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The Netherlands

Visual Guides and Bodily Metaphors: Understanding a Philosophical Text Through Prints. The case of the frontispieces from René Descartes' Opera philosophica, 1664, Amsterdam, Janssonius & Weyerstraten

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Citation
Iacob, A. (2022). *Visual Guides and Bodily Metaphors: Understanding a Philosophical Text Through Prints.: The case of the frontispieces from René Descartes' Opera philosophica, 1664, Amsterdam, Janssonius & Weyerstraten*.

Version:	Not Applicable (or Unknown)
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Note: To cite this publication please use the final published version (if applicable).

Visual Guides and Bodily Metaphors: Understanding a Philosophical Text Through Prints.

The case of the frontispieces from René Descartes' *Opera philosophica*, 1664, Amsterdam, Janssonius & Weyerstraten.

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MA Art, Architecture and Interior Before 1800s (60 EC)

Leiden University

December 2021

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Introduction

As I was musing on the possible topics of research that I could work on, an image found on an auction site online stuck with me. The item listed there was Descartes' *Opera philosophica* from 1664, advertised with a beautiful picture of the two engravings that serve as frontispieces, decorating the book. At first, I assumed that probably the engravings were already well-researched as most things that are related to Descartes are, so I tried to look for alternatives. To my surprise, little to no information could be found in an internet search regarding the frontispieces. What remained to be decided was how to approach the problem. Should a visual analysis suffice because they were not extensively researched? How can this research go a bit further than this? As I hold two BAs, one in Art History and one in Philosophy from Babeş-Bolyai University in Cluj-Napoca, and am currently enrolled in two MAs, again one in Art History and one in Philosophy, at Leiden University, I wanted to make use of my double specialization. From my BA in Philosophy, the theory of embodied cognition was of interest to me and offered a framework that can be applied to various other disciplines, among which Art History is no exception. When presented with this approach, my supervisor, Prof. dr. Yvonne Bleyerveld, was kind enough to take on this proposal, but also to introduce me to Prof. dr. Eric Jorink to whom I owe an inspiring talk. The thesis benefited from all these elements that contributed one way or the other to the final results presented here.

The present research focuses, thus, on the frontispieces from René Descartes' *Opera philosophica*, printed in 1664 in Amsterdam by Janssonius & Weyerstraten, with the two engravings being made by Cornelis Hellemans. The research done on the engravings is scarce, with a mention of the two in Matthijs van Otegem's inventory of all the publications related to Descartes and Rienk Vermij's short account on them. Because of this, the thesis proposes a visual art historical analysis to identify the components of the engravings and their meaning, together with an embodied analysis that makes use of the embodied cognition framework. The embodied analysis will focus on the frontispieces and treat them as bodily metaphors, following Lakoff & Johnson's account of metaphors. Even so, the combination of art historical research with embodied cognition is not such a common approach when it comes to research. Apart from

a book edited by Walter Melion[1], there are not many such examples in relation to early modern prints. Thus, by researching the frontispieces from *Opera philosophica*, this research offers more information on the engravings and an analysis of their provenance, versions, and creation, but also adopts this rather unusual approach. The art historical analysis is enriched through the embodied cognition framework that allows for a double-layered conclusion to be drawn.

This approach is promising due to the nature of the prints' allegorical content, alluding thus to additional meanings that have to be identified by the viewer. Together, art history and the embodied cognition framework will provide a double-layered research of the prints. One layer will be represented by the art historical meaning that is cultural and historical, while the other layer will go beyond culture and history and will appeal to our basic embodied experience. The fact that we exist in a lived body, as Maurice Merleau-Ponty stresses with his notion of *Leib*[2], allows us to have a specific human existence. The fact that our body is constituted in a certain way, with a head, two hands, a torso, and two legs, forces us to interact with our environment and the objects within it as per our bodily conditioning. To give an example, we usually don't wish to touch the grass with our head, as our head is always the element that is above everything else and we use our legs to interact with the ground. Therefore, wanting to walk in the grass with bare feet is an embodied experience that will make sense only to a creature that is constituted as we are, by having the feet as the lowest point of the body.

The research question of this thesis addresses the role that printed images have in the understanding of a philosophical text. To give an answer to this question, the book and print market, together with the roles that prints have, but also the ways in which images appeal to our cognition and reading comprehension will be inquired. The research aims to show that images encompass the traditional role of representation, but when they are coupled with text, they act as a meaningful aid in reading comprehension and rememberance of the contents of the text. In the case of philosophy texts that, by default, have highly abstract content, images help ease the reader into the content, making it more accessible via the appeal to embodiment and cognition. Therefore, the main hypothesis is that images have a positive contribution in the comprehension of a philosophical text. This hypothesis is followed by the assumption that this happens via embodiment, and that the contribution has to do with comprehension and memory, both cogntive processes. The main methods used for this inquiry include visual analysis,

[1] Ed. Walter Melion and Bart Ramakers. *Personification: Embodying Meaning and Emotion.*
[2] Maurice Merleau-Ponty, *Phenomenology of Perception*, 120-125.

literature, historical, and art historical research, coupled with the philosophical framework of embodied cognition

The art historical analysis of the engravings is the topic of the first chapter. An overview of the evolution of the print and book market from the sixteenth to the seventeenth century in the Netherlands is offered, together with a look at the role of prints. The publishing of Descartes and the printing businesses of the Elzeviers and Janssonius & Weyerstraten are discussed to offer context to the publishing of *Opera*. Lastly, the chapter deals with the artist of the engravings, their identification, possible meanings, visual references, and their later versions, offering a rough chronology of their creation and dissemination. The second chapter completes the art historical analysis with an embodied one. The two engravings are looked at through the theory of bodily metaphors. The gestures and postures of the human figures are interpreted via embodiment to investigate how the prints would have spoken to their viewer. This approach is not restricted by history because it appeals to underlying structures that make use of our embodied understanding to help us decode gestures. One will know when another is waving at him that waving is a form of signaling the person that they are seen by the waver, as they will not think that the person is merely moving the hand in the air with no meaning attached to that gesture. In this sense, the insights are not historically-limited. Lastly, the third chapter makes an overview of the literature that deals with art and cognitive processes, but also philosophical text. This helps link the current inquiry with the other already existing researches. Besides this, the chapter tackles the topic of reading comprehension and the importance of images in this process, but also meditates on the possibilities and limitations of the embodied framework for art historical research.

The three chapters focus on different aspects of the object of study, the two engravings for Descartes' *Opera philosophica* printed by Janssonius & Weyerstraten in 1664, Amsterdam. Even if the main focus is on the engravings, the inquiry takes into account the fact that they come attached to a philosophical text that makes up a book. The book is analyzed as such by connecting it to the book market context and the publishing business that produced it. The book is discussed as a collection of Descartes' work, a visual manifestation of the engraver's vision, and lastly as an impression on the reader.

Chapter 1.

Printing and the book trade in the seventeenth century

The present chapter investigates the engraved frontispiece and portrait of Descartes' *Opera philosophica* (fig. 1), fourth edition by Janssonius & Weyerstraten, 1664, Amsterdam, tracing their production, later versions, visual elements and possible interpretations, while also placing them in the wider seventeenth-century context of print production and book trade. But before discussing prints, print making, and book trade, a definition is necessary. 'Print' usually defines the physical yet highly visual materials that have some artistic characteristic attached to them. Moreover, the origin of the word settles that the defined objects should be a representation printed from a copper plate or a wooden block, on paper.[3] Accessibility, in many senses, is what defines the print as it can be multiplied easily, is portable, relatively cheap and can be made into an entirely new and independent object when combined, a book for example.[4]

The technique used to create the two prints that serve as frontispieces for *Opera philosophica* is engraving. Engraving and etching, as printing techniques in the seventeenth century, use copper plates to reproduce an impression that is transferred from a drawing to the plate and then imprinted on paper with ink.[5] When analyzing the printing capacities of plates, Antony Griffiths offers two numbers as a guide: a maximum of 2,000 impressions without retouching are possible, where more than 1,000 are of good quality, whereas etched plates would reach only half of these impressions because of the difficulty in their retouching by filling-in the plate. If retouched, the same amount could be doubled. The retouch would be best done by the artist that made the plate in the first place to ensure that the plate won't be ruined.[6] As Ilja Veldman concludes, the power to replicate such a great number of images was a revolution. Prints generally had a devotional function as they were printed in a religious context, but some of them also had practical roles such as promoting political, religious, but also social and moral ideas, spreading knowledge and making use of the power to replicate and disseminate.[7] Besides this, prints could also be used as ornaments, as this practice was inspired by the work of goldsmiths as they were already accustomed to the work in metals. They could also function as a substitute for a painting by replicating the image, but they eventually become

[3] Merlot, "The Nature and Role of the Print," 9.
[4] Ibid., 23.
[5] Griffiths. Ibid., 47.
[6] Ibid., 50-54.
[7] Veldman, *Images for the eyes and soul*, 9-11.

independent artworks that do not replicate but create original works. This can be seen in the work of Lucas van Leyden (1494-1533) (fig. 2), as he was one of the first important printmakers and the first notable Dutch artist to use engraving as an independent medium of expression.[8] The capacity of reproduction is reflected in the roles that prints start developing as they can be both practical objects and artistic expressions.

Because of this great capacity of reproduction, prints were more accessible for customers that could buy copies of a print. As the demand for prints rose, a print market was quick to form by the second half of the sixteenth century, allowing those interested to have a place where to sell and buy prints. Printing was a risky, yet profitable business because one had to predict to some extent what would be of interest for customers and then print that in batches. Printing was explored by the Italians, as Vasari noticed the growing popularity of prints when he discussed the topic in his 1568 edition of the *Lives*[9] and realized the potential it held. The European market expanded beyond Europe after the sixteenth century via the East European Indies Company, encouraging merchants to seize this opportunity.[10] At first, prints contained only images that became more and more elaborate as the printers developed and allowed for more creativity. Prints that contained lettering also entered the market and printmakers realized they have to address a wider public so they were prompted to use Latin as a way to bridge the language gap and transform their prints into universally selling products.[11] Thus, the publishers exploited the potential of a market that opened up to international prospects.

Book production and book trade in the Dutch Republic

Besides tracing the market for prints, it is mandatory to also look at the book market of the seventeenth century, with a focus on the Dutch situation. Since the sixteenth century, the book trade was highly influenced by the existence of the Frankfurt fair, held twice a year. It was the heart of the book trade for it facilitated the exchange of books and ideas, creating a sense of community.[12] What accelerated the growth of the Dutch publishing businesses can be attributed to the political climate that formed the Republic. Before the Dutch Revolt (1566-1648), there were at least twelve cities that had one printer (such as Leiden, Utrecht, or Amsterdam), and in some cities there were also print shops. The liberation of Leiden in 1574

[8] Ibid., 21-29.
[9] Bury, *The Print in Italy, 1550-1610*, 10.
[10] Griffiths. *The Print Before Photography*, 302-305.
[11] Ibid., 78-81.
[12] Hellinga, La Fontaine and Ovink, *Copy and Print in the Netherlands: An Atlas of Historical Bibliography*, 22-23.

and the capitulation of Antwerp in 1585 are marking factors for the forming of the Dutch Republic in 1581 with the *Acte van Verlatinghe*. How did this affect the printing business? It did so through the migration from south to north that occurred as a result of the fall of the south in 1585. Due to this, the focus shifted from Antwerp as a center for book and print production to Amsterdam. It is estimated that around 168 printers and booksellers migrated from the south between circa 1570 to 1630.[13] The shift from south to north and the formation of the Republic and it becoming the centre of world trade are determining factors in the evolution of the printing business.

From this point, the book trade only develops further into the seventeenth century. As the Republic was a centre for international trade, the Dutch publishers became the main book producers for this part of Europe. Nevertheless, this was greatly favoured by the position of the country, both by the sea and on the course of the Rhine, but also because of its tolerance and not-so-rigid censorship.[14] Another important factor was none but the role of the state. Printers and book shops, upon migration, would be first contracted by the state or by other institutions, such as the church or university, ensuring constant demand.[15] By the middle of the seventeenth century, the Frankfurt fair, once the field of publishers from Venice, Paris, and Antwerp, was now dominated by the Dutch.[16] Notable Dutch publishing houses expanded their business by having agents and branches outside the Republic, with Amsterdam as the heart of the Dutch book trade. Regardless, publishers were present in most regions of the country, with Leiden as another printing centre providing constant work through its university.[17] Around thirty to fifty book auctions were held in the Republic in the second half of the seventeenth century, with the first ones being held in Leiden. Out of these auctions, a part of them consisted of the sale of entire book collections or libraries that attracted customers.[18] Therefore, the activity of the publishers was varied. In this favourable climate, Descartes' works are printed by numerous publishers in various forms.

Descartes the philosopher in Netherlands

In philosophy, Descartes, together with Plato and Husserl, is considered one of the pillars of philosophical thought because his work disrupted the *status quo*, but also

[13] Pettegree, Der Weduwen, *The Bookshop of the World*, 29-32.
[14] Hellinga et al, op. cit, 29-30.
[15] Pettergree, op. cit, 33.
[16] Ibid, 27.
[17] Hellinga et al, op. cit, 33-41.
[18] Van Selm. "The introduction of the printed book catalogue," 16-17.

revolutionized it by addressing several new problems. Probably the most studied and known work of his is the *Meditations on First Philosophy* as it formulates the foundation of philosophical inquiry through questioning. The dictum of *cogito ergo sum* gives rise to the Cartesian philosophy, strengthening but also twisting, in a Cartesian sense, the existing dualism between mind/soul and body. Descartes' thought and writings, both scientific and philosophic, are devoted to very similar issues of which we still inquire. The problem of knowledge, the status of science, subjectivity and objectivity, the nature of reality, the seeming tensions between matter and mind, are still focal points of today's philosophical debate.[19] Descartes's contribution can be quite well summarized in the fact that "once in a lifetime we must demolish everything completely and start again right from the foundations"[20]. Through this strategy, the philosopher proposes a fresh start for modern thought, a start that is based on questioning, inquiring, as opposed to the dogma or tradition.

Descartes' first trip to the Netherlands was done in 1618 when he was stationed in Breda as a soldier in the Prince's of Orange army, leaving for Germany the next year. Ten years later, in 1628, he embarked on a new trip to the Netherlands.[21] Nevertheless, this second stay proved to be much longer and extremely fruitful, as he spent two decades in the Netherlands. His first stop was in Franeker where he lived for about nine months, working on a metaphysical project that coincides with the *Meditations* in as much as it discusses two core issues, that of God and that of the separation of the soul from the body. The following period seems to have revolved around his work on *The World*, but also his side-investigations in mathematics, optics, astronomy, physics and the likes. He moved between Leiden, Amsterdam, Utrecht, and Alkmaar, mostly due to his preparation for publishing his first book. However, the progress on the manuscript of *The World* was influenced by the condemnation of Galileo in 1633. Descartes realized that heliocentrism can bring about a lot of hostility from the Church, posing real dangers to his well-being.[22] Three years later, in 1636, he managed to publish the *Meditations,* followed by the *Discourse* in the next year. For the *Meditations,* he briefly moved to Leiden to foresee the process, especially the printing of the diagrams it contains. Regarding this publishing, it is worth mentioning that he is advised by his friend and patron Constantijn Huygens (1596-1687) to use woodcuts instead of engravings for the illustrations and diagrams he wants, but also to have those printed in the text. This is an interesting point as Descartes and

[19] Cottingham, *The Cambridge Companion to Descartes,* 3-8.
[20] Cottingham. op. cit., 2.
[21] Clarke, op. cit., 39-52.
[22] Ibid., 97-111.

his publishers followed Huygens' advice and most editions follow these recommendations. About Descartes' remaining time in the Netherlands, from 1637 he lived secluded in Northern Holland, first in Alkmaar and then, presumably, in Egmond. After this final stay in the area, he left the Netherlands 1649.[23]

Two publishers of Descartes: the Elzeviers and Elizeus Weyerstraten

The publishing of Descartes is closely tied to the Elzevier family that established itself as one of the main publishing houses of the Dutch Republic. The Elzevier family first settled itself in Leiden, through the move of Louis (I) Elzevier (1540-1617) in 1580 from the southern Leuven. They activated in Leiden and then opened another office in Amsterdam when the grandson of the first Elzevier, Louis (III) (1604-1670), moved to Amsterdam in 1637, effectively starting the business in 1640.[24] The Leiden and Amsterdam branch of the Elzeviers ended up being the most successful.[25] Daniel Elzevier (1626-1680)[26], the cousin of Louis (III) joined the Amsterdam firm in 1655. From this point onwards, the Amsterdam firm starts to eclipse the other branches as it becomes the most influential office. This development had to do with the prosperity of Amsterdam as a centre for European trade, because from the first quarter of the seventeenth century up to the last one, the number of printing businesses grew from 96 to 273. To attest to this prolific period of trade, the Dutch representatives sent to the Frankfurt fair were mainly composed of traders from Amsterdam.[27] The Elzeviers are closely tied to the printing innovations of the century as they made good use of them. They relied on the auction market, the publishing of duodecimos (7 to 8 inch tall books) that were sought after by collectors, but also on stock catalogues to attract customers and maintain their influence in the publishing world.[28] This general development, together with the efforts of Daniel to enlarge the Amsterdam branch, but also to publish and add new and old books to the stock,[29] assured the survival of the office in a rapidly expanding trading environment.

Another publisher of Descartes that is of interest for this research is Elizeus Weyerstraten (1634-1666). He was born in Nijmegen and activated as a bookseller and, from 1662 up to his death, as a publisher in Amsterdam. He was married to Sara Janssonius (1644-

[23] Ibid., 126-156.
[24] Davies, *The World of the Elseviers, 1580-1712*, 105-106.
[25] Hoffijzer, *Exploring the Heritage of the Elzeviers*, 11-13.
[26] Daniel Elsevier (sometimes spelt Elzevier) was the elder son of Bonaventura Elsevier, a bookseller that activated in Leiden. Daniel's grandfather and Bonaventura's father was the first Louis Elzevier of Leiden.
[27] Davies, op. cit, 97-103.
[28] Pettegree, op. cit, 34.
[29] Davies, op. cit, 108.

1669), niece of Johannes Janssonius van Waesberghe (1616-1681) and had a son, Elizeus (II) (1666-1698) who later on took his father's business.[30] Johannes Waesberghe came from a Rotterdam family of printers and book sellers and married into the Janssonius family of cartographers and publishers from Amsterdam. He had a partnership with Sara and her husband, Elizeus, printing under the name Janssonius & Weyerstraten. Johannes Janssonius is notable for collaborating with Joan Willemsz. Blaeu. He also worked with other printers, publishers and booksellers, attesting to the popularity that the Janssonius business enjoyed.[31] In this context, the *Opera philosophica* is published from Janssonius &Weyerstraten. However, in the same year the Amsterdam Elzevier, Daniel, published the same *Opera philosophica* of Descartes, in the same fourth edition. This makes one wonder whether the two were rivals or if they agreed on this double publishing that could be viewed as concurrence. At the same time, this can also be seen as attesting to the popularity of Descartes' work in the Republic.

Interestingly enough, Daniel Elzevier seems to have known Elizeus Weyerstraten as the former is mentioned as a witness in the execution of a testament on 15th of September 1665, where Elizeus is one of the parties involved. Moreover, the witnessing took place in Elzevier's house.[32] In these two documents[33] it is stipulated that Johannes Janssonius and Sara had to deliver two printing orders of bibles to their respective contractors. This makes one wonder if, in practice, Sara was the one who managed the business rather than Elizeus. This is also supported by the fact that she took care of the business after her husband's death. Besides these accounts, there is not much information regarding the publishing activity of Elizeus (I), leaving us with not much to go on regarding this. Therefore, let us take a look at the publishing of Descartes.

In 1634, Elzevier was Descartes' first choice for his French edition of *Meditations*, the first book published by Descartes. However, the philosopher dropped Elzevier because the two couldn't come to an agreement and took up Jan Maire (1575-1666) of Leiden instead. However, Descartes' collaboration with the Elzeviers seems to be restored as the philosopher chose to reprint his books, this time in a Latin translation, with the Elzeviers in 1644.[34] Even after

[30] *Ecartico.* "Elizeus Weyerstraten." 2019. Accessed on 28. 09. 2021. http://www.vondel.humanities.uva.nl/ecartico/persons/13613.
[31] *Ecartico.* "Johannes Janssonius van Waesberghe." 2019. Accessed 10.12. 2021 https://www.vondel.humanities.uva.nl/ecartico/persons/11197. See also Stadarchief Amsterdam, Amsterdam: DTB-registers (toegangsnummer 5001), 44: 135.
[32] Kleerkooper et al., *De Boekhandel Te Amsterdam Voornamelijk in de 17e Eeuw*, 1328. The document is done at a notary one year later, in the year of Elizeus' sudden death in 1666.
[33] Ibid., 1492-95.
[34] Clarke, *Descartes. A Biography*, 142-144.

Descartes' death he seems to remain a classic for the Elzeviers as they published his works from 1635 until the publishing house closed in 1712.[35] This indicates that most likely Descartes was one of their best-selling philosophy authors.

As Descartes' *Opera philosophica* is in Latin, it can be asked if publishing in Latin was common. A quick look at the strategy of the Elzeviers can shed some light on this matter. The generation of Abraham (1592-1652) and Bonaventura Elzevier (1583-1652) had a big stock of 8,000 titles, out of which most were in Latin. Moreover, they also offered 1,200 books that were imported.[36] This indicates that a choice for Latin opened up the international book market for the Elzeviers, as Latin was the base of education in Europe, the language of the elites, but was also spoken as a *lingua franca* by most travellers.[37] It was a strategy to ensure profitability. After 1664 when Louis (III) retired and Daniel took up the office, it can be noticed that there is a decrease in Latin books and a shift towards vernacular languages.[38]

Therefore, on one hand there are the Elzeviers that publish Descartes from his second edition of *Meditations*, in 1635, and keep on publishing his works as long as their business runs. On the other hand, Elizeus Weyerstraten publishes Descartes' *Opera* in the fourth edition, using the translations of Elzeviers, in 1664. While the Elzeviers have priviledges and the author's blessing[39], Weyerstraten publishes Descartes fourteen years after the philosopher's death, yet his edition features two marvelous frontispieces compared to Elzevier's *Opera* that only has an austere bust portrait of Descartes (fig. 3). This choice was likely meant to attract the customer's interest as a way to rival the Elzeviers' prestige.

Opera philosophica's frontispiece, portrait, and their versions

The *Opera philosophica's* frontispieces, in the form of a portrait and an allegory (fig. 1) were never studied thoroughly before. Rienk Vermij addressed the allegory frontispiece before in a short study[40], but without any information regarding the artist, first publishing date, identifications, or a wider context, as he worked on a later print and concluded that the engravings must have originated around 1690. The only other mention regarding the 1664 *Opera* and its frontispiece can be found in Otegem's bibliography[41] of the works of Descartes,

[35] Ibid., 108 and Pettegree, op. cit, 273.
[36] Pettegree, op. cit., 269.
[37] Griffiths, op. cit., 81.
[38] Davies, op. cit., 108 and Pettegree, op. cit., 273.
[39] In the letter featured in the Elzevier prints of Descartes' works.
[40] Vermij, "The light of nature and the allegorisation of science on Dutch frontispieces around 1700."
[41] Van Otegem, *A Bibliography of the Works of Descartes*, 695.

but in this publication the portrait is only mentioned, and the allegory is illustrated but is not analyzed.

Taking a closer look at the *Opera philosophica* as a type of publication, it can be seen that this practice of selling more works of Descartes as a set[42] under this name was started by Louis (III) Elzevier, in 1650. The publishing of the *Opera philosophica* is dominated by the editions of the Elzeviers that issue it several times until 1678, while publishers like the Blaeu family published it until 1692. Of importance here is also the fact that since 1656 most of the editions of the *Opera* contain a portrait of Descartes.[43] Therefore, our edition respects this rule, even if it differs by the fact that instead of a bust, like the Elzevier editions (see fig. 3), it offers a full-body portrait (fig. 4). Among the publications of Descartes that were made either before 1664 or close to this year, those that feature a portrait of him usually use a bust. This is very visible in the publications of Daniel Elzevier and Pieter Blaeu (1637-1706) that use Frans van Schooten the Younger's (1615-1660) bust portrait (see fig. 3).[44] It's comparable to Elzevier's *Opera* because the Weyerstraten edition appears as the fourth[45], just like Elzevier's, and uses the Latin translation of the latter,[46] yet Descartes portrait differs as it is a full-body portrait that comes with an allegoric title page (fig. 5-6).

The two prints from the frontispiece are each signed with the same monogram *C:H.fe* (fig. 6). However, when trying to match the monogram with a name[47], the only match is with Cornelis (sometimes appearing as Kornelis) Antonius Hellemans (1657?-1721).[48] Is this match correct? By looking at other prints that are identified as works by Hellemans, the style of the cross hatchings, the distribution of light and shadow, but also the monograms are comparable, with the latter bearing obvious similarities between each other. Such an example is the engraving of *Terra* (fig. 7,8) from Hellemans' series of the four elements. The play between light and shadow, the use and distribution of the cross hatchings, but also the figures of cupids indicate some relation between the artist of the frontispiece engravings and this one. Moreover, the signature from *Terra* corresponds with the monogram discussed in as much as it features

[42] As under the title *Opera philosophica*, more works of Descartes are sold as a set, each book retaining its original page title as they are not compiled in one book but are rather independent books tied together.
[43] Op. cit., 680-683; 695.
[44] For this see Descartes' *Opera philosophica*, 1664 Daniel Elzevier, Amsterdam, but also 1692 Typographia Blaviana, Amsterdam for the use of Schooten's engraved portrait.
[45] As it is inscribed on the frontispiece *Renati Des-Cartes. Opera Philosophica. Editio Quarto.*
[46] Clarke, op. cit., 144 and Davies, op. cit., 105-109.
[47] This was done by consulting the RKD database that has the most information regarding Hellemans, as he is only mentioned in Thieme-Becker.
[48] *RKD.* "Cornelis Hellemans." RKD artists. 1997. Accessed on 15. 09. 2021. https://rkd.nl/explore/artists/112915.

the same initials featured here as 'C. H. *fecit'.* As the monogram from *Opera* is done in an inclined hand and features a colon after 'C', another example can support this identification further. Hellemans' engraved *Portrait of Hero Sibersma* (fig. 9) has a longer signature of the artist. Even if the portrait is engraved in a painterly style the signature is very helpful. Illustrated here (fig. 10), it reads '*C: Hellemans Fecit'*. The relevance of this last example lies in the fact that it makes a connection between the C.H. *fecit* and *C:H.fe* via the use of colon after *C,* attesting to the fact that the artist signed himself as such. This match between the monogram and Cornelis Hellemans is a bit problematic because the publishing of the frontispieces is done in 1664 and, if we are to go with the birthdate of either 1657 or 1650, then the artist was too young to have done it. This leads to three possibilities. Either the artist was a prodigy, the year of birth is wrong, or there were a father and son both named Cornelis Hellemans, and the engravings for the 1664 edition were made by the father.

The scarce documentation[49] on Hellemans mentions him as a print artist and art dealer who worked in Amsterdam and married Johanna van Rossum, widow of Jacobus Hardenbroek (?-1691) in 1700. According to Arnold Houbraken's account[50], Willem Kalf (1619-1693), the still life painter[51], "requested Hellemans to engage in commerce in prints with him"[52] but their partnership was ended by the sudden death of Kalf. This collaboration between Kalf and Hellemans is meaningful in as much as it confirms Hellemans as having contact with the print world by engaging in the commerce of prints, but also because it allows for an age comparison between them. This age comparison is relevant as it shows a thirty-eight year gap between the two, allowing for the possibility of a wrong birthdate or a father and son Hellemans. The wrong birthdate can be supported by the assumption that Kalf and Hellemans must have been of similar age.

A visual analysis of the allegoric title page

The title page of the frontispiece (fig. 5) is rich in allegoric content as indicated by the three figures and many objects that dominate the scene. The central figure, that of a woman in

[49] *RKD.* "Cornelis Hellemans." RKD artists. 1997. Accessed on 15. 09. 2021. https://rkd.nl/explore/artists/112915 but also "Notice of marriage on September 19, 1681" via, *openarchives* for the document that lists the marriage between Johanna Rossen and Jacobus Hardenbroek, in Amsterdam, Register of notices of marriage
Part: 509, Period: 1681-1682, Amsterdam, archive 5001, September 19, 1681, Ondertrouwregister, folio p.196.
[50] Houbraken, *De Groote Schouburgh Der Nederlantsche Konstschilders En Schilderessen,* 218-219.
[51] *RKD.* "Willem Kalf." RKD artists. 1992. Accessed on 12. 09. 2021. https://rkd.nl/explore/artists/43285.
[52] Houbraken, 218. See Volume 2, page 210-219 - Houbraken Translated (rkdstudies.nl) for the translation. Accessed 06.01.2022.

armor pointing to the sky, can be identified as Athena or Minerva. Minerva is the Roman form of the Greek goddess Athena and is described as wearing a helmet, armour, with her attributes being the spear, *aegis*, and also the owl. Both Athena and Minerva are associated first and foremost with philosophy, and only then with literature and the arts. They are also closely linked with academic knowledge.[53] As the first book from the *Opera* is that of *Principia philosophiae*, one can infer that Athena/Minerva[54] is teaching the seated woman the principles of philosophy both from the book that she is holding, but also from the visible sky to which she points. The sky has the constellations of Leo and Cancer and it can be taken to represent more broadly the idea of learning from Nature and the higher order of things, such as the celestial bodies, constellations, and their movements. This interpretation of Athena as instructor can also be supported through Adam van Noort's *Minerva instructing Pictura* (fig. 11), from 1598. The drawing depicts Minerva in the middle of instruction, teaching Pictura the art of painting and everything that it entails. The posture of Minerva but also her representation remind of the 1664 engraving. Moreover, the drawing uses what appears to be an existing iconography of the late sixteenth century of the goddess as instructor and source of inspiration. The iconography presented here is also of interest because of the similar motif of instruments that are scattered around Minerva, a detail that can also be found in the 1664 allegory.[55] This example strengthens the interpretation and identification.

A look at other contemporary frontispieces might be of help. The first examples that come to mind are those of Jan Luiken (1649-1712), such as the frontispiece for *Ethica of zeden-konst* from 1690 (fig. 12) and that for *Onderzoek wegens de eynd-oorzaaken der naturlyke dingen* from 1688 (fig. 13). The scene from the *Ethica* shows a seated man that receives an open book from a winged woman dressed in classical garments. The female figure, most likely Virtue, points to the sky while looking at the man, her head crowned with wreath. In the background, another female figure can be seen holding a pair of scales. The *Onderzoek* frontispiece bears a compositional similarity as it features three figures, out of which one is seated and writing. A woman dressed in a robe that echoes classical garments writes in a book on her lap, her head facing the ground in a traditional posture[56] that evokes thinking. Behind a table, on which two spheres are seated, one indicating the placement of stars and one of Earth,

[53] Grimal, *A Concise Dictionary of Classic Mythology*, 66-67.
[54] As there isn't any significant difference between the two, as their depiction remains very similar in both Greek and Roman culture.
[55] Bleyerveld et al., *Bosch to Bloemaert*, 192-193.
[56] This posture can be related to the tradition of depicting St. Jerome. This visual tradition is briefly discussed later in this chapter, under the section "Descartes' portrait."

two male figures converse. An old man points his hand to the sky just like Athena and the younger boy listens to him. What strikes the viewer in both instances is the presence of a figure that points to the sky, imitating the gesture from Descartes' frontispiece. As Vermij notes, in all these various versions of frontispieces, "the light of the sun reaches the seated figure via the figure of Virtue and the open book".[57] Even if he posits that the Descartes print follows the iconography of Jan Luiken[58], this is unlikely as the frontispiece from *Opera* dates from 1664 and might be the other way around.

The seated person has a star over her head and appears to wear pearl earrings, with a veil attached to her head and an intricate outfit, yet no shoes. It's more difficult to label her as Philosophy since there is no canon way of representing philosophy.[59] However, the most known precedent of an allegorisation of philosophy can be found in Boethius' *De Consolatione Philosophiae*. Boethius describes Lady Philosophy as having an

> "awe-inspiring appearance, her eyes burning and keen beyond the usual power of men. She was so full of years, and yet she possessed a vivid colour and undiminished vigour. Her clothes were made of imperishable material of the finest thread with most delicate silk"[60].

The figure from the print respects this description in the sense that she has a keen stare towards Athena, has a somewhat wise figure yet isn't old and is well-dressed. Boethius' description can be a starting point because it was printed several times in the seventeenth century. *De Consolatione Philosophiae* is printed by Johannes Blaeu (1596-1673) in Amsterdam in 1649, while the Libri V of *De Consolatione* (fig. 14), depicting Lady Philosophy on the frontispiece, is printed by publishers such as Jan Maire (in 1620 and 1633) and Johannes Janssonius (1631).[61] Therefore, it can be asserted that it was known in the Dutch publishing circles. Another interesting observation that can be found in Lady Philosophy's description is that she is part human and part divine.[62] The star over her head can be seen as a way to signify her connection with the higher order of things, the divine and celestial, while her body is that

[57] Vermij, op. cit., 223.
[58] Idem.
[59] This is supported by a look at Henkel and Schöne's *Emblemata* that feature some figures of philosophy but they are not represented in the same way. It is either a woman with three bodies and faces, one of which is dedicated to philosophy or an old scholar that looks like a wanderer. See Henkel, Schöne, *Emblemata*, 1535-37.
[60] Boethius, Walton, *De Consolatione Philosophiae*, Book I, Part 1.
[61] As seen on *STCN*. "De Consolatione Philosophiae." Accessed on 20. 09. 2021. https://picarta.oclc.org/psi/xslt/DB=3.11/SET=6/TTL=11/NXT?FRST=21.
[62] Idem.

of a human. A similar depiction of Philosophy can be found in some later engravings by Bernard Picart (1673-1733), a French engraver who excelled in book illustration. He studied and worked in Paris, and then moved to Amsterdam in 1711.[63] In *De Waarheid toont een groep filosofen en antieke schrijvers* (fig. 15), from 1707, made for the philosophy thesis of M. Brillon de Jouy,[64] Philosophy is shown guiding Descartes and other ancient philosophers towards a naked woman that reveals herself from the sky, holding a sun in her hand.[65] Of interest here is the fact that Philosophy is portrayed in classical garments, with a crown of stars that reminds of the 1664 Philosophy. Moreover, this example is even stronger due to the direct association between Descartes and Philosophy, the mathematical and scientific tools that lie on the ground, but also the two cupids that play with an armillary sphere. As these elements coincide between the *Opera* engraving and this one of Picart, the identification of the seated woman as Philosophy is stronger. Besides, the use of such similar elements in a comparable manner makes one wonder if, by chance, any copy of the *Opera* frontispiece reached Picart, inspiring him in the making of this title page. The same female character can be also found in Picart's *Reconciliation of Philosophy with Theology* (fig. 16), dated 1708, bearing the same attributes.

The choice of dress for Philosophy might not be made arbitrarily because, as it is often forgotten, in the early modern period dress was generally perceived as an extension of the individual, a way to communicate status, affiliations, and virtues or vices.[66] Her dress seems to combine elements that remind of early modern dress such as the bodice with the pleated collar and bows in the front, with ones that have ancient Greek-Roman inspiration, such as the toga-like skirt and the stripes detail from the sleeve. The mixed elements can be interpreted as Philosophy, though having older roots, is the early modern philosophy that becomes once again a student of Nature, as Athena's gesture to the sky is very similar to that of Plato from Raphael's *School of Athens* (fig. 17).

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[63] As stated in an entry from "Bernard Picart," *British Museum*. Accessed 24.11.2021. https://www.britishmuseum.org/collection/term/BIOG41925.

[64] *Leiden University Special Collections.* "Bernard Picart, De Waarheid toont een groep filosofen en antieke schrijvers*,"* Accessed 22.11. 2021. http://hdl.handle.net/a887.1/item:1620691.

[65] The title used by the Leiden Special Collections for this print can be deceiving as the viewer might be led to believe that the woman leading the philosophers is Truth. However, by reading the first sentence of the text featured in the print, the author clearly explains that Philosophy is the woman that leads the philosophers towards Truth that is revealed in the form of a naked woman. The exact description is as follows: "La Philosophie representée par une femme majestueuse accompagnée et suivie de plusieurs Philosophes les conduit a la connoissance de la Verité," For more on this, refer to fig. 14.

[66] Griffey, *Sartorial Politics in Early Modern Europe*, 15.

The figure of the boy with the armillary sphere is probably the hardest element to identify and interpret from this print. The only clues are his age, his ancient-inspired garment and the sphere he holds that might be counted as an attribute. As the armillary sphere is used as a model for the principal celestial bodies and their position and the boy seems to pay attention to what Athena is saying, it can be posited that he too is a student of Nature and wisdom. Possibly here he represents humanity itself as a student of natural philosophy. The rest of the elements can be interpreted in relation to the contents of the book. Descartes favours a renunciation of dogma, a turn from the old knowledge towards the natural world that can help us criticize and reconsider our truths under the signs of science, precision, mathematics.[67] The turned books on the shelves in the upper right of Descartes's portrait, as suggested by Eric Jorink[68] might stand precisely for this turn from the old, while the various scientific and mathematic instruments that are scattered all over the room represent the tools for understanding the world. From this interpretation, the frontispiece appears to be greatly connected to the contents of the title, conforming to the practice of a frontispiece being used as a way to advertise the content of the book,[69] offering the reader the principles of philosophy to build a new knowledge.

Other reprints of the title page

Regarding the allegoric frontispiece, there can be identified three versions dating from around 1690, all in the editions of *Principia Philosophiae: of Beginselen der Wysbergeerte*, printed by Jan Claesz ten Hoorn (fl. 1671-1714), in Amsterdam. Jan Claesz ten Hoorn was a book seller and publisher who had a shop nearby the Lord's Hostel (*over het Oude Herenlogement*). He is notable for having tried to issue a Dutch version of Spinoza's *Tractatus theologico-philosophicus* unsuccessfully as the commission was stopped by the Church Council because the work was labelled as dangerous.[70] Three virtual records can be found about this print. One states the print is the title page for *Principia*, giving the measurements of 190 x 143 mm,[71] while the 1664 print measures 240 x 300 mm.[72] Another one can be found together with

[67] René Descartes, *A Discourse on the Method*, 10-17.
[68] As per our talk from 14. 09. 2021 regarding the frontispieces.
[69] Griffiths, op. cit., 185.
[70] Amsterdam, SA, 376: 'Archief van de Hervormde Gemeente; Kerkenraad' (Algemeen), ms. 'Protocolboeken', inv. no. 15, p. 164, 9 January 1687, via https://spinozaweb.org/people/319.
[71] *Alamy*. "Jan Claesz. Title page Principia Philosophiae." Image ID: 2B6AHY2 Accessed 20. 09. 2021. https://bit.ly/3suajBx.
[72] Based on the size of the book as being 4to, corresponding to 300 x 240 mm. Given this, the actual size of the print might have an error of 10 mm on width and height.

the book as an auction item from the *Zwiggelaarauctions* (fig. 18).[73] The second Dutch edition of Descartes' *Werken* has the frontispiece together with a portrait of Descartes (fig. 19) as featured on *Zvab* auctions.[74] Here, again, no measurements are given but the volumes, four in number, are dated 1690-92. R. Vermij identified a print of the same title page of *Principia* that is currently housed in the Utrecht University Library, published in 1690, Amsterdam.[75] Now that all the known versions have been mentioned, an issue stands out; the print from 1664 has a few striking differences when compared to the 1690 ones. First of all, the title from the table sheet is changed from *Opera philosophica* to *Principia philosophiae: of Beginselen der Wysbergeerte* (fig. 20). Secondly, the bottom-right corner that originally had the *C: H.fe* is nowhere to be found, as the print is unsigned in all the other versions. With a quick look, one can easily see that no other elements differ between the 1664 version and the rest. The cross hatchings, the distribution of light, the items and figures, all are identical. The only area that has visible differences is that of the table sheet where the title has been changed. Whereas in the original the shading of the sheet's foldings is curved and more plastic, the others have straighter lines with less contrast. This difference strengthens the possibility of a purchased copperplate that had the title area reworked to engrave a new title.

Because the 1664 frontispiece has some differences compared to its later versions, some questions arise. Why was the monogram removed? Were the copper plates bought by another publisher and modified? As the allegory appears together with Descartes' portrait in 1664, it should be noted that in all other versions the portrait is non-existent, indicating that the allegory and portrait were separated. This could mean that the copper plates were sold separately at some point. The Rijksmuseum Descartes portrait print supports this scenario as the print is signed as being published by Johannes Tangena around 1687-1691 (fig. 21), while the allegories are published by Jan Claesz around 1690. Therefore, their selling must've happened sometime before 1690. Upon looking at Elizeus Weyerstraten's known heir, Elizeus (II), it can be quickly seen that he only activated as an Amsterdam publisher up to 1678,[76] indicating that he probably took another profession afterwards and then auctioned his goods.

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[73] *Zwiggelaarauctions*. "R. Descartes. *Principia Philosophiae*." From the auction of 6 December 2016. Accessed on 15. 09. 2021. https://www.zwiggelaarauctions.nl/index.php?p=a&select=30,329,15892.

[74] *Zvab*. "R. Descartes. *Principia Philosophiae."* From the auction of 8 November 2006, no. J6HHF2DBRQ14. Accessed 20.09.2021. https://www.zvab.com/Principia-philosophiae-beginselen-wysbegeerte-works.With-Meditationes/22591723937/bd?clickid=TFUQz7TcQxyLWLMwUx0Mo3EJUkBXktWtkyWFRU0&cm_mmc=aff-_-ir-_-1418078-_-77416&ref=imprad1418078&afn_sr=impact.

[75] Vermij, op. cit., 215.

[76] *Ecartico.* "Elizeus Weyerstraten (II)." Accessed 25. 09. 2021. http://www.vondel.humanities.uva.nl/ecartico/persons/41402.

This helps us narrow down the possibility of the auctioning of the copper plates between 1678 and 1687, as copper plates were seen as the most valuable assets for a publisher.[77] Moreover, the scenario of the auctioning isn't the only possible one, as copper plates were also used as loan security and would enter someone else's possession if the owner wouldn't be able to pay back the debt.[78] Therefore, it is unclear how the copper plates entered the possession of Tangena and Ten Hoorn, but it is clear that the two were separated. As things stand now, the production of the two prints seems to cease after 1690.

Descartes' portrait

It is hard to say whether Descartes' portrait draws visual inspiration from the engraving of Frans van Schooten the Younger (1615-1660), used by the Elzeviers (fig. 3), or from the painted portrait by Frans Hals (1582-1666) (fig. 22). Regardless, the choice of portrayal is unexpected because it is a full-body portrait, while both Schooten's and Hals' are busts, keeping up with the traditional way of portraiture.[79] According to Seymour Slive, Frans Hals' portrait is the only known painted original, dated most likely in 1649 in the year Descartes left for Sweden. The present panel was most likely cut at some point[80] but Suyderhoef's 1650 engraving (fig. 23) is believed to show the Hals portrait before the cut. The portrait was made in 1644 by Frans van Schooten, mathematician, enthusiast Cartesian, and artist, is most likely done with a sitting Descartes as Schooten's pupil Erasmus Bartholinus indicates in a letter from 1650, commenting that the portrait represents Descartes "as he remembers him".[81] It is hard to determine from which of the two the *Opera* portrait draws inspiration, but it's useful to note the two possible influences.

In the 1664 portrait (fig. 4), Descartes is shown sitting at his working table, quill in hand, in the process of writing. This is a very different way of representing him when compared to the existing portrayals of the philosopher (see figs. 3, 22, 23). The only other instances when Descartes is shown sitting in a full body can be found in the 1692 German edition of *Opera omnia* printed in Frankfurt (fig. 24), while the other is an allegorization of Descartes from 1700 by Laurens Scherm, printed in Amsterdam (fig. 25) for *The Life of Renatus Descartes*. There are certain similarities between the Frankfurt and the Scherm print with the 1664 portrait. For

[77] Griffiths, op. cit., 132.
[78] Idem.
[79] This can be also seen in the ways in which scholars such as Erasmus of Rotterdam were usually portrayed. See this explained later in this section.
[80] Slive. *Frans Hals*, 258-259.
[81] Slive. *Frans Hals*, (1970), 164-168.

example, in the Frankfurt portrait, Descartes is shown sitting at his desk, quill in hand, an open book in which he appears to write, inquisitive look that faces the viewer. He is shown in the same way in which he is portrayed in the 1664 engraving, minus the stepping on Aristotle, even if the foot has the same awkward outward position. Moreover, in the Frankfurt print a drapery is present behind him, revealing a window. The two globes, one possibly an armillary sphere, the geometric instruments, but also the visible scenery remind of the same objects that are present in the allegoric title page, albeit distributed in a disorderly manner in the latter. The 1700 Scherm portrait has a few similarities with the 1664 engraving such as Descartes sitting with an open book and some other books on the floor. One of the books from the floor is open and underneath it a compass can be seen, suggesting that the content of the book is build upon instrumental knowledge. The armillary sphere is present by the philosopher's feet, on the ground, reminding of the allegory. Probably what attracts the most attention in terms of differences are Descartes' fully clerical clothing, his rhetorical gesture with the hand as if speaking, but also the fact that he is crowned with wreaths. Through this coronation and rhetorical gesture, the print gains a somewhat theatrical aspect that is not that visible in the 1664 and 1692 portraits. In the previous two, Descartes is shown in a more sober and inquisitive manner, with only his gaze open to the viewer while his activity and gestures remain closed, personal (i.e. the act of writing).

As it can be noticed, both examples date way after 1664 and therefore it can be posited that they might have been influenced by it, as the 1664 portrait differs from the norm. Returning to the rest of the image, just as in the allegory, the books on the shelves are turned from the viewer's gaze so their titles cannot be read. The only visible title is that of Aristotle's book on the floor, while Descartes steps on it unbothered by its presence. This latter gesture has much to do with Descartes' work and rejection of Aristotle and scholasticism. Two key points in which Descartes and Aristotle differ are worth mentioning as they have far-reaching implications in the history of philosophy. The first is Descartes' introduction of the concept of 'simple nature' as opposed to the existing Aristotelian ones of *ousia* (essence) and *physis* (nature). The simple nature implies that we cannot know things as they are (anticipating Kant), but only in virtue of our access to them, where certainty follows. The simplicity of the simple nature is translated into accessibility, creating an epistemological turn that revolves around our capacity of knowledge, instead of higher universal orders or categories.[82] The second one has to do with soul and body, as Aristotle presupposes a necessary connection between the two while

[82] Cottingham, op. cit., 115-116.

Descartes, from a mechanistic point, doesn't differentiate between living and dead matter, implying that the body's death doesn't influence the existence of the soul. Through this, the immortality of the soul via the conscious mind is achievable, signalling the beginning of Descartes' dualism.[83] Therefore, the stepping on Aristotle is very meaningful.

A comment should be made about the space in which the entire scene happens, namely Descartes' study. Traditionally a study stands for a place of privacy, originating in the *studiolo* where the "owner is enclosed in a narcissistic space for self-contemplation."[84] The portrayal of learnt men seated at a desk with books has a longer visual tradition that can be traced in the portrayals of St. Jerome (ca. 347-420) or Erasmus of Rotterdam (1466-1536). Saint Jerome was often depicted as a scholar in his study, and the works of Albrecht Dürer (1471-1528) and Joos van Cleve (1485-1541) come to mind. In Dürer's engraving from 1514 titled *Saint Jerome in His Study* (fig. 26), the saint is depicted seated at a desk while writing, his focused gaze faces the paper. An ample view of the content of the saint's imaginary study is given by Dürer who describes the room in detail, with the most scholarly elements being the tucked books on a shelf by the window.[85] Another work by Dürer is his painted panel of *Saint Jerome* from 1521 (fig. 27), where the saint is shown in a close-up, sitting at his desk, piles of books in front of him, while meditating with a finger on a skull. This painting is echoed in Joos van Cleve's *Saint Jerome in His Study* from 1528 (fig. 28), that depicts the saint as a scholar with the same gestures; right hand holding the forehead and the left hand touching a skull with a finger, as if pointing to it in meditation.[86] Again, the seated figure, the desk with books, quill, and other writing instruments make up the scholarly image of the painting.

Dürer portrays Erasmus of Rotterdam in an engraving that builds the same scholarly image. In *Erasmus of Rotterdam* (fig, 29), the humanist is shown at a desk, focused while writing, the setting surrounded by open and closed books. The same can be said about Hans Holbein's the Younger *Portrait of Desiderius Erasmus* from 1523 (fig. 30) and Quinten Massys' *Portrait of Desiderius Erasmus* from 1517 (fig. 31). The two portraits depict Erasmus in a very similar manner, seated at a desk, in the act of writing.[87] These early examples constitute the essence of scholarly portrayal and form a visual tradition that can be seen as

[83] Ibid., 238-9.
[84] Saint-Armand, Curtis Cage, "Diderot's Dressing Gown: The Philosopher in the Cabinet," 71.
[85] Parshall, "Albrecht Dürer's St. Jerome in His Study: A Philological Reference." 303.
[86] Hand, "'Saint Jerome in His Study' by Joos van Cleve," 4-5.
[87] Hayum, "Dürer's Portrait of Erasmus and the Ars Typographorum," 657-660.

reflected in Descartes' portrait from the *Opera* via the act of writing at a desk.[88] As the 1664 portrait of Descartes seems to be one of the first depictions of the philosopher as seated, it can be asserted that the artist wanted to tie the philosopher to the visual traditions of scholars.

A few words have to be said about Descartes' attire as well, now that the choice of portrayal has been discussed. A special attire came to be associated with the study as in the sixteenth and seventeenth centuries the clerical garb was preferred with its "rich symbols linked to religious orders, universities, the profession of law and medicine, but this symbolism is dropped in favour of privacy itself."[89] Moreover, the clerical garb comes to be dominated by the dressing gown just as Descartes chooses to present himself in *Meditations* inside his study, thinking and writing while in a dressing gown, creating thus a link between this type of activity and the gown.[90] Now, this observation is important because Descartes can be found in the *Opera* portrait in clerical garb. In contrast, the later 1692 Frankfurt portrait (fig. 24) chooses to show him as described in *Meditations*, in his dressing gown. The dressing gown became a fashionable attire in Dutch portraiture around 1675-1700[91], while the clerical garb for intellectuals was used since the sixteenth century. A good example of this is the self-portrait of Ferdinand Bol, dating from 1669, where the artist is portrayed in a dressing gown (fig. 32).

Concerning Descartes' attire, another clue can be found in a comparison of Hals' portrait of Descartes with that of other gentlemen. For example, the attire from the portraits of Herman Langelius (ca. 1660, fig. 33) and Adriaen van Ostade (ca. 1650-52, fig. 34) support the idea that the clothes of the philosopher don't stand out particularly as they blend very well in the masculine trend of the period that seems to have been followed by learned and respectable men alike. Garment-wise, the only distinction that must be made here is that in Hals' portrait of the Frenchman is hard to distinguish in great detail the outfit, while Schooten's engraving offers much more detail. On the other hand, when comparing the Hellemans portrait with Schooten's it seems unlikely for the first to have followed the outfit of the latter. Therefore, it is safe to assume that the philosopher was simply dressed in something that would have been common to wear for someone of his reputation.

[88] Peter van der Coelen, "Portraits of Erasmus," 58-59. Accessed 12.11.2021. https://www.academia.edu/38854113/Portraits_of_Erasmus_in_Images_of_Erasmus_Rotterdam_2008_pp_54_87_277.
[89] Ibid., 72.
[90] Idem.
[91] For this see Ekkart et. al. *Hollanders in beeld: portretten uit de Gouden Eeuw* catalogue.

Reprints of Descartes' portrait from the frontispiece

As it was mentioned before, there are some later versions of both the portrait of Descartes and the allegory title page from the frontispiece. For the portrait, there are two versions of it. The Rijksmuseum portrait print lists Johannes Tangena[92] as the publisher whose name is added underneath (see fig. 21). This print was likely made after the 1664 as Tangena was active as a publisher between 1687 and 1692, in Leiden.[93] Because the 1664 portrait was made and published in Amsterdam, this indicates that Tangena either bought a very good copy or the original copperplate that was used in 1664. It's hard to discern which scenario is more plausible because, upon comparison, there are no noticeable differences besides the added signature of Johannes Tangena and the different sizes of the print with Tangena measuring 210 x 142 mm and Weyerstraten 300 x 240 mm. This qualifies the copperplate that Tangena used as a very good copy of the original copperplate because of the difference in size.

Besides the Rijksmuseum portrait that can be placed somewhere from 1687 to 1691, the British Museum also holds a print of the same portrait that features the *C:H.fe* monogram (fig. 35).[94] No other info is given in this print, but it lacks the Tangena added signature, making it likely to be a loose print from the 1664 edition. Interestingly enough, a larger print of the same portrait, bearing the same monogram but no signature of Tangena can be found in the National Portrait Gallery, in the United Kingdom, listed as a seventeenth-century item offered by Henry Witte Martin in 1861 (fig. 36)[95]. The size of this print is 288 mm x 206 mm[96], while the one by Tangena has 210 mm x 142 mm. This qualifies the National Portrait Gallery print as the closest in size to the original 300 x 240 mm, allowing for the possibility of it using the original copperplate. Another print of the portrait can be found in the History of Science Museum, in Oxford (fig. 37). The print features all the characteristics of the 1664 version but has a size of 230 mm x 180 mm.[97] Based on these, it can be posited that there are at least two versions of this print, one that has Tangena's signature and one that doesn't. Apart from this,

[92] Print artist, publisher, and bookseller, active in Leiden between 1687 and 1692. See Thieme-Becker *Vollmer Gesamtregister*, 1907-1950 , vol. 32, 429 and *RKD*. "I. Tangena." RKD artists. 2009. Accessed on 10. 09. 2021. https://rkd.nl/explore/artists/421160.
[93] Idem.
[94] "Renatus Descartes." *British Museum*. Accessed 17. 09. 2021. https://www.britishmuseum.org/collection/object/P_1867-1214-965.
[95] As stated on "René Descartes." *National Portrait Gallery* . Accessed on 17. 09. 2021. https://www.npg.org.uk/collections/search/portrait/mw62223.
[96] Idem.
[97] "Print Rene Descartes." *History of Science Museum* Accessed on 15. 09. 2021. https://www.mhs.ox.ac.uk/collections/imu-search-page/record-details/?TitInventoryNo=88725&querytype=field&thumbnails=on&irn=10921.

they both match the 1664 original, and no other differences can be noted. From this respect, the word ‘version’ is used in a lighter sense to mark the slightly difference between the two via the added signature. The difference in sizes between all the portrait prints raises the question of the copperplates. Which ones might have used the original copperplate and which ones a copy of it? Based on the size, a classification can be made. The original 300 x 240 mm can be put in the same size category with the prints from the National Portrait Gallery 288 x 206 mm and the History of Science Museum 230 x 180 mm, while the Tangena 210 x 142 mm and British Museum 208 x 143 mm both have similar sizes.

Conclusion

The frontispiece and portrait from the 1664 *Opera philosophica* of Descartes fit in the print and book market that was characteristic of the period, following the trends that were influenced by the Elzeviers who printed in the same year the same publication. Moreover, the Latin text of the book indicates that Weyerstraten intended the book for a wider public. As it has been shown, these prints were not created sometime at the end of the century, as it was suggested by Vermij, but much earlier. Their likely artist is Cornelis Hellemans, as the Rijksmuseum suggests, even if it’s not clear if there is a son and father or a single Hellemans. Lastly, their composition makes them stand out from other examples, but also advertises the contents and theme of the book. The allegory print with Athena, Philosophy and the young boy can be read as a summary of Descartes’ opera and natural philosophy, while the portrait is a more specific summary of Descartes’ philosophical position in relation to Scholasticism and Aristotle.

Chapter 2.

From the body to the print and back

Having discussed the origins and possible interpretations of the two prints that serve as frontispieces for Descartes' *Opera philosophica*, this chapter will analyze the prints from an embodied cognition standpoint. To do so, the two prints will be treated as complex metaphors that are formed by multiple bodily metaphors which, ultimately, convey meaning to the viewer. Lastly, the aim is to see how the two can communicate and impact us in a manner that engages our embodied human condition.

Introducing embodied cognition

The first natural step for this investigation is to introduce the theory of embodied cognition so it can then be applied to *Opera*'s frontispieces. According to the Merriam Webster dictionary, *to embody* stands for giving a spirit to a body, but also for something concrete and physical that has a body or is part of one.[98] *Cognition*, the other term from embodied cognition, stands for

> "all conscious and unconscious processes by which knowledge is accumulated, such as perceiving, recognizing, conceiving, and reasoning. It is a state that can be distinguished from an experience of feeling and willing."[99]

To define embodied cognition further, a good strategy is to take a look at the general claims it makes. Firstly, it claims that cognition is embodied, meaning that it takes place in a body. It is not a separable entity from the body as the two work together to arrive at the result that is cognition as we know and experience it. Secondly, it posits that cognition happens always in a real-world context, in an environment, it exists and functions as an action-oriented mechanism. In the absence of an environment, cognition operates according to the framework formed as a result of its interaction with the environment and the objects contained in it.[100] To place embodied cognition in a wider philosophical and scientific context, a few points must be made. This philosophical theory has originated in the revolution created by Edmund Husserl's

[98] According to Merriam-Webster under "Embodied". Accessed on 10.05.2021. https://www.merriam-webster.com/dictionary/embodied.
[99] According to Britannica under "Cognition (Thought Process)". Accessed on 10.05.2021.https://www.britannica.com/topic/cognition-thought-process.
[100] Wilson, "Six Views of Embodied Cognition," 626.

(1859-1938) phenomenology[101], especially in the claim of our perception of objects as being strongly affected by the *I can*. This translates to our view of ourselves and our interactions with the world as affected by what we can do, by our possibilities of interaction and action with objects and others. Phenomenology, thus, opened up a new path of thinking with a focus on human experience in terms of perception and embodiment. Maurice Merleau-Ponty (1908-1961) continued on Husserl's path and focused on experience and perception.[102] Merleau-Ponty distinguishes between two conceptual bodies, the *Körper* and the *Leib*. *Körper* is used to define our body as any other object in the world, in the sense that it is a mass of matter of a certain shape and size, in a certain time and space, while *Leib* is used to define our body as lived.[103] The lived body is my body as mine with its distinct and personal features that make my experience of living in a body as singular. Both Husserl and Merleau-Ponty, through their interest in perception, experience, and the body, heavily influence the emergence of embodied cognition.

Another important step was taken when, at the end of the twentieth century, embodied cognition became notorious in a theoretic background that favoured the computer model to understand how human cognition works. The computer model understood the human being in terms of computer parts with the mind as a processor, and the perceptual and motor systems as input and output sources. Under the influence of this model and of dualism[104], most cognitive sciences focused on the brain alone with no regard to the motor or perceptual components that provide the necessary data for cognition.[105] In the end, the embodied model was preferred because it combines data from multiple fields to provide a new and more inclusive framework of thinking.

Specialists like Mark Johnson and George Lakoff, on whom the present analysis will rely, stress the implications of embodiment as follows. Reason is not disembodied, floating somewhere beyond our bodies, and most of our cognitions have an unconscious character. These two points are of prime importance because they define reason as a product of the brain,

[101] Phenomenology is the philosophical theory initiated by Edmund Husserl. It studies the phenomena in an attempt to illustrate how experience is structured and represented in consciousness. Its focus is directed mainly towards the essence of things and how those essences are grasped in human experience. For more on this, see Husserl's *Cartesian Meditations*.
[102] As seen in Edmund Husserl. *Ideas Pertaining to a Pure Phenomenological Philosophy.*
[103] Merleau-Ponty, *Phenomenology of Perception,* 120-171.
[104] Dualism stands for the philosophical theory that claims the human being is made up of two separate parts, the body and the mind/soul. It originates in ancient Greek philosophy and culminates with Cartesianism. It is seen as a view that opposes the premises of embodied cognition for it believes that mind and body are separable. To see an overview of this problem, see the correspondence between Elizabeth the Palatinate and R. Descartes.
[105] Wilson, "Six Views of Embodied Cognition," 627-628.

our body, and our experience within the later. Moreover, they also challenge the assumption of cognition as exclusively conscious and thus thoroughly controlled and rational. To top it off, reason has an evolutionary character to it in the sense that it uses sensorimotor input that is present and given in other animals besides the human, creating thus a larger biological context for the human reason to fit in, undermining its believed uniqueness. Thought and all other mental processes that constitute us happen in the body and through the interface of the body, as we don't possess any other means of interacting with the world.[106] A bodiless brain has no possibility of interacting with the world or of having a world, for that matter. This perspective holds high stakes for exploring the role that images, in the forms of prints, have for the understanding of a philosophical text. The book as an object is a material object situated outside ourselves, a pack of papers put together with characters printed on each page. The images it contains are nothing but some bigger stains of ink. Without understanding and the role that our brains play in decrypting them, books would be just some incomprehensible objects. Arranging characters in readable sentences that are connected to form a text, but also understanding images that are not always so straightforward and appeal to our cultural, visual, and bodily knowledge makes one wonder just how our understanding happens.

What are the arguments for using the embodied cognition theory? First, an embodied approach takes into consideration the larger interaction that happens between the reader/viewer, the book, and its multiple contexts. Prints, more so in a book, aren't purely mental objects, cut off from manual handling and the information they provide through our bodily interaction with them. Second, this approach can offer insight, to some extent, for both the seventeenth and twenty-first-century viewers because our brains didn't change in such a drastic manner (it would take far more years for such a change to occur). The findings can be used to explore the understanding of texts and abstract concepts through visual elements in an embodied manner.

From print to allegory and personification

Traditionally, word and image are seen as closely connected forms of expression. This goes back to the first connection between text and image that can be traced to Horace's *ut picture et poesis*[107] where painting and poetry are treated as similar. A similar comparison is also made by Aristotle in his *Poetics*[108] where he links poetry to painting as they both replicate

[106] Lakoff, Johnson, *Philosophy in the Flesh*, 3-10.
[107] Lee. "Ut Pictura Poesis: The Humanistic Theory of Painting." 197
[108] Idem.

human action, one way or the other. This comparison gets expanded in Renaissance, where its sense is augmented and stressed by art theorists that come to identify one with the other.[109] Even prints, albeit not paintings, fall under the influence of this tradition that links image to text, more specifically painting to poetry. In the case of *Opera*'s frontispieces, the connection between text and image can be seen clearest in the allegorical print. Allegories usually contain personifications, and to personify means to give a human face to something, to confer identity.[110] This applies quite well to the print in question as it features the personification of Philosophy and Athena, goddess of wisdom. Here, the discipline of Philosophy is given a human face in the form of a lady crowned with a star, while Athena embodies the concept of wisdom. The image is linked with the text as it indicates that the text is philosophical through the two personifications.

In Renaissance, personifications were seen as either revealing or hiding knowledge to the viewer. They could either decrypt knowledge, making it more accessible via images, or could encrypt it through the choice of representation that would be accessible only to those with specific knowledge. On the other hand, Neo-Platonists viewed images as the physical expression of concepts. This interest in concepts and their physical manifestation influenced the development of the emblem literature from the sixteenth century onwards, using combinations of word and image to express ideas, sometimes in the form of visual riddles.[111] The emblem literature relied on image, combined with a motto and a verse to fix a concept to a standard representation (fig. 38). Emblems were seen as acting like comparisons, as in the rhetoric's *similitudo*, because they shared the same ability to clarify, decorate, but also give life to an argument.[112] The connection between emblems and rational thinking lies in the motifs that oftentimes refer to the realm of the mind. They can also incorporate references to philosophy and science alike.[113] These practices are present in the seventeenth century, as personifications still deal with the access of knowledge and the fixation of ideas to a certain representation.[114] In this case, knowledge in the form of Descartes' core ideas is revealed through the allegoric print (fig. 5). The print is complex as it features another human figure and many objects in a certain room with a specific setting. The entire composition can be viewed as a *memoria*

[109] Lee, "Ut Pictura Poesis: The Humanistic Theory of Painting," 197-200.
[110] Melion, "Introduction," 1.
[111] Bocharova, "Personification allegory and embodied cognition," 43.
[112] Adams, Harper, *The Emblem in Renaissance and Baroque Europe*, 70-71.
[113] Canone, Spruit, *Emblematics in the Early Modern Age,* 103-104.
[114] Merlot, "The Nature and Role of the Print," 30.

artificiala in the sense that it connects ideas to be remembered by the reader with illustrated beings and objects,[115] collecting the essential themes of Descartes' *Opera philosophica*.[116]

Following the account of rhetorician Cyprien Soarez (1524-1593), personifications are seen as figures of thought, as opposed to figures of speech. A figure of thought is a rhetorical device that uses figurative meaning to communicate a certain message without being dependent on the structure or choice of words. Metaphors, for example, are viewed as figures of thought because the words that make them up are not necessarily connected to the meaning. Figures of speech, on the other hand, are dependent on the word choice and their arrangement to convey meaning.[117] An example of a figure of speech is the anacoluthon. This implies that figures of thought actively help form schemata (mental images that have a sensorimotor source) while also acting as clarifiers.[118] Images are not words and they shouldn't be confused with them because they come into contact with us differently than words do. They are more appealing and don't require a linguistic context to be grasped, making them more accessible. To put it in Mark McDonald's words when assessing printed images, "The fact that images and words are printed close to each other is insufficient to support that they have the same agency."[119] Even without having the same agency, the fact remains that printed images oftentimes feature words. The image can be enriched via the addition of the text, gaining the function of example or redirecting the reader to another text.[120] In the case of frontispieces, images play the role of a guide for the accurate comprehension of the text[121], and this again points to the fact that in the context of a print, words and images don't operate the same way but collaborate. Personifications, seen as figures of thought that guide the access of knowledge are given a human face to appeal to our own human body and embodied experience.

The body and metaphorical meaning

For early modern viewers, images that contained human figures and personifications were perceived as having more reality and being as they weren't seen as a mere sign, even though they were.[122] An example from the relationship between early modern art and science can illustrate this aspect. Art occupied itself with representations of things, while science with

[115] Melion, Ramakers, *Personification: Embodying Meaning and Emotion*, 5.
[116] For which the allegoric print is specifically made as a title page.
[117] For more on the figures of thought and speech, see Quintilian. *Institutio Oratoria*. Vol. 1, Book 1. Chapter 5.
[118] Op. cit., 14-15.
[119] McDonald, *Ceremonies, Costumes, Portraits and Genre*, 74.
[120] Bleyerveld, "Chaste, Obedient and Devout," 219.
[121] McDonald, op.cit.
[122] Melion. op. cit., 14.

the things themselves and not with their image. Yet, the painter and anatomist had to, ideally, be trained in the other's field. Through this, we are informed by nothing other than the reality that was assigned or given to representations. The anatomist gets to know the real thing, the physical human body and, by being trained in drawing, can transfer the realness of the physical body to that of the represented body, so that the gap between the two closes as such that one can mentally cross the bridge between visual representation and the physical object. By crossing this gap, one can learn from the representation as if learning from the real thing itself (fig. 39).[123] Without further developing this example, images were not viewed as pure images, but they had a sense of reality and being that made them comparable to their real counterparts. This offers the possibility of them having a greater empathic effect on the viewers, becoming more relatable because they communicated in a personal, human, way.

Looking at the myriad of elements present in *Opera*'s allegorical frontispiece, it's a sensible observation that the allegory also fulfils the role of a metaphor for the contents of the book itself. If we are to take 'metaphor' in the larger, embodied sense that Johnson & Lakoff use, then metaphor also stands for the cognitive mappings[124] that happen between sensorimotor processes and abstract concepts. To put it even simpler, our linguistic or cultural metaphors have their roots in bodily aspects or actions. The fact that my body is vertical, has two hands, a head, and two feet, that it moves using its feet and can do several movements, structures our associations and forming of metaphors based on our human experience.[125] The metaphor "more is up" shows that we correlate verticality with quantity via our bodily experience. The two authors analyzed several examples and showed that all metaphors, whether simple or complex have their roots in our embodiment.[126] So to say, if a horse would create a metaphor, due to its different embodiment, the content of the metaphor would be relevant for its experience and not for ours. The importance of metaphors as bodily products can be found in the fact that "to study metaphor is to study truth as we are able to comprehend it."[127] Because this research analyzes the two prints from an embodied cognition perspective, metaphors are relevant for a couple of reasons. First, abstract concepts are mostly metaphoric, as the prints deal with philosophical

[123] Jorink, Ramakers, "Undivided territory. 'Art' and 'science' in the early modern Netherlands," 7-9.
[124] The mapping process should be understood as our capacity to unite or connect sensorimotor activities with abstract concepts and think of them as connected. The mapping is called as such because we remember the connections we have made in the past and, by accumulating connections, we are able to build a mental map that contains all of our bodily associations with abstract concepts or ideas. For more on this, see Laila Craighero. "The role of the motor system in the cognitive functions."
[125] Lakoff, Johnson, *Philosophy in the Flesh*, 47-54 and Johnson. *Embodied Mind, Meaning and Reason*, 74-80.
[126] Lakoff, Johnson, *Philosophy in the Flesh*, 60-63.
[127] Bocharova. Op. cit., 52.

concepts that are hinted at visually. Second, the allegoric nature of the frontispiece also makes metaphors relevant because the frontispiece can act as a visual metaphor for the contents of the book. This larger definition of metaphors allows going a bit beyond the classic conclusions of "x is a metaphor for y" and reflect on the role that the body has concerning cognition and the creation of these metaphors.

As embodied subjects, our bodily existence offers us a specific way of experiencing and thinking the world. Because our ideal posture is the upright posture, we tend to use that bodily experience to associate it with other things, forming metaphors. The upright position is oftentimes associated with positive things, just as Johnson's core metaphor of 'more is up' shows.[128] Whatever is vertical, upright, is just, good, desirable, and so on. An upright man is a just and good man. In the same sense, we tend to value the 'up' instead of 'down' because we are constituted with a head, that is the visual centre of perception and thought, which is placed in the upper part of our bodies. Therefore, 'up' is also good because it is where the head and everything happens. The 'more' has also a positive association, possibly connected with the bodily fact that we grow in height, so more is up, growing is growing up. Other core bodily metaphors are those associated with symmetry and balance, interior and exterior, front and back. Our body is symmetric and balanced, has an interior and an exterior, but also a front and a back. Something is good when it's symmetric and balanced like my body or something can have an interior, that is harder to reach as per my bodily experience, or an exterior that is more accessible, it has a front that faces the world and is visible, but also a back that is hidden to me but existent.[129] These are just a few examples of what a bodily metaphor entails, and these core structures can be used to form or derive more and more complex metaphors that are composited, yet have a bodily basis. Let us investigate what bodily metaphors can be identified in the *Opera philosophica* allegory and portrait.

Opera philosophica's frontispieces as embodied metaphors

Starting with the allegory print (fig. 5), probably the most striking gesture of the composition is that of Athena pointing to the sky, visible through the window. The pointing to the sky can easily be classified as an 'up is good' type of metaphor that is in line with the contents of the book itself. Descartes advises philosophy and the sciences to go back to Nature, forget the dogma and start from scratch as students of Nature. The same gesture can be read

[128] Lakoff, Johnson, op. cit., 54-60.
[129] Ibid., 47-49.

also as a ‘more is up’ type of metaphor, especially if it’s compared with Plato’s gesture from the *School of Athens* (fig. 17), towards the Forms. Even though the philosophies are different, the meaning is similar: more knowledge lies in the sky, whether in the shape of Forms or celestial bodies and universal laws. Another notable point is the fact that Athena is the only figure that stands perfectly upright, as Philosophy is seated and the young boy has his back arched. As per the 'upright is good' metaphor, Athena is the person the others should look up to because she is the beneficial one of the trio. Returning to Adam van Noort’s *Minerva instructing Pictura* (fig. 11), from 1598, a similar visual schema can be identified. Minerva stands near Pictura and gestures in instruction as she places one of her hands on Pictura’s shoulder while using the other to show her how to use a compass. Through her proactive approach, Minerva steps in the process of creation while Pictura follows her lead.[130] A dynamic can be identified in the two interactions between Athena-Philosophy and Minerva-Pictura. Namely, the beneficial aspect can be seen from the upright position that seems to bring something into the relationship, in these cases instruction. This can be read broadly as connected to the ‘more is up’ metaphor as Athena is ‘up’ from the seater’s perspective while bringing ‘more’ via the knowledge she shares.

Moving on to Philosophy, her facing Athena so visibly and directly seems to invoke the 'front-back’ metaphor. Whatever is in our front is seen, it’s visible, has our attention. The fact that she’s facing the goddess illustrates her attention, following the 'front is seen' bodily metaphor. As we mentioned the meaning of the upright position, Philosophy as seated can be read as passivity, enforcing the identification given to Philosophy as a student of Nature and Wisdom. Her seated posture and the gestures of her hands denote nobility and grace, as her posture is elegant, upright. Even if sitting can be seen as a passive stance, Philosophy’s hands and gaze look very active. Her right hand is ready to write while her left hand touches her face to signal how absorbed she is by Athena’s lecture. As indicated in the study[131] of Herman Roodenburg, the European elites, Dutch included, paid close attention to elegant countenance and graceful gestures. The *welstand* plays an important role in the upbringing of well-to-do citizens but also in the ways in which gentle individuals are illustrated by painters. Gestures, posture, and the overall countenance of an individual were believed to be able to inform the viewer of his education, upbringing, but also status. The upright position played a prime role in communicating the virtues of an individual, while a hunched back or an inclined neck would

[130] See Bleyerveld et al., *Bosch to Bloemaert*, 192-193.
[131] Roodenburg, *The Eloquence of the Body*, 60-75.

denote laziness, taste for depravity and lack of morals. Constantijn Huygens was a prime example of this culture of gestures, as he paid special attention to the countenance and posture of himself and his children.[132] Keyser's portrait (fig. 40) reveals an individual with fine and subtle gestures directed at his clerk, while maintaining his elegance and grace in the front of the viewer.

The arched back of the young boy with the armillary sphere can be read from this early modern perspective of gestures and posture. He might be seen as a lazy individual that lacks proper manners, not being able to navigate his body gracefully. The arching of the back can be another argument for the visual bodily hierarchy created in the print, with Athena and her straight back, philosophy as slightly arched, and the boy as rather hunched. This reading thus suggests that the most well-mannered and cultured figure is Athena as, by gestures, she comes from the finest background, as goddess. She is then followed by Philosophy that retains most of her grace, and the least graceful is the boy that has a boorish posture even though he seems eager to join in the lecture. Unfortunately, a precise identification of the young boy is not possible. However, Peter de Witte I (1548-1628)'s *Studies for 'Julius Caesar': Two Boys with an Armillary Sphere* (fig. 41), ca. 1601-1603, shows two young boys that seem to be of similar age playing with an armillary sphere each. The two boys look the same age with the young boy from the allegory, suggesting that probably this depiction wasn't uncommon. Moreover, the association between young boys and armillary sphere may ultimately have to do with the education that boys received in the Republic, as they were expected to master the liberal arts but also have a good knowledge of the natural sciences.[133] As connected to the present print, the hunched and unrefined position but also the armillary sphere might simply indicate that the young boy is in the process of receiving education, as his mind and body are visibly still uneducated. His gaze is curious but boorish when compared to that of Philosophy and his gestures lack a civilized and upright character.

The choice of putting the mathematical instruments on the floor while Athena points to the window placed in the upper part also appeals to our bodily meanings. As 'more is up', whatever is seated on the floor is less than that, not so important. This can be, again, seen as an illustration of the book's contents. Descartes uses mathematics to explain and understand natural phenomena, so the mathematical tools are just means of understanding Nature that is 'more' and 'up'. A last point can be made in regards to the interior and exterior metaphor as well. The

[132] Ibid., 80-85.
[133] Ibid., 102-115.

allegory is the only print out of the two that features a window, connecting both the outside with the inside. This can be read in two ways such as our human society is an inside that needs to study Nature, the outside, or the quietness of the study room is the place for thinking, is the inside of our human mind that ought to look towards the exterior to explain phenomena. Regardless, any of the two can be matched with Descartes' philosophy and act as a reading guide for the book.

The portrait print is less crowded with elements but still features some metaphors that are worthwhile. The reverse of the 'more is up' is 'less is down' and this can be quickly connected with the fact that Descartes is stepping on a book that has the name Aristotle on it. Because the book is placed on the floor, at the lowest possible level of the scene, this shows that the book, here standing for the entirety of Aristotle's thought, is less than whatever is above it. Of course, what's above it is nothing but Descartes' foot, stepping on it. Descartes' foot and Descartes himself count here as 'more' than 'less' as the philosopher is 'up' while the book is 'down'. In both the portrait and the allegory, the books from the shelves are on the same level with Descartes' head, on one hand, and Athena's head, on the other hand. Following the logic of our head as a centre of perception, but also the metaphor 'more is up', it can be deduced that the books have the same importance as our heads. And what exactly are books if not heads that come in a different shape? Books essentially enclose and record in themselves the mental lives of certain individuals. They record and illustrate arguments, opinions, lines of thoughts, and more broadly, ways of perceiving the world. Through this reading, what is depicted is nothing but a line of heads, of minds. Descartes' mind is followed by the preserved minds of other authors that are stacked on the shelf. Athena's mind is preceded by the line of minds that followed her lead and loved Wisdom.

In the same metaphorical space, when one looks at the portrait it can be noticed that the book Descartes is writing is vertically aligned with the book on the floor, at the expense of Descartes' awkward bodily position. This is also quite telling from the perspective of bodily metaphor. Applying the same logic, Descartes' book is more important than Aristotle that is 'down'. The sitting position denotes passivity via our bodily associations, as the philosopher is not engaged in the same upright type of instruction that Athena is giving in the allegory. The sitting and writing, in both Descartes' and Philosophy's case, may indicate the contemplative life that is seen as a rather passive type of living that is specific to philosophers.[134] On the other

[134] See for example Aristotle's *Nicomachean Ethics*, Stoic tradition, and so on.

hand, even though his body has a certain passivity to it, his hands have a more active gesture compared to those of Philosophy. He gracefully holds the quill mid-air, as if he is ready to write a few words as we look at him, while with the other hand gently holds a few pages up. This transmits a sort of intimacy where we, as viewers, can witness the process of thinking and creating, a process that would otherwise be highly personal. Just as in the two first portraits of Descartes by Frans Hals (fig. 22) and Frans van Schooten (fig. 3) Descartes' gaze seems active, inquisitive. He doesn't look up or down, but gazes directly at the viewer.

Again, just as in Philosophy's case, the direct gaze relates to our bodily front that translates in us facing something exterior of ourselves and paying attention to it. Descartes' front is directed at the viewer so the latter can feel seen knowing that the author is watching him, paying attention to him. This forces the viewer to also pay attention to his message in a simulation where gazes are exchanged. This is a welcoming gesture that invites the reader to engage with the author via his book. Of course, this is an illusion, as there is no Descartes watching from the print nor any gaze exchanged. However, our brain responds to these bodily queues and associates these gestures with specific messages or events. The last point about the portrait is the lack of a window, making the scene to be a complete 'inside'. As in the case of the allegory, this can be translated in a few ways. Either the scene is happening in Descartes' interior self, and we are witnesses to his mind's laboratory that created the content of *Opera philosophica*, or the scene represents the inside, the content, of the *Opera*, summing visually Descartes' opposition with Scholasticism and Aristotle. Both scenarios as just as plausible.

This short analysis focused on the bodily metaphors, simple and complex, that could be identified in the *Opera philosophica*'s two frontispieces. The gestures and postures of the figures featured appeal visually and bodily to our own bodily experience, enabling us to understand the meaning behind them. Based on our bodily understanding we can grasp the quantitative and qualitative meanings of abstract notions and ideas that are featured in Descartes' philosophy. Such subtle meanings would be mainly foreign to us if we wouldn't be able to rely on our primal bodily metaphors and our understanding would go as far as simply describing what we see: a seated woman, a young boy, a window, etc. When our bodily metaphors enter into play, unconsciously we understand that Philosophy is paying attention to Athena because she is facing her or that Athena means the sky when she is pointing up. Such conclusions seem obvious and common-sense, yet by being aware of their existence we can point to otherwise unnoticed, yet present structures that influence and model our visual understanding.

Hands and representations of bodies

Throughout the *Opera philosophica*, the collected works contain in-text woodcuts that illustrate the workings of certain mechanisms, human or natural. The woodcuts were made by Frans Van Schooten under the indication and collaboration of Descartes, some of them being based on the philosopher's sketches.[135] When browsing the book, what strikes the most is the fact that a big number of woodcuts make use of either a human hand or a human body to illustrate a point (fig. 42, 43, 44, 45, 46). Of course, using a human body to illustrate some working of the human body is perfectly understandable. However, these uses do not occur in these instances only, but also in illustrations where their presence may seem unnecessary. This section will deal with the role that hands and bodies play in the illustration of concepts and phenomena that don't imply a high metaphorical content (or none at all).

To address this particular case, the story has to start a bit before Descartes, namely with *Homo sapiens* (appeared in ca. 200.000 BCE). Even though the perfect transition from *Homo erectus* (ca. 2 mil- 117.000 BCE) to *sapiens* is still not fully understood, the main feature that is of interest here is that of the hand. What did it mean when the soon-to-become *Homo sapiens* acquired the human hand that has most of the capabilities of our contemporary hand? The human hand has extended grasping possibilities and allows for different types and degrees of movement. Beyond its practical abilities, it also plays an important role in the relationship between our brains and seeing/touching. The hand is one of our main sensorial organs that allow us to interact with the outside world. However, the hand is not merely a tool of perception, it is also a communicator. *Homo sapiens* didn't only use its hand to manipulate objects, but also to remodel its brain circuits as the movements of the hand, as part of perception, are deeply involved in our brain mapping.[136] Moreover, it has been posited that gestural language was the means for communication before the apparition and development of spoken language.[137] This has important implications for our previous discussion of bodily metaphors that speak to us so deeply because they appeal to our first communicative structures, those of gestures and their meaning.

The hand, in relation to language, opens up a broader sense for the concept of 'knowledge'. Knowledge becomes something that goes beyond words and concepts illustrating

[135] Seymour, *Frans Hals* (1970), 166-168.
[136] Wilson, *The Hand*, 59.
[137] Ibid., 49.

the relationship we have with the world, which at all times includes our body.[138] When you get hurt by a certain object, the event is not recorded and remembered as a pure mental fact but is always accompanied by fragments of the original sensation. One may remember the bluntness of the object or the pain in the bruised area. In this wider sense, knowledge has a special relationship with *mimesis* that "results in the sharing of knowledge without every member of the group having to reinvent the knowledge. The primary form of mimetic expression is visuomotor."[139] Therefore, when someone sees another get burnt in a fire, one doesn't need to go and put his/her hand in the fire to acquire knowledge but, instead, can observe the other, grasp mentally the implications of the action and mimic not getting the hand in the fire (fig. 47).

The inner-workings of embodiment

Probably what makes embodiment relevant to any of our interactions with the world is, of course, the body, but also the existence of a body schema that allows us to envision all of our body's spatial possibilities. The idea of the body schema is featured in Merleau-Ponty's account on perception, where the body is seen as the one that perceives everything around us through sensorimotor processes. The body schema permits us to be aware of our hand and its physical possibilities of reaching an object.[140] Whenever we want to grasp a glass from the table while we are reading a book, we don't stop our activity and look at the glass, calculate mathematically our arm's position and the possibility of grasping, but we have this awareness intuitively. This awareness is nothing but a sense of spatiality that we use in all of our daily orientations through the world. Our body is a "silent *cogito*" [141], to refer to Descartes' philosophy, not an object like the glass from my table. It is silent because its role can go unnoticed, misleading us into believing that we can get rid of it, but is still a *cogito* because it takes part in high-order cognitive processes such as thinking.

Our interactions with the world around us, other humans, and objects shape our minds, influencing the development of the brain and its internal wiring between certain areas or neurons. Considering this as a true premise, how can we relate it to seeing hands or human bodies in a visual representation, in this case in the form of print? Does this impact the viewer in any notable way that might influence his/her understanding of the information conveyed?

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[138] Ibid., 51.
[139] Ibid., 48.
[140] Gallagher, "Phenomenology and Embodied Cognition," 10-11.
[141] Shusterman. *Body Consciousness,* 49-50.

Charles Bell's (1774-1842) account of the 'seeing hand' postulates that the hand and eye develop as perceptive organs through practice. This implies that our brains need time to learn how to efficiently synthesize the information encountered, but also to coordinate the two with utmost precision.[142] The result is as follows.

> "the image constructed by the brain must of necessity be based both on the messages from retinal and/or skin receptors and on the record of guided eye or limb movements occurring during the collection of the sensory data."[143]

Bell's account, even though considerably old, is a good starting point because it highlights the dependency of our brain to the main sensing organs, the eyes and hands. On an interesting note, Frank R. Wilson talks[144] about Descartes' choice to illustrate the geometry of eye movements because those movements are mirrored in the movements of the humerus head from our shoulders and this implies that the possibilities of movement of the eyes are mirrored in those of the hand and fingers (fig. 45, 46). This observation together with Bell's account, emphasize the special relationships between eyes and hands, but also eyes, hands, and mind. Because of this, the viewer can be impacted by some seen bodily gesture via an empathic response that is triggered.

Mirroring the seen

The motor cortex plays an essential part in complex cognitive abilities through the ventral premotor area F4 and the ventral intraparietal area (VIP). The two areas are a parietofrontal circuit of the brain where neurons react to the movement of the head and the arm. A great number of these neurons from the VIP-F4 circuit respond to sensory stimuli, especially those that are visually three-dimensional or tactile. The role of this circuit is that of encoding the perceived space according to two dominating rules: the act of reaching and grasping an object with the head or an arm, and the possible actions to be made in that given space.[145] This entails that our perception and processing of a space or environment will be done with the possibilities of interaction with objects (via reaching, grasping, etc.) and actions we can take in the said space. At the first look, this can seem arid and overly technical but it is crucial data because it affirms what philosophers like Husserl, Merleau-Ponty, and eventually embodied

[142] Wilson, *The Hand*, 92-95.
[143] Ibid., 97.
[144] Ibid., 88.
[145] Craighero, "The role of the motor system in the cognitive functions," 51-53.

cognition presupposed. Namely, that we perceive everything around us in terms of what we can do, in terms of bodily possibilities.

The discussion on the VIP-F4 circuit opens the topic of mirroring that was only briefly mentioned so far. Mirroring refers to the engagement of mirror neurons, a type of neuron that is activated by enacted or observed action, when the latter involves the use of the hand or head. Moreover, mirror neurons (MN) fire when encountering stimuli from the VIP-F4 circuit, enabling the process of mirroring. Mirroring translates as my capacity to experience another person's action as if it were mine. Thus, MN allow us to connect motor actions with feelings or mental states, enabling what would generally be seen as an empathic response. An empathic response in the context of MN translates as our ability to connect and interact with an observed action so that it feels as if I am the one enacting it.[146] The need for the observed action to be performed by either a hand or a head, as a minimum requirement, impacts the previous discussion regarding Van Schooten's woodcuts. As we were questioning the necessity of those prints to contain either a hand or a human figure that is featured while enacting a specific operation, the mirroring and the VIP-F4 circuit are relevant pieces of information. The necessity of the woodcuts to be done in such a way and not in another derives from the desired effect they ought to produce in the reader. The reader, ideally, should feel as if he/she is the one grasping an object or handling a tool. When a human figure is seen using a tool, the reader will feel as if they were doing the same. The reader will also be able to grasp the size of a human compared to the tool, the right bodily position that one has when using it, and so on.

The various hands featured in various instances make the illustrations that explain abstract ideas or natural phenomena appealing to a human reader. By including a hand in a scientific explanation, the said explanation enters a human world where actions and explanations are done by humans through their bodies. Of course, Descartes and Van Schooten did not know anything about the process of mirroring or the VIP-F4. However, because they inhabited a human body just like us, illustrating the works as such might have felt natural, just as the mathematical tools from the allegory need to be used by human figures for Nature to be revealed via observation.

[146] Idem and Gallagher, "Empathy, Simulation, and Narrative," 355-356, but also Iacob, "Feeling for Fiction Through Empathy," 5-6.

Conclusion

Embodied cognition theories support the idea of the body having an active part in cognition because we are not floating minds, but beings that are embodied in a human-like body that has two arms, two legs, a head, and a torso. Personifications, that are usually part of allegories, engage us as viewers because they present themselves in a human form, oftentimes in feminine guise.[147] They are concepts and abstract ideas that gain a human face and body. When a human body is present in an image, here in the form of prints, the said image can be read as a bodily metaphor. This is possible because the human figures from Descartes' *Opera philosophica* frontispieces are illustrated in movement, gesturing. The gestures as bodily metaphors evoke our own bodily experience in such a manner that we understand that Athena pointing to the sky is a positive thing, while Descartes stepping on Aristotle means that the latter is a negative thing. Lastly, the neuroscience behind our bodily understanding offers additional theoretical support through the brain circuit VIP-F4 and the activity of mirror neurons (MN). When viewing someone enacting something using the hand we can experience this as if we are the ones doing that via the firing of MN. Visually interacting with the frontispieces permits us to enter the scene that they propose. Athena's gestures speak to us, making us look at the sky, becoming aware of the natural phenomena around us, while Philosophy's attention and diligence become contagious. We want to know whatever she is hearing so we are looking for clues in the print.

[147] De Muelenaere. "Double meaning of personification," 435-437.

Chapter 3.

Printed images and reading

As this research aims to see what role images, in the form of prints, play in the understanding of a philosophical text, the last chapter will focus on the topic of reading comprehension. Reading comprehension refers to our ability to understand a text and grasp its meaning so that the text isn't just a collection of sentences we can read, but a complex system of signs that relay messages. The first section gives an overview of other accounts that connect images, art, to thinking processes and philosophy, in order to place the current investigation in a wider context. Then, by addressing reading comprehension, we will be able to better evaluate to some extent if images have a role in this process. Lastly, the possibilities and limitations of an embodied approach for this type of art historical inquiry will be analyzed to discern whether this framework is advantageous or not.

Possibilities of art as thinking

The proposal of this research connects with other existing research that explores art as related to cognition or more precisely, to thinking, oftentimes in connection to some text. The American art historian Walter Melion explores the connection between the role of early modern devotional prints and thinking via meditation. This premise is connected to a tradition that was specific for the medieval period and stated how images can evoke meditation. Melion builds on already-existing interpretations,[148] showing how images with religious content and themes invited their viewer to meditate, pray, and join the represented figures in their virtuous activities and ways of living by performing an *imitatio* of the depicted holy figure. An example of this can be found in the devotional prints of Virgin Mary and St. Christopher (fig. 48, 49). Melion points that this devotion was done in a contemplative manner that requires the full and heightened attention of the viewer.[149] While devotional prints are not necessarily connected to philosophy in general, Melion's analysis is valuable because it stresses contemplation and meditation as cognitive processes. To meditate or contemplate upon something ultimately means to think about it, to mentally engage with an object for a prolonged time, as opposed to

[148] Such as that of Ilja Veldman, *Images for the Eye and Soul*, that covers the functions and roles of prints.
[149] Melion, "'Quae lecta Canisius offert et spectata diu': The Pictorial Images in Petrus Canisius's De Maria Virgine of 1577/1583," 223 and Melion, "Prayerful Artifice: The Fine Style as Marian Devotion in Hieronymous Wierix's Maria of ca. 1611," 598 and also see Melion. *The Meditative Art.*

the usual short mental encounters our mind has on a daily basis. By viewing devotional prints as ways to meditate, prints relate to thinking because meditation wouldn't be possible or be the same in the absence of the prints.

British curator and art historian Antony Griffiths makes a great review[150] of the variety of functions that prints have, out of which some roles relate to cognitive processes. Starting with the observation of Michel de Marolles (1600-1681) that prints are useful in education and continuing with Crispin de Passe's (1564-1637) account of the prints' ability to morally educate the youths, prints disseminate information but also help one acquire the capacity for morality. This function of education can be illustrated with *The Tree of Logical Relations* (fig. 50), that was a visual schematization of the mental logical processes. By making a visual representation of such mental operations, the viewer could remember them better. By representing the unseen (and what could be more invisible than the human mind?), the prints are used as a way to educate students by facilitating their access to the invisible while also shaping them morally. In Fludd's representation of the human mind (fig. 51), God is shown as the highest guiding principle in the functioning of the mind. Another way to morally educate the viewer is through prints that relay moral messages through their theme. Such an example is the story about Phyllis and Aristotle (fig. 52) that emphasizes how even the greatest mind can become a slave of pleasure. This is quite similar to the role of devotional prints that also serve as moral examples, engaging the viewer in thinking about what a moral behavior is, for example. Getting closer to the cognitive processes, John Evelyn (1620-1706) anticipated the contemporary studies that deal with reading comprehension through images when stating that images help teaching children how to read.[151] This function ties prints and, more generally, images to remembering and memory.

Thinking prints as memory is reflected in Edmé-François Gersaint's (1694-1750) account. He sees prints as a way of exploring the curious and exotic objects of the world and also remembering them via the prints that help ground the memory. This ability to cultivate or trigger memory was seen by Gersaint as beneficial for both young and old people alike.[152] In the same line, Roger de Piles (1635-1709)[153] viewed prints as deposits of knowledge and objective reality. One could literally deposit all that composes our cultural human world in a

[150] Griffiths, *The Print Before Photography*, 395-396.
[151] Ibid., 395.
[152] Ibid., 396.
[153] Idem.

print and make it accessible and readily-available to others. This latter point opens up the role of prints as conservators. They could conserve images and make sure that those images survive the objects they recorded. A great example of this are the prints of cabinets of curiosities such as the one from *Ferrante Imperato* (fig. 53) as it records a series of natural objects from a collection. A book or a painting may not survive time, but prints, through their power of duplication and accessibility, could make sure that something is recorded enough and exists. The task of prints as preservers is also the emphasis of Denis Diderot (1713-1784) when he sees engravings as directly responsible of the survival of paintings.[154] These accounts are, in part, the product of the more medieval view of prints as devotional objects, but they also illustrate the evolution of the functions of prints, forming a closer bond with thinking and cognition.

Stepping closer to philosophy, Susanna Berger, associate professor of art history and philosophy at the University of Southern California, argues in *The Art of Philosophy* that visual representations are instruments for generating knowledge. Images, in the early modern period, helped express what words could not, in the sense that they managed to represent mental structures such as logical operations. The creation and interaction with images equaled cognitive operations in the context of philosophy because the viewer could interact and see how mental structures are organized in, for example, Aristotelian logic. Moreover, the author suggests that image and text acted as maps for the relationships between concepts.[155] These ideas are extremely valuable in connection with the current inquiry because they create a bigger context in which the findings can be placed, attesting to the fact that images went beyond the traditional role of simple representation but engaged cognitive processes in an active manner. Berger also makes an interesting observation regarding Descartes' own position on images and representation. Descartes explained perception and the formation of visual representations through the stimulation created by external objects on our sensory organs (fig. 44). These stimulations are perceived and get transmitted to the brain via nerves and, lastly, the brain interprets them as *X* object.[156] This view stands against Aristotle's that claims that we can see a tree because inside our eye there must be a representation of a tree that allows us to perceive it. Descartes' argument against Aristotle's is that if the latter would be right, then written words would make no sense nor would names that don't precisely refer to the object. Moreover, according to Berger's reading, Descartes explains cognition through examples that refer to operations that are common for engraving, as he gives the example of perceptions being

[154] Idem.
[155] Berger, *The Art of Philosophy*, 184.
[156] Descartes, *Key Philosophical Writings*, 366-367.

engraved in our mind just as the engraver sculpts an image in the copperplate.[157] This is an appealing reading because it places the art of engraving and philosophy in an even closer relationship to cognition, a relationship that even Descartes hinted at. However, it is unclear if Descartes used this comparison as an example or as a way to fully equate the two.

Another author that relates art to thinking is the Dutch art historian Hanneke Grootenboer who, in *The Pensive Art as a Form of Thinking,* holds that art is thinking because it "offers thoughts instead of meanings or a narrative."[158] What the author categorizes as pensive images have a quality of not being decipherable as they don't reward the viewer with any hidden meaning. What they offer, however, is something that goes beyond meaning or narrative, as they have an effect on us, they 'touch' us and initiate in us lines of thoughts. She supports this idea through the nature of art as provocative, making us pose questions when we encounter it. From this, the similarities of art and philosophy are visible through questioning. Images as art are places where our mind can enter and explore a mental realm that offers endless possibilities that are grounded in thinking.[159] Through its *thinking* character, the images become a *locus*, a mental space dedicated to cognition processes that are set in motion by the visual elements presented to the viewer, in the form of art.

These views that relate images, oftentimes in the form of prints, to thinking are good indicators for a few things. First, they show that relating printed images to thinking is something that other authors have done, in various forms. Second, their conclusions can be connected with the findings of this research, placing the latter in a wider theoretical context as the main thesis holds that prints play a positive role in the understanding of a philosophical text.

Do images help reading comprehension?

Many authors[160] who have studied reading comprehension and language agree that reading comprehension is an embodied process. As noted by Arthur Glenberg, professor in the Department of Psychology at Arizona State University and theorist of embodied cognition, "comprehension is the ability to take effective action based on affordances related to the body, the physical world, and personal goals and cultural norms."[161] The affordances of the body can

[157] Berger, *The Art of Philosophy,* 2; 184-186.
[158] Grootenboer. *The Pensive Image: Art as a Form of Thinking,* 2.
[159] Ibid., 2-6, p. 169.
[160] Such as Barsalou, Johnson, Lakoff, and Glenberg.
[161] Glenberg, "How reading comprehension is embodied and why that matters," 5.

be understood as its practical possibilities for action. To exemplify this concept[162], when a human and a dog are presented with a road that has at the finish line a reward for them, the affordance of the human will be to use two legs and run in an upright position to reach the finish line, while for the dog its four legs and dog-like capacities will be used for the same purpose. The possible actions that our bodies can enact are given by their affordances that are mediated by the information we receive from the exterior world. The embodied character of comprehension in general, whether it be oral or reading, stems from the fact that comprehension is always related to action, and information is viewed as useful in the ways in which it can be acted upon. The affordances of information in action equal with nothing but the possibilities that information grants according to the constitution of our body, the context, and so on.[163] Because of its action-oriented character, it relates to the body as all action can be done only through the latter.[164]

Another component of linguistic comprehension is the possibility of simulation. In the previous chapter, when analyzing the frontispieces from an embodied cognition perspective, it was noted that the viewer would have an empathic response towards the content of the prints because they feature human beings. The images were able to 'speak' to their viewers with the aid of the mirror neurons (MN) and the VIP-F4 brain circuit that allow for simulation. The mirroring makes the viewer feel as if they are making the action they view, as long as hands or heads are featured. However, simulation is not only engaged in such a context but plays an important role in reading comprehension as well. To quote Glenberg once more,

> "according to the simulation theory of language comprehension, language is understood by simulating the situation described by the language, by driving the brain into the states that are analogous to the perceptual, action, and emotional states that arise during perception of and acting in the real situation."[165]

What this entails is that we pair words such as 'eat' with the action itself and that we grasp meanings through our bodily experience. For example, when we read about someone hiking on a dangerous route, we experience that reading as if we are doing the hiking ourselves and we are exposed to the possible dangers. As we are dealing with an abstract text, that of Descartes'

[162] As in J. Gibson's concept of affordances. It refers to that which the environment offers to an organism when the latter interacts with the former.
[163] Ibid., 5-6.
[164] This point is stressed in the previous introduction of embodied cognition but also in the theory of Johnson and Lakoff.
[165] Glenberg, op. cit., 6.

Opera, the relevance of simulation can be doubted because abstract meanings and language seem divorced from bodily actions.

The divorce between the two is only apparent as it is generally agreed that even abstract language has its root in embodiment and bodily action. Something cannot be meaningful by simply having a system of abstract and arbitrary symbols connect to other such systems.[166] To give an obvious example, someone instructs you how to draw hieroglyphs to make up a sentence without understanding their meaning, but language doesn't work like that. This can work only for a computer model where meaning is created in the form of abstract propositions that can program a computer to act a certain way. However, in the case of humans, there is an extensive mental imagery, motivations, will, emotions, and other such elements that make the process more complex and less straightforward.[167] This is yet another argument for how abstract meaning is integrated into our configuration as it stands. So, when we are dealing with an abstract text, what is the role that images play? Moulton and Kosslyn[168] believe that imagery can be viewed as a type of simulation. Mental imagery and simulation are similar elements that work together when we are dealing with a text. When one reads 'Ben kicks the ball' the scene is imagined mentally through imagery while also having a simulated dimension where, for a second, one becomes Ben and has the experience of kicking the ball. To follow Sadoski's line of argument[169], abstract content like mathematics is rooted in bodily experiences through metaphors, like Johnson and Lakoff point. Moreover, there is convincing evidence that indicates how language, in general, is rooted in both mental imagery and simulation, meaning that this applies to metaphors too.[170] To return to Descartes, this indicates that the texts contained in *Opera*, even though abstract and sometimes technical, can be understood by the readers through the bodily experience and mental imagery and simulation that are activated when reading. If so, is there a necessity for printed images if the text by itself can evoke some mental imagery?

Mentally picturing abstract concepts without an image support is still a difficult thing because recent research[171] shows that a reader is less likely to remember abstract language

[166] For example, the manipulation of a foreign alphabet doesn't guarantee the understanding of the language itself and its meanings.
[167] Glenberg, op. cit., 8-9 and Sadoski, "Reading comprehension is Embodied: Theoretical and Practical Considerations," 333-334.
[168] Moulton & Kosslyn, "Imagining predictions: mental imagery as mental emulation," as cited by Sadoski, op. cit.
[169] Sadoski, op., 343.
[170]See Glenberg, op. cit., 8, for an overview of this.
[171] Sadoski offers a great overview of this in op. cit., 336-338.

compared to concrete language when it comes to text. Therefore, it can be posited that the two frontispieces act like an anchor for memory, a true *memoria artificiala*, as they can help the reader remember the main ideas of the book through the meaning of the prints. The reader will remember that Descartes opposes Aristotle and Scholasticism because he is shown stepping on the former. It will be clear that the 'good' philosophy is the one that follows the upright Athena that points to the sky, instructing philosophy to be natural philosophy by studying Nature. The reader will also remember that mathematical and astronomical tools, found on the ground, ought to be used to study and understand Nature in an attempt to gain true wisdom and knowledge about the world, and so on. This role of images as anchors for memory and understanding is also supported by a contemporary project initiated by Glenberg named *Moved by Reading*.

The *Moved by Reading* is a reading comprehension intervention designed by Glenberg to help children derive meaning from text and understand it. The children are given stories to read and for each story, they have at their disposal the physical objects from the story or images of those objects. They are asked to read a sentence from the text and to reproduce the contents using the images or the objects at their disposal. This intervention helps increase the understanding of the text because the child has to link words to objects/images and then reproduce the content in action, in a physical manner that makes the act more concrete. According to a survey of this method, it was reported that 62% of the children who interacted with objects or images recalled the content, while the others who didn't, remembered only 29%.[172] The *Moved by Reading* is a good example of how images can ease text comprehension in children. Even if it doesn't directly say anything about philosophical texts or the impact of artistic images, it offers the grounded, tested, information for why images do play a role in understanding. One can object that Glenberg's project is not relevant for abstract text comprehension in adults.

However, it stands from the discussion so far that memory is influenced by different forms of images that act as an anchor. Even in children, this fact is visible through the statistic that shows how memory can be improved to a bodily interaction with objects or images of objects. Images, when they don't have bodily metaphors, do stimulate simulation that acts as a grounding act in our recalling of information.[173] Applied to Descartes' case, even if we were to abstract the conclusion that the two frontispieces act as embodied metaphors, they would still play an essential role in the understanding of the text. By remembering the prints, the reader

[172] Glenberg. op. cit., 9-12.
[173] Ibid., 15-16.

would deduce from the representation the main themes of *Opera*. As memory acts in a personal way, seeing Athena might awaken the memory of a certain passage or idea from the text and because this remembering as linked to the print would occur, this is proof of reading comprehension.

Limitations of the embodied cognition theory

Probably the first visible obstacle that an embodied cognition approach poses is the lack of uniformity in the various theories that this term defines. To be more precise, embodied cognition is better thought of as a framework rather than one unified theory. The theories that can be found within this framework have some general ideas on which they agree upon but when it comes to investigations, they don't have a common direction.[174] For an art historical approach, this can be seen as an obstacle because the art historian, supposing he/she isn't familiar with embodied cognition, has to navigate this complicated web of theories that creates this framework. This diversity is also translated in the various domains that investigate the thesis of embodied cognition such as philosophy, psychology, neurosciences, engineering, and so on.[175] The diversity of domains and their involvement in the research of embodiment can be challenging because it highly solicits the knowledge of the historian.

Another challenge and, at the same time, limitation can be posed by the more practical and technical side of embodied cognition. Most researchers inform themselves to some degree from experiments, surveys, medical and neuroscientific findings. The difficulty here can arise in managing to apply the conclusions of an experiment to an artwork, for example, in a manner that produces valuable insights. The level of technicality that some neuroscientific research poses is challenging in itself because it requires some knowledge of the brain anatomy to grasp the information.[176] This increases the difficulty of the already-challenging field of art history by adding one more layer of inquiry.

The question here would be the following. Is it worth employing this framework in art historical research, in this case, in the study of seventeenth-century prints? To the extent that it was applied in this research, the answer would be yes because it operated with meanings and interpretations that can be recognized as common-sensical. The Johnson & Lakoff theory of

[174] Zwaan, "Two Challenges to 'Embodied Cognition' Research and How to Overcome Them," 3-4. Accessed 16.11.2021. http://doi.org/10.5334/joc.151.
[175] Idem.
[176] Ibid., 5-6.

embodied metaphors doesn't presuppose a highly technical and laboratory-dependent approach. On the contrary, it relates to meanings and language, how they are experienced on a basic and common level. Because this theory operates on this level, it is comparable to the more traditional approaches of art historical interpretations such as visual analysis, iconography, symbolism, but also historical and object-based research. As such, this embodied cognition approach through embodied metaphors can be considered to have the potential to offer conclusions that have a comparable validity to those of traditional art historical approaches.

Conclusion

Prints are investigated as related to forms of thinking in the research of authors like Melion, Berger, and Grootenboer. This places the current research in the same line with the addition that this inquiry focuses on the understanding of a text by a reader with the aid of a printed image. To conclude on whether images do help reading comprehension or not, accounts of reading comprehension as an embodied cognition process are briefly overviewed and analyzed. Understanding a text is still grounded in embodiment because we visualize and simulate the content of the text, even if the content is of abstract nature. As Glenberg's *Moved by Reading* project shows, images enhance text understanding in children and this might prove beneficial for adult readers as well. Through this, the thesis that the two frontispieces from *Opera philosophica* aid the understanding of a philosophical text is supported. Lastly, a few limitations of the embodied cognition framework for art historical investigation are taken into account because this application might prove difficult due to its technical character. However, the theory of the bodily metaphors by Lakoff & Johnson relies on common-sense and daily bodily experience, making it approachable and useful for art historians.

Conclusion

The present research investigated the role that printed images played in the understanding of philosophical texts in the seventeenth century Netherlands. This investigation has been carried through the case study of the frontispieces for René Descartes' *Opera philosophica*, fourth edition, published by Elizeus Weyerstraten under the printing business Janssonius & Weyerstraten, in 1664, Amsterdam. The case study has been approached from different angles. The first chapter placed the two engravings in a historical context of print making and book production and trade, while also offering an account of their creation, their circulation, but also their identification through a brief visual analysis. The second chapter approached the engravings from a different angle via the theoretical framework of embodied cognition. It analyzed them relying on the theory of Lakoff & Johnson that describes the ways in which embodied metaphors give rise to meaning through visual perception. The last chapter gave an account of the existing research that investigates the link between images and cognitive processes in art history. This account was then followed by a section dedicated to the role of images in reading comprehension and a meditation on the possible limits and benefits of the embodied cognition framework for art historical research.

The book publishing of *Opera philosophica*, just like other ones from this period, followed a trend in the book market that was interested in publishing the works of popular authors in Latin, so the books could be sold both in the domestic and international market. In the first chapter, it is shown that Descartes enjoyed a steady interest from readers and publishers alike, as his works were published constantly by the Elzeviers, one of the main publishers in the Netherlands, from 1635 until the early eighteenth century when the last Elzevier dies. However, publishing Descartes was not something restricted to the Elzeviers, as other publishers, among which Weyerstraten too, published the philosopher's works. However, the Elzeviers did the first Latin translations of the text and held the *privilegio* of publishing, as Descartes worked with them since he was alive. Weyerstraten's *Opera philosophica* follows the Elzevier model by using the same Latin translation, publishing this fourth edition in the same year in which the Elzeviers published their own fourth edition. This, and the documents available about Weyerstraten, indicate that Elizeus and Daniel, the head of the Elzevier publishing house, were on good terms. By aligning himself with Daniel, Elizeus Weyerstraten followed a wider, European lead in the book market that aimed at a larger audience.

The Weyerstraten *Opera* must have been appealing to its readers because of the two engravings it featured at the beginning, as the Elzevier one only had the Frans van Schooten engraved bust of Descartes which it used since 1635. The frontispieces are composed of two engravings, one a portrait of Descartes and the other an allegoric title page, and they were likely made by Amsterdam engraver and art dealer Cornelis Hellemans. The allegoric title page features Athena in the act of instructing a seated woman identified as the personification of Philosophy. Near them, a curious young boy with an armillary sphere seems eager to join in, while the room is full of scattered scientific instruments. Descartes' portrait is unusual as it shows the philosopher at his desk, in the act of writing while stepping on a book by Aristotle.

The engravings might not seem so engaging at first, especially as they were sometime identified as having been firstly produced around 1690. However, as it was shown, they are part of the 1664 *Opera philosophica* and this brings new meanings to them. From the overview of Descartes' portraits during this research, it appears that the 1664 portrait is the first seated portrait of the philosopher. As Descartes was the subject of various visual representations, it may come as surprising that this engraving was the first such representation that, most likely, influenced later ones. As it was discussed, the choice of portrayal is very interesting because it places Descartes in a scholarly tradition while also alluding to his philosophical position as this print is the only one where the philosopher steps on Aristotle. The allegory title page uses similar means of allusion to inform the reader of the key ideas contained in Descartes' works. By employing a well-thought visual game of references, Hellemans manages to present to his reader two images with a double role. That of enticing the potential reader with the riddled visual meanings of the prints, to make the reading of the book a desirable act, but also that of a reading guide for the reader during the lecture.

What the bodily metaphor analysis reveals regarding the engravings is directly connected with the question 'how do we *actually* understand the meaning of an image?' The second chapter argues, in essence, that our visual understanding is not solely dependent on our visual, cultural, and art historical knowledge. Images, here in the form of prints, appeal to us in a deeper, bodily sense. One does not need to know that Athena is who she is to understand that she is pointing to the sky, visible through the window. This is understandable to us because we do the same gesture when we want to point at something and redirect someone's attention. The two prints are a collection of metaphors that are ultimately formed through the basic metaphors that come from our embodied experience. Our understanding, when it comes to images, firstly

comes through the body and only afterwards gets processed, refined, and further interpreted using our existing information and visual references.

As strange as it may seem to some contemporary philosophers that tend to disregard images and favour text in philosophical instruction, images do play a positive role in the comprehension of a philosophical text. As in Descartes' case, the portrait and allegory engravings summarize the key ideas of his philosophy, guide the reader through the lecture, but also act as a *memoria artificialia* because they improve memory, helping the reader remember the said key ideas. This role is also supported by the project *Moved by Reading* done by Arthur Glenberg and his team who investigated whether images help children remember textual content. During the early modern period, prints serve a multitude of roles with an impressive capacity of use and adaptability. This statement is further strengthened by the results of this analysis that point to an intimate relationship between reader, prints, and scientific texts.

The investigation carried out on the two engravings focused on a visual and bodily analysis of the core bodily metaphors that can be identified in the prints. Even if it did argue that images have an active and beneficial role in the understanding of a philosophical text in the early modern context, the research still has a few points that would benefit from further research as they were not the aim of the proposed scope. For example, the matter of Hellemans' activity and whether there was a father or son couldn't be completely elucidated as it stopped at a working hypothesis. Moreover, more copies of the Janssonius & Weyerstraten *Opera philosophica* can be found in the United Kingdom than in the Netherlands so this topic could benefit from an investigation on the popularity and dissemination of this edition. Another point for future research is nothing but a more in-depth approach of the two engravings and their various 'versions' as the visual identification and the bodily metaphors discussed can be developed further. Hopefully, these topics will be addressed in the future, one way or another and this seated portrait of Descartes with its complementary allegory will become a point of interest for other researchers as well.

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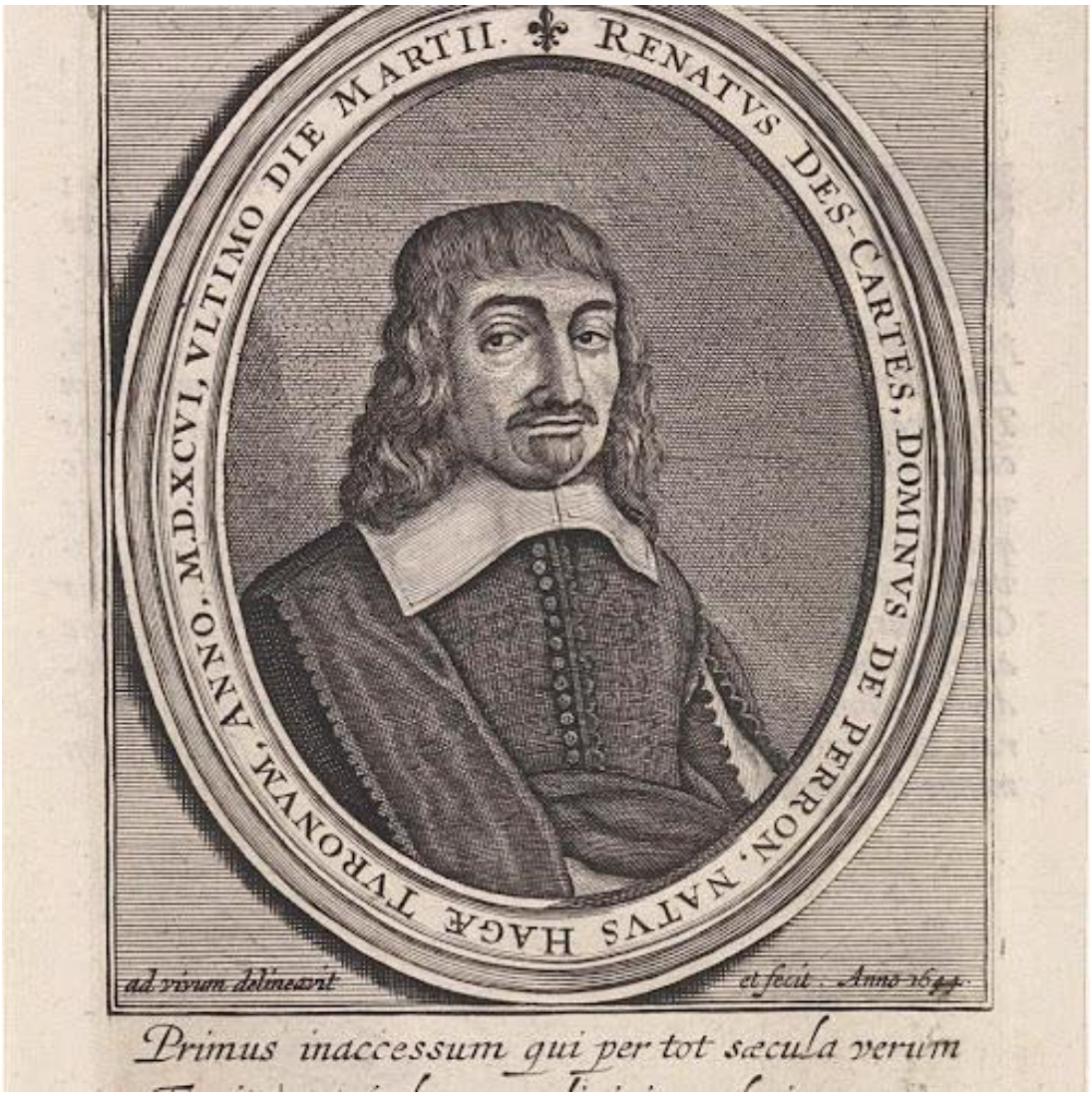

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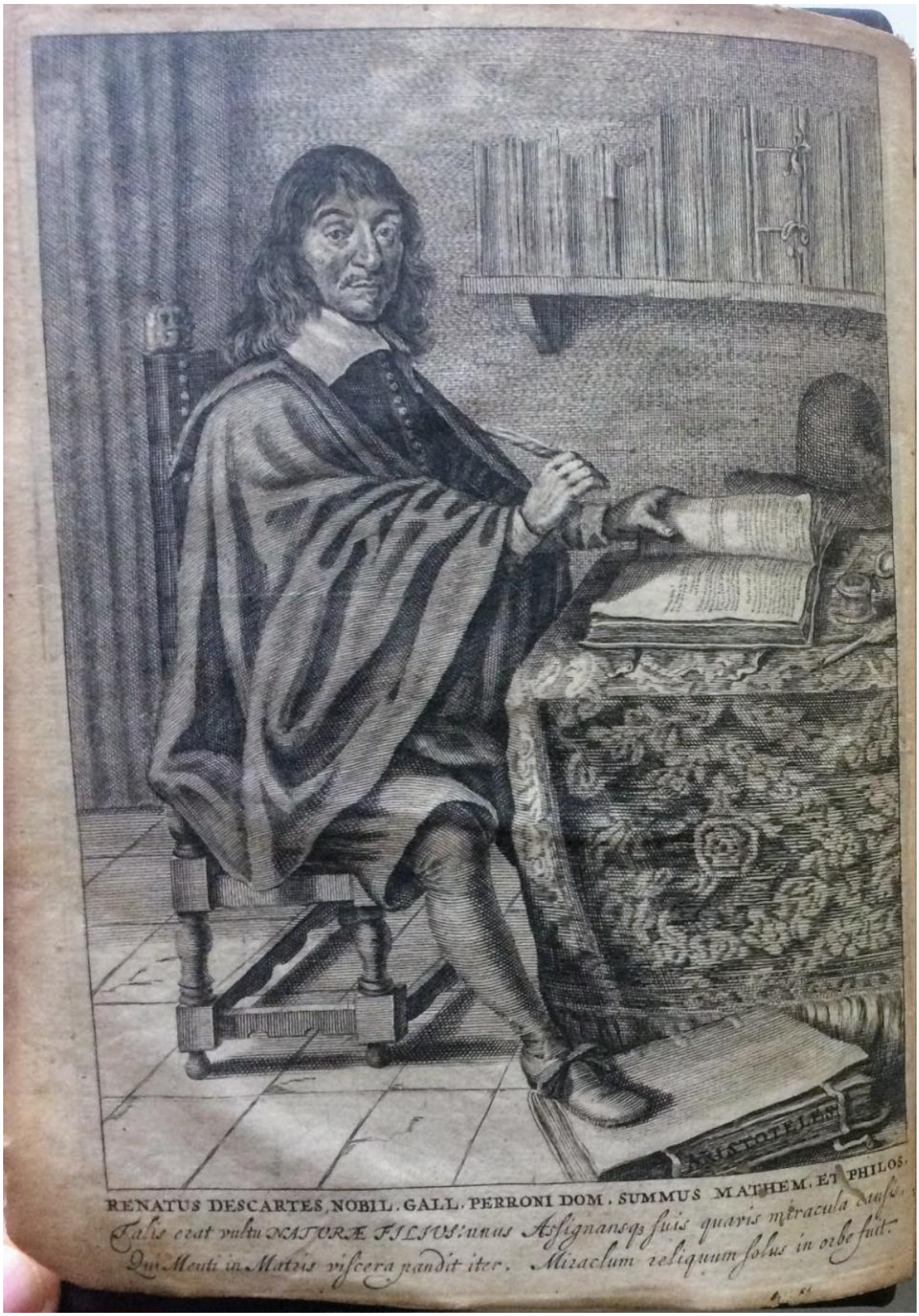

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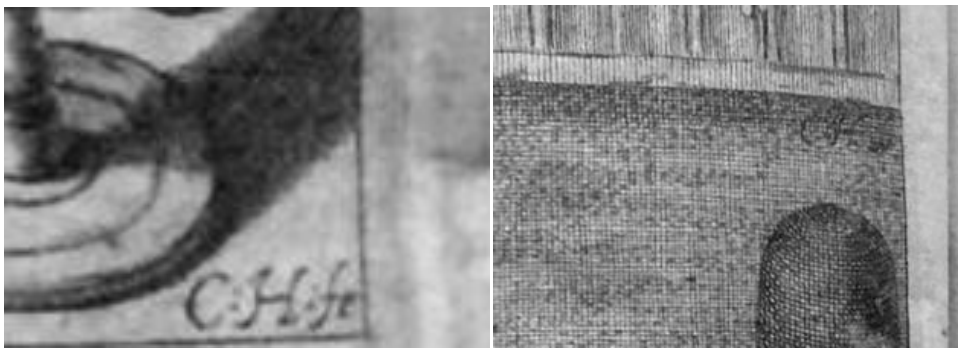

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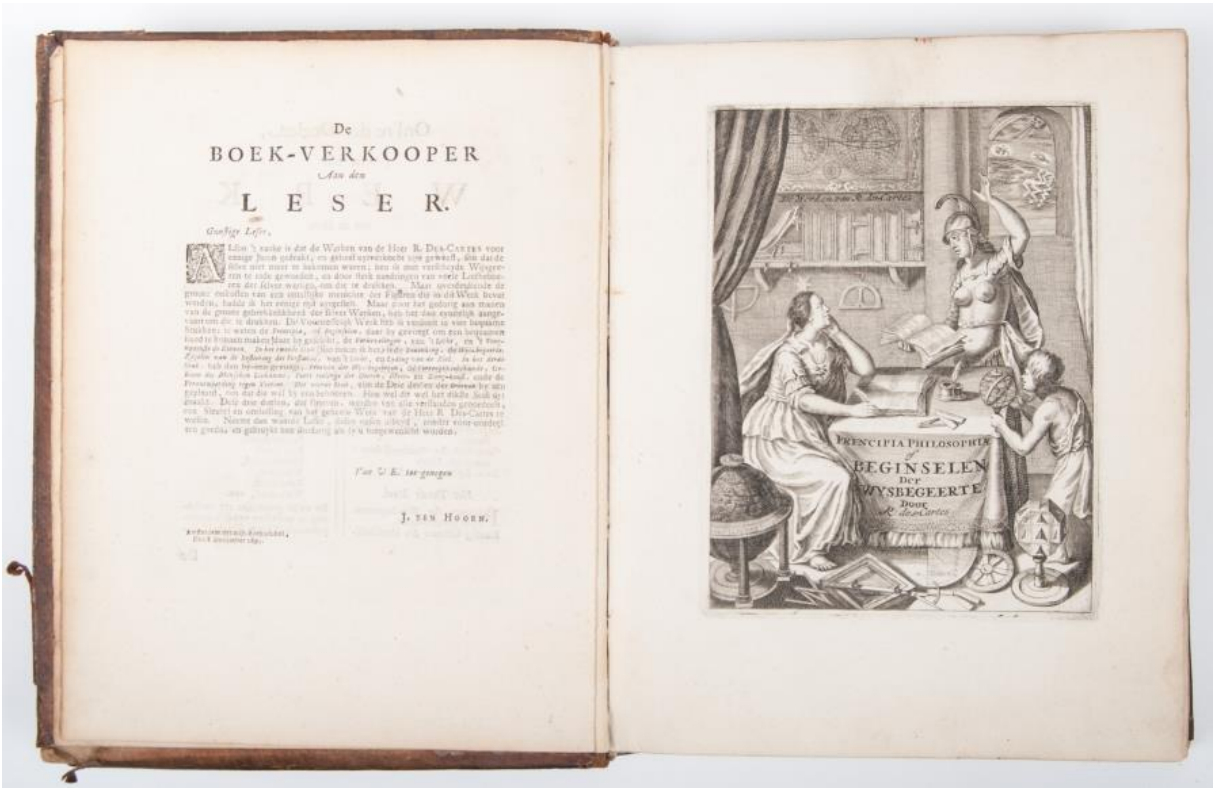

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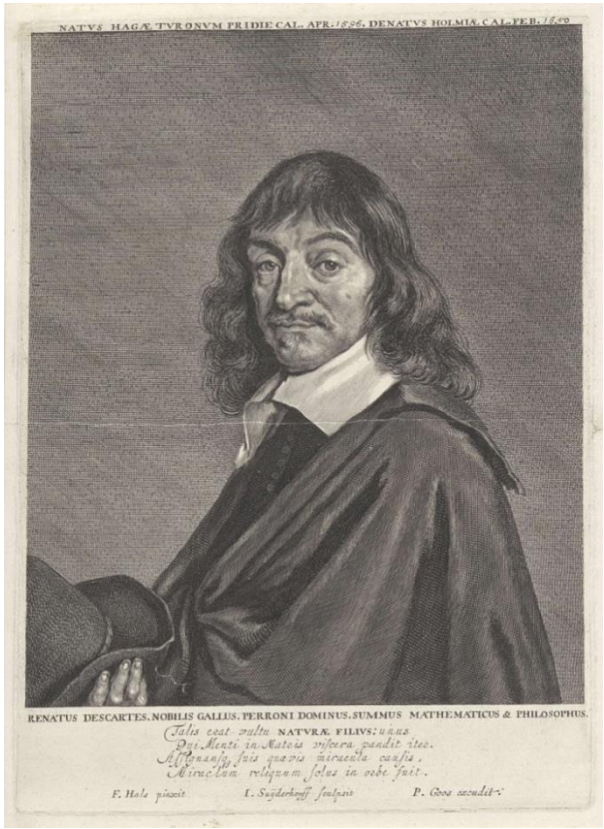

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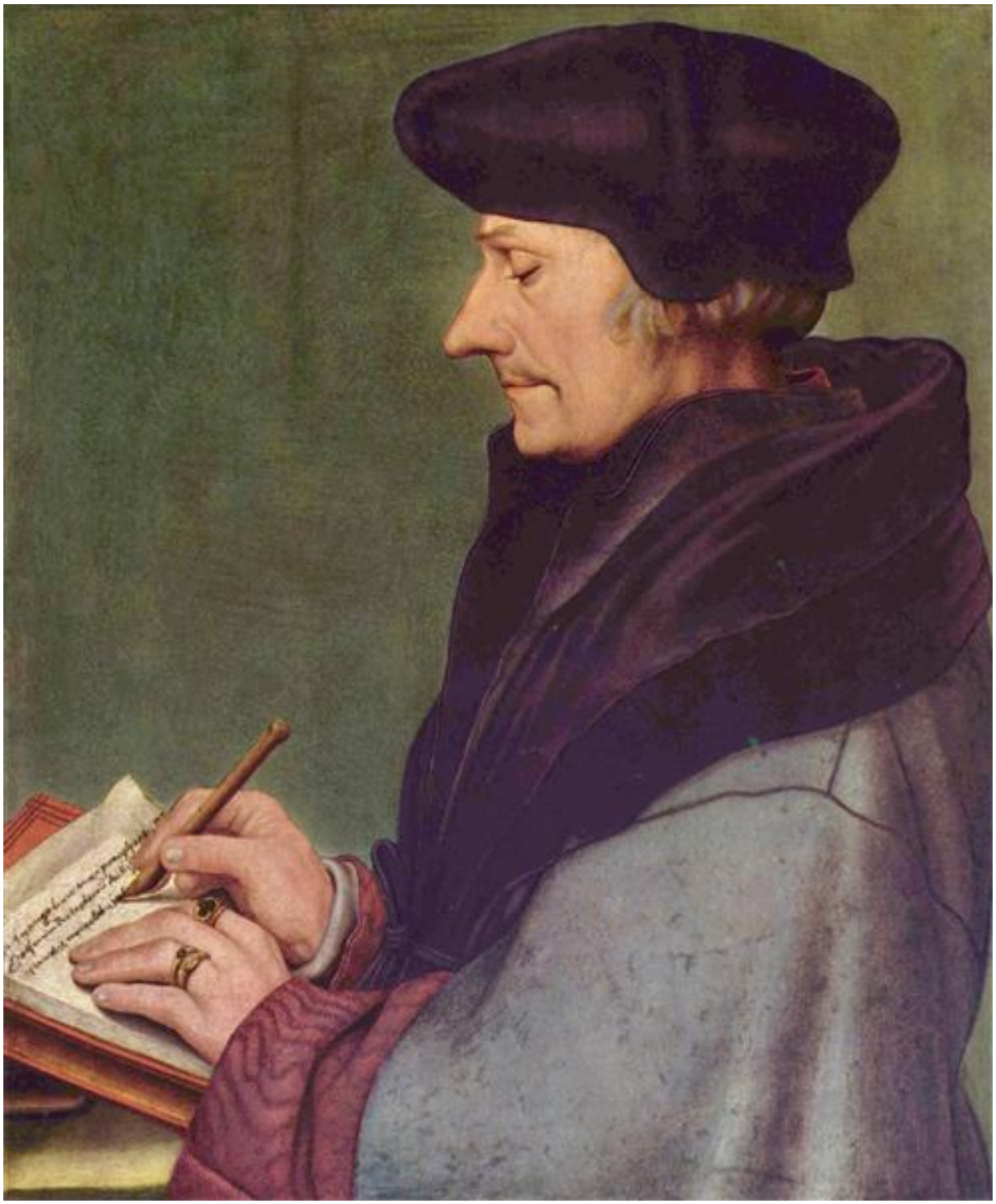

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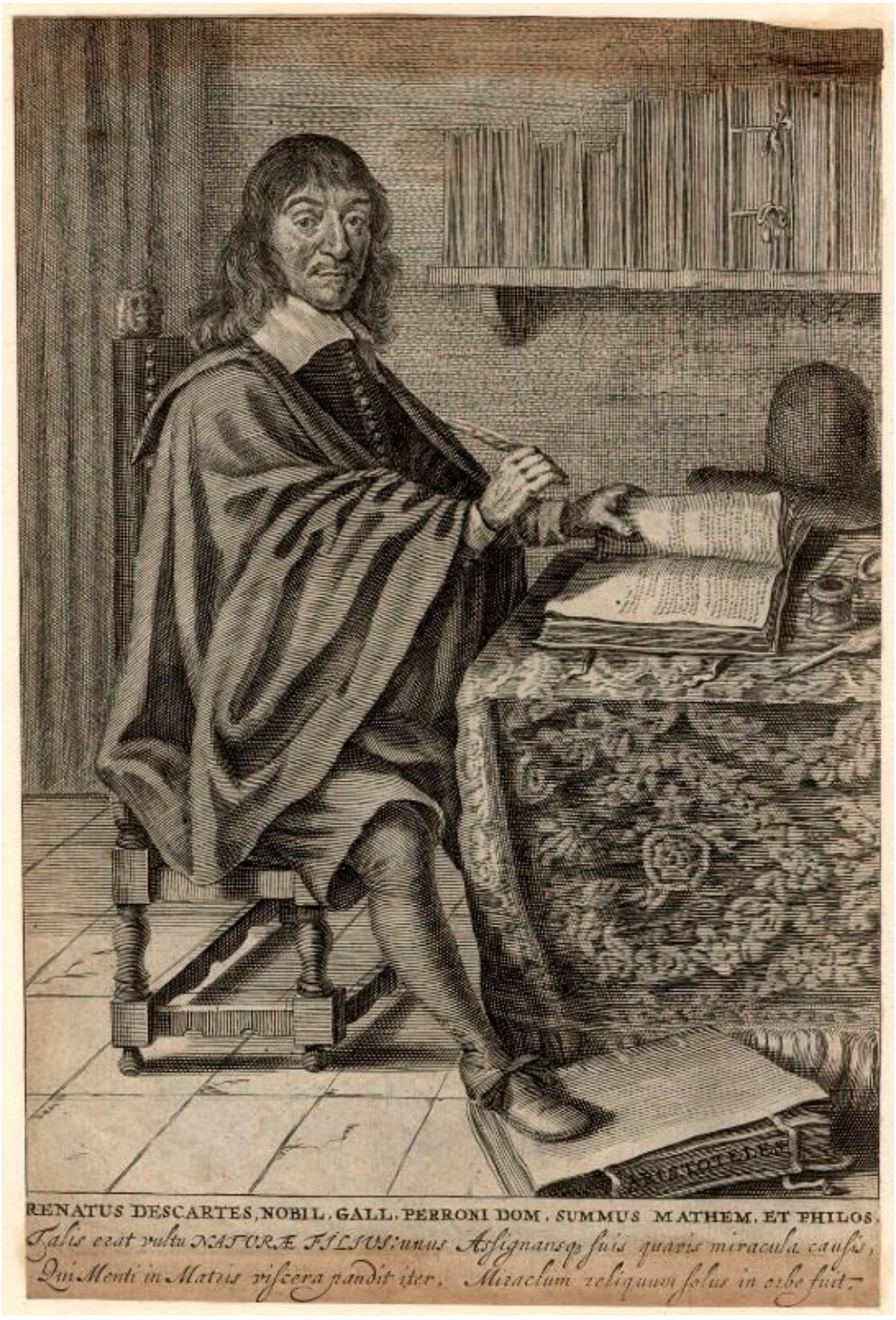

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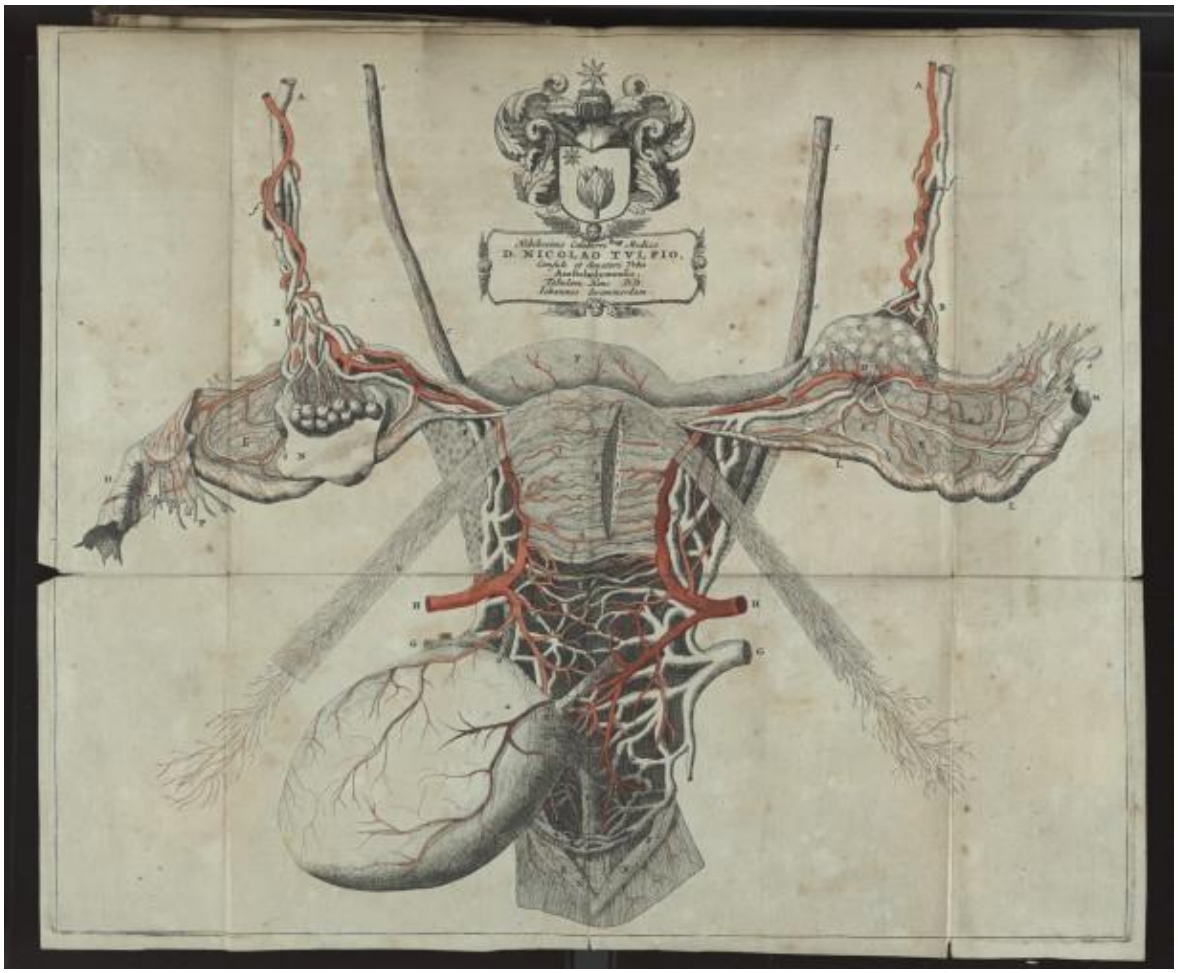

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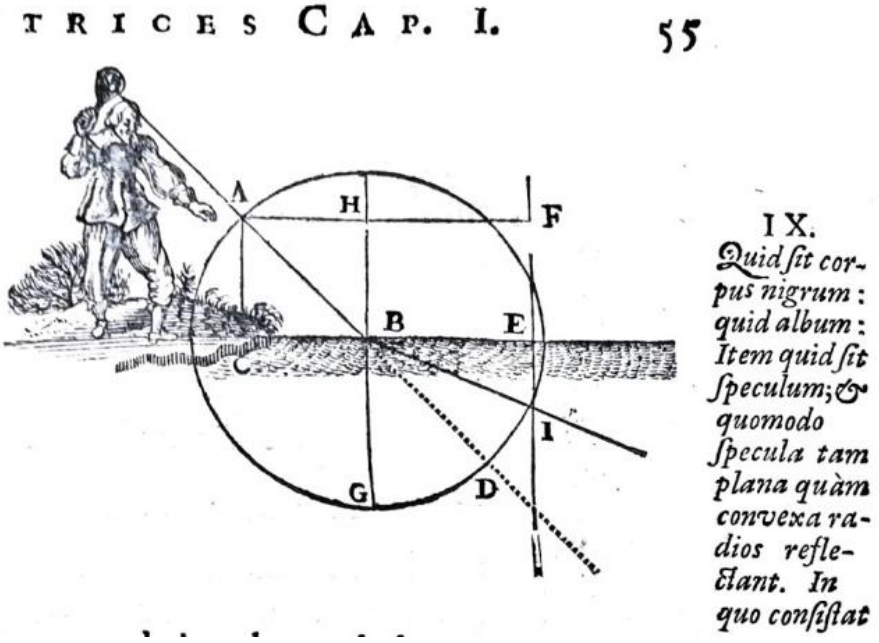

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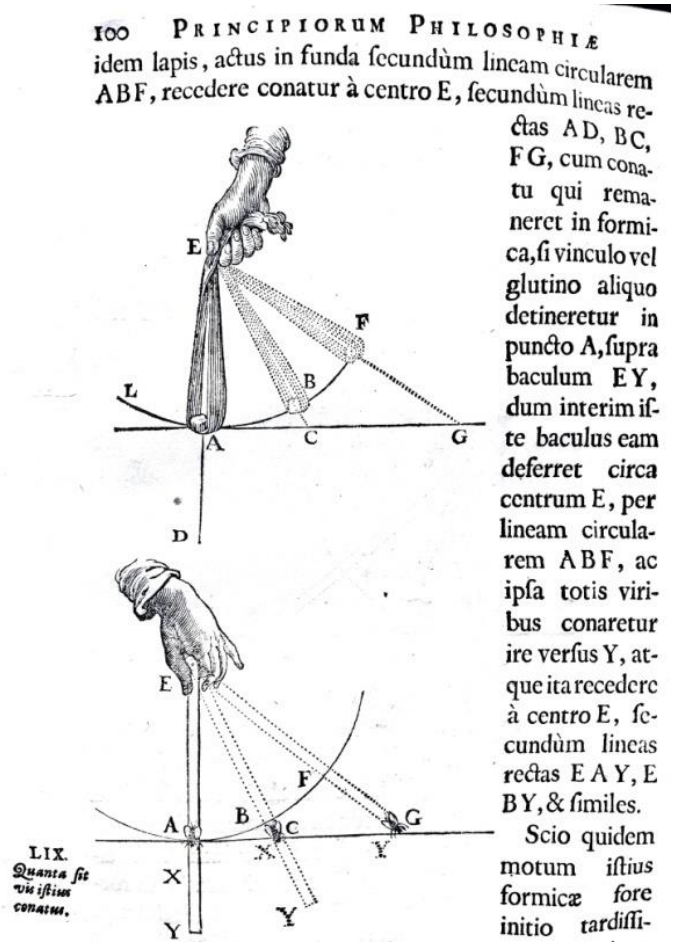

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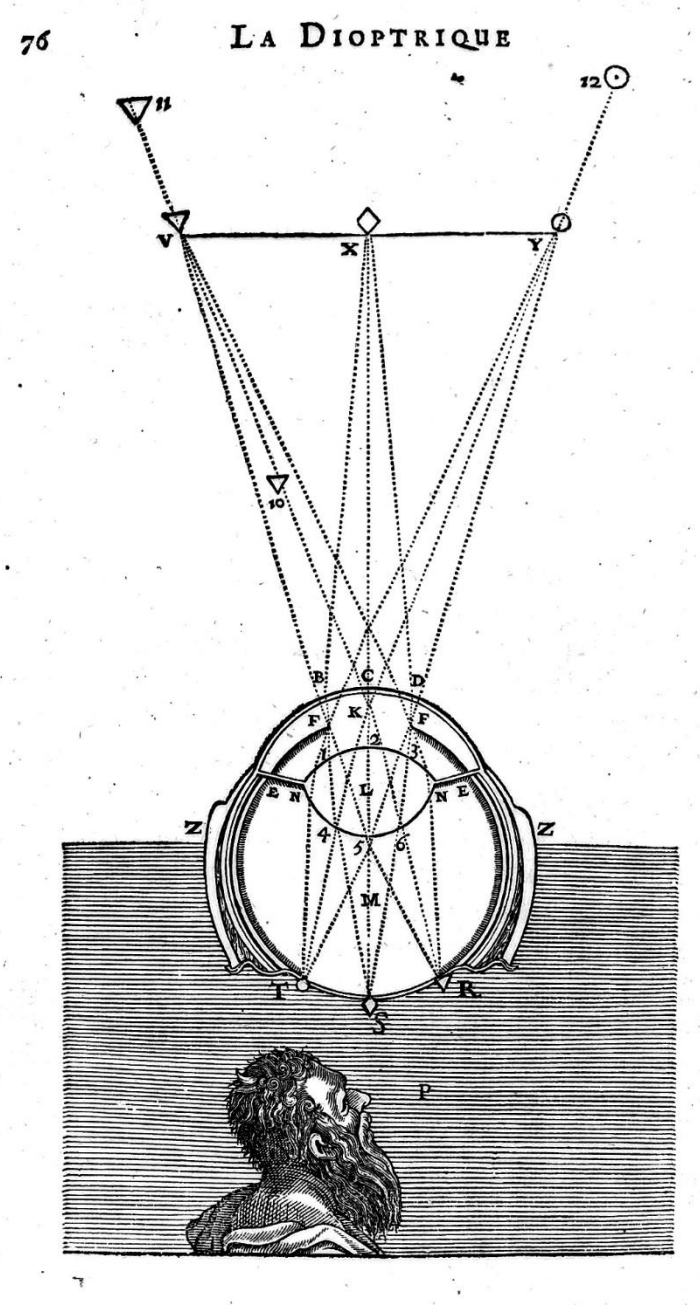

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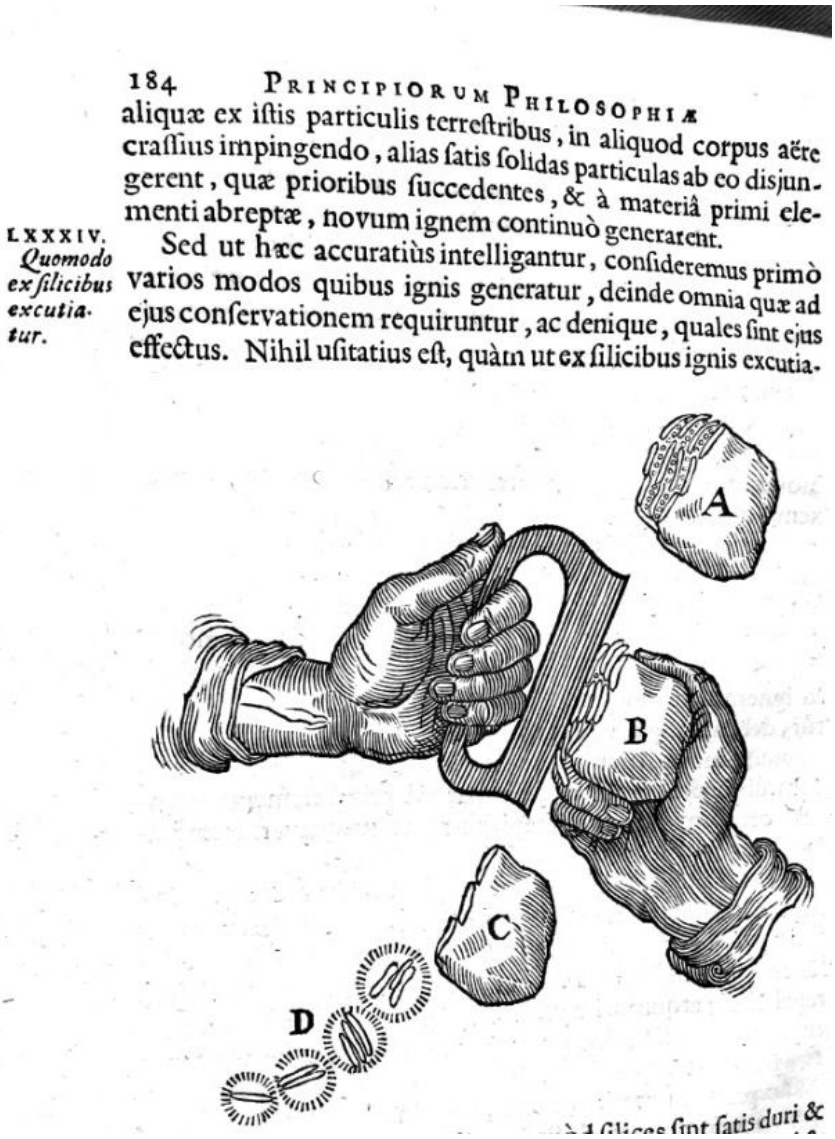

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aliquæ ex iſtis particulis terreſtribus, in aliquod corpus aëre craſſius impingendo, alias ſatis ſolidas particulas ab eo disjungerent, quæ prioribus ſuccedentes, & à materiâ primi elementi abreptæ, novum ignem continuò generarent.

LXXXIV. *Quomodo ex ſilicibus excutiatur.*

Sed ut hæc accuratiùs intelligantur, conſideremus primò varios modos quibus ignis generatur, deinde omnia quæ ad ejus conſervationem requiruntur, ac denique, quales ſint ejus effectus. Nihil uſitatius eſt, quàm ut ex ſilicibus ignis excutia-

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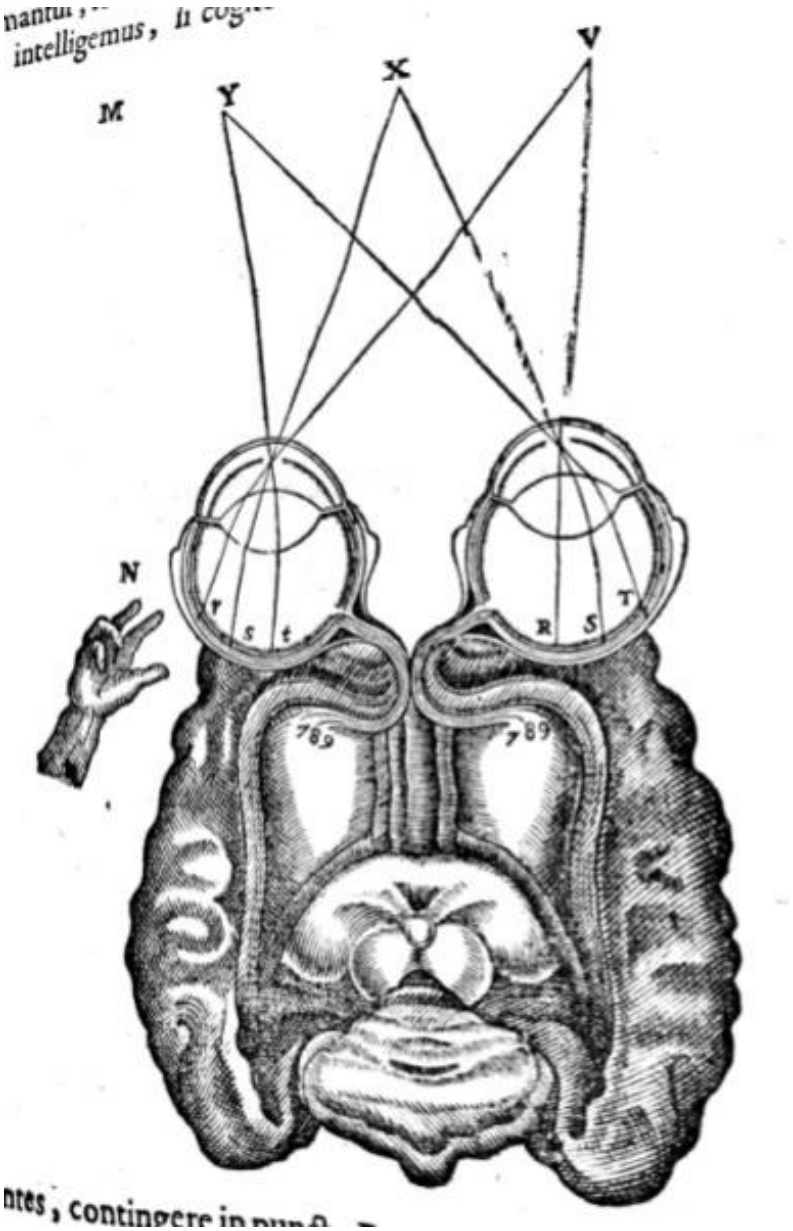

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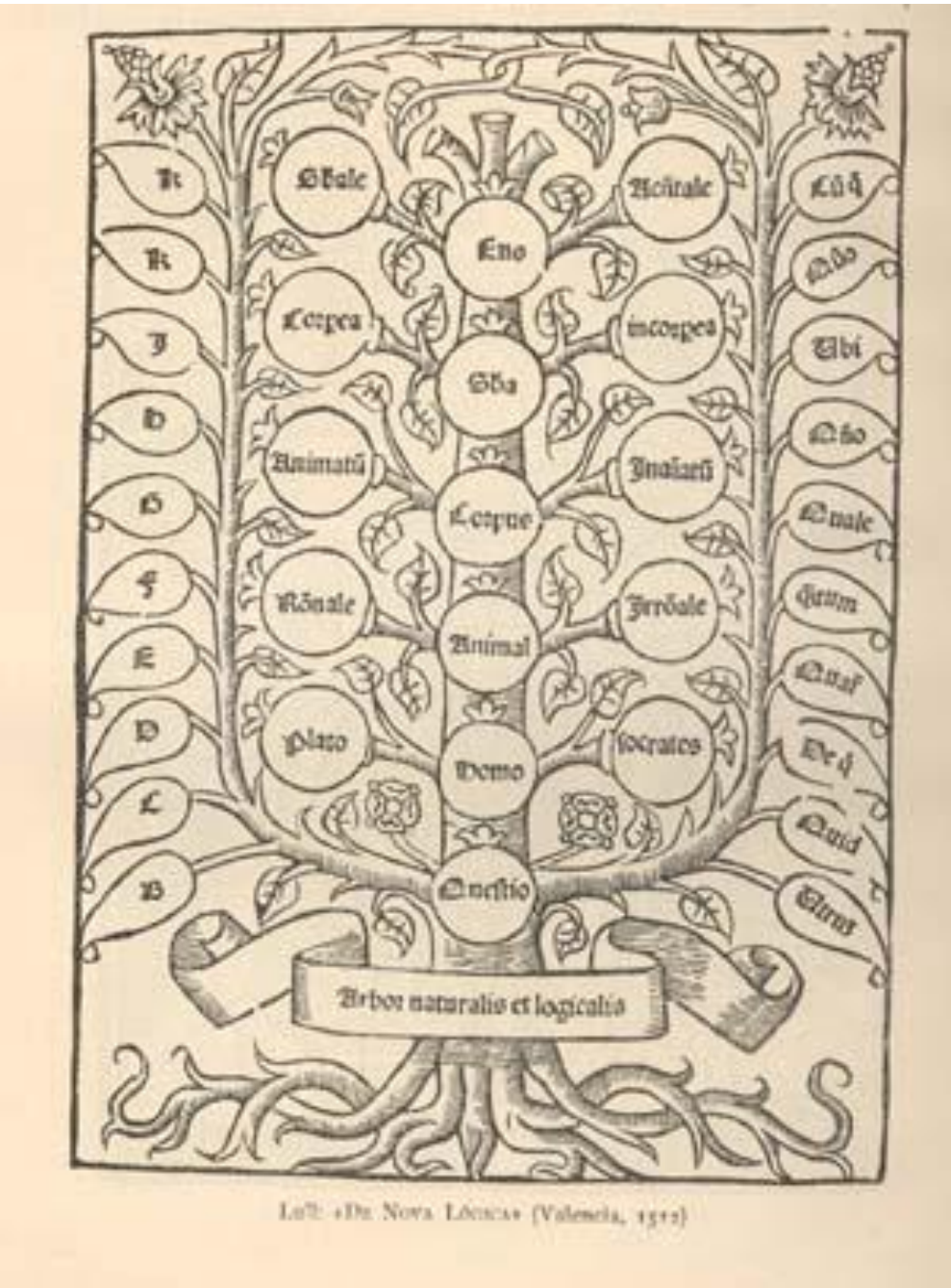

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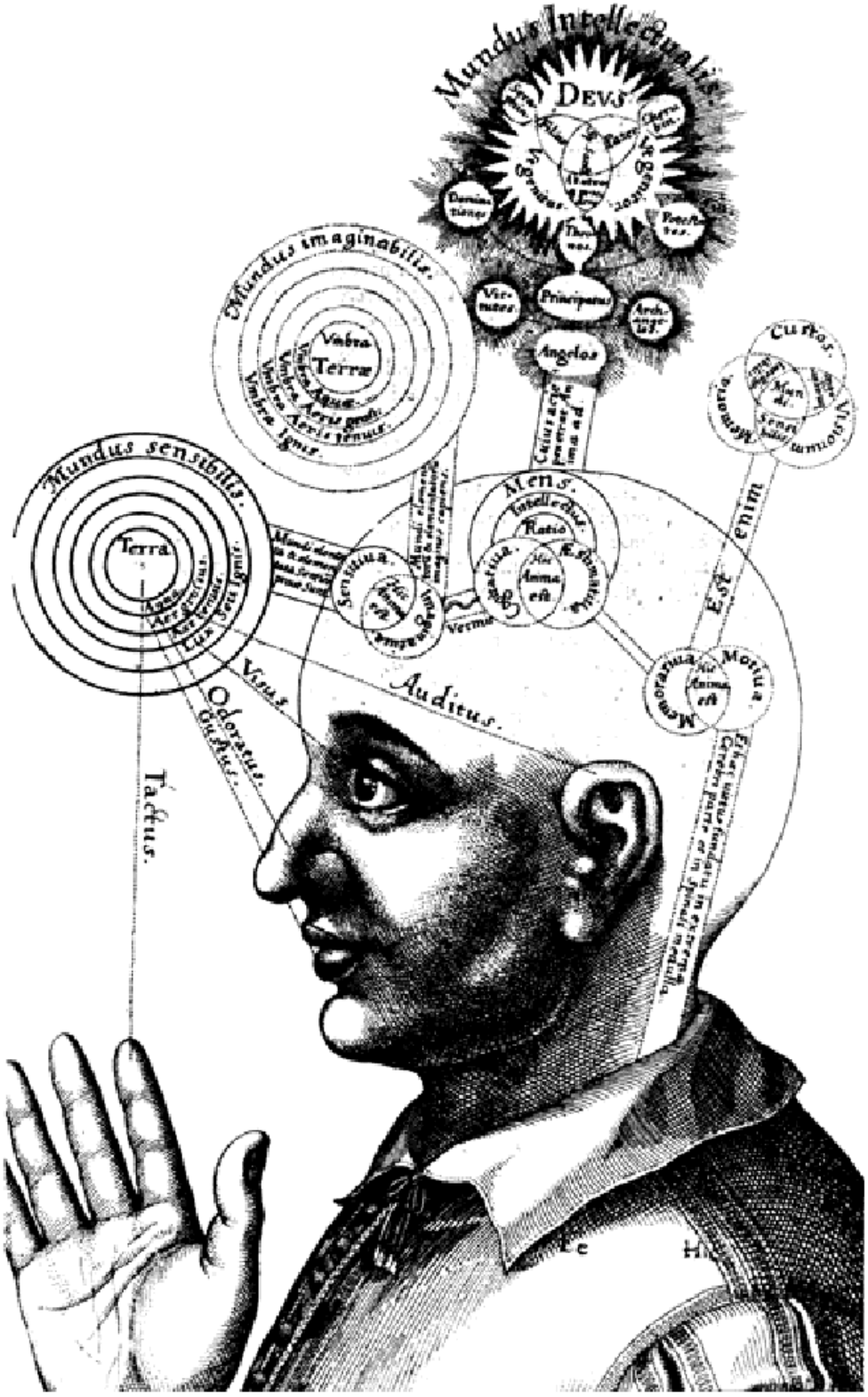

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https://commons.wikimedia.org/wiki/File:Arbor_scientiae_(Ramon_Llull)_using_A_porphyri_structure.png#/media/File:09L'arbre_des_relations_logiques,_selon_une_édition_de_1512_de_la_Logica_nova..jpg.

Fig. 51 Downloaded 13.12.2021.

https://www.researchgate.net/figure/Robert-Fludd-The-Mystery-of-the-Human-Mind-from-Utriusque-cosmi-majoris-1617-1621-II_fig2_28675373.

Fig. 52 Downloaded 13.12.2021.

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