Descartes

The Story of a Mind

GIANLUCA MORI

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Preface

Life and thought, biography and philosophy are inextricably intertwined in Descartes. His extremely rich correspondence, which at every step reveals important aspects of his intellectual experience, proves it beyond doubt. Descartes's life, to paraphrase his own words, is nothing but the "story of a mind", with uncertainties and regrets, steps backward, successes and failures. But we often read Descartes retrospectively: the early writings in the light of the *Discourse*, the latter on the basis of the *Meditations*, and the *Meditations* themselves with the help of the *Objections and Replies* and the *Principles*, as if a complete and well-organised Cartesian system – a "Vauban fortress", declared Martial Gueroult admiringly – had existed from the beginning, and as if Descartes's philosophical consciousness had gradually adapted to it. As opposed to this approach, Ferdinand Alquié attempted a different path, perhaps closer to Descartes's own mentality: that of following his intellectual evolution step by step, analysing it in terms of a progressive "metaphysical discovery" of the depths of the human being.

However, metaphysics is not Descartes's unique philosophical preoccupation, and it should never be severed from his physical and moral inquiries. Thus, in this book I will follow Descartes's mind in its multiform applications and interests – from his beginnings as a mathematician and a physicist to his late reflections on morality – without taking anything for granted and almost pretending not to know what will happen next. Unlike Peter Machamer and J. E. McGuire's *Descartes's Changing Mind* (2009), where they describe Descartes's thought as a coherent progression, characterised by distinct phases culminating in a definitive position (designated as the "epistemic stance"), this short intellectual biography does not subject the Cartesian text to a strict categorization or periodisation. Its primary focus is to clarify how that text came about, by which requirements and uncertainties it was motivated, and how it was constituted over a long period throughout Descartes's life. For this reason, I have devoted ample space to the main philosophical debates in which Descartes found himself entangled, especially the controversy with Regius, the epistolary exchange with Princess Elizabeth of the Palatinate, and the *Objections and Replies* to the *Meditations*. The latter are generally overlooked, as is the preponderant role played by Father Mersenne in shaping them. This is mostly due, in turn, to the reluctance of most Descartes specialists to consider Mersenne as the author of the Second and Sixth Objections – that he explicitly endorses in a private text – and of the letter sent by the so-called "Hyperaspistes", which is a continuation of the same debate. Likewise, the anonymous letter dated 19

May 1641 forwarded by Mersenne to Descartes is nothing but a follow-up of Hobbes's Third Objections – solicited, once again, by Mersenne, who secretly betrayed Descartes's wishes to sever any ties with "the Englishman". In other words, the *Objections and Replies* are an excellent illustration of Mersenne's tireless activity as the *éminence grise* of modern thought, halfway between Galileo, Hobbes, Gassendi and Descartes.

A whole series of labels have accumulated over the years about Descartes and his thought. Much has been argued on his "methodical" or "hyperbolic" doubt, his alleged distinction between the "rule of analysis" and the "rule of synthesis", his discovery of what others will call "analytic geometry", his purported "spiritualism" or his "mind/body dualism" which apparently splits the human being in two (Descartes's "error", according to some, or Descartes's "myth" according to others), the theory of the "animal-machine", and even his commitment to the "*cogito ergo sum*" refrain – to which he was so little attached that he did not include it in his philosophical masterpiece, the *Meditations on First Philosophy*. These labels or formulae are often too rigid, in some cases anachronistic or even apocryphal, and conceal, at least in part, the conceptual path underlying them and the fact that they were often momentary postures and not immovable dogmas. Descartes's thought is in continuous motion: he would not be perhaps the most studied author of the early modern period if he were not an open author, proceeding by successive approximations to truth, feeding on his own intrinsic indeterminacy. It is not in a systematic stance, therefore, that the mark of Descartes's philosophy is to be found, but precisely in the broad waves of its internal movements, and above all in the depth of its theoretical questioning, capable of subverting established beliefs but also of continually renewing its own vitality.

With the possible exception of the political sphere, we find Descartes's indelible imprint on all crucial debates of the early modern era, even beyond or against his own intentions: the advent of science and technology and their importance for medicine and morals, the reform and sudden crisis of metaphysics and theology, the rise of individualism, the collapse of the Aristotelian worldview and the discovery of the infinite silence of the universe. Descartes made people think the unthinkable: that matter is a geometric entity devoid of any inherent force; that human souls consist only in thought; that the order of nature is the result of simple mechanical laws and not of God's providential design; that mathematical and moral truths are not eternal but created by God; that life depends exclusively on material factors and can be prolonged by medicine; that human passions themselves can be scientifically analysed. But Descartes also cast doubt on what seemed indubitable: the real existence of the human body and the entire material universe, the necessary truth of the

theorems of mathematics, the mutual influence of the body and soul. On all these issues, Descartes created a new space for debate that occupied Western philosophy for centuries. Its offshoots are still active today: materialism, immaterialism, spiritualism, deism, atheism, dualism, monism, empiricism, rationalism, scepticism, in the form they have taken since the 17th century, would have been inconceivable without him. So much so that even Descartes's greatest opponents in the decades and centuries immediately following were often in danger of being willy-nilly Cartesians. Leibniz is Cartesian when he maintains (as opposed to Locke) that the mind always thinks, but Locke is also Cartesian when he maintains (as opposed to Leibniz) that thought is essentially consciousness. And Hume and Kant are also Cartesian in their own way: the former when he asserts that the mind is nothing but a "bundle of perceptions", and the latter with his "*Ich denke*", a transcendental and de-substantialised version of the *cogito* – not to mention the hyper-Cartesians Spinoza and Malebranche, who start with some of Descartes's fundamental principles and push their bold systems even further.

Descartes's greatness is mainly philosophical. Important and often decisive as his contributions to the sciences were, from mathematics to physics, biology and medicine, his point of view in all these disciplines was always that of the philosopher. In all these disciplines, indeed, he always sought to investigate and test the principles, rules, general notions, and foundations, often leaving it to others to elaborate more successfully specific theorems or explanations. Surpassed in mathematics by Fermat and later by Leibniz, in physics by Huygens and Newton, exposed to easy ridicule in the life sciences because of his theories concerning the "pineal gland" and the animal-machine, Descartes surpasses everyone in the boldness of his original questioning on the foundation of knowledge, to be achieved through the asceticism of doubt. After Descartes, this was to be the philosophical question *par excellence*.

Bibliographical Notice

Unless otherwise indicated, quotations from Descartes's works are taken from the reference edition: *Œuvres de Descartes*, edited by Charles Adam and Paul Tannery, Paris, CERF, 1897–1913, revised edition, Paris, Vrin-CNRS, 1964–1974, 12 volumes [*AT*]. When mentioned in the footnotes, the English versions are taken from *The Philosophical Writings of Descartes*, translated by John Cottingham, Robert Stoothoff, Dugald Murdoch, Cambridge, CUP, 1985–1991, 3 volumes [*CSM*], with some modifications (in particular, to avoid any misunderstanding, the French words *évidence* and *évident* and their Latin versions *evidentia* and *evidens* will be always translated by the English expressions "self-evidence" and "self-evident"). When no mention of an English version is made, the translations provided are to be understood as mine. For Descartes's correspondence up to 1638, the relevant texts are quoted – with some occasional alterations – from the on-going new English edition: *René Descartes. The Complete Correspondence in English Translation*, Volume I, *From the Early Years to the Discourse on Method, 1619–1638*, edited and translated by Roger Ariew, Erik-Jan Bos with Élodie Cassan, Sébastien Maronne, Oxford, OUP, 2024 [*CC*]. A complete bibliography of Descartes's works and critical literature, with useful comments and updates, may be found in *Bulletin cartésien*, a yearly publication (1972–) of the *Centre d'études cartésiennes* (Paris)/*Centro dipartimentale di studi su Descartes "Ettore Lojacono"* (Lecce), available online (*http://www.cartesius.net/il-centro/pubblicazioni/category/bulletin-cartesien/*).

This volume is an augmented version of an introductory book on Descartes published in Italy in 2010, incorporating new research and updated discussions of scholarly literature. I am once again grateful to Antony McKenna for his friendly assistance and support throughout the drafting of this work, that could not have been published without his help.

CHAPTER 1

A Long Apprenticeship

1 A Mature Student and a Jurist *manqué*

René Descartes's years as a youth remain, in many respects, a mystery: there are few direct testimonies, and the traces left in his correspondence are rare and fragmentary. His well-known biographer, Adrien Baillet, who published an extensive *Vie de Monsieur Descartes* in 1691,[1] skillfully blended facts with imaginative embellishments, thus engendering confusion among all those who later attempted to follow his path. However, Descartes himself did much to obscure the truth. In the autobiographical pages of the *Discourse on the Method*, he recounts his early years with a keen eye on the present, with the intention of presenting his personal experience as a universal model. This complicates the task of distinguishing, in the famous 1637 narrative, between genuine memory and elements of his present perspective projected onto his past. Seemingly, everything took on a symbolic value, everything followed a predetermined plan: conventional education, solitary escape, worldly temptations, and the discovery of the right path, which immediately became a mission. Baillet, for his part, added other classical hagiographic elements to Descartes's self-portrait: noble birth, a prophetic dream, and an edifying death.

The historically verifiable reality is far less linear. In fact, what little survives of Descartes's early and even mid-career writings – those predating 1637 – documents an anxious search for direction and existential purpose, along with uncertainties, digressions, and many false starts. From 1616 and for about twenty years, Descartes accumulated an impressive number of unfinished works, left incomplete or merely sketched despite his initial enthusiasm. These included a *Thesaurus Mathematicus* with an exceptionally long subtitle, some *Olympica* and some *Democritica*, a *Parnassus*, a *Mechanics*, a *Geometric Algebra*, an enigmatic *Thaumantis Regia* (that is, *The Palace of Wonders*), a *Studium Bonae Mentis*, a methodological sketch, *Regulae ad directionem ingenii*, and even an unfinished *World*.[2] That he often wrote only the title of a

1 Adrien Baillet, *La Vie de Monsieur Descartes*, Paris, D. Horthemels, 1691, 2 vols.

2 See the so-called Stockholm Inventory, AT X, 7–8 (*Thaumantis Regia*, *Parnassus*, *Olympica*, *Democritica*). Pour les autres titres citées, voir AT X, 78 (*Algebra*), 159–160, 168 (*Mechanica*), 191–203 (*Studium*); 214 (*Thesaurus*). For the *Regulae* and *The World* see *infra*, pp. 22–36, 42–56. See also Baillet, *Vie*, I, pp. 50–51.

treatise without proceeding further is something that Descartes himself openly admitted in January 1619, lamenting his own indolence.[3] His first printed work, the *Discourse on the Method* accompanied by three scientific essays, was not published until he was past forty.

René Descartes – whose surname was later Latinized to *Cartesius*,[4] from which the adjective "Cartesian" derives – was born on 31 March 1596, in La Haye, a small village in the French province of Touraine, halfway between Tours and Poitiers. His birthplace was renamed *La Haye-Descartes* in 1801 and, since 1967, simply *Descartes*. His family, originally from the neighbouring province of Poitou, consisted of physicians and jurists who had gradually risen to noble status. This was a form of "robe nobility", acquired through service in public administration rather than ancestral lineage (although the Descartes family was formally ennobled only in 1668). René was the son of Joachim Descartes (1563–1640), a counsellor and later dean of the Grand Chamber of the Parliament of Brittany, and Jeanne Brochard, who died in childbirth when René was one year old. He was born as "Seigneur du Perron", a title inherited from his mother, linked to a small estate still in existence near Châtellerault.[5] In his early years, he occasionally signed as "Du Perron", but, around 1622, relinquished most of his properties in France.

Young Descartes was probably a provincial gentleman much like many others: wealthy, free from financial worries, destined for a life of comfort, and troubled only by somewhat fragile health. He remained distant from the worldly life of the capital, which he never grew fond of, and lived discreetly, almost concealing his aspirations. His life was not initially directed toward philosophy but towards more lucrative and socially esteemed professions, such as law, following in his father's footsteps. Like his elder brother Pierre (1591–1660), who would later become a counsellor in the Parliament of Brittany, Descartes

3 René Descartes to Isaac Beeckman, 24 January 1619 (*AT* X, 151; *CC* I, 3).

4 At first Descartes protested against *Cartesius* (Descartes to Henricus Regius, 24 May 1640 – *AT* III, 68) but then changed his mind (Descartes to Mersenne, 31 December 1640 – *AT* III, 277), and after the first edition of the *Meditations* (1641) the Latin form of his name became common. See also a recently discovered letter by Descartes to Mersenne, 27 May 1641, edited by Erik-Jan Bos in *Bulletin cartésien* 42 (2011), *Liminaire*: "Since Mr Gassendi wished to name me *Cartesius*, you will, if you please, retain this name in the places where he has put it, and you may also put it in the objections of the Theologian of this country in the places where he has put D. Cartes, but for the first page of the book it seems to me better to retain my real name Des Cartes".

5 See Richard A. Watson, *Cogito Ergo Sum: The Life of René Descartes* [2002], Jaffrey, D.R. Godine, 2007, p. 81.

received a distinguished education at the Jesuit college of La Flèche (in the Loire Valley, near Le Mans and Angers).

The college was founded in 1604 by King Henry IV of France, who had converted from Protestantism to Catholicism ("Paris is well worth a Mass!"). It was already well-regarded at the time and would become even more famous in the following centuries due to its association with Descartes. In 1762, the Jesuits were expelled from France, and later, during the Napoleonic era, the college was transformed into a military academy (or *Prytanée militaire*), a status it maintains today. At the time, it was "one of the most famous schools in Europe",[6] educating more than a thousand students from noble and non-noble families across France. Even those of modest means were admitted if they demonstrated merit and they were treated with the same respect as the others.[7] Despite Descartes's criticisms and nostalgic recollections, La Flèche represented for him both the cradle of scholastic prejudice and an example of well-organized and regulated knowledge. He never forgot this. His vision was to reconstruct science on new foundations, but he recognized the necessity of a powerful and authoritative institution such as the Jesuit order, which, in the preceding half-century, had established over 150 colleges in France alone.

Descartes studied at La Flèche for approximately nine years, but neither the exact dates of his enrolment and departure nor the precise duration of his studies are certain. The most plausible and widely accepted hypothesis is that he entered the college mid-year, possibly for health reasons, around Easter 1607 (he was, therefore, about three years older than his classmates) and that he left around 1615.[8] The first six years of the standard curriculum were devoted to humanistic studies (grammar, literature, and history), followed by three years of specialized instruction in philosophy (logic, physics, ethics, and metaphysics) and mathematics (algebra and geometry). An additional period of study was required to earn a doctoral degree, but Descartes did not pursue this path. Instead, he continued his studies elsewhere, following a common practice among La Flèche students who were destined neither for the Jesuit order nor for a teaching career.[9]

In 1610, while at La Flèche, the fourteen-year-old Descartes may have witnessed the public display of the body of Henry IV, who had been assassinated

6 Descartes, *Discourse on the Method*, *AT* VI, 5; *CSM* I, 113.

7 Descartes to Mersenne, 11 October 1638 (*AT* II, 378; *CC* I, 391).

8 See Geneviève Rodis-Lewis, *Le Développement de la pensée de Descartes*, Paris, Vrin, 1997, p. 190.

9 See Gilson's commentary in R. Descartes, *Discours de la méthode. Texte et commentaire*, Paris, Vrin, 1st ed. 1925, 1987, pp. 106–110.

by the Catholic zealot François Ravaillac. Since 1599, the Jesuit theologian Juan de Mariana had justified regicide in cases where the king was a "tyrant", and the murder of Henry IV had thus provoked widespread indignation against the Jesuit order.[10] To counter this, the college solemnly commemorated the anniversary of Henry IV's death in the following year, with students contributing various literary compositions. Among these was an anonymous sonnet celebrating Galileo's recent discovery of Jupiter's moons, announced in *Sidereus Nuncius* (*1610*). Whether Descartes read this poem is unknown, although some have speculated that he may have written it.[11] However that may be, it may have marked his first encounter with modern science – a science still theologically innocent enough to be celebrated in a Counter-Reformation school.

Descartes's philosophical and scientific training followed the traditional Jesuit curriculum, as outlined in the *Ratio Studiorum* of 1599. The exact contents of his courses remain uncertain, but he probably studied philosophy through widely used textbooks, despite his later exaggerated disdain for them. He was undoubtedly familiar with the works of the *Conimbricenses*, as well as those of Toledo, Ruvius, and Eustache de Saint-Paul, whose *Summa Philosophiae* (1609) was widely read.[12] In mathematics, the education received by Descartes at La Flèche must have been first rate, given the fundamental importance that this subject had acquired within the *Ratio Studiorum* under the influence of the most renowned Jesuit mathematician, Christophorus Clavius (1538–1612). A professor at the Roman College, Clavius was the author of a recent algebra textbook (published in 1608), which Descartes mentions as his only source for mathematical studies while at La Flèche, and the editor of an often reprinted edition of Euclid's *Elements*, which Descartes, however, would later claim to have merely skimmed over in four days (but this is his typical way of downplaying his reading of books by other authors).[13] In any case, the algebraic

10 See Juan de Mariana, *De rege et regis institutione libri tres*, Toleti, apud Petrum Rodericum, 1599. For more details, see A. McKenzie-McHarg, "Early Modern Variations on the Theme of Complicity: How Jesuits Came to Be Linked with Regicide", *Journal of Jesuit Studies*, 10(1), 2023, 63–82.

11 The sonnet is available in *The Cambridge Companion to Descartes*, ed. by J. Cottingham, Cambridge, CUP, 1992, p. 85, note 36, with an English translation. For the original edition see *In anniversarium Henrici Magni obitus diem Lacrymae Collegii Flexiensis Regii Societatis Iesu*, Flexiae, J. Rezé, 1611, p. 163. According to Johannes de Raey's highly unreliable anecdote, Descartes wrote a letter to Galileo on the Earth's shells as early as 1616: see Andrea Strazzoni, "Some unpublished fragments on Descartes's life and works", *The Seventeenth Century*, 37:5, 2022, pp. 801–839.

12 Descartes to Mersenne, 30 September 1640 and 11 November 1640 (*AT* III, 185, 231).

13 See *AT* I, 70–1. For other examples, see below, pp. 193–194. On Descartes and Clavius, see also Chikara Sasaki, *Descartes' Mathematical Thought*, Dordrecht, Kluwer, 2003 (new edition 2013), p. 22 ff.; 45 ff. (and the texts cited therein, including *AT* IV, 730 f.).

notations that Descartes initially uses are precisely the "cossic" symbols, typical of the Italian algebraic tradition of the sixteenth century and adopted by Clavius. He would only later create his own notation, which was so successful that it has endured to this day.[14]

The first known work by Descartes – recently rediscovered by chance – dates back to late 1616. It consists of several theses defended at the Faculty of Law in Poitiers, where he had moved to obtain his degree. However, uncertainty remains regarding the exact duration of his studies – whether it lasted two years, one year, or even less.[15] More striking than the forty brief and entirely conventional theses is the lengthy dedicatory letter, written in a pompous and baroque Latin. Nothing in it suggests the future great scientist and philosopher; rather, it reveals an accomplished flatterer. Beginning with Lucretius, Descartes strings together classical citations, bucolic and hydraulic metaphors, flowing rivers, crashing waves, ineffable fragrances that fail to quench the thirst of the soul, and graceful nymphs offering not pleasure but virtue – all to court his maternal uncle and godfather, René Brochard, Sieur des Fontaines, to whom the work is dedicated.[16] Science, as it appeared to Descartes, who still felt the dampness of his nurse's milk on his lips, was an infinite sea from which endless streams flowed; for the time being, he was content to explore only one – that of law.

A brilliant student, the twenty-year-old Descartes demonstrated great skill in rhetoric, Latin, and both civil and canon law, in which he graduated with distinction. However, there is no trace of mathematics or philosophy – two "streams" that remained relatively dry for him at the time. Despite this promising start, he did not fully commit himself to a legal career or become a jurist.[17] Around 1617, he moved to Brittany, near Nantes, with his father and his father's new wife, Anne Morin. As the second-born of the first marriage, his prospects

14 See *AT* X, 155–156.

15 See Jean-Robert Armogathe, Vincent Carraud, Robert Feenstra, "La licence en droit de Descartes. Un placard inédit de 1616", *Nouvelles de la République des lettres*, 1988–II, pp. 123–145, with an extensive commentary. See also "Descartes' 1616 Law Thesis", English translation (2023) by Holly Johnson and Kurt Smith (*https://plato.stanford.edu/entries/descartes-works/tenglish.html*). For a survey of the debate about Descartes's studies in Poitiers, see Vincent Carraud and Gilles Olivo (ed.), *René Descartes. Étude du bon sens, La recherche de la vérité et autres écrits de jeunesse (1616–1631)*, Paris, Presses Universitaires de France, 2013, p. 17, n. 2.

16 René Brochard died in 1648 leaving Descartes as his only, but meagre, heir. See Descartes to Abbé Picot, 1 September 1648 (*AT* V, 227–228).

17 On the possible influence of Descartes's law studies on his philosophical approach to the question of "moral certainty", see Vincent Darveau-St-Pierre, "Remarques sur les origines juridiques possibles de la certitude morale chez Descartes", in Id. (ed.), *La Certitude morale de Descartes à Hume*, Paris, Classiques Garnier, 2023, pp. 27–47.

of inheriting his father's position were slim, especially as his father had also to provide for the children of his new union, including the eldest, Joachim Descartes, who would also become a counsellor in the Breton parliament. Traditionally, younger sons were destined either for military service or the clergy; Descartes leaned towards the former, though without great conviction. His strained relationship with his father, which would remain distant and cold throughout his life, probably influenced his decision. In 1618, seeking escape, he left for the Netherlands and enlisted in the army of Maurice of Nassau, a Protestant ally of Catholic France, a renowned military leader known for his free-thinking and passion for mathematics. Descartes temporarily resided in Breda, in the Flemish Brabant, where Maurice's court was based. Meanwhile, in May 1618, the so-called Defenestration of Prague marked the beginning of the Thirty Years' War, which would last throughout much of Descartes's life.

2 A Master: Isaac Beeckman

Descartes had a master, but he did not want this to be known. Too proud to admit that he had learnt anything from anyone, he was convinced that philosophy cannot be learnt from others, whether Plato, Aristotle, or Epicurus, but must instead be practised individually and independently, grounded in "true reasoning".[18]

Legend has it that on 10 November 1618, while walking in Breda, Descartes came across a public notice presenting an unsolved mathematical problem – a practice that was reportedly quite common in Dutch cities. Unable to understand the text, written in Flemish, he asked the only person capable of explaining it to him in Latin: Isaac Beeckman, who happened to be passing by at the same time. Descartes would later provide the solution to the problem. The veracity of this anecdote is uncertain, since it was surely embellished with various details by the imaginative Baillet.[19] Beeckman offers a much less vivid version in his handwritten diary, merely presenting and refuting Descartes's argument (which claimed that "no angle truly exists," since the existence of angles is incompatible with the definition of a mathematical point).[20] However that may be, what is certain is that the two men developed a close intellectual and personal relationship, marked by mutual esteem, which lasted

18 See Descartes to Beeckman, 17 October 1630 (*AT* I, 158; *CC* I, 65).

19 Baillet's narration is based on Daniel Lipstorp's version (texts in *AT* X, 46 ff.).

20 See *Journal tenu par Isaac Beeckman de 1604 à 1634*, edited by C. de Waard, vol. I (1604–1619), La Haye, M. Nijhoff, 1939, p. 237.

for several months. Their contact was then interrupted for a decade and later resumed, albeit without great enthusiasm, in the early 1630s.

Isaac Beeckman (1588–1637) was slightly older than Descartes and came from a very different social background. He earned his living by manufacturing candles and designing hydraulic systems for Dutch breweries. A self-taught mathematician and physicist, he obtained a medical degree from the University of Caen. He later became a Latin teacher while continuing to cultivate his scientific interests, which brought him into contact with Mersenne and Gassendi. Beeckman never published anything during his lifetime, and it was only in the twentieth century that his *Journal*, starting in the early seventeenth century and compiled over several decades, filled with notes on a wide range of subjects, was fully published. Beeckman's journal provides valuable insights into the formative years of Descartes as both a philosopher and a scientist.[21]

As often happens, the pupil ultimately surpassed the master. And as is perhaps even more common, the pupil later sought to erase the master from his personal historical memory: the absence of any reference to Beeckman in the autobiographical section of the *Discourse on the Method* is telling. However, it is undeniable that, between the young Descartes who dedicated his theses to his uncle René Brochard and the competent scientist of his first mathematical notes, there stands the encounter with the learned Dutchman. In Beeckman we find, well before his meeting with Descartes, nearly all the intellectual interests that would characterize the young philosopher-scientist between 1618 and 1620. Before this period, Descartes's work contained only citations and rhetorical flourishes, such as those to be found in his Poitiers theses. Following the documents now available, Beeckman must therefore be considered to have exercised a crucial influence on Descartes in several key areas: mechanistic physics (that is, the explanation of all natural phenomena in terms of the motion of material particles), the principle of the continuation of motion (a precursor to the principle of inertia), Copernicanism, the notion that God created the world according to quantitative parameters ("weight, time, and measure"),[22] and the idea that mathematics is the key to understanding nature. This list could be further extended to include more specific concepts: the use of vortices as an explanatory model for celestial motion, the Sun as a fire composed of subtle matter, magnetism explained through the flow of

21 For a recent reappraisal of Beeckman's scientific and philosophical thought, see Klaas van Berkel, *Isaac Beeckman on Matter and Motion. Mechanical Philosophy in the Making*, John Hopkins University Press, 2013.

22 See Beeckman, *Journal*, I, p. 246. Descartes alludes in the *World* (*AT* XI, 47) to the same biblical passage (*Wisdom*, 11, 20–21) paraphrased by Beeckman.

corpuscles between a magnet and iron, animal spirits understood as material particles flowing through the nervous filaments, and mechanical models used to comprehend foetal development in the womb.[23]

This was no trivial influence. And it remained significant, even though Descartes's mechanism would ultimately differ greatly from Beeckman's, being far more refined and philosophically grounded. Beeckman, for instance, was still influenced by ancient atomism and explained certain natural phenomena by the shape of atoms rather than solely by their motion.[24] Descartes's understanding of the relationship between mathematics and the study of nature would also diverge significantly from Beeckman's. Nevertheless, Descartes's patricide (or rather fratricide) becomes more understandable the stronger we assume Beeckman's influence on him to have been between late 1618 and early 1619. In a letter dated 23 April 1619, written with great affection, Descartes confessed to Beeckman that everything he had accomplished was due to him, recognizing him as "the promoter of my studies," the only one who had managed to overcome his innate laziness: "when my mind strayed so far from serious pursuits, it was you who brought it back to the right path".[25]

Descartes's first scientific work was the *Compendium Musicae*, a brief treatise on music theory written at the end of 1618 and immediately offered as a gift to Beeckman, who had been its direct inspirer.[26] This work represents Descartes's first approach to a theme that would remain central to his intellectual biography: the application of mathematics to physical reality. The notion, as we have seen, had already been entertained by Beeckman, whom the young Descartes recognized as the only person who "united physics with mathematics".[27] Since the time of the Pythagorean school, music had been the privileged domain for exploring such a union. Descartes was thus taking position within a very ancient tradition, alongside other key figures of the Scientific Revolution, such as Kepler – who in 1619 published his *Harmonice Mundi*,

23 See Beeckman, *Journal*, I, p. 121 (animal spirits); p. 139 (formation of the foetus); pp. 152–153 (sun); I, pp. 25, 167 and II, pp. 119, 295 f., 473, 607 (vortices); I, pp. 36, 101, 102 (magnetism).

24 See e.g. Beeckman, *Journal*, I, p. 216 (on wet and dry).

25 *AT* X, 162; *CC* I, 6–7. Great outbursts of affection are to be found already in Descartes's 24 January 1619 letter: "I would not be able to forget you any more than the Muses themselves. For they have joined me to you forever with a bond of friendship" (*AT* X, 155; *CC* I, 4).

26 See R. Rasch, "René Descartes and Isaac Beeckman: The Philosopher and the Schoolmaster", in *Music and Science from Leonardo to Galileo*, Turnhout, Brepols, 2022, pp. 277–304.

27 *AT* X, 52 (Beeckman, *Journal*, I, p. 244). See also John Schuster, *Descartes-Agonistes Physico-mathematics, Method & Corpuscular-Mechanism 1618–33*, Dordrecht, Springer, 2012, esp. pp. 104–166.

where musical harmony was used to explain planetary motion – and Galileo, who employed harmonic proportions to interpret the motion of the pendulum. However, unlike Kepler and Galileo, Descartes did not start with music to understand the mathematical structure of reality; rather, he used mathematical tools to comprehend music itself, particularly its traditional function of eliciting pleasure in the listener.

The *Compendium*, which would be published posthumously a few months after Descartes's death in 1650,[28] does not, overall, exhibit great originality in the history of musical theory. Descartes follows paths already explored by his master Beeckman as well as by others, particularly by the one author he explicitly quotes: the Venetian Gioseffo Zarlino (1517–1590[29]). A composer and music theorist, Zarlino was the inventor of the so-called *senario*, in which consonances are analysed in terms of mathematical proportions among the first six numbers (rather than just the first four, as in the Pythagorean *tetractys*): the octave, or *diapason*, corresponds to the ratio 1/2, the fifth to 2/3, the fourth to 3/4, the major third (or *ditonus*) to 4/5, and the minor third to 5/6.[30] In his attempt to mathematise music, Zarlino opposed the empirical approach of other sixteenth-century music theorists (including Galileo's father, Vincenzo Galilei) and did not hesitate to base his analyses on a Christian-Platonic mathematical framework.[31] Similarly, Descartes's treatment is almost entirely founded on mathematical considerations, which he regards as proper demonstrations.[32] However, unlike Beeckman, he did not consider the strictly material aspects of harmony to be of primary importance. He thus left to "physicists" the analysis of everything related to the formation and propagation of sound.[33]

For Descartes, music is fundamentally based on mathematical proportions, both in terms of rhythm and pitch. This also applies to the subjective aspect of musical experience – that is, how sounds affect the listener. This connection between mathematics and psychology is perhaps one of the most original aspects of the *Compendium* and foreshadows Descartes's later reflections on the relationship between body and mind. For example, the pleasure derived from hearing a consonance between two notes comes from the simplicity of

28 *Renati Des-Cartes Musicae compendium*, typis G. a Zijll & T. ab Ackersdijk, Utrecht 1650 (*AT* X, 89–141).

29 See *AT* X, 134 and related notes (also on Beeckman and Zarlino).

30 Gioseffo Zarlino, *Le Istituzioni Harmoniche*, In Venetiam, 1558, p. 25; to be compared with Descartes, *AT* X, 98, and Beeckman, *Journal*, I, pp. 54–55.

31 Zarlino, *Istituzioni*, p. 21: "all things created by God were ordered by him by number, indeed number was the principal exemplar in the mind of the Maker".

32 On this point, see Descartes to Beeckman, 24 January 1619 (*AT* X, 153; *CC* I, 4).

33 *AT* X, 95.

the underlying mathematical proportion. For this reason, consonances based on arithmetic progressions are more pleasing than those based on geometric progressions.[34] Among all consonances, the fifth is considered "the most pleasant and well-accepted by the ears", surpassing even the octave. The octave, by making two voices resonate in a kind of unison, lacks inherent variety, although this very feature allows it to be used extensively in compositions.[35]

The *Compendium*, in addition to offering a detailed discussion of consonances and "degrees" – that is, the transitions between consonances – also includes a brief analysis of the art of composition, which Descartes reduces to a few general rules. This is the first indication of his passion for establishing laws, principles, maxims, precepts, and rules – an approach that would characterize all his philosophical thought (even though, in this case, many of the rules in the *Compendium* owe much to Zarlino).[36] The treatise concludes with a heartfelt dedication to Beeckman, whom Descartes asks to keep the work safely stored in his archive, without showing it to anyone else.

Alongside his studies in music, and again under the direct influence of Beeckman, Descartes also devoted himself to explaining the fall of heavy bodies – one of the crucial themes of the new mechanics, on which Galileo had already been working for some time. Here too, his approach was strictly mathematical, without any reference to physical notions and even less to measurements or empirically verifiable data. This led to anomalous, if not outright incorrect, results: Descartes's falling bodies, once all the calculations had been made, fell faster than they should have done.[37] But that is not the important point. As Alexandre Koyré once pointed out, the errors of great thinkers are sometimes just as instructive as their discoveries. What is more interesting to note is how, even in these early analyses, Descartes made use of interpretive

34 *AT* X, 91–92. See Descartes to Mersenne, January 1630, 4 March 1630 and October 1631 (*AT* I, 107–9, 126–7, 223–4; *CC* I, 46–47, 53, 80).

35 *AT* X, 106. Cf. Descartes, *Treatise on Man*: "green, which consists in the most moderate action (which by analogy one can speak of as the ratio 1:2), is like the octave among musical consonances, or like bread among the foods that one eats, that is, it is the most universally agreeable" (*AT* XI, 158; in *The World*, ed. Gaukroger, p. 131).

36 On this point, see also H.F. Cohen, *Quantifying Music: The Science of Music at the First Stage of the Scientific Revolution, 1580–1650*, Dordrecht, Reidel, 1984, pp. 163–164.

37 After Alexandre Koyré's *Études Galiléennes* (Paris, 1939), see Vincent Jullien, André Charrak, *Ce que dit Descartes touchant la chute des graves*, Lille, Presses Univ. du Septentrion, 2002. For a deeper analysis on a mathematical basis, with interesting historical remarks, see Richard T. W. Arthur, "On the mathematization of free fall: Galileo, Descartes, and a history of misconstrual", In Geoffrey Gorham *et al.* (eds.), *The Language of Nature: Reassessing the Mathematization of Natural Philosophy in the Seventeenth Century*. Minneapolis, University of Minnesota Press, 2016, pp. 81–111.

tools that would reappear in his later works – most notably an embryonic principle of inertia, or rather, of the continuation of motion, adopted for the moment in a form similar to that proposed by Beeckman as early as 1613, when Descartes was still at La Flèche: "in a vacuum, that which once moves will move forever" (with no mention, at this stage, of the tendency toward rectilinear motion).[38] Thus, it is once again to Beeckman that we must turn to understand the position of the young Descartes.

Beeckman's theory of the continuation of motion is characterized not only by the rejection of Aristotle's classical theory (which held that the continuation of motion necessarily requires an external force), but also of the medieval theory of *impetus* (which claimed that the motion of projectiles was caused by an internal force within the moving body that gradually diminished). For Beeckman, in fact, matter does not need any force to keep moving, neither internal not external: a stone thrown in a vacuum will continue to move indefinitely unless it encounters an obstacle.[39] The case of accelerated motions, such as that of falling bodies, is different. To explain these, Beeckman – perhaps inspired by recent theories presented in Gilbert's *De magnete* (1600) or Kepler's *Astronomia nova* (1609) – postulated the existence of an attractive force exerted by the Earth.[40] At this stage, his friend and student from Poitou ("Picto" – as Beeckman sometimes called Descartes in his handwritten notes) followed him faithfully, trying to give a mathematical form to his master's reflections.

In various texts on the subject, all dating from 1618–1619, Descartes explains the fall of heavy bodies by assuming that they are drawn downward by a constant "attractive force," which, by accumulating from one moment to another, causes the acceleration of falling motion. At every instant, in fact, each body maintains (according to the principle of the continuation of motion) the quantity of motion it possessed in the previous instant, to which is added the

38 *AT* X, 60; 77. See also *AT* I, 28–9 (*CC* I, 19), and cf. Beeckman, *Journal*, I, pp. 24–25. Like Galileo, Beeckman believed that inertial motion could also be circular (see *AT* X, 224–5, and Beeckman, *Journal*, I, p. 253). Cf. John Schuster, *Descartes-Agonistes: Physico-mathematics, Method & Corpuscular-Mechanism 1618–33*, Dordrecht, Springer, 2013, pp. 109–110, 138–144, 206–208, 409, 445–446. For a different interpretation, see Samuel Le Gendre, "Beeckman, Descartes, and the Principle of Conservation of Motion", in *Knowledge and Culture in the Early Dutch Republic. Isaac Beeckman in Context*, Amsterdam, Amsterdam University Press, 2022, pp. 202–238. According to Le Gendre, Descartes was influenced on this crucial point not by Beeckman but rather by the Coimbrans, who mentioned the theory of the continuation of motion in bodies in their textbook (but also refuted it).

39 Beeckman, *Journal*, I, pp. 24–25 (texts from 1613).

40 Beeckman, *Journal*, I, pp. 260–261.

new quantity caused by Earth's attraction.[41] As for the origin of this "attractive force," Descartes drew upon the scholastic doctrine of *continuous creation*: God, by creating bodies at every moment with all their determinations, continuously communicates to the Earth the same attractive force at every instant.[42] This marks the first, albeit brief, appearance of a theological theme in a writing by Descartes; it would continue to have lasting significance. Also closely linked to the theological theory of "continuous creation" is Descartes's conception of time as composed of independent instants, each unrelated to the others".[43] Continuing along these lines, Descartes would later – although not without significant modifications and developments, including the abandonment of any attractive force – arrive at a theological justification of the very principle of inertia. Beeckman, by contrast, believed that God initially moved the material atoms, which then maintained their inertial motion without any further divine intervention.[44]

However, despite the originality of certain aspects of the young Descartes's research, it is undeniable that his main scientific assumptions and theories were already to be found in Beeckman. And this holds true even though Descartes, years later, would try to deny the obvious influence that the Dutch scientist had exerted on him. Offended by Beeckman's lack of discretion – by claiming the original inspiration for the *Compendium*, he also presented himself as Descartes's teacher – Descartes was enfuriated and, in October 1630, sent Beeckman a long, insulting, and acrimonious letter: "I did not learn any more from the reveries of your Mathematico-Physics than from the *Batrachomyomachia*. Has your authority ever moved me? Have your reasons ever

41 *AT* X, 58–61, 75 f., 219.

42 See *AT* X, 77–8. Cf. Richard T. W. Arthur, "Beeckman, Descartes and the Force of Motion." *Journal for the History of Philosophy* 45 (1), 2007: 1–28.

43 Cf. *AT* X, 58: Beeckman, *Journal*, I, p. 262 ("*cum autem momenta haec sint individua*", etc.) and Descartes to Chanut, 6 Juin 1647: "all moments of the duration [of the world] are independent of one another" (*AT* V, 53). Interpreters disagree on the Cartesian notion of "moment": for Martial Gueroult, *Descartes selon l'ordre des raisons*, Paris, Aubier, 1954, I, pp. 272–285, these are instants without duration; a position contested by Jean-Marie Beyssade, *La Philosophie première de Descartes*, Paris, Flammarion, 1979, pp. 130–142. According to Jorge E.K. Secada, "Descartes on Time and Causality", *The Philosophical Review* 99, no. 1 (1990), pp. 45–72, and Daniel Garber, *Descartes' Metaphysical Physics*, University of Chicago Press, 1992, pp. 266–273, Descartes is neutral on the issue. See also Geoffrey Gorham, "Descartes on Time and Duration." *Early Science and Medicine* 12, no. 1 (2007), pp. 28–54.

44 See Beeckman, *Journal*, I, p. 132: "*Deus corpora atoma primo movit non minus quam creavit; motis semel nunquam quiescebant, nisi ab invicem impeditis*". On Beeckman's theological thought, see Ben Van Acker, *Isaac Beeckman (1588–1637) and the Rise of Modern Science: An Exploration of Beeckman's Theological Thought in the Context of His Mechanical Philosophy*, M.A. Thesis, Evangelische Theologische Faculteit, Leuven, 2019, esp. pp. 133–134.

persuaded me? But you apparently claim that I believed and approved of many of your views as soon as I learnt of them. However, if that is true, you must be persuaded that I did not learn them from you, but rather that I was incited to approve them because I had already come to the same views myself". This was followed by further jabs – clearly exaggerated, unless driven by deeper personal reasons – about a mental illness that had supposedly made Beeckman happy by rendering him unaware of his condition, and about the utter worthlessness of his handwritten notes, of which the most valuable part, according to Descartes, was the binding.[45] A cold reconciliation followed, but the last letter Descartes ever wrote to his former master and one-time friend remained thoroughly arrogant: Descartes claimed to have a "true demonstration" of the instantaneous propagation of light, while poor Beeckman – who had reason to believe that light has a speed, albeit an extremely high one – was accused of all sorts of sophistry and faulty reasoning.[46]

But this is a constant trait in Descartes: "Before me, no one" (*nemo ante me*). Any precursor had to be downplayed, minimized, if not erased.[47] Beeckman, like many others, was merely a sharp mind without true genius, incapable of reaching the first principles of things: the world, according to Descartes, could have done without him. When the Dutch scientist died before the age of fifty, Descartes could think of nothing better to say – in an attempt to console a mutual friend – than that, since the span of earthly life is short compared to eternity, "we shouldn't worry too much if we are called a few years earlier or later".[48]

3 In Search of Himself: Journeys, Dreams, Projects

Descartes's personal notes, which he guarded jealously in a parchment notebook, had a troubled history. Found among his papers after his death, they passed from hand to hand until they eventually disappeared without a trace. Apart from a few excerpts quoted by Baillet, only a partial transcription by Leibniz in 1676 survived. This was published in the 19th century by Foucher de Careil – before it, too, was lost – under the title *Cogitationes privatae* ("private thoughts").[49]

45 Descartes to Beeckman, 17 October 1630 (*AT* I, 159 f.; *CC* I, 65–66).

46 Descartes to Beeckman, 22 August 1634 (*AT* I, 310 f.; *CC* I, 120).

47 See *AT* VII, 549 (7th Replies); *AT* VIII–2, 347.

48 Descartes to Colvius, 14 Juin 1637 (*AT* I, 379; *CC* I, 164).

49 Texts in *AT* X, 179–88, 213–48. See Henri Gouhier, *Les Premières Pensées de Descartes. Contribution à l'histoire de l'anti-Renaissance*, Paris, Vrin, 1958; G. Rodis-Lewis, *Le développement de la pensée de Descartes*, pp. 37–93.

These loose notes, perhaps written in imitation of Beeckman's *Journal*, offer a direct glimpse of Descartes's reflections following his encounter with the Dutch scientist. The first entries date from January 1619 and begin with a disquieting declaration: "actors, taught not to let any embarrassment show on their faces, put on a mask. I will do the same. So far, I have been a spectator in this theatre which is the world, but I am now about to mount the stage, and I advance masked" (*larvatus prodeo*).[50]

This note has inspired many interpretations, even fuelling speculation about Descartes's alleged involvement with the Rosicrucians, supposedly an esoteric sect much talked about in German circles at the time.[51] Yet, once again, reality proves less romantic. Descartes did indeed seek information about the elusive Rosicrucians, and he also showed interest in occult doctrines (the "curious sciences" that he would later mention in the *Discourse on the Method*) and in so-called "miracles" – or rather what we might today call special effects, created with devices manipulating light and air to simulate real phenomena. These were themes closely linked to the "natural magic" explored by the Italian naturalist Giambattista Della Porta (1536–1605), and they were possibly to be included in Descartes's projected and never-written *Thaumantis regia*.[52] All this, however, only demonstrates the breadth of Descartes's interests and his momentary inability to channel them in a single direction (at the time, he also dabbled in painting, military architecture, and the Flemish language).[53]

It is true, nonetheless, that an air of ambiguous tension permeates much of Descartes's published work. He feared the external world, dreaded exposure, and wanted first to gauge others' reactions – often recalling the anecdote of the painter Apelles, who secretly observed how people reacted to his works of art. In a 1629 letter to Mersenne, he declares that he wants to publish anonymously a scientific essay (the future *Meteors*), while "hiding behind the painting to hear what people say".[54] This tendency was especially strong in Descartes's youth. But that "mask" he felt compelled to wear in 1619 would never be truly

50 *AT* X, 213 (*CSM* I, 2). See Jean-Pierre Cavaillé, *Descartes. La fable du monde*, Paris, Vrin, 1991, pp. 302–312.

51 Rumours concerning Descartes's affiliation with the Rosicrucians were already circulating at the time, at least since Schoock's *Admiranda methodus* of 1643 (cf. *AT* VIII–2, 142), but for Baillet, *Vie*, I, p. 91, already in 1623.

52 See also Descartes to [Condren?], [October 1629?], *AT* I, 21; *CC* I, 17). On Della Porta, cf. G. Rodis-Lewis, *L'Œuvre de Descartes*, Paris, Vrin, 1971, I, pp. 87–88.

53 Descartes to Beeckman, 24 January 1619 (*AT* X, 151–152; *CC* I, 3).

54 Descartes to Mersenne, 8 October 1629 (*AT* I, 23–4; *CC* I, 17–18).

abandoned.[55] He lived in solitude, far from his homeland, constantly changing residence and even at times concealing his address to avoid disturbance of his meditation and research. Despite his ambition and desire for recognition, he never loved the crowd, the clash with public opinion, with authority, or, more generally, with anything except himself. He would later try, especially in the *Discourse on the Method*, to place a rhetorical screen between his ideas, sometimes too audacious, and their potential audience.[56]

In spring 1619, Descartes entered a long period of instability that lasted nearly a decade. In April he set out again, once more choosing the army. "I am still uncertain where fate might carry us, and where we will be allowed to settle," he wrote somewhat melodramatically to Beeckman, quoting Virgil: mechanics and geometry could wait until the first stop.[57] He headed first toward Denmark (though it's unclear whether he ever reached Copenhagen, where Beeckman sent him a letter in May), then to Frankfurt in Germany for the coronation festivities of Emperor Ferdinand II of Habsburg. He planned to enlist again and probably did so in the army of Maximilian of Bavaria, head of the Catholic League and France's ally. But Europe was in turmoil. The Bohemians, already in rebellion the previous year, refused to recognize the new emperor and elected their own king: the Protestant Frederick, Elector Palatine, whose daughter, Princess Elizabeth, would later become one of Descartes's closest correspondents. War soon erupted against Frederick, led by the Habsburg allies under Maximilian – a war in which Descartes did not take part. In fact, it's not certain that he ever fought in any battle.

After summer, Descartes sought winter shelter, since battles were not waged in the cold season. He probably stayed in a German principality, possibly in the Duchy of Neuburg on the northern Bavarian border.[58] And there, on the night between 10 and 11 November 1619, he had his famous three dreams.

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55 In early 1642, responding to Father Bourdin's 7th Objections, Descartes declares that he will "take off the mask" (*illam* [*larvam*] *detraho* – AT VII, 454), but only because he did not recognize himself in the "mask" that he considers Bourdin to have artificially imposed on him. As we shall see, his replies to the 7th Objections are far from devoid of opportunistic disguise (cf. below, p. 169).

56 On dissimulation and other rhetorical strategies in Descartes, see Fernand Hallyn, *Descartes. Dissimulation et ironie*, Genève, Droz, 2006; Anne Staquet, *Descartes avance-t-il masqué ?*, Bruxelles, Académie royale de Belgique, L'Académie en poche, 2015.

57 Descartes to Beeckman, 23 April 1619 (*AT* X, 162–3; *CC* I, 6).

58 Baillet does not mention Neuburg in the first version of his *Vie*, but in the later *Abrégé* (1692).

Almost everything known about these dreams comes from Baillet, that is, from a very unreliable source. Leibniz, apparently uninterested, transcribed only a marginal note at the beginning of Descartes's account: "On 10 November I began to understand the foundations of a marvellous invention (*inventum mirabile*)".[59] Baillet, instead, paraphrases the full dream narrative from the *Olympica*, a text found in the same manuscript as the *Private Thoughts* but written from back to front in the notebook.[60]

The published fragment includes both the dreams and Descartes's own interpretation. The latter is perhaps more significant than the precise content of the dreams, some of which were disturbing, others reassuring. Facing a dictionary – perhaps Goclenius's *Lexicon philosophicum*[61] – Descartes immediately thinks of the unity of the sciences. Reading a line from the Latin poet Ausonius, he grasps the inner connection between philosophy and wisdom: *quod vitae sectabor iter?* – "What path will I follow in life?" The theme of the unity of knowledge, which would constantly guide Descartes's thought, reappears in other fragments[62] that speak of rediscovering unity beneath the mask currently obscuring the sciences. But what that mask consists in, and what exactly that unity or interconnectedness might be – Descartes still does not know, or at least does not write.

To interpret his 1619 dreams, even Sigmund Freud has been called on, followed by various psychiatrists and historians of philosophy of every sect and school. Interpretations have been as varied as they are purely speculative: ecstatic illumination, nervous breakdown, mystical crisis, depression, guilt, sexual perplexity, self-awareness, esoteric connection to the Rosicrucians, symbolic parricide, or rejection of his father's profession. Everything has been said – again and again – but with little conclusive evidence. Perhaps it is more useful to see the whole narrative as fitting within a precise Renaissance *topos*. From Vives to Cardano, dream interpretation was a thriving genre in the 16th century. And Descartes's early notes are steeped in Renaissance culture: enthusiasm, cosmic harmony, elemental conflict, Bruno-esque fury, natural magic, mnemonic techniques, poetic imagination as superior to cold philosophical reasoning, and the myth of free will as a divine gift.[63] All this is mingled with

59 *AT* X, 216.

60 *AT* X, 178–88. For De Raey's version of this episode, and more details on the different sources available, see Strazzoni (2022), pp. 813–14.

61 See Alan Gabbey, Robert E. Hall, "The Melon and the Dictionary: Reflections on Descartes's Dreams", *Journal of the History of Ideas*, 1998, pp. 651–668.

62 See especially *AT* X, 215.

63 On these Renaissance legacies, see Paolo Rossi, *Logic and the Art of Memory: The Quest for a Universal Language* [1960], Bloomsbury Academic, 2000; Cesare Vasoli, *Le Rapport*

mathematical and physical research, in which the triangle is defined (for the first and last time) as a "hieroglyph of divinity".[64] Descartes is not yet "Cartesian", some 20th-century readers have quipped[65] – perhaps too fond of the idea of a timeless Cartesianism, independent of its creator's actual thoughts and fluctuations.[66]

Critics have especially tormented themselves over the meaning of the "marvellous invention" of which Descartes claims to have glimpsed the foundation on the night of 10 November 1619 – and again a year later, as noted in the margins of the *Olympica* for 10 (or 11) November 1620.[67] The texts are silent, so speculation abounds: was it his new philosophical method? Was it analytic geometry? Was it the *cogito ergo sum*? Or was it some important scientific or mathematical theorem? But perhaps these passages have been overestimated, since, in themselves, they offer little concrete insight into Descartes's real intellectual development. In his *Discourse on the Method*, he speaks not of dreams or inspiration but only of a room heated by a stove (a *poêle* in French, or a *Stube* in German) – a cozy place where he spent the winter of 1619–20 in tranquil meditation. Baillet, carelessly merging the *Discourse* and the *Olympica*, places the dreams there too.[68]

Since that night, winter was to become a symbolic space for Descartes: a time of deep reflection. In 1619 he linked it with his "marvellous science"; in 1637 with the method, and three years later, with his metaphysics – the protagonist of the *Meditations* also being described as sitting in winter clothes by the fire. Descartes disliked the heat of southern cities. He writes to Guez de Balzac:[69] "If you fear the northern winters, tell me what shades, what fans, what fountains could so well protect you at Rome from the discomforts of heat, as a stove or a large fire would exempt you here from getting cold?" (*CC* 1, 84). Ironically, he would die in freezing Stockholm. However, some coincidences

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entre les "Olympica" et la culture de la Renaissance, in *Descartes et la Renaissance*, edited by E. Faye, Paris, Champion, 1999, pp. 187–208.

64 *AT* X, 229.

65 See Henri Gouhier, "Comment Descartes est devenu cartésien", in Id., *Essais sur Descartes*, Paris, Vrin, 1937.

66 On Descartes's early philosophical reflections, see also the articles collected in the recent volume *Mirabilis scientiae fundamenta. Das Erwachen der kartesischen Philosophie*, ed. by Dan Arbib, Vincent Carraud, Édouard Mehl, and Walter Schweidler, Baden-Baden, Verlag Karl Alber, 2023.

67 *AT* X, 179 (Baillet: 11 November); 216 (Leibniz: 10 November). For a survey of the various hypotheses about such an "invention", see Rodis-Lewis, *L'Œuvre de Descartes*, vol. 1, pp. 46–47.

68 Baillet, *Vie*, I, pp. 77–86.

69 Descartes to Guez de Balzac [May 1631] (*AT* I, 204; *CC* 1, 83–84).

of dates are striking: on 10 November 1616, he received his law degree in Poitiers; on 10 November 1618, he met Beeckman; on 10 November 1619, he had the "marvellous invention" dream – repeated again on 10 or 11 November 1620. Too many coincidences[70] not to suspect that he deliberately gave these dates to highlight key moments, regardless of their possibly corresponding to any real discoveries. Thus, the story of the three dreams is best understood as a symbol of Descartes's final choice of a way of life – the beginning of a long philosophical journey – not the outcome of his research.

Be that as it may, his 1619 nocturnal "illumination" had no visible effects. After wintering in the *Stube*, Descartes headed in early spring for Ulm, a strategic city between Frankfurt and Vienna. There, he may have met the German mathematician Johann Faulhaber, who was also interested in the Rosicrucians and had recently published works blending mathematics and mysticism. This could explain the traces of contact with German mathematicians found in Descartes's *Private Thoughts*.[71]

On either 23 September (Leibniz) or 23 February (Baillet) 1620,[72] Descartes made himself the promise to publish a revolutionary treatise by the following Easter. This was probably the *Thesaurus mathematicus*, of which title appears in his notes, attributed to a fictitious "Polybius Cosmopolitanus" and dedicated – perhaps ironically – to the "most celebrated Rosicrucian Brothers in Germany".[73] He was never to publish such a work, at Easter or afterwards. But the promise depended on an explicit precautionary condition: *if* I find "enough publishers", or "enough books" (Baillet and Leibniz disagree again here).[74] The scope of the project can be guessed from its interminable subtitle, describing it as a work that: "Provides the true means to solve all difficulties of this science and shows that the human mind can go no further in solving such problems; intended to awaken the laziness or defeat the rashness of those

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70 See also Descartes's letters to Mersenne of 13 November 1629, where he reveals his intention to write *The World* (*AT* I, 69–70; *CC* I, 35–6), of 13 November 1639 – exactly ten years later – where he writes that he has just begun writing the *Meditations* (*AT* II, 622) and 11 November 1640, where he announces the project of the *Principles* (*AT* III, 233).

71 *AT* X, 242. On Descartes and Faulhaber see especially Édouard Mehl, *Descartes en Allemagne* (*1619–1620*), Presses Univ. de Strasbourg, 2001, 2nd ed. 2019, pp. 185–218.

72 Leibniz's reading, handed down by Foucher de Careil, is perhaps the correct one: see G. Rodis-Lewis, *Descartes*, cit., p. 71 ff. (against *AT* X, 218).

73 *AT* X, 214. On the origin of the pseudonym: K. Hawlitschek, "Die Deutschlandreise des René Descartes", *Berichte zur Wissenschaftsgeschichte*, 2002, pp. 235–52. On the Rosicrucians: Henri Gouhier, *Les Premières Pensées*, cit., chap. 6–7; William R. Shea, "Descartes and the Rosicrucian Enlightenment", in *Metaphysics and Philosophy of Science in the 17th and 18th Century*, edited by R.S. Woolhouse, Dordrecht, Kluwer, 1988, pp. 73–100.

74 Leibniz's reading is again more likely: "books" (against *AT* X, 218).

who promise new miracles in all sciences, and also to lighten the burdens of those who exhaust all their mental energy grappling with the Gordian knots of mathematics".

The ideal of a *Mathesis universalis* or "universal science", or, more precisely, a "universal mathematics" – that is, a general science of quantities – was not new. It had circulated widely since the late 16th century. It was the ambition of François Viète, who envisioned a method capable of solving any mathematical problem, with the motto: *nullum non problema solvere* ("to leave no problem unsolved").[75] In Viète's wake, the concept of *mathesis universalis* was taken up by Adriaan Van Roomen, then by the Jesuit Pereira, and later by Johann Heinrich Alsted. Descartes clearly aligned with this tradition – even before his German retreat and dreams of winter 1619. As early as March of that year, he wrote to Beeckman: "what I want to write is not like Lull's *Ars brevis*, but an altogether new science that would propose a general solution of all possible questions in whatever genus of quantity, whether continuous or discrete, but each according to its own nature".[76]

This was his first step toward unifying arithmetic and geometry – a central goal of Descartes's mathematical project – by developing an algebra that could govern both discrete quantities like numbers and continuous quantities like geometric entities. In fact, in texts from this period, we can already see the early attempt (later known as "analytic geometry," though that term does not appear in Descartes's works) to draw a close parallel between arithmetic and geometry by classifying problems into distinct, corresponding categories. Descartes calls this "an infinite task not fit for one person alone". It is "incredibly ambitious", he adds, but "through the obscure chaos of that science I glimpsed some light, thanks to which the thickest darkness might be dispelled".[77] Even the *Algebra* that he may have shown Beeckman years later, in a more finalized form, bears the same ambition. Yet he had not reached *La Géométrie*, published in 1637 alongside the *Discourse on the Method*. Based on Beeckman's excerpt, Descartes's attempt to reduce all mathematical questions to two-dimension spatial representations was still a mere sketch at this time.[78]

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75 Mersenne mentioned Viète's program in his *Vérité des sciences*, Paris, 1625, p. 452. Descartes writes about it with sarcasm, and precisely to Mersenne, on 3 May 1632, *AT* I, 244; *CC* I, 95.

76 Descartes to Beeckman, 26 March 1619 (*AT* X, 156–7; *CC* I, 5). See Giovanni Crapulli, *Mathesis universalis. Genesis of an idea in the 16th century*, Rome, Edizioni dell'Ateneo, 1969.

77 Descartes to Beeckman, 26 March 1619 (*AT* X, 156–7; *CC* I, 5). With a marginal note from Beeckman: « *Ars generalis ad omnes quaestiones solvendas quaesita* ». See Pierre Costabel, *Démarches originales de Descartes savant*, Paris, Vrin, 1982, pp. 27–38.

78 See *AT* X, 333–4, and Beeckman, *Journal*, III, pp. 94–5. See also Sasaki, *Descartes' Mathematical Thought*, cit., pp. 159–76.

The issue of the relationships – and possibly the unity – among the sciences was probably the focal point of the *Studium bonae mentis*, another unfinished and now lost work, dating probably from the early 1620s. Descartes dedicated it to someone named "Musæus," whom some scholars again identify as Beeckman. If Baillet – our only source – is correct, it was Descartes's first attempt at a "story of his mind": a kind of early draft of the *Discourse on the Method*. It probably covered his school years, his curiosity about the Rosicrucians and the attraction they exerted on him, particularly in connection with the idea of a universal science ("a new wisdom, that is, the true science not yet discovered"), and also more philosophical themes such as the distinction between bodily memory and purely intellectual memory – an issue that was to reappear in later works.[79]

All this work, or rather wishful thinking, fits into an existential context which remains uncertain. Indeed, very little is known about Descartes in the 1620s, especially in the first half of the decade. He eludes biographers' grasp, except Baillet, who offers a number of detailed anecdotes – even about how Descartes dressed while walking about Paris[80] – but often without any verifiable source.

However that may be, for Descartes this was a period of travel. After spending most of the years 1622–1624 in France, he resumed his wanderings. He certainly passed through Italy in 1625, but his trip was much shorter – and much less picturesque – than Baillet thought or imagined, since his main goal was that of being paid for "some mules" formerly owned by the cousin of his mother and sold to a Lyon merchant.[81] Descartes stayed just a few weeks on Italian soil, probably only in Piedmont (Turin and Gavi). He did not visit Venice, even less the sanctuary of Loreto (where some biographers want to send him at any cost),[82] nor Florence or Rome – and he certainly did not meet Galileo.[83] In 1626 he was in Paris, where he began to reside more steadily and made the acquaintance of Marin Mersenne (1588–1648), a Minim friar and future

79 The excerpts from the *Studium* quoted or paraphrased by Baillet are found in *AT* X, 191–203 (see especially p. 193, 201).

80 Baillet, *Vie*, I, 130–31: "he was dressed in a simple green taffeta".

81 See Erik-Jan Bos's blog, "Descartes in Italy: to sell some mules" (2022) https://decodingdescartes.nl/2022/04/22/382/) – French version in *Bulletin cartésien*, 51 (2019). According to Baillet, *Vie*, I, 117–128, Descartes left France for Italy in September 1623 and came back in 1625.

82 Descartes had indeed planned to go to Loreto around 1620, see his *Olympica*, AT X, 218, but this is the only mention of the Italian sanctuary in his entire work.

83 Descartes to Mersenne, 11 October 1638: "I never met or had any communication with him" (*AT* II, 387; *CC* I, 395).

collaborator, intellectual prompter, and friend, as well as an untiring facilitator of the scientific and philosophical debates of the age.[84]

Great uncertainty also surrounds the events known to us through the few letters – or rather, the few surviving fragments of correspondence – from this period. The fact is that Descartes himself seems unsure of what to do. At one point, in 1625, he even attempted to return to the judiciary by purchasing an official position (as was common practice under the *ancien régime*) for which he sought his father's assistance. That same year, however, his father gave up his own post as counsellor and passed it on to the eldest son from his second marriage. In any case, Descartes's attempt to reestablish contact with his father was unsuccessful – according to Baillet, due to some logistical mishaps, but more likely due to a persistent lack of communication which the official biographer chooses not to explore in depth.[85] Joachim Descartes died in 1640 without ever seeing his son again – at least not after 1628. And Descartes, upon learning via Mersenne of his father's death, responded with just a few lines at the end of a long letter devoted to other matters.[86]

What can be stated with historical certainty is that, between 1627 and 1628, Descartes participated in a meeting in Paris with Cardinal Guidi di Bagno, the papal nuncio and future employer of the libertine Gabriel Naudé, which was also attended by Cardinal Pierre de Bérulle (1575–1629), former chaplain to Henry IV and founder of the religious society of the Oratory. The meeting – which Descartes briefly recounts in a letter dated 1631 – also included Mersenne and other intellectuals and scientists,[87] among them the alchemist-chemist Chandoux, a virtually unknown figure whose first name and literary production historians have discovered only recently.[88] During the meeting, Descartes intervened against Chandoux, and "made the whole company acknowledge what power the art of reasoning well has over the minds of those who have no more than average knowledge, and the extent to which my principles are better established, more true and more natural, than any of those currently received in the learned world". This is the first sign of the anti-elitist attitude that would characterize Descartes's mature philosophy (see the famous incipit

84 We will return to Mersenne below, see chapter 5.

85 Baillet, *Vie*, I, 129–30 (= *AT* I, 4–5; *CC* I, 10–11).

86 Descartes to Mersenne, 3 December 1640 (*AT* III, 251).

87 Descartes to Villebressieu, summer 1631 (*AT* II, 213; *CC* I, 88).

88 See Nicolas de Villiers, sieur de Chandoux, *Lettres sur l'or potable, suivies du traité De la connaissance des vrais principes de la nature et des mélanges et de fragments d'un Commentaire sur l'Amphithéâtre de la sapience éternelle de Khunrath*, Textes édités et présentés par Sylvain Matton avec des études de Xavier Kieft et de Simone Mazauric, Paris/Milan, SÉHA/ARCHÈ, 2013.

of the *Discourse on the Method*) and also marks his definitive overcoming of any attraction to Renaissance magic, based on the supposedly supernatural qualities of the magician-scientist: the philosopher is a man like any other, who comes to the truth not because he is more intellectually gifted, but because he follows the right scientific method. Descartes presented his ideas with such passion and persuasive power that he was later received – according to Baillet, the sole source on this point[89] – by Bérulle himself, who encouraged him to continue his research. Descartes does not mention this fact in his letter to Beeckman, but recalls that the attendees urged him to put the results of his reflections into writing – a suggestion he would indeed follow.

4 The *Regulae ad Directionem Ingenii*

With the *Regulae ad directionem ingenii* ("Rules for the direction of the mind"), the archaeology of Descartes's thought is founded on significantly more substantial material than his earlier fragmentary notes. The *Regulae* are an unfinished Latin work, discovered among Descartes's papers after his death and published in 1701, after a Dutch translation based on a different manuscript had already appeared in 1684.[90] With the *Regulae*, the epistemological turn of Descartes's thought is fully accomplished. The *Regulae* focus on the possibility of certain knowledge and the method to acquire it – and this will henceforth be the central issue of all Cartesian philosophy. This question is already treated here in considerable depth and accompanied by important reflections in various thematic areas. The *Regulae* allow us to draw a well-defined picture of Descartes's thought at the end of the 1620s: a thought still evolving – as it always will be – but beginning to take definite shape, already displaying, alongside ephemeral elements, features destined to endure.

89 *Vie*, I, p. 165. Baillet bases himself on an account by Clerselier, which has been lost like all the others – true or invented – that he quotes.

90 Both versions are to be found in the critical edition established by Giovanni Crapulli: R. Descartes, *Regulae ad directionem ingenii*, The Hague, M. Nijhoff, 1966. An important new manuscript copy has been discovered recently in Cambridge: see *René Descartes. Regulae ad directionem ingenii: An Early Manuscript Version*, edited and translated by Richard Serjeantson and Michael Edwards, Oxford, OUP, 2023. See I. Agostini, F. De Buzon, and T.R. Dika, "A Cartesian Event: The *Rules for the Direction of the Mind*, Cambridge Manuscript", *Revue de métaphysique et de morale*, 120/4 (2023), pp. 513–528; and John A. Schuster, "The discovery of the century – an early version of Descartes' *Regulae*: more questions than answers?", *History of European Ideas*, 50 (2023), pp. 872–879. See also the recent commentary (based also on the Cambridge manuscript) by Tarek R. Dika, *Descartes's Method. The Formation of the Subject of Science*, Oxford, OUP, 2023.

We do not know exactly where and when Descartes wrote the *Regulae*. The work emerges almost out of nowhere, with no explicit mention in his correspondence and only a few partial anticipations in earlier writings. Baillet cites some passages while discussing events in Descartes's life in 1623 but does not give a firm dating.[91] We can only offer conjectures: the composition of the *Regulae* can be reasonably placed between 1625 – when Descartes began living more permanently in Paris after years of travel[92] – and 1629, when he was deeply involved in other projects and had already taken a position "on all the foundations of philosophy".[93] Additional evidence comes from the mathematical content, which closely resembles ideas found in other writings by Descartes (and Beeckman) between 1625 and 1628.[94] Even the title of the *Regulae* is uncertain: manuscript and printed sources disagree between *Regulae ad directionem ingenii* ["Rules for the Direction of the Mind"], *Regulae de inquirenda veritate* ["Rules for the Search for Truth"], and the more extensive French version *Règles utiles et claires pour la direction de l'Esprit en la recherche de la Vérité* ["Useful and Clear Rules for the Direction of the Mind in the Search for Truth"].[95]

The plan of the *Regulae* announces three parts, each containing twelve rules. The surviving text includes a total of only twenty-one rules, with only the titles of the final three. As Descartes explains at the end of Rule XII, the first part was to be devoted to general methodological principles and self-evident propositions; the second to problems that are clearly understood but lack solutions (such as mathematical equations with one or more unknowns); and the third to issues that are not yet fully understood (such as problems involving empirical data).[96] However, the text is neither systematic nor uniform. The writing is extraordinarily complex, and often obscure, due to the interweaving of different themes and repeated refinements on the same issues,

91 Baillet, *Vie*, I, pp. 112–5.

92 In Rule II, Descartes states that he is "now freed from the oath which bound [him] to [his] master's words and [...] old enough to be no longer subject to the rod" (*AT* X, 364; *CSM* I, 11). A work begun in Paris and left unfinished is mentioned in the letter cited below, p. 37, note 2.

93 Descartes to Mersenne, 8 October 1629 (*AT* I, 25; *CC* I, 18).

94 Cf. Pierre Costabel, *Demarches originales de Déscartes savant*, cit., pp. 49–62 (see also Marion's edition quoted below, Annexes III–V). In his edition, Crapulli is inclined to an earlier dating (*op. cit.*, pp. 95–7).

95 This latter title is adopted in the heavily annotated French translation edited by Jean-Luc Marion: R. Descartes, *Règles utiles et claires pour la direction de l'esprit en la recherche de la vérité*, La Haye, Nijhoff, 1977 (see pp. 85–87 for a discussion of the different titles). The newly discovered Cambridge manuscript is untitled.

96 *AT* X, 428–31; *CSM* I, 50–52.

all designated with significant terminological ambiguity ("things," "natures," "entities," "ideas" appear throughout the *Regulae* without ever being clearly defined). This has led to the plausible hypothesis that the text is layered and drawn from different periods – which, far from resolving the question of its dating, only makes it more difficult.[97]

The *Regulae* open with a fundamental assertion for Cartesian philosophy and modern thought in general. So far, writes Descartes in Rule I, intellectual pursuits have been fragmented, neglecting the unity of science, which stems from the unity of the human mind. Therefore, the primary task is to study the "right mind," or "good sense" – imperfect translations of the Latin term *bona mens* (the same concept at the heart of the unfinished *Studium bonae mentis*, to which the *Regulae* may possibly be linked). The human mind is the source of all knowledge: like the sun, it illuminates the most varied objects while itself remaining the same.[98] This line of reasoning will lead, in about a century and a half, to Kant's "Copernican revolution" and, later, to the Neo-Kantian interpretations of Cartesianism (from Natorp to Cassirer). For now, Descartes is calling for a preliminary examination of the cognitive powers of the human mind: "At least once in our life" – he repeats this three times in Rule VIII as a sort of moral engagement[99] – we *ought* to ask ourselves "what sort of knowledge human reason is capable of attaining," what its limits are, and what the proper path is to arrive at truth.

According to Descartes, the human mind is capable of grasping truth provided it is correctly guided. To this end, one must "reject all such merely probable cognition", embracing only what is perfectly self-evident and cannot be called into doubt (Rule II).[100] This decisive move shapes the entire trajectory of Cartesian philosophy, directing it first and foremost toward mathematics. Mathematics, with its branches of arithmetic and geometry, provides the prime example of a science consisting entirely in necessary and incontrovertible propositions. This does not mean that people should study only arithmetic and geometry, but rather that they should study only those objects about which they can attain a degree of certainty equal to that of mathematical

97 Jean-Paul Weber, *La Constitution du texte des Regulae*, Paris, SEDES, 1964. For Rule IV, Weber rightly supposes the existence of two alternative versions inserted one after the other in the text (caesura before the paragraph: "When I first applied my mind" – *AT* X, 374; *CSM* I, 17), but see Marion's remarks in his edition, p. 308, and Id., *Sur l'ontologie grise de Descartes* [1975], Paris, Vrin, 2000, pp. 55–59.

98 *AT* X, 359–361; *CSM* I, 9–10.

99 *AT* X, 395–398; *CSM* I, 29–31. The same imperative will return in the very first lines of the *Meditations* (*AT* VII, 17) and of the *Principles of Philosophy* (1st Pt., §1).

100 *AT* X, 362; *CSM* I, 10.

demonstrations (Rule II).[101] Mathematics thus becomes the criterion of all certain knowledge, while historical and humanistic knowledge is devalued – a constant theme throughout Descartes's work.[102]

Descartes's method directly mirrors the procedures of mathematicians: from intuitive knowledge of fundamental entities and universally valid axioms, one proceeds by means of rigorous chains of deduction that preserve truth to define theorems with the greatest possible certainty. Despite the disdain he would later express in the *Discourse on the Method*, Descartes is perhaps recalling doctrines taught at La Flèche. Clavius himself, though officially Aristotelian, was deeply influenced by Platonism and promoted mathematics as the ideal form of knowledge, opposing sectarian philosophical disputes.[103] Nevertheless, Descartes's intellectual horizon has expanded, and he now moves on with originality. If mathematics is the model of human knowledge, it is no longer regarded as exhausting the field of certain human knowledge. This is the decisive step taken in the *Regulae*, one that opens the way to mature Cartesian philosophy: "it is quite another discipline I am expounding [...] This discipline should contain the primary rudiments of human reason and extend to the discovery of truths in any field whatever." (Rule IV).[104]

Thus, the initial project of a "universal mathematics"– still present in some parts of the *Regulae*, where the only two occurrences of *mathesis universalis* in Descartes's corpus are to be found[105] – is largely surpassed: now Descartes seeks a method as certain as mathematics but applicable to all knowledge. *Mathesis universalis* concerns "order and measure" independently of any specific matter.[106] It certainly represents the first step towards science, since it defines quantitative relationships among all types of magnitudes ("numbers, figures, stars, sounds" – *ibid.*), but this is also its limit, since the objects of the mind are not all quantifiable. Descartes is acutely aware of his past trajectory, but also of his new goals: his ambition is now clearly defined. One must begin with mathematics because it is based on simple, universally accessible concepts – and for that reason, "as far as I could, I cultivated this universal mathematics," or general science of quantity. But now the time has come to move forward and to "broach seriously more elevated sciences" (Rule IV). The

101 *AT* X, 365–6; *CSM* I, 12–13.

102 Carlo Borghero, *La certezza e la storia*, Milan, F. Angeli, 1983, p. 24 ff., which refers to the *Discourse on the method* and the *Search for Truth* (*AT* X, 502–3).

103 See in particular the passage by Clavius quoted by G. Rodis-Lewis, *Développement*, cit., p. 32 f.

104 *AT* X, 374.

105 *AT* X, 378–379; *CSM* I, 19.

106 *Ibid.*

method thus originates in mathematics, adopting its rigour as a paradigm and raising it to the status of the ideal science – but then transcends mathematics itself to encompass all human knowledge at its very source: the thinking intellect. For the Descartes of the *Regulae*, method is an innate capacity, *nescio quid divini*,[107] a sort of divine spark of which we get a glimpse in the mathematicians of antiquity, who, however, concealed their procedures. Now is the time to rediscover them and search within the human mind itself for the deep root of the unity of knowledge.

"As soon as I just see the word 'secret' (*arcanum*) in some proposition, I begin to have a bad opinion of it", wrote Descartes to Mersenne in 1629, in a letter that closely reflects the theoretical framework of the *Regulae*.[108] However, even his own method is founded on a "secret", but a secret that can (and must) be revealed to all. Descartes unveils it in this letter after having alluded to it in the *Regulae*. This "secret" lies in the concept of "order", a notion that would become central to all his thought: this, and not the various *arcana* dreamt up by occult philosophers and magicians, nor the "keys" of Llull or Agrippa, nor the obscure formulas of alchemists, is the true foundation of science.[109]

"Order" is a universal epistemological criterion that encompasses not only mathematical quantities – defined in the context of *mathesis universalis* as "order and measure" – but also all the "things" accessible to the human mind, including itself and even God. Henceforth, Descartes's guiding imperative is the following: to discover the order in the various kinds of knowledge accessible to humans, for once that order is found, the truth will reveal itself. But of course, we must understand what Descartes means by the "order" of knowledge. The *Regulae* provide at least three definitions and three criteria of this concept: one in terms of the "clarity" of the objects that should be known first; another in terms of the "simplicity" of fundamental notions; and a third in terms of the logical "independence" of initial knowledge in relation to subsequent knowledge. But in fact, all three criteria are essential and inseparable: the greatest clarity belongs to knowledge that is not composed of multiple elements and does not depend on anything else.

Thus, order means beginning with the simplest and most accessible knowledge, and gradually rising to the more complex and difficult, which depends on the former. In this sense, all human knowledge can be organized into parallel chains of interconnected propositions, forming an alternative structure to

107 *AT* X, 373; *CSM* I, 17.

108 Descartes to Mersenne, 20 November 1629 (*AT* I, 78; *CC* I, 38).

109 On Llull and Agrippa: to Beeckman, 29 April 1619 (*AT* X, 164–5; *CC* I, 7–8). On magicians, astrologers and alchemists see *Discourse on the method* 1st Part, *AT* VI, 9.

the traditional Aristotelian classification of categories. "All things," Descartes writes in Rule VI, "can be arranged serially in various groups, not in so far as they can be referred to some ontological genus (such as the categories into which philosophers divide things), but in so far as some things can be known on the basis of others".[110] Within each series, one must find a *primum*, a self-evident truth – relative to that series – on which the others depend. "And in this," Descartes repeats, "lies the secret of the entire method: to observe attentively, in all things, what is most absolute."[111]

Ultimately, for the Descartes of the *Regulae*, the entire method boils down to this rule of "order", which is its founding principle and the origin of the method as a whole. It is precisely that same order that dictates that the first thing to be studied is the human mind and the proper use of its faculties, because the mind is the general condition of all science: "nothing can be known prior to the intellect, since knowledge of everything else depends on the intellect, and not *vice versa*".[112]

Here we may note the first symptom of the kind of circular reasoning often attributed to Descartes. He writes:

1. that we must study the human mind instead of dispersing ourselves among the particular sciences, since it is the source of all truth (Rule I);
2. that in the search for truth, we must use a method that enables the mind to acquire reliable and certain knowledge (Rule IV);
3. that such a method prescribes starting with what is simple and dependent on nothing else (Rules V–VI);
4. and therefore, first and foremost, we must study the human mind, on which all other knowledge depends (Rule VIII) – by which the circle is completed.

In reality, these supposed circles (deemed vicious by Descartes's critics) are best understood as expressions of the intrinsic dynamism of Cartesian thought – a thought that progressively enriches itself with new elements, and that, after initially and provisionally stating a postulate, gradually justifies it by the argumentative process. Descartes is fully aware of this. In the *Regulae*, he uses a comparison that could serve as a metaphor for his entire philosophy: the blacksmith, before working metals, must forge his tools using whatever materials are at hand – stones and rudimentary implements – which he later discards

110 *AT* X, 381; *CSM* I, 21. See Jean-Luc Marion, *Sur l'ontologie grise de Descartes*, about Descartes's opposition to the Aristotelian approach in the *Regulae*.

111 *AT* X, 381–382; *CSM* I, 21 (Rule VI). The same reference to the "secret" of the method can be found in *AT* X, 526 (*Search for Truth*).

112 *AT* X, 395–396; *CSM* I, 30 (Rule VIII).

once his proper tools are made. Similarly, the method must develop its rules starting from certain "formless precepts" that must first be refined and tested before they can be fully founded and applied to other objects of knowledge. The advantage of the method – compared to the blacksmith's art – is that its "seeds" are innate, and so it is only a matter of bringing them to light, making the mind aware of powers it already possesses.[113]

5 Intuition, Deduction, Simple Natures

Human knowledge, which the method requires to be examined before anything else, is divided by Descartes into two areas: knowledge of the thinking subject, and knowledge of the various thinkable objects (Rule XII).[114] The first, as has just been seen, precedes the second inasmuch as it is its condition. Within the thinking subject, the intellect must be distinguished from the lower cognitive faculties, imagination and sensibility. This tripartition will survive throughout the rest of Descartes's thought, even if it is later subject to different articulations and is often integrated with a fourth faculty: memory (which in the *Regulae* is sometimes identified with imagination).[115]

However, the boundary between mind and body is not clearly marked. In the *Regulae*, thought is generally considered to be a cognitive "virtue" or "power" (*vis cognoscendi*) that expresses itself in various ways, depending on whether it applies only to the intellect, which is purely spiritual, or also to the lower faculties, which are to be considered corporeal, since they are connected with the sensory organs and with "fantasy."[116]

Intellectual knowledge is the locus of truth and certainty, which are in themselves independent of any external experience. The intellect works essentially through "intuition" (*intuitus*), that is, the direct knowledge of incontrovertible truths. Here Descartes connects with a centuries-old philosophical tradition, although he claims to use the term differently from the ordinary Scholastic connotation – which is certainly true with regard to late Scholasticism. Nonetheless, "intuition", as Descartes understands it, still bears an important feature of "intuition" as it was conceived by the Thomist tradition. "Intuition" is

113 *AT* X, 397; *CSM* I, 31 (Rule VIII).

114 *AT* X, 411; *CSM* I, 39: "Where knowledge of things is concerned, only two factors need to be considered: ourselves, the knowing subjects, and the things which are the objects of knowledge".

115 For example in *AT* X, 416; *CSM* I, 42 (Rule XII).

116 *AT* X, 428, *CSM* I, 50 – translated as "cognitive powers" (Rule XII).

opposed, in Descartes as in Thomas, to "deduction": one has the "intuition" of something when one knows it immediately and with the highest certainty, such that all doubt is excluded; one makes a "deduction" when one acquires certainty by means of a discourse consisting in a movement or succession of thoughts (Rule III). The fundamental difference from the Thomist approach lies in the fact that, while Descartes limits the possibility of having intuitions to the intellect alone, for Thomas, on the other hand, intuition can also be supplied by the senses.[117]

From this standpoint, intuition precedes method and makes method possible. The function of method is not to teach us how to have intuitions (or deductions), but rather to clear the field of all the false and doubtful knowledge which can obstruct the free activity of the intellect. Once freed from prejudices and obstacles, the mind will effortlessly contemplate the truth of things: "method cannot go so far as to teach us how to perform the actual operations of intuition and deduction, since these are the simplest of all and absolutely basic. If our intellect were not already able to perform them, it would not comprehend any of the rules of the method, however easy they might be".[118]

As examples of intuitions, Descartes provides in the *Regulae* the immediate certainty that everyone has of existing and thinking (a first hint of the *cogito ergo sum*, but without any metaphysical corollary) and also the equally immediate certainty that a triangle is bounded by three sides (Rule III). With such examples, a basic epistemological equivalence is established between mathematical truths – taken as the model of knowledge – and truths of a different and not yet well-defined class, unrelated to material objects. It is also clear that Cartesian "intuitions" are not only representations of individual things. Intuitions can also consist of inferences or implications (Descartes uses the term *illatio*), provided they are immediate, grasped through a single act of the mind, such as the equivalence between 3+1 and 2+2.[119]

Contrary to the latter kind of cognitive act, inferences that imply the use of memory, by which present and past mental acts are connected, belong to the domain of "deduction", which has a different status precisely because it relies on something extra-intellectual. The distinction also has a psychological aspect, since Descartes admits that the same cognitive act can be, depending on the point of view, either an intuition or a deduction: for example, when

117 See Emanuela Scribano, *Angeli e beati: modelli di conoscenza da Tommaso a Spinoza*, Rome-Bari. Laterza, 2006, pp. 144–160.

118 *AT* X, 372; CSM I, 16 (Rule IV).

119 *AT* X, 369–370, 389; *CSM* I, 14–15, 26. See Desmond Clarke, *Descartes' Philosophy of Science*, Pennsylvania State Univ. Press, 1982, pp. 58–70.

I draw a consequence from a self-evident principle, I can do so either intuitively (that is, through a single act of thought) or deductively (that is, through a succession of mental acts).[120] An important consequence is that every deduction is in principle reducible to an intuition, and indeed, only when such a reduction is effective can deduction lead to conclusions that are absolutely certain.

To make such a reduction, an additional methodological tool is necessary: "enumeration," which produces a kind of comprehensive overview of the various steps of reasoning, reducing them in fact to a single one and reducing the contribution of memory to a minimum, if not eliminating it altogether. Descartes adds that enumeration must be "sufficient," that is, such that it omits no case or subgroup of cases (Rule VII).[121] Despite a certain argumentative indecision – also due to the fact that Descartes returns to the issue at least three times within the *Regulae* – the conclusion of his reflections seems clear: intuition, deduction, and enumeration ultimately merge into a single, simultaneous cognitive act, which becomes the standard of certain and indubitable knowledge (Rule XI).[122]

On the other hand, Descartes expels syllogism from his method, thus aligning himself with the entire scientific revolution and with much of early modern thought, from Bacon to Locke – with the significant exception of Leibniz. What is the defect of the syllogism that makes it so useless for science? For Descartes, as for many other early modern thinkers, the syllogism is heuristically sterile: it relies on general premises taken for granted, without any effort to demonstrate their correspondence to truth (Rule X). Therefore, human knowledge must be freed from the "fetters" of syllogistic reasoning, which binds reason to the exposition and clarification of what is already known, precluding any progress in knowledge.[123] The syllogism belongs instead to rhetoric, that is, to the art of persuasion, and has no place in science, which aims to enrich human knowledge (Rule XI). For Descartes, science seeks to discover truth, not to construct abstract formal systems for their own sake. The issue then becomes what truth-content intuitions might have that truly allows them to say something about the world and the nature of things. From this point of view, the issue of the subject of knowledge leads directly to that of its object.

According to Descartes, human intuition, the instrument by which the intellect knows truth, has a specific object, determined by the immediacy and simplicity of the cognitive act that characterises it: one does not have intuition, first

120 *AT* X, 369–370; *CSM* I, 14–15 (Rule III).

121 *AT* X, 387–389; *CSM* I, 24–26.

122 *AT* X, 407–409; *CSM* I, 37–38.

123 *AT* X, 388–389; *CSM* I, 25–26 (Rule VII). See S. Gaukroger, *Cartesian Logic: An Essay on Descartes's Conception of Inference*, Oxford Univ. Press, 1999, pp. 6–25.

and foremost, of complex truths, but rather of extremely simple "things" and self-evident (*per se notae*) truths that need no proof: both these kinds of object may be called "simple natures." At the time of the *Regulae*, Descartes believed that all human knowledge is based on a limited number of such "natures", and that certain knowledge is engendered by their orderly composition.

Yet what precisely these "simple natures" are is not easily grasped at first glance. Indeed, it is one of the concepts that has caused the most difficulties for Descartes's readers and critics. The term "simple natures" was already in use in the *Novum Organon* and other texts by Bacon, and it is not impossible that this was the historical source for Descartes's theory in the *Regulae*. But Descartes's simple natures, unlike Bacon's, are not components of reality (gold, for Bacon, is composed of the simple natures "yellow," "weight," "ductility," etc.). Descartes, it is true, sometimes states that simple natures are "things," and appears to come close to Bacon when he claims, for example, that the simple natures that make up a magnet must be collected through experience in order to know the true "nature" of magnetic phenomena.[124] Elsewhere, however, he explains that simple natures are not in the objects but constitute the way in which we apprehend the objects. And this seems to be the most meaningful sense: "we are concerned here with things only in so far as they are perceived by the intellect, we term 'simple' only those things which we know so clearly and distinctly that they cannot be divided by the mind into others which are more distinctly known".[125]

In short, the concept of "simple nature", in Descartes's intention, has a primarily epistemic value: it concerns things as they are "perceived by the intellect" and not things as such.[126] Examples of "simple natures" are "figure", "motion", "thought", "cause", "limit", but also privations of reality, such as "nothingness". The simplicity of such notions lies in the fact that they do not depend on others and are not further divisible. And this is true even if, in reality, it is impossible to distinguish them from the things in which they reside: a body is a body, not a composite of "extension" and "figure" (in this sense, the body is not equivalent to extension understood as a simple nature grasped by the intellect).[127] It remains true, however, according to Descartes, that the knowledge of simple natures comes *before* the knowledge of the things that arise

124 *AT* X, 427; *CSM* I, 49–50 (Rule XII).

125 *AT* X, 418; *CSM* I, 44 (Rule XII).

126 For a "realist" reading see instead Brian E. O'Neil, "Cartesian Simple Natures" (1972), in *René Descartes: Critical Assessments*, I, pp. 118–37.

127 *AT* X, 443–445; *CSM* I, 60–61 (Rule XIV): propositions such as "extension is not body" must be removed from the imagination *ut sint verae* ("if they are to be true"). See the relevant note by J.-L. Marion in his edition of the *Regalae* quoted above, and Jean-Marie Beyssade, *Descartes au fil de l'ordre*, Paris, Puf, 2001, pp. 89–104.

from their composition: to know what a "triangle" is, one must already know what an "angle" is, a "line", the number "three", and so on; it follows that the latter notions are "better known than the triangle."[128] Simple natures, in sum, make up the cognitive baggage proper to the human mind, which intuition grasps spontaneously.

What guarantees the truth of knowledge founded on simple natures? The problem is not addressed in its full dramatic scope, although Descartes distinguishes between mathematical knowledge of figures or geometric properties and the actual reality of the entities known, leaving it to physicists to decide on the latter.[129] However, his reconstruction of the process of perception, by which the human mind comes into contact with external objects, constitutes in fact a first attempt to answer the question of the correspondence between our knowledge of things and the things themselves. The basic elements of Descartes's solution in the *Regulae* are, regarding the *object* of knowledge, the reduction of bodies to parts of geometrically determinable matter, and, regarding the *subject*, the use of the essential tools of *mathesis universalis* (order and measure) as interpretive principles for the elaboration of sensory data.

Descartes reduces the entire perceptual process to a mechanical action of the objects on the sensory organs of the subject, respectively considered as the "seal" and the "wax". This is a simile of Aristotelian origin, to be taken literally: the external object truly modifies the sense organs, and their new configuration generates a motion that, through the nerves, is transmitted to the "common sense", where sensory data are gathered, and from there to corporeal imagination, also called "fantasy", an area of the brain where an "idea" is produced – that is, at this stage, a corporeal figure.[130] The entire process – not very clearly explained in its physiological aspects – can be interpreted in terms of simple and self-evident elements: motion and configuration of geometric entities. The fundamental simple nature here is precisely "figure", a mathematical schema that allows the interpretation of all physical reality. "Figure" plays an important representative role and initially guarantees the correspondence between modifications of the sentient body and external objects, even if later, when the "cognitive force" comes into action, the simile of the seal and wax becomes – as Descartes expressly notes – a mere "analogy." And it is here that a question begins to emerge, without yet being raised explicitly as such, that will become decisive in Cartesian thought: the dissimilarity between mental

128 *AT* X, 418, 422; *CSM* I, 44, 46 (Rule XII).

129 *AT* X, 448; *CSM* I, 62–63 (Rule XIV).

130 See *AT* X, 413–415; *CSM* I, 40–42 (Rule XII) and Jean-Marie Beyssade, *Descartes au fil de l'ordre*, cit., pp. 69–88.

cognitive states and the external objects they represent. Indeed, "in corporeal things nothing is found that is similar [to thought]", and a perceived colour no longer has anything to do with the movement of the material particles that caused it.[131]

Descartes's position on the question of knowledge of bodies brings us back to the cultural context of those years: the age of mechanism, in which the idea took hold that mathematics is the key to interpreting the entire material world – a thesis of Platonic origin that Descartes had embraced from the beginning, but which now finds its first application to the interpretation of human knowledge. Descartes's position in the *Regulae* is close to that of two founders of the seventeenth-century scientific revolution: Galileo and Kepler. Descartes certainly read the latter's works around 1628, if not earlier;[132] Galileo, on the other hand, was apparently unknown to him until 1634, when Beeckman lent him the *Dialogue Concerning the Two Chief World Systems*[133] – even though in *Le Monde* (1630–33) we will find a possible hint of his reading Galileo's *Saggiatore* (1623). Nonetheless, the consonance with Kepler's and Galileo's positions is no coincidence, and perhaps Beeckman's mediation – Descartes had briefly reestablished contact with him in the late 1620s – is not irrelevant. Galileo, in a famous page of the *Saggiatore*, spoke of the mathematical characters in which the "great book" of nature is written: triangles, circles, squares;[134] Kepler, for his part, affirmed the divine nature of geometry, which God placed in our minds to enable us to apprehend the world.[135]

Likewise, Descartes believed that the human mind can grasp the mathematical framework of reality, contemplating it with the help of imagination and interpreting experience by their means. However, Descartes's "simple natures" are not essences in the classical sense: they do not provide the definition of things, but are rather the constituent elements, from the point of view of human knowledge, of the essences of things. Furthermore, and above all, Descartes's simple natures are not reduced to the "mathematical characters" of Galileo or Kepler but also include the various elements of human cognitive experience (the act of thinking, willing, doubting). And this is the first sign of the shift, already foreshadowed in Rule IV, from *mathesis universalis*, that is,

131 *AT* X, 415; *CSM* I, 42 (Rule XII).

132 On Descartes and Kepler: Jean-Luc Marion, *Sur la théologie blanche de Descartes. Analogie, création des vérités éternelles et fondament* [1981], Paris, PUF, 1991, p. 195 ff.; G. Olivo, *Descartes et l'essence de la vérité*, Paris, Puf, 2005, pp. 291–315.

133 See Mersenne, 14 August 1634 (*AT* I, 303–4; *CC* I, 118).

134 Galileo Galilei, *The Assayer*, 1623 (in G. Galilei, *Opere*, Italian "National edition", vol. VI, p. 232).

135 See Johannes Kepler, *Harmonice mundi* (1619), bk. IV, chapter 1.

a general doctrine of quantities and proportions, to a more general science, for the time being without a well-defined scope – and also without a name. In Rule XII, Descartes distinguishes simple natures into three different groups:[136]

1. "material" simple natures, such as extension, figure, motion;
2. "intellectual" simple natures, such as, precisely, the mental states of cognition, volition, doubt;
3. "common" simple natures, that is, those referred both to material and intellectual "things", further subdivided into:
    a. simple natures referring to modes of existence of things, such as the notions of "existence," "duration," or their privation: "nothingness," "instant";
    b. simple natures governing relations between other simple natures, that is, general and indemonstrable axioms (called since the Stoics "common notions") such as the principle that "two things equal to a third are equal to each other."

Encouraged by this initial result, by which he believed he had delimited the scope of knowable things, Descartes could proclaim that "the whole of human knowledge consists uniquely in our achieving a distinct perception of how all these simple natures contribute to the composition of other things."[137] However, despite this apparent confidence, the text of the *Regulae* stalls at about halfway along the intended pathway, after partially addressing the examination of "perfectly understood" questions, for which Descartes merely applies logical-mathematical models and enunciates a method based on a few precepts: 1) to define the question preliminarily; 2) to clarify what is the unknown term to be found; 3) to analyse the single steps of the reasoning and reduce them to intuitive connections; 4) to use figures to represent proportional or equivalent relations, and then proceed to further simplification through simple graphic signs (and here, in Rule XVI, Descartes applies for the first time his new algebraic notation, expressing powers with exponent numbers and known quantities with the first lowercase letters of the alphabet).[138]

Contrary to "material" simple natures, "intellectual" ones are not given much attention: Descartes reiterates again and again that they are accessible through an innate "light" that allows the subject a direct view of his own psychic states, but otherwise does not go beyond affirmations that would hardly

136 *AT* X, 419–20; *CSM* I, 44–45.

137 *AT* X, 427; *CSM* I, 49 (Rule XII).

138 Cfr. *AT* X, 456; *CSM* I, 67–68. In the *Geometry* of 1637 Descartes will also introduce the use of *x*, *y*, and *z* for the unknowns.

seem profound or original to someone who is not already familiar with mature Cartesian thought: "If [...] Socrates says that he doubts everything, it necessarily follows that he understands at least that he is doubting".[139] As for God, there is little in the *Regulae* beyond the assertion that from the fact that "I am", one can also prove that "God exists" (Rule XII).[140] But how? The demonstration is left to the reader's inventiveness, even though Descartes perhaps never expected the *Regulae* to find a reader. At the conclusion of Rule IV, he even suggests that he had put them in writing solely for his own personal benefit.[141] In any case, there is too little for us to speak of a "metaphysics",[142] although, on at least one occasion, Descartes anticipates the future application of the tools of his method to theological questions. This is how we must interpret the perhaps deliberately cryptic reference to the rational foundations of Christian faith (that is, since Thomas Aquinas, the existence of God and the immortality of the soul), which should be revealed "by one or other of the two ways we have just described", that is, intuition or deduction, "as we may show at greater length at some time (*aliquando*)".[143] However, elsewhere in the *Regulae*, Descartes writes that the question of God – not even named here but unequivocally indicated as a "superior power" that "never deceives" (*numquam fallit*) – does not come "within the scope of method".[144] Can we or can we not philosophise about God? This speculative indecision will soon be resolved. But not in the manuscript of the *Regulae*, which Descartes leaves to decay in his drawer.

At the end of 1628, after a decade of a wandering life, Descartes made a decision that would remain firm: he settled permanently in the Netherlands – the ideal destination of his peregrinations. It is not known for sure whether he settled there as early as the autumn of 1628 or whether he spent the winter of 1628–29 in the Breton countryside, in order to improve his health.[145] In any case, he would return to France only for brief stays, and at least fifteen years

139 *AT* X, 421; *CSM* I, 46 (Rule XII).

140 *AT* X, 422; *CSM* I, 46 (Rule XII).

141 *AT* X, 379; *CSM* I, 20 (Rule IV): "I shall try to bring together and arrange in an orderly manner whatever I thought noteworthy in my previous studies, so that when old age dims my memory I can readily recall it hereafter, if I need to, by consulting this book, and so that, having disburdened my memory, I can henceforth devote my mind more freely to what remains".

142 On this point, see Ferdinand Alquié, *La Découverte métaphysique de l'homme chez Descartes* [1950], Paris, Puf, 2000, p. 78.

143 *AT* X, 370; *CSM* I, 15 (Rule III).

144 *AT* X, 424; *CSM* I, 47 (Rule XII).

145 See Descartes to Pollot, 1648 (*AT* V, 558).

would pass before his first return – without much enthusiasm since he always spoke rather poorly of his country and its capital: "the air of Paris inclines me to conceive chimeras rather than thoughts of a philosopher".[146] What drew him to the Netherlands was perhaps the cold climate, which he considered healthier, but above all the freedom of movement and research that only the United Provinces could offer at the time. First Franeker, then Amsterdam, Leiden, and various other abodes, often isolated and at a prudent distance from the world of scholars and centres of civil authority. It was in the Netherlands that the ferment of these years would bear fruit, in a vibrant and flourishing environment in which the reserved Descartes moved, at least initially, in perfect solitude.

146 Descartes to Chanut, May 1648 (*AT* V, 183).

CHAPTER 2

The 1630 Crisis and *The World*

1 The Creation of Eternal Truths

Descartes's decision not to complete the *Regulae* has no obvious explanation. The text breaks off abruptly in the planned third part as it approaches the task of tackling "imperfectly understood" questions – such as the nature of magnetism – which Descartes hoped to reduce to mathematical problems concerning magnitudes and proportions, preliminarily delimiting the body of empirical data to be examined and eliminating any element foreign to them.[1] The fact is that the laws of physics – as Descartes knew since first broaching dynamics – cannot be interpreted solely in terms of "simple natures" known through direct intuition; they require an external foundation based on the existence of a "lawgiver", which in turn can only be secured through a metaphysical reflection.

This may be the hidden background of an important passage in Descartes's letter to Mersenne dated 15 April 1630, regarding "some other treatises" begun "when I was in Paris" and then left unfinished – no doubt the *Regulae* and perhaps the *Studium bonae mentis*.[2] Descartes gives Mersenne "the reason" for this renunciation: "when I was working on them I gained a little more knowledge than I had when I started them, and wanting to take this into account, I was forced to start a new project, one a little larger than the first; in the same way that, if someone who started building a house for himself acquired some unexpected wealth and changed his status, such that the building he started was now too small for him, we would not blame him if we saw him start another house more suitable to his fortune".[3]

This is the first of a long series of architectural metaphors that will multiply in Descartes's subsequent writings, starting with the *Discourse on the Method*. However, despite Descartes's typical euphemistic tone, one cannot help but interpret his words as the recognition of a philosophical crisis: the house of the *Regulae* had become too small while he was in the process of building it, which forced him to launch another construction "more suitable to his fortune" – that

1 *AT* X, 431 (Rule XIII).

2 Descartes to Mersenne, 15 April 1630 (*AT* I, 137 ff.; *CC* I, 57). For a different hypothesis on Descartes's abandoning the *Regulae*, see Stephen Gaukroger, *Descartes: An Intellectual Biography*, Oxford, OUP, 1995, pp. 178–181.

3 Descartes to Mersenne, 15 April 1630 (*AT* I, 137 ff.; *CC* I, 57).

is, more suitable to the new conceptual openings that had presented themselves. And it was on this new building site – as the context makes clear – that he would elaborate his physics, in which he hopes eventually to include "whatever else [he] may learn" (*ibid.*).

Neither thematised nor designated explicitly in the *Regulae*, "metaphysics" suddenly and almost brutally emerges in the Cartesian corpus, from which, until that point, it had been entirely absent. The first symptom of this metaphysical awakening had already appeared in July 1629, when Descartes wrote to Guillaume Gibieuf that he had begun work on a "little treatise" – a work that, given the profession of his correspondent, can reasonably be supposed to concern God and the human soul. Gibieuf, a doctor in theology at the Sorbonne, was about to publish a significant book on the freedom of God and man.[4] On 15 April 1630, Descartes informed Mersenne that metaphysics was the subject he had "studied above all others" since arriving in the Netherlands, and that it was through metaphysics that he had been able to discover the foundations of physics.[5]

This lost metaphysical treatise, begun in 1629 at Franeker in Friesland – Descartes's first Dutch residence – is known to have occupied him for several months.[6] His stated aim, as he later wrote to Mersenne, was to demonstrate metaphysical truths, in particular the existence of God and the immortality of the soul, in order to silence the impudence of the atheists (against whom Mersenne himself had written a powerful volume in 1624: *L'Impiété des déistes, athées, et libertins de ce temps*).[7]

In his 15 April 1630 letter to Mersenne, Descartes makes a remarkable claim. He asserts that his treatise aims to demonstrate the existence of God

4 Descartes to Gibieuf, 18 July 1629 (*AT* I, 17–18; *CC* I, 16): "I [am about to] finish a little treatise I am starting, which I would not have mentioned until it was done, except that I was afraid the length of time it needed would make you forget your promise to correct it and add some finishing touches".

5 Descartes to Mersenne, 15 April 1630 (*AT* I, 144; *CC* I, 60): "this is the matter I studied above all others, and in which, by the grace of God, I have been satisfied to some extent".

6 Descartes to Mersenne, 15 April 1630 (*AT* I, 144; *CC* I, 60): "The first nine months I was in this country I worked at nothing else, and I believe you already heard me say I had planned to put something of this in writing".

7 Descartes to Mersenne, 25 November 1630 (*AT* I, 182; *CC* I, 74). Descartes possibly refers to La Mothe Le Vayer's *Dialogues*, published in 1630 – but see Alain Mothu's discussion of this point: "Orasius Tubero et le 'méchant livre' de Descartes", *La Lettre clandestine*, 4 (1995), pp. 525–538. See also Edouard Mehl, "Le méchant livre de 1630", *Libertinage et philosophie au XVIIe siècle*, 1 (1996), pp. 53–67.

in a manner "more self-evident than the demonstrations of geometry."[8] This is a striking assertion, especially coming from an author who, not long before, had identified geometry – and mathematics more generally – as the highest expression, and indeed the very standard of truth. The break with the program of the *Regulae* is obvious here, even if not yet conceptually explicit. Descartes is reluctant to go into detail and, in fact, guards the fruits of his reflections with great secrecy (particularly from Gibieuf), anticipating that he will still need a few years before completing and publishing the treatise – or perhaps destroying it altogether: "if I am not skilled enough to produce something worthwhile, I will at least try to be wise enough not to publish my imperfections".[9]

And yet, under the pressure of Mersenne's insistent doubts and questions (which we can only infer, since nearly all his letters to Descartes have been lost), something soon begins to emerge. Three letters are important in this regard, all addressed to Mersenne in the spring of 1630 – specifically on 15 April, 6 May, and late May or early June. Each of these letters focuses on the issue of God's power over so-called "eternal truths," and over mathematical truths in particular.

It is solely by divine decree, Descartes asserts, that it is true that "all lines drawn from the centre to the circumference [of a circle] are equal".[10] Eternal truths, therefore, are eternal only in an improper sense ("the truths that *you* call eternal"),[11] since in reality they depend upon God. To these examples drawn from mathematics, others will later be added, until – in several texts from the 1640s – Descartes comes to claim that all necessary truths depend on God, including the axioms of both ethics and metaphysics.[12]

On this matter, Descartes's position is virtually without precedent in the history of philosophy – and also without real successors, except for a few loyal Cartesians in the decades immediately following his death.[13] For Descartes, it

8 Descartes to Mersenne, 15 April 1630 (*AT* I, 144; *CC* I, 60). The same statement is to be found in Descartes's letters to Mersenne of 25 November 1630 and April 1637 (*AT* I, 182, 350–1; *CC* I, 74, 152).

9 Descartes to Gibieuf, 18 July 1629 (*AT* I, 18; *CC* I, 16): "for I do not expect to finish it within two or three years, and maybe after that I will decide to burn it, or at least not to let it escape my hands or those of my friends without it being well considered, for if I am not clever enough to do something good, at least I will try to be wise enough not to publish my imperfections".

10 Descartes to Mersenne, late May or early June 1630 (*AT* I, 149–50; *CC* I, 63).

11 Descartes to Mersenne, 15 April 1630 (*AT* I, 144; *CC* I, 60 – my italics).

12 A synoptic table of all Descartes's texts on the creation of eternal truths can be found in Marion, *Sur la théologie blanche de Descartes*, cit., pp. 270–1.

13 Among the possible sources, however, one could mention some passages of Montaigne (*Essais*, II, 12, ed. Villey, p. 527 ff.) as reported by Edwin M. Curley, *Descartes against the*

is God who decreed that 2 + 2 = 4, and it is God who ordained that the sum of the internal angles of a triangle equals two right angles. If this were not the case – that is, if mathematics existed from all eternity and were necessarily true – then God would be subject to a kind of supreme fate which would destroy His free will. God would resemble a pagan deity, like Jupiter or Saturn, and above all, He would not be omnipotent, since He would have no power over the order of mathematical truths but would depend on them Himself.

Some philosophers, Descartes observes, claim that "even if God did not exist, these truths would still be true"; but that inverts the proper order of things: "the existence of God is the first and the most eternal of all the truths there can be, and the only one from which all the others flow".[14] Otherwise, one is committed to atheism: for to deny the omnipotence of God is, ultimately, to deny His very existence. One must never say, then, that God could not do something; at most, we may say that an angel "could not do it".[15]

Although Descartes adopts here a position opposed to the entire preceding Western metaphysical tradition, he seems to direct his criticism above all against a specific adversary, without ever naming him explicitly: the Jesuit Francisco Suárez (1548–1617), author of the *Disputationes metaphysicae* (1597), the most important and influential metaphysical work of late scholasticism. It was Suárez who had written that even if, *per impossibile*, God did not exist, the "eternal truths" would nonetheless remain true. Obviously, Suárez's claim was intended as a counterfactual statement, far from any atheistic implications, but it was perfectly clear in positing the independence of the "eternal truths" from God.[16]

In stark contrast to Suárez, Descartes assimilates truths to created things, subjecting them entirely to divine power. In his letter of late May (or early June) 1630, he explicitly states that God "established" eternal truths with the same kind of causality by which He created everything else. He even adds that the eternal truths "are something" – thereby attributing to them a certain

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Skeptics, Harvard Univ. Press, 1978, pp. 38–40. As for Descartes's followers on this point, almost all minor French and Dutch thinkers, see Geneviève Rodis-Lewis, *Idées et vérités éternelles chez Descartes et ses successeurs*, Paris, Vrin, 1985; Emanuela Scribano, *Da Descartes a Spinoza. Percorsi della teologia razionali nel Seicento*, Milan, F. Angeli, 1988.

14 Descartes to Mersenne, 6 May 1630 (*AT* I, 149–50; *CC* I, 62).

15 Descartes to Beeckman, 17 October 1630 (*AT* I, 165; *CC* I, 69). But on this last point, another echo of Montaigne, see also Descartes to Heny More, 2 May 1649 (*AT* V, 273).

16 F. Suárez, *Disputationes metaphysicae*, XXXI, XII, § 38–47, and in particular § 45: "*si per impossible nulla esset talis causa* [i.e. God], *nihilominus illa enuntiatio* [*"every animal is sensitive"*] *vera esset*".

ontological status.[17] In this same letter, Descartes appears to take a further step, extending God's power beyond eternal truths themselves to the very essences of created things – precisely those discussed by Suárez in his controversial passage. However, this extension proves less significant than it initially appears, for in Descartes's view the essences of material things reduce to mere configurations of geometrical space – in other words, they are still mathematical truths.

The metaphysical theory of the creation of eternal truths arises in direct relation to physics – that is, to the strictly mechanistic physics towards which Descartes decisively reorients the focus of his inquiry around 1629–1630. This connection is clearly attested in the 1630 correspondence: "I could not have discovered the foundations of physics if I had not sought them by this path" (that is, by way of metaphysics).[18] Cartesian physics is founded on the certainty that reality has a mechanical structure, that can be interpreted in purely mathematical terms and is thus accessible to the human intellect.

But – and this is the great discovery announced in 1630 – the eternal truths of mathematics, although innate in our minds ("*mentibus nostris ingenitae*"), are not eternal in themselves or independent of God. They are innate not as such but because God has so willed it – in the sense that in God, as Descartes puts it, "to will, to understand, and to create are the same thing".[19] The latent innatism of the *Regulae* now seems to have found a higher metaphysical grounding – and with it, a full justification. In other words, the combinatorial structure based on "simple natures" – central in the *Regulae* – finally gives way to a pyramidal conception of knowledge, with the existence of God placed at the apex as the first truth from which all others derive.

It thus becomes clear why Descartes can claim – on 15 April 1630 – that the existence of God is "more self-evident" than mathematical truths: because the latter depend both logically and ontologically (that is, in their very being, as created entities) on the former, and not the other way around. This can be seen either as a decisive break from the mathematical foundationalism of the *Regulae* based on the existence of self-evident "simple natures," or as a coherent radicalisation of that very doctrine, based on the "secret" of order. The search for the ultimate foundation of human knowledge, once pushed to its extreme consequences, leads to a reassessment of the primacy of simple natures and a reassertion of the absolute origin of all truth in the omnipotence of God.

17 Descartes to Mersenne, late May or early June 1630 (*AT* I, 151–2; *CC* I, 62–3).

18 Descartes to Mersenne, 15 April 1630 (*AT* I, 144; *CC* I, 60).

19 Descartes to Mersenne, 27 May 1630 (*AT* I, 151–2; *CC* I, 62–3).

Descartes is visibly enthusiastic about his new discovery and urges Mersenne to spread it widely, although, as usual, "without mentioning my name."[20] He adds that the doctrine of the creation of eternal truths will be one of the key principles of the physics he is about to establish. Physics will still be grounded in order and measure – in other words, in the *mathesis universalis* of the *Regulae* – but Descartes has now discovered that this *mathesis* is itself created and therefore may no longer be *universalis* in the strongest sense of the word – that is, the self-founded model of all knowledge – since it too depends on something superior. To that higher principle Descartes must then turn, even in physics, to find the certainty that, from his youth, he had hoped to locate in mathematics. And what more solid foundation could be found than the very attributes of God?

2 The Laws of Nature

As early as the autumn of 1629, Descartes triumphantly announced to Mersenne that he had "decided to explain all the phenomena of nature, that is to say, all of physics".[21] The treatise he began to compose during that period would occupy him for almost four years and would bear an ambitious title, *The World*, followed by a more modest – but only apparently so – subtitle: *or Treatise on Light*. Indeed, Descartes considered the question of light to have a privileged status in the new science: years later, he would state that his entire physics depended on the simple analysis of light in terms of matter and motion.[22] The initial plan announced a brief text, "to be read in an evening after dinner".[23] In the end, however, the text would expand significantly, eventually including an extensive treatment of the human body, which would be published separately and posthumously under the title *L'Homme* (*Treatise on Man*).[24] Descartes believed he would complete the entire work at the beginning of 1633. He promised it twice to Mersenne,[25] but things turned out differently, and *The World*, like the *Regulae*, remained unfinished and unpublished during Descartes's

20 Descartes to Mersenne, 15 April 1630 (*AT* I, 144; *CC* I, 60).

21 Descartes to Mersenne, 13 November 1629 (*AT* I, 70; *CC* I, 35).

22 See Descartes to Mersenne, 25 November 1630 and 23 December 1630 (*AT* I, 179, 194; *CC* I, 72–3, 77–8); Descartes to Vatier, 22 February 1638 (*AT* I, 562–3; *CC* I, 232); *Principles of Philosophy*, Part 4, § 206.

23 Descartes to Mersenne, 15 April 1630 (*AT* I, 137–8; *CC* I, 60).

24 On Descartes's *Treatise on Man* see below, chap. 3, pp. 74–82.

25 Descartes to Mersenne, 15 April 1630 and 25 November 1630 (*AT* I, 137–8, 179; *CC* I, 57, 73).

lifetime: it was to be published for the first time in 1664, never having received its author's *imprimatur*.[26]

The World opens – somewhat unexpectedly – not on a scientific scene but on an epistemological issue: that of the relation between "our sensations and the things that produce them," which is the subject of the first chapter.[27] In fact, the preliminary to the question of the nature of light is the manner in which we apprehend it. Here, the inversion between subject and object of knowledge, advocated at the beginning of the *Regulae*, clearly surfaces: even to know the external world, one must begin by examining human cognitive faculties (the same line of reasoning will apply to God in the *Meditations*). However, compared to the *Regulae*, Descartes places much more emphasis on the dissimilarity between our sensations and the objects themselves: the complex mediation of "figures" traced in the imagination – preserving a certain analogy between the action of bodies on the sense organs and the corresponding modification of corporeal imagination – now recedes into the background.[28]

The distinction between the qualitative characteristics of bodies perceived by human senses (colours, tastes, smells, sounds and tactile sensations) and their quantitative and measurable characteristics (shape, size, motion, reciprocal position) constitutes a dogma of all forms of mechanism. Descartes adopts it in *The World*, reconnecting with the major representatives of the scientific revolution, all of whom opposed the scholastic doctrine of "sensible species", according to which objects send representations of themselves to our sensory apparatus, which is intrinsically capable of receiving them. As Galileo had written since 1623 in *The Assayer* (*Il saggiatore*), the sensation of tickling is not a property of the feather nor of the hand, but of the mind of the person who experiences it – and this, he asserted, holds for all sensations.[29] In *The World*, Descartes takes the same example to underline how our perceptions differ from the physical events that cause them: "the ideas of tickling and pain, which are formed in our thought on the occasion of contact with external

26 *Le Monde de Mr. Descartes ou le traité de la lumière, et des autres principaux objets des Sens, avec un Discours du Mouvement Local, et un autre des Fièvres, composez selon les principes du mème auteur*, Paris, Th. Girad, 1664.

27 *The World*, AT XI, 3; CSM I, 81.

28 For further developments of this explanatory model in Descartes's *Dioptrics* (1637), see Elisa Angelini, *Le idee e le cose*, pp. 74–87 (and cf. p. 222 ff.).

29 G. Galilei, *The Assayer*: "the animated body [...] feels different affections according to the different parts [where] it is touched; and being touched [...] it feels, in addition to the common touch, another affection, to which we have given a particular name, calling it *tickling*: which affection is entirely ours, and not at all of the hand" (Galileo Galilei, *Opere*, vol. VI, p. 348).

bodies, have no resemblance to them" (where it is worth noting the use of the term "idea" to indicate, in this case, any kind of perception).[30] The gap between human knowledge and the external world is clearly designated – a gap that Descartes will attempt to bridge (by metaphysics) only in the *Meditations*. For the moment, he limits himself to refining his theory of sensations: these are "signs" established by an unspecified "nature" and constantly connected to certain bodily movements, in the same way that words are linked to objects without having anything in common with them: just as the word "dog" does not have four legs, so our perception of the colour "red" has nothing to do with the physical event that produces it, which consists simply in the motion of parts of matter.[31]

The mechanistic interpretation of the perceptual process leads directly, in the following chapters of *The World*, to the question of what bodies are in themselves. Descartes's position on this matter is clear: bodies are devoid of non-quantifiable properties; in them, there are neither "real qualities" (such as heat and cold, humidity and dryness), nor "substantial forms" capable of organizing raw matter.[32] A declaration thus emerges that sounds like a definition of mechanism: "all the forms of inanimate bodies can be explained without the need to suppose in the matter of the bodies themselves anything other than motion, size, shape, and the arrangement of parts".[33] But the mechanism inherited from Beeckman has now been developed in an original direction. For Descartes, matter is identified with spatial extension. Extension is "that which is most simple and easiest to know among inanimate creatures"[34] and is the only characteristic inseparable from matter: one can think of a body without colour or taste, but not without extension. Compared to the *Regulae*, one can note on the one hand a continuity (the application of the epistemological criterion of simplicity/ease), but on the other hand, an undeniable innovation: extension is now considered as the essence of bodies and is no longer merely a "simple nature" which, united with others, allows us to know them.[35] The equivalence thus achieved between matter and extension – a cornerstone

30 *AT* XI, 5–6. On the various meanings of "idea" in Descartes see below, p. 104.

31 *AT* XI, 4–6.

32 David van Goorle (or Gorlæus, 1591–1612) and Sébastien Basson (around 1580-after 1625) had already declared themselves opposed to these notions before Descartes: the first, Descartes says he has never read (*AT* VII, 586), while the second is mentioned among the "*novatores*" in the letter to Beeckman of 17 October 1630 (*AT* I, 158; *CC* I, 65).

33 *AT* XI, 27.

34 *AT* XI, 36.

35 *Ibid.:* extension is not an "accident", that is, a simple quality of matter, but "its true form and essence". On the *Regulae*, see above, p. 31.

of Cartesian physics and metaphysics – has several important implications. First, it follows that matter is indefinitely divisible and that there are no atoms (every particle, occupying even the smallest space, can be further divided into smaller particles);[36] and secondly, it follows that there is no void in nature and that, therefore, "the spaces in which we feel nothing" must be considered as filled with the same matter – although more rarefied – as those occupied by the bodies we perceive.[37] The absence of void in space also explains the possibility of the transmission of light, and indeed clarifies what light itself is: an instantaneous communication of motion between bodies, even very distant from each other, such as stars and the eyes of men who gaze at them, through the intermediary of cosmic matter (just as the striking of a stick at one end is transmitted instantly to the opposite end).[38]

As for the differences between various parts of matter, these are explained solely on the basis of motion: a "solid" body is such only because it is made up of an aggregate of particles possessing the same common motion but which remain at relative rest with respect to one another.[39] The so-called "elements" of scholastic physics (water, air, earth, fire) are thus nothing more than names for different configurations of the same identical matter.[40] Extremely important in Cartesian physics, "subtle matter" (or "first element"), spread everywhere in the cosmos, is composed of minute particles in whirling motion, capable of filling every interstice between parts of other bodies and of initiating motion everywhere in nature. The other elements are characterized by aggregations of denser matter and possess less motion (as in the case of the "second element," corresponding to air), or, as in the case of solid bodies, at mutual rest (this is the "third element," corresponding to earth).[41]

This matter-extension is conceived in *The World* as dependent on God at every instant, for its existence and for all its modifications. As already during his partnership with Beeckman,[42] but this time explicitly, Descartes borrows from scholastic theology the principle of "continuous creation": at every moment, God recreates the world, which, by itself, lacks the strength to persist in being and therefore needs the continual creative support of the divine Being. Thus, there is not, nor can there be, any "Nature" endowed with a power of its own, independent of God's action, and when one speaks of nature one

36 *AT* XI, 12.
37 *AT* XI, 18.
38 *AT* XI, 9 (the same example returns in the *Dioptrics*, *AT* VI, 84).
39 *AT* XI, 14–6.
40 *AT* XI, 23 ff.
41 *Ibid.*
42 See above, p. 11–12.

means simply matter, under the condition that "God continues to preserve it in the same manner in which He created it".[43] Upon this sole assumption are founded the three general laws, or rather "rules," that Descartes formulates in *The World* (chap. 7):

1. Persistence of states of motion and rest. A body in motion will continue to move uniformly until it encounters obstacles (a principle already adopted by Descartes around 1618–19, following Beeckman, but here derived as a particular case of the more general principle according to which "every part of matter [...] persists in the same state until the collision with others forces it to change" – whereby rest and motion are substantially equivalent states).
2. Conservation of the quantity of motion. Every body that strikes another transmits to it a quantity of motion identical to that which it itself loses: the quantity of motion in the universe is therefore constant.
3. Tendency toward rectilinear motion. Bodies have a natural tendency (or "inclination") towards rectilinear motion, even though, given that a vacuum is impossible, the actual motion of bodies will always be circular, due to the obstacle that other bodies constitute to the movement of individual parts of matter.

The first rule, combined with the third, essentially corresponds to what, little more than half a century later, was to be Newton's "law of inertia" (and the law of all modern physics to this day); the second posits a conservation principle that is more precisely developed in Newton's law of action and reaction. But beyond the strictly scientific differences – which will be capital – what opposes Descartes to Newton is precisely his attempt to constitute a deductive physics, of which the founding principles are theologically guaranteed and in which one can arrive at a wholly demonstrative knowledge of nature: "whoever knows how to examine sufficiently the consequences of such [mathematical] truths and of our rules [the laws of physics] [...] can have *a priori* demonstrations of all that may be produced in this new world".[44] Even the tendency towards rectilinear motion depends, for Descartes, on an *a priori* theological assumption: rectilinear motion is the only conceivable "simple" motion, determinable in a single instant, that is, independently of time; any other motion would require a temporal duration to be completely determined and would therefore be incompatible with the essence of God.[45] Newton, instead, would

43 *AT* XI, 43.

44 *AT* XI, 47.

45 *AT* XI, 43–44. See Geoffrey Gorham, "The Metaphysical Roots of Cartesian Physics: The Law of Rectilinear Motion", *Perspectives on Science* 13/4 (2005), pp. 431–451.

always claim – at least in the public presentations of his thought – the empirical and phenomenological foundation of the laws he established, and would seek to prove them through repeated experiments, rejecting all deductivism.

3 The Fable of the World

From a certain point of view, Descartes's physics is far more "modern" than Newton's. For Newton, the universe is still and always will be the theatre of God's creation and providential power: God is an infinitely wise being, who has harmoniously arranged the planets and who, in His provident wisdom, maintains the cosmic equilibrium. For Descartes, instead, the universe is simply the result of the laws of nature, without the need for local divine interventions beyond the initial creative impulse that reiterates itself at every instant of time. Indeed, to the three laws, or rules, of *The World*, Descartes entrusts not only the task of fully explaining observable phenomena on earth, renouncing all occult forces, cosmic sympathies or antipathies, real qualities or substantial forms, but also the explanation of the origin of the entire universe, and in particular of the solar system. This latter passage is especially bold and requires an appropriate rhetorical strategy. It is thus that the (potential) reader of the scientific treatise suddenly finds himself catapulted into a "fable," which Descartes begins to recount as early as chapter 6 of *The World*.

It is, of course, offered as a "fable" mostly for prudential reasons: Descartes has to reassure professors and theologians of every confession that the concern here is not the true world, created by the God of Scripture in the six days of Genesis, but a fantastic world, which Descartes ironically places in the "imaginary spaces" of scholastic physics.[46] It is, moreover, an expedient historically determined by the Catholic Church's attitude to Copernicanism. At least until Galileo's trial, the church allowed Copernicanism to be upheld as a pure "hypothesis," and Descartes's "fable" could obviously pass for something similar, at least on a superficial reading. However, an attentive reader would have no difficulty in realizing that there is in fact nothing hypothetical at all in Cartesian cosmogony: the world in which the fable takes place is a world governed solely by the necessary laws of mechanics, where no miracles occur and everything depends on the motion of parts of matter. At the end of the

46 Cf. *The World*, chap. 6 (*AT* XI, 30; *CSM* I, 90). In medieval philosophy, the doctrine of "imaginary spaces" had been developed by thinkers such as Oresme and Bradwardine as a way to conceptualise the existence of space beyond the known universe, even space not yet populated by physical bodies.

story, the two worlds – the fabulous and the real – coincide, and one is nothing but the mirror of the other. The use of the fable, therefore, certainly does not indicate the supposedly hypothetical character of Cartesian physics, but rather an effective rhetorical strategy, wholly transparent and intentional.[47] The device of the "fable" was also strictly necessary in order to prevent any dangerous comparison with the Genesis account. As Descartes makes clear at the very beginning of chapter 6, it is necessary "to lose sight of all the creatures that God made five or six thousand years ago, and after stopping there in some definite place, let us suppose that God creates anew so much matter all around us that, in whatever direction our imagination may extend, it no longer perceives any place that is empty" (*The World*, chap. 6, CSM I, 90).

Descartes's basic intuition consists in the idea that the entire universe is organised by the composition of simple inertial motions. The quantity of motion in the universe remains constant, according to the second "rule" enunciated in *The World*, but the aggregations among the various bodies and particles change. It sufficed therefore that God, in the beginning, create matter without giving it any particular order. The initial state of the universe was a primordial chaos in which material particles acquired different configurations according to their motion, which is assumed to have been heterogeneously distributed ("let us suppose that God, at the beginning, introduced among the parts of matter all sorts of differences").[48] Since no void existed in creation, every particle collided with others, losing and transferring motion proportionally. Unable to move freely, and thus rectilinearly, the particles of matter immediately assumed a circular motion, which gave rise to vortices of matter. Within these vortices, the centripetal and centrifugal forces determined by motion and by the interaction among bodies engendered respectively the accumulation at the centre of the vortex of particles of the (very fine and highly agitated) first element and the formation of large fluid masses of matter of the second element rotating around the centre, within which are transported conglomerates of solid matter of the third element. The solar system, for Descartes, is nothing but one of these vortices, with the sun at its centre, composed of subtle matter and source of light, and around it the planets, including the Earth, composed of solid matter of the third element, in constant orbital motion.[49]

47 Writing to Mersenne on 13 November 1629, Descartes declared he had found "how to expound all my thoughts in a way that some will find satisfying and others will not have the occasion to contradict" (*AT* I, 70; *CC* I, 35).

48 *The World*, chap. 8 (*AT* XI, 50).

49 *The World*, chap. 8–10 (*AT* XI, 48–72). The three "elements" of Descartes's physics obviously do not differ essentially from each other: the only difference between them depends on their respective quantity of motion.

With the "fable of the world", Descartes takes two fundamental steps. He provides, first of all, a genetic interpretation of Copernicanism, attempting to explain not only *how* the planets are arranged in the cosmos, but also *why* and by what evolutionary process, explicable by wholly scientific principles. And secondly, he overcomes a primordial prejudice that underpinned almost all Western theological and philosophical conceptions of the universe and that only the ancient atomists had previously sought to challenge: the idea that natural order presupposes an intelligent demiurge, or creator, who designed and introduced that order into creation. What Descartes rejects is precisely the connection between order and intelligence – and he does so, paradoxically, in the very same moment that he grounds all his physics on the attributes of God. Not however on intelligence or wisdom, but rather on immutability: the God of *The World* is above all the motor of matter and the necessary source of the laws of nature.[50] Descartes, moreover, does not deny that God is intelligent and wise, or that He has purposes in creating the universe. He merely maintains that, to explain the formation of the universe itself, and in particular that of the solar system and of the Earth, we do not have to suppose that God displayed any particular wisdom; the mechanical laws of nature were sufficient for the purpose:

> For God has established these laws in such a marvellous way that even if we suppose that He creates nothing more than what I have said, and even if He does not impose any order or proportion on it but makes it of the most confused and muddled chaos that any of the poets could describe, the laws of nature are sufficient to cause the parts of this chaos to disentangle themselves and arrange themselves in such a good order that they will have the form of a most perfect world, a world in which one will be able to see not only light, but all the other things as well, both general and particular, that appear in the actual world.[51]

There is something epic in Descartes's expressions when he tells his correspondents that he is working on the "fable" of *The World*. It is as though he were living in a sort of cosmogonic delirium: "I am now set on untangling the chaos to bring out the light from it," he writes to Mersenne in December 1630.[52] And a few months later, to Guez de Balzac, he declares that, without realising it, he

50 For a later reappearance of this (potentially atheistic) image of God, see *infra*, p. 220, on Descartes's letter to Henry More (1649).

51 *The World*, chap. 6 (*AT* XI, 35; *CSM* I, 91).

52 Descartes to Mersenne, 23 December 1630 (*AT* I, 194; *CC* I, 78).

is mixing his "daydreams with those of the night".[53] It was certainly a moment of great creativity, which allowed him to achieve results that he himself would later judge "incredible". As he wrote in a 1638 letter to Vatier: "I did indeed think that what I said I wrote in my treatise *On Light* concerning the creation of the universe would be incredible. For only ten years ago I would not myself have wanted to believe that the human mind could have achieved such knowledge if anyone else wrote it. But my conscience, and the force of truth, prevented me from fearing to advance a topic I thought I could not omit without betraying my own cause, and for which I already have sufficient witnesses".[54]

In Holland, where minds were on other things – and above all on commercial profit – Descartes felt he had become so much of a philosopher "that I despise most of the things that are ordinarily valued, and I value other things to which we do not normally attribute much importance."[55] But the temptation of isolation, of estrangement, was always present. And there was no better isolation than that experienced in the midst of a crowd of men busy with their own business: "I take a walk every day amid the bustle of a large crowd, with as much freedom and repose as you would have in your garden paths, and I pay no more attention to the people I see there than I would to the trees in your forests or the animals grazing there. The noise of their commotions no more interrupts my reveries than would the sound of a stream. If sometimes I reflect upon their actions, I derive the same pleasure from it as you get when you see the peasants cultivating your fields; for I can see that all their work serves to enhance the beauty of my residence and to cause me not to be lacking in anything."[56]

This is the dream of "complete freedom" that Descartes cultivated in Amsterdam at the beginning of the 1630s.[57] A dream destined to be broken soon, despite all the caution maintained throughout the pages of *The World*.

4 Back to Reality: the Galileo Affair

When working on the *World*, Descartes knew that he was dealing with a dangerous text, in various respects. At first, he was concerned above all by the

53 Descartes to Guez de Balzac, 15 April 1631 (*AT* I, 199; *CC* I, 82).

54 Descartes to Vatier, 22 February 1638 (*AT* I, 561; *CC* I, 231).

55 Descartes to Guez de Balzac, 15 April 1631 (*AT* I, 198–9; *CC* I, 82).

56 Descartes to Guez de Balzac, 5 May 1631 (*AT* I, 203; *CC* I, 84).

57 *Ibid.*: "in what other country can one enjoy such complete freedom, where one can sleep with less restlessness" (*AT* I, 204; *CC* I, 84).

thesis of the infinity of the universe – implied by the reduction of matter to geometrical extension. Already in December 1629 he had asked Mersenne for clarification on the Catholic Church's position on this point: Giordano Bruno had been burned at the stake not long before, and the topic was still a dangerous one.[58] Above all, it was clear to him that the Church's attitude relied on the choice of Aristotelianism as the Christian philosophy *par excellence*: "theology [...] has been so subjugated to Aristotle that it is almost impossible to explain another philosophy without it seeming at the outset against the faith".[59] To avoid trouble, he asserts – in *The World* and in all subsequent writings – that the extension of the universe is not infinite but "indefinite," in the sense that its limits cannot be conceived.[60] But he has not overcome the fear of "shocking the imagination of anyone or offending the opinions received by all".[61] In April 1632, he begins to apologize to Mersenne because he is afraid that, once again, he will not manage to complete his treatise within the expected timeframe. On May 3, he announces his desire to let it "rest" before refining it.[62] The first anxieties concerning the heliocentric thesis – which was rejected by those who had made Ptolemaic cosmology "an article of faith"– emerge in the summer of 1632, when he writes to Mersenne: "Like you I feel pity for this author [Jean-Baptiste Morin] who uses astrological reasons to prove the immobility of the Earth; but I would pity these times even more, if I thought that those who want to make this opinion an article of faith had no stronger reasons for holding it."[63]

At the end of that same year, Descartes asked Mersenne for news about Galileo's theories on the tides: perhaps he also wanted to know more about the *Dialogue Concerning the Two Chief World Systems*, recently published and already censored, but he did not dare ask explicitly. In the meantime, he busied himself with anatomical studies, necessary to complete the part of *The World* devoted to the human body.[64] The next surviving letter to Mersenne dates from the summer of 1633: *The World* was still unfinished, but Descartes was hoping to send it to him by the end of the year.[65]

58 Descartes to Mersenne, 18 December 1629 (*AT* I, 86; *CC* I, 40).

59 Descartes to Mersenne, 18 December 1629 (*AT* I, 85–6, *CC* I, 40).

60 *The World*, chap. 6 (*AT* XI, 33). On the difference between "indefinite" and "infinite", see also *Principles of Philosophy*, 1st Pt., §26–27.

61 Descartes to Mersenne, 23 December 1630 (*AT* I, 194; *CC* I, 78).

62 Descartes to Mersenne, 5 April 1632 (*AT* I, 242; *CC* I, 95) and 3 May 1632 (*AT* I, 248; *CC* I, 97).

63 Descartes to Mersenne, summer 1632 (*AT* I, 258; CC I, 100).

64 Descartes to Mersenne, November or December 1632 (*AT* I, 261; *CC* I, 100–101).

65 Descartes to Mersenne, 22 July 1633 (*AT* I, 268; *CC* I, 106).

But he would never finish it, nor would he send it to Mersenne.[66] In June 1633, Galileo was condemned by the Inquisition and forced to abjure Copernicanism. In dismay, Descartes acknowledged in November that the condemnation of Galileo "so shocked me I almost resolved myself to burn all of my papers, or at least not to let anyone see them. For I could not imagine that he, an Italian, and even well-liked by the Pope, as far as I understand, could be made a criminal for anything other than his wanting, no doubt, to establish the motion of the earth, which I know was already censored by some Cardinals."[67]

With Galileo, Descartes saw his *World* itself put on trial and banned: "all the things I explained in my treatise, which included that opinion about the motion of the earth, were so completely dependent on one another, that the knowledge that one of them is false is sufficient for the recognition that all the reasons I made use of are worthless. And although I thought they were supported by very certain and very [self-]evident demonstrations, nevertheless I would not for anything in the world maintain them against the authority of the Church."[68] The desire to flee returned forcefully, and he even let slip an Ovidian motto popular among the libertines of his time: "the desire I have to live in peace and to continue the life I embarked on, taking as my motto: *he lives well who hides well* (*Bene vixit, bene qui latuit*), means that I am happy to be freed from the fear I had of acquiring, by means of my writing, more knowledge than I desire, rather than angry at having lost the time and the trouble I used in composing it" (*ibid.*).

Perhaps it was also, in part, a pretext, albeit a well-chosen and effective one. Descartes asked Mersenne "a year's delay to revise and polish", hoping that the condemnation by the Inquisition might not be rigidly enforced. He was soon to discover that the position of the Church was in fact very severe: the prohibition of Copernicanism now applied even in cases where it was proposed "hypothetically," as had initially been permitted (and this rendered the device of the fable equally useless).[69] Meanwhile, he continued to devote himself to research in physics, while metaphysics is almost absent from his correspondence until 1637. What is certain is that there was a setback after the initial enthusiasm of the early months in Holland – an enthusiasm rekindled by the letters to Mersenne in the spring of 1630. But after that date, Descartes, despite having

66 The more strictly physical part of *The World* is lacking two chapters (16 and 17), while the part on man does not include the analysis of the union between mind and body, promised at the beginning of the text (*AT* XI, 120).

67 Descartes to Mersenne, late November 1633 (*AT* I, 270; CC I, 107).

68 Descartes to Mersenne [Late February 1634] (*AT* I, 286; *CC* I, 111).

69 Descartes to Mersenne, late November 1633, February 1634, [Late February 1634], and 14 August 1634 (*AT* I, 272, 281–282, 285–288, 305–306; *CC* I, 107, 110, 111, 118–119).

already abandoned the project of the *Regulae*, also left incomplete his new metaphysics – or rather, developed it only to the extent required to establish the laws of physics in the central chapters of *The World*. The shipwreck of *The World* thus caused Descartes's entire project to falter at the beginning of the 1630s: the new house – to pursue his favourite architectural metaphor – was large enough, but its foundations were not yet solid, nor was it very presentable. Confronted with the harsh reality of Galileo's condemnation, Descartes rethought his entire philosophy, which still wavered between different and potentially contradictory demands.

Already at this point, a specific unresolved conflict can be discerned between the two opposing poles of Cartesian reflection on the foundation of human knowledge: a "humanistic" pole, which had emerged clearly in the *Regulae* (science is founded on the natural intuition of certain basic and indubitable notions, and all knowledge is founded on the combination of those notions), and a "theocentric" pole, which had manifested itself above all in the letters to Mersenne in the spring of 1630 (science is founded on the absolute power of a God who is not subject to any order, but is the free cause of the essence and existence of things). In the mature formulation of his metaphysics – namely, in the *Meditations* – Descartes would attempt a mediation between these two poles, without abandoning their specific traits but without evoking their most radical aspects. This would involve a substantial sacrifice of his two most original – and most extreme – positions of the years 1628–1633: the theory of simple natures and the theory of the divine creation of eternal truths. These two doctrines would nevertheless have different fates in Descartes's intellectual biography. Simple natures, in fact, were inert materials, which would not threaten the solidity of the Cartesian edifice and would even reappear from time to time, under different names and with diminished importance;[70] the

70 In *The World*, the "nature" of movement is designated as "simple and intelligible" (*AT* XI, 39). See also, in the 1st Meditation, the list of things which are "simpler and more universal" (*AT* VII, 20; *CSM II*, 13–14); and cf. Descartes to Mersenne, 16 October 1639 – *AT* II, 597). In the *Principles of Philosophy*, 1st part, §10, Descartes speaks of some "very simple notions", and in a letter to Elizabeth of the Palatinate to which we will return he will speak of some "primitive notions". However, the only occurrence of the syntagm "simple natures" after 1628 is to be found in the *Colloquium with Burman* of 1648 (*AT* V, 160), where, however, Descartes maintains that they depend on the will of God, thus denying their epistemological autonomy. On the fate of the "simple natures" after the *Regulae*, see the contrasting theses of Jean-Luc Marion, *Questions cartésiennes*, Paris, Puf, 1991, pp. 75–110 (substantial continuity) and of Gilles Olivo, *Descartes et l'essence de la vérité*, cit., pp. 273–352 (irreducible epistemological break).

creation of eternal truths, on the other hand, was a ticking time-bomb, which at any moment could bring down the whole structure.

In 1630, Descartes had proposed his theory of eternal truths with great enthusiasm to Mersenne. He had even ordered him to make it known everywhere: "Do not hesitate, I beg of you, to avow and to proclaim everywhere, that it is God who established these laws in nature, as a King establishes laws in his Kingdom".[71] But it brought with it some problems which were not insignificant. Some of them were raised by Descartes himself: if truths depend on God's will, could God not change them Himself? But God is immutable, he would immediately respond – thus appealing to the same attribute that underpinned the laws of physics.[72] Other problems were less apparent, but far more insidious. With the thesis of the divine creation of eternal truths, Descartes came to maintain that human knowledge does indeed reach the necessary truth of certain propositions – and in particular of mathematical truths – but also that such necessity depends on a free and contingent act of God. With this, the entire preceding Christian theological tradition is overturned (as well as the position of the two great inspirers of the scientific revolution: Galileo and Kepler): to the reassuring absolute necessity of truths in the Platonic-Augustinian tradition, to their being rooted in the divine intellect itself – in which man could, in some way, participate – Descartes would oppose a sharp rupture between man and God, which he would have to try to make up for by means of an adequate rational theology. But how can God be known with certainty after all ties have been severed between the creature and his Creator? Has God truly given man simply a cognitive code that appears eternal and uncreated, but which is in reality dependent on His free will? And is this God a God who wishes to be known – or is He rather an unattainable "hidden God"?

It is therefore not all that surprising that, in the end, the very prudent Descartes never spontaneously presented his theory of eternal truths in a public writing: he did so only when prompted by others, and only some ten years after its first elaboration – that is, after the letters to Mersenne in 1630.[73] It is as if the creation of eternal truths never quite managed to become an integral part of Cartesianism. And that is so from the very beginning. Not only does the theory not appear in the published works in which Descartes presents his metaphysics (not, therefore, in Part Four of the *Discourse on the Method*, nor in the

71 Descartes to Mersenne, 15 April 1630 (*AT* I, 145–6; *CC* I, 60).

72 Descartes to Mersenne, 15 April 1630 (*AT* I, 145–6; *CC* I, 60). On this point, see S. Landucci, *La teodicea nell'età cartesiana*, Napoli, Bibliopolis, 1986, pp. 127–93.

73 See Descartes's 5th and 6th Replies to Mersenne's and Gassendi's objections (*AT* VII, 380, 431–6).

Meditations, nor in the *Principles of Philosophy*[74]); it is conspicuously absent even from the work in which he had intended to formulate it in 1630, according to his declaration to Mersenne: "in my physics" – that is, in *The World*, then just begun – "I shall not omit to touch upon several metaphysical questions in my physics, and in particular the following: that the mathematical truths you call eternal were established by God and depend entirely on him, as much as all the rest of the creatures." Further on in the same letter, Descartes even specifies that he hopes "to write this in my physics even before the next two weeks have passed".[75]

But during those two weeks – or afterwards – something must have happened, because in *The World* as it has come down to us, "eternal truths," that is, mathematical truths, are indeed mentioned, but only in order to indicate that they are innate in the human mind, with no allusion at all to the fact that God himself freely creates such truths – and indeed stating that they would be valid in every possible world.[76] The latter assertion would lead a reader unaware of Descartes's real position to adopt the theory exactly opposite to the one he had expressed in his private correspondence with Mersenne. From the very beginning, then, despite his initial enthusiasm, Descartes considered the theory of creation of truths to be a non-essential element of his system: he did not include it in his physics, just as he would not include it later in his metaphysics.

Almost all interpreters of Descartes have wondered about this embarrassed and embarrassing silence. Prudence or speculative uncertainty? Duplicity or masterly avoidance? Or, possibly, simply fear of being "too free on such lofty matters"?[77] Did Descartes perhaps entertain two metaphysics – one private and one public? Is the thesis of the creation of eternal truths a marginal curiosity, albeit a persistent one, or does it constitute a subterranean undercurrent throughout the Cartesian system, of which it is the secret key (or rather, its Achilles heel)? In the *Regulae*, Descartes had maintained that demonstrations follow an irreversible direction, and that the truth of God's existence follows from each man's awareness of his own existence. In 1630, on the other hand,

74 Some vague allusions, identifiable only by those who are familiar with Descartes's thesis, can possibly be found in the *Discourse on the Method* and in the *Principles*: see G. Rodis-Lewis, *L'Œuvre de Descartes*, cit., I, pp. 133–135. See also *infra*, p. 117, n. 89–90.

75 Descartes to Mersenne, 15 April 1630 (*AT* I, 145; *CC* I, 60).

76 *AT* XI, 47. On the possibility that *The World* underwent a revision after 1633, see R. Love, "Revisions of Descartes's Matter Theory in *Le Monde*", *The British Journal for the History of Science*, 1975, pp. 127–137.

77 Descartes to Mersenne, 6 May 1630 (*AT* I, 149; *CC* I, 62): "I do not wish to meddle in Theology; I am even afraid you may judge that my philosophy is becoming too free, since it dares to speak out on such lofty matters".

Descartes discovers and proclaims enthusiastically that the existence of God is "the first and most eternal of all truths that may exist, and the only one from which all others proceed".[78] Thus, the priority of God's existence is affirmed with great force, along with the necessity of considering God "as an infinite and incomprehensible being, who is the sole author on whom all other things depend".[79] Yet, we are still far from a rational theology: indeed, the decisive task remained to be completed – namely, to provide a demonstration of the existence of God, on which all human science depends and from which that science derives necessarily. But how, and on what basis, could what had just been declared to be the "first truth", from which all others follow, ever be demonstrated? This aporia could only be overcome by means of a renewed reflection on human knowledge, on the world, and on God himself – a reflection that would find its fullest public expression only in the *Meditations*.

78 Descartes to Mersenne, 6 May 1630 (*AT* I, 149; *CC* I, 62).
79 Descartes to Mersenne, 6 May 1630 (*AT* I, 149; *CC* I, 62).

CHAPTER 3

The *Discourse on the Method*

1 A Successful Preface

In the *Discourse on the Method*, there is something of everything Descartes had written or was yet to write. The First Part, autobiographical, probably connects to the lost *Studium bonae mentis*; the Second Part, dedicated to method, and the Fifth Part, concerning issues of physics, return to themes already addressed in the *Regulae* and in *The World*; the Third Part announces the moral themes of the later years, which culminate in the *Passions of the Soul*; the Fourth Part connects back to the lost metaphysical treatise of 1629 and anticipates the future *Meditations*, while the Sixth Part expresses the ambition to propose a new paradigm of knowledge that will be realized in the *Principles of Philosophy*. There is thus the *cogito ergo sum* [*je pense, donc je suis*], there are the rules for reaching truth through self-evidence, there is the fable of the world, the demonstration of the existence of God founded on that of the thinking subject, the theory of animals as unconscious machines, the anatomical description of certain organs of the human body; there is, finally, the German *Stube* and the time at La Flèche. But it is a revised and corrected Descartes, who offers, for many of his principal doctrines, a toned-down version for undemanding readers, and moreover in French, so that everyone, "even women",[1] will be able to follow him some way.

A writing conceived as a simple "preface" or as a brief "warning" to the reader[2] gradually overwhelmed and finally suppressed the three scientific essays it was supposed simply to introduce, and which follow it in the original 1637 edition: the *Dioptrics*, the *Meteors*, and the *Geometry*. That is the paradox of the *Discourse on the Method*, which, after a modest beginning (very few copies of the first edition were sold),[3] would go on to enjoy an extraordinary and unfailing success, especially from the nineteenth century onwards. But among the hundreds of modern editions of the text, translated and reprinted in all the major languages of the planet, those which also contain the scientific works

1 Descartes to Vatier, 22 February 1638 (*AT* I, 560; *CC* I, 129–30).

2 Descartes to Huygens, 1 November 1635 (*AT* I, 592; *CC* I, 231); Descartes to Mersenne [April 1637] (*AT* I, 349; *CC* I, 151–52).

3 See Descartes to Mersenne, 9 January 1639 (*AT* II, 481). See also Pierre Costabel's note in *Bulletin cartésien V*, *Archives de philosophie*, 1976, pp. 445–54.

that originally accompanied it can be counted on the fingers of one hand. Descartes, on the contrary, held his essays in high esteem. He often boasted, and justly so, of the results achieved in the mathematical and physical fields and of their practical applications, especially in optics, which he had discussed with Constantijn Huygens. However, Huygens himself appreciated above all the first part of the volume: "I devoured your *Discourse on the Method*, which is truly [...] the best expressed, most mature, and most savoury literary production I ever saw" – "*la più saporita*, as it seems to me the Italians express sharply".[4]

On the other hand, if Descartes finally decided to publish something, it was above all to extract from his research some important results that had long been ready: he was already discussing some of the topics treated in the *Dioptrics* and *Meteors* in the autumn of 1629;[5] as for the *Geometry*, although materially drafted at the last moment,[6] it finally brings to fruition the long labour of unification of algebra and geometry begun way back in 1619.

The idea of a *Discourse on the Method* emerged only at the end of 1635.[7] For the writing intended to introduce his scientific essays, Descartes imagined a long and grandiloquent title, vaguely reminiscent of his youthful reflections on *mathesis universalis*. Thus: *The Project of a Universal Science, That Can Elevate Our Nature to Its Highest Degree of Perfection. Plus the Dioptrics, the Meteors, and the Geometry, in which the most curious subjects that the Author has been able to choose to demonstrate the universal science he proposes are explained in such a way that even those who have not studied may understand them*.[8] In the end, he fell back on the more modest – but not yet concise – *Discourse on the Method of rightly conducting one's reason and seeking the truth in the sciences and in addition the Optics, the Meteors and the Geometry, which are essays in this Method* – to emphasize that he did not intend to write a dogmatic treatise but only to present certain aspects of his procedures of inquiry. The method, indeed, can neither be taught nor learnt from anyone, nor even studied, but

4 Huygens to Descartes, 24 March 1637 (*AT* I, 626; *CC* I, 149 – translation edited). Constantijn Huygens (1596–1687), State counselor of the United Provinces and father of the great scientist Christiaan Huygens, was one of Descartes's most faithful correspondents since 1635.

5 For the *Dioptrics* (mentioned as a separate work already in Chapter 2 of *The World*), see Descartes to Ferrier, 8 October 1629 (*AT* I, 32–37; *CC* I, 20–27), and 13 November 1629 (*AT* I, 53–69; *CC* I, 28–37). For the *Meteors,* see Descartes to Mersenne, 8 October 1629 (*AT* I, 23; *CC* I, 17–18).

6 Descartes to Deriennes, 22 February 1638 (*AT* I, 458; *CC* I, 233).

7 Descartes to Huygens, 1 November 1635 (*AT* I, 592; *CC* I, 129).

8 Title proposed to Mersenne in March 1636 (AT I, 339; *CC* I, 135) and rectified almost a year later, see Descartes to Huygens, 25 February 1637 (*AT* I, 620–21; *CC* I, 146–7).

only practised on one's own.[9] And the *Discourse* is nothing other than the narration of how the method was engendered, so to speak, from itself, through the direct experience of its discoverer: from this point of view, it corresponds exactly to the "story of his mind" ("*l'histoire de son esprit*") that Descartes had promised to write since 1628 at the request of Guez de Balzac and other French friends.[10]

On 2 December 1636, Descartes signed with the bookseller Jan Maire of Leiden the publishing contract for the *Discourse* and the three essays that follow it, demanding the absolute anonymity of the publication. He successfully required that even the royal "privilege" granted in France – a kind of copyright[11] – make no mention of the author's name. The printing was finished in June 1637 and the volume began to circulate immediately, thanks above all to Descartes himself, who asked for two hundred copies to send to his correspondents: that number is not small for an author who declared himself alien to any aspiration to worldly glory ("I fear reputation more than I desire it," he had declared a few years earlier).[12] The anonymity was also more superficial than real, since Mersenne circulated the book even before it was bound, immediately revealing its authorship.[13] In a short time, the learned and powerful of Europe knew the volume and its author. Descartes sent copies to the King of France Louis XIII, to Cardinal Richelieu, to Prince Frederick Henry of Orange-Nassau, Stadtholder of the United Provinces, to two important Vatican prelates, Cardinals Barberini and Guidi di Bagno, and also to one of his former teachers at La Flèche, recognizing his debt to the Jesuits and asking that the book be examined by the doctors of the Society of Jesus (not without the hope "of having them all on [his] side").[14] And, naturally, he also sent it to a great number of scientists and philosophers, among them Galileo. In 1639, finally, Descartes would willingly abandon anonymity.[15]

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9 Descartes to Huygens, 25 February 1637 (*AT* I, 620–1; *CC* I, 146); Descartes to Mersenne [April 1637] (*AT* I, 349; *CC* I, 151–52).

10 Balzac to Descartes, 30 March 1628 (*AT* I, 570; *CC* I, 13–14 – translation edited).

11 Descartes to Huygens, 3 March 1637 (*AT* I, 622–3; *CC* I, 147).

12 Descartes to Mersenne, March 1636 and 15 April 1630 (*AT* I, 339, 136; *CC* I, 135, 60).

13 Descartes to Mersenne and to X***, May 1637 (*AT* I, 364, 369–70; *CC* I, 157–59).

14 Descartes to Wilhem, 12 June 1637 (*AT* I, 387; *CC* I 163); Descartes to Huygens, 27 June 1637 (*AT* I, 639–40; *CC* I, 167); and Descartes to Mersenne, 31 March 1638 (*AT* II, 85; *CC* I, 265 – see also Descartes to Mersenne, 19 June 1639 – *AT* II, 565); Descartes to [Fournet], 14 June 1637 and 3 October 1637 (*AT* I, 383, 455; *CC* I, 165, 191–92); Descartes to Huygens, 9 March 1638 (*AT* II, 662; *CC* I, 246).

15 Descartes to Mersenne, 19 June 1639 (*AT* II, 564). For the sending to Galileo, via Mersenne, see Galileo Galilei, *Opere*, vol. XVII, p. 226 (Marin Mersenne to Galileo Galilei, 27 November 1637).

The famous incipit, with all its ambiguity, sets the tone for the entire *Discourse*: "good sense is the best distributed thing in the world" (and everyone, even those most critical about everything else, is satisfied with what he has).[16] The maxim, inspired by Montaigne,[17] would become proverbial. Irony? Provocation? More simply, Descartes tests his ability to awaken the reader from the torpor of prejudice and starts with an initial universal prejudice: everyone vaguely believes he has sufficient "good sense," and thus recognises himself in the good-natured complicity of the first declaration. But immediately in the following lines Descartes enacts a tacit but radical semantic shift: good sense, as he understands it, is nothing other than "reason," that is, the faculty of distinguishing true from false. And it is this "reason" – identical with the *bona mens* of the writings of the 1620s – that is the protagonist of the *Discourse on the Method*.

Protagonist as the object of analysis, but also and above all as subject, through its spokesman Descartes, who speaks directly in the first person: another tangible sign of Montaigne's influence. The subjectivist point of view, however, is only apparent. Rather than describing himself, Descartes gives voice to the rational man within him, recognizing himself as not superior to the average person and even less capable than others in many things ("For my part, I have never presumed my mind to be in any way more perfect than that of the ordinary man").[18] But this very display of modesty, more than truthfully representing the author's character – highly competitive and vain[19] – is expressed in order to advance his purpose, which is to show that reason, in its potential, is equal in all men. To demonstrate this, Descartes immediately places himself under the authority of the scholastics, that is, of his own adversaries, who held that "more" and "less" apply only to the accidental characteristics of individuals of a given species, but not to their "forms or natures" – and the "rational soul" was precisely, for the scholastics, the substantial form of man. In other words, if the essence of man is to be a rational animal, reason is necessarily equal in all – and, it is implied, the guiding rules for its optimal exercise will be equally universal.

Thus, in only two paragraphs, Descartes hopes already to have won over the average reader without philosophical training – perhaps fascinated by

16 *AT* VI, 1–2 (*CSM* I, 111).

17 See Gilson's commentary on the *Discourse*, ed. 1987, p. 83.

18 *AT* VI, 2 (*CSM* I, 111–112).

19 Descartes's constant fear, especially in mathematics, is that others appear to "know more than I do" (cf. Descartes to Mersenne, late December 1637 and January 1638 – *AT* I, 478–81, 487, 491–3; *CC* I, 199, 207–8). See also below, p. 222 (on the Letter-Preface to the *Passions of the Soul*).

Montaigne – and the reader steeped in scholastic culture, to whom he makes it appear that he is saying nothing new. And this is an example of a fully conscious rhetorical strategy, despite Descartes's disdain for rhetoric and indeed his explicit theorisation of the expulsion of rhetoric from philosophy.[20] But the *Discourse* is carefully conceived, calibrated, adjusted to obtain the attention and agreement of the readers to whom it is addressed, even while presenting innovative doctrines, in some cases anything but uncontentious. Descartes was to reveal this strategy of covert persuasion a few years later in writing to his first disciple, Henricus Regius (to whom we shall return later). He advised Regius to maintain "in name" all the old doctrines, while at the same time providing the reasons that lead one to adopt the new. There is no need, then, to openly repudiate the "substantial forms" or "real qualities" of the scholastics: it suffices to show that one can proceed further – and better – without them.[21]

In this conciliatory and seemingly reassuring framework, Descartes again exploits, from the beginning, the literary device of the fable, this time in order to introduce a kind of intellectual autobiography that occupies almost the entire First Part of the *Discourse* and reappears in various places in the subsequent parts, providing the continuous thread of the writing. What I propose, writes Descartes, is only a "a story or, if you prefer, a fable in which, among certain examples worthy of imitation, you will perhaps also find many others that it would be right not to follow"; and he does not intend to dictate a general method for conducting reason "but only to reveal how I have tried to direct my own."[22] The rest of the text will progressively and strikingly contradict this statement – the method will even find its first warrant in God – but the boundary between individual experience and universal message is so skilfully blurred as to be often imperceptible. And this too contributes to giving the *Discourse on the Method* that underlying ambiguity, or that illusory clarity, which still makes it attractive and readable today beyond stale and pompous celebration.

Descartes's autobiography begins with his time at La Flèche and his dissatisfaction with scholastic knowledge, source of doubts and errors in all those disciplines learnt with effort but uncertain and useless for life, and in particular a mathematics limited to practical applications and lacking philosophical depth. He recounts a journey in knowledge lasting almost nine years, during which he often delved into history: to read ancient books, for Descartes, is like travelling and "conversing with [men] of past centuries". But the result is disheartening:

20 On this point, see Henri Gouhier, *La Pensée métaphysique de Descartes* [1962], Paris, Vrin, 1999, p. 95 f. ("Une philosophie sans rhétorique").

21 Descartes to Regius, end of January 1642 (*AT* III, 491 ff.).

22 *AT* VI, 4; *CSM* I, 112.

"one who is too curious about the practices of past ages usually remains quite ignorant about those of the present".[23] And so, from bookish journeys, we pass on to real ones, in which Descartes, reversing the metaphor, portrays himself grappling with the "great book of the world", which holds further uncertainties for him. Indeed, familiarity with other men and other nations – which he had especially in the 1620s – only renders more obvious the precariousness of beliefs and prejudices: what seems strange and ridiculous to us is accepted and approved in societies different from our own. We find here another trace of Montaigne's influence, or another allusion aiming at complicity with the many readers of Montaigne.

Until finally, tired of the world of books and of the book of the world, Descartes resolves to study himself. And it is precisely in himself that he will find the method for "distinguishing the true from the false in order to see clearly into my own actions and proceed with confidence in this life."[24]

2 Four Rules and a General Principle

It may seem strange that, in a work programmatically dedicated to defining the method of human knowledge, no more than a single page is devoted to the fundamental rules of the method itself.[25] Perplexity also arises from the disproportion between the broad presentation, which occupies the entire beginning of the Second Part of the *Discourse*, and the actual enunciation of the rules, which is quite concise. In the presentation, the aim is to show – by an elaborate argument including five examples – that reforms made by "a single individual" are much better than those elaborated by a number of different agents. In the case of science, this single reformer would naturally identify with the author of the *Discourse*, and the fact that one of the examples chosen by way of comparison is "God" himself – the sole author of all the precepts of true religion – shows how deeply Descartes felt himself invested with a truly important mission. As for the origin of his reflections on method, everything is once again traced back to the fateful winter of 1619–1620, when Descartes had retired to meditate in Germany – although, as we have seen, the authentic account of those memorable reflections contained nothing more, regarding method, than vague references to the unity of knowledge. Likewise, as already mentioned, in the autobiographical section of the *Discourse*, there is no trace of dreams or nocturnal revelations.

23 *AT* VI, 6; *CSM* I, 113–114.

24 *AT* VI, 10; *CSM* I, 115.

25 *AT* VI, 18–19; *CSM* I, 120.

The four "rules" of the *Discourse on the Method* are the following (*CSM* I, 120):

1. "The first was never to accept anything as true if I did not have self-evident knowledge of its truth: that is, to carefully avoid precipitate conclusions and preconceptions, and to include nothing more in my judgements than what presented itself to my mind so clearly and so distinctly that I had no occasion to doubt it";
2. "The second, to divide each of the difficulties examined into as many parts as possible and as may be required in order to resolve them better";
3. "The third, to direct my thoughts in an orderly manner, by beginning with the simplest and most easily known objects in order to ascend little by little, step by step, to knowledge of the most complex, and by supposing some order even among objects that have no natural order of precedence";
4. "And the last, throughout to make enumerations so complete, and reviews so comprehensive, that I could be sure of leaving nothing out."

Even though similar precepts can be found in the *Regulae ad directionem ingenii*, written only a few years earlier, it does not seem legitimate to speak of a strong continuity with that work: the horizon of Descartes's methodological reflections has significantly changed.[26] And the signs of this change are plain for all to see: simple natures have disappeared, in name and in fact (except for the mention of the "simplest and easiest objects to know" referred to in the third rule, without further specification). But not only simple natures: also absent are the other two cornerstones of the youthful work – namely, intuition and deduction – which are no longer mentioned at all. And this applies not only to the *Discourse* but to all of Descartes's subsequent production. It is as if, after the *Regulae*, Descartes had come to distrust such concepts, no longer considering them adequate for his new speculative horizon. In some cases, there is a sort of retranslation: the *intuitus* of the *Regulae* survives, in the mature writings, in the knowledge each person has of his/her own existence as a thinking being (the *cogito*), and in that of the axioms attested in a non-discursive way by "natural light" – whereas, after the metaphysical turn of 1630, *intuitus* is excluded precisely from the domain in which its application had seemed most obvious: mathematics.[27]

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26 A different and quite popular reading is found in Étienne Gilson's commentary, *op. cit.*, p. 196 ff.: "the two works, in substance, coincide".

27 *Intuitus* will reappear only twice: see Descartes to Mersenne, 16 October 1639 (*AT* II, 599: "the natural light, or *intuitus mentis*") and the 2nd Replies (*AT* VII, 140), while discussing the *cogito*. As for *deductio*, the only occurrence will be in the *Entretien avec Burman* (*AT* V, 170). The French word *intuition* is not attested in Descartes, while *déduction* occurs only once in the sense relevant here (*AT* IX–2, 2). Descartes speaks of a "connaissance *intuitive*"

In the *Discourse*, two key concepts already used in the past are still present: *self-evidence*, the core of the first rule, and *order*, around which the other three rules are articulated. But the role of self-evidence has changed. Self-evidence, which was previously only a characteristic of intuition, has now supplanted intuition itself as the criterion of validity for human knowledge. It is the tangible sign of the autonomisation – which is also, by the same token, a devaluation – of the question of method in relation to the broader issue of the actual truth-value of human knowledge, which only metaphysics can address. In the *Regulae*, the two issues were still united, if not confused: it was a matter of describing the conditions for the possibility of certain knowledge of objects, which would allow the mind, when rightly applied, to grasp truth directly (*intuitus*) and not to lose the truth-value of its original cognitions (*deductio*). The simple natures grasped through intuition were true and indubitable in themselves and also had a determined objective content not subject to error: extension, figure, motion, the acts of thought.

But now Descartes is no longer willing to claim that there are notions valid in themselves, prior to any inquiry into their foundation. The question becomes, for the time being, to define what must be accepted "as true" (*pour vrai*), according to the subtly but decisively subjectivist nuance that characterises the first rule of the *Discourse*. Only afterwards will it be discovered that what we accept "as true" on the basis of its self-evidence is actually true and not an illusion: but this will require an entire metaphysics, of which the *Discourse* itself provides only a summary in the Fourth Part. It is, in fact, within metaphysics that it can finally be asserted that "the things we conceive very clearly and distinctly are all true". This "general rule", or rather principle – indeed, the Cartesian principle *par excellence* – is enunciated for the first time precisely in the Fourth Part of the *Discourse*.[28] As for the foundation of such a principle, it is once again in God that it must be sought: however self-evident our ideas may be, if we did not know ourselves to be created by a perfect and infinite Being, "we would have no reason to be sure that they had the perfection of being true".[29] In short: self-evidence *per se* is not a guarantee of truth – a thesis simply inconceivable in the era of the *Regulae*.

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with Silhon [?] in 1637 (*AT* I, 354) and again in 1648 (*AT* V, 136–8, still on *the cogito*); an "inuitive" cognition, referred to God and the angels, is also discussed in the letter to Plemp of 3 October 1637 (*AT* I, 415; *CC* I, 177).

28 *AT* VI, 33; *CSM* I, 127: "I decided that I could take it as a general rule that the things we conceive very clearly and very distinctly are all true".

29 *AT* VI, 38–39; *CSM* I, 130. See also *ibid.*: "what I took just now as a rule, namely that everything we conceive very clearly and very distinctly is true, is assured only for the reasons that God is or exists, that he is a perfect being, and that everything in us comes from him".

There are two defining features of self-evident knowledge in the *Discourse on the Method*: 1) resistance to any possible doubt; 2) clarity and distinctness. Indubitability defines "self-evidence" negatively, showing that it is not a psychological concept (the simple fact of being convinced that something is a certain way) but an epistemological one: self-evidence is the final result of a complex cognitive process aimed at eliminating any spurious elements from knowledge, and doubt is the principal tool of this selective process – as will be more clearly explained in the First Meditation. As for clarity and distinctness, they are famously a pair of fundamental concepts in Descartes's philosophy, which emerge in the *Discourse* to define self-evident knowledge, after already appearing in the *Regulae* to define, precisely, the predecessor of self-evidence, namely intuition.[30] Both in the *Regulae* and in the *Discourse*, clarity and distinctness form a single expression. Descartes will explain only later, in the *Principles of Philosophy* of 1644, that they refer to two different concepts: while "clear" means immediately present to the mind, "distinct" denotes a knowledge not mixed with anything unclear.[31] However, as we shall discover, the positive criterion of "clearness" and "distinctness" will prove less effective than the negative criterion of indubitability. Pending the First Meditation and hyperbolic doubt, Descartes already warns the reader of the *Discourse* that "there is some difficulty in recognizing which are the things that we distinctly conceive" (a further indication of the decline of the myth of an intrinsically reliable "intuition" advocated in the *Regulae*).[32]

The other three rules defined in the *Discourse* are closely connected, in agreement here with the *Regulae*, where they constituted a unified block around the notion of an "order" of knowledge. The rule of division (sometimes, but improperly, called that of "analysis") and that of enumeration are in reality only operational precepts that allow one to apply, to its fullest extent, the third rule, that of order, which prescribes a hierarchy of cognitions from the simplest to the more complex: in short, this is the "secret" of the method, already widely disclosed in the *Regulae* (here too, a term sometimes used to indicate

30 See *AT* X, 407; *CSM* I, 37 (Rule XI).

31 See Descartes, *Principles of Philosophy*, 1st Part, §45–46: the perception of pain is "clear", because it imposes itself upon the mind of the sufferer; but it is not distinct, because it is connected with and mixed with deceptive perceptions (*AT* VIII, 21–22; *CSM* II, 207–208). However, the distinction is quite unstable: in the *Meditations* we read that sensations are "in their own way more distinct" than intellectual ideas (*AT* VII, 75; *CSM* I, 52); see also *Principles* 1st Pt., §68: "pain and colour [...] are clearly and distinctly perceived when they are regarded merely as sensations or thoughts" and not as "real things existing outside our mind" (*AT* VIII, 33; *CSM* II, 217).

32 *AT* VI, 33; *CSM* I, 127. See below, pp. 156–157, 169.

this rule – "synthesis"[33] – is one that Descartes himself does not use and which is in fact misleading). If self-evidence is the formal criterion of what we are willing to regard as true, "order" determines a gradation among self-evident propositions, of which the features are however not yet visible in the absence of concrete examples. But this vagueness is intentional: Descartes specifies that his method is not tied to any "particular subject matter"; if he applied it first to mathematics, it was to accustom his mind "to feed on truths", while preparing to extend it to other forms of knowledge.[34]

The generic nature of the rules of the method, combined with their succinct enunciation, was not well received by all readers. Indeed, on many contemporaries, as well as on many readers in the following centuries, the four rules did not make a great impression. Even Arnauld and Nicole, authors of the *Port-Royal Logic* (*La Logique, ou L'Art de penser*, 1662), limited themselves to mentioning them briefly and without much comment: "they may be useful".[35] The ironic paraphrase of Leibniz, who compared them to the empty formulas of certain alchemists, has become famous: "Take what is needed, do what you must, and you will obtain what you desire".[36] Is that all? To be sure, the first to lend little importance to the rules of the method was Descartes himself, who never returned to them after the *Discourse*. In the prefatory letter to the French edition of the *Principles of Philosophy* (1647), in which he redesigns the whole architecture of knowledge, he devotes only a few lines to the question of method, referring to the "rules" of a logic different from common logic, to be practised *before* proceeding to "true philosophy".[37] By that very gesture, the whole issue of method is relegated to a mere propaedeutic.

From another point of view, however, Descartes's method cannot be reduced to the enunciation of the four rules in the Second Part of the *Discourse*. The method is active throughout Descartes's writings and is applied – without burdensome normative paraphernalia – in his philosophical practice. And this applies not so much to the texts that he himself explicitly indicates (such as

33 The use of the pair analysis/synthesis to indicate the second and third rules of Descartes's method is ancient: it dates back to Nicolas-Joseph Poisson, author of the first commentary on the *Discourse* (1671). See G. Rodis-Lewis, *L'Œuvre de Descartes*, cit., I, p. 173 (and note 61). On "analysis" and "synthesis", understood as different argumentative procedures, see below, pp. 173–177.

34 *AT* VI, 19, 21. On the propaedeutic value of mathematics, already apparent in the *Regulae*, see *AT* V, 176–77 (*Conversation with Burman*).

35 A. Arnauld, P. Nicole, *La Logique, ou L'Art de penser* [1662], ed. P. Clair and F. Girbal, Paris, Vrin, 1981, p. 306.

36 Leibniz, *Die philosophischen Schriften*, ed. Gerhardt, vol. IV, p. 329.

37 *AT* IX-2, 13–14.

the discussion of the rainbow in the *Meteors*),[38] but rather to metaphysics. The best illustration of the method, finally, will be precisely the *Meditations*, where, from an initial simple and self-evident proposition laboriously attained, one ascends in orderly fashion to the resolution of more complex issues, posed at the beginning and rigorously distinguished from one another. It is, moreover, obvious that Descartes conceives the method as a propaedeutic to philosophy, but also, at the same time, as the backbone of any philosophical reasoning. The method is the "universal science" promised in the first title initially conceived for the *Discourse*: universal not because it encompasses all knowledge, but because it applies to any object, guiding reason in the search for truth. For this reason, Descartes can affirm that the method "extends to everything," explicitly including within this "everything" both metaphysics and the other disciplines,[39] even though, as has been seen, his reader will eventually discover that the method is not sufficient in itself but depends in turn on metaphysical premises. This is another typically Cartesian circle, which will reemerge and be discussed in the debate following the *Meditations*.

3 A Provisional Morality

Having finally – after so many hesitations – entered onto the stage of the world, Descartes experiences an impulse of prudence. To the first two parts of the *Discourse*, in which he boldly presents himself as the reformer of knowledge, he adds in the Third Part a digression, necessary to clarify the scope of his methodological reform founded on the rejection of all probable knowledge and on the primacy of clear and distinct ideas – a reform from which he excludes, in one stroke, morality and religion. He had already excluded politics: state reforms are always harmful, and only "folly" could lead someone not already in power to believe he could undertake one.[40] However, the cases of religion and morality are quite different from one another. For religion – and in particular for revealed theology, already mentioned in the First Part – the exclusion from the procedures of the method is to be presumed definitive, but for morality it is only a temporary solution, albeit expedient while awaiting better times. This is the meaning of the "provisional" morality (*par provision*, in the original

38 On this point, see Descartes to Vatier, 22 February 1638 (*AT* I, 559; *CC* I, 230–231), and Jean-Robert Armogathe, "L'arc-en-ciel dans les *Météores*", in *Descartes*, ed. Jean-Luc Marion *et al.*, Paris, Bayard, 2007, pp. 161–176.

39 Descartes to x***, May 1637 (*AT* I, 370; *CC* I, 159).

40 *AT* VI, 14–15; *CSM* I, 118 (*Discourse on the Method*, Part 2).

text) or "temporary" morality (*ad tempus*, in the 1644 Latin translation, revised by the author),[41] which Descartes seeks to outline in the Third Part of the *Discourse*, where the "three or four maxims" to which it is reduced are proposed and explained.

Once again, he has recourse to the metaphor of houses and foundations: while constructing the new building after demolishing the old one, we need a roof above our heads, a shelter for use while the site remains unfinished. Indeed, there are actions that do not allow delay or suspension: morality is the site of our daily choices, which cannot await the completion of the entire process of reconstruction of knowledge. It is therefore necessary to clarify, from the outset, how one must act in the world while still lacking the light of science. The maxims of "provisional" morality are presented by Descartes with his usual subjectivist nuance: he claims to have conceived them for himself – like the rest of the method – during the winter of 1619–20, in his Neuburg retreat.[42] It is also in the same period that he may have received as a gift (from a Jesuit!) a copy of Charron's *Sagesse* – a copy still preserved in a private collection in that city, in which there is a dedication addressed to him.[43] Charron's *Sagesse* was a scandalous work, placed on the Index as early as 1605 and destined shortly thereafter to become the target of traditionalist authors such as Father Garasse (and even Mersenne); but it was a work that undoubtedly exerted a certain influence on the provisional morality of the *Discourse*.

In reality, nothing in the writings preceding the *Discourse on the Method* attests an engagement of Descartes in the field of morality, apart from some vague statements in the *Private Thoughts* concerning human free-will.[44] Even admitting that he might have read Charron's *Sagesse* in 1619, it is plausible to

41 On the sense in which the moral maxims of the *Discourse* are "*par provision*" see the remarks of Vincent Carraud and Gilles Olivo, "Une saignée pour en finir avec la morale dite 'par provision'", *Bulletin cartésien*, 48 (2017), pp. 143–147: not a temporary morality, they argue, to be surpassed by another (and better-founded), but a true morality imperfectly sketched. However, here as elsewhere, a fixist reading of Descartes's thought clashes with his ever-evolving philosophical creativity. See *infra*, p. 73, on the intrinsic instability of the "*morale par provision*"; pp. 214–215, on Descartes's letter to Elizabeth of 4 August 1644; and pp. 234–237, on the unheard of theory of "generosity" in the *Passions of the Soul*.

42 *AT* VI, 28; *CSM* I, 125.

43 See Frédéric de Buzon, "Un exemplaire de la *Sagesse* de Pierre Charron offert a Descartes en 1619", *Bulletin cartésien* 20 (ed. 1992), pp. 1–3. However, the fact that in the dedication the Latinized name appears ("*Doctissimo Amico grato et minori fratri Renato Cartesio*"), which came into use only around 1640 (cf. above, p. 2, note 4), does not fail to raise some doubts about its authenticity.

44 See *AT* X, 218: "*Tria mirabilia fecit Dominus: res ex nihilo, liberum arbitrium, & Hominem Deum*".

suppose that, after leaving the volume in Neuburg, he did not reflect much further on moral themes until 1637. It was at the time of the *Discourse* that the situation changed, given the essentially promotional function of this publication, destined for a wide public. Descartes feared that his method might be understood as a subversive proclamation against faith and current morality, inevitably destined to raise doubts, and thus to fall under the axe of negation that struck every doctrine lacking intellectual self-evidence. He wanted to avoid at all costs being taken for an unbeliever or a nihilist. Taking a stance in the moral domain thus suddenly became an urgent necessity for him. As he would confess with total candour in 1648, he felt obliged to formulate some moral norms "because otherwise they would have said that I am without religion and without faith, and that, through my method, I want to destroy them".[45]

In the third part of the *Discourse*, Descartes declares that "I have formed for myself a provisional moral code consisting of just three or four maxims, which I should like to tell you about." Descartes's first three maxims are the following:

1. "The first was to obey the laws and customs of my country, holding constantly to the religion in which by God's grace I had been instructed from my childhood, and governing myself in all other matters according to the most moderate and least extreme opinions – the opinions commonly accepted in practice by the most sensible of those with whom I should have to live." (*CSM* I, 122)
2. "My second maxim was to be as firm and decisive in my actions as I could, and to follow even the most doubtful opinions, once I had adopted them, with no less constancy than if they had been quite certain" [...] "Similarly, since in everyday life we must often act without delay, it is a most certain truth that when it is not in our power to discern the truest opinions, we must follow the most probable." (*CSM* I, 123)
3. "My third maxim was to try always to master myself rather than fortune, and change my desires rather than the order of the world." (*CSM* I, 123–124)

The first maxim immediately highlights the conservative and conformist side of Descartes's "provisional" morality, preaching acceptance of the *status quo* and the rejection of all extremism – a conception widely diffused at the time, with key references in Montaigne and Charron. The latter were the noble fathers, in general, of the entire tradition of *libertinage érudit* in the first half of the seventeenth century. The libertine sage does not present himself as a reformer of morality, much less of religion; rather, he adopts and maintains the

45 *Conversation with Burman*, *AT* V, 178. Similar expressions, more euphemistic, already occur in a letter to Pollot of 1638 (*AT* II, 35).

religion in which he was born and educated, without exposing himself publicly: "I have the religion of my nurse," Descartes would say years later to the Dutch Protestant minister Revius – here echoing Guez de Balzac.[46] Needless to say, such an attitude was also the result of decades of bloody religious wars between Catholics and Huguenots, which had sown discord and terror across France in the second half of the sixteenth century. "I have the religion of my king", Descartes would add, again to Jacopus Revius (Jacob van Reefsen), thus hoping to dispel any misunderstanding regarding his residence in the Netherlands and to ease tensions with representatives of the various Christian confessions. But without much success: "The Huguenots hate me as a papist and those of Rome do not love me, thinking I am corrupted by the heresy of the motion of the earth".[47]

The rejection of all radicalism and extreme options applies not only to public decisions but also to private ones: that one ought not to restrict one's freedom of action by contracting indissoluble bonds, is in fact a corollary of the first maxim. In the text, only commercial contracts and religious vows are mentioned: useful and praiseworthy, but not for me, affirms Descartes (and this statement would bring some reproaches down on him).[48] But it is possible that he was also thinking of something else, as a brief look at his – rather bleak – emotional life confirms. In 1635, two years before the publication of the *Discourse on the Method*, his daughter Francine was born in Deventer, by Helena (or Eijlena) Jans van der Strom, one of his maids. Both mother and child were in fact extremely ephemeral ties, from which he would soon be freed, albeit for different reasons: Francine died in infancy in 1640; as for Helena, Descartes would secure her future by financing her marriage to the son of a Dutch innkeeper, thus freeing himself from what Baillet defines a "dangerous commitment".[49] Nor are any other romantic involvements of the philosopher known, apart from a "slightly cross-eyed" girl[50] who had made an impression on him when he was a child: an episode which all biographers – even the most serious – mention for lack of better material.

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46 The anecdote is reported by Charles Adam in *AT* [1st ed.] XII, p. 345, note. For the relevant texts by Balzac, see G. Rodis-Lewis, *Le Développement* ..., p. 442.

47 Descartes to Mersenne, 16 October 1639 (*AT* II, 593).

48 See *AT* VI, 24, and Gilson's *Commentaire* [ed. 1987], p. 240, on religious vows.

49 Further details are provided by G. van de Ven, "Quelques données nouvelles sur Helena Jans", in *Bulletin cartésien XXXII*, *Archives de philosophie*, 2004, pp. 10–12. On the "dangerous commitment" see Baillet, *Vie*, II, p. 91, who cites a testimony – who knows how reliable? – by Clerselier. Descartes speaks of Francine as "my niece" (Descartes to [Unknown]), 10 August 1637 (*AT* I, 393; *CC* I, 168).

50 Descartes to Chanut, 6 June 1647 (*AT* V, 57).

The second maxim shows how, in reality, the interplay of the sources of the "provisional morality" in the *Discourse* is far more complex than appears at first glance – but that is always the case with Descartes – and irreducible to a simple revisiting of Montaigne's and Charron's works. Descartes addresses different readers and seeks to adapt to them all, preparing the ground for his more innovative doctrines. In the second maxim he has in view the reader educated in scholasticism and accustomed to discussions among "casuists," that is, specialists in delicate "cases of conscience" (who were later to be ridiculed by Pascal in the *Provincial Letters*). These were debates opposing the theses of "probabilists" and "rigorists," with Descartes closer to the former than to the latter. However, contrary to Pascal's "laxist" probabilists, who approved any "probable" moral opinion (i.e. published and authorised by a casuist), Descartes insists on the need to embrace the *most probable* opinions, then to follow them with the utmost rigour.[51] The firmness of moral choices is in fact a value in itself and must be pursued, with no concession to doubt or regret: when lost in a forest, one must always follow one direction, even if chosen at random, rather than wander about aimlessly, risking never to escape.[52]

What emerges from the second maxim is above all the attempt to dissociate morality from the strict canon of the Cartesian method: is it possible to behave morally well even in the absence of epistemic certainty? A probabilistic approach, however unacceptable to Descartes in physics and metaphysics, allows him to reconnect with late scholasticism, and in particular with Suárez, in the field of morals. Suárez had increasingly distanced himself from certain key theses of Aristotelianism, insisting on the intrinsic value of moral conscience: one can act with the certainty of acting virtuously even without possessing the light of truth. Probability or doubt must be distinguished from truth when science is at stake but in the practical realm it is legitimate to translate probability into certainty. Descartes follows Suárez on this point, literally reversing what had been – and would remain – his position in purely theoretical matters: whereas, in the search for truth, what is only "probable" or subject to doubt must be considered "absolutely false," on the contrary, in moral choices, a doubtful or uncertain opinion must be considered "most true and certain," once embraced, either because it is more probable than others or simply because a decision had to be made without further delay.[53]

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51 See Vincent Carraud, "Morale par provision et probabilité", in *Descartes et le Moyen-Âge*, ed. J. Biard and R. Rashed, Paris, Vrin, 1997, pp. 259–279.

52 *AT* VI, 24; *CSM* I, 123.

53 *AT* VI, 31, 25; *CSM* I, 126, 123. See Vincent Carraud, "Morale par provision et probabilité", esp. pp. 272–276.

The third maxim further broadens the range of Descartes's sources. After the libertines and the scholastics, the mandatory reference is now to Stoic morality – from Epictetus to Justus Lipsius – which had seen a major resurgence of interest and adherence in the seventeenth century (but also of renewed criticism). It is the Stoic sage who is invoked here, the sage who learns to accept fate with meditative resignation by introspection, allowing him to find happiness in the limitation of his own desires. The secret of happiness thus lies in understanding that "nothing lies entirely within our power except our thoughts," and that therefore external goods have no relevance, being outside our jurisdiction: the best way to obtain everything we desire, therefore, is to desire nothing that does not depend upon ourselves.[54] The enthusiastic praise of Stoicism that Descartes proclaims in the following lines is, moreover, rather at odds with the scorn he had himself expressed in the First Part of the *Discourse* towards Stoic wisdom, which then had seemed to him nothing more than "callousness, or vanity, or desperation, or parricide."[55] And precisely what he had earlier denounced as the fruit of unhealthy pride now becomes the great quality of the Stoics: that of "escaping from the dominion of fortune" in order to "rival their gods in happiness".[56] This would not be the last of Descartes's wavering in the moral sphere. On the contrary, a defining feature of all his thinking on ethical themes is the integration, not without internal tensions, of Stoic and anti-Stoic elements: the *Passions of the Soul* were to confirm this point beyond any doubt.

The provisional morality concludes with a final recommendation ("Finally, to conclude this moral code"), which is in fact to be understood as an additional maxim (at the beginning of the Third Part there was indeed mention of "three or four maxims"). The register is again subjectivist: Descartes speaks of his decision to "continue my self-instruction" so as to acquire all the knowledge necessary to "to judge well".[57] But, as usual, the message is intended for everyone. Indeed, this final recommendation ultimately reveals "the sole basis of the foregoing three maxims".[58] It turns out, in fact, that the first three maxims of the provisional morality are suspended upon a condition and a condition that is anything but provisional – rather, it is foundational in all Descartes's moral thought: that of striving to increase one's knowledge, because practical

54 *AT* VI, 25–26; *CSM* I, 123–124. On the sources (ancient and modern) of these positions of Descartes, see Gilson's *Commentaire*, pp. 247–261.

55 *AT* VI, 8; *CSM* I, 114–115.

56 *AT* VI, 26; *CSM* I, 124.

57 *AT* VI, 27–8; *CSM* I, 124.

58 See Jean-Marie Beyssade, *Descartes au fil de l'ordre*, cit., pp. 237–58, who sees here the emergence of yet another Cartesian "circle".

errors always derive from ignorance, and, as the scholastics said, no one chooses evil except under the appearance of good. Conformism, therefore, does not exclude rational examination of dogmas, but merely postpones it: "I should not have thought myself obliged to rest content with the opinions of others for a single moment if I had not intended in due course to examine them using my own judgement" (Descartes would later refer to this sentence in reply to those who had deduced from the first maxim that infidels are morally obliged to remain in their religion).[59] Similarly, probabilism does not translate into passivity in the face of life's circumstances, but into a rational conduct dictated by reason, which always remains in search of the best solution. As for the Stoicism of the third maxim, this too is supported by the imperative to promote knowledge, because the limitation of desires to the sphere of thought – the only sphere that depends solely on ourselves – still implies the maximum enhancement of cognitive activity ("a path by which I thought I was sure to acquire all the knowledge of which I was capable, and in this way all the true goods within my reach").[60]

However, the moral analyses offered by Descartes in the *Discourse* have something intrinsically "provisional." They do not include, for instance, an adequate reflection on human freedom – a topic never addressed thematically in his writings prior to the *Meditations*.[61] The most provisional, if not precarious aspect of Descartes's moral questioning in the *Discourse* lies ultimately in its moralism: the entire question of individual choices is reduced to an internal play of thoughts and opinions, conceived as mental states entirely independent from bodily conditioning. Morality seems to have nothing to do with those things that are "in man" but do not depend "on man" (that is, precisely, bodily movements).[62] In the Third Part of the *Discourse*, the case of a possible interaction between the two components of the human being is never contemplated: the word "passion" does not appear at all.[63] This is an approach that Descartes would later abandon. However, the direction in which he was heading can be inferred from a revealing phrase in the Sixth Part of the *Discourse*, where he states that every human good depends strictly "on the temperament and

59 *AT* VI, 27; *CSM* I, 124. Cf. Descartes to Mersenne, May 1637 (*AT* I, 367; *CC* I, 158).

60 *AT* VI, 28; *CSM* I, 125.

61 The only possible exception is a passage from a fragment lgredy entitled *Cartesius*, of very uncertain dating (*AT* XI, 647–653), transcribed by Leibniz and published by Vincent Carraud in *Bulletin cartésien* 14, 1985 (for the year 1983), pp. 1–6.

62 Descartes to Reneri for Pollot, April or May 1638 (*AT* II, 36; *CC* I, 293).

63 In the Fifth Part of the *Discourse*, Descartes still mentions "hunger and thirst" as instances of "internal passions" (*AT* VI, 55; *CSM* 139), without distinguishing them from the true "passions of the soul" – on which see below, chap. 7.

disposition of the bodily organs," so that, in order to make men "wiser," one must first think of their physical health.[64] In short, even in morality, sooner or later, one must reckon with the body – that is, with a subject that Descartes had extensively studied since the early 1630s while awaiting a better understanding of its relationship with the mind.

4 The Body Machine

One of Descartes's most revolutionary writings is the treatise on the human body which constitutes the final part of *Le Monde* and which would be published separately, fourteen years after his death, with a perhaps spurious title: *L'Homme* (generally translated as *Treatise on Man*).[65] The Fifth Part of the *Discourse* contains a muted echo of this text – consistent with the cautious tone adopted throughout the work – but still enough to draw the attention of readers, particularly by the allusions it contains to one of Descartes's most famous and infamous theses: that of animals as machines lacking any sort of thought or consciousness.

The *Treatise on Man* opens with a section expressly entitled "The Body Machine". This title precisely conveys Descartes's decisive move, the originality of which lies not so much in the use an artificial model to explain certain bodily functions (this had already been considered by the Scholastics and even by Aristotle),[66] but rather in the reductionist rigour with which he proceeds in his reasoning: the human body, for Descartes, is *nothing but* a machine. In asserting this, he does not claim great originality from a strictly anatomical point of view. He is aware of having "nothing new" to say compared to what had already been shown by other specialists in the field, from Vesalius to Bauhin.[67]

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64 *AT* VI, 62; *CSM* I, 143. On Descartes's medicine, see below, chap. 7.

65 Descartes's *Treatise on Man* was first published in a Latin translation (*De homine*) by Florentius Schuyl, in 1662. A French version appeared in Paris two years later. In August 2022, Erik-Jan Bos announced his discovery (in Leiden) of another Latin translation, see his blog "An Unknown Latin Manuscript Translation of Descartes' *L'Homme*" – *https://www.leidenspecialcollectionsblog.nl/articles/an-unknown-latin-manuscript-translation-of-descartes-lhomme*. See also Delphine Antoine-Mahut and Stephen Gaukroger (eds.), *Descartes' Treatise on Man and its Reception*, Springer, 2017.

66 See Dennis Des Chene, *Spirits and Clocks: Machine and Organism in Descartes*, Ithaca, Cornell University Press, 2001, p. 13.

67 Descartes to Mersenne, early June 1637 (*AT* I, 378; *CC* I, 161). On Vesalius (A. van Wesel, 1514–1564), cf. Descartes to Mersenne, 20 February1639 (*AT* II, 525). On Gaspard Bauhin (1560–1624), see Annie Bitbol-Hespériès, *Le Principe de la vie chez Descartes*, Paris, Vrin, 1990, pp. 195–209.

Descartes's innovation is not anatomical but physiological: it concerns the analysis of the functions of the human body, not the description of its various organs. The body, for Descartes, is a device comparable to automata, hydraulic machines, fountains, mills, or precision mechanisms like the clock (a symbol of all seventeenth-century mechanism) and its functioning is based on the principles of the new mechanistic physics.

In this connection, Descartes distances himself from the medical science of his time, still heavily influenced by the Galenic tradition and the theory of bodily humours; but he distances himself not so much in the single physiological explanations, as in their translation into the new language of the scientific revolution. This is the case, for example, in the analysis of digestion. Descartes follows the main lines of Galen's explanation but eliminates all reference to supposed "faculties" and virtues of the bodily organs. His explanatory theory is entirely based on mechanical models, particularly that of the fermentation and dilation due to the overheating of particles of matter, that is, ultimately, to their vortical motion. Digestion thus consists in the breakdown of food by liquids present in the stomach, which separate its parts just as acids attack metals. The finer parts pass through small pores and flow into a large vein that carries them to the liver, where they are purified and transformed into blood, which then begins to circulate within the organism.[68]

Around 1630, the thesis of blood circulation was no trivial matter. William Harvey (1578–1657) had published his discovery only two years earlier, in his *De motu cordis*. Before that, it was believed that blood, continuously produced by the liver and heated by the heart, irrigated the body and was then extinguished in the peripheral tissues. Descartes, for his part, declared he had read Harvey only after writing his *Treatise on Man*.[69] But we have only his word for that, and it is plausible that he came to know Harvey's thesis even without consulting the work directly. In any case, in the *Discourse on the Method* and in other subsequent texts, Descartes honestly acknowledges that the discovery of circulation is the achievement of the English physician, renouncing any claim to paternity.[70] In any case, Descartes's approach is certainly different from Harvey's. The latter regarded the heart as a muscle capable of contracting and expanding,

68 *AT* XI, 121–123. See F.A. Meschini, "La dottrina della digestione secondo Descartes. Itinerari tra testi, contesti e intertesti", *Physis*, 2015/1–2, pp. 113–164; Carmen Schmechel, "Descartes on fermentation in digestion: iatromechanism, analogy and teleology". *The British Journal for the History of Science*, 55, 2022; pp. 101–116.

69 Descartes to Mersenne, November or December 1632 (*AT* I, 263; *CC* I, 101).

70 See *AT* VI, 50; *CSM* I, 136. On Descartes and Harvey, see E. Gilson, *Études sur le rôle de la pensée médiévale dans la formation du système cartésien* [1930], Paris, Vrin, 1987, pp. 51–100.

thus making blood flow through the circulatory system. For Descartes, on the contrary, the heart should be considered as a source of heat, or as a "flameless fire" – like fermenting grapes – which heats the blood, dilates it, and pushes it into the lungs, where it condenses and returns to nourish the heart itself, the motor of the body (the functioning of the heart is also extensively treated in the 5th Part of the *Discourse*).[71]

From a strictly medico-scientific point of view, Harvey is far more advanced than Descartes. However, Descartes is far more capable than Harvey of giving an explanation of the heart's motion compatible with the laws of physics, reinterpreting in mechanistic terms – without any occult faculty or "pulsific virtue"[72] – the classical thesis (already held by Plato and Aristotle) of the heart as the warmest place in the body. Moreover, for Descartes, the circulatory system is connected to the nervous system and the main bodily functions rely on their interaction. The nerves are small tubes equipped with an internal filament and spread throughout the organism. Inside them flow the "animal spirits," another traditional term of Galenic origin, which Descartes borrows to indicate small particles of extremely fine matter (similar to those of the "first element") and thus endowed with rapid motion. Descartes believes that the animal spirits are generated mechanically in the brain, which is continuously irrigated by blood: as it flows from the heart to the brain, the blood is filtered by a sort of sieve formed of cerebral tissue, which allows to pass through its pores only the smallest parts of which the blood is composed – the animal spirits – destined to pass into the nerves.[73] The animal spirits have various functions, all dependent exclusively on their motion: 1) they determine and guide the contraction and relaxation of the muscles; 2) they keep the nerve filaments taut, allowing the transmission of impulses; 3) they modify the brain (in a way we will consider below) in correspondence with events in the internal and external organs of the body.

The brain is the directional centre of the entire bodily machine.[74] It consists of a complex of nerve filaments capable of assuming and preserving different physical states (like the "folds" that a sheet of paper retains after being creased) depending on the stimuli received from the passage of the animal spirits. The cerebral "folds" are the seat of memory, that is, the ability to retain traces of

71 See *AT* VI, 51–53; *CSM* I, 136–138.

72 The thesis of the *vis pulsifica* of the heart was already present in Galen; see W. Pagel, *New Light on William Harvey*, 1976, p. 72.

73 *AT* XI, 130–131. Cf. Descartes to Vorstius, 19 June 1643 (*AT* III, 688).

74 For a recent reappraisal of Descartes's neurophysiology, see the papers collected in Denis Kambouchner, Damien Lacroux, Tad M. Schmaltz, & Ruidan She (eds.), *The Cartesian Brain: Philosophical and Scientific Perspectives*, New York, Routledge, 2025.

sensations experienced in the past. The core of the brain is composed of a small gland located at its base: a gland provisionally indicated, in the *Treatise on Man*, by the letter H, and then identified as the *conarion*, that is, the "pineal gland" (so called because it resembles a pinecone), already known to Galen and later described by Bauhin.[75] Suspended in a complex system of filaments, the pineal gland is the seat of "common sense," that is, the meeting point of the entire nervous system. In fact, it is the only part of the brain "that is not double" (i.e., not split in two symmetrical parts), and thus the one where it is appropriate to suppose that all information coming from the body converges.[76] The animal spirits "issue from the gland H" and are directed into the various nerves through specific openings (or "pores") present in the inner cavity of the brain.[77] Acting on this gland, the mind – if and when it is united with the body – can control all its movements, in the same way that a plumber (Descartes's example) can control an entire hydraulic system by positioning himself where the various pipes converge and present "valves" that can be opened.[78]

The analysis of the sensory apparatus constitutes perhaps the most original and fascinating section of the *Treatise on Man*. To explain the functioning of the five sense organs and their relationship with the brain, Descartes does not postulate the existence of any special faculty, but rigorously applies the figurative model of the *Regulae*, now integrating the physical aspect of the question, previously only sketched. All the messages transmitted from the nervous system to the brain consist in the agitation of the internal filaments of the nerves, which is transmitted from the sensory terminations to the brain, provoking the opening of the corresponding pores in the inner cavity of the brain. The animal spirits, coming from the pineal gland, can then flow into the nerves through these same pores, determining the motor response to the stimulus received (thus, at the first sensation of a burn, we immediately pull our foot away from the fire).[79]

As for sensations and emotions, they do not depend on structurally different cerebral events: only the "figures" (that is, the configurations of cerebral tissue) to which they correspond are different. Thus, the various colours, sounds, tickling, fear, good mood, and hunger differ only because they correspond to different states of cerebral matter. Sight, in particular, does not depend at all –

75 See A. Bitbol-Hespériés, *Le Principe de la vie*, p. 195 ff.

76 Descartes to Meyssonnier, 29 January 1640 (*AT* III, 19). Cf. Franco A. Meschini, "The Doctrine of the Pineal Gland: A Cryptic Doctrine", in *The Cartesian Brain*, 2025, pp. 19–41.

77 *AT* XI, 174–178.

78 *AT* XI, 131.

79 *AT* XI, 142 ff.

as for the Scholastics – on strange "images fluttering through the air" sent by objects and containing in miniature a representation of them,[80] but on the pressure of light on the eyes, and in particular on the retina, where it paints the reversed image of the object (as Kepler had recently discovered). This image is then translated into an impulse by the filaments of the optic nerve, and the agitation of that nerve in turn determines the formation of a figure in the cavity of the brain, where the opening of the corresponding pores allows the flow of animal spirits from the pineal gland to be modified, also giving it a particular inclination that blocks or attenuates other sensations: while our gaze follows an arrow, we do not smell the scent of a flower.[81]

Just as in physics, so too in physiology, Descartes pursues a radical reductionism: in physics, he dispenses with "qualities" and "forms," in physiology, even with the soul. For the Scholastics, the soul (which was regarded as the "substantial form" of man) was necessary for life, for locomotion, for the most basic functions of every living being, starting with sensation. The Scholastics, however, distinguished between the "vegetative soul" of plants (living but devoid of sensation), the "sensitive soul" of animals (not only living but also capable of sensation), and the "rational soul," characteristic only of man, which contains the principle of rationality and also those of life and sensation. The first two "souls" were generally considered to be corruptible, unlike the rational soul, which, while containing the others as its inferior faculties, is nevertheless immortal.[82] But Descartes intends to avoid any contamination between thought and body. For this reason, he rejects the tripartition of the soul's faculties and reduces all lower functions to bodily matter alone, mechanically organized, the latter being sufficient to explain life, organic functions, the sensory apparatus, memory, and corporeal imagination. In the conclusion of the *Treatise on Man*, he argues that, "to explain these functions, then, it is not necessary to conceive of any vegetative or sensitive soul, or any other principle of movement or life, other than its blood and its spirits which are agitated by the heat of the fire that burns continuously in its heart, and which is of the same nature as those fires that occur in inanimate bodies".[83]

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80 *AT* VI, 85 (*Dioptrics*). Descartes offers a caricatural description of the scholastic thesis: see D. Perler, "Descartes, critique de la théorie médiévale des species", in *Descartes et le Moyen-Age* ..., pp. 141–53.

81 *AT* XI, 174 ff., 185–187.

82 Hence Descartes's objection: how is it possible that "the sensitive soul, when it is alone, is of a corporeal and mortal nature, while, when it is united with the rational soul, it is spiritual and immortal"? (Descartes to Plemp, 3 October 1637 – *AT* 415; *CC* I, 177).

83 *AT* XI, 201–202 (Gaukroger, p. 169).

But do such machines exist – purely material, yet capable of living and responding to sensory stimuli – or are they merely fictitious? Once again, the hypothetical nuance present at the beginning of the *Treatise on Man* ("I *suppose* the body to be just a statue or a machine made of earth")[84] corresponds only to Descartes's prudence: animals provide the clearest example of such machines. Descartes had already treated this point in the *Regulae*, asserting that the actions of animals are all explainable in terms of bodily modifications.[85] Animal bodies constitute an important critical case from Descartes's perspective: on the one hand, because they show to what extent matter can do without thought – that is, it can perform everything we find in animals; and on the other, because they make it easier to clarify, in negative terms, the nature of thought itself: something that does not consist in bodily memory, nor in figures imprinted in the brain, nor in the capacity to respond to environmental stimuli. For Descartes – but he will specify this clearly only years later[86] – thought is essentially consciousness, that is, immediate awareness of one's actions and mental states: an awareness that must be denied to animals.

Thus, the peculiarity of Descartes's position does not consist merely in the claim that animals are machines, but in the subsequent assertion that they are machines without consciousness. This latter claim, moreover, is not made explicitly in the *Discourse on the Method*, which generates a whole series of misunderstandings. In the Fifth Part, in particular, Descartes is chiefly concerned with denying that animals have reason, thereby responding to a famous remark by Montaigne. In one of his celebrated *Essays*, Montaigne had sought to subvert the commonplace of man's preeminence over animals, polemically reversing it and attributing a form of rationality to animals.[87] Against Montaigne, Descartes reiterates that the outward acts of animals, even those that appear most human and refined, still show their lack of reason. This, for two reasons: 1) language, which is proper to man and which no animal can imitate except by producing sounds in response to certain stimuli – something a machine could also do; 2) the universality and creativity of human reason,

84 *AT* XI, 119 (Gaukroger. p. 99).

85 *AT* X, 415; *CSM* I, 42: "We refuse to allow that [animals] have any awareness of things but merely grant them a purely corporeal imagination." Another early, but cryptic, reference to the soul of animals can be found Descartes's letter to Mersenne of 27 May 1630 (*AT* I, 154; *CC* I, 63).

86 In the 2nd Replies (*AT* VII, 160) and then in the *Principles of Philosophy*, Pt. I, §9.

87 See Montaigne, *Essays*, II, 12, and the passages cited in Gilson's commentary, p. 426 (1987 ed.).

which constantly applies itself to new objects, whereas animals can do only one thing, however well, and sometimes better than humans.[88]

With this manoeuvre, Descartes perhaps hoped to ingratiate himself with the Scholastics, whom he followed by his use of the term "rational soul," of which animals are said to be entirely deprived (on this point, indeed, the Scholastics agreed). This equivocation, perhaps intentional, generated another that was certainly unintentional. The first readers were in fact led to think that Descartes was willing to maintain that bodily organs are sufficient to produce sensations (that is: not merely responses to specific sensory stimuli, but the actual awareness of such stimuli), and thus that he was proposing a kind of materialistic theory of sensitivity – albeit limited to animals. Moreover, certain statements in the *Discourse* were not free of ambiguity. For instance, Descartes maintained that the machine of the body is sufficient for all those functions in which animals resemble us and which are independent of the rational soul. A Scholastic could only interpret this to mean that matter is sufficient for sensation, although not for reason. That is, indeed, how one of the first critics of the *Discourse on the Method* – Libert Froidmont, professor of theology in Louvain – understood it.[89]

At this point, Descartes was forced to clarify things. And he did so at last, but only in private. Animals, he wrote in a letter of October 1637 to Plemp, *do not have a soul* – but not because they are incapable of reacting to a visual or auditory stimulus with observable external behaviour. Animals are obviously capable of doing all that, as common experience shows. Moreover, they also have a form of memory, based on the persistence of traces of animal spirits in the brain, just as they have retinal images and a convergence of various nervous stimulations in the common sense. The point is that animals are not aware of possessing all these functions and capacities. A mystery? No more so, Descartes explains, than are the involuntary actions of humans, like reflex movements, which certainly do not depend on the soul, but on an internal

88 *AT* VI, 57–59; *CSM* I, 140–141.

89 See Froidmont's letter to Plemp, 13 September 1637 (*AT* I, 403), in reference to *AT* VI, 46; *CSM* I, 134: "when I looked to see what functions would occur in such a body, I found precisely those which may occur in us without our thinking of them, and hence without any contribution from our soul (that is, from that part of us, distinct from the body, whose nature, as I have said previously, is simply to think). These functions are just the ones in which animals without reason may be said to resemble us. But I could find none of the functions which, depending on thought, are the only ones that belong to us as men; though I found all these later on, once I had supposed that God created a rational soul and joined it to this body in a particular way which I described." On this point, see especially Sergio Landucci, *La mente in Cartesio*, Milan, F. Angeli, 2002, pp. 39–54.

circuit of material events giving rise to regular mechanisms of action and reaction: just as, when falling, we extend our hands (similarly, a dog beaten to the sound of a violin will show fear every time it hears that sound, even before being struck again).[90]

In reality, Descartes's position on animal consciousness is not so rigid, and little by little he will shift from the assertive declaration of 1637 to more cautious expressions that border on agnosticism: we cannot know what animals feel – he writes to More in 1649 – because consciousness is a private fact and thus only an animal itself could testify to its possible conscious states.[91] Nevertheless, the doctrine of animals-as-machines was from the beginning one of the most controversial points of Descartes's philosophy and would lend itself to all kinds of accusations and caricatures, especially in popular publications and polemical pamphlets. What was most unacceptable was the thesis that animals are incapable of feeling pain: it seemed to open the door to every kind of sadistic cruelty towards them, including vivisection. Descartes was undoubtedly responsible for this interpretation of his thought. Although he was well-versed in animal behaviour and even owned a dog ("Monsieur Grat"), he had effectively asserted that only the "external movements that accompany pain" are to be found in beasts, and "not the pain itself".[92]

Yet one last, perhaps most unsettling question remained: if the body of both man and animals is a machine, who is its designer and maker? God, replies Descartes in the first instance, both at the beginning of the *Treatise on Man* and in the *Discourse on the Method*, where he specifies, however, that only the insufficiency of available data had prevented him from treating the question "in the same style as the rest," that is, without distinguishing the question of the origin of life from that of the origin of the universe as a whole.[93] In a letter to Mersenne dating from 1639, Descartes goes so far as to postulate that the body of organized beings is formed in the same manner as the rest of matter generated from the original chaos: a machine, thus, that assembles

90 Descartes to Plemp, 3 October 1637 (*AT* I, 413; *CC* I, 176). For the (Pavlovian *ante litteram*) example of the dog, see Descartes to Mersenne, 18 March 1630 (*AT* I, 134; *CC* I, 56). For the example of the fall: *AT* VII, 229–230. On the topic: Georges Canguilhem, *La Formation du concept de réflexe aux XVII*e *et XVIII*e *siècles*, Paris, PUF, 1955, pp. 27–57.

91 See especially Descartes to More, 5 February 1649 (*AT* V, 276–277 – my italics): "Although I hold it as demonstrated that thought cannot be proven to exist in brute animals, *I do not therefore think it can be demonstrated that none exists*, because the human mind does not penetrate their hearts".

92 Descartes to Mersenne, 11 June 1640 (*AT* III, 85). On Descartes's dog, see Baillet, *Vie*, II, p. 456.

93 *AT* VI, 45.

itself, and, therefore, a machine in a highly improper sense. How could such a self-constructive process have taken place? Descartes declares that he wants to elucidate that question in the future, in the same way that he explains in the *Dioptrics* the formation of the organized structure of snowflakes and salt crystals (an analogy that would be often resumed in the scientific thought of the following centuries). But the important point is to establish from the outset that "the great number and the order of the nerves, veins, bones, and other parts of an animal" depend solely on a nature that acts "according to the exact laws of mechanics."[94]

Finally, shortly before his death, Descartes would embark on another impossible challenge: to explain, on the basis of the laws of motion alone, the formation of the foetus in the mother's womb. He would not succeed, for obvious reasons, but the path towards the unification of what would later be called "biology" with the other exact sciences – though still steep and long – was thus indicated.[95]

5 Science and Society

The Sixth Part of the *Discourse on the Method* – important above all in order to understand Descartes's overall cultural programme – starts with a small exercise in rhetoric. Descartes must *deny* being a Copernican, while at the same time making clear – to those who are ready and able to understand – that he *is* a Copernican and that his decision not to disclose his physics (i.e., *The World*) is entirely justified. Hence we are confronted with a series of linguistic contortions, allusive descriptions, and meaningful disclaimers: "persons for whom I have particular respect" (*i.e.*, the Roman Inquisition) disapproved of "an opinion in matters of physics" (Copernican heliocentrism) published "by someone else" (Galileo); an opinion in which I saw nothing dangerous to religion or the state but which "I do not wish to say I shared" (that is: I do not wish to say so because I am forbidden to do so, but in reality I did and still do share it); an opinion, in any case, that I could have upheld publicly "if reason had persuaded me to it" (that is: I could publicly uphold Copernicanism, of which I am rationally persuaded, but I do not do so because the Church forbids it).[96]

94 Descartes to Mersenne, 20.2.1639 (*AT* II, 525).

95 On *De la formation du fœtus*, an unfinished work dating back to around 1648, cf. D. Des Chene, *Spirits and Clocks*, cit., pp. 32–52, and V. Aucante, *La Philosophie médicale de Descartes*, Paris, PUF, 2006, pp. 297–329.

96 *AT* VI, 60.

Faced with such circumlocutions, even a cultured and attentive reader like Constantijn Huygens had some difficulty following his friend Descartes, unable to imagine what could possibly have prevented him from publishing *The World* – others, however, would be less naïve.[97] Huygens often returned to the question in those years, even inappropriately: "in the end you will die, and, after your death, this *World* will come into the world," he writes to Descartes in May 1639.[98] In his attempt to persuade Descartes to publish, Huygens is valiantly backed by Mersenne. The latter had even inserted a clause in the privilege for the *Discourse on the Method* that obliged the author to publish his treatise on physics as well. Not content with this constraint, Mersenne wrote to Descartes that the only way to read his writings now was to kill him… And obviously Descartes was not pleased: "if I die, I must be satisfied with those who survive me, otherwise no one will see my writings".[99] As for *The World*, Descartes nonetheless declared that he had not yet abandoned publication and that he was publishing the *Discourse* precisely to "take the temperature".[100]

This cautious strategy is also confirmed by the three scientific essays that he offers at the end of the *Discourse* itself: a step back, compared to the ambitions of *The World*. In these, Descartes explicitly adopts a much more restricted point of view, which he considers necessary in order not to reveal too much of his physics. What is missing in these essays is precisely what was most boldly Cartesian in *The World*: the search for first principles, the laws of nature and their foundation, the aspiration towards a unified explanation of nature based on a few simple notions. In the *Dioptrics*, Descartes speaks of light, but discards from the outset the question of its "nature,"[101] and starts with certain empirical data, seeking to proceed on the basis of mere "suppositions" (not in the sense that they are hypotheses, but simply because he refrains from showing how such suppositions might be deduced *a priori*, restricting himself to applying them to experience).[102] The same precaution appears in the *Meteors*, which is devoted to the mechanistic explanation of meteorological phenomena such as winds, clouds, rain, hail, and snow, as well as the rainbow.[103]

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97 Huygens to Descartes, 24 March 1637 (*AT* I, 626; *CC* I, 149); see however Jacobus Revius, *Statera philosophiae cartesianae*, Lugduni Batavorum, P. Leffen, 1650, pp. 54–58.

98 Huygens to Descartes, 28 May 1639 (*AT* II, 680).

99 Descartes to Mersenne, [April] 1637 (*AT* I, 348–9; *CC* I, 151).

100 Descartes to [Unknown], May 1637 (*AT* I, 370; *CC* I, 158–159).

101 *AT* VI, 83; *CSM* I, 152: "I need not attempt to say what is its true nature".

102 Cfr. *AT* VI, 76; *CSM* I, 150. As to Descartes's reticence in the essays published with the *Discourse* in 1637, see Descartes to Morin, 13 July 1638 (*AT* II, 201; *CC* I, 322); Descartes to Mersenne, 9 January 1639 (*AT* II, 483); Descartes to Debeaune, 30 April 1639 (*AT* II, 544).

103 *AT* VI, 233.

The *Geometry* is more systematic, although what it would become famous for – namely, the principle of so-called "analytic geometry" – is stated almost in passing and cryptically,[104] and the entire work certainly does not shine for its internal organization. Descartes would reveal the reason for this a decade later to Mersenne: he had deliberately rendered his treatise more obscure and convoluted "to prevent Roberval and his kind from speaking ill of it".[105] In this case, then, what was at stake was not so much the fear of upsetting the Scholastics or the Catholic censors, as Descartes's usual obsession with intellectual competition.

In reality, the Sixth Part of the *Discourse* also makes it clear that something has changed in Descartes. The public impact of his mission is increasingly present in his mind: the time when he wrote the *Regulae* only for his personal use now seems the distant past. The *Discourse* lays out a genuine programme of scientific and cultural reform. A programme conceived for "purely human" men,[106] that is, for human beings in their natural state, lacking divine grace; for men who must build their life experience in this world by themselves, using the intellect and the other cognitive faculties – but using them to the best of their ability and bringing them to their highest perfection.[107] It is therefore, first of all, a matter of changing knowledge – since Descartes is unable or unwilling to change religious and political power. But the ambition to change knowledge does not aim to construct a new cathedral of thought, but to create a "practical philosophy," by which, knowing "the power and action of fire, water, air, the stars, the heavens and all the other bodies in our environment, as distinctly as we know the various crafts of our artisans", we may exploit them to "make ourselves, as it were, the lords and masters of nature".[108] This is the Baconian side of Descartes, generally absent (with some exceptions) from his writings prior to the *Discourse on the Method*.

Again like Bacon – who is the privileged reference for the entire Sixth Part – Descartes also begins to focus on the relationship between science and technology, another typical theme of the seventeenth-century scientific revolution,

104 *AT* VI, 392–393. See Michel Serfati, "Constructivisme et obscurités dans la *Géométrie* de Descartes", in *Mathématiciens français du XVII*e *siècle: Descartes, Fermat, Pascal*, ed. M. Serfati and D. Descotes, Clermont-Ferrand, Univ. Blaise Pascal, 2008, pp. 11–44.

105 Descartes to Mersenne, 4 April 1648 (*AT* V, 142).

106 *AT* VI, 3: "*hommes purement hommes*" (expression omitted in the English translation). "More than a mere man" is instead he who, aided by the grace of God, becomes capable of examining revealed truths (*AT* VI, 8; *CSM* I, 114).

107 On this humanistic theme in Descartes, see Emmanuel Faye, *Philosophie et perfection de l'homme. De la Renaissance à Descartes*, Paris, Vrin, 1998.

108 *AT* VI, 62; *CSM* I, 142–143.

indeed one of the great epochal shifts that the new science brought with it, surpassing the intellectualism of the Aristotelians and the elitism of the occult and alchemical tradition. The relationship works in both directions: on the one hand, as seen in *L'Homme*, the machines invented by craftsmen and mechanics – automata, clocks, fountains – serve as explanatory models for research in physics and physiology (to understand how the body works, it helps to compare it to a hydraulic machine); on the other hand, the design and construction of machines in turn becomes a prime result of scientific research itself, which also aims to free human beings from the slavery of manual labour, allowing us to "enjoy without effort the fruits of the earth and all the conveniences it provides".[109]

Descartes personally devotes his efforts especially to the possible applications of his knowledge in optics. Hence his study of lenses and collaboration with craftsmen in the field, like Jean Ferrier, to produce instruments for manufacturing them. Specifically, Descartes evokes the fabrication of hyperbolic lenses intended for a new and more powerful telescope: an initiative that dragged on for several years without yielding the expected results. At one point, even Richelieu became involved, as Descartes's French friends asked him to promote "the invention of telescopes", but in the end the economic aspect of the venture also proved disappointing.[110]

The fact is that, in order to change knowledge and truly create a "practical philosophy," many contributions were necessary. Not so much in the sense, as we will soon see below, of philosophical cooperation, but rather in that of a division of experimental labour. Experimentation also played a role in Descartes's deductive physics, as the *Principles of Philosophy* would confirm a few years later. If the laws of physics are universal and necessary, and if the whole world is a machine, the "gears" of that machine remain unknown. And here too Bacon came to Descartes's aid: he had to identify a crucial experiment (*instantia crucis*) that would determine unambiguously, by excluding all other possibilities, which particular configuration of matter underlies a given phenomenon.[111] But the experiments to be carried out were many and required substantial funding. Science was expensive: the lodestone alone, Descartes would say years later, "costed Gilbert more than fifty thousand écus". And in that context, he would explicitly mention Bacon's *Instauratio Magna* and *Novus Atlas*, noting that in

109 *AT* VI, 62; *CSM* I, 143.

110 Descartes to Mersenne, 25 January 1638 (*AT* I, 501; *CC* I, 212).

111 Bacon, *Novum organon*, II, 36. However, while for Bacon the *instantia crucis* reveals, *a posteriori*, the cause of a phenomenon, for Descartes it only allows one to choose between various explanations compatible with the first principles, the latter being valid *a priori*.

order to carry out all the experiments prescribed in those works, the wealth of two or three of the most powerful monarchs on earth would not suffice. Moreover, men work faithfully and diligently only if well paid, and therefore, to have good collaborators and good researchers, one must be generous with compensation: volunteers only waste time.[112]

Thus, funding was needed: public funding, essentially. Descartes had spoken of private individuals eager to invest in science back in 1632, already in connection with Bacon's scientific program, but without much conviction.[113] Years later – as Baillet reports – some noblemen would offer to support him in his investigations, but Descartes would always remain very wary regarding even this kind of patronage, partly because of his choice, attested by the "provisional morality," not to contract ties and obligations toward anyone. In short, Descartes always believed "that it was up to the public to pay for what he did for the public".[114]

However, it would be a mistake to assume that Descartes had a clear and modern vision of scientific progress as a collective endeavour, perhaps under the aegis of the state. Public funding, as Descartes presents it in the Sixth Part of the *Discourse* and in subsequent works, would be intended for him and for him alone: his task "could not be accomplished so well by someone other than the person who began it".[115] The call for collaboration among scientists, on which Mersenne placed all his hopes for progress, only applied to the material aspect of research, not to the great theoretical choices. In any case, Descartes's isolation and his distance from France and the court made it highly unlikely that he would readily obtain royal stipends. And thus, public funds, moreover always requested in a rather lukewarm manner, never arrived.[116]

The Sixth Part of the *Discourse on the Method* concludes with a precise request from Descartes: that objections be addressed to him. And so they were.[117] In addition to those already mentioned from Libert Froidmont, objections came from Jean-Baptiste Morin, a physician and astrologer, as well as more aggressive criticisms from Pierre Petit, the king's engineer – himself a marginal and heterodox figure, whom Descartes treated with sovereign disdain. Petit went so far as to characterize the proof of God presented in the

112 Cf. *AT* VI, 72; *CSM* I, 148, and AT XI, 320 f.

113 Descartes to Mersenne, 10 May 1632 (*AT* I, 251–2; *CC* I, 97–98).

114 Baillet, *Vie*, II, p. 462, based on testimony by Clerselier.

115 *AT* VI, 72; *CSM* I, 148 (*Discourse on the Method*, 6th Part).

116 On the pension Descartes was promised in 1648, see below, p. 219.

117 Descartes lists the various objections received in the letter to Mersenne of 29 June 1638, giving different judgments on them (*AT* II, 191–192).

Fourth Part of the *Discourse* as "obscure". Descartes responded to him only briefly, in the "Preface to the Reader" of the *Meditations*.[118]

However, as Descartes had feared, these objections and ensuing discussions ultimately distracted him from what he continued to regard as his primary goal: the publication of *The World*, a project he pursued until the summer of 1640, before it was eventually absorbed into the *Principles of Philosophy*.[119] Instead of continuing along that path, Descartes began composing a treatise on metaphysics. This shift arose, at least initially, from his dissatisfaction with the summary of his metaphysical thought in the Fourth Part of the *Discourse*. There, in an effort not to antagonise "weaker minds",[120] Descartes had deliberately watered down his theses – at the risk of compromising the order of reasoning to which he was so deeply committed. Hence emerged the increasingly urgent need to intervene with a fully developed metaphysics. In April 1637, Descartes considered appending his 1629 metaphysical draft to a prospective Latin translation of the *Discourse* – a project that would be delayed until 1644. By July 1638, he began to think that metaphysics merited a separate and independent treatment, written in Latin. In November 1639, he confirmed to Mersenne that he was working on a discourse intended to "clarify what I have previously written on this subject".[121] Thus, while the intellectual community was expecting *The World*, or at the very least a treatise on physics containing the principles only partially disclosed in the *Discourse* and the *Essays*, Descartes disconcerted his readers by presenting the *Meditations*, completed by the spring of 1640. Upon hearing the news, Huygens was taken completely by surprise; he had anticipated a discussion on optics and lens-grinding but instead found himself confronted with "a work on the soul and divinity."[122]

The decision to publish a metaphysical treatise marked indeed a complete reversal of Descartes's private and public strategy. In 1630, when corresponding with Mersenne on the creation of eternal truths, he believed his metaphysics was too audacious to be presented before his physics had gained widespread

118 See C. de Waard, "Les objections de Pierre Petit contre le *Discours* et les *Essais* de Descartes", *Revue de métaphysique et de morale*, 1927, pp. 53–89 (pp. 80–81); Claudio Buccolini, "Dalle *Objections* di Pierre Petit contro il *Discours de la méthode* alle *Secundae objectiones* di Marin Mersenne, in *Nouvelles de la République des lettres*, 1998, I, pp. 7–28 (but cf. Emanuela Scribano, "Traces of the Atheist. From Lessius to Descartes via Vanini, Mersenne, and Petit", in Id., *Descartes in Context. Essays*, Oxford, OUP 2022, pp. 146–167).

119 See Descartes to Mersenne, 6 August 1640 (*AT* III, 146).

120 Descartes to Mersenne, April 1637 (*AT* I, 350; *CC* I, 152).

121 See respectively: Descartes to Mersenne, April 1637 (*AT* I, 350; *CC* I, 152), 27 July 1638 (*AT* II, 267; *CC* I, 348) and 13 November 1639 (*AT* II, 622).

122 Huygens to Descartes, 24 July 1640 (*AT* III, 749–50).

acceptance.[123] A decade later, impressed by Galileo's condemnation and the controversies surrounding the publication of the *Discourse*, he finally came to understand that physics could never be accepted unless its principles were metaphysically founded. It was to this foundational task that he ultimately devoted all his efforts.

123 Descartes to Mersenne, 15 April 1630 (*AT* 1, 144; *CC* 1, 60): "I believe you already heard me say I had planned to put something of this [that is, of his early metaphysical reflections] in writing. But I do not consider it appropriate to do so until I first see how my physics will be received".

CHAPTER 4

The *Meditations*

1 The Reasons for Doubting

Like all the great classics of philosophy, the *Meditations* never grow old: they have always been read and reread, stubbornly resisting definitive interpretation. That would not have pleased Descartes, since he was convinced that he had finally fulfilled the task of establishing the fundamental metaphysical truths.[1] But the extraordinary richness of the text authorises and indeed invites ever closer critical analysis. Nearly every word raises questions, debates, analyses of various kinds, not to mention the evocative force of certain salient moments: the deceiving God, the *cogito*, the demonstrations of God's existence, the foundation of so-called (but not by Descartes) "dualism," and thus the problem of the union of mind and body. The title alone – slightly different in the two editions of 1641 and 1642 – could provoke a long commentary: *Meditations on First Philosophy, in which are demonstrated the existence of God and the distinction of the soul from the body*.[2]

Why "meditations"? The term at that time was foreign to philosophical jargon, belonging rather to religious vocabulary: meditation is an ascetic step towards holiness (as in Ignace of Loyola's *Spiritual Exercises*).[3] But Descartes requires from the reader – in the very preface of the work – a genuine ascetic retreat, that is, a flight from the world of the senses and of prejudices, similar to his "first meditations" in Holland described in the *Discourse on the Method*, "so metaphysical and so uncommon that perhaps they will not appeal to everyone".[4] The *Meditations* correspond to that definition above all because

1 *AT* V, 165: "one should not exaggerate in applying oneself to the *Meditations* and to metaphysics in general, subjecting them to elaborate commentaries and the like [...]; the author has dwelt sufficiently on metaphysical truths [...] exempting others from committing themselves and toiling over them for a long time" (*Conversation with Burman*).

2 *Meditationes de prima philosophia, in quibus Dei existentia et animae a corpore distinctio demonstrantur* (title of the 2nd edition, 1642; the original title of 1641 will be discussed further below, note 8).

3 See, among others, Ivonne del Valle, "Loyola's God and Descartes's Method: the Role of the *Spiritual Exercises* in Modernity and Secularization", *Philosophy and Theology*, 34/1–2 (2022). See also Jorge K. Secada, "The Scholastic and Meditational Traditions", in J. Secada *et al.*, *The Cartesian Mind*, London, Routledge, 2025, pp. 37–67.

4 *AT* VII, 9; *CSM* II, 8 (Preface to the reader) and *AT* VI, 31; *CSM* I, 126–127 (*Discourse*).

they constitute a path of individual development, laborious, mediated by various stages, not without difficult obstacles: the result will not be eternal salvation, but the awareness achieved of the value of human knowledge.[5] An enterprise to be attempted – as Descartes claimed since the *Regulae* and reiterated at the beginning of the First Meditation – at least "once in the course of [one's] life".[6]

And why "first philosophy"? At the time of the *Meditations*, Descartes chooses this expression – in itself, genuinely Aristotelian – because he wants to convey that the object of his work diverges from what Scholastics referred to as "metaphysics". Descartes's first philosophy is "first" not because it deals with being *per se* (according to the definition in Aristotle's *Metaphysics*), and not only because it will include a treatment of God and of the human soul, immaterial substances – according to the other traditional sense of the term – but because it has as its object "all the first things that can be known by philosophizing in order".[7] That is, all those notions that, as the rule of "order" prescribes, are precisely the "first" and "easiest to know": among them, the essence of material things and the union of mind and body, which fell outside the scope of metaphysics as it was generally understood.[8]

Certainly, the traditional objects of metaphysics – and in particular of its "special" part, according to the division established in late Scholasticism – appear fully in the subtitle: God and the soul. But the subtitle is, in all likelihood, an invention of Mersenne's, to whom Descartes had granted "the power to baptise" his work, himself suggesting only the main title.[9] This would explain why, in the first edition, released in August of 1641, the subtitle refers

5 On the reason why Descartes wrote "meditations" rather than "disputes and questions, as philosophers do, or even theorems and problems, as geometers do," see *AT* VII, 157 (2nd Replies). In 1639–40 Descartes still spoke of the *Meditations* as a "discourse" (*AT* II, 622) or an "essay" (*AT* II, 629; III, 35–36). The only extant manuscript copy of the *Meditations* – sent to Fermat in February 1641 and recently discovered – is simply entitled "*Renati Des Cartes Prima Philosophia*." See Jeremy Hyman, "Un manuscrit des *Meditationes* retrouvé à la Bibliothèque Municipale de Toulouse", *Bulletin cartésien* 47 (2016), pp. 174–179.

6 *AT* VII, 17; *CSM* II, 12. For the *Regulae* see above, p. 24, note 99.

7 Descartes to Mersenne, 11 November 1640 (*AT* III, 239).

8 Descartes explicitly distinguishes "metaphysics" from "first philosophy" in his letter to Mersenne of 11 November 1640 (*AT* III, 235, 239). He will later consider them to be synonymous terms (with the new meaning): cf. *AT* IX–2, 14 (preface to the French edition of the *Principia philosophiae*, 1647). The title of the French edition of the *Meditations* (translated by Louis-Charles d'Albert, 2nd Duke of Luynes) is an unsuccessful hybrid: *Méditations métaphysiques touchant la première philosophie* (1647).

9 Descartes to Mersenne, 11 November 1640 (*AT* III, 239).

to a demonstration of the *immortality* of the soul,[10] a topic which is briefly mentioned only in the dedicatory letter and in another liminal text, the "Synopsis of the following Six Meditations," while in the main body of the work nothing is found on that subject. The question of immortality is not included in Descartes's "first philosophy", whereas the question of the "real," i.e. substantial, distinction between the soul and the body is an integral part of it – and, indeed, Descartes substituted that question for that of the immortality of the soul in the definitive subtitle of 1642. The "Synopsis" specifies, however, that immortality, if it cannot be demonstrated philosophically, can nevertheless be rendered conceivable by considering the incorruptibility of every substance and in particular of the mind, which is "immortal by its nature". For a soul to lose its immortality would thus require a specific decree by God to make the soul perish at the dissolution of the body (on which philosophy can say nothing). Here we have the point at which Descartes comes closest to the classic thesis of Thomas Aquinas according to which human reason is able to demonstrate the "preambles of faith," that is, precisely, the existence of God and the immortality of the soul.[11] However, Descartes's argument does not go very far: it is as if he were arguing that the soul is by its nature immortal, but that its nature could also be mortal, since the nature of the human soul, in both cases, necessarily depends on the will of God – like any other essence. This is perhaps why this line of reasoning is only to be found in the "Synopsis" of the *Meditations*.[12]

The Letter to the Dean and Doctors of the Sorbonne opens the volume of the *Meditations* and reveals its official motivation: the battle against atheism and impiety. However, this letter, part of a careful publicity campaign,[13] carries

10 *Meditationes de prima philosophia, in qua Dei existentia et animae immortalitatis demonstratur*, Paris, M. Soly, 1641. Mersenne will address again the question of immortality in his 2nd Objections, *AT* VII, 128, *CSM* II, 91, cf. Descartes's reply, *AT* VII, 152, *CSM* II, 108–109. On the theme of immortality in Descartes, see C. F. Fowler, *Descartes on the Human Soul: Philosophy and the Demands of Christian Doctrine*, Dordrecht, Kluwer, 1999. See also Michael W. Hickson, "The Moral Certainty of Immortality in Descartes", *History of Philosophy Quarterly* 28 (2011) 227–247; Lynda Gaudemard, *Rethinking Descartes's Substance Dualism*, Springer Nature Switzerland, 2021, pp. 100–108.

11 *AT* VII, 12–4. Descartes also alludes to Aquinas's position at the beginning of the dedicatory letter of the *Meditations* (*AT* VII, 1–2; *CSM* II, 3).

12 According to Edwin M. Curley, "The Immortality of the Soul in Descartes and Spinoza", *Proceedings of the American Catholic Philosophical Association*, 75 (2001), *Person, Soul, and Immortality*, pp. 27–41, Descartes's "attempt to prove the immortality of the soul [is] extremely disappointing" (p. 36).

13 Descartes wanted to send the *Meditations* to each doctor, to have their opinion before the final printing (to Mersenne, 11 November 1640 – *AT* III, 239).

a hidden intention, typical of the literary genre to which it belongs. Descartes declares that, in the *Meditations*, he will do nothing other than "develop" with greater clarity "the principal and most important arguments" already presented by others on the existence of God and on the immortality of the soul. Such a declaration is immediately contradicted in the following "Preface to the Reader," where he claims to follow, on these very points, "a route [...] so untrodden and so remote from the normal way" that it would be unsuitable "in a book [the *Discourse on the Method*] written in French and designed to be read by all".[14] In any case, Descartes candidly confesses in a letter to Mersenne that the refutation of atheism was certainly not the sole purpose of the work, and that in fact the heart of his project lay elsewhere: the *Meditations* contain all the foundations of his physics, "but we must not say so, I beg you", otherwise the Aristotelians will be very careful not to approve them.[15] Descartes is perhaps even more explicit in another letter to Mersenne, where he affirms that "the principal goal of my Metaphysics is to explain which are the things that it is possible to conceive distinctly".[16] No wonder that the First Part of the *Principles of Philosophy* (1644), in which the main themes of the *Meditations* reappear, is presented under the title "On the Principles of Human Knowledge". And that is now the role of metaphysics, clearly distinct from theology and transformed into a discussion of the foundations of human knowledge (i.e. knowledge both of God and of the nature of mind and body). In thus defining the primary objective of philosophy itself, Descartes will be followed by a great number of early-modern philosophers up to – and including – Kant.[17]

The project of the *Meditations*, highly innovative despite the inevitable traditional legacies, is translated into an equally unprecedented and fascinating literary form. Though now writing for the learned, and thus in the philosophical Latin still dominant, Descartes does not abandon the first person of the *Discourse on the Method*, dictated not so much by stylistic constraints as by the very structure of the argumentation. Here, however, he passes from autobiography to monologue, from the recounting of a past experience to the recording of a live chronicle: the meditating "I" enters into a dialogue with itself and reports its reflections in a sort of metaphysical diary, raising objections to itself and responding to them. The questions and difficulties follow one another

14 See respectively *AT* VII, 3 (*CSM* II, 4) and *AT* VII, 7 (*CSM* III, 8).

15 Descartes to Mersenne, 28 January 1641 (*AT* III, 298).

16 Descartes to Mersenne, 30 September 1640 (*AT* III, 192).

17 See in this regard Jean-Luc Marion, *Sur le prisme métaphysique de Descartes* [1986], Paris, PUF, 2004, pp. 1–8 (the whole volume aims to define Descartes's relationship with the Western metaphysical tradition).

in close pursuit, generated one by the other in a compelling argumentative vortex. The *Meditations* may give the impression of being disorganised and informal, but that is only on the surface. What Descartes particularly cares about is the "order of reasons" which constitutes the backbone of his method.[18] This "order", however, is not constituted by an impersonal series of propositions leading to a general conclusion. On the contrary, it is an order experienced and thought by the meditating subject, that includes falterings and sudden steps backwards, as well as a progressive development and modification of the concepts at stake, if not of the very terminology; an order, therefore, that can hardly be reduced to that of a logical demonstration. For this reason, it is hard to summarize the *Meditations* or reduce them to a rigid plan: they function only if meditated upon over the six symbolic days in which they unfold. And this alone is what Descartes expressly advises and requests of his reader: to meditate with him.[19]

The beginning of the *Meditations* cannot have been pleasing to the doctors of the Sorbonne – if the work ever reached them: Descartes's metaphysics begins with doubt and, literally, with a "general destruction" (*generalis eversio*) of established knowledge. This beginning, overwhelming as such, makes plain Descartes's break with the scholastic tradition: it is almost a punch on the nose for readers raised in the colleges and accustomed to being introduced to the study of metaphysics with a placid discussion of the various possible opinions on the "object" of this science (as was the case in Suárez's *Disputationes*). Descartes, instead, wants to start again from zero, doing without any opinion or authority. His is a radical doubt, exhibited as the guiding thread in the very title of the First Meditation: "Of the things that may be called into doubt". But it is a doubt founded in reason – philosophical or "methodical"[20] – not a vague and instinctive scepticism: doubt must be motivated by very solid reasons, which may be far from obvious. Now, for Descartes, there is good reason to call many things into doubt. At times, as in the initial "Synopsis" of the work, he even claims that one must doubt "about all things" (*de rebus omnibus*).[21] The latter expression was to enjoy great success because of its simplicity and immediacy, even if, as will later become clearer, it should rather be attributed to a surge

18 See Gueroult's masterful study: *Descartes selon l'ordre des raisons*, Paris, Aubier, 1953, 2 vols. (English translation by R. Ariew, Minneapolis, University of Minnesota Press, 1984, 2 vols.).

19 *AT* VII, 9; *CSM* II, 8. See also *AT* VII, 157 (2nd Replies).

20 Descartes never speaks of a "methodical doubt" (nor of a "method of doubt"), but these expressions have become widespread in Descartes literature.

21 *AT* VII, 12; *CSM* II, 9.

of rhetorical enthusiasm. Moreover, the clarification that follows must also be taken into account: to doubt everything "and particularly material things".

It is important to understand *what* Descartes doubts and *why* he doubts it in order then to appreciate the solutions he proposes for the doubts initially raised. The *Meditations* are composed in a circular structure: the same questions are raised in the course of the text and again at the end, when a way out of the labyrinth is finally found. We must first distinguish between two types of doubt, often inextricably intertwined: (1) an epistemological doubt about the correspondence between our representations and the objects to which they refer,[22] and (2) an ontological doubt about the real existence of the objects conceived by the mind.[23] Descartes passes from one to the other, often without indicating that the object of his reflection has changed. In the First Meditation he claims that the senses deceive us (1) by making us believe that an object is different from what it is – to which the most common human experience bears witness – but that they could also deceive us in making us believe that (2) our body really exists, while our entire existential experience could be a dream, or the expression of delirious madness. The result of this double doubt is the rejection of knowledge gained through the senses, insofar as, at best, it is plausible, but lacking self-evidence: if it is not possible to distinguish sleep from wakefulness using "sure signs" (*certis indiciis*), all our knowledge derived from the senses will be subject to doubt, and thus must be rejected all at once.[24]

This first stage of doubt is followed by a further critical analysis, which arises from an objection that the meditating subject raises for himself: certainly, my life could be a dream, but what are dreams made of? They are made of images, figures, and forms. Now, are these phantastic materials not themselves "true", like the colours that a painter uses for his paintings, however fanciful and invented the subjects represented may be? But what are the fundamental components of our imaginations, whether dreamlike or real? The point is crucial, because here one witnesses a momentary resurgence of those notions which, like the material "simple natures" in the *Regulae*, constitute the mathematical fabric of reality. Descartes talks here of a "corporeal nature in general (*in communi*),[25] and its extension; the shape of extended things; the quantity, or

22 As Descartes will argue in his Replies to Arnauld's 4th Objections, in the 1st Meditation he has doubted that things are "according to truth, such and such as we conceive them" (*AT* VII, 226).

23 "Epistemology" and "ontology" are obviously anachronistic terms unknown to Descartes, used here only for the sake of clarity.

24 *AT* VII, 19; *CSM* II, 13.

25 Descartes uses this expression here – for the first time – perhaps alluding to "common matter", abstracted from sensory experience and considered by Thomists as the object of

size and number of these things; the place in which they may exist, the time through which they may endure, and so on".[26] If these components of our representations are "true," that is, if they correspond to something real, then mathematics, the science that deals with them, will also be true and indubitable. In this way, the *Meditations* adopts the argument proposed in the *Regulae*. Apparently, the certainty of mathematics – an eminently intellectual science – is untouchable by the dream argument: "for whether I am awake or asleep, two and three added together are five, and a square has no more than four sides. It seems impossible that such transparent truths should incur any suspicion of being false".[27]

The dramatic twist comes in the following paragraph, a real watershed for all the *Meditations* and for Descartes's thought in general. A "long-held opinion" enters the scene: that there exists a "God who can do everything" and by whom man has been created. The conception of God as it occurs in these lines constitutes a kind of spontaneous theology, not rationally articulated but enclosed in the vague reference to the attribute of omnipotence. Now, could this God – still unknown but all-powerful – not deceive me, and deceive me on both the levels on which doubt has been exercised: (1) about the real existence of things outside us and of their essential constituents, "so that there is no earth, no sky, no extended body, no figure, no size, no place," but also (2) about the actual validity of our knowledge, and even of self-evident propositions, as those which result from mathematical operations? In other words: how can I know that God has not willed that "I go wrong every time I add two and three or count the sides of a square, or in some even simpler matter, if that is imaginable?"[28]

This is the famous argument known as the "deceiving God", which Descartes, moreover, did not invent, but rather borrowed from scholastic tradition and probably from Suárez,[29] bending it, however, to his own ends. And his principal aim here is to show – contrary to what he had argued in the *Regulae* – that arithmetic and geometry are not exempt from doubt and therefore cannot claim to constitute the criterion of truth. This is the scandal of the First Meditation, which breaks a taboo of the entire Western tradition: philosophers debated whether mathematics constituted the essence of things or merely a

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mathematics. See M.A. Olson, "Descartes' First Meditation: Mathematics and the Laws of Logic", *Journal of the History of Philosophy*, 1988, pp. 407–439.

26 *AT* VII, 20; *CSM* II, 14.

27 *AT* VII, 20; *CSM* II, 14.

28 *AT* VII, 21; *CSM* II, 14.

29 See Scribano, *Angeli e beati*, p. 175 ff., and F. Suárez, *Disputationes metaphysicae*, IX, "De falsitate", II.

human abstraction, but it was taken for granted that mathematics was certain in its operations and conclusions. Descartes throws this certainty into a crisis, subjecting it to a binding condition: I cannot be certain of the truth of my knowledge until I know the origin of my mind. A science without metaphysics, therefore, is impossible (and an atheist way-out would only make matters worse).[30] Certainly, the hypothesis of the deceiving God gives rise to an artificial and exaggerated doubt – or "hyperbolic," to use an expression Descartes employs elsewhere[31] – but it is nevertheless conceivable; it constitutes a good "reason," therefore, for calling into question the certainty of human knowledge even in the face of rational self-evidence.

There has been much discussion – and probably always will be – about the relationship between the hypothesis of the deceiving God and the thesis of the divine creation of eternal truths.[32] The thesis of the creation of truths, which postulates God's power over mathematical knowledge, would seem to be the ideal metaphysical backdrop for the doubt of the First Meditation. What God, if not one who has power even over eternal truths, could make 2 + 3 not equal 5, as men believe? But there are also indications to the contrary. Above all, the metaphysical situation in which the hypothesis of the deceiving God takes shape is important: we are in the First Meditation, therefore in a context that is still epistemologically confused, and in the framework of a pre-philosophical conception of God, in which the question of the origin of truths and essences is not even raised. A supposedly deceiving God would not necessarily need to dispose at will of mathematical truths: it would suffice for him to mould the human mind that thinks them, creating a kind of systematic and continuous – and thus irremediable – deception. It is above all from the nightmare of this deception – and not from a possible alteration of essences and truths – that the rest of the *Meditations* seeks to liberate human knowledge. This is the object of the following sections of the work, where the question of the origin of eternal truths will not even be raised.

It nevertheless remains difficult to deny any relationship between the thesis of the creation of truths and the hypothesis of the deceiving God. Upon closer inspection, their role within Descartes's foundation of knowledge is analogous: to show that mathematics is not a true science in itself and that it

30 Cf. *AT* VII, 21; *CSM* II, 14: "the less powerful they [the atheists] make my original cause, the more likely it is that I am so imperfect as to be deceived all the time."

31 *AT* VII, 89, 226, 460 (6th Meditation; 4th and 7th Replies).

32 The two extreme positions respectively in Martial Gueroult, *Descartes selon l'ordre des raisons*, I, pp. 42–9 (no direct relationship or implication), and Henri Gouhier, *La Pensée métaphysique de Descartes*, p. 258 (the hypothesis of the deceiving God is possible "only in reference to a God creator of eternal truths").

requires a superior foundation. Having set aside – already around 1630? – the idea of making the thesis of the creation of truths the basis of his metaphysics (and therefore also of his physics), Descartes needs an alternative argument that serves the same function – that of calling into question the epistemological autonomy of mathematics – but an argument that is understandable and acceptable to a reader still attached to the traditional way of thinking. The hypothesis of the deceiving God might thus be nothing other than the translation into more widely acceptable terms of the principle of divine omnipotence that had guided the thesis of the creation of eternal truths. It is a form of omnipotence not yet rationally controlled, and which, as such, runs the risk of destroying human knowledge. This is why, in the First Meditation, doubt about mathematics immediately entails doubt about God: "Perhaps there may be some who would prefer to deny the existence of so powerful a God rather than believe that everything else is uncertain".[33] Here, the dramatization is obvious: the epistemological question suddenly becomes a theological question, confirming the fundamental duality of the *Meditations* but at the same time the centrality of the problem of knowledge. The fight against atheism gains sense and value precisely when it becomes necessary to defend the legitimacy of rational knowledge. The existence of God must certainly be defended against atheists and libertines, but not only in the name of the Christian faith: in the name, also and above all, of science and the possibility of science.

The hypothesis of the deceiving God constitutes the strongest "reason for doubting" in the *Meditations* and absorbs all the preceding ones. But it is also the most abstract and least easy to conceive. For this reason, in the final part of the First Meditation, Descartes introduces another character: the "evil genius",[34] a weakened version of the deceiving God with a similar function: to make conceivable the possibility of cognitive deception, this time limited to sensory perceptions and not to mathematical self-evidence. This is because, obviously, an evil genius, i.e. an intelligence superior to the human intelligence but still finite, could have no power over the human mind in general: it could not make me conceive with self-evidence a false notion, even if it could, by its artifices, illusorily persuade me of the existence of things ("the sky, the air, the earth, colours, shapes, sounds") which "are merely the delusions of dreams which he has devised to ensnare my judgement".[35] It is, in short, a kind of strategic step backward, necessary to facilitate the metaphysical journey of the

33 *AT* VII, 21; *CSM* II, 14.

34 The nearest source could be found again in Suárez's *Disputationes*, IX, II, 7, where a "bad angel" (*angelus malus*) is evoked.

35 *AT* VII, 22–23; *CSM* II, 15.

meditator, who risks out of laziness to fall back continually into prejudices. This confirms the psychological depth of the *Meditations*: it is necessary not only to convince the intellect with cold arguments, but to sway the heart of the meditator. The important thing is to clear the field of notions that are merely plausible, and above all to split human knowledge into two: that which depends in some way on material things – the specific object of doubt in the First Meditation – and that which has no relation to the body. It is in the latter that the way out of the cul-de-sac of doubt will finally be found.

2 The Discovery of the Subject

In all philosophy textbooks the name of Descartes is inevitably associated with the *cogito ergo sum*, a slogan that has always been considered as the trademark of Cartesianism – even if in this exact formulation it is not to be found in the *Meditations* but rather in the *Discourse on the Method* (in the French version: *je pense, donc je suis*) and in some later texts.[36] After an anxious account of the conclusions of the previous day, the Second Meditation opens precisely with the discovery that only one certainty is exempt from doubt: that since I am thinking, I must exist. This argument, as such, is not an invention of Descartes, as was immediately pointed out to him: Saint Augustine had already followed a similar line of reasoning and made it one of his weapons against the sceptics. But Descartes – for once – did not care to claim originality: the novelty does not lie in the proposition as such, in itself anything but profound, but rather in its analysis, in its implications and in the consequences that he can draw from it.[37] The Second Meditation is expressly devoted to these topics.

Despite the *ergo*, which generally introduces the conclusion of a chain of reasoning, the *cogito* does not intend to be discursive knowledge, much less a syllogism, but an intuitive certainty (as Descartes will later avow, first in his replies to Mersenne's Second Objections and later in his 1648 letter to Silhon).[38] The *cogito* is an incontrovertible experience: I know that I exist while I am thinking and nothing in the world can make me change my mind. The *cogito* has that peculiar characteristic of not being falsifiable and not even dubitable.

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36 *AT* VI, 32; *CSM* I, 127 (*Discourse on the Method*); *AT* VII, 140; *AT* X, 523; *CSM* I, 417 (*Search for Truth*); *AT* VIII–1, 7; *CSM* I, 195 (*Principles of Philosophy*, 1st Part, § 7); *AT* V, 137 (Descartes to Silhon [?], 1648); *AT* V, 147 (*Conversation with Burman*, 1648).

37 See Descartes to Colvius, 14 Novembre 1640 (*AT* III, 247–248) and Augustine, *De civitate Dei* (XI, 26). See also *AT* VII, 197–198 (4th Objections).

38 See the passages of the 2nd Replies and of the letter to Silhon cited above, p. 64–65, n. 27.

It resists, indeed, every possible test of doubt, and in particular doubt in its maximal form, that of the deceiving God – or rather, in this case, of the evil genius ("supremely powerful and cunning"), because the possible doubt about my existence would not concern a self-evidence of the mathematical type but my experience: "let him deceive me as much as he can, he will never bring it about that I am nothing so long as I think that I am something".[39] In another work, Descartes also uses the formula "I am doubting, therefore I exist",[40] to show that doubt concerning the *cogito*, rather than refuting it, ends up by verifying it once again.

With this, an element of knowledge that resists every doubt is finally found, in the form of a rational self-evidence that gives immediate access to truth. Thus Descartes has acquired – as he had already written in the *Discourse on the Method* – the "first principle" of philosophy.[41] But in what sense?

Not in the sense that all other truths can be logically deduced from it; on the contrary, there are axioms more general than the *cogito*, from which the *cogito* can be deduced. This makes one understand why, in certain cases, Descartes presents the *cogito* as a consequence of the axiom "to think one must exist" (or "everything that thinks exists"), which in turn depends on the more general statement "nothing comes from nothing" (*ex nihilo nihil fit*). Descartes will later specify that the *cogito* presupposes many other elements of knowledge: I must already know what it is "to exist", what it is "to think", before affirming that "I am thinking, therefore I exist".[42] But once again this does not diminish the intuitive and immediate character of the *cogito* and, above all, its existential value: whereas an axiom like "nothing comes from nothing", although indubitable, does not imply that something exists, the *cogito* constitutes an immediate existential experience, which reunites thought and being in an inseparable connection.[43]

Nevertheless, the *cogito* is not the "first principle" even in the sense that it reveals my ontological independence as a thinking being. On the contrary, as will be discovered in the Third Meditation, my existence, like that of every other created being, depends on God at every instant. Moreover, my very awareness

39 *AT* VII, 25; *CSM* II,

40 *AT* X, 523; *CSM* II, 417 (*Search for Truth*).

41 After making that assertion in the *Discourse on the Method* (*AT* VI, 32; *CSM* I, 127), he will repeat it often, even if not in the *Meditations*: cf. *AT* X, 527; *CSM* II, 420 (*Search for Truth*); to Clerselier, June or July 1646 (*AT* IV, 444–445); and in the letter-preface to the French edition of the *Principles*, *AT* IX–2, 10.

42 *Principles of Philosophy*, 1st Pt., § 10. See also *AT* V, 147 (*Conversation with Burman*).

43 On the *cogito* as a "performative" speech, see the influential paper by Jaakko Hintikka, "*Cogito ergo sum*: inference or operation?" [1962].

of existing, and of being imperfect insofar as I am subject to doubt, is possible according to Descartes (but this too will not emerge before the Third Meditation) only if I already have the idea of an infinite being: the recognition of my existence as a finite being thus already testifies to a dependence and certainly not to a priority.

It is in another sense, then, that the *cogito* is the first principle of philosophy. The *cogito* is *first* precisely in the sense in which Descartes spoke of a "*first* philosophy": that which begins with the simplest notions and "easiest to know",[44] rising gradually to those more complex. The *cogito* is the first truth in the order of knowledge, because we must start from it in order to come to know anything else. With the *cogito* both aspects of the doubt of the First Meditation are overcome: that of the correspondence of our perceptions with reality and that of the real existence of a thing represented by my idea. The *cogito*, in fact, attests to me without any possibility of doubt that *I am thinking* (I thus truly have the property of thinking and I cannot not have it) and that *I exist* (I am something real, not a dream or an illusion). The *cogito* is epistemologically unique: there are no other propositions that enjoy the same privilege of being unassailable by doubt from every side. This is explained only by the fact that the *cogito* belongs to a dimension different from that of the material *objects* about which the doubt of the First Meditation had been conceived. The *cogito* belongs to the dimension of the thinking *subject*, which cannot be transcended as such: before or without it, nothing can be thought.

The *cogito* therefore also clarifies, negatively and retrospectively, the doubt of the First Meditation, and determines its extent. It is confirmed, in particular, that Descartes does not doubt "everything." A possible absolute doubt would be inoperative, clashing at least with the self-evidence of the *cogito*. In the First Meditation the "meditator" doubted above all about corporeal things, regarding their existence and their essence (the doubt about God was only subordinate). This is why, in order to meditate, it is necessary to exclude everything that comes through the senses, calling into doubt even the existence of one's own body. In the lexicon of the *Regulae*, the doubt of the First Meditation thus concerns the "material" simple natures,[45] leaving intact the "intellectual" simple natures (and also some "common" ones, as we will see). In the lexicon of the *Meditations*, on the other hand, Descartes's discovery is that the mind has a privileged access to its existence as the subject of acts of thought, and that

44 AT IX, 26 (2nd Meditation, French version: "*il n'y a rien qui me soit plus facile à connaître que mon esprit*").

45 Cf. Jean-Luc Marion, *Questions cartésiennes*, pp. 100–101 (within the framework, however, of his controversial thesis of a continuity between the *Regulae* and the *Meditations*).

therefore it is "easier to know" than the body – as the very title of the Second Meditation states.

The *cogito* therefore demonstrates that I am, i.e. I exist, while I am thinking. But does it also tell me what I am? In the Fourth Part of the *Discourse on the Method*, Descartes had claimed that it does: I am a "a substance whose whole essence or nature is simply to think," and as such "entirely distinct from the body".[46] The argumentative path of the *Meditations* is much more sinuous and complex. The meditator, at the moment of the Second Meditation, does not yet have any clear and distinct notion of bodies; indeed, he does not even know whether bodies exist. He must therefore proceed according to the methodological precepts that he has imposed on himself: that is, to deny what is subject to doubt. He will deny, therefore, everything in him that depends on the body; he will deny being a "rational animal", according to the scholastic definition of man, because the notion of "animal" is confused, depending on that of "soul" (*anima*) – a term by which is generally indicated the principle by virtue of which man walks and nourishes himself.[47] However, as the *Treatise on Man* had clearly demonstrated, such functions are entirely dependent on bodily motions. What, then, is inseparable from the *cogito*, what is it that remains intact even supposing that one has no body or limbs? Only the fact that I am thinking: "thought, this alone is inseparable from me."[48] Hence Descartes's conclusion: "I am precisely only (*praecise tantum*) a thinking thing," that is, a mind, "that doubts, that conceives, that affirms, that denies, that wills, that does not will, that also imagines, and that feels".[49]

However, even if the distinction may seem subtle, the "thinking thing" (*res cogitans*) of the Second Meditation cannot yet be equated with the "substance whose whole essence or nature is simply to think"[50] mentioned in the Fourth Part of the *Discourse on the Method* (the equivalence will occur only in the Sixth Meditation and will be contested, as we will see, by almost all the first readers). In the Second Meditation, Descartes specifies that, knowing nothing of the body, he still cannot exclude that bodies may be substantially identical to minds (*AT* VII, 27; *CSM* II, 18). From the epistemic point of view of the Second Meditation, immaterialism (I am only a mind and no "body" exists) and materialism (I am a mind but my mind is nothing other than a modification of my body) are *hypotheses* still open, given the absolute ignorance of the meditator

46 *AT* VI, 33; *CSM* I, 127.

47 *AT* VII, 25; *CSM* II, 17. Cf. *AT* X, 515–516 (*Search for Truth*).

48 *AT* VII, 27–8; *CSM* II, 18.

49 *Ibid.*

50 *AT* VI, 33; *CSM* I, 127.

about everything except his cognitive states. Only in the Sixth Meditation will Descartes oppose to immaterialism and materialism the theory of the "real" (that is, substantial) distinction between mind and body. The Second Meditation nevertheless prepares the future developments of the argumentation by specifying what it means to think, so as no longer to confuse thought with the "soul" (*anima*) of the Scholastics. Indeed, Descartes tends to use the latter term as little as possible in his strictly philosophical works, preferring the purely cognitive term "mind".[51] To think, therefore, means to feel, to imagine, to conceive intellectually, to affirm and to deny: all functions of a subject aware of his mental acts.

The last part of the Second Meditation includes the famous analysis of the "piece of wax," which allows Descartes to offer a further description of the functions of the mind. He seeks to show once again, to those who are not yet convinced by the *cogito*, how illusory it is to believe that corporeal things are "easier to know" than thought. The adversary here is the scholastic philosopher, who believes that knowledge necessarily depends on the senses. For Descartes, external objects do not have, as such, a special representative power that allows them to be known by human cognitive faculties (as in the Scholastic theory of *species*). According to him, "objects" are in some way intellectual constructions. Consider, says Descartes, a piece of wax: at first it is solid, it has the smell of flowers, then it liquefies, changes colour, expands; and yet we are always disposed to believe that it is still the same wax. What gives us such certainty? Certainly not our senses, which in fact provide us with diverse and changing representations. We say we "see" the wax, but in reality we carry out an intellectual operation that makes us recognize, beyond our sensory perception, an extended "something" that occupies a certain place and continually changes its state due to infinite movements of its particles, for the most part not even perceptible. Not the senses, therefore, and not even the imagination (which is unable to comprehend the infinity of corporeal movements), but the intellect allows us to "know" external objects – always assuming that they exist. Further on in the *Meditations* it will also be discovered how this is possible: thanks to the innate idea of extension. For the moment, Descartes is content to restate the epistemological priority of the mind over the body. Not only does the mind know itself through direct consciousness of its own operations, as attested by the *cogito*, but it is also the source by which we acquire knowledge of bodily objects.

51 On the ambiguity of the word "soul", and the need to replace it with "mind", see *AT* VII, 355–356 (5th Replies).

The analysis of the piece of wax thus confirms the absolute priority of the thinking subject over all its cognitive acts, and therefore over every possible object of knowledge. And while the existence of the thinking subject is definitively established, God, the world, and the human body itself are all still exposed to doubt in its various forms. The result of the first two *Meditations* is therefore a dramatic split between the mind and God and between the mind and the material world. From this point of view, Descartes places himself in diametrical opposition to the theory of material and intellectual "simple natures" that was characteristic of the *Regulae*. These "natures" were deemed all "true" as such, and directly accessible to the intuition of the mind. For the Descartes of the *Meditations*, there is instead an epistemological asymmetry between the mind and the body: while I know immediately the existence of the former and begin to glimpse its essence, the latter's status is still a mystery to me, and I could be deceived – by the malice or the inscrutable will of the being on whom I perhaps depend – both about its essential characteristics and about the very fact that it exists. The uncertainty about God, about the world, and about my very body leaves me alone in my thought.

3 From the *Cogito* to God

"I am, therefore God exists" (*Sum, ergo Deus est*). Descartes had already offered this inference in the *Regulae* without providing further details.[52] The arduous task of transforming it into a demonstration – indeed into two distinct arguments – falls to the Third Meditation, one of Descartes's most studied texts. The path is in some way mandatory: to demonstrate that God exists, one must start from the only thing of which one is certain, that is, from one's own existence while thinking (the temporal reference is necessary for the *cogito*). There was no other way available, since Descartes, in the First Meditation, had already made a clean slate of all the knowledge held by most to be indubitable, thus forbidding himself access, by a single blow, to all five "ways" proposed by Thomas Aquinas to prove the existence of God: all five, indeed, started from things in the world, or from nature in general, in order to infer the existence of their creator.[53] But the meditator, subject and object of the *Meditations*, does not yet know whether the world exists or not, and indeed methodologically denies that it exists. The only possible starting point is then the *cogito*, which

52 *AT* X, 421; *CSM* I, 46 (Rule XII).

53 Thomas, *Summa theologiae*, I, *q.* 2, *a.* 3.

testifies to me the only existence of which I can be certain without need of demonstration: my own.

The beginning of the Third Meditation is almost a summary of the first two: the various stages of doubt are retraced: doubt regarding the reliability of the senses, doubt regarding the real existence of things outside the thinking subject, and finally doubt regarding mathematics, with a return to the foreground of the deceiving God and, correlatively, of the atheist hypothesis: "I do not yet even know for sure whether there is a God at all".[54] All this, in order to reiterate what is at stake: not a generic demonstration of the existence of a God, but the affirmation of the validity of human knowledge, and in particular of self-evident knowledge, through the response to the most insidious objection, founded on the possibility of a systematic deception. Even at this point, when he comes closest to the traditional mission of metaphysics and rational theology – to demonstrate the existence of God – Descartes claims the fundamentally epistemological character of his research: it is above all a question of founding and justifying clear and distinct knowledge. Indeed, until I know that God exists and that he does not deceive me, "it seems that I can never be quite certain about anything else" (with the sole exception, one must suppose, of the *cogito*).[55]

To start from the *cogito* means to start from all those mental states, already listed in the Second Meditation, which are typical of the "thinking thing": all indubitable as such, being all dependent on the *cogito* itself (every act of thought attests to me my existence). Since *The World*, Descartes had called "ideas" all the various perceptions of the mind, with a patent (and conscious) terminological innovation. In the Platonic-Augustinian tradition, and then scholastic, the term "ideas" designated the models of created things present in the intellect of God.[56] However, in the Third Meditation, the term "idea" is used in a much more restricted sense, limiting it to those mental acts that are "images" (that is, representations) of an object – "a man, or a chimera, or the sky, or an angel, or God" – and excluding therefore wills, judgments, affections, passions, and other internal sensations (this new sense of "idea," however, will also reveal itself to be unstable).[57] Descartes's choice is dictated by the

54 *AT* VII, 36; *CSM* II, 25.

55 *AT* VII, 36; *CSM* II, 25.

56 See *AT* VII, 181 (3rd Replies). On the context of Cartesian terminological innovation: Roger Ariew, *Descartes among the Scholastics*, Leiden-Boston, Brill, 2011, pp. 101–126 ("Ideas in and before Descartes").

57 Descartes will in fact soon return to the idea-perception, see *AT* VII, 160, 181 (2nd and 3rd Replies) and even to his early conception (attested in the *Regulae*) of "ideas" as material configurations "impressed" in the brain (see *Passions of the Soul*, art. 103, 136). On the

need, which will clearly emerge later, to concentrate his metaphysical efforts on the relationship between the idea and the object to which it corresponds and which it is supposed to be capable of representing: it is a matter of verifying whether the various representations connected with ideas correspond to something real, that is, truly existing outside the mind itself, or if they are only illusions produced by human imagination.

It is sometimes said that, in order to proceed to the demonstration of the existence of God, Descartes distinguishes between adventitious, factitious, and innate ideas, and then, having found among innate ideas that of God, concludes that God himself exists. However, if such a procedure were really adopted in the *Meditations*, it would be begging the question. In fact, the meditator does not yet know whether anything exists besides his mind that thinks and that knows itself to exist while thinking. Impossible, therefore, to distinguish between "adventitious" ideas, i.e., coming from outside (it is not known whether there *is* an "outside" of the mind, and whether the supposedly adventitious ideas resemble the things they are supposed to represent), factitious ideas, i.e., produced by the mind (nothing is known of the powers and faculties of the mind, of which only the act of thinking is known), and innate ideas, i.e., present in the mind itself by its very nature (again, this "nature" remains as yet unknown and on whom or on what it ultimately depends). For this reason, Descartes specifies that, as far as is known at this stage of the meditation, "all my ideas may be thought of as adventitious, or they may all be innate, or all made up".[58]

It is not with such classifications that we can even begin to find a clue as to the existence of other things besides the "thinking thing". We must thus start with something else: from the objects of ideas; that is, precisely, with what ideas represent. And this is the decisive move in the Third Meditation. A move carefully prepared and presented from the beginning with a scholastic terminology. Descartes distinguishes between the "objective reality" and the "formal reality" of ideas: objective reality is precisely the representative content of an idea, while formal reality is the type of existence that an idea, like any being, possesses. As to formal reality, ideas are simply "modes" of the mind, and as such, trivially, belong to the mind like all its modifications. From this stand point, all ideas are equivalent, and there is no distinction between the idea of God and that of a stone. The case of "objective reality" is different: an idea

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evolution of the term in Descartes and in European philosophy, see the various contributions to the volume *Idea. VI International Colloquium of the European Intellectual Lessico*, edited by Marta Fattori and M.L. Bianchi, Rome, Edizioni dell'Ateneo, 1990.

58 *AT* VII, 38; *CSM* II, 26.

will have greater "objective reality" the higher, in the hierarchy of beings, the degree of "formal reality" of the object it represents. In plain words: the idea that represents a colour, that is, a quality of a body, will have less "objective reality" than the idea that represents a table, which, in the hierarchy of being, is found at a higher level than colour (colour is an accident, or a mode, which depends on that of which it is a mode, while a table is an independent substance). From this point of view, the idea of God will have the greatest possible "objective reality", since it represents the infinitely perfect being.[59]

Descartes's second move, equally important, consists in the sudden introduction of an axiom known "by natural light," according to which, in a cause, there must be "at least as much reality as there is in its effect". This is another formulation of the general axiom, already active in the *cogito*, according to which "nothing comes from nothing": if in the effect there were something more than in the cause, this "something" would have no cause, which contradicts the general axiom. This move is crucial since it reveals a hidden secret of the *Meditations*: from the doubt of the First Meditation are excluded not only the *cogito* and all the cognitive states of the mind depending on it, but also some general axioms of knowledge, and in particular the principle that "nothing comes from nothing" (other axioms, or "common notions," guaranteed by natural light, will be mentioned in the Sixth Meditation and in later works).[60] If these axioms were not valid in themselves, Descartes could not escape from doubt, especially in its "hyperbolic" version, and the itinerary of the *Meditations* would be blocked from the start.

The axiom "nothing comes from nothing" (which is in fact a negative formulation of the principle of causality, already applied by Descartes in the first rule, or law, of physics in *The World*) supports both arguments for the existence of God that are to be found in the Third Meditation. Both are *a posteriori* arguments: they start from an effect and seek its cause. In this, Descartes's proofs do not differ from those of Aquinas. The substantial difference lies in the fact that the effect from which Descartes starts is neither an event in the world, nor an object of sensory experience, nor even nature in its entirety: the effect of which the cause is sought is the very idea of God, considered in its representative content, that is, its objective reality. The "idea of God", in its "formal reality", is simply a modification of the mind and therefore finite like the mind; but that idea has a content that exceeds the finite capacity of the mind that conceives it, since its "objective reality" represents the infinite. Now, for Descartes,

59 *AT* VII, 40; *CSM* II, 27–28.

60 Cf. H. Gouhier, *La Pensée métaphysique de Descartes*, pp. 265–285; P. Machamer and J.E. McGuire, *Descartes's Changing Mind*, Princeton, Princeton University Press, 2009, pp. 74–79.

only a being that has an infinite "formal reality" is capable of creating an adequate representation of itself (otherwise, the axiom according to which nothing comes from nothing would be contradicted). Therefore, if I am capable of thinking of an infinitely perfect God, God necessarily exists. Descartes's first argument in the Third Meditation can be summarized as follows:

1. I am thinking, therefore I exist (*cogito ergo sum*);
2. Among the various ideas that I can think of there is that of an infinitely perfect being;
3. I cannot be the cause of this idea insofar as its "objective reality" is concerned, that is, inasmuch as it represents an infinite being, given that I am finite and imperfect;
4. Only an infinitely perfect being can be the cause of an idea that represents it as such (according to the principle "nothing comes from nothing"); therefore,
5. God, the infinitely perfect being, exists.

The crux of the proof lies in the thesis according to which the human mind, though finite, can have an adequate and positive representation of divine infinity. If it were not so, if the idea of God were confused and obscure, it could very well be an artificial product of the mind, and the whole argument would collapse. However, for Descartes, the idea of God is clear and distinct (indeed "the truest and most clear and distinct of all my ideas"),[61] and it is precisely the clarity with which we conceive the infinite that is incompatible with the finitude of the mind – and which allows us to conclude that God exists as the only possible cause of the idea of infinity in the human mind.

The idea of God can now be qualified as "innate" (in the Latin original of the *Meditations*), that is, "born and produced with me, from the moment I was created" (in the French 1647 version).[62] This conclusion paves the way to a more accurate analysis of the relationship between the idea of God and the *cogito*. For Descartes, the perception of the infinite is original and precedes that of the finite. Not, of course, in the sense that every man thinks of God before his own existence: the *cogito* remains the first conscious act of the thinking subject; but the *cogito* itself is only possible against the background of infinity offered

61 *AT* VII, 46; *CSM* II, 32. From an epistemic point of view, all "clear and distinct" (or "self-evident") ideas are equally "clear and distinct" (or "self-evident"). However, Descartes also thinks that, epistemologically, that is, from the point of view of their dependence on other propositions, some "clear and distinct" (or "self-evident") truths are *more* "clear and distinct" (or *more* self-evident) than others. In this sense, as Descartes argues since his 1630 letters to Mersenne, the assertion of God's existence is "more self-evident" than any mathematical theorem (see *supra*, pp. 38–39, and note 8).

62 *AT* VII, 51; *CSM* II, 35.

by the idea of God. How would I be able to doubt something, how would I be able to know my finitude, if there were not already in me a horizon of infinity against which I measure my being? Thus, the traditional conception of the infinite as negation of the finite is overturned; on the contrary, according to Descartes, the infinite is a primitive notion, not attainable starting from the finite, and the latter, if anything, is precisely nothing other than a negation of infinity.[63]

The second argument proposed in the Third Meditation is not structurally different from the first. It starts from the *cogito* and the decisive step is made when the principle of causality appears ("nothing comes from nothing"). The main difference is that now the effect of which the meditator seeks the cause is no longer the idea of God as such, but the existence of a thinking mind which has the idea of God. This argument is not a mere reformulation of the first, although Descartes did not take care to distinguish between them.[64] The second argument includes a few theological novelties, destined to provoke a vast debate. God is here not only the cause of the idea I have of Him, but is fundamentally the cause of being, of every being and even of *his own* being (as will be made explicit in the *Objections and Replies*). Descartes still uses the scholastic thesis of continuous creation, on which the laws of physics of *The World* were founded. He shows that my existence would fall back into nothingness if it were not continuously recreated by a cause capable of giving me existence. And this cause certainly cannot be myself, because I am not at all conscious of this supposed faculty. Then, from whom do I receive existence? Certainly not from my parents nor from other creatures. The point in question is not to determine the chain of past causes on which I depend, perhaps reconstructing my genealogical lineage, but to ask what is the cause that "preserves me at the present moment" and at every instant.[65] And this cause can only be God, because only God can create and maintain in existence a being such as man, that is, a being capable of thinking the infinite. This last specification would seem to render indispensable – as in the first argument – the reference to the idea of God present in the mind of the meditating subject. However, the appeal to the causality of God for every existence renders such a reference potentially

63 *AT* VII, 46–47; *CSM* II, 32. Later, in the 5th Replies, Descartes will argue that "every limitation contains in itself the negation of the infinite" (*AT* VII, 365); see also Descartes's *Conversation with Burman*: "every defect or negation presupposes the thing of which it is a defect or negation" (*AT* V, 153). However, for Descartes, the originality of the idea of the infinite must be understood as a virtual capacity to conceive divine perfection, not as an effective possession of the idea of God: cf. *AT* XI, 655 (*Notes to the Principles of Philosophy*).

64 Descartes to Mesland, 2 May 1644 (*AT* IV, 112).

65 *AT* VII, 50; *CSM* II, 34.

superfluous, because the capacity to create constitutes for Descartes the sign of omnipotence, and thus of infinite perfection (the connection will emerge clearly only in the *Objections and Replies*).[66]

In the last part of the Third Meditation, the "veracity" of God is finally asserted. In a few lines, the most important conclusion of all the *Meditations* is drawn, at least as far as the principal goal of the work is concerned: God cannot be a deceiver. To reach this result Descartes invokes another maxim recognized as true thanks to natural light: "all fraud and deception depend on some defect."[67] It follows that the infinite perfection of God, which has just been demonstrated, directly implies the impossibility that he might deceive us. And even if, in the remaining *Meditations*, the spectre of the deceiving God will continue to manifest itself, it will now only be a bogey to scare the adversaries of Descartes's metaphysics. Indeed, in his eyes, his argumentation constitutes the only possible way to exorcise it.

4 Freedom and Error

Having reached the demonstration of God's veracity, the path of the *Meditations* would now seem definitively clear. But an objection arises spontaneously, and indeed Descartes had raised it himself already at the beginning of the work: if God cannot endow his creatures with deceptive faculties, why nonetheless is the human being subject to error?[68] That man sometimes errs is all too well known. It therefore remains to be understood how this is possible: at first glance, it would seem that, being the offspring of a truthful God, man ought never to err in his judgments. The Fourth Meditation is written in order to resolve this question. It is positioned between the assurance achieved of the validity of clear and distinct ideas and their concrete application "to the knowledge of other things" – that is to say, beyond the thinking *me* revealed through the *cogito*, and God, whose existence has now been demonstrated.[69] The Fourth Meditation interweaves traditional doctrines with others that are quite innovative, faithful in that respect to Descartes's characteristic style. In certain respects, indeed, it is the least original part of the *Meditations*, yet it vehicles several theses that are disruptive with respect to scholastic metaphysics.

66 See below, p. 134.
67 *AT* VII, 52; *CSM* II, 35.
68 *AT* VII, 21; *CSM* II, 14.
69 *AT* VII, 53; *CSM* II, 37.

Descartes's first move on the issue of human error redirects the *Meditations* towards the Christian theological tradition. In fact he revives the classical doctrine of Saint Augustine on evil, later codified by Thomistic scholasticism, but he transposes it from the field of morals to that of epistemology. For Augustine, the task was to render compatible the existence of God with that of evil and sin in the world; for Descartes, it is a matter of explaining how human error is possible although God is not a deceiver. In other words, the philosophical agenda of the Fourth Meditation is that of a "theodicy," as Leibniz would say seventy years later.

Descartes's first step is an ontology of error. For him, "error" – like "sin" for Augustine – is not something real, but rather a "defect," that is, a lack of reality, and thus cannot have God as its cause, since God is the cause only of real things.[70] "Error" thus depends on the necessary imperfection of the human being, that is, on the negativity inherent in the fact of his being a creature: the human intellect is not infinite and is therefore subject to fail from time to time. But this doctrine is not sufficient in itself: "error", however much it may appear to be a human imperfection and defect, nevertheless denotes a malfunction of one of the faculties that God gave to man. Technically, that imperfection is a "privation," not a simple "negation",[71] since it must be admitted that God could have created man imperfect and limited, and yet free from any possibility of error. Descartes gives no examples, but one might think of the condition of the blessed in Paradise according to Christian theology: finite spirits, imperfect, and yet constitutionally incapable of sinning. Could God not have created us from the beginning with that same nature?

The objection is weighty. Descartes takes care to deflect it with a first counter-argument, familiar to theologians: God is incomprehensible, and it is presumptuous to question his choices. However, while the latter argument is certainly coherent with the theology of divine omnipotence that is an undercurrent throughout Descartes's thought – at least since his 1630 crisis – it seems to be ill-suited for the purpose of the meditator, which is to clarify matters in the metaphysical realm and, most importantly, establish a foundation for human knowledge. Such an appeal to the divine incomprehensibility could perhaps have pleased to the Sorbonne theologians. However, this conciliatory move towards theology is accompanied by a far more daring thrust, which is

70 *AT* VII, 54; *CSM* II, 38.

71 In Scholastic terminology, "negation" means the lack of a property not included in the nature of an entity (human beings do not have wings), while "privation" is the absence of something that should be there. According to Thomas Aquinas, *Summa theologiae*, I, *q*. 48, *a*. 3, evil is the "privation of good" in the same sense as blindness is the privation of sight.

presented as a logical consequence of divine incomprehensibility. According to Descartes, God's incomprehensibility implies that one must never appeal to his presumed "ends" to explain the structure of nature. In other words, divine incomprehensibility precludes any attempt to define "final causes", and Descartes is intent on excluding them from the mechanistic physics of *The World*. In this latter work, the only "cause" that it makes sense to invoke is the efficient cause, exemplified by the collision of particles of matter. Of course – as already in *The World*[72] – Descartes does not deny, in the Fourth Meditation, that God acts according to "ends": he simply denies that these can be known by human beings, which renders finalism entirely useless in physics (as Francis Bacon had already argued).[73]

However, in the context of the Fourth Meditation, even the argument based on the incomprehensibility of God's ends appears immediately inadequate. And that the meditator is conscious of its inadequacy is shown by the very fact that Descartes's reasoning does not stop there. In the end, Descartes's most original response to his own objection – if God is truthful, why is man fallible? – is another argument, one which is wholly independent of scholastic sources and which constitutes the philosophical core of the Fourth Meditation. He introduces a new conception of the relationship, within the human mind, between the intellect and the will. It is there, he claims, that we find both the source of error and the method by which it can be surmounted.

For most scholastic philosophers, including Aquinas, theoretical judgments (by which one assents to this or that proposition, considering it to be true) belong to the intellect, whereas the will has an eminently moral function: that of guiding human actions in relation to the good. For Descartes, however, the will has a much broader jurisdiction: it is the source of all choices, including purely theoretical judgements. Such a thesis appears for the first time in the Fourth Meditation: in the *Regulae*, theoretical judgments still depended on the intellect.[74] Knowledge is for Descartes a signally voluntary act, insofar as

72 See above, p. 49.

73 *AT* VII, 55; *CSM* II, 39. See Francis Bacon, *De dignitate et augmentis scientiarum*, III, 5.

74 Cf. *AT* X, 420; *CSM* I, 45 (about "the faculty by which our intellect [...] makes affirmative or negative judgements"). However, even after the *Meditations*, Descartes does occasionally affirm, taking the word "intellect" in a more general sense, that the intellect judges. cf. *AT* VII, 139 (2nd Replies); *AT* IV, 277, 356 (Descartes to Elizabeth, 18 August 1645 and January 1646); *AT* IX–2, 10 (Preface to the French edition of the *Principles*). Therefore, the presence of the traditional position on the intellect in Descartes's unpublished *Recherche de la vérité* cannot be considered as a useful clue for the dating of this text (on which see below, pp. 170–171, note 168). In the metaphysical part of the *Discourse on the Method*, Descartes makes no declaration on this topic, which is addressed very briefly.

it involves "judgments," that is, precisely, affirmations or negations concerning this or that. The intellect presents to the human mind certain perceptions and "ideas," which as such, cannot be erroneous: they are simply states of mind (if I feel cold, then it is trivially true that I feel cold). It is the task of the will to formulate a judgment and to assert, or to deny, that something real corresponds to a given perception, and to determine, if applicable, what corresponds to it (in the case of cold, nothing other than the material configuration of my body). Descartes's entire method, properly understood, is based on the idea that science is a voluntary construction, in which the subject fully governs his own cognitive acts and is able to analyse and select them: without freedom of judgment, that voluntary construction would be impossible. But what kind of "freedom" is invoked here?

The point is far from negligible. In Christian theology, discussions on free will had always been on the agenda, at least since Augustine, and they had reached paroxysmal intensity between the end of the sixteenth century and the beginning of the next, when the Counter-Reformation was in full swing. The two extremes to be avoided, within the Catholic sphere, were those of Pelagianism (salvation depends on the free initiative of human beings, independently of divine grace)[75] and of the Lutheran and Calvinist "enslaved will" (the actions of human beings are determined by the grace that God freely bestows – or does not bestow – on them). Between these two extremes, the two main schools of Catholic theology at the time offered their solutions: the Dominican "Thomists" – so called even if their link with Thomas Aquinas was not always very close – and the Jesuits, led by the Spanish doctors Molina and Suárez.[76] The Thomists emphasized an idea of freedom as spontaneous adherence to the good and rejection of sensory impulses: the more a human being follows the divine commandments, the more he (or she) is free, and he (or she) is most free when under the influence of divine grace, which determines him (or her) to the good without constraint. The Jesuits, on the other hand, defined human freedom as a choice, granting to the will the power to determine itself with "indifference", that is, without being necessitated by the motives acting upon it, toward one or other alternative presented to it. This latter doctrine, within a generally humanistic framework, was more inclined to accept the possibility that every human being may contribute in some measure by his/her merit to his/her own salvation.

75 On a possible sympathy of Descartes for Pelagianism, see below, p. 151, note 84, and p. 233.

76 For the theological context of Descartes's theses on free will, see especially Étienne Gilson, *La Liberté chez Descartes et la théologie*, [1913] Paris, Vrin, 1982.

In the face of this debate, Descartes adopts an elusive position. Perhaps he is also motivated by a desire not to alienate either of the two parties: neither the supporters of the Thomist position (with one of whom, Gibieuf, he had been in contact since the end of the 1620s),[77] nor, *a fortiori*, the Jesuits. On the one hand he insists on human free will, going so far as to affirm that the human will is "infinite" (being a mere faculty of "affirming or denying," it has no limits and applies to every possible object);[78] on the other hand, he hesitates to promote the kind of freedom that, more than any other, seems to make humans masters of their own destiny – namely, the freedom of indifference. In the Fourth Meditation, he writes that indifference "is the lowest degree of freedom"; it occurs in the face of obscure and confused propositions, whereas, in face of self-evidence – just as under the influence of divine grace (the comparison is explicit in the text) – a human being cannot remain indifferent; rather, he (or she) gives his (or her) assent by necessity, albeit spontaneously.[79] Descartes, therefore, draws upon both definitions of freedom that were prevalent during his era: Thomistic freedom, which emphasizes the spontaneity of the mind's adherence to the good; and Jesuit freedom, which highlights indifference towards motives while acknowledging the will's power to choose between alternatives. He employs these two definitions, however, to analyse two different epistemic contexts: that of assent to self-evident truths and that of indecision determined by the obscurity and confusion of ideas engendered by the senses.

This philosophical scaffolding supports the conclusion that Descartes aims to reach in his theodicy: the origin of error is not to be sought in God, nor in the human will as such, because the will naturally assents with maximal spontaneity precisely in the face of self-evidence, with respect to which one cannot be deceived. However, an error may arise because the will, by definition infinite, is associated with a necessarily finite intellect, which sometimes presents it with obscure and confused perceptions. Faced with these, the will is indifferent and thus risks giving its assent to false notions: "it easily turns aside from what is true and good, and this is the source of my error and sin" (where once

77 Writing to Mersenne on 21 April 1641, Descartes declares that "I have not written anything that contradicts what Gibieuf argued in his book *De Libertate*." (*AT* III, 360).

78 *AT* VII, 58; *CSM* II, 40: "[God's Will] does not seem any greater than mine when considered as will in the essential and strict sense". The (unheard-of) thesis of the infinity of the will, absent from Descartes's writings prior to the *Meditations*, is foreshadowed in his letter to Mersenne of 25 December 1639 (*AT* II, 628).

79 *AT* VII, 58; *CSM* II, 40: "divine grace and natural knowledge, far from diminishing my freedom, rather increase and strengthen it".

again one notes the identification of theoretical error with moral error).[80] It is therefore the disproportion, not in itself imputable to God, between will and intellect, that constitutes the cause of error. God has done everything that was possible for human beings: he has even given him a will that is infinite and an intellect capable of grasping self-evidence if rightly guided.

Error, then, depends exclusively on an improper use of one's faculties: it consists in regarding certain confused perceptions as true, without suspending judgment as one ought to do in the absence of rational self-evidence. Such improper use – or rather abuse – of free will thus constitutes a "privation." But it is a "privation" with respect to human beings, certainly not with respect to God, who nevertheless concurs with – and indeed causes, through his continuous creation – every human volition.[81] With respect to God, human errors are merely "negations," that is, necessary limitations of the creature's condition (God remains infinitely perfect even if His creatures are finite and subject to error).[82] Certainly, Descartes had admitted that God could have created man in such a way that he would never err: true, but man is not isolated from the rest of nature and must be seen within the totality of creation, in which he is to fulfil the role assigned to him. All degrees of being are represented in the universe, and this variety contributes to the general perfection of the created order, without giving man the right to lament this or that imperfection. This response (which is an obvious echo of Augustine) now sounds definitive: the apparent defects of man are considered necessary in order to give greater emphasis to the perfection of the universe. A thoroughly traditional solution, in short, to which even Leibniz would eventually entrust his ambitions for a Christian theodicy.

What matters, for the itinerary of the *Meditations*, is nonetheless that error is avoidable – and that it is avoidable thanks to free will. The Fourth Meditation thus has the dual function of defending the dogma just established concerning divine veracity, and of opening the path forward, showing how human freedom is the source of all epistemic enrichment. In some later letters, and in particular in the correspondence with the Jesuit Father Mesland, Descartes will move a step further: he will also admit, besides the freedom of spontaneity in the face of intellectual clarity and the freedom of indifference in the face of obscurity, also the existence of a freedom to "test" one's "positive power" of choice by denying even truths attested by "very self-evident" reasons.[83] But this

80 *AT* VII, 58; *CSM* II, 41.

81 On this point, see the text cited below, p. 217, note 50.

82 *AT* VII, 61; *CSM* II, 42.

83 Descartes to Father Mesland, 2 May 1644 (*AT* IV, 115–8) and especially 9 February 1645 [?] (*AT* IV, 173–175). On the questions opened by these texts, after Étienne Gilson, *La Liberté*

kind of freedom – which Descartes, not wishing to offend his correspondent, tries to relate to Jesuit "indifference" – was in fact already implicit in the hyperbolic doubt of the First Meditation. This perhaps explains, in retrospect, why the theory of the voluntary nature of judgment arises in Descartes only after the failure of the *Regulae* project. There, assent to the self-evidence of simple natures was strictly compelling; but, once it became clear that mathematical self-evidence, though apparently invincible, is not grounded in itself, it became necessary to find a tool that would allow possible and practical doubt even with respect to clear and distinct ideas: that tool is free will – the hidden weapon of Descartes's method.

5 The Essence of Bodies and the "Ontological" Proof

The universal fame of Descartes as a philosopher rests largely on the *cogito*, and perhaps on the rules of method and the demonstration of the existence of God, but equally original is his conception of matter, which provoked a vast and prolonged debate. First of all, for Descartes, "matter" exists in itself as a "substance", without requiring any "form"; secondly, its essence can be known by a clear and distinct idea. These two theses overturn two pillars of Aristotelian scholasticism: respectively, the idea that matter cannot, by its nature, exist autonomously but is the indistinct substratum of things, and the idea that it is something obscure that only "form" can organize and make intelligible to human minds.[84] On the first point, however, Descartes avoids expressing his position with precision in the Fifth Meditation, since the meditator does not yet know whether bodies, including his own, exist or not. He says a great deal, however, on the second question – that is, on the essence of matter. For him, the question "what is matter?" can indeed be addressed even without knowing whether matter has a real existence or not – elsewhere, he writes that of everything, including God, one must first ask what it is (*quid sit*) and then whether it truly exists (*an sit*).[85]

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chez Descartes et la théologie. Paris, F. Alcan, 1913, and Ferdinand Alquié, *La Découverte métaphysique de l'homme chez Descartes*, pp. 287–99, see Anthony Kenny, "Descartes on the Will", in John Cottingham (ed.), *Descartes*, Oxford. OUP, 1998, pp. 132–159; Tad M. Schmaltz, *Descartes on Causation*, Oxford, OUP, 2008, pp. 178–216; Thomas M. Lennon, "Descartes's Supposed Libertarianism: Letter to Mesland or Memorandum concerning Petau?" *Journal of the History of Philosophy* 51 (2013/2), pp. 223–248; C.P. Ragland, *The Will to Reason: Theodicy and Freedom in Descartes*, New York and Oxford, OUP, 2016.

84 On the scholastic context, which is very varied, see Roger Ariew, *Descartes among the Scholastics*, pp. 127–56.

85 On this point, see especially *AT* VII, 107–108 (1st Replies).

The essence of matter consists, according to Descartes, in something very simple and clear: spatial extension (a position that, as we have seen, is attested in his writings since *The World*).[86] In the Fifth Meditation, matter is definitively defined as an "extended thing" (*res extensa*) – an expression that recalls the "thinking thing" (*res cogitans*) that appeared with the *cogito* already in the Second Meditation but was still lacking a full metaphysical justification. Descartes prefers to use the term *res*, which is in itself rather vague, to indicate bodies and minds, while awaiting a more precise formulation of his thought through a reworking of the scholastic doctrine of substance – a task that will only be undertaken in the *Principles of Philosophy*.

To determine the essence of matter, Descartes starts as usual with the cognitive aspect of the question, asking in what way a human mind comes to know material things. The only distinct knowledge that one can have of them is that provided by geometry, which bears exclusively on "extension in length, breadth, and depth," with respect to which my mind is capable of demonstrating innumerable theorems. But what is the origin of the notion of extension? To answer this question, the meditator embarks on a path analogous to that of the Third Meditation regarding the idea of God. He excludes that one has a factitious idea of extension – that is, an artificial one (given that geometric ideas elude our control and indeed impose themselves on the mind with necessity) – or an adventitious one, that is, deriving from things outside us (since there exist figures that are constructible in geometric space but do not exist in nature). Thus, being neither derived from experience nor arbitrarily constructed by the intellect of a thinking mind, the idea of geometric space can then be nothing other than innate.

Descartes thus officially and consciously embraces a Platonic conception of mathematics, alluding clearly to the doctrine of *anamnesis* in *Meno* (where Socrates has a slave "recall" the Pythagorean theorem).[87] With his innatist choice, however, Descartes also reconnects with his early metaphysical explorations in the 1630s. Mathematical truths, he had written to Mersenne, are "inborn in our minds" – *mentibus nostris ingenitae*.[88] The difference is that it is now no longer specified whether mathematical truths, although innate, are themselves created or not: the doctrine of the creation of eternal truths once again remains behind the scenes, without playing any perceptible role.

86 See above, p. 44.

87 *AT* VII, 64; *CSM* II, 64: it seems to me "that I remember what I already knew before, that is, I perceive things that were already in my mind, although I had not yet turned my thoughts to them".

88 Descartes to Mersenne, 15 April 1630 (*AT* I, 145; *CC* I, 60).

Its substitute, in the *Meditations*, is divine veracity: if mathematical ideas are innate, and thus disposed in our mind by our Creator, they cannot be false. And it matters little, for the purposes of the *Meditations*, whether they also impose themselves on God or instead depend on his creative power. The only possible echo of the thesis of the creation of eternal truths is found in the assertion that mathematical truths "are something, and not merely nothing".[89] On this same premise, Descartes had argued in 1630 that mathematical truths are created by God just like every other entity.[90]

The full intelligibility of matter as such (that is, without the need of any "form"), which Descartes claims against the scholastic tradition, is an immediate consequence of the identification of matter with geometric space. The innate idea of matter-as-extension is in fact the domain of "pure mathematics" (*pura mathesis* – "pure", insofar as it is devoid of any sensory element and, therefore, valid as such, independently of the real existence of the objects to which it refers). Mathematical theorems, for Descartes, would remain equally true even if our entire bodily life were a dream (according to the doubt formulated in the First Meditation and still in force). Mathematics thus becomes the skeleton of physics and indeed constitutes the field of inquiry within which a true physics can be developed. As Descartes will later specify, physics is "a part of mathematics" in the sense that it investigates, among all the possible relations between mathematical entities, those that actually exist.[91] With the idea of matter-as-extension, Descartes thus provides the metaphysical and epistemological foundation for the basic dogma of the scientific revolution: that nature is "written in mathematical characters" (Galileo) and that the human mind possesses the cognitive tools necessary to investigate it. Freed from the doubt of the deceiving God, mathematical self-evidence now constitutes the criterion of intelligibility of the entire material world.

It is at this point that Descartes inserts – apparently as an aside – a further argument for the existence of God. This time, an *a priori* argument. Descartes's line of reasoning does not proceed from an effect to infer the existence of its cause, as in the *a posteriori* proofs of the Third Meditation. It starts instead from the definition of God in order to deduce directly the existence of God Himself. Descartes's argument faithfully follows the one invented by Anselm of Canterbury (or of Aosta), that had been virtually eclipsed by Aquinas's

89 *AT* VII, 65; *CSM* II, 45.

90 Descartes to Mersenne, 27 May 1630: "I know God is the author of all things, and these truths are something, and consequently he is their author" (*AT* I, 152; *CC* I, 62).

91 See *AT* XI, 315–6 (letter-preface to the *Passions of the Soul*, to which we will return below, pp. 220–221) and *AT* V, 160 (*Conversation with Burman*).

objections, falling into oblivion for several centuries. After Descartes, it was to return with great vigour (Spinoza, Leibniz), until Hume's and Kant's destructive interventions in the eighteenth century – preceded, as we shall see, by Gassendi's Fifth Objections to the *Meditations*. It was precisely Kant, in the *Critique of Pure Reason*, who baptised this proof "ontological," considering it to be the secret – though shaky – foundation of all rational theology. This designation then became standard, even though in a prior work (*The Only Possible Argument in Support of a Demonstration of the Existence of God*, 1763), Kant himself, following Leibniz, had referred to it as the "Cartesian proof," which shows how much the modern success of the argument depended precisely on Descartes's version of it.

In the Fifth Meditation, the proof inherited from Anselm appears in a peculiar form. It is in fact equated with the simple deduction of a property of a mathematical entity – for example, a triangle – from its definition (hence the connection with the rest of the Meditation). The equation between mathematical theorems and the "ontological" proof is to be understood in an epistemological sense: the existence of God, thus demonstrated, has "at the very least" (*ad minimum* – *AT* VII, 65) the same degree of certainty as mathematical truths. Now, these words "at the very least" inevitably raise suspicion: had Descartes not always declared – starting from 1630 – that the existence of God is "more certain", and even "more self-evident" than mathematical truths? Why, then, this partial retraction, already anticipated and confirmed in the *Discourse on the Method*, where it is stated that existence is included in the idea of God "in the same way as the idea of a triangle includes the equality of its three angles to two right angles".[92] If the equation were to be taken literally, a significant question would inevitably arise: since mathematical theorems depend, for their certainty, on the truthfulness of God, then the "ontological" proof – once equated with them – should also depend on it, with the consequence that the *a priori* proof of the Fifth Meditation would logically depend on the *a posteriori* proofs of the Third, by which divine veracity was demonstrated. And this would open up an indefensible paradox.[93]

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92 *AT* VI, 36 (cf. *CSM* I, 129, where a misleading addition is to be found, not attested in the original 1637 text nor in the 1644 Latin translation: "the idea I had of a perfect being [...] included existence in the same way as – *or even more evidently than* – the idea of a triangle includes the equality of its three angles to two right angles").

93 The question of the relationship between the two proofs has been the subject of a heated dispute, the main protagonists being M. Gueroult, *Descartes selon l'ordre des raisons*, I, pp. 22–29; 346–60; *Nouvelles réflexions sur la preuve ontologique*, Paris, Vrin, 1955, and Henri Gouhier, "La preuve ontologique de Descartes (à propos d'un livre récent)", *Revue interna-*

There is, however, an acceptable sense in which the "ontological" proof can be understood as independent from the first two. This proof is conceived primarily for someone who, unaware of the prior itinerary of the *Meditations*, is mistakenly convinced of the absolute truth of mathematics, without even posing the question of their epistemological foundation.[94] To such a person – an atheist mathematician, or an atheist convinced that only mathematics possesses certainty[95] – Descartes recalls two things: in the first place, that he cannot be sure of the truth of his theorems, because he is incapable of raising and resolving the objection of the deceiving God; in the second place, that – granted, though not conceded, that mathematical theorems possess intrinsic validity independently of divine guarantee – then the *a priori* proof of the existence of God has that same intrinsic validity, since it is configured precisely as a theorem, deducing, from the definition of God, His existence, just as from the definition of the triangle we deduce that the sum of its internal angles is equal to two right angles. Hence a dilemma arises for the atheist: either he recognizes that mathematics requires divine guarantee and is thus forced to posit the existence of an infinitely perfect and truthful God, or he must admit directly that an infinitely perfect God exists, because His existence follows from His definition in the same way that theorems of mathematics are deduced from the basic definitions of mathematical entities.

The fact that, in the Fifth Meditation, Descartes addresses a specific adversary does not imply, however, that he himself does not consider the "ontological" argument to be valid. If he were not convinced that in God, and only in God, existence is an essential attribute, he would not repeat this argument in all his expositions of metaphysics, from the *Discourse on the Method* to the *Principles of Philosophy*, where indeed the *a priori* proof will appear first in order of presentation. For Descartes, in God, essence necessarily implies existence, and the deduction by which this conclusion is drawn can certainly be considered "the most perfect way of demonstrating".[96] However, the human mind, in order to reach it, "require[s] careful reflection" – a reflection, one

tionale de philosophie, 1954, pp. 295–303; and Id., *La Pensée métaphysique de Descartes*, pp. 104–12; 143–77.

94 On this point, see Sergio Landucci, *La mente in Cartesio*, pp. 181–86.

95 Perhaps an allusion to Maurice of Nassau, under whom he had served in 1618–1619 and who is alleged (by Guez de Balzac, *Socrate chrétien*, 1652) to have said on his deathbed: "I believe that two plus two makes four". See Mariafranca Spallanzani, "*Bis bina quatuor*", *Rivista di filosofia*, 1991, pp. 301–117; Alain Mothu, "Mathématiques et libertinisme", in *Révolution scientifique et libertinage*, ed. by A. Mothu, Turnhout, Brepols, 2000, pp. 209–249.

96 Descartes to Mersenne, 16 June 1641 (*AT* III, 383).

might add, that presupposes the identification, on the basis of divine veracity, between self-evidence and truth.[97] In this sense, Descartes will also observe *en passant* that the *a posteriori* argument of the Third Meditation is "the principal argument" at our disposal for demonstrating the existence of God, "not to say the only one".[98] The only one, obviously, from the point of view of the epistemic itinerary of a meditating human subject, who must overcome prejudices, obscurity, and hyperbolic doubts. The very assertion that the idea of God is innate, repeated in the Fifth Meditation (the definition of God and that of the triangle cannot be artificial, but arise from "true ideas born with me"),[99] is not immediately self-evident in itself: it took an entire meditation (the Third) to establish it with certainty.

In the final part of the Fifth Meditation, Descartes resumes a theme already touched upon earlier: that of the sense in which divine veracity must be understood. Descartes takes the opportunity to reinforce once more the principle of clear and distinct ideas: everything that can be conceived with self-evidence – that is, clearly and distinctly – is true. Thus, self-evidence – and not only mathematical self-evidence – is definitively elevated to the status of criterion of truth, under the guarantee of divine veracity. But it also becomes clear at this point that the divine guarantee has a purely epistemological function and adds nothing to the intrinsic self-evidence of clear and distinct ideas. These cannot be doubted in the moment they are conceived by the intellect; they can only be doubted when, forgetting the self-evidence that had previously led one to accept them, one allows oneself to be distracted (more or less voluntarily or freely) by erroneous ideas about God, such as the hypothesis of the deceiving God. This psychological dubitability is, however, nothing but the symptom of an epistemological dubitability,[100] far more dangerous, which the hypothesis of the deceiving God has allowed to be analysed in depth. Only now that I know God, and that His existence as an infinitely perfect being is fully demonstrated, can I be certain that everything that is clear and distinct is true. Based on this certainty, the meditator may now turn to what remains of his former doubts.

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97 In the 1st Replies, Descartes will confirm that the ontological proof requires, as a "major premise", the principle "everything that we intend or conceive clearly and distinctly is true" (*AT* VII, 115–16).

98 See *AT* VII, 14, 101, 238 ("Synopsis", 1st and 4th Replies).

99 *AT* VII, 68; *CSM* II, 47 (5th Meditation).

100 On this opposition, cf. Edwin M. Curley, *Descartes against the Skeptics*, p. 111 ff., 118–23; P. Markie, *Descartes' Gambit*, Ithaca, Cornell Univ. Press, 1986, with the reply of Curley, *Certainty: Psychological, Moral and Metaphysical*, in *Essays on the Philosophy and Science of René Descartes*, edited by S. Voss, Oxford Univ. Press, 1993, pp. 11–30.

6 The Body, the Mind, the Human Being

If the *Meditations* were only, or mainly, an apologetic work against atheism, they ought to conclude with the resolution of all doubts concerning man, the world, and God, with the demonstration of the immortality of the soul and a general happy ending. But despite Descartes's efforts to make them palatable to the Sorbonne theologians (who, however, did not grant them official patronage),[101] the *Meditations* remain above all a work of philosophy, with all the related risks. The Sixth Meditation amply demonstrates how Descartes's text is written without shortcuts or concessions to common sense: the problems addressed are numerous, so too the solutions proposed, but perhaps still more numerous are the new questions raised and left as a legacy to Cartesian and non-Cartesian posterity. The principal themes of the Sixth Meditation, often interwoven, are:

1. the existence of "material things";
2. the "real distinction" between mind and body;
3. the "union" of mind and body;
4. the function of sensory perceptions;
5. the errors of the senses and their compatibility with God's goodness.

The meditator begins with the question of the real existence of "material things", that is, of bodies, including his own. He already knows, from the Fifth Meditation, that the existence of bodies is "possible", as attested by the fact that we have clear and distinct ideas of bodies themselves – and "God is capable of creating everything that I am capable of perceiving in this manner".[102] The difficulty lies in the passage from possibility to reality. The intellect, from this point of view, is powerless, since it limits itself to the clear and distinct idea of the essence of material things and can in no way prove their existence. The best candidates for this mission would therefore seem to be the non-intellectual faculties of the human mind. Imagination is considered first – and indeed introduced explicitly for the first time in the *Meditations*.

This move is somewhat contrived, its principal aim being precisely to clarify the difference between imagination and intellect. The distinction is illustrated by an illuminating example: a figure such as a triangle or a pentagon can be easily conceived both by the imagination and by the intellect; on the contrary, it is not possible to have a clear image of a "chiliagon," that is, a polygon with a thousand sides (it is impossible to distinguish it in one's imagination from one with ten thousand sides), whereas its properties will always be determinable

101 Descartes to Gibieuf, 19 January 1642 (*AT* III, 473–4).

102 *AT* VII, 71; *CSM* II, 50.

by the intellect with the utmost clarity. Imagination thus has its own specific mental dimension, even if it is not essential to the "thinking thing": I would still be a thinking being even if I were not capable of forming images of material things, but only of perceiving purely mathematical relations. This suggests that imagination is connected to something different from the mind, and in particular to the brain, here indicated by means of a circumlocution (a body to which the mind is so joined that it can look into it and "paint" in it the images of things). In Descartes's mechanist physiology, the brain has a power of encoding the different stimuli it receives either from the mind or from the body, connecting them to particular positions of the "pineal gland", but this power is necessarily limited, as proved by the case of the "chiliagon".[103] However, given that the meditator does not know yet whether something like a "brain" exists or not, the supposition of its physical limitations makes the existence of my body only probable, and we are still far from a demonstration.

The only path open in order to demonstrate that bodies – and my body in particular – exist (an unusual task for a philosopher, and even more so in a metaphysical treatise, but one imposed by the doubts of the First Meditation) is thus the one that starts from the senses. The senses present me with knowledge over which I have not the slightest control and which in fact imposes itself upon me with great vividness, to the point of making me think that it comes from an external cause which is different from me as a thinking being. Certainly, the senses deceive me with regard to many things. They deceive me above all by presenting to my mind things that are false or non-existent: colours, smells, tastes have nothing to do with external objects, which consist only in parts of extension (in this sense Descartes had previously spoken of the "material falsity" of the ideas that represent the so-called "qualities" of bodies, such as heat and cold, which in reality lack any true external counterpart).[104] But the senses also deceive me with regard to those sensations that would seem to originate from our own body: someone who has had a limb amputated continues to localize pain in a part of the body that he no longer possesses.[105]

We thus return to a question of theodicy analogous to that in the Fourth Meditation, but even more problematic: there, the question was how it is possible that man be mistaken *at times*, and how such a thing is compatible with God's veracity. However, Descartes's definitive conclusion on the senses is that man is *always* deceived by them, which hardly seems compatible with divine veracity. How is it possible that one of my faculties always deceives me?

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103 *AT* VII, 73; *CSM* II, 51. See also *AT* V, 162–163 (*Conversation with Burman*).

104 *AT* VII, 43–44; *CSM* II, 30. See also *AT* VII, 232–234 (4th Replies).

105 *AT* VII, 77; *CSM* II, 53.

On this issue, Descartes apparently finds himself at a dead end. He had always scorned sensory perception, considering it to be the greatest obstacle to metaphysics, but he must now recognize that it is God who gave us our senses. On at least one point, therefore, the senses must not deceive us, otherwise God would be the author of an intrinsically fallacious faculty. And this point, it turns out, is precisely the existence of bodies. Descartes's demonstration of their existence hinges on a subtle distinction between the essence and the existence of matter, and thus between the two aspects of the doubt of the First Meditation (which will, indeed, find two different solutions in the Sixth). From an epistemological point of view, the senses deceive us entirely with respect to the characteristics of bodies – and therefore with respect to their essence – but this error is corrigible thanks to the clear and distinct ideas of the intellect and to the will, which, in the absence of the former, is always free to suspend assent (Fourth Meditation). On the contrary, from an ontological point of view, how could we correct a possible error regarding the existence of bodies? Certainly not by means of the intellect, which at most allows us to know that bodies can be interpreted as mathematical objects, independently of whether or not they exist (Fifth Meditation). If, then, the senses were to deceive us at the very moment they make us believe that bodies exist, this error would be incorrigible, and thus God himself would have deceived us by giving us a fallacious faculty. Descartes once again draws strength from the principle of divine veracity, extending it in this case to non-self-evident perceptions, such as those of the senses. What makes this transition less jarring is the fact that the sensory perceptions that spontaneously lead us to believe in the existence of the external world give us a "great inclination" (*magna propensio*) to assent, comparable to that – equally irresistible – which leads us to assent to the self-evidence of the *cogito* (as had emerged in the Fourth Meditation, where Descartes indeed used the same expression).[106]

Bodies therefore exist and, in particular, this body exists which I feel to be mine. However, Descartes must at this point raise the question – hitherto postponed – of the relation between the body and the mind (of which, so far, we know only that it is defined by its acts of thought). This is why the meditator,

106 Compare *AT* VII, 59, *CSM* II, 41 (4th Meditation: "I could not but judge that something which I understood so clearly was true; but this was not because I was compelled so to judge by any external force, but because a great light in the intellect was followed by a great inclination [*magna propensio*] in the will") with *AT* VII, 79–80; *CSM* II, 55 (6th Meditation: "God [...] has given me a great inclination [*magna propensio*] to believe that [my sensory perceptions] are produced by corporeal things. So I do not see how God could be understood to be anything but a deceiver if [they] were transmitted from a source other than corporeal things. It follows that corporeal things exist").

almost in passing, within the demonstration of the existence of bodies and even before arriving at its conclusion, proposes his demonstration of the "real distinction"[107] between the mind and the body. The demonstration is offered without emphasis, even though it is one of the metaphysical trophies announced in the subtitle of the second edition of the *Meditations*. But if the question can be dealt with in just a few lines, it is because the materials have long since been prepared – indeed, almost pre-processed. That the mind is only "thought" had already been asserted in the Second Meditation: a property of the mind is everything that can be substituted for "I am thinking" in the statement "I am thinking, therefore I exist" (I am doubting, I am willing, I am perceiving, I am dreaming). However, at that stage, this position could be asserted, but not yet rigorously demonstrated, given the persistence of the hypothesis of divine deception: the clarity and distinctness of my ideas could still be fallacious. In the Sixth Meditation, once the principle has been established that clear and distinct ideas are true, Descartes can finally affirm "that my essence consists solely in the fact that I am a thinking thing (*res cogitans*)".[108]

By contrast, that geometrical extension is the essence of matter in general – and of my body in particular – had already been intimated in the Second Meditation with the analysis of the piece of wax, and then definitively established in the Fifth. Hence Descartes's conclusion in the Sixth Meditation: the very fact that one can have a clear and distinct idea of these two things (mind and body), each idea independently of the other, demonstrates that the things represented by these two ideas are really distinct and that God can make the one exist without the other. The latter assertion is based on the same principle already invoked preliminarily in the course of the demonstration of the existence of bodies: God can produce everything that we conceive clearly and distinctly. Otherwise, once again, God would deceive us – this being the major premise of all Descartes's most important conclusions in the Sixth Meditation.

It is important to remember that, in the Cartesian "order of reasons", the entire demonstration of the "real distinction" between mind and body *precedes* that of the existence of bodies, from which it is in fact independent: the demonstration of the "real distinction" is founded solely on the separate conceivability of two essences, which demonstrates – in the light of God's veracity – the separation of the "things" corresponding to them, namely (1) my mind, a "thinking thing" (*res cogitans*), and (2) my body, an "extended thing" (*res extensa*) – if indeed it exists. Also for this reason, Descartes does not even touch upon the question of the

107 The distinction is "real" (*realis*) in the sense that it allows us to distinguish between two things (*res*), that is, two substances. See also *Principles of Philosophy*, 1st Part, § 60–62.

108 *AT* VII, 78; *CSM* I, 54.

immortality of the soul: a question discussed in the "Synopsis" of the *Meditations*, and immediately relegated to the theological domain; and, in any case, an existential question, independent as such of that of the real distinction, which, as we have just seen, is made entirely on the level of essences.[109]

Once the real distinction between mind and body has finally been demonstrated, and the actual existence of bodies established, Descartes moves on to another issue, to which he is necessarily led by the analysis of human sensory perception just undertaken. Mind and body, although two different "things," are united in man, as is attested precisely by the fact that we receive sensations on the occasion of the contact of other bodies with our own: since we are now certain that the latter exists, we also now know that it is capable of acting upon the mind, with which it seems intimately united. But what is the ultimate reason for such a union? And how is it possible for there to be an interaction between two "things" that are defined precisely by their diametric opposition? Thus arises, suddenly and unexpectedly, the necessity for a further meditative effort, also unprecedented in the history of philosophy. No philosopher had ever laboured so much to know whether and how it is possible for the mind and the body to be united; and this is because no philosopher had ever distinguished them in such a rigorous manner: in the Aristotelian tradition, dominant for centuries, body and soul formed a single substance – namely, the human being – of which they constituted respectively the "matter" and the "form", and their union did not need to be explained – even less justified – in any way.

By contrast, in Descartes's thought, the question of the union constitutes a real enigma, which begins to manifest itself in all its complexity only in the Sixth Meditation: Descartes had never previously raised it, except in passing and without ever problematizing it. Now, he asserts that the machine of the body is intimately linked to the mind, and that this union gives rise, no longer to a machine, but to a "composite" (*compositum*), sensitive and sentient – namely, the human being – in which the parts contribute organically to the preservation of the whole. Thus, any human being, insofar as he is corporeal, follows the immutable laws of physics like all other material things, including animals and plants; and insofar as he is a thinking being, he possesses innate ideas of the essences of things, and in this he is like an angel who contemplates truth. But "man" also has a "nature" of his own – and his alone – which derives precisely from the fact that he is a composite of an "extended thing", infinitely divisible, and a "thinking thing," simple and indivisible. In this opposition

109 For the "Synopsis", see above, p. 91, note 10.

between the divisibility of the body and the indivisibility of the soul Descartes finds, moreover, another argument – derived from Plato's *Phaedo* – for the real distinction between the two "things" which compose every human being.[110]

The "union" between mind and body is thus the peculiar element of human nature, understood in this way, and can be explained – insofar as it can be explained – through reference to the pineal gland, not named but clearly indicated as the seat of the "common sense" in human brain.[111] On this point, the Sixth Meditation reconnects with the *Treatise on Man*, where, however, the issue – far from being discussed – had been resolved in all haste by declaring that the mind, acting on the gland, moves the body like a "plumber" dealing with the pipes of a hydraulic system.[112] In the Sixth Meditation, Descartes makes use of a similar comparison – but in order to deny it. The mind, he writes, does *not* relate to the body as the sailor (or the "pilot", in the French version) to the ship, but in a much closer way:[113] whereas the sailor and the pilot feel no pain if a part of the ship is damaged, the mind *feels* the body's material alterations. The union between mind and body is therefore almost a fusion, or a "mixture" (*permixtio*), even if the meaning of this expression – intricate in itself – remains entirely undefined.[114] Descartes limits himself to affirming that God has organised the mind-body composite by making certain movements of the pineal gland correspond to certain sensations, and this in a wholly arbitrary way. But it is an arbitrariness quite different from that which presides over the creation of truths, because it corresponds to teleological criteria; and these are not in the least incomprehensible – contrary to the declaration in the Fourth Meditation on "final causes"[115] – indeed, they are entirely transparent. Descartes no longer maintains that in physics one must not investigate the ends of God, and even less that God establishes the essences of things freely without being bound by anything. Instead, he now maintains that God has assembled the clockwork of the body in order to make it function in accord with the mind

110 *AT* VII, 85–86; *CSM* II, 59: "there is a great difference between the mind and the body, inasmuch as the body is by its very nature always divisible, while the mind is utterly indivisible".

111 *AT* VII, 86; *CSM* II, 59.

112 *AT* XI, 131. See above, p. 77.

113 *AT* VII, 81; *CSM* II, 56. For the sources of the simile (generally used against the Platonic doctrine of the soul), see F. Manzini, "'Comme un pilote en son navire'", *Bullettin cartésien* 31 (2003).

114 For an "emergentist" reading of Descartes's theory of the mind, according to which the mind cannot subsist (or cannot be created by God) "without a certain configuration of physical components", see Lynda Gaudemard, *Rethinking Descartes's Substance Dualism*, Springer Nature Switzerland, 2021, p. 113.

115 See above, p. 111.

and to preserve the life of their composite: "nothing better" could have been imagined (*excogitari*) to safeguard the health of human beings.[116]

However, this novel teleological perspective inevitably raises a novel question of theodicy: if sensory perception has been placed in us by God for a precise purpose – namely, to preserve the mind-body composite – it cannot be fallacious. But then how can we explain the cases in which the senses fail to fulfil their function properly? Such cases do indeed appear to exist. What is at stake is not only the corruption and illness of the body, which are entailed by the necessary imperfection and finitude of human beings: illnesses are, in this sense, natural (insofar as "nature" is everything that is created by God). But, at times, a human being is deceived by his very own "nature," now taken in the stricter and newly defined sense of the term – namely, his "nature" as a composite of mind and body. And what deceives him is precisely his mind, which, for example, makes him believe that a certain limb is giving him pain whereas it has been amputated, or urges a patient suffering from dropsy to drink even though it will be harmful to his health.[117] In these cases, sensory perception appears to function against its natural end. And how is this to be reconciled with the veracity (and now also the goodness) of God?

Descartes addresses this further question of theodicy in the final pages of the *Meditations*, and places the emphasis on his mechanistic physiology, taking the opportunity to summarize it. He explains that the relation between bodily movements and sensations is a relation that follows general laws, established by God from the beginning and guaranteed (like all the laws of physics and even the eternal truths themselves) by His constancy and immutability.[118] Each nervous filament mechanically generates in the pineal gland a certain movement, to which corresponds one and only one sensation, even in the case where the filament has been cut at some point. It is for this reason that, even if a limb has been amputated, the mind continues to feel it as if it still existed. The same holds for dropsy: thirst, in all human beings, depends on a certain material configuration of the throat that stimulates one to drink; it matters little, then, that in a given individual, this same configuration is caused by a bodily illness, and that the resulting impulse to drink is harmful to him: what matters is that it functions correctly in the vast majority of cases. Descartes invokes a statistical principle: the marginality of anomalies with respect to the situations in which the human composite functions perfectly, thanks to God's wise design. This, however, does not prevent him from admitting that, in those

116 *AT* VII, 87; *CSM* II, 60.

117 *AT* VII, 86–89; *CSM* II, 59–61.

118 On this point see also Descartes's *Conversation with Burman* (*AT* V, 164).

fringe cases of irregularity such as dropsy, and "notwithstanding the immense goodness of God" (*non obstante immensa Dei bonitate*), the "nature of man" (*natura hominis*) inevitably deceives some human beings in a way that they are utterly unable to prevent.[119]

Thus, unexpectedly and even unbelievably, Descartes's *Meditations on First Philosophy* – a hymn to divine veracity – conclude with the candid assertion that, in certain cases, "nature" – that is, God's creation – is "deceptive" (*fallax*). This was a paradoxical, if not tragic, outcome for a work intended to find a firm foundation for all knowledge in God's moral and metaphysical attributes. Paradoxical if not tragic, even though, at the time, the difficulty hardly drew attention: none of Descartes's first opponents noticed it, and only some decades later would it begin to attract examination by his more or less faithful readers and disciples, first Malebranche and then Bayle. However, while the Oratorian would honestly acknowledge the seriousness of the issue and attempt to solve it with his Theory of General Laws, Bayle would show how both the problem and Malebranche's solution constitute serious threats to Christian theology.[120] As to the final resolution of the "dream doubt", in the very last lines of the *Meditations*, it sounds more like an obligation fulfilled than a real effort of conceptualization. Once again, Descartes's purported solution is based entirely on his dogma of God's veracity: "from the fact that God is not a deceiver it follows that in cases like these I am completely free from error".[121]

By then, everything that needed to be said had been said, and the *Meditations* could make their entrance into the world of philosophy – overturning it from top to bottom.

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119 *AT* VII, 88–9; *CSM* II, 61 (where the passage is translated: "the nature of man [...] is bound to mislead him from time to time"). Cf. also *AT* VII, 143 (2nd Replies): "we are *really deceived* by that natural instinct which has been given to us by God" ("*ab ipso naturali instinctu, qui nobis a Deo tributus est, interdum nos realiter falli videmus*").

120 For Bayle's anti-theological reappraisal of the hydropic case, see his *Objections to Poiret* [1679], in P. Bayle, *Œuvres diverses*, La Haye, 1727–31, vol. IV, p. 159. On the whole question, see especially Sergio Landucci, *La teodicea nell'età cartesiana*, Naples 1986.

121 *AT* VII, 90, *CSM* II, 62.

CHAPTER 5

Objections and Replies

1 Scholastic Resistance: Caterus

Just as the *Discourse on the Method* is almost always detached from the scientific essays that originally accompanied it, so the *Meditations* are often published and read without the *Objections and Replies*, from which they are nonetheless inseparable. From the beginning, Descartes wanted to circulate his text before making it public in order to test the opinion of possible readers and assess the impact the work might have among intellectuals and theologians. In July 1640, he wrote to Mersenne and Huygens that he would not even publish his "Metaphysics" but that he had sent copies to "twelve or fifteen of our leading theologians", awaiting their judgment.[1] Things, however, turned out differently. In fact, Mersenne published the *Meditations* in Paris in August 1641 after gathering the objections of the authors to whom he and Descartes had previously sent manuscript copies of the text (and not a printed pre-edition). A collective framework had been part of Descartes's metaphysical project from the start.

The first edition of the *Meditations* already included six sets of *Objections and Replies*, all anonymous (except the Fifth) and accompanied by Descartes's replies: the First by Caterus, the Second by Mersenne,[2] the Third by Hobbes, the Fourth by Arnauld, the Fifth by Gassendi, and the Sixth again by Mersenne; to these were added, in the second edition (1642), the Seventh, by the Jesuit Father Bourdin. The volume that landed in the hands of the first readers was in fact a collective work, considering the extent of the *Objections and Replies* – six or seven times longer than the *Meditations* themselves – and the authority of the objectors.[3] Rarely in the history of philosophy has there been a debate

1 Descartes to Mersenne, 30 July 1640 (*AT* III, 127); Descartes to Huygens, 31 July 1640 (*AT* III, 751).

2 On Mersenne's authorship of the Second and Sixth Objections – officially ascribed to unknown "doctors" and "theologians" but explicitly endorsed by Mersenne in a private letter – see below, pp. 136–137.

3 See especially Jean-Luc Marion, "The place of the *Objections* in the development of Cartesian metaphysics", in *Descartes and His Contemporaries: Meditations, Objections, and Replies*, ed. Roger Ariew and Majorie Grene, University of Chicago Press, 1995, pp. 7–20. See also the papers collected in the volume *Objecter et répondre*, Actes du colloque [...] organisé par le Centre d'études cartésiennes à la Sorbonne et à l'Ecole normale supérieure du 3 au 6 octobre 1992 [...], ed. Jean-Marie Beyssade et Jean-Luc Marion, Paris, PUF, 1994.

of such breadth, with no punches pulled. Descartes's metaphysics, a work in progress, was further dynamized by the objectors' queries and in his replies Descartes often innovated upon the original *Meditations*. These innovations intersect with the initial drafting of the *Principles of Philosophy*, which occurred in those same months (the winter and spring of 1641). It is therefore not without reason that, in the Synopsis of the *Meditations*, Descartes asks readers not to judge the work "until they have been kind enough to read through all these objections and my replies to them".[4]

The first objector to come forward, directly consulted by Descartes at the suggestion of two Belgian Catholic priests with whom he was acquainted, was a theologian, also Belgian and also Catholic: Jan de Kater (1590–1655, Latinized as Caterus. He was an obscure provincial priest who would perhaps have remained obscure forever if he had not written the First Objections: perhaps prepared already in the summer of 1640, they were sent by Descartes to Mersenne the following autumn, together with the final text of the *Meditations*. This test was of utmost importance for Descartes: how might a theologian trained in the scholastic tradition react on reading his work? Caterus, for his part, does not require prompting and gets straight to the point – with finesse, but also with determination – skipping over the doubt of the First Meditation, briefly touching on the *cogito*, and omitting everything concerning matter and its essence or existence: almost all his objections aim at the pillars of Cartesian metaphysics, particularly the theory of ideas and the three proofs of the existence of God.

What scandalizes the scholastic Caterus above all is that ideas are considered by Descartes as "something," and even as something that needs a cause.[5] An "idea", for Caterus, is nothing more than an "extrinsic denomination" (*extrinseca denominatio*), that is, a simple label that says nothing about the thing it refers to but only about its relation to us. By "idea," in fact, one means only the "object," that is, in scholastic jargon, the term or the content of the intellectual act by which something is known. The idea as such is a "pure nothing" and enjoys at most the status of the essences: the idea of the triangle, that of a ship, or that of Oedipus are "eternal truths," universally valid even if the corresponding things do not exist. And this once again confirms, according to Caterus, that ideas do not need any cause, since it is licit to speak of the cause of something only if that something is created, whereas eternal truths are not

4 *AT* VII, 11; *CSM* II, 8.

5 *AT* VII, 92–93; *CSM* II, 66–67.

created. Of course, Descartes thought differently on this point, but Caterus does not know that – nor will he be enlightened by Descartes's elusive reply.[6]

In any case, having rejected Descartes's theory of ideas, Caterus can only disapprove of the first demonstration of God's existence in the Third Meditation. He turns then to the second demonstration, which is more easily reconciled with scholasticism. Indeed, he does not fail to recognize "the same approach taken by Saint Thomas", namely that of the "causality of the efficient cause". However, he notes, the Thomist proof was better and also simpler, precisely because it did not concern itself with the cause of ideas and, thus, not with the cause of my existence insofar as I possess the idea of God. For Caterus, the only task is to demonstrate that God is the cause of myself insofar as I exist, and then to demonstrate that, on the contrary, God exists *per se*, without needing any cause.[7] However, from such a demonstration of God as a necessary being, who exists as such, it does not follow, according to Caterus, that God is infinite. On this point, while criticizing Descartes, Caterus goes well beyond Suárez and a great number of scholastic theologians: precisely because God has no cause, His essence is what it must be from all eternity, without any reason being given for it, and thus it is not possible to demonstrate that his essence is necessarily infinite.[8]

The following objection is closer to the prevalent view in scholasticism: even supposing that the divine infinity can be known, it can never be known clearly and distinctly, as Descartes claims. Caterus maintains on the contrary, repeating a scholastic dictum: "the infinite, *qua* infinite, is unknown".[9]

Given these premises, it is easy to understand how little Caterus was inclined to accept the proof of the Fifth Meditation – the "ontological" proof – in which he promptly recognizes the old argument of Anselm of Canterbury upon which Aquinas's anathema had fallen. It is precisely this anathema that Caterus reproduces in his objections, quoting directly from the *Summa theologiae*: the proof does not demonstrate the existence of anything, but merely posits an implication between two concepts (that of a being endowed with all

6 Descartes limits himself to a brief allusion to the eternal truths "which *he* [Caterus] *says* have no need of a cause" (*AT* VII, 104; *CSM* II, 76). He will be more explicit only in the 5th and 6th Replies (*AT* VII, 380; 432 and 435–436).

7 *AT* VII, 94; *CSM* II, 68.

8 See Igor Agostini, *L'infinità di Dio. Il dibattito da Suárez a Caterus (1597–1641)*, Roma, Ed. Riuniti, 2008. See also Id., "Descartes's *ens summe perfectum et infinitum* and its Scholastic Background", in *Infinity in Early Modern Philosophy*, ed. by Ohad Nachtomy and Reed Winegar, Springer, 2018, pp. 9–26.

9 *AT* VII, 96; *CSM* II, 69. See Thomas Aquinas, *Summa contra gentiles*, LXIX, 11, which in turn refers to Aristotle's *Physics*: "*infinitum, secundum quod infinitum, est ignotum*".

perfections and that of existence), thus remaining entirely within the dimension of thought.[10] The "logical" (as it is generally dubbed) critique of Anselm's argument was linked, in Aquinas, to the conviction that it is not possible to demonstrate the existence of anything *a priori* (that is, starting from the cause), but only from effects. This holds all the more for God's existence, since God, according to Aquinas and Caterus, has no cause.

Faced with the valiant resistance of Caterus and his precise vindication of certain bulwarks of scholastic knowledge, one might expect Descartes to beat a cautious retreat behind the lines of the *Meditations*, without further developments. But exactly the opposite happens. The First Replies open up new and unexpected horizons: they are almost a seventh meditation, dedicated to the idea of God and the proofs of divine existence that can be constructed upon it. However, we witness a kind of reshuffling of the cards, that is, a general fusion of the various proofs, which tend to unite under a single common denominator: the doctrine – unprecedented and here explicitly proposed for the first time – according to which God is the cause of Himself (*causa sui*).[11]

First and foremost, Descartes reiterates that "objective reality," that is, the representative content of ideas, is not "nothing" and therefore requires a cause. Indeed, it is legitimate to ask, for example, what is the cause of the fact that a man is capable of thinking of a certain mechanical device, and it must be answered that this cause must possess at least as much perfection as is necessary to design, and therefore to make conceivable by himself or by others, that particular device: it will then be replied either that this man has learnt mechanics from books, or that he has seen that device in reality, or else that he has conceived it on his own through his own capacities. The same applies to the idea of God, about which it must be asked why we have it. To say, as Caterus does, that the source of ideas, and thus also of the idea of God, is our "imperfection" does not resolve the difficulty – indeed, it makes it insurmountable: how can the imperfection of human nature generate the idea of infinite perfection? It would be akin to suggesting that an individual lacking basic mechanical knowledge can conceive a sophisticated device.[12]

Descartes is above all stimulated by the comparison with Thomas Aquinas and the question of the infinity of God, raised by Caterus. This leads him to sharply distinguish his position from the Thomist one, implicitly criticizing it: only through my proof, proclaims Descartes, is it possible to demonstrate the

10 *AT* VII, 98–100. See Thomas Aquinas, *Summa theologiae*, I, *q*. 2, *a*. 1.

11 See above all Emanuela Scribano, *L'Existence de Dieu: histoire de la preuve ontologique de Descartes à Kant* [1994], Paris, Seuil, 2002. chap. 2–3.

12 *AT* VII, 104–105; *CSM* II, 75–76.

existence of an infinitely perfect being. The Thomist proofs, starting from the world and thus from finite effects of God, are unable to rise to knowledge of the infinite being. Descartes overturns Aquinas's position, inaugurating a line of thought that will eventually lead to Kant's *Transcendental Dialectic*: a wholly *a posteriori* proof of the existence of God is impossible, because it can never arrive at the concept of an infinitely perfect being, which we can only possess *a priori*, certainly not starting from the world of finitude and imperfection. The Thomist proofs, at most, could demonstrate that "there is a cause of my being", whereas my proof, asserts Descartes, can demonstrate "more": that "this cause contains every perfection, and hence that it is God".[13] The proofs of the Third Meditation are, therefore, formally *a posteriori*, because they take as their starting point an effect (the idea of God, of which one asks the cause) or a real existence (that of my *ego*, which is capable of conceiving the infinite), but they also have an *a priori* element, insofar as they begin with an innate idea (the notion of an infinitely perfect being) entirely independent of my external experience and of my imaginative capacities.

The general foundation of Descartes's line of reasoning is the clarity and distinctness of the idea of the infinite. Descartes is fully aware that this is the fulcrum of his entire metaphysical revolution. But how is it possible to overturn the scholastic assumption reiterated by Caterus, that the infinite is unknown to us? Descartes cannot deny that the idea of God, as far as it is conceived by a human being, also contains obscure elements: it would be blasphemous to claim the contrary. He does, however, distinguish between the clarity of our manner of "understanding" the infinite and the impossibility of "comprehending" it totally. He attempts to make that distinction more accessible by using a few metaphorical examples: between understanding and comprehending the infinite there is the same difference as between touching a mountain and embracing it entirely, or between imagining the side of a polygon of a thousand sides and enclosing the entire figure in a single vision....[14] What matters is the primordial clarity of the notion of the infinite, a notion that cannot be arrived at gradually and which must be possessed entirely from the outset. The entire edifice of the *Meditations* rests indeed upon this positive conception of the infinite: even the *cogito* itself, as we have seen, is comprehensible only against the backdrop of divine infinity, innately possessed by the human mind.

At this point, Descartes ought to address the "logical" critique of Aquinas, revived by Caterus and directed against the *a priori* proof of the Fifth

13 *AT* VII, 108; *CSM* II, 78.

14 The first example is already to be found in Descartes's letter to Mersenne of 26 May 1630 (*AT* I, 152; *CC* I, 62–63).

Meditation. However, he considers it unnecessary, as he believes he has already parried the blow in advance: in his proof, he starts not from a mere definition but from the innate idea of God, which imposes upon our mind the truth of divine existence. Here, Descartes does not limit himself to a simple reply to Caterus, but gives a new formulation of the "ontological" proof. Our observation concerning the proof of the Third Meditation is here reversed: there, Descartes had shown how his *a posteriori* proof necessarily contained an *a priori* element; here, on the contrary, we have the insertion, into the *a priori* proof, of an element generally thought to belong to the *a posteriori* arguments, that is, the causality of an infinitely powerful being. The relationship between essence and existence in God is in fact considered by Descartes not merely in terms of the simple inclusion of a predicate (existence) in a subject (the idea of a most perfect being), but in terms of omnipotence: a being of supreme power that exists "by its own power" will necessarily have all the perfections contained in the idea of God, and therefore will be God.[15] Descartes himself acknowledges the difference with the Fifth Meditation: if I have changed my manner of writing, he declares, it is "to appeal to a variety of different minds".[16] In reality, he is here proposing yet another *a priori* proof of the existence of God, fully independent of any other assumption and disconnected from the context of the *Meditations*, where the "ontological" argument had only a subordinate role.

Finally, the *causa sui*: precisely because God contains the reason for His own necessary existence, He must also be considered as the cause of Himself. This was an outright heresy for a scholastic, so much so that Caterus had advanced the hypothesis of a God *causa sui* only to show how absurd and inadmissible it was: if you say that to exist "by itself" means to create oneself positively, then you must say that God is the cause of Himself.[17] Descartes accepts exactly this consequence: God is *causa sui* in the sense that He is the ultimate cause of His own existence. According to Descartes, this self-causality must be understood in a "positive sense", and not as the simple absence of an external cause determining God's existence and attributes. Once again, the reason for God's existence must be found in His "immense and incomprehensible power"; this power "is so exceedingly great that it is plainly the cause of his continuing existence, and nothing but this can be the cause".[18] In this way, Descartes

15 *AT* VII, 119; *CSM* II, 85: "his supremely powerful being cannot but possess within it all the other perfections that are contained in the idea of God".

16 *AT* VII, 119–120; *CSM* II, 85.

17 *AT* VII, 95; *CSM* II, 68: "What derives existence from itself in this sense [i.e. "as a cause"] bestows its own existence on itself; so if by an act of premeditated choice it were to give itself what it desired, it would undoubtedly give itself all things, and so would be God".

18 *AT* VII, 110; *CSM* II, 79–80. See also below, p. 155 (4th Objections).

manages to insert a causal modality into the ontological proof, revitalizing it and bequeathing it to his successors: Spinoza will not fail to take advantage of it.[19]

2 Father Mersenne, or the Shadow Objector

Descartes and Mersenne lived for a long time in a sort of intellectual symbiosis: it lasted from the end of the 1620s until 1648, when Mersenne died shortly before his friend. Mersenne was Descartes's critical conscience and his link with the real world. He put him in contact with the most important scientists, philosophers, and mathematicians of the time; he kept him up to date on the progress of scientific research and new publications, but above all he bombarded him with questions, submitting queries both minute and vast on the most diverse subjects – from the most material matters of mechanics to the loftiest theology. Mersenne was a veritable objection machine. With all his requests for explanations, clarifications, and solutions to geometrical and physical problems, Mersenne even became harassing at times, and then Descartes would become irritated ("You interrogate me as if I had to know everything"[20]), and he would even try to discourage him, but to no avail: Mersenne pretended not to hear and started again from the beginning with his questions – at times captious, but at others sharp and apt to reveal weak points in Cartesian thought.

There was, moreover, a subtly mischievous side to Mersenne, not entirely befitting his monastic habit: he delighted in stimulating and observing intellectual disputes from the outside, especially if they were heated and with no holds barred. He was a *provocateur* – certainly with good intentions, but nonetheless a *provocateur*. He solicited judgments and criticisms on this and that and then relayed them to the interested party, who inevitably reacted and responded

19 Descartes's metaphysical invention of the "*causa sui*" has sparked a wide debate: see Vincent Carraud, *Causa sive Ratio: la raison de la cause: de Suárez à Leibniz*, Paris, Puf, 2002; Thierry Gontier, *Descartes et la causa sui: autoproduction divine, autodétermination humaine*, Paris, Vrin, 2005; Emanuela Scribano, *L'existence de Dieu*, chap. 2–3; Robert Miner, "The Dependence of Descartes's Ontological Proof Upon the Doctrine of *Causa Sui*", *Revista Portuguesa de Filosofia*, 58 (2002), 873–88; Richard Lee Jr., "The Scholastic Resources for Descartes's Concept of God as *Causa Sui*", in Daniel Garber, and Steven Nadler (eds), *Oxford Studies in Early Modern Philosophy*, Oxford, 2006, pp. 91–118; Igor Agostini, "L'analogia della *sui causa*: Descartes e Archimede." *Archivio di Filosofia*, vol. 84/3 (2016), pp. 141–153.

20 Descartes to Mersenne, 25 February 1630 (*AT* I, 115; *CC* I, 50).

in kind, often again through his mediation.[21] Mersenne's acquaintances were also ambivalent: he was a devout believer, specialized in works of Christian apologetics – as well as a respected scientist and mathematician – but he lived among intellectuals and libertines of far from spotless faith, indeed sometimes openly irreligious. In his works, he does not refrain from using, almost plagiarising, arguments drawn from texts reeking of heresy: Vanini, Campanella, Petit.[22] Is it an unavowable attraction, or a desire to engage face to face with the dark side of man? We will never know.

When the *Meditations* were ready for print, Mersenne became so engrossed in the debate that he wanted to participate directly. But he evidently took inspiration from Descartes even in his guarded way of engaging in dispute: almost all his interventions are anonymous or under a collective identity – philosophers, theologians, unnamed geometers whose terms and arguments he reports and reworks. Although the fact is still generally neglected by Descartes scholarship,[23] Mersenne is certainly the sole author of the Second Objections, that he sent to Descartes at the end of January 1641, and of the Sixth Objections (except the very short *Appendix*)[24] sent piecemeal in the following spring. There is no need to "feign hypotheses" on this point, since Mersenne

21 See Baillet, *Vie*, I, p. 341, concerning Descartes's quarrels with Fermat and Roberval: "Father Mersenne had a particular talent for setting men of science against each other and for prolonging the disputes he himself had provoked." Mersenne had also caused the rift between Beeckman and Descartes, by reporting to the latter the former's claims on the *Compendium musicae* (*AT* I, 24, 155, 157, 171). On Mersenne's secret role in the debate between Descartes and Hobbes, see below, pp. 148–149 (and, for Descartes and Gassendi, see Mersenne, *Correspondance*, X, 672, note 3).

22 On Mersenne's plagiarisms of Campanella: G. Paganini, *Skepsis. Le débat des modernis sur le scepticisme*, Paris, Vrin, 2008, pp. 129–47. On Petit and Vanini, see above, p. 87, note 118. See also Claudio Buccolini's recent reappraisal of the Mersenne-Descartes debate: "Mersenne: Questioning Descartes", *The Oxford Handbook of Descartes and Cartesianism*, eds Steven Nadler, Tad M. Schmaltz, and Delphine Antoine-Mahut, OUP, 2019, pp. 271–289.

23 See for instance Dan Arbib (ed.), *Les Méditations métaphysiques. Objections et réponses*. Paris, Vrin, 2019. In this volume, the 2nd objections are attributed *vraisemblablement* to Mersenne (by Frédéric de Buzon, p. 229), while the 6th are said to have been "collected by Father Mersenne from some theologians and philosophers" (Xavier Kieft, p. 355). However, as we shall soon discover, the main reason for attributing the 2nd objections to the Minim Friar is the same reason that compels us to attribute the 6th objections to him as well.

24 The *Appendix* (*AT* VII, 419–20) contains only three brief questions sent from Father La Barde; see Descartes to De Launoy, 22 July 1641 (*AT* III, 420); Descartes to Gibieuf, 19 January 1642 (*AT* III, 472).

himself acknowledged his authorship of these texts in a letter to Gijsbert Voet of December 1642, in which he begged his correspondent to keep the secret:

> After I had read over those six *Meditations on First Philosophy* several times – as the Author himself declared he wished – I proposed those objections which are placed in the second place (which I wish to tell you as if into your ear, for he himself does not know whose they were), to which I later added the sixth set, which you now have at hand.[25]

Voet, for his part, had already begun circulating the rumour that Mersenne was writing against Descartes, and he had done so in an attempt to seek allies – even in the Catholic field – for his anti-Cartesian crusade (to which we will return). But Descartes did not lend credence to what he considered pure slander, trusting the reassurances of his friend.[26] Hence some awkward situations. Descartes officially appreciated the objections he had received, but wrote privately to Mersenne that whoever had written the Second Objections – that is, Mersenne himself – had understood nothing of the *Meditations*, even if it was better not to tell him so, lest he take offence.[27] Descartes's judgment was equally harsh regarding the "Doctor"– Mersenne, again – who had offered the Sixth Objections: he writes nonsense, for example when claiming that we can doubt whether we are thinking or not.[28]

Not at all discouraged by such frank assessments, Mersenne returned to the fray in July 1641 in an even more spectacular manner. He assumed the mask of an enigmatic character who presents himself as the last and most formidable of the objectors, unless, he adds at the end of his letter, a new "Hyperaspistes" ("shield-bearer", "defender", or also "warrior") should appear.[29] The anonymous objector is immediately nicknamed "Hyperaspistes" by Descartes and is known under that name to readers of his works. However, that pseudonym conceals the inevitable and incorrigible Mersenne, as is demonstrated by the many similarities with his other texts, as well as by various factual considerations.[30]

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25 Mersenne to Voet, 13 December 1642 (published in *AT* III, 602).

26 See Descartes to Regius, January 1642 (*AT* III, 507); Descartes to Mersenne, 7 December 1642 (*AT* III, 600).

27 Descartes to Mersenne, 28 January 1641 (*AT* III, 293).

28 Descartes to Mersenne, 21 April 1641 (*AT* III, 360). This letter is in fact an anticipation of the 6th Replies.

29 X*** to Descartes, July 1641 (*AT* III, 397–412).

30 See the indisputable arguments (also unduly neglected by Descartes scholarship) of Sergio Landucci, "Contributi di filologia cartesiana", *Rivista di storia della filosofia*, 2001, pp. 5–23. The objections of "Hyperaspistes" have been unsuccessfully attributed first to Dom.

Under this new mask, Mersenne concentrates not so much on the text of the *Meditations* as on Descartes's replies to Gassendi's objections, which he had just received, adding here and there, disjointedly, other critical remarks that perhaps he had forgotten he had recenly sent to Descartes – hence various analogies with the Sixth Objections.[31] In certain instances, Mersenne and Hyperaspistes employ precisely the same words and share the same stance, particularly when they assert the necessity of an apologetic approach to theological matters:

Mersenne, 6th Objections (*AT* VII, 416)	Hyperaspistes (*AT* III, 401–402)
Nor [...] should *you deny that you are obliged to respond to those matters* which pertain to Scripture and *to theologians*: for since *you are a Christian*, it is fitting that you *be prepared to give a reply* to all who raise objections *against the faith*, and *especially* against those things which you wish to establish.	But if *you deny that you must respond to these matters* on the grounds that you are not *a theologian*, I object that *you are a Christian*, [...] and that Sacred Scripture commands one to *be prepared to give an account of his faith*, *especially* since [...] you yourself have given occasion to speak on this matter.

The questions raised by Hyperaspistes were supposed to be included, along with Descartes's lengthy and promptly drafted reply, in the second edition of the *Meditations*, but in the end they were dropped because Descartes

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Porlier (attribution rejected by Igor Agostini, in *Bulletin Cartésien*, 35 (2006), "Un homme qui se faisait appeler l'Hyperaspistes"), and lately to Gérard Gutschoven (1615–1668) by André Pessel, *Étude de quelques arguments sceptiques au XVII*e *siècle*, Paris, Klincksieck, 2020 (cf. Jean-Robert Armogathe et Vincent Carraud, "Un nouveau document sur l'Hyperaspistes", *Bulletin cartésien* 49, 2020, pp. 154–156). The latter attribution is refuted by the simple fact that Gutschoven was a disciple, or a "defender" of Descartes ("*Cartesii Hyperaspistes*", in Thomas White's words), and not his adversary, as was the 1641 Hyperaspistes.

31 In addition to the many analogies noted by Landucci, see the following: 1) Both Mersenne and "Hyperaspistes" cite and comment on the same passage from the *Ecclesiastes*: "man has nothing more than the animal" (*AT* VII, 416 – *AT* III, 411); 2) both allude to the persons of the Trinity as an objection to the mind/body distinction (*AT* VII, 419 – *AT* III, 412); 3) Mersenne writes that he "read the *Meditations* seven times" with an effort worthy of an angelic mind ("*mentem, Angelorum instar, pro viribus attollimus*"), without yet being persuaded; Hyperaspistes will say that some theologians and geometers, having read the *Meditations* "for the tenth time", have not been able to understand them despite all their efforts ("*pro viribus*"), and that perhaps Descartes can do so because he is endowed with an "angelic mind" (*AT* VII, 421 – *AT* III, 407).

demanded that the anonymous opponent remove issues already raised by others (that is, by Mersenne) or that he reveal his identity.[32] Neither happened, of course, and the epistolary exploit of Hyperaspistes remained unpublished.

In his texts against the *Meditations* – naturally quite fragmentary – Mersenne does not reveal his personal philosophical position, letting it transpire only on certain points. He insists above all on theological themes or those bordering on theology: he is the only one among the objectors to take seriously Descartes's apologetic motivations and, in particular, his commitment to providing a philosophical foundation for the immortality of the soul. Mersenne's new nightmare, with respect to the apologetic writings he himself had produced years earlier, was the advent of a materialistic philosophy based on the dogmas of the new science. Here we see clearly a line of thought that would become classic in the next century and a half but of which we already have the first signs in these earlier years (as we shall see with Regius): the possible transition, entirely unintended and certainly contrary to Descartes's intentions, from mechanism to materialism. A path opened by Descartes himself with theses such as that of the so-called "animal-machine" and the denial of the lower functions of the soul, entirely delegated to the body. Mersenne repeatedly insists on these critical points and, to put Descartes to the test, does not disdain to don the guise of a materialist himself: could thought not derive from the motion of matter just like life and other natural phenomena? How is it possible to demonstrate on the sole basis of the *cogito* that matter cannot think? We could doubt everything, even bodies, and yet be bodies ourselves, without knowing it, and thought could consist in a certain configuration of the brain. And who tells us that God could not have created a thinking matter? The latter hypothesis was to be taken up by Bayle and – more notoriously – by Locke with his theory of "superaddition", which was to have a great success among eighteenth-century materialists, including Voltaire.[33]

The creation of eternal truths is another of Mersenne's obsessions: having asked Descartes about it already in 1630, he again raises the question twice (in the *Sixth Objections* and in the letter of Hyperaspistes), asking by what "kind of causality" God creates the truths and the essences of things.[34] Mersenne's fear is that one might end up asserting that God created his own Word, the

32 Descartes to Mersenne, 22 July 1641, *AT* III, 417.

33 See Antony McKenna, Gianluca Mori, "A short history of Locke's 'superaddition': from Father Mersenne to Voltaire", *Studi Lockiani*, 3 (2022), pp. 87–118. See also Simone Guidi, "Descartes and the "thinking matter issue", *Lexicon philosophicum*, 2022, pp. 181–208.

34 See *AT* I, 151; *CC* I, 62 (Descartes to Mersenne, 27 May 1630); *AT* VII, 417–418; *CSM* II, 281 (6th Objections) and *AT* III, 406 (Hyperaspistes).

seat of eternal truths, perhaps through a kind of mystic-tinged emanation: it is precisely for this reason, in fact, and well before knowing Descartes's unheard-of thesis, that he had polemicized with theosophical doctrines such as that of Fludd.[35] Mersenne's own position is that of classical theology from Augustine onward: a kind of retranslation of Platonism for Christian ears. The eternal truths reside in the Word, that is, in the divine intellect, and therefore they cannot depend on a choice or action of God. They are thus coeternal with Him; otherwise, God could destroy them by withholding His concurrence, which is inconceivable.[36]

However, Mersenne alternates such theological vertigo with a much more cautious position regarding human cognitive abilities, entrenching himself in a sort of Christian scepticism.[37] This is his characteristic position since his first apologetic writings: we do not know and cannot know whether the world was created in time or in eternity; we do not know and cannot know what the infinite is and whether matter is infinitely divisible or made of atoms; above all, we cannot be certain that what today appears to us as clear and distinct will also appear so to us tomorrow and forever.[38] Mersenne accuses Descartes of an excess of metaphysical pride, as if man really could know himself, God, and creation: "if God were to show us the pure truth, what eye, what mental vision, could endure it?"[39] In order to humble our sinful pride, Scripture itself tells us that "man cannot know anything",[40] thus condemning that dangerous mania for absolute certainty which, according to Mersenne, is nestled within Cartesian thought, without being allied with genuine support of theology and the Christian religion. In the *Meditations*, one does not even find "a word" on the immortality of the soul,[41] and indeed, God's ends – that is, the clearest

35 See Edouard Mehl, *Descartes en Allemagne*, pp. 263–270, in particular the passage from Mersenne cited on p. 269, n. 95: "the light and splendor of the Father, that is, the eternal word, is not created [...] and the ideas are not themselves created, but uncreated, and are God himself".

36 *AT* VII, 417–418; *CSM* II, 281 (6th Objections); *AT* III, 406 (Hyperaspistes).

37 On this point see especially Richard Popkin, *The History of Scepticism from Savonarola to Bayle*, Oxford, OUP, 2003, pp. 112–127.

38 See *AT* III, 407–411 (Hyperaspistes) and *AT* VII, 126, 418–419; *CSM* II, 90, 281–282 (2nd and 6th Objections). On divisibility, see also Mersenne, *La Vérité des sciences contre les sceptiques ou pyrrhoniens*, Paris 1625, p. 725 ff.; on the eternity of the world, cf. Mersenne, *Quæstiones in Genesim*, Paris 1623, col. 451 (and Robert Lenoble, *Mersenne, ou la naissance du mécanisme* [1943], Paris, Vrin, 1971, p. 261).

39 *AT* VII, 126; *CSM* II, 90 (2nd Objections).

40 *AT* VII, 415–416; *CSM* II, 280 (6th Objections).

41 Mersenne had already pointed this out to Descartes in December 1640 (*AT* III, 266); he repeats the criticism in the 2nd Objections (*AT* VII, 127–128; *CSM* II, 90–91).

thing of all – are denied; not to mention the Trinity and Transubstantiation, dangerously called into question and exposed to the risk of heresy.[42]

Thus, Descartes's friar friend, protected by anonymity, did not spare criticism of the philosophical project in the *Meditations*. For his part, Descartes replies with an abundance of arguments. He begins, in the Second Replies, with two important clarifications, or rather, in this case, two partial self-criticisms (which, to avoid misunderstandings, Descartes will be forced to reiterate to almost all the other objectors, though not always heeded):

1. He does not claim to derive directly from the *Cogito* the demonstration of the real distinction between mind and body (as might be inferred from the Fourth Part of the *Discourse on the Method*); the *cogito* tells us something about ourselves, but it does not make us certain of the fact that we are thinking substances different from the body, because for that one needs the certainty that our clear and distinct ideas are true: a certainty that will come with the Third Meditation. It is for this reason that the materialistic hypothesis will only be defeated afterwards – along with its equally false opposite, the immaterialist hypothesis – in the Sixth Meditation.[43]
2. By the term "idea," he does not designate the images of things impressed in the corporeal imagination (even though that was exactly how he had understood ideas in the *Regulae* and in the *Treatise on Man*).[44] He now uses this term to designate every perception, that is, every conscious content of the mind.[45] Indeed, as is clarified in an appendix to the Second Replies (to which we shall return), thought is essentially defined as "consciousness". Previously, Descartes had never made such an affirmation: in fact, it is a conceptual and terminological innovation destined to enjoy great success.[46] Even on the question of ideas, he had not been very clear in the *Meditations*, where he had even claimed that the proper sense in

42 *AT* III, 408 (Hyperaspistes); *AT* VII, 418–419; *CSM* II, 281–282 (6th Objections).

43 *AT* VII, 130–31; *CSM* II, 94. Descartes will repeat it to Hobbes (*AT* VII, 175), then to Arnauld – who however had understood it by himself – (*AT* VII, 199, 226) and finally to Gassendi (*AT* VII, 386–7). He had already anticipated it to Mersenne, in vain, on 24 December 1640 (*AT* III, 266). See also *AT* VII, 8.

44 See *AT* X, 414 (*Regulae*); *AT* XI, 174 (*Treatise on Man*).

45 *AT* VII, 139; *CSM* II, 99–100.

46 On the metamorphosis of the term "conscience" from the moral to the cognitive sense, which begins with Descartes, see C.G. Davies, *Conscience as Consciousness: The Idea of Self-Awareness in French Philosophical Writing from Descartes to Diderot*, Oxford, The Voltaire Foundation, 1990. For an original reassessment of Descartes notion of "*conscientia*" – and a critique of the conventional translation in terms of mere "consciousness" – see Andrea Christofidou, "Descartes on Selfhood, *Conscientia*, the First Person and Beyond",

> which one can speak of ideas is the one that makes us understand them "as images of things." Now, having finally reached clarity on this point, he will reiterate it in the course of the debate with the objectors, and especially in the Third Replies: "I use the name 'idea' for everything that is conceived immediately by the mind".[47]

However, Descartes also senses, and from the outset, that referring to the "order of reasons" and to the correct definitions of terms is not in itself sufficient to overcome his readers' resistance – let alone that of the self-styled "theologians and philosophers" (that is, once again, Mersenne) whom he believes he is addressing. To confuse mind and body is not only a philosophical error. It is something more: a deeply ingrained prejudice that must be patiently uprooted through the exercise of the *Meditations*. This is what he begins to suggest in the Second Replies,[48] only to find himself, in the Sixth Objections, again confronted with the same uncertainties and the same hesitations expressed by those whom he believes to be his new interlocutors, without suspecting that it is still his tireless collaborator and friend Mersenne (who undoubtedly alludes to himself when, in the Sixth Objections, he affirms that, despite having practiced metaphysics for thirty years, he cannot fully grasp Descartes's reasoning).[49] It is thus with almost pedagogical patience that, in the final part of the Sixth Replies, Descartes attempts to overcome what he considers to be the main obstacle to the understanding of his text, adopting an autobiographical style similar to that he had already tried out in the *Discourse on the Method*: that prejudice, he suggests, had been his own.

Just like children, human beings think only of their bodies and project their own needs and sensations onto things. It is as if the world outside them were a magical world, alive and full of "little souls": what is "heaviness", if not a little soul diffused in all parts of matter and capable of guiding each body downwards? Yet, heaviness is also something material, divisible, measurable. One is thus led to think that soul and body are the same thing, and it is precisely this indistinction or confusion between mind and body that engenders "real qualities" (such as heaviness itself) and "substantial forms" (like the human soul, which, according to the scholastics, is wholly in the entire body and wholly

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in Andrea Strazzoni, Marco Sgarbi (ed.), *Reading Descartes. Consciousness, Body, and Reasoning*, Florence, Firenze University Press, 2023, pp. 9–40.

47 *AT* VII, 181.

48 *AT* VII, 131.

49 *AT* VII, 421. Mersenne had completed his theological studies exactly thirty years earlier (in 1611) at the Sorbonne.

in each single part).[50] Real qualities and substantial forms thus stem from man's inveterate tendency to refer everything to his body – a tendency that can be corrected only by the clear and distinct ideas of reason. If, therefore, the authors of the Sixth Objections struggle to grasp the distinction between mind and body, it is because they allow themselves to be bogged down by a childish prejudice – wholly unjustified, notes Descartes blandly, in people who have been studying metaphysics for thirty years.[51]

As for the limits of philosophical knowledge, repeatedly emphasized by Mersenne, Descartes deftly counters that it is in theology that the insufficiency of the human intellect emerges. Philosophy demonstrates that the soul is distinct from the body, but we cannot know anything about God's will, and this is the insurmountable obstacle for the metaphysical issue of immortality. Everything that pertains to the will of God is inexplicable, for the good reason that, in God, the will is not something that depends on preceding intellectual knowledge, as it does in man. In God, will and intellect are identical (as Descartes had already declared to Mersenne in 1630),[52] and this implies that God is not bound by any moral consideration prior to His decrees: thus, not only mathematical truths depend on Him, but also the criterion of good and evil (a point made for the first time in the Sixth Replies). It follows that everything God does is "good" simply because He does it, and not because in so doing He conforms to a preexisting idea of goodness.[53]

In short, given the inscrutability of God's will, the certainty that man can attain is a wholly human certainty, dependent on the right use of his cognitive faculties. For the rest, Descartes writes, divine inspiration is needed, which he lacks entirely. And to Mersenne/Hyperaspistes he even delivers a short lesson in epistemology: in the *Meditations* he deals with the reality of things, not with *our beliefs* about things, and indeed the verb "to believe" has no place in science. Science is indubitable knowledge, which an atheist cannot possess because he does not know his own origin; but it is a human knowledge, which in no way depends on a blind act of faith. The atheist can have "self-evidence" but without certainty (he can demonstrate mathematical theorems but cannot know whether they tell us something true); the believer can have "certainty" but without self-evidence (faith does not make mysteries self-evident

50 *AT* VII, 130–2, 440 ff. See Descartes to Mersenne, 26 April 1643 (*AT* III, 648–49); Descartes to Regius, late January 1642 (*AT* III, 505–6).

51 *AT* VII, 445.

52 See above, p. 41, note 19.

53 *AT* VII, 432, 435–6 (6th Replies).

but makes us "confident that they must be believed").[54] Only reason, within its domain, grants us clear access to the reality of things, uniting the self-evidence of our perception with the certainty of its truth.

3 Hobbes and Descartes: Duelling Philosophers

Between Hobbes and Descartes, the two acknowledged champions of seventeenth-century mechanism, understanding was lacking from the very beginning, as attested by their reciprocal distrust, suspicions of heresy or of atheism, accusations of plagiarism promptly returned with even more malicious insinuations. To many readers, the duel between the two seems disappointing from a philosophical point of view, compared to legitimate expectations.[55] Perhaps it is not exactly so, even if it is difficult to adopt a position that does not concede too much to one or the other of the contenders, thereby precluding the possibility of understanding what is at stake in the debate.

A first skirmish between Descartes and Hobbes took place between the end of 1640 and the beginning of the following year. Hobbes had just returned to France after the beginnings of the English Civil War. He had already stayed there from 1634 to 1637 and had come into contact with Mersenne and his circle. It was at the request of Mersenne that Hobbes had written in November 1640, shortly before leaving England, a long letter (now lost) of objections to Descartes's *Dioptrics* and to his theory of light. Descartes, who perhaps did not even know the name of his interlocutor, received Hobbes's objections in various fragments at the beginning of 1641 and responded with some ill grace: he took exception in particular to the alleged resemblance between Hobbes's doctrine of the "internal spirit" (the elementary material particles that permeate all bodies) and his own doctrine of subtle matter.[56] For this reason, already

54 *AT* III, 425–6 (Reply to Hyperaspistes). See also Descartes to Huygens, 10 October 1642 (*AT* III, 798).

55 See Edwin Curley, "Hobbes versus Descartes", in *Descartes and His Contemporaries: Meditations, Objections, and Replies*, ed. by Roger Ariew and Marjorie Grene, pp. 97–109. See also Marcus P. Adams, "The Wax and the Mechanical Mind: Reexamining Hobbes's Objections to Descartes's Meditations", *Philosophy Faculty Scholarship*. 20 (2014), *https://scholarsarchive.library.albany.edu/cas_philosophy_scholar/20*; Martine Pécharman, "Troisièmes objections et réponses", in Dan Arbib (ed.), *Les Méditations métaphysiques. Objections et réponses*. Paris: Vrin, 2019, pp. 251–282; *Hobbes, Thomas, Objections aux Méditations – Descartes, René, Réponses. Un débat impossible*, traduction et commentaire de Jean Terrel, Paris, Vrin, 2019; Stewart Duncan, "Hobbes against Descartes", in Id., *Materialism from Hobbes to Locke*, Oxford-New York, OUP, 2022, pp. 9–22.

56 Descartes to Mersenne for Hobbes, 21 January 1641 (*AT* III, 287–288).

at the beginning of March, he requested Mersenne to sever all contact with "the Englishman" and not to communicate any of his own writings that had not already been published.[57] But Mersenne had already sent the *Meditations* to "the Englishman" (just as he had let Fermat read them, whether before or after Descartes told him not to do so is unclear) and the debate had inevitably extended to metaphysical matters.[58]

Hobbes's Third Objections – ready by the end of January 1641[59] – and Descartes's replies interspersed within them are the result of this tentative dialogue, or rather of this intellectual clash between two brilliant but profoundly different minds.

After agreeing with the critique of sensory knowledge contained in the First Meditation, Hobbes immediately attacks one of the crucial points of the whole debate that will oppose him to Descartes. "I am a thinking thing", one reads in the Second Meditation. Very well, but why conclude from this that I am "a spirit, a soul, an intellect, a reason"? Why pass from a faculty, that of having thoughts, proper to an unspecified thing, to a substance that consists solely in thought? It is as if, from "I walk," one derived "I am a walk".[60] Instead, Hobbes suggests that the "thinking thing" could be material "and the contrary is postulated, but not proven."[61] In other words, Hobbes accuses Descartes of metaphysical dogmatism. To which Hobbes opposes – at first glance – an equal and opposite dogmatism, categorically asserting that only material substances exist: "the subject of any act can be understood only in terms of something corporeal or in terms of matter".[62]

Which dogma has the better claim to prevail, the Cartesian dualist dogma (mind as thinking thing and matter as an extended thing) or Hobbes' monistic, materialist dogma? Beyond partisan choices, there was no shortage of good arguments on either side, but it has fallen to interpreters to spell them out, because the duellists themselves were rather sparing in their analyses. On the one hand, scholars have noted that, from Hobbes's point of view, he would have excellent grounds for believing that substance is necessarily material: it is only of matter, and in particular of Cartesian extended matter, that one has a clear idea insofar as it is a permanent substrate of some property, whereas an indefinite and contentless thought is simply inconceivable as such (Descartes

57 Descartes to Mersenne, 4 March 1641 (*AT* III, 320).

58 See the editors' notes in *AT* III, 332–33.

59 See Descartes to Mersenne, 28 January 1641 (*AT* III, 293) and Karl Schuhmann, *Hobbes: une chronique*, Paris, Vrin, 1998, p. 68.

60 *AT* VII, 172–73; *CSM* II, 122.

61 *Ibid.*

62 *AT* VII, 173; *CSM* II, 122.

indeed holds that thoughts are always specific and are defined by their conscious content: a pain, an intellectual idea, a sensation, a doubt, a desire).[63] On the other hand, scholars more sympathetic with the Cartesian approach have noted that in any case this material substance must be conceived and determined by a mind (Hobbes admits indeed that the subject can only be *conceived* as corporeal) and that the body thus loses its primacy, yielding – although Hobbes does not acknowledge this conclusion – to the privileged and indispensable role of thought.[64]

The text of the Third Objections is nonetheless highly composite, as could be expected, and touches upon many other issues. Hobbes seizes the opportunity to enunciate some of his most characteristic theses, not all of which are relevant to the *Meditations*: reason defined as discursive calculation, the imposition of names as an arbitrary human convention, denial of free will. His offensive, however, focuses not only on the question of the "thinking thing" (*res cogitans*) but also on the related question of ideas and in particular on the idea of God.

For Hobbes, it is impossible to have an "idea" of God and of the soul in the absence of a sensory image of such entities. It follows that we have only a discursive knowledge of God and the soul, which does not generate any new "idea" (that is, any new perceivable image). We know that "God" is a substance, that is, that he exists, whereas we have only a negative knowledge of all the other attributes, linked to the notion of the infinite: to say that God is "infinite" means to say that we do not conceive limits in him; and to say that God is independent means to say that we do not conceive that he depends on any cause.[65] However, in his Third Objections, Hobbes prudently hides a part of his doctrine, which denotes a change of strategy after the decidedly bold opening of his November 1640 letter, where he had stated in plain terms God's materiality.[66] The latter thesis runs obliquely through all his works, although he publicly embraced it only in his last years. In the Third Objections, which he knew were destined for print, Hobbes makes no mention of this question and limits himself to upholding a causal proof of God's existence, based on an analogy: just as a blind man concludes that fire exists even if he cannot see it, so the existence

63 See Edwin Curley, "Hobbes versus Descartes", pp. 156–157.

64 Jean-Luc Marion, "Hobbes et Descartes: l'étant comme corps", in *Hobbes, Descartes et la métaphysique*, ed. D. Weber, Paris, Vrin, 2005, pp. 59–77.

65 *AT* VII, 186–87; *CSM* II, 130–131.

66 Descartes's response to Mersenne for Hobbes, dated January 21, 1641 (AT III, 287–88), may provide valuable insights into the content of Hobbes's lost letter. Descartes starts by dismissing Hobbes's materialistic views: "Let us disregard the initial discussion on the soul and God as corporeal, the internal spirit, and other matters that do not concern me".

of God, though not attested by any idea, can be deduced by conceiving him as the first and eternal cause of every being.[67] Hobbes had already offered this argument in the contemporaneous, but still unpublished, *Elements of Law*, and would redeploy it a decade later in the *Leviathan*.

Despite Hobbes' prudence on the point of God's materiality, his objections were nonetheless inadmissible to Descartes, if only because of the forcefulness with which Hobbes asserted his empiricist and anti-spiritualist viewpoint. Piqued by Hobbes's vehemence, Descartes did not wish to gratify him and replied almost always tersely, adopting an attitude very different from that shown towards Caterus and Mersenne. He ostentatiously displays self-confidence and superiority. Above all, he wants to keep at a distance an author whose theological heterodoxy, if not outright atheism, he rightly suspects. Hobbes's heterodoxy was all the more irritating insofar as "the Englishman" seemed apparently close to Descartes's position in physics, and in particular in his mechanism – a fact of which Descartes was perfectly aware from the outset: "I am not afraid that his philosophy may seem like mine, since he refuses to consider anything other than figures and movements, as I do".[68]

The point of greatest difficulty, for Descartes, concerns precisely the status of the mind. Hobbes had asked whether thought is an "action" or a "substance" and had added that only the action of thinking is knowable by the human mind. Descartes is forced to agree that "we do not know substance immediately in itself," but only by its accidents, that is, its properties[69]. However, albeit quite orthodox from a scholastic point of view, the latter position is scarcely useful to Descartes's cause: having admitted our inability to know substance as such, it becomes all the more problematic to assert anything positively about it – and in particular that it is "thinking". The only path left open, for the moment, is the one that leads to distinguishing substances based on the classes of properties inherent in them: "cogitative" properties refer to a *res cogitans*, "corporeal" properties to a *res extensa*. But this brings us very close to a *petitio principii*.[70] Descartes also evokes the polysemy of the term "thought," which "is sometimes taken to refer to the act, sometimes to the faculty, and sometimes to the thing which possesses the faculty".[71] However, the point contested by Hobbes was not a possible terminological ambiguity, but, precisely,

67 *AT* VII, 180; *CSM* II, 127.

68 Descartes to Mersenne, 21 January 1641 (*AT* III, 283).

69 *AT* VII, 176, 185; *CSM* II, 124, 130. See also below, p. 181, note 29 (on Suárez).

70 *AT* VII, 176; *CSM* II, 124. The adjective *cogitativus*, of scholastic origin, appears here for the first time in Descartes, who will then use it sporadically.

71 *AT* VII, 174; *CSM* II, 123.

the passage from an action (*cogito*) to a thing (*res cogitans*), no matter by what name one might wish to call the former and the latter.

Driven into a corner, Descartes tries to reverse the roles and turns into an objector himself: if language is conventional, as Hobbes maintains, then no dialogue will be possible and one might call earth "heaven" and heaven "earth," and thus the very question of the essence of the mind would depend on mere linguistic convention.[72] But what most clearly demonstrates the difficulty of Descartes's position is the fact that he often has recourse to the authority of the scholastics and to universal consensus: a bad sign in a philosopher who had made a banner of his struggle against prejudice and against the principle of authority. Nevertheless, it is precisely to the common opinion of philosophers that he ends up appealing: they all say that "some substances are spiritual and some are corporeal"; they all know "the distinction of essence from existence"; it is obvious to everyone that some things contain "more reality" than others, and that an infinite substance is "more of a thing" than a finite one.[73] As for free will, it is attested by each human mind's consciousness – a position he would reiterate later, drawing criticism from Spinoza and Leibniz.[74]

However, Hobbes cannot have been overly satisfied with these answers. Evidence of this is a brief coda to the debate, which has remained secret until recently because of the discretion of the protagonists. Mersenne is once again the one who was working behind the scenes. Heedless of Descartes's *vade retro*, he continued to exchange with Hobbes, with whom he established a collaboration destined to last: in 1642, Mersenne promoted the first edition of *De cive* in Paris, and two years later he included one of Hobbes's texts in a volume of his mathematical-scientific writings and used a summary of Hobbes's thought as a preface to his *Ballistics*.[75] It is precisely from Hobbes that Mersenne received a letter dated 19 May 1641, containing new objections to the *Meditations*, most of which bear on the question of ideas.[76] Mersenne promptly forwarded the

72 *AT* VII, 179; *CSM* II, 126.

73 *AT* VII, 175, 194, 185; *CSM* II, 124, 156, 130.

74 On the conscience of freedom, after the Third Replies (*AT* VII, 191), see *Principles of Philosophy*, 1st part, §39 and 41. For the criticisms of Spinoza and Leibniz, see respectively *Ethics*, 2nd Part, Prop. 35, *Scholium*, and *Essais de théodicée*, "Discours préliminaire", §69.

75 See Robert Lenoble, *Mersenne*, p. XXXVIII. See also Gregorio Baldin, *La Croisée des savoirs*: *Hobbes*, *Mersenne*, *Descartes*, Milano, Mimesis, 2020.

76 X*** [Hobbes] to Mersenne for Descartes, 19 May 1641 (*AT* III, 375–357). For the attribution of this letter to Hobbes, see Gianluca Mori, "Hobbes, Descartes, and Ideas: A Secret Debate", *Journal of the History of philosophy*, 50 (2012), pp. 197–212 (attribution accepted by Jean Terrel in his edition of the Third Objections and Replies quoted above, note 55). Ferdinand Alquié notes the "depth" of a question posed in the 19 May letter (in Descartes, *Œuvres philosophiques*, vol. II, p. 347, n. 3), and Aloyse-Raymond Ndiaye compares the

letter to Descartes, carefully refraining from disclosing the name of the author. Unaware of the identity of his "new" objector, Descartes goes so far as to express some seemingly sincere compliments and to show that he understands he is facing a philosopher of the highest calibre – yet against whom, in his two replies, he also renews one of his constant complaints: he has not understood me and attributes to me things that I have never asserted in my writings.[77]

In his letter of 19 May 1641, Hobbes claims to have just read the *Meditations*, but in fact returns to an objection (on the idea of the sun) that he had already raised and to which Descartes had responded curtly in two lines. Ideas belong only to the imagination, we read in the letter, while our subsequent reasonings have no ideal, that is, imaginative, counterpart.[78] Therefore, there is no idea of God, or – if one insists on using Descartes's terminology – the idea of God is only another way of indicating the reasoning by which we affirm that "God exists" (for Hobbes, existence is the only attribute that one can sensibly ascribe to God). If this were so, however, Descartes's demonstration of the existence of God would be entirely fallacious, because the so-called idea of God would already contain the affirmation of his existence and therefore could never demonstrate it.[79]

To this stringent criticism, Descartes responds by denying all his rival's premises: he denies again that we have only imaginative ideas (how could one conceive God if not through an intellectual thought, therefore through an idea of which one is conscious?). Above all, Descartes denies that the idea of God is equivalent to the mere assertion that God exists: if it were so, we would know nothing of the nature of God, "and this would be the most impious and inopportune thing in the world" (impious, one may suppose, because it would imply the rejection of God's moral attributes; inopportune, because the possibility of basing man's knowledge on the veracity of his creator would also be lost).[80]

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letter to Hobbes's position (*La Philosophie d'Antoine Arnauld*, pp. 28–33); see also Gabriel Nuchelmans, *Judgment and Proposition*, p. 132, n. 45 and 132, n. 43 (where the comparison remains indirect). Incidentally, but rightly, some authors have compared Descartes's reply to the letter of May 19 with his reply to Hobbes: see J. Cottingham, "'The Only Sure Sign'," p. 38; R. Ariew and M. Grene, "Ideas, in and before Descartes", p. 89.

77 Descartes to Mersenne, 16 June 1641 and July 1641 (*AT* III, 382–83, 395).

78 For a discussion of this point within the context of the Hobbes-Descartes debate, with a specific emphasis on the letter dated May 19, 1641, refer to Lauren Slater's scholarly work., *Word Made Flesh: Sensory Ideas as Meanings of Bodily Signs in Descartes*, PhD thesis, Birkbeck, University of London, 2023, pp. 73–78. (DOI: *https://doi.org/10.18743/PUB.00051022*).

79 x*** [Hobbes] to Mersenne for Descartes, 19 May 1641 (*AT* III, 377).

80 Descartes to Mersenne, July 1641 (*AT* III, 395).

In the duel between Hobbes and Descartes, modern philosophy was at a crossroads. Descartes would undoubtedly prevail, and much subsequent thought would be marked by his choice to privilege the self, the thinking subject, the *res cogitans*, assigning to matter an epistemologically and ontologically subordinate role, or even denying it any role: this was the path followed by Malebranche, Leibniz and Berkeley (but also by Locke, for whom the thinking subject only knows his existence through direct intuition and the world through the intermediary of sensory perceptions, guaranteed by God). Descartes's victory, however, was lame, because of the difficulty in establishing the substantiality of the mind. Here Hobbes certainly touched on a real point. In writing the Sixth Meditation, Descartes thought he could overcome the difficulty by basing himself on the simple conceivability of the mind and body as separate, and thus on the fact that, since God does not deceive us, He can make them subsist separately. However, he had not taken the trouble to investigate any further what the *res cogitans* might consist of in itself. With the *Objections and Replies*, he undertakes a critical study of the notion of "thinking substance" – and of "substance" in general – which will bear fruit in the scholastic exposition of his thought that he began preparing at this very time: the *Principles of Philosophy*.

4 A Cartesian Theologian: Antoine Arnauld

Of all the objections received, Descartes particularly appreciated and praised the Fourth,[81] and not without reason. Their author, Antoine Arnauld (1612–1694), was to become one of the most famous Cartesians of the second half of the seventeenth century, as well as the co-author, together with Pierre Nicole, of one of the most influential philosophical texts of the age: the *Port-Royal Logic*. Philosopher but above all theologian, religious controversialist, prominent representative of French Jansenism and, like all Jansenists, a great admirer of Saint Augustine, Arnauld would gain great fame – he would indeed be called the "Great Arnauld". A fame that entailed a lifetime of disturbance and persecution: he was to pay personally, with exile, for his resistance to the anti-Jansenist policy promoted by Louis XIV. At the time of the Fourth Objections, however, Arnauld was still a young theologian with great hopes who embraced with enthusiasm the new Cartesian philosophy. Years later, in the summer of 1648, his discussion with Descartes would be continued in an important epistolary

81 Descartes to Mersenne, 4 March 1641 (*AT* III, 331).

exchange, where some themes touched upon earlier would be resumed and developed, in particular on the question of the relationship between thought and consciousness.[82]

The reason why Descartes appreciated Arnauld's objections is also the one that makes them more insidious: Arnauld was perhaps the first among the objectors to follow Descartes's line of reasoning in the *Meditations* as it were from within.[83] His doubts are all the more worthy of consideration insofar as they come from a thinker already well disposed toward Descartes's metaphysics and Cartesianism in general. Indeed, Arnauld declares himself satisfied, in advance, with Descartes's responses and ready to embrace his philosophy, in which he also sees a solid pillar for the Christian religion (although he will change his mind – at least privately – on Descartes's orthodoxy).[84]

Arnauld divides his objections into two broad areas: that of philosophy and that of faith. In this, despite his admiration for Saint Augustine, he is closer to Saint Thomas: he conceives faith and reason as two separate and mutually distinct domains. It follows that his concerns as a philosopher are quite different from those he expresses when he adopts the robes of the theologian: the former address the internal strength and coherence of Descartes's position; the latter regard the compatibility of Cartesianism with Christian dogmas, particularly with those under contention with the Protestants, such as transubstantiation. As for the philosophical objections, they mainly concern three points: 1) the "real distinction" between mind and body and the definition of thought as present "consciousness"; 2) God as *causa sui*; 3) the issue of the "vicious circle".

Concerning Descartes's demonstration of the "real distinction" – which he correctly locates in the Sixth Meditation[85] – Arnauld asks whether it really is sufficient to exclude that thought might be a mere modal entity and not a substance in its own right.[86] In his opinion, it is not enough to know one property of an entity in order to know it completely, because that same entity could have other properties at present unknown, or doubtful, but in fact necessary to determine its essence (likewise, the Pythagorean theorem does not constitute the essence of the right-angled triangle, but only one of its demonstrable

82 *AT* V, 185–194; 212–224.

83 Descartes to Mersenne, 4 March 1641: "he penetrated more deeply than anyone else into the meaning of what I had written" (*AT* III, 331).

84 On Arnauld's initial satisfaction, cf. Mersenne to Voet, December 1642, *AT* III, 603. For his later doubts, see A. Arnauld, *Œuvres complètes*, Lausanne 1775–83, I, pp. 670–671 (on Descartes's "Pelagianism").

85 *AT* VII, 199; *CSM* II, 140 Cf. *AT* VII, 8; *CSM* II, 6–7 (Preface of the *Meditations*).

86 See also Arnauld to Descartes, July 1648 (*AT* V, 213).

properties).[87] Arnauld specifies that his thesis does not imply materialism: it would suffice to suppose that the mind has by nature a "power of thought" (*vis cogitandi*) without, however, being itself thought.[88] Arnauld's solution would also explain the different degrees of consciousness (such as pre-conscious or sub-conscious states) attested by human experience, and the fact that "the power of thought appears to be attached to bodily organs, since it can be regarded as dormant in infants and extinguished in the case of madmen".[89] These questions mark the appearance of another major difficulty of Cartesianism, later emphasised by Leibniz, linked to Descartes's conception of thought as actual consciousness ("that is where the Cartesians have failed badly, since they took no account of the perceptions that we do not apperceive").[90]

On God as *causa sui*, Arnauld reiterates Caterus's objections, contesting above all that God's self-causality should be interpreted in a positive sense, and instead maintaining that the only legitimate sense in which it can be understood is a negative one: to be *causa sui* means, at most, not to depend on any other cause. Furthermore, for Arnauld, it makes no sense to affirm that God is the efficient cause of himself, because in God essence and existence coincide, and essences do not require any cause (again, we are on the track of the *First Objections*).[91]

As for the "vicious circle," this is the first occurrence of an objection that will have a long life. Arnauld's main argument concerns the circular relationship that seems to be established between the demonstration of the existence of God and the thesis of the necessary truth of clear and distinct ideas, each of which appears to depend on the other. According to Arnauld, Descartes affirms that "we are sure that what we clearly and distinctly perceive is true only because God exists", but he also maintains that "we can be sure that God exists only because we clearly and distinctly perceive this", and therefore, "before we can be sure that God exists, we ought to be able to be sure that whatever we perceive clearly and evidently is true".[92] This argument, also to be found in Gassendi,[93] has been suspended since then over Descartes's metaphysics like a sword of Damocles.

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87 *AT* VII, 201; *CSM* II, 141–142.

88 *AT* VII, 204; *CSM* II, 143.

89 *AT* VII, 204; *CSM* II, 143.

90 See Leibniz's *Monadology*, § 14. For more details on the various aspects of this issue, refer to Geneviève Rodis-Lewis's classical study. *Le Problème de l'inconscient et le cartésianisme*, Paris, Puf, 1950.

91 *AT* VII, 208–14; *CSM* II, 146–150.

92 *AT* VII, 214; *CSM* II, 150.

93 See P. Gassendi, *Disquisitio metaphysica* [1644], edited and translated by B. Rochot, Paris, Vrin, 1965, especially pp. 463–465.

Turning to the theological part of his objections, Arnauld raises the burning question of transubstantiation, which was soon to become a weak spot of Cartesianism in Catholic countries, and, conversely, one of the reasons for its success in Protestant lands. Constantly confronted with ecclesiastical censorship, Arnauld was eager to present himself as a guarantor of Catholic orthodoxy against Reformed heresy, thus also shielding himself from the accusations of collusion with the Reformation that were often levelled at the Jansenist movement. According to the scholastics, the perceivable properties of bodies constitute their "real qualities", or "real accidents", normally subsisting in the bodies themselves but capable of existing, by miracle, even without them, as in the case of the Eucharistic bread and wine (their substance being transformed, by divine miracle, into that of the body of Jesus Christ). Such a conception was at risk of being overturned by Descartes's theses on matter, according to which all the perceived qualities of external objects other than extension and motion are reduced to different cognitive states of the thinking subject, thereby eliminating the "real accidents" of the scholastics (colours, odours, tastes, etc.) and with them – apparently – the dogma of transubstantiation.[94]

Descartes struggled more than usual in elaborating the Fourth Replies. He announced them to Mersenne on 4 March 1641, and sent them to him two weeks later, but still incomplete. The final part, which concerns precisely transubstantiation, was sent on March 31.[95] In contrast to his sharp responses to Hobbes (and subsequently Gassendi), his approach to the Fourth Objections is collaborative. He even agrees to modify the text of the *Meditations* according to the corrections suggested by Arnauld (which Mersenne promptly inserted into the text approved for publication).[96] Descartes's aim, as always, was to avoid overly disturbing theologians in order to secure their approval.

On transubstantiation, however, Descartes is less conciliatory than one might expect. In fact, departing for a moment from his wise resolution not to enter into questions of revealed theology, he offers an explanation which, without being convincing as such, has the unfortunate effect of making the orthodox doctrine appear blatantly absurd. He argues that the external appearances of Eucharistic bread and wine cannot subsist by themselves (as supposed in the doctrine of "real accidents") without becoming themselves substances and therefore having their own independent existence, which is obviously impossible for mere "accidents." The only way to conceive transubstantiation,

94 *AT* VII, 217–218; *CSM* II, 153–154. Galileo had encountered the same problems, and for the same reasons: see Pietro Redondi, *Galileo: Heretic* [1st ed. 1983], Translated from the Italian by Raymond Rosenthal, Princeton, NJ, Princeton University Press, 1987.

95 Descartes to Mersenne, 4 March 1641 and 31 March 1641 (*AT* III, 331; 349).

96 See especially Descartes to Mersenne, 18 March 1641 (*AT* III, 334–338).

then, is to consider the extension of the bread and wine as miraculously transformed into Christ's body and blood, without the physical properties of that extension being altered, and thus without altering their capacity to evoke in a human observer the same sensations as bread and wine.[97] However, Descartes's purported solution immediately elicited the reaction of Mersenne and was expunged from the first (Parisian) edition of the *Meditations*, although Descartes would promptly reinstate it in the second (Dutch) one, outside the reach of Catholic censorship.[98] However, the Eucharistic question was one of the reasons why the most important works by Descartes were placed on the *Index of Prohibited Books* soon after his death (in 1663) pending an improbable correction (*donec corrigantur*). They would eventually remain in the Roman *Index*, undisturbed, until its last edition in 1948.

However, matters were no easier for Descartes concerning Arnauld's strictly philosophical objections:

1. On the question of the substantiality of thought, Arnauld had asked whether thought could not simply be a property of the mind, just as the Pythagorean theorem constitutes a simple property of the right-angled triangle and not its essence. Descartes replied, first, that the analogy does not hold, because the Pythagorean theorem, unlike human thought, is not a substance in itself.[99] Which is certainly incontestable, but it was this very point – that thought is a substance and not a property – that had to be demonstrated. Descartes's best argument on this point is therefore another, already foreshadowed at the end of the First Replies: he maintains that we conceive the mind as a "complete" substance (even when doubting the existence of the body or even denying it) and that this judgment is guaranteed by God's veracity. For Descartes, it is not a matter of considering separately certain qualities or properties, distinguishing them from others that belong to the same entity (as in the case of the various theorems that may be demonstrated about the triangle), but of positing a relation of mutual exclusion between two classes of entities: "not only do we understand [the mind] to exist without the body, but, what is more, all the attributes which belong to a body can be denied of it [the mind]. For it is of the nature of substances that they should mutually exclude one another."[100] Finally, concerning the embarrassing question of children's unconscious, or semi-conscious thoughts, Descartes offers

97 *AT* VII, 248–256; *CSM* II, 172–177.

98 See Descartes to Mersenne, 22 July 1641 and 17 November 1641 (*AT* III, 416; 449). For further Eucharistic elaborations, see Descartes to Mesland, 9 February 1645 (*AT* IV, 162–170).

99 *AT* VII, 224; *CSM* II, 157–158.

100 *AT* VII, 227; *CSM* II, 159.

for the first time a well-found – albeit unfalsifiable – reply, which once again presupposes the truth of his main hypothesis: children do *have* conscious thoughts even before being born, but they later forget them.[101]

2. On God as *causa sui*, the speculative fervour of the First Replies having abated, Descartes reverts to his usual prudence. He cannot answer "yes" or "no" to Arnauld's crucial dilemma: can God be considered the efficient cause of himself *in a positive sense*, or not? In the first case, he would risk positing duration in God (since an efficient cause always precedes its effect); in the second case, he would in fact deny all self-causality in God (for him, as for almost all early modern thinkers, there are no other causes beyond the "efficient cause"). Descartes has no choice, therefore, but to take refuge in ambiguous formulas, as when he affirms that God "can be called something close to an efficient cause (*quasi causa efficiens vocari potest*) of his existence".[102] However, beyond such hesitations, and the verbosity of his replies, the main argument of the First and Second Replies reappears: one must ask of everything, even of God, what is the cause that makes it exist (*causa cur existat*), otherwise it would no longer be possible to demonstrate its existence (an Aristotelian argument, incidentally).[103] The concept of God as *causa sui* is thus the final term of a line of thought initiated by Descartes in 1630, when he had dramatically posed the question of the origin of the so-called "eternal truths". On that occasion, breaking with a millenary tradition, he had established that even essences have a cause; now, he adds that not even God escapes the causal regime of being. Against scholastic medieval philosophy – which denies, precisely, that God can have a cause – Descartes makes causality a sort of universal paradigm: even God depends on it.[104]

3. Finally, Descartes had to reply to the "vicious circle" objection. On this point, we have already seen how a potentially circular dynamic is inherent in the perspective of Cartesian philosophy. Nonetheless, even taking this into account, Descartes's replies to Arnauld's objection do not shed much light, which is why Descartes scholars have had to enter the field – massively – to defend or condemn him.[105]

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101 *AT* VII, 246; *CSM* II, 171–172. See also 5th Replies, AT VII, 356–357; *CSM* II, 246–247.

102 *AT* VII, 243; *CSM* II, 170. Cf. Descartes's 1st Replies: "I did not say that it is impossible for something to be the efficient cause of itself" (*AT* VII, 108).

103 See *AT* VII, 108, 164, 238.

104 On this point, see also Jean-Luc Marion, "Entre analogie et principe de raison: la '*causa sui*'", in *Objecter et répondre*, pp. 305–34.

105 Several dozens of papers on this question are reported in *Bibliographie cartésienne 1960–1996*, ed. J.-R. Armogathe and V. Carraud, Lecce, Conte, 2003, Index, *s.v.* "Cercle logique", but the list has since grown even longer.

Descartes's official reply to Arnauld in the Fourth Replies runs as follows: to demonstrate that God exists, he writes, it is enough "to pay attention to the reasons that prove his existence"; once the existence of God has been demonstrated, it suffices "to remember" having conceived something as self-evident to be certain that it is true, because at that point the foundational rule of human knowledge (that is, the implication between self-evidence and truth) is established on the firm basis of divine veracity: it is no longer necessary, therefore, to subject all our knowledge to doubt.[106] In this way, however, rather than resolving the issue of the vicious circle, Descartes ignores it, taking for granted the very point targeted by the objection – namely, that one can demonstrate the existence of God without making use of "clear and distinct" notions that require divine veracity to be considered reliable.

The challenge lies precisely in the latter issue: whether or not it is possible to prove the existence of God using cognitive tools exempt from the doubt of the deceiving God. On this crucial issue, two paths open up.

The first has the advantage of a greater adherence to Cartesian texts on the "circle" topic and consists in considering as indubitable all self-evident knowledge at the moment in which it is perceived, invoking veracity only for "remembered" self-evident truths, of which one could doubt if one did not already know that God is not a deceiver. Following this argument consistently, however, one would end up making even the *cogito* subject to doubt, not in the moment in which it is thought, but when it is only remembered.[107]

The second path – which is based on other texts by Descartes – consists in distinguishing between self-evident propositions valid in themselves and self-evident propositions subject to hyperbolic doubt. While the *cogito* certainly belongs to the former, mathematical conclusions bear – at least *prima facie* – only an appearance of clarity and distinction (or self-evidence) since they are not exempt from the deceiving God objection.[108] Indeed, as stated in the Third Meditation, "God could have given me a nature such that I was deceived even in matters which *seemed* most self-evident".[109] With the *Meditations*,

106 *AT* VII, 246. Already in the 2nd Replies, replying to another objection, Descartes prefigures his reply on the "circle" issue (*AT* VII, 140–2, 144–6). See also *AT* V, 178 (*Conversation with Burman*).

107 This is what Martial Gueroult maintains in *Descartes selon l'ordre des raisons*, vol. I, p. 154 ff. See also Jean-Marie Beyssade, *Études sur Descartes*, Paris, Seuil, 2001, pp. 136–141.

108 Descartes will clarify this point only in the 7th Replies, on which see *infra*, p. 166–171. For a "simple" – yet convincing – solution of the circle issue based on this distinction, see Emanuela Scribano, "The Replies to the Seventh Set of Objections, the Skeptic's Duties, and the Circle", in Id. *Descartes in Context. Essays*, Oxford, OUP, 2023, pp. 68–81.

109 *AT* VII, 35–36; *CSM* II, 25.

the progressive reduction of clarity and distinction to the negative – and discursive – criterion of indubitability (already presaged in the *Discourse on the Method*)[110] is accomplished: all truths, with the sole exception of the *cogito*, are based on a deductive process shaped by the equivalence of indubitability and self-evidence. In other words, for human beings, there is no other immediate or intuitive access to the truth but through the *cogito* – the last surviving instance of the young Descartes's myth of *intuitus*.

However, the passage from the *cogito* to God has still to be explained. The fact is that, according to Descartes, this passage may be accomplished without any "clear and distinct" (i.e. indubitable) idea of anything beyond the existence of the thinking subject, from which the existence of God Himself is deduced by a simple application of the principle of causality. But what is the epistemological status of the principle of causality? Is it exposed to the deceiving God objection? If so, the "circle" would return even stronger than before. However, in this regard, we must take into account a distinction that Descartes sometimes emphasises between our knowledge of "things" endowed with some kind of existence, including mathematical truths – a knowledge only valid once divine veracity has been established – and our knowledge of some general axioms devoid of existential import but universally valid *per se* insofar as they are attested by "natural light."[111] Among the latter, Descartes almost always indicates the principle of causality. The *cogito* itself is in fact reduced to an instance of the causal nexus: in order to think, one must exist, as the event of "thinking" would otherwise lack any cause. In short, by recognizing the causal foundation of being and the innateness of the principle of causality in man (but this time, an innateness that does not depend on God for its content), one

110 See above, p. 64, note 29. According to Harry G. Frankfurt, *Demons, Dreamers, and Madmen: The Defense of Reason in Descartes' Meditations*, Indianapolis, IN: Bobbs-Merrill, 1970, p. 240, Descartes "establishes truths by removing the grounds for doubting them rather than by proving their truth in a direct way".

111 On this point, see *AT* VII, 140; *CSM* II, 100 (2nd Replies): "when I said that we can know nothing for certain until we are aware that God exists, I expressly declared that I was speaking only of knowledge of those conclusions which can be recalled when we are no longer attending to the arguments by means of which we deduced them. Now awareness of first principles is not normally called 'knowledge' by dialectitians". See also *Principles of Philosophy*, 1st Part, §48–49. On the relationship between mathematical truths (subject to doubt) and "metaphysical" truths such as the existence of God (demonstrable despite the doubt about mathematics), see *AT* V, 177 (*Conversation with Burman*). On the reference to "natural light" as a way out of the circle, see especially Henri Gouhier, *La Pensée métaphysique de Descartes*, pp. 271–85. For a different solution, see Stephen I. Wagner, *Squaring the Circle in Descartes' Meditations. The Strong Validation of Reason*, Cambridge, Cambridge University Press, 2014.

may hope to avoid circularity. But there is a price to pay for this: "natural light" – that is, the faculty by which the axioms of knowledge are known by human minds – becomes a sort of original principle of knowledge, even prior to the *ego*/God diarchy that rules in the *Meditations*. This would at least lend sense to Descartes's assertion in a letter to Mersenne in 1641: "there is nothing in my metaphysics that I do not believe to be, either very well known by natural light, or rigorously demonstrated".[112]

5 Gassendi and Descartes: Flesh and Spirit

Having completed his replies to Arnauld, Descartes thought that the debate on the *Meditations* – which he had launched with Mersenne's complicity – had come to an end. He intended to publish his work just as it was, concluding the volume with a defence of the compatibility of his philosophy with the dogma of transubstantiation: an excellent recommendation, he thought, addressed to the Sorbonne theologians.[113] However, in May 1641, he received – possibly forewarned by Mersenne[114]– the objections raised by Pierre Gassend (1592–1655), better known as Gassendi, who was the main renovator of Epicureanism in modern times, as well as a prominent representative of the new philosophy opposed to Aristotelianism and close to the scientific revolution. Gassendi's objections were to be the Fifth in the first edition of the *Meditations*, and those that would have perhaps the greatest impact on the philosophical debate of the period.

Longer than the *Meditations* themselves and destined to expand further when Gassendi would recast them into his huge *Disquisitio metaphysica* (1644),[115] the Fifth Objections were the trial by fire for Descartes. It was as if Gassendi summed up in himself the qualities of all the other objectors: skilled in scholastic discussion like Caterus, devil's advocate like Mersenne, capable like Arnauld of following the Cartesian arguments from within, favourable to mechanism in physics but hostile to its theological foundations like Hobbes, and, finally, a master of rhetoric as Bourdin would later prove to be. Gassendi's was a comprehensive attack, even if, once again, the two points on which

112 Descartes to Mersenne, 21 January 1641 (*AT* III, 284).

113 Descartes to Mersenne, 31 March 1641 (*AT* III, 349–50).

114 Descartes to Mersenne, 21 April 1641 (*AT* III, 363).

115 Pierre Gassendi, *Disquisitio metaphysica* [Amsterdam, 1644; see also the French translation by Bernard Rochot, Paris, Vrin, 1962)]. In this work, ready in March 1642, Gassendi reproduces the 5th Objections with Descartes's replies, followed by further "instances" for a total of several hundred pages. For Descartes's brief reply, see *AT* IX-1, 202–17.

attention focused were the question of the soul and that of God. On both accounts, Gassendi hastily declares his own religious orthodoxy (which was, however, more apparent than real)[116] but denies that Descartes's arguments are sufficient to uphold it. Hence, in particular, his aversion to Cartesian spiritualism – that is, to the thesis that the mind is a substance apart, independent of matter. With obvious irony, taking as pretext Descartes's claim to being "only a thing that thinks," Gassendi calls his adversary "Mind" (*Mens*) – or "Spirit" (*Esprit*) in the French translation – and Descartes, irritated, replies in kind by calling him "Flesh" (*Caro*/*Chair*). According to Baillet, Descartes's biographer, they would reconcile only years later, in 1647, thanks to the good offices of the abbot (and future cardinal) César d'Estrées.[117]

As regards the distinction between mind and body, Gassendi immediately plays his trump card, on which he will insist throughout all his objections and then again in the *Disquisitio*: the *possibility* of materialism. Unlike Hobbes, who peremptorily asserted that everything that exists is body, Gassendi opts for a more cautious approach: spiritualism is not sufficiently proven by Descartes, and thought *could be* the property of a corporeal being. In this, Gassendi is close to Mersenne's Second and Sixth Objections, but he goes beyond the latter's sharp jabs, sketching a rudimentary materialist theory – albeit a hypothetical materialism, accompanied by a pre-emptive acceptance, in the name of Christian faith, of the existence of a "soul", or "spirit", in man.[118] The soul, or the "mind" in Descartes's terms, certainly has nothing to do, for Gassendi, with the solid, visible bodies of common experience, but could be "a very thin vapour, given off when the heart heats up the purest type of blood".[119]

Even more insidious than his revival of an already somewhat antiquated materialism (destined nevertheless to persist here and there for over a century) are Gassendi's objections concerning the real distinction between the thinking and the extended thing, and on Descartes's attempts to demonstrate it. On this specific point, especially in the *Disquisitio*, Gassendi develops the

116 *AT* VII, 257: "I profess to believe that there is a God and that our souls are immortal". On Gassendi and religion, see Olivier Bloch, *La Philosophie de Gassendi*, La Haye, Nijhoff, 1971, chapters 9–11. On Gassendi's complicity with Guy Patin, the author of the *Theophrastus redivivus*, the most famous atheist manuscript of the 17th century, see G. Mori, *Athéisme et dissimulation: Guy Patin et le Theophrastus redivivus*, Paris, H. Champion, 2022, esp. pp. 265–267.

117 Baillet, *Vie de Descartes*, II, 341.

118 See Gassendi, *Disquisitio metaphysica*, p. 443. In the *Syntagma* (1649) Gassendi will instead attempt to argue a dualistic theory of the soul: in human beings, the sensitive soul is material while the rational one is incorporeal.

119 *AT* VII, 259–61; *CSM* II, 182.

objections already presented by the other objectors (Caterus, Mersenne, Hobbes, and Arnauld), also taking into account how Descartes had modified his position during the debate. The independence of the two "things" in question, Descartes had argued in the Fourth Replies, is attested by the fact that we have "complete" concepts of each of them. For Gassendi, this is simply begging the question. How do we know that we have a "complete" concept of both mind and body? It is certain that two "complete things" are distinct from one another, but, in the case of mind and body, the very point is to demonstrate that they are two "complete things".[120] The *petitio principii* that underlies the entire discussion of the real distinction between mind and body thus consists in the unexamined assumption that extension constitutes the essence of body in such a way as to exclude any form of thought.[121]

For Gassendi, Descartes's thesis of the "real distinction" between mind and body also entails some unacceptable consequences. The chief among them is that it forces one to deny that animals have any form of thought: how is it possible that a dog recognizes its owner if not through some mental operation? The experience is too common to be denied.[122] Now, it is Descartes himself who asserts that knowledge of something as an individual substance distinct from others depends on the mind, for only the intellect can construct the idea of something that persists beneath the various apparent modifications attested by the senses (and discussed in the famous "wax" argument of the Second Meditation). So, if the dog succeeds in always recognizing its owner despite changes of clothing or posture, walking or sitting, this means that it is capable of mentally connecting various representations and linking them to a single substance that does not change despite its external variations. Gassendi thus skilfully turns the "wax" argument of the Second Meditation against the theory of the animal-machine.[123]

According to Gassendi, Descartes reasons the wrong way round about animals: he does not start from experience but from arbitrary premises that lead him, in the name of consistency, to deny obvious truths. Descartes postulates, without proof, that matter is incompatible with thought and thus finds himself confronted with the following dilemma: either animals think

120 Gassendi, *Disquisitio metaphysica*, pp. 560–68.

121 On this point, see *ibid*., pp. 574 and 577.

122 *AT* VII, 272–273; *CSM* II, 190: "What you have to say about 'men whom we see, or perceive with the mind, when we make out only their hats or cloaks' does not show that it is the mind rather than the imagination that makes judgements. A dog, which you will not allow to possess a mind like yours, certainly makes a similar kind of judgement when it sees not its master but simply his hat or clothes".

123 See Gassendi, *Disquisitio*, p. 176, and above, p. 102–103 (the piece of wax).

with an immaterial soul, or they do not think at all.[124] Gassendi's point clearly highlights the difficulty that had forced Descartes to advance his thesis of animals as unconscious machines: it was the lesser evil, since he wanted to affirm at all costs the immateriality of the human soul and the indissoluble unity of all the functions of the mind under the common denominator of consciousness. The other available options opened the door to theological heterodoxy (God giving an immaterial – and thus potentially immortal – mind to the lowliest living beings, including plants, worms, mosquitoes, and caterpillars)[125] or to materialism (if the principle of conscience is material in animals, it will presumably also be so in humans). Historically, it was precisely this latter possibility that would be at the centre of the subsequent debate, then summarized and further fuelled by the article "Rorarius" in Pierre Bayle's *Dictionnaire historique et critique* (1697).[126]

Gassendi's objections concerning the union of mind and body are equally formidable. After spiritualising the soul and denying it any organic function and making it an independent substance, Descartes is no longer able – according to Gassendi – to explain how it interacts with the body. How can an incorporeal substance modify a material body? How can a non-extended substance be located in a certain place? How can an indivisible being be connected to parts of matter necessarily distinct from each other? It is futile to appeal to the nervous system, the brain, or the pineal gland: however small one supposes the meeting point of the mind and the body, it will still be a part of extension, and therefore something incompatible with an incorporeal, immaterial, unextended mind. If the soul is something internal to the body, it is therefore body; if the soul moves the body and is moved by the body, then, once again, it is itself body. And in any case, the soul grows with the body and declines with it, it does not think in the foetus and is dormant in the newborn, at times it is extinguished or nearly so as in cases of lethargy, all of which would be inexplicable if it were of a nature different from the body. Even knowledge itself is possible only because the images of things, which are extended, are imprinted on organs that are themselves extended and in some way comprehend them.[127] Here, Lucretius comes to the rescue: "nothing, except body, can touch or be touched" (*tangere enim et tangi, nisi corpus, nulla potest res*) – a

124 Gassendi, *Disquisitio*, pp. 154–158.

125 For plants, see Gassendi, *Disquisitio*, cit., p. 158; for the other examples: Descartes to More, 5 February 1649 (*AT* V, 277).

126 According to Bayle, Descartes maintained the thesis of animal-machine "out of pure necessity", that is to "save his principles" (*Œuvres diverses*, vol. I, p. 8; *Nouvelles de la Républiques des Lettres*, March 1684, art. II).

127 *AT* VII, 261–264, 337–45; *CSM* II, 182–184, 233–239.

verse that will later be repeated in chorus by all opponents of Cartesianism and of spiritualism in general.[128]

Gassendi finally turns to Descartes's demonstrations of the existence of God, contesting all three of them. The first is based on the "objective reality" of the idea of God, supposing that it is greater than that of any other idea. A claim unacceptable for Gassendi, because the representative content of the idea of God cannot have more "reality" than the finite things from which it is composed (for Gassendi, one arrives at the infinite by amplifying finite properties attested by experience). On the other hand, Descartes admits that the infinite cannot be comprehended: and how can we then be certain that our idea of God adequately represents divine infinity?[129] The second proof is contested because it seems to be based on the impossibility that my existence may depend on an unbroken chain of preceding causes: Gassendi considers such a regress entirely conceivable and counters Descartes with the opinion of those (such as Aristotle) who have upheld the eternity of the world.[130] Finally, as to the "ontological" proof, Gassendi's refutation prefigures Kant's famous "hundred thalers" argument: "existence is not a perfection either in God or in anything else; it is that without which no perfections can be present."[131] To lack existence does not therefore mean, for God or for a triangle, to lack a property, but simply to be nothing – and therefore to lack, not only existence but also every conceivable property or attribute.

Descartes's reaction to Gassendi's attack is rancorous. Since his letter introducing the Fifth Replies, Descartes constantly accuses his objector of not being a true philosopher but only a vacuous rhetorician, enslaved by corporeal imagination and incapable of rising to the level of intellectual truths. Contempt which is decidedly excessive, but which nevertheless would mark Gassendi forever (even today, one occasionally sees him branded as a "down-to-earth" or intellectually shallow thinker).[132] Descartes is nonetheless convinced of the overwhelming force of his rebuttals. For this reason, when preparing the printing of the *Meditations*, he suggests to Mersenne that the name of Gassendi be explicitly indicated as the author of the Fifth Objections (all the other series

128 See Lucretius, *De rerum natura*, I, v. 304 and *AT* VII, 341. See also Gassendi's *Disquisitio metaphysica*, pp. 314–319. The same verse is obviously quoted in Guy Patin's *Theophrastus redivivus* (ed. Canziani-Paganini, p. 149).

129 *AT* VII, 285–286; *CSM* II, 199–200.

130 *AT* VII, 303. On Gassendi's secret adherence to this Aristotelian theory, see Emanuela Scribano, "I sociniani, Leibniz e Gassendi. Concorso divino e materia eterna", *Bruniana & Campanelliana* (2021), pp. 211–234.

131 *AT* VII, 323; *CSM* II, 224–225.

132 See M. Grene and D. Kambouchner, in *Objecter et répondre*, p. 182, 363.

of objections are published anonymously). He thus hopes to punish the incautious adversary and expose him to public reproach.[133] It is not known whether Descartes obtained the desired effect. It is known, however, that in the following years he would change strategy and attempt to suppress entirely the debate with Gassendi from the French edition of the *Meditations* (1647).[134] By then, however, the Fifth Objections had already drawn too much attention and the translator, Clerselier, was careful not to omit them.

Descartes's replies to Gassendi, while bringing some clarification to the metaphysics of the *Meditations*, are overall devoid of new openings: there is too much irritation in Descartes, and little willingness to engage loyally with Gassendi. On the real distinction between mind and body, his strategy remains unchanged: he refers to the Sixth Meditation and adds that, to say he is in Holland, he does not need to prove he is not in China (metaphorically: he need not prove that the mind is incorporeal as early as the Second Meditation, where the point is merely to show how the thinking subject recognises itself as existing in the moment it thinks).[135] Descartes will offer yet another clarification on this critical point – literally besieged by all objectors – a few years later in his last intervention against Gassendi. When he stated in the Second Meditation that he was "nothing but" a thinking thing, he explains, he did so on the basis of an "abstraction": he knew he was a thinking thing by abstracting from everything pertaining to the body, not, for the moment, denying that he could be corporeal.[136]

Certainly, from Descartes's point of view, it was not difficult to refute the ancient thesis of the soul as "fire" or "subtle wind": the essential incompatibility between thought and extension holds for any kind of extension, no matter how subtle or delicate (nonetheless, Descartes's claim to have proven this with the *cogito* alone may be questionable: should he not have waited until the Sixth Meditation to settle this point as well?).[137] However, Descartes's main difficulties lie once again in his inability to meet the fundamental question posed by Gassendi, almost obsessively, from the beginning of the Fifth Objections (pending the 1644 *Disquisitio*). Gassendi asks him to demonstrate the impossibility of thinking matter, that is, to demonstrate that materialism is self-contradictory. But Descartes eludes the question, postpones it, avoids

133 Descartes to Mersenne, 23 June 1641 (*AT* III, 384).

134 See Descartes' "Warning" concerning the 5th Objections, included in the French edition of 1647 (*AT* IX–1, 198–99).

135 *AT* VII, 354–355; *CSM* II, 245–246.

136 *AT* IX–1, 216–217.

137 *AT* VII, 352–354, 386–387. For Gassendi's rejoinder, cf. *Disquisitio metaphysica*, cit., pp. 116 and 554.

it, and does not seem to realise its weight. He repeatedly refers to the Sixth Meditation but carefully refrains from attempting an explicit demonstration of the impossibility of materialism. In the *Disquisitio*, Gassendi would not fail to point this out, accusing him of outright sophistry: that of deducing the substantiality of the mind from the simple *cogito*. For Gassendi, to turn the "I am a thinking thing" of the Second Meditation into the "I am a thinking substance" of the Sixth is a kind of philosophical alchemy, lacking any real foundation: the *cogito* does not tell me what kind of "thing" the thinking subject is, and it could well be a mode of the body, not necessarily a substance endowed with autonomous existence.[138]

As for the other questions raised by Gassendi, Descartes essentially reiterates doctrines already expounded previously, sometimes switching to a heavily polemical tone. He argues: 1) that the brain does not act when the mind has pure intellections; 2) that no one can say what animals truly think (if you, Gassendi, believe that a dog can discern and judge like a man, it is because you are Flesh like a dog);[139] 3) that, if the mind declines together with the body, this is because it uses it as an instrument (a reworking of a traditional doctrine, of Platonic origin); finally, as for Gassendi's objection drawn from the state of the lethargic or of human embryos, he repeats what he had already replied to Arnauld: that both think but then forget their thoughts.[140] Descartes's Fifth Replies remain entirely silent on the delicate question of the union of mind and body, on which Gassendi had heavily insisted: in a later text (1646), Descartes will declare that he has not yet addressed it and that, in any case, it is not necessary for the metaphysics of the *Meditations* (he would nonetheless deal with it at length in the following years, and finally in the *Passions of the Soul*).[141]

The point of greatest divergence between Descartes and Gassendi is obviously on the proofs of the existence of God. The root of their disagreement also emerges clearly: it is the question of the "infinite" and how it should be defined. Here two philosophies confront one another in irreducible antithesis. The empiricist Gassendi maintains that the mind works on necessarily finite representations, that are derived from experience: ideas are all "adventitious" and to speak of something as "infinite" means "to attribute to something one does not understand a name that one does not comprehend".[142] Descartes replies

138 Gassendi, *Disquisitio metaphysica*, p. 116.

139 *AT* VII, 358–359; *CSM* II, 247–248.

140 *AT* VII, 354, 356–357; *CSM* II, 245–247. But see Gassendi's rejoinder, *Disquisitio*, p. 108 ss., 128, where Descartes is repeatedly accused of begging the question.

141 *AT* IX–1, 213.

142 *AT* VII, 279, 286; *CSM* II, 190–195, 199–200.

that the idea of the infinite is innate and is the foundation of all knowledge, and that it is not a matter of comprehending God, but of understanding His infinity, which we could not do unless we already had in us the idea of the infinite.[143]

On the second proof, Descartes again specifies that the cause sought is a cause *secundum esse*, which maintains in existence the human mind at every moment, and this makes Gassendi's appeal to the eternity of the world entirely irrelevant.[144] Finally, on the "ontological" proof, Descartes persists in his conviction that existence is a perfection (what else could it be? – he asks) and repeats that the property inherent in the definition of God is not simple existence but "necessary" existence, characteristic of the infinitely perfect being, while to a finite thing like a triangle one can at most grant, as a property, possible existence.[145]

With Gassendi's Fifth Objections, early modern empiricism took its first steps: Locke was now just around the corner. Gassendi's strength lay precisely in his cautious epistemology, tinged with scepticism: we know only the external appearance of substances; the infinite is only an approximation based on our finite knowledge, and mathematics, being a purely artificial construct rather than a mirror of reality, cannot tell us how the world truly is (this was the "objection of objections," as Descartes would later call it, not without reason).[146] Gassendi's is an empiricism developed independently of materialism, as opposed to Hobbes, and made compatible with Christian religion thanks to an antidogmatic critique that stops short before the divinity, whose existence is established *a posteriori* by observation of the marvellous order of nature.[147] Although purely tactical and devoid of any philosophical substance – he always remained an Epicurean and "died a philosopher's death" (that is, as an atheist)[148] – Gassendi's public move would have many followers in the seventeenth and eighteenth centuries. If a rationalistic metaphysics is impossible, if one has no clear and distinct idea of the infinite, if the ontological proof is fallacious, only one path remains to arrive at God: the teleological proof founded on the order of nature, which attests the existence of an

143 *AT* VII, 365; *CSM* II, 252.

144 *AT* VII, 369; *CSM* II, 254–255.

145 Cf. *AT* VII, 382–83; *CSM* II, 262–263.

146 For the unknowability of substances cf. AT VII, 271–276; *CSM* II, 189–193. For Descartes's answer on mathematics, cf. AT IX–1, 212.

147 *AT* VII, 308–310; *CSM* II, 214–215.

148 In Guy Patin's words: "M. Gassendi was a *Provençal* of infinite merit, an honest man, learned in *belles-lettres* and in the philosophy of the Ancients. [...] He died *morte philosophorum*, regretted by all good people" (*Naudaeana et Patiniana*, Paris, 1703, pt. II, pp. 6–7).

intelligent author of the world. This was a common opinion in the 18th century, until Hume and Kant exposed the weakness of this argument as well.

6 Father Bourdin and the Jesuit Reaction

Written at the end of 1641 after the publication of the first edition of the *Meditations*, the Seventh Objections by the Jesuit Father Pierre Bourdin (1595–1653) were added to the second edition, substantially increasing its dimensions. Bourdin's objections were generally neglected, not to say disapproved, by Descartes and by many of his contemporary and later readers: partly because they arrived last, partly because of the difference in tone and substance compared to the rest, partly because of the bombastic style and argumentation – which also contagiously affected Descartes's replies.[149]

And yet the *Seventh Objections* are important for two reasons. One concerns Descartes's strategy towards the Jesuits, whether ingenuous or reckless is unclear: he was always tempted by the idea of winning them over, admiring their cohesion and organizational strength,[150] but at the same time he was intent on refuting their philosophy, which he regarded as the cradle of prejudices that prevented the advent of the new knowledge (the publication of the *Principles of Philosophy*, as we shall see, fits squarely into this plan). Bourdin, moreover, was no ordinary Jesuit: an astronomer and teacher of physics and mathematics at the Parisian college of Clermont, he had previously taught at La Flèche (but after Descartes had completed his studies). Nor was this his first intervention on Cartesian philosophy: he had reacted to the *Discourse on the Method* with a rather harsh *Velitatio* ("skirmish"), which was unsurprisingly not well received by the author. For this reason too, in the second edition of the *Meditations*, Descartes took the precaution of appending to the Seventh Objections and Replies a letter to Father Dinet, Provincial of the Jesuits of France (future confessor to Louis XIII and then Louis XIV), with whom he had maintained good relations since their college days. In his letter, he complains about

149 A few exceptions must be mentioned here: Roger Ariew, "Bourdin and the 7th Objections", in *Descartes and His Contemporaries*, pp. 208–26; Gianni Paganini, *Skepsis*, pp. 229–63; Édouard Mehl, "Septièmes objections et réponses", in *Les Méditations métaphysiques. Objections et réponses*, sous la direction de Dan Arbib, Paris, Vrin, 2019, pp. 375–396; Emanuela Scribano, "The Replies to the Seventh Set of Objections, the Skeptic's Duties, and the Circle", in Id. *Descartes in Context. Essays*, Oxford, OUP, 2023, pp. 68–81.

150 If the Jesuits are on my side, Descartes wrote in 1645, my philosophy "will acquire in a few years all the credit that otherwise it could not acquire before a century" (to Charlet, 9 February 1645 – *AT* IV, 157–58). See also Descartes to Dinet, 9 February 1645 (*AT* IV, 159) and Descartes to ***, June 1645 (*AT* IV, 224).

the treatment he had received and tries to distinguish Bourdin (with whom he would nevertheless later be reconciled)[151] from the Society of Jesus as a whole.

The second and more crucial reason for reading Bourdin's Seventh Objections carefully is that they primarily concentrate on the First Meditation. and in particular on the question of doubt, which had passed almost unscathed through the six previous series of objections: Caterus and Arnauld had not even considered it; Mersenne had limited himself to the theological question of divine deception, more familiar to him; Hobbes and Gassendi had essentially agreed with Descartes, though deploring (Hobbes) that he had dedicated an entire meditation to the theme, and (Gassendi) that he had lingered on the unnecessary artifice of the evil demon instead of simply denouncing the weakness of the human intellect. As to Bourdin, he finds Descartes's method of doubt intolerable, regarding it as a destructive seed capable of reducing human knowledge to nothing. No one had yet drawn that conclusion, at least not in such radical terms: Bourdin's Descartes is a sceptic, a destroyer of all certainty. His accusation, sustained by an ironic and relentless (if obsessively repetitive) style, results in a ponderous *disputatio*, almost entirely based on the initial proposition: "we should regard as false whatever contains even a minimal element of doubt".[152]

It must be said at the outset that Bourdin's premise is authentically Cartesian: as early as the *Discourse on the Method*, Descartes had affirmed that doubt should be transformed into a methodical denial of whatever lacks certainty, and he had repeated it recently at the beginning of the Fifth Replies and would reaffirm it in the future.[153] Moreover, Descartes had likewise stated on various occasions that one must doubt "everything", without overly concerning himself with clarifying the limits of this bold assertion.[154] Bourdin takes these imprudent declarations at face value ("Are you telling me to renounce all my former beliefs? 'Yes I am', you say, 'All of them'. All of them? This implies no exceptions")[155] without verifying whether they correspond to the philosophical substance of the First Meditation, and upon them he constructs syllogism upon syllogism until he reduces Descartes's position to absurdity. The *Meditations* thus become a gigantic illustration of the liar's paradox: with his

151 See R. Ariew, *Descartes and the Last Scholastics*, p. 33. In his cosmological work of 1646, Bourdin would indeed argue for the fiery nature of the sun, quoting Descartes in support of his thesis (see his *Sol flamma, sive Tractatus de sole*, Parisiis, 1646, p. 5).

152 *AT* VII, 454; *CSM* II, 304.

153 *AT* VI, 31, *CSM* I, 127: "I thought it necessary [...] to reject as if absolutely false everything in which I could imagine the least doubt," (*Discourse on the Method*). See also *AT* VII, 350–351 (5th Replies) and *Principles*, 1st Pt., §2.

154 See above, pp. 93–94.

155 *AT* VII, 469; *CSM* II, 315–316 (*omnia qui dicit, nihil excipit*).

postulate of universal doubt, combined with the thesis that what is doubtful must be considered false, it is as if Descartes were saying at the beginning that "every proposition written in this book is false".[156] Even the *cogito* cannot in any way overcome the universal doubt practised in the First Meditation. The *cogito*, after all, tells me only *that* I am thinking, but it does not tell me *what* I am and, if I remain in doubt on this point, then by the same general premise I must deny not only that I am an extended and corporeal substance but also that I am a thinking substance. In short, for Bourdin, Descartes is an Icarus who takes flight with wings of wax that will soon betray him, or – in a variation on that theme – a builder who uses scaffolding which collapses and brings down the building under construction. And so on.[157]

Yet, despite the obvious rhetorical self-indulgence of these observations, it would be historically incorrect to consider the Seventh Objections as a mere narcissistic delusion: in the following decades, the main question brandished by Bourdin – that of the sceptical outcome of the method of doubt – would dominate all public condemnations of Cartesianism, not only by the Jesuits but also by many European universities. At the same time, the idea of a "sceptical Descartes" would begin to circulate in discussions, especially French and Dutch, around the new philosophy.[158] Was it just an ideological battle devoid of true theoretical interest? Certainly, the spectre of scepticism was an easy weapon to wield against a philosophy like that of Descartes, which questioned all acquired truths and therefore constituted, in itself, an attack on tradition. But perhaps there was also more to it, if it is true that David Hume – who was not unfamiliar with scepticism – would end up unexpectedly validating the Jesuit Bourdin's diagnosis, using it to strike at Cartesian foundationalism, that is, the claim to ground human knowledge in the certainty of human knowledge itself. For Hume, Descartes's method is a dead end, because the very idea of founding human knowledge on a universal doubt that implicates our very faculty of thought is inherently doomed to failure.[159]

Descartes, of course, thought differently. Even though, when faced with Bourdin's accusations, he tried not to answer him directly and declared that he wanted to reply with simple marginal notes – but he did not manage stay within these bounds, and indeed his replies expanded significantly. Bourdin's

156 *AT* VII, 500; *CSM* II, 339.

157 *AT* VII, 500, 527–8, 530.

158 See Carlo Borghero, "*Cartesius scepticus*", in *Le Scepticisme au XVI*e *et au XVII*e *siècle*, ed. Pierre-François Moreau, Paris, A. Michel, 2001, pp. 391–406. See also E. Van der Wall, "Orthodoxy and Scepticism in the Early Dutch Enlightenment", in *Scepticism and Irreligion in the 17th and 18th Centuries*, edited by R.H. Popkin and A. Vanderjagt, Leiden, Brill, 1993, pp. 121–141.

159 Cf. David Hume, *An Inquiry Concerning Human Understanding*, chap. 12.

Seventh Objections appear to him as a collage of his own original texts but strung together haphazardly: a distorted and "masked" Descartes, without or even against the "order of reasons" and thus rendered absurd and incomprehensible.[160] In his reply, Descartes is particularly clear on a point that he had previously left in the background: hyperbolic doubt is exercised on propositions that are only "apparently" self-evident – that is, "clear and distinct" in themselves but not indubitable – but can do nothing against "really" (i.e. genuinely) self-evident knowledge, instantiated by the *cogito*, which is the only truth presupposed in the demonstration of the existence of God.[161]

Some of Descartes's "notes" are, however, surprising. They express a kind of strategic retreat, dictated perhaps in part by a desire not to overly antagonise the Jesuits: Descartes replies to Bourdin, but he knows that an entire congregation is listening. And so: he never said that doubtful things should be considered false, but only that we should provisionally pretend that they are; he never said that one must doubt self-evident things, but only those of which one does not yet have clear and distinct knowledge ("At the end of the First Meditation," he writes, "I said that very strong and maturely considered reasons could oblige us to doubt all things not yet clearly perceived").[162] But what about the doubt on mathematical knowledge, promptly evoked by Bourdin (who rightly distinguishes it from knowledge depending on sensory experience)?[163] And what about the deceiving God? The hyperbolic doubt is watered down and reduced to a mere critique of intrinsically obscure knowledge: "whether there be an earth, whether I have a body, and the like."[164]

This defensive skirmish is nonetheless above all a preparation for the final thrust, which is to be found in a very long reply that once again takes the form of an architectural metaphor. The two main characters of Descartes's metaphor are the architect (Descartes himself) and the mason (Bourdin), the latter being ignorant of statics and incapable of understanding the value of the

160 *AT* VII, 454, 459–60.

161 See *AT* VII, 462; *CSM* II, 310 (my italics): "because it requires some care to make a proper distinction between what *is* clearly and distinctly perceived and what merely *seems* or *appears* to be, I am not surprised that my worthy critic should here mistake the one for the other". On this point, see Emanuela Scribano, "The Replies to the seventh set of Objections", in Id., *Descartes in Context*, pp. 74–75.

162 *AT* VII, 459–60, 523–5, 546.

163 *AT* VII, 455. In the Third Meditation, Descartes had asserted that one must doubt not only whether "the earth, the sky, the stars" exist, but also (*imo etiam*) what one believes one knows "with very great self-evidence" (*AT* VII, 21, 35–36).

164 According to J.-L. Marion, *Questions cartésiennes II*, p. 66, note 16, the position of the 7th Replies is the most authentically Cartesian. However, if Descartes's doubt were limited to obscure perceptions, there would be no need for him to give a metaphysical foundation for the general rule "everything that is clear and distinct is also true"? (see above, p. 64, note 29).

foundation on which the new edifice is to be built. Descartes's weapon is now that of retaliation. To Bourdin and to all followers of the "ordinary philosophy" who accuse him of fomenting sceptical doubt, there is only one reply: it is you who condemn men to scepticism, you who do not want to search for the rock and clay on which to ground knowledge but are content with sand, that is, with verisimilitude and sensitive experience, thus opening the way to a general uncertainty, itself a prelude to atheism (and here is targeted an attitude close to that of some contemporary libertines, such as La Mothe Le Vayer).[165] Descartes instead presents himself as the greatest opponent of the sceptics: nobody before him (*nemo ante me*) has pushed so far into this "dubious and dangerous ford" – an expression used by Bourdin (*vadum dubium et infidum*) – ensuring a safe crossing and succeeding in founding human science.[166]

Descartes's strategy against the accusation of scepticism is thus twofold: on the one hand, he attenuates, or makes less explicit, the actual scope of the doubt of the First Meditation; on the other, he maintains that only he can successfully face the obstacle of scepticism, while the scholastics and those who stop at verisimilitude will be easy prey for the sceptics. The same strategy is also found in another (unfinished) work in which Descartes presents his metaphysics: *The Search for Truth by Natural Light*, a dialogue among fictional characters in which Eudoxus, Descartes's spokesman, rejects the objections of Epistemon, the defender of traditional knowledge, and wins over Polyander, a sensible young man not yet corrupted by scholastic subtleties.[167] The date of composition of this work has always been the object of controversy, ranging between two possible extremes: an unpolished work of the author's youth or a late work interrupted by his death. However, some clues could allow it to be placed, albeit hypothetically, in a period not far from the Seventh Replies.[168]

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165 On this point, see G. Paganini, *Skepsis*, cit., p. 248 ff.

166 *AT* VII, 549–50.

167 *AT* X, 495–527; *CSM* II, 400–420. Critical ed., *La Recherche de la vérité par la lumière naturelle de René Descartes*, cit. below in Bibliography.

168 For a similar hypothesis, see S. Gaukroger, *Descartes: An Intellectual Biography*, p. 362 s., but on the basis of the fragile arguments of Pierre-Alain Cahné, *Un autre Descartes*, Paris, Vrin, 1980, p. 56 ff. The analogies with the 4th and 6th Objections detected by S. Landucci, *Contributi di filologia cartesiana*, pp. 20–23, provide a solid *terminus post quem* (summer 1641); less certain, however, is the *terminus ante quem* proposed by Landucci, namely the 7th Replies (beginning of 1642): the argumentative passage from the simple doubt about bodies to the assertion that it is not the body that thinks, the fallacy that Descartes is said to have noticed when replying to Bourdin, returns in similar terms in the letter-preface of the French *Principes* in 1647, see *AT* IX–2, 9–10: that which doubts everything but cannot doubt itself "*n'est pas ce que nous disons être notre corps*" (*Search for truth*, *AT* XI, 518 and 521: since, even though I doubt my body, it is impossible for me to doubt

In the *Search*, for example, the metaphor of the "ford" already proposed by Bourdin reappears, and Descartes again links it to the challenge of scepticism. After Epistemon has brandished the spectre of scepticism against Cartesian philosophy ("such general doubts would lead us straight to Socratic ignorance or to the uncertainty of the Pyrrhonians, and this is deep water, where it does not seem to me that one can touch bottom"), Eudoxus responds to him just as Descartes responds to Bourdin: "I acknowledge that those who, not knowing the ford, venture into it without a guide would suffer harm [...] but you need not fear to pass through it after me"; those who stop at "sensorial things" build on sand, while it is necessary "to dig further to find rock and clay".[169]

The approach to the question of doubt is also similar in the replies to Bourdin and in the *Search for Truth*: a weakened doubt, which no longer affects rational self-evidence but stops at uncertainty "whether there be an earth and a sun" or "whether I myself have eyes, ears and a body",[170] thus targeting above all sensory experience. In Eudoxus's words: one must "reasonably doubt all those things to the knowledge of which [one arrives] solely through the senses". But one will soon recover from this doubt, despite Polyander's astonishment ("I do not see [...] how a doubt of this kind can be a principle that has the power to lead us so far"), finally defeating scepticism.[171] Descartes reveals in these texts an anti-sceptical background to the strategy of doubt to which he had already alluded in the *Discourse on the Method* – where he had presented the *cogito* as the only truth capable of resisting "the most extravagant suppositions of

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myself, that which doubts in me "*non illud esse quod nostrum corpus esse dicimus*"). For other dating hypotheses, see E. Lojacono in R. Descartes, *Recherche de la vérité*, Rome, Ed. Riuniti, 2002, pp. 151–179 (this volume also includes, pp. 69–188, valuable lexical research by Franco Aurelio Meschini on the text of the *Search*). Gilles Olivo, *Descartes et l'essence de la vérité*, pp. 81–152, places the text in the era of the *Regulae*, but with debatable arguments, such as the fact that in the *Search* "judgment" is attributed to the intellect (on this point see above, p. 111, note 74); see also René Descartes, *Étude du bon sens. La recherche de la vérité et autres écrits de jeunesse (1616–1631)*, ed. by Vincent Carraud et Gilles Olivo, Paris, PUF, 2013. For a recent reassessment, see Maira de Souza Borba, *La Recherche de la vérité de Descartes et les objections faites aux Méditations métaphysiques: pour une approche systématique du problème de datation*, Philosophie, Université Panthéon-Sorbonne – Paris 1, Universidade Federal de Minas Gerais, 2015, who exploits Meschini's lexical research and places the text in 1645–46, based on the similarities between the *Search*, the Preface of the French *Principes* and the correspondence with Princess Elizabeth, where a *Traité de l'érudition* is mentioned that could be the same text currently known as *Recherche de la vérité*. We could add that the French edition of the *Principes* also bears some traces of a weakening of Descartes's doubt (see below, p. 177, note 15).

169 *AT* X, 513.

170 *AT* X, 514 (*Search for the Truth*); cf. above, note 163.

171 *Ibid*.

the skeptics" – but on which he had not said a word in the *Meditations*, which were programmatically addressed to those who had too many certainties, in order to demolish convictions unsupported by adequate rational grounds. It is as if Descartes were reinterpreting the *Meditations*, making it seem that he had written them specifically "against the sceptics" (and so he would say, a few years later, to Frans Burman, during the famous 1648 conversation).[172]

It is difficult to determine whether Descartes's 1642 self-interpretation really captures his intentions at the time of writing the first draft of the *Meditations*. In any case, if Descartes attacked the sceptics so harshly, it is also because he had in mind a closer, and perhaps more formidable, adversary: the ancient and modern empiricists, a motley but substantial group ranging from the last Scholastics to his direct interlocutors Mersenne and Gassendi, who grounded human knowledge precisely on sensory experience.[173] It is therefore plausible that, around 1641–1642, Descartes was at least tempted to downplay the impact of doubt, the better to triumph over his principal adversaries of the moment, turning against them the accusation of scepticism and presenting himself as the only champion of reason. In this context, a figure like the deceiving God proved extremely inconvenient. To suppose his possible existence meant calling into question the primacy of clear and distinct ideas, reviving the risk – feared by Bourdin in his objections and by Epistemon in the *Search for Truth*[174] – of a continuous and irremediable deception. Moreover, Descartes might have felt vulnerable to the accusations of circularity that the other objectors had already exploited, which is why he employs his "hyperbolic" doubt with some parsimony after the first edition of the *Meditations*: the deceiving God argument is absent from the Seventh Replies and mentioned in the *Search for Truth* only allusively, with the sole purpose of reinforcing doubt about the senses. However, the temptation to suppress him altogether – if there was one – must have been fleeting: the *Principles of Philosophy* attest to this, giving the hypothesis of the great deceiver its last public appearance.

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172 *AT* V, 165. See also Edwin Curley, *Descartes against the Skeptics*, Cambridge, Harvard Univ. Press, 1978.

173 On this point, see Denis Kambouchner, *Les Méditations métaphysiques de Descartes*, I, Paris, Puf, 2005, pp. 90–104; Charles Larmore, "Descartes and Skepticism", in *The Blackwell Guide to Descartes' Meditations*, ed. S. Gaukroger, London, Blackwell, 2006, p. 20 f.

174 Cf. *AT* X, 512: "Such general doubts would lead us straight into the ignorance of Socrates, or into the uncertainty of the Pyrrhonians; and that is deep water, where it does not seem to me that we can find footing".

CHAPTER 6

The *Principles of Philosophy*

1 Analysis and Synthesis

Descartes commenced writing *The Principles of Philosophy* in the latter part of 1640, a few months before the publication of the first edition of the Meditations. He probably completed the *Principles* in the winter of 1643–1644 and the volume was published in Amsterdam by Elsevier in July 1644, in Latin, and dedicated to the Princess Elizabeth of the Palatinate. A French version appeared three years later in Paris, preceded by an important prefatory letter addressed to Descartes's translator and close friend, the abbot Claude Picot. In some respects, this is the least original of Descartes's writings, as it revisits themes and doctrines already expounded in *The World* and the *Meditations*. Yet, at the same time, it is his work that had the greatest immediate impact.[1] Descartes conceived the *Principles* as a "course in philosophy" to be used in universities in place of the old Scholastic textbooks. Initially, he intended to publish the work in the form of marginal notes to a textbook of that kind, Eustache de Saint-Paul's *Summa philosophiae* – which title he had also considered retaining.[2] The project was later modified, partly due to Eustache de Saint-Paul's death but also, and more importantly, because Descartes had come to realise that engaging with the old philosophy would be a superfluous battle: "it is so entirely and clearly destroyed by the sole edification of mine that there is no need for any further refutation" (obscure threats against the Jesuits follow: if they dare to hinder him, he will publicly refute them until "they are ashamed forever").[3]

Nevertheless, the *Principles* retain a scholastic structure. They are divided into four parts, each containing short paragraphs that separately address the

1 On the *Principles*, see the collection of papers *Descartes: Principia philosophiae* (*1644–1994*), ed. Jean-Robert Armogathe and Giulia Belgioioso, Naples, Vivarium, 1996. See also Stephen Gaukroger, *Descartes' System of Natural Philosophy*, Cambridge, CUP, 2002.

2 Descartes to Mersenne, 30 September 1640, 11 November 1640, 31 December 1640, December 1640; 21 January 1641; 28 December 1641 (*AT* III, 185, 232–3; 260; 276, 286; 470); Descartes to Huygens, 31 January 1642 (*AT* III, 782). The definitive title – "mes *Principes*" – appears in 1643: *AT* IV, 67. For more details on the various titles imagined by Descartes, including the Euclid-inspired *Elementa philosophiae*, see A. Strazzoni. "Some unpublished fragments on Descartes's life and works", *The Seventeenth Century*, 37:5 (2022), 801–839, esp. pp. 809–812.

3 Descartes to Mersenne, 22 December 1641 (*AT* III, 470). Descartes will say, however, that he wrote the *Principles* "in such a way that it can be said that they are not at all contrary to common philosophy" (*AT* IV, 225).

questions specified in their respective titles. Part 1 contains a new exposition of Descartes's metaphysics (under the significant title: "On the principles of human knowledge"); Part 2 analyses the fundamental concepts of physics ("On the principles of material things"); Part 3 ("On the visible world") and Part 4 ("On the Earth") contain the physical description of the universe and of the planet Earth. Two other parts were originally planned but ultimately omitted: one on living bodies and the other on "human nature".[4] Notably absent, compared to traditional manuals, are logic and ethics, though the absence of the former is partially compensated by the contemporaneous publication of the Latin version of the *Discourse on the Method* (together with the *Dioptrics* and the *Meteors* but without the *Geometry*, which Descartes did not consider to be an integral part of philosophy).[5] While *The Principles* did not become the new textbook of European students, as Descartes had hoped, the work profoundly influenced early-modern philosophy. Many universities, especially in Holland and in France, gradually incorporated elements of Cartesian thought – albeit with various mediations and combinations – well into the 18th century.

Descartes would later write to Chanut (in 1649) that the First Part of *The Principles* is merely a simplified and more accessible summary of the *Meditations* – the reason why he strongly recommended it to Queen Christina of Sweden. Yet it is a strange summary, being scarcely shorter than the work it claims to condense; and as for its greater readability, this too is relative. In reality, as we shall see, the metaphysical part of *The Principles* contains both omissions and additions compared to the *Meditations*. As Descartes himself maintains in another letter: "what is put in a longer form in one is more abbreviated in the other, and vice versa"; what changes, he specifies, is above all the "style".[6] Indeed, in *The Principles*, Descartes abandons the first person of the *Discourse on the Method* and of the *Meditations*, adopting a more anonymous and impersonal mode of expression. His approach has changed: it is no longer a time for autobiography and inner reflection, but for didactic presentation.

Should we conclude, then, that the metaphysical part of *The Principles* is nothing but a scholastic version of the *Meditations*, abandoning the "order of reasons" that prevailed there? Descartes himself encouraged this interpretation, if we are to believe what Frans Burman retained of their 1648 conversation: in *The Principles*, Descartes reportedly adopted the expository order of

4 See *Principles*, 4th Pt., §188.

5 R. Descartes, *Specimina philosophiae*, Amstelodami, Elzevier, 1644.

6 Descartes to Chanut, 26 February 1649 (*AT* V, 291); to Mersenne, 31 December 1640 (*AT* III, 276).

"synthesis", which is more suitable for a didactical exposition, rather than the "analytic" order necessary for discovery.[7]

On this point, it should be mentioned that in early 1641 Descartes had made another attempt to give a "synthetic" exposition of his thought at Mersenne's request (in the Second Objections, the latter had asked him to expound his doctrines following "the method of geometers"). In his Second Replies, Descartes had tried to explain what he meant by "analysis" and "synthesis"; indeed, this is the only place in the Cartesian *corpus* where such a distinction is explicitly considered and discussed, although perhaps not fully clarified.[8] For Descartes, one must distinguish between the "order" (that prescribed by the Third Rule of the *Discourse*) and the "method" of demonstrations.[9] It is with respect to the latter that the opposition between "analysis" and "synthesis" is relevant. "Analysis" allows us to broaden our knowledge, starting from the effects to define the causes (or principles) that explain them. Synthesis, by contrast, systematically organises acquired knowledge, partially concealing the path of discovery by presenting causes (or principles) first and then the effects deriving from them. In metaphysics, Descartes states, analysis is to be preferred, because the peculiar difficulty of metaphysics consists precisely in discovering the "first notions" from which the others follow. In geometry, by contrast, the synthetic method of demonstration can be more useful, since fundamental axioms are immediately self-evident and can be stated from the outset, along with all their accompanying postulates and definitions, from which the individual propositions will be deduced.

Nevertheless, in order not to displease his objectors (namely Mersenne), Descartes also provides a brief synthetic exposition of his metaphysics, appended to the Second Replies and entitled: *Reasons that prove the existence of God and the distinction of the soul from the body, arranged in geometrical fashion* (*more geometrico*). Here, four propositions of metaphysics are demonstrated as if they were mathematical theorems, that is, by prefixing – just as in Euclid's *Elements* – a list of definitions, postulates and axioms (or common notions) from which the propositions to be demonstrated follow. The *Reasons*

7 *AT* V, 153 (*Conversation with Burman*).

8 Cf. AT VII, 155–56 (2nd Replies). See also Daniel Garber and Lesley Cohen, "A Point of Order: Analysis, Synthesis, and Descartes' Principles", in *Descartes Embodied*, ed. D. Garber, Chicago, University of Chicago Press, 2000, pp. 52–63, and cf. Jaakko Hintikka, "A Discourse on Descartes's Method", in *Descartes: Critical and Interpretive Essays*, ed. M. Hooker, Baltimore, Johns Hopkins University Press, 1978, pp. 74–88. See also N. Guicciardini, "Descartes, Leibniz, and Newton on Analysis and Synthesis", in W.R. Newman, J. Schickore (eds), *Traditions of Analysis and Synthesis*, Springer, Cham, 2025, pp. 137–168.

9 *AT* VII, 155–156; *CSM* II, 110 (2nd Replies).

are historically important: Spinoza will later draw inspiration from them to construct and expound his own system, which will be entirely "synthetic" in the Cartesian sense of the term, directly grounded in the light of self-evidence. But what Spinoza could do, Descartes could only attempt at great cost. While the *Reasons* – once the axioms and initial postulates are granted, including a sort of disguised *cogito*[10] and even a new version of the "ontological" argument[11] – offer a demonstration of the existence of God and the spirituality of the soul, they are nevertheless devoid of the most original part of the Cartesian project: doubt about self-evidence. As in other texts from 1641–1642, there is no mention here of deceiving gods or evil demons. We find instead a blind reliance on clear and distinct ideas, with no concern about "hypotheses founded on something unknown".[12] Thus, Descartes "synthetic" metaphysics takes for granted – surreptitiously inserting it among its "postulates" – none other than the rule of clear and distinct ideas (whatever is self-evident is true). In the *Meditations*, this rule itself depended on the existence of a non-deceiving God.

One might expect the metaphysical part of *The Principles* to be an evolved and expanded version of the *Reasons* appended to the *Second Replies*. But this hypothesis does not hold up to scrutiny, despite some obvious textual and structural parallels.[13] Among the latter, the most evident and the most discussed concerns the position of the "ontological" proof with respect to the other two proofs of the existence of God: in *The Principles* and in the 1641 *Reasons*, the "ontological" proof precedes the others, an inversion that may stem from the fact that the "synthetic" method privileges *a priori* arguments, starting from definitions (including that of God) and methodically deducing from them the various properties of defined things (including, in the case of God, His existence).[14] However, this structural analogy between *The Principles* and the *Reasons* is belied by equally important differences, starting from the fact that, in *The Principles*, the doubt about self-evidence appears in full force. Section 5 of Part 1 of *The Principles* is one of the few texts where Descartes openly maintains that it is possible, and even necessary, to extend doubt even to

10 *AT* VII, 162; *CSM* II, 114: "if [readers] consider their mind and all its attributes, they will recognize that they cannot in any way doubt about these, even supposing that everything they have learned through the senses is false".

11 *AT* VII, 163–64; *CSM* II, 114–115: "in the idea of God is contained not only possible existence, but, moreover, necessary existence".

12 *AT* VII, 164; *CSM* II, 116.

13 The hypothesis cannot, of course, be dismissed that Descartes wrote the *Reasons* attached to the 2nd Replies (spring 1641) *after* he had already drafted the first version of the Metaphysics of the *Principles*, on which he had been working since autumn 1640.

14 See above, p. 118, note 93 (interventions by M. Gueroult and H. Gouhier).

mathematics, since "we do not yet know whether [God] has wanted to make us such that we are always deceived, even in the things we believe we know best". We might, therefore, *always* be deceived: the nightmare of the deceiving God proves ineradicable from Cartesian thought, despite recurring temptations to get rid of it once and for all – temptations that did not subside after the *Objections and Replies* (for example, the 1647 French translation of *The Principles* – revised and in some places rewritten by the author – seems once again to limit doubt to cases of cognitive obscurity).[15]

Descartes's attempts to adopt the style – or method – of "synthesis" thus clash with the demands of his metaphysics, which is intrinsically "analytic" inasmuch as it is founded on the method of doubt, which implies the rejection of every general notion and definition (except, of course, common notions devoid of existential import).[16] In short, Descartes had to choose sooner or later between the analytical method founded on doubt and the *cogito*, and the synthetic method inspired by Euclid's geometry. His choice is immediately evident in *The Principles*. The initial paragraph, regardless of the possible misunderstandings of which Bourdin had taken advantage, revives the motto of the First Meditation ("to doubt everything at least once in a lifetime"), followed by the same maxim that had aroused the Jesuit's irony: "it is useful to consider as false all things that can be doubted" (§2). Far from limiting doubt to sensory experience (referred to in §4), Descartes invokes once again the deceiving God and the doubtfulness of all knowledge, even self-evident knowledge (§5). The *cogito*, finally, arises once again from the destruction of all certainty and has a temporal dimension: we can easily suppose that there is "no God, no heaven and no body", but we cannot deny that we exist *while* we think that (§ 7).

However, a "synthetic" and didactic aspect is undeniably present in the *Principles*. It can be found above all in Descartes's sporadic attempts at conceptual systematization and terminological definition, in which he engages almost reluctantly, reiterating his conviction that philosophers very often make things more obscure, instead of clarifying them.[17] Some definitions are offered in specific paragraphs: that of "thought" as immediate awareness (*conscientia*) of one's own perceptions (§9) effectively mirrors the analogous definition proposed in the 1641 *Reasons*.[18] We will later return to the definitions

15 *Principles*, 1st Pt., §13: the Latin text mentions a doubt "*de talibus*" (that is, about self-evident perceptions), which is transformed into its opposite, that is, into a doubt on "*tout ce qu'elle* [the mind] *n'aperçoit pas distinctement*" in the French version reviewed by the author (*AT* IX–2, 31).

16 The general axioms of "natural light" are listed in *Principles*, 1st Pt., §10, §48–50.

17 *Principles*, 1st Pt., § 10.

18 *Principles*, 1st Pt., § 9 (see also above, p. 142, note 46).

of "substance" and "movement". However, Descartes also attempts to better specify and distinguish the concepts of "infinite" and "indefinite" (§27), and the epistemological hendiadys formed by "clarity" and "distinction" (§45–46). Such attempts are sometimes incongruously placed within the "order of reasons": in §48, the various types of existing substances are enumerated, including extended substances, but the demonstration of the existence of bodies, and therefore of such substances, will only be given later.[19] The final result is quite bewildering and makes the First Part of the *Principles* – among Descartes's various expositions of his metaphysics – the least apt to give an understanding of its internal structure. Indeed, the inextricable mixture of "analytic" and "synthetic" elements produces a hybrid order of exposition – a "bastardized" one, according to a leading twentieth-century Descartes scholar.[20]

2 A New Theory of Substance

In the First Part of *The Principles* there is also something philosophically original, compared to the *Meditations*. This "something" is the theory of substance (§51–54) which – together with the following paragraphs devoted to other "general" notions ("duration", "order", "number") and to the various kinds of "distinction" (§55–70) – constitutes an absolute novelty, both for its content and its breadth, in Descartes's metaphysical publications.

"Substance" was the first of Aristotle's categories and constituted one of the basic notions of Aristotelian and then Scholastic metaphysics. While Aristotle offered many different definitions of "substance", two principal meanings run through the medieval philosophical tradition: a) an "ontological" meaning, which emphasises the autonomous existence of substances, and b) a relational one, focused on the relationship of subordination between certain knowable qualities and their condition of possibility. These meanings are also to be found in Descartes's constant guide in metaphysical matters, Francisco Suárez, who conceives substance both (1) as a thing existing in itself, which does not require anything else to subsist (a meaning valid for God, properly speaking, but also extended, as an "aptitude" [*aptitudo*], to creatures, which are susceptible to being brought into being by God), and (2) as that which underlies the various accidental characteristics of a thing, therefore as a subject, or

19 That is, at the beginning of Part 2 (§ 1).

20 Martial Gueroult, "La vérité de la science et la vérité de la chose", in *Descartes*, "Cahiers de Royaumont", no. 2, Paris, Éd. de Minuit, 1957, p. 137. See also Jean-Marie Beyssade, "L'ordre dans les *Principia*" [1976], in Id., *Descartes au fil de l'ordre*, pp. 189–210.

substratum, in which certain properties inhere (this meaning, however, is valid for created substances but naturally not for God, who is not the subject of any accidents).[21]

As for Descartes, until the *Meditations* he had avoided defining substance and had also been very sparing in his use of the term. As we have seen, his youthful writings and especially the *Regulae* are populated with unidentified "things" without further definition: "substance" is mentioned on only two occasions, and in generic terms. This rejection of "substance" is programmatic in a text that positions itself at the antipodes of Aristotelian categorisations and adopts a completely different approach, based on "simple natures" and on "intuition" as the fundamental epistemic device. And indeed, among the "universal" simple natures – that is, common to bodies and minds – the *Regulae* mention "existence", "unity", "duration", but *not* "substance".[22]

The first "substance" to obtain citizenship in Descartes's philosophy is not thought, but matter, which, since *The World* and other texts from the early 1630s, is considered as the foundation of all corporeal phenomena: in nature "there is only one material substance, which receives from an external agent the action, or the means of moving locally, from which it draws different figures or modes, which make it as we see it in those first compounds which are called elements".[23] Matter is therefore a substance in itself and its modes depend on the motion of its parts, which in turn is caused by an external agent (God). This material substance has nothing to do with the *prima materia* of the scholastics, that is, a substrate devoid of any determination, but rather has its own essence, that is, something that defines it: extension. *The World* is crystal clear on this point: "the quantity of the matter I have described does not differ from its own substance any more than the number differs from the thing

21 Francisco Suárez, *Disputationes metaphysicae*, XXXII, sect. I, §6: "substantia non tantum [dicitur] quae per se est, sed quae accidentibus substat vel substare potest". See Jean-Luc Marion, "Sostanza e sussistenza. Suarez e il trattato della *substantia* nei *Principia*, I, 51–54", in *Descartes: Principia philosophiae*, pp. 203–230; Jorge Secada, "The Doctrine of Substance", in *The Blackwell Guide to Descartes' Meditations*, pp. 72–73. See also Anat Schechtman, "Substance and Independence in Descartes", *The Philosophical Review* 125 (2016), pp. 155–204. On the relations between the two definitions of substance, see Louis E. Loeb, *From Descartes to Hume*, Ithaca, Cornell Univ. Press, 1981, pp. 78–100; J. Skirry, *Descartes and the Metaphysics of Human Nature*, London, Continuum, 2005, pp. 19–38.

22 *AT* X, 420 (and see *supra*, p. 34). On the anti-Aristotelian background of the *Regulae*, see especially Jean-Luc Marion, *Descartes's Grey Ontology: Cartesian Science and Aristotelian Thought in the Regulae* [1st ed. Paris, 1975], St. Augustine's Press, 2022.

23 Descartes to Villebressieu, summer 1631 (*AT* I, 216; *CC* I, 87).

numbered". Extension, therefore, is by no means an accident of corporeal substance but constitutes "its true form and essence".[24]

The thinking substance makes its appearance only a few years later, in the *Discourse on the Method*, immediately after the enunciation of the *cogito*: "from this I understood that I was a substance whose entire essence or nature consists only in thinking"[25] (in the *Regulae*, there was still talk of a cognitive power – not better specified – distinct from the body "no less than bones are from blood").[26] Even in the *Discourse on the Method*, however, substance is mobilized above all to raise the question of its essence, or what constitutes its nature, and to show how it is the subject of various properties: if, from the fact of being able do doubt, or from the simple *cogito*, I can pass to *sum*, it is because each property ("doubting", "thinking") necessarily inheres in a substratum, which in this case is, precisely, the thinking substance. A forceful return of this relational point of view occurs four years later, in the *Reasons* attached to the Second Replies, where Descartes defines "substance" as "every thing in which whatever we perceive immediately resides, as in a subject", or "every thing by means of which whatever we perceive exists."[27] According to this definition, independent existence would not be constitutive of the concept of substance.

In the *Meditations*, however, Descartes's approach had been different. As promised in the title of the work, two questions had to be addressed that brought to the forefront the dimension of substantiality as existence in its own right: that of the existence of God and that of the "real distinction" of the mind from the body. "Real distinction" was a purely scholastic expression and its use in the very title of the *Meditations* makes it clear that Descartes finally intended to enter the field on the opponent's terrain. From his perspective, to offer a theory of substance meant challenging the scholastics by taking possession of the cornerstone of their ontology and adapting it to a different metaphysical environment. It is thus not too surprising to see that "substance" is reinstated in the *Meditations* among the clear and distinct ideas immediately present to the mind (as were the "simple natures" of the *Regulae*) replacing "existence" and – in a sequence analogous to that of the *Regulae* – preceding "duration" and "number". There follows, almost in passing, a definition that resumes the first Aristotelian meaning: "substance" is that thing which exists

24 *AT* XI, 33–36; cf. also above, pp. 44–45.

25 *AT* VI, 33; *CSM* I, 138. See Silhon [?], March 1637 (*AT* I, 353; *CC* I, 381).

26 As we will see, Descartes sometimes considers the different parts of the human body as each constituting a substance (cf. *AT* VII, 423).

27 *AT* VII, 161; *CSM* II, 114.

(or is "capable of existing" [*apta existere*]: the same nuance as in Suárez) in itself, that is, independently of anything else.[28]

Such is the situation before the *Principles*, where all the steps of this tortuous rediscovery of substance return in a much more articulated whole. First of all, the reinstatement of substance among the "general notions" is confirmed, the latter being another metamorphosis of the old "common simple natures" (§48: "substance", "duration", "order", "number"). Substance is therefore a general notion, and it is so because it can refer to all "things". But what does it indicate? In the new definition of substance given in the next section of the *Principles*, the first of the two traditional meanings returns: "by substance we cannot understand anything other than the thing that exists in such a way as to have no need of anything else in order to exist" (§51). However, still following Suárez, Descartes now adds that this is true, strictly speaking, only of God. As regards creatures, it should be specified that independence is relative and is understood only horizontally, that is with respect to other created substances, but not vertically, with respect to God. No trace, for the moment, of the other meaning of substance, as the substrate of certain attributes or qualities. It promptly emerges, however, in the following section (§52). It is true that by "substance" is meant that which exists, but, as Descartes now specifies, this gives us only a generic definition of substance; it does not tell us how we can *know* substance and *know* that it actually exists. It is in this perspective that the relational point of view of the 1641 *Reasons* comes back into force: substance can be known only by starting from something that is inherent in it and of which it is the substrate (§53).

Paradoxical as it may seem, "substance" as such does not have any epistemic priority. Even though it does not depend on anything else (other than, possibly, on God) for its existence, it necessarily depends on something else for it to be known, namely, on its perceptible properties. That is what Descartes maintains, without originality on this topic: his source, once again, is Suárez (but, even before that, one might go back at least to Duns Scotus).[29] The novelty is not on this point, but on another, which emerges clearly from the very beginning of the same section (§53). Here, Descartes ventures into completely virgin territory, affirming that for every kind of "substance" there is a "principal attribute", which defines the essence of that substance and allows us to know it. Moreover, this attribute is in fact identified with the substance, because

28 *AT* VII, 45; *CSM* II, 31. See also the 4th Replies: "the notion of substance" lies in the fact that it "*can* exist by itself, that is, without need of any other substance" (*AT* VII, 226).

29 See J.-L. Marion, *Questions cartésiennes II*, pp. 103–104. The point had already emerged in the 3rd, 4th and 5th Replies (*AT* VII, 176, 222, 360).

there is only a "distinction of reason"[30] between a substance and its principal attribute. This is obviously instantiated by the two species of created entities that Descartes has always conceived: the corporeal substance, of which the "principal attribute" is extension, and the thinking substance, which is identified with thought, also qualified as its "principal attribute".

Descartes thus presents himself, once again, as a reformer from within. Although he uses certain scholastic notions, he manages to bend them to his purposes and subtly undermines them. In the *Principles*, he completes a long and articulated thought process: the necessity of giving an intelligible essence to thought and matter had long been needed in Descartes's thought. But the doctrine of the principal attribute emerges definitively only in the *Principles*. It allows him to clearly distinguish between thinking and extended substances, avoiding the materialistic hypothesis and postulating the existence of two very distinct and mutually incompatible kinds of entity. In other words, the doctrine of the "principal attribute" is Descartes's final reply to all those objectors (including Hobbes, Arnauld, and Gassendi) that had accused him of having failed in defining the essence of thought. By doing so, Descartes transfigured the traditional conception of the "attribute," which, in fact, opposed it to "substance" (Descartes himself used this term, up until the *Principles*, as equivalent to "mode" or "accident"),[31] going so far as to define it as constituting the essence of the substance itself and, at the same time, the principle of its knowability.

Can one regard Descartes's reform – or rather revolution – as successful? As often happens, depending on the point of view, the glass will appear half full or half empty. Overcoming the intrinsic paradox of Suárez's thesis (that a substance can be known only through its accidents), Descartes maintains that knowing the substance through the principal attribute means knowing its essence, and not its accidental properties: we can have a clear and distinct idea of created substances precisely because we can have a clear and distinct idea of their principal attribute; and we can have a clear and distinct idea of the uncreated substance, God, because we know Him by an innate idea, which, although insufficient to make us understand the divine infinity in all its perfection, is sufficient to make us clearly conceive "an uncreated substance that thinks and is independent".[32] Thus, Descartes succeeds in constructing a

30 On the "distinction of reason", see *Principles*, 1st Pt., §62–63. On the Cartesian theory of distinctions (and its difficulties): J. Skirry, *Descartes and the Metaphysics of Human Nature*, pp. 39–69.

31 On this point, see Daniel Garber, *Descartes's Metaphysical Physics*, cit., p. 65.

32 *Principles*, 1st Pt., §54. On the difficulty of thinking of God as pure *cogitatio*, cf. however J.-L. Marion, *Sur le prisme métaphysique de Descartes*, p. 107 ff.

theory of substance compatible with the new science and capable of having important rewards in the theological field: he gives a metaphysics to spiritualism through the concept of the thinking substance, and a metaphysics to mechanism through the concept of the extended substance. By elevating the mind to the status of a substance (not merely a "substantial form", as for Aquinas), he also postulated its potential "incorruptibility", offering a concrete foundation to the thesis of the immortality of the soul.

At the same time, however, Descartes also opened some questions that would prove to be extremely troublesome.

1. The first concerns the relationship between finite substances (creatures) and the infinite substance (God). If the principle of substantiality lies in independent existence (or even in the mere "aptitude" for independent existence), how can creatures, which depend on God at every instant, be considered as "substances"? The classic solution, adopted by Suárez, consisted in regarding the notion of substance as "analogous" (that is, neither univocal nor equivocal) in God and in creatures. In the *Principles*, Descartes avoids taking a position on the matter, maintaining only that, of course, there is no univocity between infinite and finite substance: it was the least that could be said, but the question remained open.[33] In a later text, Descartes would affirm that infinity is essential to substance, while every limitation that makes substance finite is accidental.[34] Along this same path, Spinoza, not many years later, would arrive at much more radical conclusions, assuming in its strictest sense the concept of substance as an independent being and subscribing – literally – to Descartes's definition of substance in the *Principles*: if "substance" is truly that which "does not need anything else to exist", then there can be only one substance, and that is God.[35]
2. Difficulties arise, secondly, when Descartes tries to apply to matter, and to the human body, his definition of substance as a self-subsistent being. In the First Part of the *Principles* we read that every single body is a substance as is every single human mind, in the sense that each "body" can exist independently of other parts of matter (§60). The same idea reappears in Part 2 (§55) and is taken to its extreme – and paradoxical –

33 *Principles*, 1st Pt., §51.

34 Descartes to Clerselier, 23 April 1649 (*AT* V, 355).

35 Spinoza's definition of "substance" in the *Ethics* matches exactly Descartes's: "By substance I understand what is in itself and is conceived through itself, i.e., that whose concept does not require the concept of another thing, from which it must be formed" (trad. Edwin Curley).

consequences in a letter to Gibieuf written by Descartes while working on the *Principles*: since matter is infinitely divisible, every part of it is in turn divisible into two parts which are themselves "complete substances".[36] This is an extremely problematic thesis, which plainly contradicts other positions adopted by Descartes. He maintains indeed in *The World*, that there is only one corporeal substance, and this appears to be the only conceivable doctrine for him, since he denies the existence of a vacuum in nature: no part of matter, therefore, can exist, or even be conceived, independently of the others.[37] Moreover, it would seem to follow from this that the human body is not a substance, and indeed we learn from the "Synopsis" of the *Meditations* that the death of the body is nothing other than a mutation of some modes of the unique material substance, of which the body is only a part.[38]

3. Things are no better if we turn to the mind, of which the "principal attribute" is constituted by thought, or, more properly, "consciousness". To affirm that "consciousness" is the essence of thought seems to entail denying the existence of something that lies "under" (in the etymological sense of the term *substantia*) the various actual thoughts that compose the human mind. The Cartesian mind is thought "in act", therefore it is identified with its successive cognitive states: nothing can be conceived "before" or "under" them. The greatest risk of this actualism – which emerged already in Arnauld's Fourth Objections – is the very impossibility of conceiving the mind as a substance that subsists independently of its modifications, that is, of its single perceptions, or conscious states. This very line of reasoning will bring the most important Cartesian *malgré lui* of the 18th century – David Hume – to reduce the human mind to its perceptions, and to declare completely unintelligible the question of knowing what lies beneath them: the mind, for Hume, "is a kind of theatre, where several perceptions successively make their appearance; pass, re-pass, glide away, and mingle in an infinite variety of postures and situations. There is properly no *simplicity* in it at one time, nor *identity* in different; whatever natural propension we may have to imagine that simplicity and identity".[39] As the latter words imply, Descartes's actualism

36 Descartes to Gibieuf, 19 January 1642 (*AT* III, 477).

37 See *Principles*, 2nd Pt., §4–11 (on vacuum, also §16–18). In *Principles*, 2nd Pt., §21, Descartes defines the world as "the whole of corporeal substance" (*universitas substantiae corporeae*).

38 *AT* VII, 14; *CSM* II, 10.

39 David Hume, *Treatise on Human Nature*, 1.4.6.4 (SBN 252–253).

and emphasis on "consciousness" as being the essence of the mind was to bring about not only the definitive self-dissolution of the concept of a thinking substance, but also the crisis of the traditional notion of personal identity (Kant's *Ich-Denke* will be an attempt to find a remedy for this, but without any temptation to hypostatize the mind as a separate being or "substance").

4. Given the problematic nature of Descartes's doctrines on the substantiality of the body and the mind, the question of the type of unity that can be attributed to the human being is even more complex: is man a "substance", or a union of different "things"? Man is sometimes conceived by Descartes as being that which results from the composition of an indivisible substance (the mind) united with certain modes, in continuous variation, and of another substance (the body).[40] In other passages, however, Descartes seems to affirm that man as a whole is to be considered a "substance", and in that case it follows that the mind inheres in another substance – a theory that could be seen as an unexpected return to scholastic hylomorphism (the soul as a "substantial form" of the body).[41] Descartes's position is, however, highly unstable on these topics and was to be overwhelmed by opposed extremisms: his early follower Henricus Regius – to whom we will return – immediately translated Descartes's theory of substance into materialistic terms, casting doubt on the substantiality of the mind. Bishop Berkeley would take the opposite path at the beginning of the 18th century, denying any substantiality to the body. In the meantime, however, another early Cartesian – Baruch Spinoza – had already denied the substantiality of both (mind *and* body) making them modes of the unique divine substance.

3 Matter, Motion and Rest

By publishing the last three parts of the *Principles*, Descartes finally gave satisfaction to his friends and correspondents – especially Mersenne and Huygens – who had been tormenting him for a decade to "bring to light" his *World*. But he did not limit himself to publishing his theories in physics, which they prized above all else (Mersenne even postponed a trip to Italy to await the volume's

40 See the passage quoted above, note 38.

41 Paul Hoffman insists on this point in "The Unity of Descartes' Man" [1986], later in Id., *Essays on Descartes*, Oxford, OUP, 2009, pp. 15–32. Cf. Descartes to Mesland, 9 February 1645 (*AT* IV, 166–67).

release and take it with him).[42] Now Descartes had greater ambitions: he wanted to publish his new physics together with his new metaphysics, and to show how the former depended on the latter in its supporting structures, thus overturning the traditional scholastic approach, in which metaphysics constituted the final part of philosophy courses, preceded by logic, ethics and physics. According to the celebrated metaphor of the letter-preface to the French translation of the *Principles* (1647) addressed to Picot,[43] the "tree of science" is supported by the "trunk" of physics, which, in turn, sinks into the ground its metaphysical roots. In more modern terms, Cartesian science was to appear together with its own epistemological foundation, from which it drew the lifeblood that allowed it to subsist.

The *Principles* set out Descartes's physics in its most mature state: not a simple Latin translation of *The World*,[44] nor even an expanded *World* transformed into a manual, but a text with its own characteristics. Descartes's philosophy of nature had evolved: the initial enthusiasm had given way to a more moderate position. The revolutionary programme of the *World*, that of an entirely demonstrative and *a priori* system of physics,[45] had proven impracticable, given the incalculable variety of the natural world. From the "principles" of physics, Descartes now writes, one can deduce "many more things than we see in the world and also many more than we could travel through in thought in our entire lifetime".[46] Mechanism has two faces, which Descartes had already distinguished in the *Discourse on the Method*: one *a priori*, dependent on a metaphysically founded model; one *a posteriori*, to be corroborated through empirical observation. While the Second Part of the *Principles* is devoted to the exposition of the fundamental notions of physics, deduced from the innate idea of "extended substance" and from the attributes of God, the two following parts contain the explanations of specific natural phenomena.

As regards the fundamental notions of physics, the *Principles* record a notable deepening of the Cartesian effort to understand the rational structure of nature. The laws of conservation – founded theologically on divine immutability and here repeated without considerable variations with respect to *The*

42 Huygens to Descartes, 15 February 1644 (*AT* IV, 769).

43 *AT* IX–1, 1–20. On the genesis of this text, see Descartes to Elizabeth, 31 January 1648 (*AT* V, 111–112).

44 On 31 January 1642, Descartes writes to Huygens that he intends finally to publish *The World* after having taught him to "speak Latin" (*AT* III, 523). An analytical commentary of the 2nd Part of the *Principles* can be found in F. de Buzon, V. Carraud, *Descartes et les Principia II. Corps et mouvement*, Paris, PUF, 1994.

45 See above, p. 46.

46 *Principles*, 3rd Pt., § 4.

World (the tendency to continuity of uniform and rectilinear movement, conservation of the same quantity of movement in the universe) – are no longer sufficient.[47] In what is also intended as a "synthetic" manual, Descartes must define and discuss systematically the main concepts of physics, starting from the two cornerstones of mechanism: matter and motion (the question of time being quickly settled).[48]

Regarding the definition of matter, Descartes repeats what he had already said in various texts: "matter" is identified with geometric extension, devoid of all the qualities that human sensory perception attributes to bodies (colours, smells, flavours, etc.). This infinite extension – or rather "indefinite", as is also reiterated in the *Principles* – is also infinitely divisible, since it is not conceivable that a part of extension cannot be further divided into two. We have already shown the problems that this definition entails from a metaphysical point of view, due to the difficulty of distinguishing individual extended substances within matter considered in general. Analogous difficulties blossom, in the Second Part of the *Principles*, from a strictly physical point of view, when it comes to defining space, place and body. Descartes's approach is, as usual, reductionist: these terms can be used but, among the objects to which they refer, there is only a "distinction of reason", because in reality they are still parts of matter-extension considered from different points of view. That, in the world, there exists a "space" distinct from the parts of matter, or that there exist "places" filled by them, is a naive presupposition of common sense that the new mechanistic and Copernican science had definitively overturned: in the universe, every part of matter is in motion with respect to some other and the idea that there is something like a fixed "place", gradually filled by bodies in motion, is purely illusory.[49] Thus, from the questions of "place", "space" and "body" (not yet clearly defined), Descartes has passed almost imperceptibly to that of motion, which will prove more complex than expected.

Descartes had always lacked not only a theory, but even an acceptable definition of motion. At the beginning, he had programmatically refused to consider it: in the *Regulae*, "motion" was one of the "material simple natures"

47 *Principles*, 2nd Pt., § 36–40.

48 Cf. *Principles*, 1st Pt., § 55: "duration" is not distinguished from substance, insomuch as the latter persists in existence; "time" is the subjective measure of duration (§ 57). Arnauld, in 1648, asks Descartes "what time is properly, and how it differs from the succession of a permanent thing [...]" (Arnauld to Descartes, 3 June 1648 – *AT* V, 189), but Descartes's reply, sent the following day, is disappointing (*AT* V, 193). On some scholastic antecedents, see Jean-Luc Solère, "Descartes et les discussions médiévales sur le temps", in *Descartes et le Moyen-Âge*, 1997, pp. 329–348.

49 *Principles*, 2nd Pt., § 10–15.

and as such indefinable, being known by the mind by means of an intuitive glance without requiring any further clarification. Descartes seemed confident that this was a good solution: "who does not know what movement is?"[50] As for the Aristotelian definition (motion is "the actuality of what is potentially, *qua* potential"),[51] it is contextually cited, in the *Regulae*, only to point out how it makes things more obscure, instead of clarifying them. According to Descartes, this resembles more a magic formula than a philosophical proposition. The same sarcasm – partially unjustified, moreover[52] – returns in *The World*, accompanied however by a first attempt at an alternative definition, in terms that are all in all still very close to the scholastic concept of local motion: motion is "that which makes bodies pass from one place to another, successively occupying all the intermediate spaces".[53] Such a definition, Descartes states, is even "easier to conceive" than the lines of the geometers (because to generate a line from a point, and therefore conceive it, it is necessary to already possess the notion of motion). This same traditional conception of motion as a passage from one place to another returns in the *Dioptrics* and in other contemporary texts.[54]

In the *Principles*, however, Descartes turns the page. And the reason is simple and even explicit, although he does not confess that he is also arguing against himself when (in Part 2, §24) he takes issue with the "ordinary opinion" (*sensus vulgaris*) that defines motion as a passage of a body from one place to another. The latter definition is now useless for him after positing that "place" and "body" are the same thing and that there are therefore no fixed places in the universe, because every single body is in motion with respect to another. The definition offered in *The World* is therefore epistemologically downgraded: it does not convey the true "reality" of motion, but only an external characterisation relative to the point of view of an observer: to someone travelling on a ship, it seems as if he is standing still with respect to the ship itself (the example comes directly from Galileo's *Dialogue*). The "true" definition of motion given by Descartes in Part 2, §25 of the *Principles* runs as follows: motion is

50 *AT* X, 425–426; *CSM* I, 48–49 (Rule XII). A similar nonchalance about the concept of motion can be found in Descartes's letter to Mersenne of 16 October 1639 (*AT* II, 597).

51 *Motus est actus entis in potentia, prout in potentia est*. On Descartes's possible sources, see Dennis Des Chene, *Physiologia: Natural Philosophy in Late Aristotelian and Cartesian Thought*, Ithaca, Cornell Univ. Press, 2000, p. 26 ff.

52 As Pierre Costabel writes, Cartesian motion is also a sort of potential "energy" endowed with directionality. See also Garber's *Descartes' Metaphysical Physics*, pp. 188–193.

53 *AT* XI, 39 (*The World*, chapter 7). Cf. Thomas Aquinas, *in Phys*., IV, 17 (576): "*inter alios motus, primus est motus localis, qui est a loco in locum secundum aliquam magnitudinem*".

54 *AT* VI, 89 (*Dioptrics*, *I*); Descartes to Morin, 12 September 1638 (*AT* II, 364; *CC* I, 386).

"the transport of a part of matter, or of a body, from the vicinity of those which immediately touch it, and which we consider as at rest, to the vicinity of some others". In the same section of the *Principles*, Descartes finally also defines the "body", as "everything which is transported together" in motion, or as a mass of particles of matter at rest with respect to each other, which inertially move away from the surrounding matter – where we immediately notice that the definitions of "body" and "motion" rely on each other, with typical Cartesian circularity.[55]

The new definition of motion, rather cumbersome as such, has several advantages, one of which is opportunistic: it allows Descartes, in the Third Part of the *Principles*, to write that the earth does *not* move (§ 26), once again avoiding an open confession of his Copernicanism.[56] But this time it is not a question of pure and simple dissimulation. To understand it, we must remember that the cosmology of the *Principles* is based on a hydrostatic model, that of the vortices already presented in broad terms in *The World*. The latter system has the great advantage – from Descartes's point of view – of explaining the mechanism of the solar system without resorting to any form of action at a distance or cosmic attraction. Vortices are made up of flows of matter of the second element (gaseous) in which the larger celestial bodies, formed by particles at rest with respect to each other, are dragged like ships on a river. The movement of the planets, therefore, does not depend so much on the planets themselves, which are inert, as on the material fluid in which they are immersed and which drags them around the sun.[57] In this sense – but *only* in this sense – Descartes can affirm that the earth is immobile, thus paying homage to the dictate of the Roman Inquisition. The earth does not move, indeed, if we take as a reference the fluid in which it is immersed and by which it is dragged; "yet it moves" – as Galileo is said to have muttered after his forced abjuration – with respect to the sun.

Descartes's change of position on the definition of motion also has another implication, this time concerning rest. Already in *The World*, arguing against Aristotelian physics (where rest is considered as a simple privation of motion),

55 See S. Gaukroger, *Descartes' System of Natural Philosophy*, p. 99; F. de Buzon, V. Carraud, *Descartes et les Principia II*, cit., p. 81. See also Andrea Strazzoni, "Descartes on Place and Motion: A Reading through Cartesian Commentaries", *Berichte zur Wissenschaftsgeschichte*, 47 (2024), pp. 179–214.

56 See Tad Schmalz, "Galileo and Descartes on Copernicanism and the cause of the tides", *Studies in History and Philosophy of Science*, vol. 51 (2015): pp. 70–81.

57 *Principles*, 3rd Pt., §24–40. On the hydrostatic model, see S. Gaukroger, "The Foundational Role of Hydrostatic and Static in Descartes' Natural Philosophy", in *Descartes' Natural Philosophy*, pp. 61–80.

Descartes had asserted that rest is a *positive* quality of bodies. Now, he adds that rest also has its own "force", mirroring that which a body acquires with its motion.[58] In short, motion and rest are relative entities when two contiguous bodies are compared (it is indifferent to maintain that one of them moves away from the Earth or that the Earth moves away from the other), but nonetheless real: motion and rest are "modes" of the body that determine its behaviour. Descartes therefore proposes a middle way between the total relativity of every state of motion or rest (which would prevent us from thinking about their reality, reducing them to entities of reason)[59] and the thesis of an absolute space, a sort of universal container of the universe, capable of providing the real coordinates of every part of matter and therefore determining their condition of motion or rest (such will be Newton's solution).

It is from this point of view that we should read the ill-famed "rules" for the collision of bodies (or "rules of impact"), which constitute perhaps the most important, and most controversial, addition in the physics of the *Principles* (Part 2, §45–53) compared to *The World*.[60] It was also a necessary addition, because in the universe of mechanism every event is ultimately reduced to a collision between parts of matter. Defining the rules of impact therefore meant, on Descartes's part, providing the fundamental laws of every natural event, according to the programme of his entire physics.

Contested at the outset by physicists such as Christiaan Huygens and Leibniz, the rules of the *Principles* are nevertheless not devoid of legitimacy from Descartes's viewpoint. The most discussed and counterintuitive rule is the fourth, by which it is postulated that a body at rest will never be moved (in a vacuum) by a body of smaller mass that collides with it, regardless of the speed of the latter.[61] Here, Descartes not only contradicts common experience,

58 Cf. *AT* XI, 40 (*The World*, chap. 7). In recent decades, a broad debate has developed between an "occasionalist" interpretation of Descartes (according to which God is the sole cause of every event in the material world) and one that grants matter its own real "force". For a recent reappraisal of the "occasionalist" interpretation, see Nicholas Theo Westberg, *Descartes and the Metaphysics of Causality in the Material World*, Boston University, PhD Thesis, 2023. For a "causal realist" reading, see for instance Tad Schmaltz, "The Metaphysics of Rest in Descartes and Malebranche", *Res Philosophica*, Vol. 92/1, ì 2015, pp. 21–40.

59 On this subject, see also a handwritten note by Descartes in the *Principles* (*AT* XI, 656 ff.).

60 See Desmond M. Clarke, "The Impact Rules of Descartes' Physics." *Isis*, vol. 68/1 (1977), pp. 55–66; Tad M. Schmaltz, *Descartes on Causation*, pp. 98–99; 112–115; D. Garber, *Descartes' Metaphysical Physics*, pp. 234–242.

61 *Principles*, 2nd Pt., §49 (and cf. §29).

but also his explanations offered to Mersenne a few years earlier.[62] This paradoxical fourth rule is founded on his conception of the positivity of rest: the force of rest of a body with respect to another depends on its mass but also on the speed with which it is approached by the other body; thus, as the speed of the moving body increases, the force of rest of the body that is struck also increases proportionally: the latter, therefore, will never move after the impact if it has a greater mass than the moving body.[63]

With the rules of collision between bodies, Descartes believed that he had completed the *a priori* framework that he deemed necessary to explain all the phenomena of nature: the elaboration of the mechanistic model was now complete. It was accompanied, in the Third Part of the *Principles*, by a new exposition of the cosmogonic "fable" of the *World*, here replaced by an alternative rhetorical device: a "false" supposition, from which, however, as if by magic, true conclusions can be drawn. The purported "false" supposition is that God gave a certain configuration to the original matter, dividing it into more or less equivalent parts and directing them in such a way as to compose vortices, each of which is destined to form a planetary system with characteristics similar to the solar system (including, perhaps, life).[64] This supposition is called "false" since it is contrary to the Bible, which teaches us that the world was created from the very beginning with all the perfection it was supposed to have. However, Descartes dares to add that "it matters very little in what way I suppose here that matter was arranged at the beginning"; because, whatever its initial configuration, matter "must continually change until it finally composes a world entirely similar to this one". The foundation of this statement

62 Descartes to Mersenne, 25 December 1639, *AT* II, 627: "For *inertia*, I think I have already written that in a space which is not at all impeding, if a body of a certain size, which is moving with a certain speed, meets another which is equal in size to it, and which has no movement, it will communicate half of its own to it, so that they will both go half as fast as the 1st did; But if it encounters one that is twice its size, it will give it two thirds of its motion, so that together they will not travel further in three moments than the 1st did in one. And generally speaking, the larger the bodies, the slower they must move when pushed by the same force". See also Descartes to Mersenne, 28 October 1640, *AT* III, 210–211 (and cf. Gaukroger, *Descartes' System*, pp. 126–128).

63 Descartes realised the difficulty of the rules of collision of bodies: cf. Clerselier, 17 February 1645 (*AT* IV, 183–88). Hence, perhaps, some additions that can be found in these sections in the French version of the *Principles* (1647 – see *AT* IX, 89–91). For a deeper analysis, see Daniel Garber, *Descartes' Metaphysical Physics*, pp. 231–241.

64 *Principles*, Part 3, §§46–65. The thesis of the plurality of planetary systems distinguishes Descartes from Copernicus, but also from Galileo and Kepler. The most obvious antecedent, without going as far as Lucretius or Democritus, is naturally Giordano Bruno. On life on other planets – a theme destined to be very popular in the seventeenth and eighteenth centuries – see *AT* V, 168 (*Conversation with Burman*).

is a necessitarian conception in which what is "possible" is what has not yet happened but which will happen sooner or later: "these laws being the cause that matter must successively take all the forms of which it is capable, if one considers all these forms in order one will finally be able to arrive at that which currently exists in this world".[65]

In these dense pages of the *Principles*, metaphysics triumphs over physics but also, implicitly, over theology, because the creation in the six days of the book of *Genesis* loses its exceptional or singular character: the world would have reached its current state, sooner or later, however God had created it (it is no coincidence that in the *Conversation with Burman* the biblical narrative will be described as "metaphorical").[66] As for the Earth, it is not necessary to suppose any *ad hoc* divine decree to justify its position in the cosmos: like the other planets, it joined the solar system after having fallen from its state as a star and after the collapse of the vortex to which it belonged.[67] It would be childish, on the other hand, to believe that God created the universe only for humans: the immensity of interstellar space revealed by the new Copernican astronomy attests to this: the earth, home of human beings, "compared to the sky, is but a point", a grain of sand in the limitless cosmos.[68] As opposed to Pascal's unbeliever, who will be terrified by such a desperate vision ("the eternal silence of these infinite spaces frightens me"),[69] Descartes displays great serenity in this regard. The material fabric of the cosmos appears to him to be completely intelligible and clear: the universe is the theatre of a continuous game of corporeal particles which, following necessary and constant laws, give rise by their collisions to all the combinations compatible with the essence of matter. A conception which Descartes will not develop further but which will not go unnoticed: Leibniz will see in it the seed of Spinoza's and Hobbes's atheism.[70]

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65 *Principles*, 3rd Pt., § 47 (and Mersenne, 9 January 1639 – *AT* II, 485). For possible scholastic reminiscences: Vincent Carraud, "La matière assume successivement toutes les formes", *Revue de métaphysique et de morale*, 2000, pp. 57–79.

66 *AT* V, 169.

67 *Principles*, 4th Pt., § 2 (this is another novelty compared to the *World*).

68 *Principles*, 3rd Pt., § 2–3; § 40–41. Assuming the rotary motion of the earth around the sun, the absence of detectable parallax with respect to the fixed stars led to their distance from the earth to be considered as almost infinite (cf. *ibid.*, § 40).

69 Blaise Pascal, *Pensées*, ed. Ph. Sellier, fragment 233. Contrary to unbelievers, "those who have a living faith in their hearts see immediately that all that exists is nothing other than the work of the God they adore" (Sellier, fragment 644).

70 See Leibniz, *Philosophische Schriften*, ed. Gerhardt, IV, 334: "Descartes says [...] that matter successively takes all possible forms, and that, thus, it must finally have come to that which he has supposed. But if what he says is true [...] it follows that there is neither

4 Galileo's Revenge: Science and Experience

Between the writing of the first chapters of *The World* (in around 1630) and that of the *Principles* (in 1641–43), something extremely important had happened in European science: the publication of Galileo's two most important books: first, the *Dialogue Concerning the Two Chief World Systems* (Rome, 1632) and then the *Discourses and Mathematical Demonstrations Concerning Two New Sciences* (Leiden, 1638). Galileo's works opened a new path, based on "empirical experiments and certain demonstrations", which would be followed by a good part of early modern and contemporary science. Galileo's approach was consonant in some ways with that of Descartes – for its full-blooded mechanism, its rejection of scholastic knowledge, and finally its Copernicanism – but in other ways antagonistic and competitive. While Descartes privileged a deductive approach based on strong metaphysical tenets, Galileo assiduously cultivated field research, with an extensive use of mathematics in the analysis of empirical data, associating it with a metaphysics outlined in broad strokes.[71]

Descartes's attitude towards Galileo is generally characterized by a certain arrogance, often seasoned with an affected lack of interest: he borrows the *Dialogue Concerning the Two Chief World Systems* only "for thirty hours" and, a few years later, claims not even to know whether the author is still alive.[72] In cases where Galileo's research risks overlapping with his own, lack of interest becomes distrust or worse. Descartes's reactions to Galileo's progressive disclosure of the results of his investigations into falling bodies are highly indicative from this point of view. At the end of the year 1632, Mersenne – who had Galileo's *Dialogue* before his eyes – probably communicated to Descartes the formulation of Galileo's law: the space covered by falling bodies is proportional to the square of times (that is, if in the first unit of time one unit of space is covered, in the second another three units will be travelled and therefore four in total, in the third another five and nine in total, and so on).[73] Descartes,

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choice nor providence, that what does not happen is impossible, and that what does happen is necessary, precisely as Hobbes and Spinosa say in clearer terms".

71 See William Shea, "Descartes as Critic of Galileo", in R.E. Butts, and J.C. Pitt (eds), *New Perspectives on Galileo*. The University of Western Ontario Series in Philosophy of Science, vol 14, Springer, Dordrecht, 1978; William Shea, "The 'Rational' Descartes and the 'Empirical' Galileo", in *The Reception of the Galilean Science of Motion in Seventeenth-Century Europe*, ed. C.R. Palmerino and J.M.M.H. Thijssen, Dordrecht, Kluwer, 2004, pp. 67–82.

72 Descartes to Mersenne, 14 August 1634 and 11 June 1640 (*AT* I, 303–304, III, 74).

73 See Galileo, *Dialogue on the Two Chief World Systems*, Edizione Nazionale, vol. VII, p. 248: "The spaces passed by the moving body departing from rest [...] are to each other like the squares of the times".

who for his part had arrived – as we have seen – at different results,[74] initially professed a kind of epistemological scepticism: Galileo "*cannot* have reached the truth" because he did not consider the differences between the various materials of which heavy bodies are made (but this was precisely the crux of Galileo's discovery).[75] Three years later Descartes's judgement was still drastic: Galileo's law "*cannot* be true" since the resistance of the air means that, once they have reached a certain speed, bodies do not accelerate further (a question already raised by Beeckman).[76] In 1636, Descartes wrote to Mersenne – who, in the meantime, had published a French version of important research by Galileo – that to examine what Galileo says about motion would require "more time than I could devote to it now". Again, on 22 June 1637, "neither Galileo, nor anyone else" can determine anything that is clear and demonstrative about falling bodies, "if he does not first know what weight is and if he does not possess the true principles of physics".[77]

In the summer of 1638, Descartes had the opportunity to "browse" Galileo's *Discourses* for an even shorter time (two hours) than he had devoted to the *Dialogue*, after promising Mersenne to examine them and to send him his notes. Apparently, he was not very impressed by them: "I find so little in them to fill the margins that I believe I could write in a very small letter everything I could note down".[78] However, in the following October, he finally sent Mersenne his reading notes. The tone was still one of superiority, but the first positive judgments began to emerge: Galileo "philosophizes better than the average", because he rejects scholasticism and is seeking the mathematical laws that govern natural phenomena. Galileo's limit, however, is again that of not seeking the "first causes", and of dedicating himself to particular and futile questions with the sole aim of "enhancing his goods". Descartes's obsession with being the first and only innovator of science (Galileo, by the way, was not free from the same vice) emerges here again: he claims that his philosophy had drawn nothing from Galileo, and that, *a contrario*, Galileo had perhaps taken over his musical doctrines (with yet another dig at Beeckman, who had circulated Descartes's *Compendium musicae* far and wide). In conclusion: "I see nothing in his books that attracts me and almost nothing that I would like to

74 See above, p. 10–12.

75 Descartes to Mersenne, November or December 1632 (*AT* I, 261; *CC* I 100–101).

76 Descartes to Mersenne, 1635 or 1636 (*AT* IV, 687–688). See Beeckman, *Journal*, I, p. 264 ff., and also Descartes to Mersenne, 18 December 1629 (*AT* I, 88–96; *CC* I, 41–43).

77 Descartes to Mersenne, March 1636 and 22 June 1637 (*AT* I, 340–41, 392; *CC* I, 135, 166).

78 Descartes to Mersenne, 23 August 1638 (*AT* II, 336; *CC* I, 380).

recognize as my own".[79] Above all, nothing that had to do with the law of falling bodies.

In the end, however, Descartes was forced to surrender: first, with a remark written between the lines in 1640[80] and then more explicitly after Galileo's death (1642) in a long letter to Huygens dated 1643: almost a small treatise on hydraulics, destined however to remain unpublished. Here Descartes, taking back everything he had previously said, recognizes that bodies fall by gradually covering a greater distance in proportion to the "square of the times", and also manifests his agreement with Galileo regarding the parabolic trajectory of projectiles, determined by the composition of a uniform horizontal motion and a uniformly accelerated vertical motion.[81] Descartes's unconditional surrender can perhaps be explained by the ever wider diffusion of Galileo's laws of motion among the scientific community, despite fierce resistance and a thousand objections.[82] But it remains a grudging surrender, to which only Descartes's correspondence bears witness. Indeed, in the *Principles*, nothing transpires of what is one of the most important results of seventeenth-century physics before Newton. In that work, as in *The World*, the question of falling bodies is not even mentioned: not a great issue for Descartes.[83]

However, it would be exaggerated to attribute Descartes's negligence to his self-esteem, or pride, alone. His disagreement with Galileo was above all methodological, and concerned three fundamental aspects, intertwined with each other: the metaphysical foundation of physics, the contribution of empirical observations and the use of mathematical models to explain natural phenomena.

If the law of falling bodies is not even worthy of mention in the *Principles*, it is, first of all, because it cannot be deduced from the general laws of motion: it is at most a correct mathematical interpretation of an empirical fact, not a theorem demonstrable *a priori* such as Descartes had tried to construct – without attempting any experimental verification – in 1619. Furthermore, for Descartes, knowing how fast bodies fall is not in itself very significant, because that does not yet yield any physical explanation of gravity. "To explain", in the physics of the *Principles*, means above all to identify and describe the material events,

79 Descartes to Mersenne, 11 October 1638 (*AT* II, 380–382, 388; *CC* I, 392–395).

80 Descartes to Mersenne, 29 January 1640 (*AT* III, 11). On the various stages of the Descartes's step backward, cf. V. Jullien and A. Charrak, *Ce que dit Descartes …*, cit., p. 165 ff.

81 Descartes to Huygens, 18 February 1643 (*AT* III, 807–812).

82 See Carla Rita Palmerino, "Infinite Degrees of Speed: Mersenne and the Debate over Galileo's Law of Free Fall", *Early Science and Medicine*, 1999, pp. 269–328.

83 In 1629 (*AT* I, 71; *CC* I, 35–36) Descartes had told Mersenne that he wanted to insert "in my physics" an analysis of the falling of bodies: it would remain a mere intention.

generally invisible, that underlie natural phenomena. In this sense, gravity can also be explained: it depends, as was already clear in *The World*, on the pressure of subtle matter, which, with its vortical movement around the earth, pushes the particles of the other elements toward the centre, that is, downwards.[84] As Descartes observes on another issue: if Galileo perhaps succeeds in correctly describing the physical *fact* (*quod ita sit*), only he – Descartes – can truly explain its *cause* (*cur ita sit*).[85] Science, for both Descartes and Aristotle, is therefore knowledge of causes. For Galileo, on the other hand, it is the measurement of empirical data, isolated in the simplified form permitted by experiments, and their reduction to general laws that are mathematically structured and universally valid. As for the "cause" of gravity, according to Galileo, we know very little about it.[86]

Cartesian physics, unlike Galilean physics, starts from causes and not from effects, explaining the latter through the former. The first cause is naturally God, who at every instant recreates every single piece of matter by communicating the same movement to it. Divine immutability and omnipotence guarantee the conservation of the quantity of movement in the universe and its indefinite continuation. God does not have the slightest power over His own attributes: a world with different general laws of motion is therefore not even conceivable.[87] Everything that can be deduced from these laws maintains the same necessity; what remains is a mere hypothesis or mathematical construction to be verified by experience: just as two clocks can mark the same time but have different mechanisms inside, so the same natural phenomenon admits different explanations, all compatible with the essence of matter, the choice between which will ultimately depend on experiment.[88] Empirical observation, for Descartes, will never be able to change one iota of the general principles of physics: "even if experience seemed to make us see the contrary, we

84 *Principles*, 4th Part, § 20–27; Descartes to Mersenne, 29 January 1640 (*AT* III, 9–10). See already chap. 11 of *The World* ("Of Heaviness"), *AT* XI. 72–80.

85 Descartes to Mersenne, 15 November 1638 (*AT* II, 433; *CC* I, 413). Descartes often reproaches Galileo for constructing "without foundation" (*AT* II, 380, 385; *CC* I, 391, 393).

86 Galileo Galilei, *Dialogue on the Two Chief World Systems*: "it is not that we really understand more that the principle or the virtue is that which moves the stone downwards, than that we know what moves it upwards, separate from the progenitor [...] except (as I said) the name, which we have assigned to it as more singular and specific, of 'gravity'" (National Edition, VII, p. 261).

87 Cf. *AT* VI, 43; *CSM* I, 132–133: even if God "created more worlds", the laws of nature would be "observed" in each of them (*Discourse on the Method*, 5th Pt.).

88 *Principles*, 4th Pt., § 204. See also above, p. 85, note 111.

should, nevertheless, give more faith to our reason than to our senses".[89] When Pascal believed he had demonstrated, with his famous experiments, the existence of a vacuum in nature, Descartes replied imperturbably that it must in any case be assumed that subtle matter fills the spaces left free by the heavier particles: absolutely never, however, could such experiments invalidate the equation between space and matter, known *a priori* and guaranteed by divine truth.[90]

If the relationship between science and experimental research in Cartesian physics is not always clear, the application of mathematics to the study of nature, which Descartes considers to be one of the qualifying points of his physics ("all my physics is nothing but geometry"), is equally complex and full of difficulties.[91] The question of falling bodies is not the only one that Descartes glosses over in the *Principles*. In general, all his more specifically physical-mathematical investigations remain excluded from this work, just as they had remained excluded from *The World*, even though they are attested by private correspondence. Descartes did not even want to be named when (in 1644) Mersenne inserted extracts from his friend's unpublished texts among his own reflections and experiments in this field.[92] If empirical phenomena are difficult to interpret with mathematical tools, it is also because of the quantity of variables in play and the undeniable difficulties of calculation. And Descartes is undoubtedly beating a retreat, compared to his earlier works, when he takes issue with Galileo precisely because he refers too often to the infinite.[93] This rebuke is indeed paradoxical, but revealing: after having built all his metaphysics, or almost, on the idea of the infinite, Descartes slows down precisely in physics, without understanding how much infinitistic mathematics can be of help in the study of natural phenomena. And this is perhaps the weakest point of all of Descartes's physics, which in turn follows logically from the intrinsic limits of his conception of mathematics: a mathematics that does

89 *Principles*, 2nd Pt., § 52 (on the rules of collision between bodies). On this point see already *The World*, chap. 7 (*AT* XI, 43).

90 Cf. D. Garber, *Descartes' Metaphysical Physics*, cit., pp. 136–143 (who however minimises Descartes's dogmatism on this point).

91 Descartes to Mersenne, 27 December 1638 (*AT* II, 271; *CC* I, 361): "Even though what I wrote regarding geostatics is not in any way worthy of being published, if however, given what you told me, people wanted this done, it is something of little importance to me, as long as my name is not put on it".

92 See Descartes to Mersenne, 27 July 1638 (*AT* II, 271; *CC* I, 349) and 3 February 1643 (*AT* III, 613). And see, in this regard, D. Garber, "A Different Descartes: Descartes and the Program for a Mathematical Physics in His Correspondence", in *Descartes' Natural Philosophy*, ed. S. Gaukroger *et al.*, pp. 113–130.

93 Descartes to Mersenne, 11 October 1638 (*AT* II, 383; *CC* I, 165).

not programmatically give access to the dimension of the infinite and which for this reason will soon be supplanted by that of Leibniz and Newton.[94]

This explains in part why, in the *Principles* as in *The World*, there is in reality very little that is mathematical: many words and no equations. All the explanations are offered in terms of a difference – not quantified – in motion, which in turn generates a difference in the shape and position of the bodies: this results in models that are certainly ingenious but which, for the most part, will never enter the scientific vulgate (such is the case, for instance, of the explanation of magnetic fields in terms of flows of subtle matter with screw-shaped particles that penetrate the most solid matter).[95] Hence the merciless judgment of Christiaan Huygens: when he was 15–16 years old – in the house of his father Constantijn, a great friend of Descartes's – he took the doctrines of the *Principles* at face value, then he discovered that they were nothing but a "novel". Leibniz will also speak of Cartesian physics as a "beautiful novel" (*beau roman*), not to mention Pascal's "useless and uncertain" Descartes (referring precisely to his mechanistic explanations of physical phenomena).[96] All that irony was possibly too easy, as will be that of eighteenth-century posterity regarding the theory of vortices. The later theory was perhaps fragile, but also the only one that explained the movement of the planets on an inertial basis, without postulating the existence of occult forces inherent in matter; the only one, therefore, consistent with the paradigm of mechanism – and for this reason the last of the Cartesians, Fontenelle, would still defend it a century later.

In short, the greatness of Descartes, even in physics, is not measured by the success of his individual explanations, but by the entirely philosophical ambition of his overall programme: to provide a description of reality based on certain and indubitable theories, metaphysically guaranteed and traced back to a very small number of general principles, while fully aware that perhaps "many centuries" will pass before all the necessary consequences can be drawn from the theories proposed.[97]

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94 In this regard, see Jules Vuillemin, *Mathématiques et métaphysique chez Descartes*, Paris, PUF, 1960; V. Jullien, "Les frontières dans les mathématiques cartésiennes", *Historia scientiarum*, 1999, pp. 211–38.

95 *Principles*, 4th Pr., § 144–183; Descartes to Huygens, 24 May 1643 (*AT* III, 816–17).

96 Huygens's passage is quoted by F. Chareix, *La Philosophie naturelle de Christian Huygens*, Paris, Vrin, 2006, p. 110. See Leibniz, *Philosophische Schriften*, IV, p. 302. See Pascal, *Thoughts*, ed. Sellier, fr. 118: "Descartes. We have to say in general 'Everything happens as a result of shape and movement', because it is true. But saying which shapes and what movements and setting up the machine – that is ridiculous, because it is useless and uncertain and tedious".

97 *AT* IX–2, 20 (letter-preface to the French edition of the *Principles*).

On the other hand, Descartes despised Mersenne's hypothetical approach to physics, sharply criticized – as we have seen – in texts such as the Second Replies and the response to *Hyperaspistes* (i.e. Mersenne himself). In March 1640, Descartes declared, precisely to Mersenne, that "as for physics, I would believe I knew nothing about it, if I could only say how things can be, without demonstrating that they cannot be otherwise".[98] For this reason, he added, he was still hesitating about publishing "[his] principles".[99] The choice to publish them, and in a work bearing that title, would only be made when he believed he had achieved in this regard not a mere "moral certainty", valid at most for the needs of everyday life, but a full "metaphysical certainty".[100] This is the epistemological background of the conclusion of the *Principles* published in 1644, in which Descartes declares, with obvious pride, that things cannot be different from his description of them.[101] With these words, the vow he had implicitly expressed in his 1640 letter to Mersenne was finally fulfilled.

5 From Apostle to Apostate: Henricus Regius

The close connection between physics and metaphysics, certainly the main boast of the *Principles* and in general of Descartes's thought since the early 1630s, was not as solid as he would have wished. The task of dissolving it fell to a Dutch doctor from Utrecht, first an apostle (and even a "martyr" in Baillet's terms) and then an apostate (or "schismatic") of the Cartesian sect.[102]

Regius is sometimes considered by Descartes scholars as a "pupil" or "disciple" of the philosopher. However, the two had more or less the same age and Regius's career had begun well before knowing Descartes's theories.[103]

98 Descartes to Mersenne, 11 March 1640 (*AT* III, 39).

99 *Ibid.*

100 *Principles*, 4th Pt., §205–206.

101 *Ibid.* Note that this is hardly compatible with Machamer and McGuire's thesis in *Descartes's Changing Mind* (p. 142) regarding Descartes's "epistemic stance" in the *Principles*.

102 See Baillet, Vie, II, pp. 271–72. On Regius, see Erik-Jan Bos's introduction to his edition: *The Correspondence between René Descartes and Henricus Regius*, Universiteit Utrecht (thesis), 2002; Id., "Henricus Regius and the Limits of Cartesian Philosophy" in D. Kolesnik-Antoine (ed.), *Qu'est-ce qu'être cartésien?*, Lyon, ENS Editions, 2013, pp. 53–68; Tad M. Schmaltz, "The curious case of Henricus Regius", in Steven Nadler, Tad M. Schmaltz & Delphine Antoine-Mahut, *The Oxford Handbook of Descartes and Cartesianism*, 2019; Andrea Strazzoni, *Dutch Cartesianism and the Birth of Philosophy of Science*, Berlin, De Gruyter, 2019; Delphine Antoine-Mahut, *L'Autorité d'un canon philosophique. Le cas Descartes*, Paris, Vrin, 2021.

103 See Andrea Strazzoni, "How Did Regius Become Regius? The Early Doctrinal Evolution of a Heterodox Cartesian", *Early Science and Medicine*, 23/4 (2018), pp. 362–412.

Henricus Regius, born Hendrik de Roy (1598–1679), descended from a family of wealthy master brewers from Utrecht. He had studied medicine in France but then moved to Padua, where he obtained his doctorate in 1623: among his supervisors figured the heterodox Aristotelian Cesare Cremonini. After returning to his homeland, he practised medicine and was later appointed professor at the University of Utrecht. In the summer of 1638, having read and appreciated the scientific essays published together with the *Discourse on the Method*, Regius met Descartes through their mutual friend Henricus Reneri, also a professor at Utrecht, and quickly became an enthusiastic supporter of Cartesian philosophy. Together with Reneri, who died the following year, Regius was the first university professor to embrace Cartesianism and certainly the very first to teach Cartesian doctrines to the students. However, the orthodox professors, led by Gijsbert Voet (Voetius), were on the alert and a backlash was soon unleashed which momentarily risked overwhelming Descartes himself, who promptly decided to distance himself from his unwary disciple.

Yet, at first, Regius's esteem for Descartes was fully reciprocated. Descartes was particularly pleased to see that the "truth", while not yet finding an audience in France, was beginning to make headway elsewhere. He was happy, above all, that his ideas had started to penetrate academic circles and was happy to give Mersenne the news that Regius's lectures had rendered many students capable of "making fun of the old philosophy".[104] In spring 1640, Descartes did not hesitate to send Regius the first draft of the *Meditations*, even before communicating it to Mersenne, but received from him only a few brief objections – one of which bore on the positivity of the infinite – and a few changes in "punctuation and spelling". However, Descartes apparently appreciated Regius's reply and especially the "great praise" with which his correspondent had not failed to adorn it.[105] So much so that, according to some, he even showed him the manuscript of *The World*, unpublished and sought after by half of Europe (but this circumstance is highly doubtful, while it is certain that Regius managed to obtain a few years later, against Descartes's will, a copy of the final chapters of the work, those from which the *Treatise on Man* would later be extracted).[106]

104 Descartes to Regius, 20 August 1638 (*AT* II, 307; *CC* I, 367–368); Descartes to Mersenne, 23 August 1638 and 11 November 1640 (*AT* II, 334–335, *CC* I, 379–380; *AT* III, 231).

105 Descarets to Regius, 24 May 1640 (*AT* III, 63–65). Baillet describes Regius as "fascinated to the point of ecstasy" by the *Meditations* (*AT* III, 61, 71–72).

106 See Theo Verbeek, "Regius' *Fundamenta physices*", *JHI*, 1994, pp. 543–44. But cf. *AT* III, 374 (and related notes). For the *Treatise on Man*, see Descartes to Mersenne 23 November 1646 (*AT* IV, 566–67) and Andrea Strazzoni, "The Use and Plagiarism of Descartes's *Traité de l'homme* by Henricus Regius: A Reassessment". *Perspectives on Science*, 31/5 (2023), pp. 627–83.

The first cold shower for Descartes occurred in December 1641 when Regius had one of his students publicly declare that the unity of the human soul with the body subsists only "by accident" (*per accidens*). In scholastic terms, this assertion could imply two different meanings: either that the body and the mind are different substances, aggregated together but without an effective physical union, or that their relationship is analogous to that which exists between a substance and its accident.[107] Regius's declaration was obviously a blatant provocation: following the basic principles of Cartesian physics and metaphysics, once it is denied that the soul is the "substantial form" of the body, the implication is either the impossibility of conceiving an effective union between the mind and the body or, even worse, plain materialism, which makes the "mind" a simple property (or "accident") of the body. A successful provocation, indeed: public discussion in Utrecht quickly degenerated into a verbal brawl with shouts and clamour, described in detail by a colourful contemporary report, which attributed all responsibility to Regius's followers.[108] The incriminated doctrine was on everyone's lips: according to Voet, at the time rector of the University, to say that man is an *ens per accidens* means to maintain that the soul is in man as the devil is in the body of a possessed person, that is, as an external agent and not as an internal informing principle, as the soul should be regarded according to its scholastic definition in terms of a "substantial form".[109]

Descartes was worried but ascribed the raging polemics to the fiery character of his disciple: greater "moderation" was needed – he wrote to Regius in January 1642 – to better serve what he designates as the "good cause", obviously still regarding it as a shared cause.[110] Presenting himself as a master of such "moderation", Descartes sent Regius the draft of a long response to Voet's accusations.[111] Here, alongside various bombastic compliments addressed to the Utrecht theologian ("give him the most flattering titles you can"), Descartes tries to exonerate his friend by placing all the blame on "two or three rascals", thoughtless young men, agitators and provocateurs – probably the same young men he had praised in private some time before because they made fun of the old philosophy. Descartes then suggests to his disciple to deny everything,

107 See Suárez, *Disputationes metaphysicae*, IV, sect. 3, 13–14, and Jorge Secada, *Cartesian Metaphysics: The Scholastic Origin of Modern Philosophy*, Cambridge, CUP, 2000, p. 260 ff.

108 See *Testimonium academiae Ultrajectinae, et narratio historica quà defensae, quà exterminatae novae philosophiae*, Utrecht, W. Strickius, 1643, pp. 22–23.

109 See J.A. van Ruler, *The Crisis of Causality: Voetius and Descartes on God, Nature and Change*, Leiden, Brill, 1995, p. 186 ff.

110 Descartes to Regius, end of January 1642 (*AT* III, 493).

111 See *AT* III, 494–509.

to swear that man is a substantial being (not *per accidens*) and that there is a very close union between the mind and the body. However, he also begs him to be careful not to arouse the suspicion of irony with *too many* compliments or concessions. Descartes's final advice to Regius is that the most important thing is not to risk losing his university chair. Thus, in order not to irritate the "miserable tyrant" who reigns over Utrecht (Voet), one must also be willing to indulge him, reciting to students "Aesop's fables" instead of introducing true philosophy.[112]

Regius immediately published Descartes's response to Voet, adapting it in some measure, but to no avail. In March 1642, Voet obtained a condemnation of Cartesian philosophy by the academic senate of the University of Utrecht and subsequently mobilised his son Paul and a Groningen professor, Maarten Schoock, from whom he commissioned a violent anti-Cartesian indictment: *Admiranda methodus novae philosophiae Renati Des Cartes* (1643). In this work, Descartes is accused of atheism and scepticism, with aggressive arguments that will have a certain success in the Dutch context. Descartes, who considered Voet as the true author of the book, responded with a long *Epistola ad Voetium*, but despite his precautions, Regius's position became more precarious. Descartes also saw the spectre of an Inquisition (Protestant, in this case) haunting Holland: Regius risked being "the first martyr of my philosophy".[113] Descartes was also anxious for himself. He invoked the support of Constantijn Huygens, who promptly reassured him, but he still feared that Voet had the power to have him arrested "in some ill-famed inn" and so he stayed as far away from Utrecht as possible.[114] In the end, things were calmed down, thanks also to the intervention of the French ambassador.[115] In the summer of 1644, Descartes moved temporarily to France after fifteen years of absence. Regius suffered from the separation: only family commitments kept him from following his master.[116]

Despite his official acceptance of the main tenets of Christian orthodoxy, Regius had a typically "libertine" attitude on the immortality of the soul – perhaps a legacy from Cremonini, later reinforced by dangerous acquaintances such as Guy Patin (who often sent regards to Regius when writing to his Dutch

112 Descartes to Regius, end of January 1642 (*AT* III, 493–500, 509–10).
113 Descartes to Huygens, 20 September 1643 (*AT* IV, 750–51).
114 Huygens to Descartes, 5 October 1643 (*AT* IV, 754–56); Descartes to Wilhem, 7 November 1643 (*AT* IV, 33–34).
115 Brasset to Descartes, 10 November 1643 (*AT* IV, 653–54).
116 Regius to Descartes, 4 June 1644 (*AT* IV, 215–16).

correspondents).[117] Only faith, according to Regius, attests to the fact that the soul is immortal, while reason provides valid arguments for the opposite thesis. The mind could indeed be an "internal corporeal principle", since it relies on the bodily organs for all its operations.[118] Regius's libertine position on the question of immortality had partially emerged in 1631, when he had to defend himself at the consistory of Naerden against the accusations levelled at him.[119] At the beginning of his association with Descartes, however, Regius had avoided touching on this delicate question. He had once let slip that the soul is "triple", that is, vegetative, sensitive and rational, only to correct himself immediately, at Descartes's request, in the printed version of his disputes, in which he maintains that the soul is "unique, or rational".[120] His first doubts about Descartes's "real distinction" emerge in a letter of June 1642, in which he argues that thought and extension could be conceived as attributes of the same substance, in itself neither thinking nor extended.[121] But only in 1645, in the initial draft of the future *Fundamenta physices* submitted to Descartes, did Regius unveil his materialistic tendencies, again expressed hypothetically: the soul could well be nothing but a mode (or quality) of the body. Descartes was astonished: "first, considering the mind as a substance distinct from the body, you wrote that man is *an accidental being*. Now, instead, considering that the mind and the body are, in the same man, strictly united, you want it to be only *a mode of the body*. A much more serious error than the first".[122]

But Descartes's trials were not yet over. In reply to his master's letter, Regius goes further, abandoning all reverential submission. Perhaps accustomed to hiding his true thoughts or perhaps deceived by the "strategic" advice he had received at the beginning of his clash with Voet, he was now convinced that Descartes was also concealing "in the depths of his soul [...] feelings contrary to those that appear in public". In short, Regius insinuates that the dualist metaphysics of the *Meditations* is only a facade behind which a much more radical position is hidden. On this point, Regius could have been influenced again by his French libertine acquaintances, since Patin had spread the news

117 See G. Mori, *Athéisme et dissimulation*, pp. 142–48, on the possible influence of Regius's reading of Cartesian philosophy to be found in Patin's atheist *Theophrastus redivivus*, especially regarding the topic of soul's mortality.

118 H. Regius, *Fundamenta physices*, Amsterdam, L. Elzevier, 1646, p. 1.

119 See Theo Verbeek, *La Querelle d'Utrecht*, Paris, Les Impressions nouvelles, 1988, introduction, p. 42 ff.

120 Descartes to Regius, May 1641 (*AT* III, 371–72). The text of the disputation is found in Regius's *Physiologia*, reproduced in the Bos edition cited above, p. 209.

121 Descartes to Regius, June 1642 (*AT* III, 567).

122 Descartes to Regius, July 1645 (*AT* IV, 248–50).

of Descartes's "atheism" (which, for him, could simply mean a denial of any afterlife, Heaven or Hell).[123] Regius now adopts an aggressive and defamatory tone: you, Descartes, have discredited yourself by publishing a "metaphysics" and everyone regrets it, especially those who appreciated the scientific essays appended to the *Discourse on the Method* (and here perhaps Regius is not only reporting his own opinion).[124]

In July 1645, the rift between the two was complete. Descartes, offended beyond belief, ordered Regius not to publish anything for at least ten years.[125] But Regius went his own way and immediately published the *Fundamenta physices*, limiting himself to toning down some of his theses on the soul and, for the physiological part, drawing also from Descartes's *Treatise on Man*, of which he had managed to obtain a copy.[126] With Regius's *Fundamenta physices*, the autonomy of Cartesian physics from the metaphysics of the *Meditations* is complete: mechanism stands on its own, without any further need for a theological foundation (God is described, on the first page of the work, as a supernatural entity, and therefore excluded from philosophical research).

Even more explicit is the manifesto, or "programme" in twenty-one propositions entitled *Explicatio mentis humanae* that Regius printed without the consent of the authorities in 1647, attributing it to his pupil Petrus van Wassenaer.[127] Here, Regius's position on the soul finally becomes public: the mind could be either a separate substance or a mode of the body or an attribute of a substance that is neither thinking nor extended; thought and extension are different but not incompatible attributes, because the same substance can admit different modifications, and also different attributes in the Cartesian sense of the expression (a sort of Spinozism *ante litteram*). As for immortality, Regius's

123 Regius to Descartes, 23 July 1645 (*AT* IV, 254–56). See G. Mori, *Athéisme et dissimulation*, 2022, p. 148: "Mr. Descartes, *quidquid dicat*, is an atheist who plays the role of the great philosopher and mathematician" (Wien, ÖNB, ms. 7071, *Naudaeana. Recueil des anecdotes*, p. 78) On Descartes's insincerity, a theme that occasionally resurfaces: Hiram Caton, *The Origin of Subjectivity: An Essay on Descartes*, Yale Univ. Press, 1973. More recently: Margaret Wilson, "Descartes and the Corporeal Mind: Some Implications of the Regius Affair", in *Descartes' Natural Philosophy*, ed. S. Gaukroger, pp. 659–679.

124 Huygens the father, for example, is singularly silent on the *Meditations*, while he is lavish in his praise on the *Fundamenta physices* (but he does not dare tell Descartes: he lets Mersenne know, see the latter's *Correspondance*, XIV, p. 450).

125 Descartes to Regius, July 1645 (*AT* IV, 258).

126 See Delphine Kolesnik-Antoine [Mahut], *La Physique de L'Homme chez Regius*. Suivi de *En quoi le Traité de l'Homme de Descartes peut-il être lu comme un texte matérialiste?*, Presses de l'Université de Laval (Québec), 2010.

127 However, in his letter to Descartes of 9 February 1648 (*AT* V, 597–601), Wassenaer assumes full responsibility for the text.

early libertine position remains unchanged: only Scripture assures us that the human soul can exist without the body, and that the "soul" is a substance distinct from the body; without Scripture, it would be legitimate to doubt that doctrine. Finally – as if that were not enough – Descartes's proof of the existence of God drawn from His idea is ill-founded, since the idea of God possessed by the mind, being necessarily imperfect, could simply be a product of limited human cognitive powers (as Hobbes and Gassendi had already maintained).[128]

Confronted with such doctrines, Descartes could not remain silent. He responded with the *Notae in programma quoddam*, written at the end of 1647 and published the following year – a text that is not always persuasive, the need to combat the disloyal disciple prevailing often over argumentative clarity. According to Descartes, it is contradictory to state that the mind can be either a substance or a mode of the body, just as it is contradictory to state that "a mountain can be either with a valley or without a valley". However, this argument begs the question, namely that the mind is an independent substance, and that it is contradictory to think otherwise (a mountain without a valley was the typical example of contradiction, for Descartes).[129] Descartes adds that thought cannot be a mode of the body because it is a principal attribute, which expresses the essence of a substance (the doctrine of the *Principles*). However, once again, that thought is the principal attribute of a substance is an assumption that Descartes did not believe he even had to establish. In short, the risk of begging the question is always present in the *Notae in programma quoddam*, as Regius himself would observe years later, reiterating his position: there is no contradiction in thinking of the mind as a mode of corporeal substance, or of a substance in itself neither thinking nor corporeal, and therefore spiritualism is neither demonstrated nor demonstrable (as Gassendi had successfully shown in his *Fifth Objections*).[130]

Nevertheless, Descartes's counteroffensive was successful on another point, namely when it came to unmasking Regius's rhetorical stratagems. Descartes sees clearly what his former disciple's references to Sacred Scripture imply: to

128 The original text of the *Explicatio* is reproduced by Descartes in his reply (*AT* VIII–2, 342–346).

129 *AT* VIII–2, 347 f. See also Descartes to Gibieuf, 19 January 1642 (*AT* III, 476–78): it implies a contradiction, in the same way, that there are mountains without valleys and that the mind is "inseparable" from the body.

130 H. Regius, *Philosophia naturalis*, Amsterdam, L. Elzevier, 1654, p. 336 f. For a revisionist reading of Regius as a secret dualist (but why should he conceal an orthodox position?), see Andrea Strazzoni, "The Crypto-Dualism of Henricus Regius", in Stefano Caroti & Mariafranca Spallanzani (eds.), *Individuazione, individualità, identità personale. Le ragioni del singolo*. Firenze, Le Lettere. 2014, pp. 133–51.

state explicitly that something *could* be different from the Scriptural lesson, clearly implying that it really *is* different, is – according to Descartes – a typical tactic of those who seek not to strengthen but to weaken Scriptural authority. Indeed, we are men before being Christians, therefore we cannot believe anything against reason and those who say they do so actually have very little faith in the word of God.[131] This was a severe accusation and also the only one to which Regius avoided responding directly in his reply, the *Brevis explicatio mentis humanae vindicata*, 1648. Here, Regius limits himself to observing that, just as the world could have been "formed" by God in many ways other than the one in which it was actually created, so the mind could have been created differently (that is, as a mode of the body) from the way in which Scripture teaches us that it was created (that is, as an autonomous substance).[132] Regius's remark appears embarrassed and does not resolve the contradiction between his hypothesis and Christian faith, but it possibly conceals a secret retort to Descartes, if not an appeal to his complicity. Indeed, while submitting with respect to Christian revelation, Descartes had proposed (in the *Principles of Philosophy*) precisely the "false" supposition of a world formed differently from that described in Scripture, but leaving it to be understood, to anyone so inclined, that this "false" supposition was in fact true and that the paths of science were irremediably incompatible with those of faith. At least on the latter point, it could be argued, the master and his former follower were still in agreement.

131 *AT* VIII–2, 353. See Regius, *Fundamenta Physices*, p. 246: Scripture teaches that the soul "is separate from the body and subsists by itself. Thus, what is doubtful by itself is made indubitable by divine revelation". In the following passages, Regius maintains that the soul is "organical", i.e. constantly connected to the body. Descartes had already protested against every form of "double truth" in the dedicatory letter of the *Meditations* (*AT* VII, 2–3).

132 H. Regius, *Brevis explicatio mentis humanae* [...] *a notis Cartesii vindicata*, Utrecht, van Ackersdijk & van Zijll, 1648, p. 21.

CHAPTER 7

The Fruits of the Tree

1 Mechanics, Medicine and Morality

From his youth, Descartes had maintained an unwavering conviction: philosophy must serve to enhance human life rather than become an exercise in sterile, self-centred speculation. He viewed "wisdom" (*Sagesse*) as a practical approach to life, not merely as the acquisition of certain truths.[1] In this perspective, even the most abstract metaphysical inquiries were only justifiable if they ultimately led to research capable of influencing human life; otherwise, they remained as fruitless as the pursuits of the literary scholar described in the *Discourse on the Method*: a recluse in his study, cultivating nothing but pride and self-love.[2] Metaphysics, in particular, could not by itself ensure human welfare. This is why Descartes recommended dedicating "very few hours a year" to metaphysical study, devoting the remainder to matters involving sensory experience.[3] This conviction remained constant throughout his life. Indeed, with the appearance of his first "grey hairs",[4] a certain uneasiness about life and its end began to creep into his mind, together with the desire to extend the natural limits of human longevity.

The "fruits of the tree of knowledge"– to employ the metaphor in his letter to Picot that introduced the 1647 French edition of the *Principles of Philosophy* – consisted precisely in those forms of knowledge and practical applications that could prolong and enhance the existence of the mind-body composite. In his letter to Picot, Descartes specified these fruits as three interconnected disciplines: mechanics (that is, the study of machines and their operations), medicine, and morality.[5] These three forms of knowledge are interconnected, even if morality maintains a predominant position, representing both the culmination and highest expression of human wisdom.

1 See especially his 1647 letter to Picot, *AT* IX, 1–2; *CSM* I, 179: "the word 'philosophy' means the study of wisdom, and by 'wisdom' is meant not only prudence in our everyday affairs but also a perfect knowledge of all things that mankind is capable of knowing, both for the conduct of life and for the preservation of health and the discovery of all manner of skills".

2 *Discourse on the Method*, 1st Pt. (*AT* VI, 9–10; *CSM* I, 115).

3 Descartes to Elizabeth, 28 June 1643 (*AT* III, 692–95). See also *AT* V, 165 (*Conversation with Burman*).

4 Descartes to Huygens, 5 October 1637 (*AT* I, 435; *CC* I, 184).

5 *AT* IX, 14.

Descartes had previously addressed the importance of mechanics in his *Discourse on the Method*, expressing optimism that mechanical innovations could relieve humanity from the burdens of manual labour. In the same years, he had collaborated extensively with craftsmen in an attempt to manufacture an improved telescope.[6] However, his attention soon shifted to publishing the *Meditations* and the *Principles*, and he never returned to mechanical studies in his subsequent published works. Descartes's contributions to mechanics remained piecemeal, primarily emerging in private correspondence. One such fragment, sent to Huygens in October 1637 and concerning leverage principles for "lifting heavy weights", was translated and published posthumously in 1668 by the Oratorian Nicolas-Joseph Poisson under the rather grandiose title *Treatise of Mechanics* (*Traité de la méchanique*).[7] In reality, Descartes never produced a systematic treatment of mechanics, both because of the difficulty in reconciling his mechanical principles with his broader physical theories and due to their limited practical applications.[8] His frustration with material limitations and particularly with craftsmen's technical shortcomings occasionally surfaced – most notably in 1640 when the telescope project failed. His response to Huygens is revealing: "Do you imagine this troubles me? I swear to you, on the contrary, I take pride that the most skilled craftsmen's hands cannot attain what my reasoning has accomplished".[9]

The situation with medicine proved different, though ultimately no less disappointing.[10] Descartes frequently discussed medical matters, nurturing ambitious hopes for their potential. From the beginning of his stay in Holland, he conducted animal dissections, maintained a medicinal herb garden and studied medical texts; since his Paris period he had compiled a personal

6 See *supra*, p. 85, note 110.

7 *AT* I, 435–48.

8 See Sophie Roux, "Cartesian Mechanics", in *The Reception of the Galilean Science …*, ed. C.R. Palmerino and J.M.M.H. Thijssen, pp. 25–66. See also Elen Hattab, "Descartes' Mechanical but not Mechanistic Physics", *The Oxford Handbook of Descartes and Cartesianism*, ed. Delphine Antoine-Mahut, Steve Nadler and Tad Schmaltz, Oxford: OUP, May 2019, pp. 124–137.

9 Descartes to Huygens, 12 March 1640 (*AT* III, 747).

10 For a recent reappraisal of Cartesian medicine, see *Descartes and Medicine: Problems, Responses and Survival of a Cartesian Discipline*, ed. Fabrizio Baldassarri, Turnout, Brepols, 2023. See also Vincent Aucante, *La Philosophie medicale de Descartes*, Paris, Puf, 2006; G. Manning, "Descartes and Medicine", in S. Nadler, T.M. Schmaltz, D. Antoine-Mahut (eds.), *The Oxford Handbook to Descartes and Cartesianism*, pp. 157–177; F. Baldassarri, "Descartes's Three Medicines: Physics, Metaphysics, and The Passions", *Itinerari* 61/1 2022, pp. 237–255.

pharmacopeia of various remedies, perhaps intended for private use.[11] The Dutch intellectual environment proved particularly stimulating, with prominent physicians and anatomists assuming increasingly public roles – exemplified by Rembrandt's *The Anatomy Lesson of Dr. Nicolaes Tulp*, commissioned by the Amsterdam surgical guild in 1632. Probably influenced by this milieu, Descartes enrolled in medical courses at Franeker in 1629 and Leiden in 1630, and almost certainly attended public dissections in subsequent years.[12] His physiological and anatomical studies intensified during the writing of the *Treatise on Man*, until, in the *Discourse on the Method*, he declared that he wanted to dedicate the rest of his life to acquiring sufficient knowledge to establish "rules in medicine which are more reliable than those we have had up till now".[13]

This was no casual remark. Years later he would even assert that "health preservation has always been the principal aim of my studies".[14] Yet Descartes's practical achievements fell far short of his high expectations, which included freeing humanity "from an infinity of diseases of the body as well as of the mind, and even, perhaps, from senile decay".[15] Although he attempted to systematize his medical knowledge, the *Compendium of Medicine* mentioned in a late 1637 letter to Huygens never materialized.[16] As the context suggests, this work would have included a "provisional" medicine (*par provision* – like the provisional morality of the *Discourse on the Method*), aimed primarily at prolonging the life of its author and allowing him to complete his philosophical project. Descartes claimed, in fact, that he felt he could live beyond a century (hence the legend, which would circulate at the end of the seventeenth century, according to which he had claimed to be able to prolong his life and reach the age of the patriarchs).[17] More modestly, in another letter to Huygens in 1639, Descartes declared that he had "healthy and strong teeth" and that he would not die in the next thirty years, unless death came unexpectedly – as it did, eleven years later.[18]

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11 R. Descartes, *Remedia et vires medicamentorum* (*AT* XI, 641–644).

12 See Descartes to Mersenne, 1 April 1640 (*AT* III, 48–49). On dissections, vivisections and anatomical studies, see also Descartes to Mersenne, 18 December 1629 (*AT* I, 102; *CC* I, 45), 20 February 1639, 13 November 1639, *AT* II, 525, 621), and Descartes to Plemp, 15 February 1638 (*AT* I, 525 ff.; *CC* I, 218.)

13 *AT* VI, 78; *CSM* I, 151.

14 Descartes to Newcastle, October 1645 (*AT* IV, 329).

15 *Discourse on the Method*, 6th Pt. (*AT* VI, 62; *CSM* I, 142–143), Cf. also *AT* XI, 310.

16 Descartes to Huygens, 4 December 1637 (*AT* I, 649).

17 Cf. Baillet, *Vie*, II, pp. 45–53 and Des Maizeaux in *AT* XI, 671.

18 Descartes to Huygens, 6 June 1639 (*AT* II, 682–683).

The aspiration to prolong life was hardly novel in Western philosophy and science, but Descartes's approach proved revolutionary. His mechanistic physiology, outlined in the *Treatise on Man*, treated the body as a machine, rendering medicine essentially a branch of mechanics governed by mathematical and physical principles. As early as 1630, Descartes declared his intention to develop a medicine based on "infallible demonstrations" – while urging Mersenne to maintain his health in the interim.[19] However, as Descartes argued in a later unpublished text (the *Description of the Human Body*), to perfect the human machine requires deeper understanding, particularly of the mind-body distinction, which isolates their respective functions and opens possibilities for treating and preventing both physical and mental disorders.[20] From this perspective, there is nothing impossible in the project of prolonging human life, which is no different, in principle, from manipulating plants or other organisms once their mechanical structures are understood.[21]

The fundamental obstacle lay in inadequate research tools and the impossibility of conducting all the necessary experiments: the body-machine is still too complicated to be mastered. This explains, at least in part, why this new approach – that effectively inaugurated modern medicine – was soon joined by another perspective that was much more cautious and traditional, even if reinterpreted in Descartes's own way: the idea that nature is the best doctor and that it has a self-regenerating capacity, although for the most part hidden from us. In the *Conversation with Burman*, nature is described as "conscious of itself" (*sui conscia*),[22] an expression which might suggest a link with Renaissance naturalism. In reality, Descartes regarded natural instincts as clockwork mechanisms: if nature has provided us with an instinct for everything that concerns our health, it is still an instinct that has its origin in the mechanical configuration of the body.[23] In any case, this "empirical" appeal to nature and its self-therapeutic properties became increasingly prevailing in the last years of Descartes's life, accompanied by a certain mistrust: towards medicine as an invasive intervention on the human body (the abhorred bloodletting), towards

19 Descartes to Mersenne, January 1630 (*AT* I, 105–106; *CC* I, 46).

20 See R. Descartes, *Description du corps humain* (1648), *AT* XI, 224–227.

21 *AT* V, 178 (*Conversation with Burman*). On the physiological analogy between plants and animals, see also Descartes to Mersenne, 23 August 1638 (*AT* II, 329; *CC* I, 378), regarding the so-called "*Sensitive*" – probably a *Mimosa pudica* – a plant capable of reacting to environmental stimuli by moving its leaves.

22 *AT* V, 179 (*Conversation with Burman*).

23 See Descartes to Newcastle, 23 November 1646 (*AT* IV, 575–576).

drugs, especially those of chemical origin,[24] and finally towards doctors themselves and their ability to cure their patients' illnesses. A distrust typical of the period – echoed by Molière's quip: "What should one do when ill? Nothing"[25] – and further accentuated by Descartes's contempt for the contaminations between medicine and occult sciences which were still frequent in those years (for example, one of the first opponents of the *Discourse on the Method* was a doctor *and* astrologer: Jean-Baptiste Morin).[26]

Ultimately, Cartesian medicine yielded only modest practical results, as Descartes frankly acknowledged. His views on the relation of medicine with morality underwent a significant inversion. Whereas, at the time of the *Discourse on the Method*, Descartes hoped that medicine could support and indeed condition a correct conduct of life (since mental health depended on bodily harmony),[27] in the 1640s he became convinced, on the contrary, that moral convictions could compensate medical failure. As he wrote to Chanut in 1646: "instead of finding the means to preserve life, I have found another, much easier and much safer, which is to not fear death".[28] In the same letter, he declared his satisfaction with his progress in morality, which offset his medical frustrations, adding that such progress derived from a scientific understanding of moral phenomena. Morality thus became both the philosopher's refuge and science's ultimate purpose – a framework of ostensible inner peace that may have been somewhat performative. However, while Descartes frequently admitted to interlocutors his reluctance to discuss ethics,[29] he was also aware that morality was the only branch of the "tree of knowledge" capable of bearing fruit immediately. The first such fruit was a form of self-consolation, emerging from the dissolution of those youthful Promethean ambitions that can be found in his writings before the *Discourse*. From his own experience, the fifty-year-old Descartes drew inspiration to chart for his contemporaries a path toward wisdom.

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24 See Vincent Aucante, *La Philosophie medicale de Descartes*, p. 404.

25 Molière, *Le Malade imaginaire*, act III, sc. 3.

26 See Descartes to Elizabeth of the Palatinate, 8 July 1644 (*AT* IV, 66), where the "response of an astrologer or a doctor" is spoken of with contempt. On doctors, see also *AT* XI, 310 and the passage just cited from the *Conversation with Burman*.

27 *AT* VI, 62–63 (passage also cited above, p. 74, note 64).

28 Descartes to Chanut, 15 June 1646 (*AT* IV, 441–442). See also Descartes to Elizabeth, August 1644 (*AT* IV, 136).

29 Cf. e.g. *AT* V, 178 (*Conversation with Burman*); Descartes to Chanut, 20 November 1647 (*AT* V, 86–87), with an echo of the *Discourse on the Method*: giving moral rules is up to those who hold power.

2 Elizabeth, the Princess Philosopher

Understanding human nature was Descartes's ultimate and greatest challenge. Since the early 1640s, he no longer regarded the human being as simply a bodily machine – as in the *Treatise on Man* – or as an independent mind – as in the Second Meditation – but rather as an intimate union of matter and thought, or, more precisely, as a thinking being endowed with sensations, passions, emotions, and desires depending on the body. Starting from 1643, Descartes was encouraged, if not compelled, to undertake this new challenge by the young noblewoman to whom he had already dedicated the *Principles of philosophy*, Princess Elizabeth of the Palatinate (1618–1680).

Elizabeth was the third of the thirteen children of the Elector Palatine Frederick V – King of Bohemia for a winter – and of Elizabeth Stuart (second daughter of James I of England and granddaughter of Mary Stuart). In exile in Holland with her family since an early age, Elizabeth had devoted herself to studies of various kinds in The Hague and had gone through many family vicissitudes, marked by constant adversity. It may have taken this unlikely correspondent – a princess acquainted with misfortune – to compel Descartes to face up to the limitations of his anthropological framework. After considering his fellow men as "trees in a forest", after living in solitude for years, after severing all ties with his family of birth and with the one he had willingly or unwillingly created in Holland, Descartes turned with renewed attention to the complexities of human existence.

Fragile and timid in appearance, Elizabeth unexpectedly revealed herself to be a formidable discussant. Her philosophical freshness, combined with a melancholic and pessimistic temperament, made her very sensitive to certain critical points in Cartesian thought, which she was not afraid to highlight. The debate began, in 1643, precisely on the union between mind and body. Elizabeth had previously discussed this point with Regius, who had directed her towards Descartes. Elizabeth pressed the philosopher on a problem already raised by Gassendi: how an unextended mind could interact with an essentially extended body? For Elizabeth, however, the issue was not merely abstract. Plagued by anxiety and depression, she wished to understand the metaphysical basis of human unity, appealing to Descartes as both philosopher and physician and invoking the Hippocratic Oath in her plea for guidance.

In his reply, Descartes acknowledges that Elizabeth has grasped a real difficulty and that she "sees so clearly that nothing can be hidden from her."[30] To address the issue, he introduces a novel doctrine – later published in the

30 Descartes to Elizabeth, 21 May 1643 (*AT* III, 664).

Principles – positing the mind-body union as a "primitive notion" (possibly a conceptual heir to the "simple natures" of the *Regulae*), that is, an irreducible concept requiring no further explanation.[31] This was a clear way of cutting the Gordian knot highlighted by Gassendi: by elevating the "union" to the role of a first principle, Descartes rendered it both indemonstrable and incontestable. He then promises Elizabeth that he will elaborate on this notion after first examining separately, in his *Meditations*, the properties of mind and body.[32] Crucially, Descartes also insists on maintaining a strict distinction between the functions of mind and body, warning against the "childhood prejudice" (criticised in the Sixth Replies) of ascribing spiritual qualities to corporeal substances. But he adds a "genetic" clarification, which further explains the origin of this prejudice: the fact that we attribute real qualities to bodies shows that we have within us, originally, the primitive notion of the soul-body union, which however we often apply incorrectly and confusedly.[33]

Elizabeth, however, does not give an inch and replies promptly by reversing Descartes's argument: how can a prejudice that Cartesian physics demonstrates to be false serve to attest to the truth of something? Her counter-argument runs as follows: if it is impossible for the weight of bodies to be caused by some "substantial form" or quality thought of as spiritual, it will be equally impossible for the movement of the limbs of the human body to be caused by a "mind" devoid of extension and corporeality. She further asserts: "I have never conceived immaterial things except as a negation of matter, which cannot have any communication with it." Consequently, it would be more coherent to adopt a materialist stance (that is, to attribute extension to the soul) than to posit an immaterial soul that remains subject to bodily disruptions – caused by "vapours" or other material events – which impair its faculties.[34]

Confronted with this lucid critique, Descartes responds by cautioning the princess against excessive metaphysical inquiry, warning that it may harm the intellect. The reason for this unexpected distance adopted regarding metaphysics is easily discernible: the union of soul and body relies on sensory perception and cannot be the object of reason. The "union", according to Descartes, has its

31 Descartes to Elizabeth, 21 May 1643 (*AT* III, 664–66); see also *Principles*, 1st Pt., §48; Descartes to Arnauld, 29 July 1648 (*AT* V, 221–22).

32 Descartes had in fact replied to Gassendi's objections that he had not yet addressed the question of the union of body and soul/mind (see above, p. 141).

33 Descartes to Elizabeth, 21 May 1643 (*AT* III, 667).

34 Elizabeth to Descartes, 10 June 1643 (*AT* III, 83–85). The same example of "vapours" can be found in Gassendi's 5th Objections (*AT* VII, 263).

own rules and principles, constituting almost a different cognitive paradigm.[35] While in metaphysics we must get rid of sensory perceptions, in psychology we must get rid of metaphysics or at least put it in brackets. In the same letter, Descartes maintains that it is impossible to perceive clearly and distinctly the mind as both distinct from the body and united to it, since this assertion is "contradictory" (*ce qui se contrarie*).[36] The expression is strong and cannot be found in any of Descartes's official works. What he tries to emphasize is that the union between mind and body can only be experienced but not fully explained by a self-evident demonstration. Thus, the only way to remove the possible contradiction between the "real distinction" and the "union" is to give them a different epistemic status: while the former is a clear and distinct conclusion of the intellect, the latter pertains to a special sense and is intrinsically obscure. However, in her prompt reply, Elizabeth does not accept Descartes's clarification and even confesses to being attracted by scepticism, hoping that her correspondent can help her fight such a temptation.[37] But Descartes, by now, seems less and less willing to discuss theoretical questions with a correspondent so dangerously close to the positions of his two *bêtes noires* Gassendi and Regius.[38]

Starting in the spring of 1645, after touching on scientific topics (physics and geometry), Descartes and Elizabeth discuss medicine and especially moral issues. The princess was suffering from a relapse and was lying in a state of psychosomatic prostration, with "persistent fever" and melancholy.[39] Descartes attempts to assist her from a distance. On 21 July he urges her to read Seneca's *De vita beata* as an introduction to the topical question of ancient morality: that of the "supreme good". But on 4 August he changes his mind and believes he must personally enunciate clearer and better-founded moral maxims: the same ones – he claims – that he has already proposed in the Third Part of the *Discourse on the Method*. In reality, the three maxims that Descartes now enunciates do not match exactly those of the *Discourse*. The first maxim of 1645, in

35 Descartes to Elizabeth, 28 June 1643 (*AT* III, 693). Descartes nevertheless recognizes that the comparison with gravity is "limping" (*ibid.*).

36 Descartes to Elizabeth, 28 June 1643 (*AT* III, 693). "the human mind [is not] able to conceive very distinctly, and at the same time, the distinction between the soul and the body and their union; because it is necessary, to do this, *to conceive them as one thing, and together to conceive them as two*, which is contradictory" (my italics).

37 Elizabeth to Descartes, 1 July 1643 (*AT* IV, 1–3).

38 For Gassendi see *supra*, p. 161. See also H. Regius, *Fundamenta physices*, p. 246 (on apoplexy and epilepsy). Yet, only two years later, Elizabeth will declare to Descartes that the 5th Objections are the worst of all, except Hobbes's 3rd Objections, which are even worse (Elizabeth to Descartes, 5 December 1647 – *AT* V, 97).

39 Descartes to Elizabeth, 18 May 1645 (*AT* IV, 200–204).

particular, diverges significantly from the first maxim of 1637. Instead of focusing on adapting to the customs of one's own country (a really "provisional" stance, in Descartes's intellectual biography), the new maxim – closer if anything to the fourth of 1637 – seems to promote a rational analysis of every moral choice: each person must "use his mind, to the best of his ability, to know what he must do and not do in every circumstance of life".[40] Nevertheless, in 1645, the tendency of Stoic origin not to consider the "body" as a moral subject and to bring any moral issue back to the stronghold of thought is still well alive in Descartes's reflections.

This is precisely what Elizabeth cannot accept. She has experienced firsthand how misfortunes, even if predictable and dependent on uncontrollable events, affect the life of a human being, starting with physical health. When faced with misfortunes, she writes, "my body falls into such a serious state of restlessness that it takes me several months to recover".[41] She therefore reacts in her own way, that is, by sharply contesting Descartes's conclusions: "there are illnesses that totally impede the ability to reason and, consequently, that of enjoying reasonable satisfaction". It is of little use to know that man is fallible and that illness is a natural fact, since during an attack of kidney stones only a philosopher like Epicurus can say he feels no pain; as to non-philosophers, they are left with nothing but regret, and the awareness that happiness cannot be achieved by one's own means but only with "the assistance of that which does not depend on the will".[42]

Descartes understands that the objections are compelling and tries to save what he can by appealing to beliefs, or "truths" that he supposes are also shared by his correspondent. First, he recognizes that the mind is sometimes helpless with regard to the influence of the body, as happens in dreams,[43] but he adds, temporarily abandoning Seneca's humanist approach, that two metaphysical truths can help us against the evils of human life: the existence of an infinitely perfect, and, therefore, infinitely good God, and the immortality of the soul. The first truth assures us that everything depends on God and lets us "take joy even in our afflictions"; the second makes us certain of our capacity to "enjoy an infinity of joys that are not found in this life".[44] Yet such a reply is not entirely convincing. How can Descartes boast that immortality is a "truth"

40 Descartes to Elizabeth, 4 August 1645 (*AT* IV, 265).
41 Elizabeth to Descartes, 22 June 1645 (*AT* IV, 234).
42 Elizabeth to Descartes, 16 August 1645 (*AT* IV, 269–70). See also Descartes to Elizabeth, 30 November 1645 (*AT* IV, 335).
43 Descartes to Elizabeth, 1 September 1645 (*AT* IV, 282).
44 Descartes to Elizabeth, 15 September 1645 (*AT* IV, 290–96).

accessible to human reason when he has always asserted that human reason cannot demonstrate anything which is submitted to God's will, including the survival of the soul after the body?[45] He must have thought that a specialist in letters of consolation, as he considers himself, is allowed a little license.[46] He also further invokes the vastness of the universe in order to humble human pride and stresses communal duty, urging alignment with the collective good.

Once again, Elizabeth's rejoinder is terse but incisive. On immortality: if the afterlife is guaranteed to be better than the present life, why not seek death? ("I am amazed that those who said they were convinced of this truth [...] preferred a painful life to a convenient death").[47] On God: do the actions of our free will also depend on him? Is there not something that is in our power – as Descartes had claimed – and on which our good depends? On the infinite universe, anticipating Pascal's unbeliever: infinity, rather than reassuring us, makes us feel more distant from God's particular providence. Finally, on the human community and the collective good: how do we know what is best for the human race? And how is it possible to calculate the good brought about by our actions? A man of arrogant nature will "always tip the scales in his favour" and will therefore have no objective measure for his moral action, which nullifies Descartes's principle of always tending towards the best.[48] The worm of scepticism, apparently, continued to gnaw at the princess's thoughts.

At this point, Descartes realises his imprudence: speaking of eternal bliss to a woman afflicted and embittered by life could almost seem like an incitement to suicide. And he backtracks: only a false philosophy can make one believe that "this life is bad"; indeed, in life "there is more good than evil". As for immortality, he promptly returns to his standard thesis: we cannot be certain that in the afterlife we will still be there and enjoy eternal bliss, indeed "no reasoning assures it".[49] Descartes's reply on free will is more drastic: it is illusory to think

45 See *supra*, p. 91.

46 The same license appears in the 7th Replies, (*AT* VII, 549). To Huygens, who had become a widower, Descartes wrote that he "cannot conceive of anything else, for the majority of those who die, except that they pass to a sweeter and more tranquil life". In the following letter he maintains that the mind possesses an "intellectual memory" independent of the body and therefore capable of surviving it (10 October 1642 – *AT* III, 798–99). The theme, already attested previously (see above, p. 20, note 79), also returns in other letters (see *AT* III, 47–8, 84–5, IV, 114) but never in official works. On the letters of consolation, see Mersenne, 21 January 1641 (*AT* III, 283).

47 Elizabeth to Descartes, 30 September 1645 (*AT* IV, 302–303).

48 Elizabeth to Descartes, 13 September 1645 and 30 September 1645 (*AT* IV, 288–89; 302–303).

49 Descartes to Elizabeth, 6 October 1645 and January 1646 (*AT* IV, 314–15, 355–56). However, Descartes's position on immortality is quite different from Regius's fideism: for Descartes,

that free and voluntary actions depend less on God than involuntary ones: "He would not be a supremely perfect being, if anything could happen in the world that did not derive entirely from him". And again: "the slightest thought could not enter the mind of a man, unless God wanted and had wanted from all eternity that it should do so".[50] The strict determinism of Cartesian physics is therefore combined with an analogous psychological determinism (Descartes will later specify that this does not imply that free will should be denied, since its existence is attested by everyone's experience).[51] Finally, the same deterministic approach, linked to the idea of God's omnipotence but also goodness, is adopted to address Elizabeth's final counterreply: it does not matter if men are selfish and think only of themselves, because in this case too, out of interest, they will be forced to adapt to the common good and cooperate with each other, strengthening the social bond with which God has tied them together.[52]

The correspondence never completely petered out, despite Elizabeth's persistent family misfortunes: at the end of 1645, one of her brothers converted to Catholicism – a very painful event for her – and shortly thereafter another committed murder. On this occasion, the princess had to move to Germany and seek refuge with the Electress of Brandenburg, without however managing to free herself from her personal curse: her uncle Charles I Stuart was beheaded in 1649 during the English Civil War.[53] Elizabeth ended her existence as abbess of the Lutheran convent of Herford, in Westphalia. As for Descartes, the choice to study in depth the union of the mind with the body, and in particular the "passions" of the soul, dated back to the autumn of 1645 and was the natural outcome of the dialogue with his correspondent, who had been increasingly anxious to understand the emotional and passionate aspect of human life. This was to be the focus of Descartes's reflections in what would be the last years of his life.

3 The Passions of the Soul

Before engaging in correspondence with Elizabeth, Descartes had spoken very little about passions and, when the occasion had arisen, he had considered

philosophy demonstrates that the soul *can* exist without the body, while Regius is agnostic on this point, and in fact suggests the opposite.

50 Descartes to Elizabeth, 6 October 1645 (*AT* IV, 314–5).

51 Descartes to Elizabeth, 3 November 1645 (*AT* IV, 332–33). Cf. supra, p. 148, note 74.

52 Descartes to Elizabeth, 6 October 1645, January 1646 (*AT* IV, 314–15, 356–57).

53 Descartes to Elizabeth, 22 February 1649 (*AT* V, 282).

them primarily from the standpoint of the body – that of "physics" in the strictest sense of the term. In the *Treatise on Man* and in the *Discourse on the Method*, passions are understood as corporeal phenomena, depending like others – hunger, thirst, titillation provoked by tickling – on the "internal" motion of "animal spirits", to be distinguished from the "external" and visible motion of the human body.[54]

The shift towards what would become Descartes's mature doctrine began to take shape after the *Meditations*, certainly as a consequence of the growing attention paid to the mind-body problem from a metaphysical point of view. From the beginning of his correspondence with Elizabeth, Descartes considers the passions essentially as states of the "soul" (*âme*) caused by bodily motions but also capable of having effects, in turn, on the body itself, such as blushing caused by shame.[55] Even from these early indications, it is clear that the so-called passions "of the soul" are in reality the effects of a complex mind-body interaction, on which Descartes will later dwell with greater precision.

Thanks to the correspondence, we can follow the preparatory work for the study of the passions, with successive and increasingly subtle refinements. In September 1645, Elizabeth asked Descartes to better define the "passions" that the philosopher had previously referred to, quite traditionally, in terms of "domestic enemies" that prevent us from enjoying life (he will soon change his mind about this as well). The definition provided by Descartes in his reply to Elizabeth's letter is already very close to the one he would later repeat in the completed treatise, where "passions", in the proper sense of the word, are rigorously distinguished from the other mental and physical states with which they had previously been assimilated.[56] Descartes began to draw up an organised list of passions as early as the autumn of 1645, and more precisely from November, the month in which he undertook all his most important works; and, as usual, he worked on it in his creative season: winter. A first (lost) draft of the future treatise was ready by March 1646 and submitted to the princess, who immediately began raising objections, as was her custom.[57]

In the following autumn, Descartes went through a classic authorial crisis: "I will no longer write anything except letters to my friends, the subject

54 See Descartes, *Treatise on Man*, 5th Pt. (*AT* XI, 193); *Discourse on the Method*, 5th Pt. (*AT* VI, 55; *CSM* I, 327).

55 Descartes to Elizabeth, 21 May 1643 and 8 July 1644 (*AT* III, 665, V, 66).

56 Descartes to Elizabeth, May or June 1645 (*AT* IV, 218); Descartes to Elizabeth, 13 September 1645 (*AT* IV, 289); Descartes to Elizabeth, 6 October 1645 (*AT* IV, 310–311).

57 Descartes to Elizabeth, 3 November 1645 (*AT* IV, 332); Descartes to Elizabeth, 25 April 1646 (*AT* IV, 404); Descartes to Elizabeth, May 1646 (*AT* IV, 407, 414). See also Descartes to Chanut, 15 June 1646 (*AT* IV, 442;) and *AT* IV, 404, note *a*.

of which will be: "*if you are well, all is well*" (a declaration explicitly extending to moral questions as well).[58] But Descartes's crisis proved to be extremely short-lived. The turning point, both for the treatise on the passions and for Descartes's life, came at the very moment when he seemed ready to renounce all public commitments. His friend Hector-Pierre Chanut, whom he had met in Paris two years earlier, French representative in Stockholm and later ambassador, told him that Queen Christine of Sweden, then twenty years old and not yet converted to Catholicism, was curious to know his works. Descartes was naturally very honoured and thanked Chanut, even if he believed that their dialogue would remain a long-distance one: "I do not think I will ever go to the places where you are".[59] In February 1647 he wrote to Chanut, for Christine, a very long letter on love – almost a separate treatise – where he describes four original passions: joy, love, sadness, hate.[60] He then began corresponding with the queen, opening with a letter on the "supreme good". Later, Descartes sent Christine the first draft of his treatise on the passions, along with the letters he had previously written to Elizabeth.[61]

In the meantime, Abbot Picot – who was abbot in name only – joined Descartes in Egmond, a small village in the north of Holland, where he had settled for some years, and spent the winter of 1647–1648 with him.[62] The following spring – after the so-called *Conversation with Burman*, which is the last episode of the *Objections and Replies* saga[63] – Descartes returned to France for the last time and as Picot's guest. He was also granted a pension by the king, which however, due to the upheavals of the Fronde, remained merely nominal: "the most expensive and useless parchment I have ever had in my hands".[64]

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58 The (very brief) crisis is attested by two letters: Descartes to Mersenne, 12 October 1646 (*AT* IV, 527), and Descartes to Chanut, 1 November 1646 (*AT* IV, 536–37).

59 Descartes to Chanut, 1 November 1646 (*AT* IV, 536–38).

60 Descartes to Chanut, 1 February 1647 (*AT* IV, 600–17).

61 Descartes to Christine of Sweden, 20 November 1647 (*AT* V, 81–86); Descartes to Chanut, 20 November 1647 (*AT* V, 86–88).

62 Descartes to Huygens, 8 December 1647 (*AT* V, 653–55). Picot's reputation as a libertine and a "sinner" was known to Descartes (see his letter to Mersenne of 18 March 1641 – *AT* III, 340).

63 The only extant manuscript (a copy of Clauberg's version of Burman's transcription of his discussion with Descartes) is entitled: *Responsiones Renati Des Cartes Ad Quasdam Difficultates Ex Meditationibus Ejus, Etc., Ab Ipso Haustæ*. It was discovered in Göttingen in 1895, published in 1896 by Charles Adam and later in *AT* V, 143–79. For more details about the scholarly debate over this text, which should be used with caution, see Xavier Kieft, "L'Entretien de Burman avec Descartes. Un malentendu historico-philosophique", *Klesis. Revue philosophique*, 11 (2009), pp. 108–134.

64 Descartes to Chanut, 31 March 1649 (*AT* V, 328–29).

The year 1648 also marked the beginning of an important exchange of letters with Henry More. This correspondence, which continued for much of the following year, was the occasion for a further conceptual effort on the infinity of matter and on the theme of the relationship between mind and body, now doubled by the equally problematic issue of the relationship between God and the world. In one of his last letters, Descartes confesses that he has toned down his position in his public writings to avoid being seen as an advocate of the "soul of the world", that is, of an atheist reduction of God to the immanent "force" that moves matter: "Since this cannot so easily be understood by everyone, I did not wish to deal with this question in my writings, lest I appear to favour the opinion of those who consider God as the soul of the world united to matter".[65] Such an avowal might sound surprising but is entirely compatible with the image of God emerging from *The World*: that of a regular principle of motion which at every instant gives the same impulse to matter with neither wisdom nor design (the passage is rarely analysed by Descartes scholars but did not escape Baron d'Holbach, who quotes it in the *Système de la nature* in order to show the unavoidable atheist outcome of early-modern metaphysics).[66]

The year 1648 was also that of Mersenne's death: he died in Paris on 1st September, comforted by his friend Gassendi. Descartes had already returned a few days earlier to Holland, where he hoped to be able to work in solitude. However, the possibility of an invitation to Sweden soon began to emerge. Queen Christine's first official step, in February 1649, was followed by even more imperious and pressing requests, which Descartes initially resisted.[67] Finally, reluctantly, in the following spring he decided to depart. He left in early September, leaving to the publisher Louis Elzevier the manuscript of what would be his last philosophical work.

The Passions of the Soul was published by Elzevier in Holland and in France (in collaboration with the Paris publisher Henry Le Gras) at the end of 1649, when Descartes was already in Stockholm. The volume opens with a long prefatory letter purportedly sent from Paris by a self-styled "friend of the author", followed by a brief reply from Descartes, a counter-reply from the same "friend" and Descartes's final response. Some identify the unknown "friend" as Picot, others as Claude Clerselier, Chanut's brother-in-law and former translator of

65 Descartes to More, August 1649, *AT* V, 404.

66 See Paul Thiry d'Holbach, *Système de la nature*, Londres, 1770, vol. 2, p. 140, who tacitly relies on Aubert de Versé's *L'Impie convaincu ou Dissertation contre Spinoza*, Amsterdam, J. Crell, 1685, p. 115 (cf. G. Mori, *Early-Modern Atheism*, pp. 290–92). See also David Leech, "More et la lecture athée de Descartes", *Les Etudes philosophiques* 108:1 (2014), pp. 81–97.

67 See Baillet's excerpts quoted in *AT* V, 317–8, 322–3; Descartes to Chanut, 31 March 1649 (*AT* V, 328–29).

the *Objections and Replies*, who would later also prepare the (not always faithful) publication of Descartes's correspondence and other posthumous writings. Still others suggest Henri Desmarets (son of Samuel Desmarets), who translated and published the *Passions* in Latin soon after Descartes's death in 1650, as a possible candidate. These conjectures are easily disproved or lack any positive support, and their implausibility reinforces the suspicion (entertained by many[68]) that the prefatory letter came straight from the pen of Descartes himself.

Indeed, a number of details suggest that the Letter-Preface of *The Passions of the Soul* is an instance of a fashionable 17th-century rhetorical contrivance, that of "prefaces full of false assertions" (in the words of Pierre Bayle, a master of the genre).[69] The first false assertion concerns the dating of the Letter-Preface itself: it was allegedly sent on 6 November 1648, whereas all temporal references given by the author take as a starting point the early summer of 1649. This suggests that this letter, and the entire epistolary exchange prefixed to the *Passions of the Soul*, is nothing but a last-minute invention conceived by Descartes to justify publishing his text almost against his will.[70] The most obvious clue in favour of the attribution to Descartes is the fact that the unknown "friend", besides knowing all his previous works by heart, anticipates some original themes of the treatise, which he claims not to have seen and whose publication he anxiously awaits (see especially his reference to "vicious humility").[71] On another topic, that of the relationship between mathematics and physics, the Letter argues for a position that Descartes never expressed

68 See Alfred Espinas, *Descartes et la morale*, Paris, Bossard, 1925, t. 2, pp. 70, 74; Hiram Caton, "Les écrits anonymes de Descartes", *Les Études philosophiques*, 4 (1976), pp. 410–13; Paul Dibon, "En marge de la Préface à la traduction latine des *Passions de l'âme*", *Studia Cartesiana*, 1, Amsterdam, 1979, p. 92, note 3; Marta Fattori, "La Préface aux *Passions de l'âme*: remarques sur Descartes et Bacon", *Archives de philosophie*, 1998, (see *Bulletin cartésien*, XXV, pp. 1–13). Denis Kambouchner, *L'Homme des passions*, Paris, Albin Michel, 1995, t. 1, p. 410, n. 31.

69 See Pierre Bayle, *Critique générale de l'Histoire du calvinisme de M. Maimbourg*, in Id., *Œuvres diverses*, vol. II, p. 2*b*.

70 See G. Mori, "Descartes *incognito*: la 'préface' des *Passions de l'âme*", *Dix-Septième Siècle*, 69 (2017), pp. 685–99. According to Annie Bitbol-Hespériès, in *Bulletin cartésien* 48 (2019), pp. 173–175, the temporal references given in the letter-Preface (assuming that it comes from Descartes's hand) do not support the claim that it was written around 1649, since Descartes, in his computations, counts starting at "1" and not at "0". But compare the letter's "*il y a 2 ans*" (referring to June 1647, date of the publication of the French edition of the *Principles AT* XI, 301), with Descartes's letter to Mersenne of 19 June 1639 ("*il y a plus de 2 ans*", referring to the expedition of some copies of the *Essais*, published in March 1637 – *AT* II, 565).

71 See *AT* XI, 305–306 (Preface), to compared with *The Passions of the Soul*, art. 159.

in his public writings, but only in the *Conversation with Burman* (unknown to everyone except Burman, Clauberg, and a few acquaintances of theirs before its rediscovery in 1895).[72]

It thus seems that it was none other than Descartes himself who conceived and composed this baroque exchange of letters with a Parisian correspondent, apparently irritated by the continuous postponement of the publication of the *Passions* but, in reality, animated above all by the desire to praise the prowess of the author (in the "fifty centuries of the world's existence", no one has accomplished as much in philosophy as he has …).[73] Overall, the anonymous letter is a further plea for public support for scientific research – a repeat of the Sixth Part of the *Discourse on the Method* – and an opportunity to quote protagonists of the Scientific Revolution admired by Descartes (Kepler, Galileo, Harvey). As to the main body of *The Passions of the Soul*, it is divided into three parts: the first on the passions in general analysed above all from a physiological point of view (art. 1–50); the second on the primitive passions and their order (art. 51–148); the third on the particular passions, derived from the previous ones and analysed individually in detail (art. 149–212). It is not known exactly how much of the first draft was maintained in the final version.[74] However, the *Passions of the Soul* does not escape the rule that applies to nearly all of Descartes's works: not a monolithic text but an essay in open philosophy, shaped by diverse and not always harmonious inspirations.

4 A "Physicist" of Human Nature

The *Passions of the Soul* presents some entirely original doctrines, both for Western philosophy and for Descartes himself. Indeed, in many ways, the work really deals with "a subject [he] had never studied before".[75] Descartes differs from all previous moralists who had examined the world of passions by his revolutionary scientific approach: "My intention has not been to explain the passions as an orator, nor even as a moral philosopher, but only as a *physicist*."[76] The latter expression has received many divergent readings by Descartes

72 See *AT* XI, 316 (Preface), to be compared with *AT* V, 160 (*Conversation with Burman*).

73 *AT* XI, 317.

74 Descartes claims, at times, to have changed very little (*AT* XI, 326), at times to have expanded the text "by a third" (Descartes to Clerselier, 23 April 1649 – *AT* V, 354).

75 Descartes to Elizabeth, May 1646 (*AT* IV, 407).

76 *AT* XI, 326 (*Passions of the Soul*, Reply to the Second Letter). The French term "*physicien*" ("physicist") appears here for the only time in Descartes (who, however, had used the Latin word "*physicus*" in the *Compendium musicae* – *AT* X, 89).

scholars. Is Descartes asserting that he wants to limit himself to the bodily causes of passion?[77] Or it is just a matter of applying the rational method of science to the study of the passions?[78] Is it not simply a slip of the tongue, since "neither the first half of the second part nor the third part of the treatise are written by a 'physicist'"?[79] Or, finally, Descartes's expression is perhaps to be interpreted solely in terms of its contextual opposition to the study of the passions "as a moral philosopher" (in that case, however, it would remain necessary to explain in what positive sense Descartes uses the word "physicist").

A possible solution could follow from Descartes's (generally unnoticed) double definition of "physics", also to be found in his anonymous Letter-Preface to *The Passions of the Soul*, which echoes on this point his Letter to Picot prefixed in 1647 to the French edition of the *Principles*. "Physics", in Descartes's vocabulary, may mean either a field of mathematics (that is, a theory concerning the quantitative properties of existing bodies) or a comprehensive knowledge concerning everything that is "natural", including the union of mind and body. From this perspective, the study of the passions as natural phenomena can only take place within the framework of a "science of human nature": it is not medicine, nor mechanics, nor metaphysics, nor moralizing rhetoric, since it largely depends on the union of an immaterial mind with a material body as it is experienced by the thinking subject. In other words, and almost tautologically, Descartes examines the passions "as a physicist" because the study of the passions is a part of his "physics" – taking this term in its broadest sense, as the science of nature and especially of "the nature of man".[80]

The first part of the work is indeed entitled "The Passions in General, and incidentally the whole nature of man" (*Des passions en général, et par occasion, de toute la nature de l'homme*). The analysis of the passions requires a preliminary investigation into the functions of the body, followed by a brief inspection of those of the mind: understanding them separately will help to better understand the influence they exercise upon each other. The passions, in fact, are not an internal event of the soul, and even less the result of an internal struggle

77 See Carole Talon-Hugon, *Les Passions rêvées par la raison: essai sur la théorie des passions de Descartes*, Paris, Vrin, 2002, p. 118.

78 See Martial Gueroult, *Descartes selon l'ordre des raisons*, Paris, Aubier, 1954, t. 1, p. 253.

79 Jean-Luc Marion, *Sur la pensée passive de Descartes*, Paris, PUF, 2013, pp. 218–219.

80 See *AT* XI, 310 (*Passions of the Soul*, First Letter-Preface; my italics): "*physics* [...] is the science that should teach us *to know so perfectly the nature of man*, and of all the things that can serve him as food or as remedies"; and *AT* IXB, 14; *CSM* 186 (*my italics*): "The second part is *physics*, where, after discovering the true principles of material things, we examine [...] the nature of plants, of animals *and, above all, of man*". For further details, see G. Mori, "Descartes *incognito*", quoted *supra*, note 70.

between its parts, according to the famous Platonic tripartite division (irascible, concupiscible, rational soul) that strongly influenced, via Aristotle, Aquinas and a vast majority of scholastic philosophers and theologians (with a few exceptions such as Suárez and Juan Luis Vives, the only author mentioned in the *Passions*).[81] The soul, for Descartes, is indivisible and cannot have parts nor have conflicts within itself (art. 47–48). The passions of the soul, then, depend on the body in the sense that they are the mental counterpart of some neurophysiological events: a new code, parallel to that of sensory perception and imagination, from which it must be distinguished.

The scientific definition of passions occupies the central articles of the first part of the treatise and consists precisely in a progressive analysis of the distinguishing features that set passions apart from other modifications of the mind. Generally speaking (art. 1), in every natural event there is an "action" of the object that causes the event itself, and a "passion" of the object that undergoes that action.[82] Even in the mind, therefore, there will be, in this very broad sense, actions and passions, referred to states of the mind itself, that is, to thoughts: "actions" generally include all our volitions, whether they concern solely the mind (as when we want to reflect on God or other immaterial entities) or the body (as when we want to move or walk). On the other hand, "passions", still generally speaking, include all perceptions, that is, all thoughts by which the mind knows something and with respect to which it experiences passivity (art. 17–18). But this passivity can have as its active cause either the mind itself or the body. In the first case, which is that of intellectual and imaginative perceptions and of our own volitions, these passions are still actions, for the mind also plays an active function in the process (art. 19–20). In the second case (art. 22–24), true "passions" must be distinguished from external sensations (tactile, visual, auditory, etc.) and internal feelings (pain, titillation provoked by tickling, etc.). Now, what distinguishes "passions" in the strict and proper sense from other sensory perceptions, in which the soul is passive in relation to the body, is not their cause (which is always corporeal) but their reference: external sensations are referred to other bodies (if we see a tree, we believe there is a tree outside us causing our vision); internal sensations are referred to our own body (if we are pricked, we locate the pain in the part of the body affected); true passions, on the contrary, are referred to the soul itself

81 *AT* XI, 422. See Lorenzo Casini, "Juan Luis Vives and early modern psychology: A critical reappraisal", in *Psychology and the other disciplines: A case of cross-disciplinary interaction (1250–1750)*, eds. P.J.J.M. Bakker et al., Leiden: Brill, 2012, pp. 81–105.

82 The passion/passivity connection is attested not only by etymology but also by the entire Aristotelian tradition; see Aquinas, *Summa theologiae*, I^{a} II^{ae} *q.* 22, *a.* 2.

(art. 25). Thus, when we feel anger, anxiety, or panic, we attribute these states neither to our body nor to others, but to ourselves as thinking beings.[83]

The "passions", in the strict and proper sense, have as their proximate cause the body, that is (in most cases)[84] a certain movement of animal spirits in the nerves, which in turn generates a change of state in the pineal gland: each state of the gland corresponds to a specific passion of the mind. However, if one were to seek the cause on which the movement of animal spirits that modifies the pineal gland originally depends, one would find it again in a perception of the mind, so that the entire process consists of a chain of psychophysiological events causally linked to each other.

Already in the Fourth Part of the *Principles* (§190) and in a letter to Elizabeth in 1645,[85] Descartes had endeavoured to explain this complex mechanism. Take the passion of fear, at first sight aroused by the perception of a certain object. For Descartes, however, it is not this perception that arouses fear, since "perception", as such, has an exclusively representational value: it is the sign of "something" that exists (or seems to exist) outside of us. But if perception is followed by a judgment in which the danger threatened by this "something" is understood, this judgment will cause, through the pineal gland, a flow of animal spirits from the brain to the heart, producing a change in the heart (and this explains why, spontaneously and traditionally, we locate passions in the heart). This alteration of the heart, in turn, determines a return motion of the animal spirits which, through very fine nerves,[86] rise from the heart to the brain, finally causing, in the pineal gland, that material configuration that induces the passion of fear in the mind (and causes the stimulus to be communicated to the muscles of the various limbs).

A "passion" is not a momentary event, but a process that persists as long as the animal spirits flow from the heart to the gland. Descartes can affirm, in this sense, that passions are "caused, maintained and strengthened" by the motions of the spirits (art. 27). And this is one of the reasons that make passions difficult to control: it is not a matter of simple assent or refusal – as with intellectual perceptions – but of resisting or stemming a veritable flood of animal spirits (art. 46–47).

The issue of mastering or gaining control over the passions is obviously decisive from a moral point of view. Descartes insists on this repeatedly

83 For a discussion of the Cartesian definition and of the difficulties it raises, see P. Hoffman, *Essays on Descartes*, pp. 181–187.

84 As we will see below, the passion of "wonder" is an exception.

85 Descartes to Elizabeth, 6 October 1645 (*AT* IV, 312–3).

86 On such small nerves (*nervuli*), cf. *Principles*, 4th Pt., §190.

from the end of the First Part of *The Passions of the Soul*. The key point lies in his lucid awareness that, since the proximate causes of passions are mostly material, they can only be mastered by influencing their bodily aspect: the soul can never "have absolute control over its passions" (art. 46). The will, in fact, is not able to act *directly* on the passions: one cannot "will to be courageous" or prevent oneself from feeling remorse after having cowardly fled in the face of danger (art. 45). It is instead necessary to stimulate, in the pineal gland, movements contrary to the ongoing passion, mentally considering "the motives, objects, examples" that can provoke them. All this, however, requires a commitment of the will by which one can sometimes condition the bodily impulses (the comparison with the training of hunting dogs is explicit in art. 50).[87] From this point of view, Descartes goes so far as to affirm, apparently contradicting his own argument in the preceding pages, that "there is no soul so weak that it cannot, if well directed, acquire an absolute power over its own passions" (art. 50).[88]

However, the contradiction is only apparent, for two reasons. First, in stating the impossibility of a total control of the soul over the passions, Descartes only means to speak of a direct and immediate control: the only possible control is exercised *via* the body. Secondly, when Descartes writes that absolute dominion over passions is possible, he only means to argue that there is no natural impediment preventing the association of a certain movement of the pineal gland with a perception other than the passion usually connected to it (just as one learns to connect the sound of a word to a certain idea representing something, while by its nature it would only be an auditory perception). The difficulty lies in actually accomplishing such a "recoding" of material stimuli – for which a lifetime may not suffice.

As for himself, Descartes certainly tried: a constant feature of his existential experience was the attempt not to be overwhelmed by the emotional side of human experience, distancing himself from the storm of passions and observing them almost from above. His lifelong insistence on isolation may also reflect this: not the pursuit of Stoic impassivity (which he had condemned as inhuman since the *Discourse on the Method*) but the control of passions – a

87 Of course, for Descartes, animals do not have consciousness and therefore, strictly speaking, do not have "passions". The comparison is intended to show that the domain of emotions concerns above all the body: just as the will of the trainer can condition the bodily movements of the animal in a direction contrary to natural instinct, similarly the will of every human being can train the body to which it is united to react differently to passionate stimuli, equally corporeal.

88 *AT* XI, 368; *CSM* I, 348.

control to be acquired patiently, first by studying the machine of the body and then by making it function within the limits prescribed by reason.

5 From Wonder to Desire

How can one find order in the dark and chaotic world of the passions? This classic problem dates back at least to the Stoic tradition.[89] More recently, the Scholastics had sought to establish a precise taxonomy of human emotions. Aquinas had devoted an in-depth study to the passions, reducing them to eleven fundamental varieties, divided between the concupiscible and the irascible powers (*potentiae*) of the "sensitive appetite", that is, of that instinct, common to all animals, which inclines them to the search for sensory well-being. Aquinas described six passions for the "concupiscible" (love/hate, desire/aversion, joy/sadness), and five for the "irascible" (hope/despair, courage/fear, anger) grouped in pairs of opposites, one positive, the other negative, with the exception of anger, which had no corresponding opposite emotion.[90] Moralists preceding or contemporary with Descartes, from Du Vair to Charron, from Senault to Camus, from Cureau de La Chambre to Coëffeteau, had adopted the traditional tables of passions with a certain syncretism between the Stoic and scholastic doctrines, sometimes emphasizing their source in human nature but more often their immorality, if not outright "monstrosity" or "criminality" (Senault).[91]

Descartes, for his part, had an additional reason to seek order in the passions: in the third rule of the *Discourse on the Method*, he had argued not only that one must move from the things that are easiest to know to the more complex, but that an order must be assumed when dealing with *any* problem, including ones in which it is apparently lacking. In the case of the passions, after some initial hesitations and difficulties,[92] Descartes thought he had finally found the right path, founded precisely on their passivity with respect to the body. A soul without a body would never have passions, in the strict sense of the term, because it is only the influence of the body that determines the onset of passionate phenomena. But the body is in turn modified by external objects, and

89 See Cicero, *Tusculanae disputationes*, IV, 6, 11, on the doctrine of Zeno, who reduces the passions to four: pleasure, sadness, desire, fear.

90 Aquinas, *Summa theologiae*, I^{a} II^{ae}, *q*. 23, *a*. 1–4.

91 For a useful overview of the treatises on the passions before Descartes, see Anthony Levi, *French Moralists: The Theory of the Passions 1585 to 1649*, Oxford, Clarendon, 1964.

92 See Descartes to Elizabeth, 6 Octobre 1645 (*AT* IV, 313).

it is precisely the impact of external objects, mediated by sensory perception and by the intellectual judgments based on that perception, that generally provokes the passionate response of the soul. To find an order among the passions, and to genetically reconstruct their origin, one must therefore investigate the relationship of the human body with the objects that surround it (art. 51–52).

The classification of passions that Descartes attempts in the Second Part of the *Passions of the Soul*, being founded precisely on the body's relationship with external objects, is clearly connected with the analysis of human sensory perception as addressed in the Sixth Meditation. And just as the task there was to clarify the function of sensory perception, here it is to determine that of the system of the passions. Sensory perception and affectivity are independent yet closely linked corporeal faculties: both contribute to the preservation of the human body. The passions, in particular, "dispose the soul to want the things that nature teaches us are useful to us, and to persist in this volition" (art. 52).[93] The difference with respect to external feelings lies in the fact that, while the five senses are limited to providing the perceptive material that allows us to classify a certain object as pleasant or harmful to the body, passion stimulates us to seek it or flee from it with constancy. This relation to the will constitutes the functional peculiarity of human affections.

According to Descartes – as well as to Aquinas (who remains his more or less direct reference) – all passions can be traced back to certain principal passions. Descartes, however, reforms Aquinas's classification, excluding all the "irascible" passions and also eliminating, among the "concupiscible" passions, that of "aversion"; he then adds one passion of his own: "wonder" (*admiration*). The result is a grid comprising six fundamental passions, composed of two pairs of opposites identical to those described by Aquinas (love/hate and joy/sadness), and from two passions without opposites: wonder and desire (art. 69). What differs from the Aquinas's scheme is not just the list of fundamental passions but also Descartes's reasoning as to why these passions are fundamental. For Descartes – consistent with his method – they are original perceptions constituting a kind of "simple natures" in the realm of passion, and all other passions arise from their composition or specification into different variants.[94] This is why he excludes the five passions of the "irascible" (being derivable from others) and aversion (which he considers to be a species of desire, not its opposite).

93 *AT* XI, 372; *CSM* I, 349.

94 For Aquinas, all passions derive from love: see Étienne Gilson, *Le Thomisme*, Paris, Vrin, 1948, pp. 335–52. On Descartes's debt to Aquinas's classification, see also Laurence Renault, *Descartes ou la félicité volontaire*, Paris, PUF, 2000, p. 160 ff.

The inclusion of wonder among the primitive passions, and in a prominent position, distinguishes Descartes's table of passions from all those that preceded it (and also from some of those that will follow).[95] It is true that a venerable tradition going back to Plato and Aristotle considered wonder as the beginning of philosophy. But Descartes makes it a natural passion, present in every man, being the initial sign of our relationship with the world (and also with ourselves). Wonder acts like a kind of switch that opens the door to the passionate world and, as such, precedes or accompanies "almost all" passions (art. 72). For this reason, it does not admit a contrary: the absence of wonder does not move the soul and, therefore, cannot be a passion (art. 53). Equally original is Descartes's explanation of the physiological origin of wonder: unlike other passions, it arises directly in the brain, without being affected by the movements of the peripheral nervous system and the heart. Wonder has in fact a specifically cognitive function: that of directing and maintaining the mind's attention on an object, while waiting to know whether the object in question is good or bad for the body (art. 71). The elevation of wonder to a primitive passion is compensated by its devaluation from a strictly philosophical or scientific point of view: wonder may pave the way for knowledge, as the ancients held, but it is deeply harmful if prolonged. Descartes's scientific ideal actually points in the opposite direction: that of a complete transparency, that is clarity and distinction of knowledge, that eliminates all astonishment. Thus, while useful at first, wonder is best dispensed with as soon as possible (art. 76).

Love is another primitive passion and, from a strictly genetic, or temporal, point of view, it appears before wonder (which requires some form of cognitive awareness). Love, in fact, is the first passion that the foetus feels in the mother's womb, in the presence of bodily heat associated with well-being.[96] Questioning the neurophysiology of love, Descartes ventures into an explanation of passions that accentuates their natural, almost unconscious character, implicitly limiting the possibility of their rational and free control by the mind: the passion of love always arises when the body undergoes a movement similar to that experienced in the prenatal stage, even if we have since forgotten this origin (art. 107). To love, for Descartes, is to want to be one with the thing loved (art. 79–80). But love is not desire, much less the possession of what one loves. Love does not look to the future and does not even imply the presence of the loved object: it is rather that feeling by which, here and now, we feel united to

95 Spinoza, for example, will deny that wonder is a passion (*Ethics*, 3rd Pt., Definitions of the affections, 4). For the first appearance in Descartes of the theme of wonder (already understood as a passion), see Elizabeth to Descartes, 25 April 1646 (*AT* IV, 405).

96 See Descartes to Chanut, 1 February 1647 (*AT* IV, 604–605).

something whatever the distance that separates us from it. For this reason (art. 82) there cannot be different kinds of love: love is always the same, whether it is for the woman or the man loved, for God or for the most futile object (in art. 81 the scholastic distinction between "love of benevolence" and "love of concupiscence" is therefore rejected). Love, in short, is our creation, in a certain sense artificial, of an entity in which we participate together with the object of our love. Love is "the assent by which we consider ourselves henceforth as joined with what we love in such a manner that we imagine a whole, of which we take ourselves to be only one part, and the thing loved to be the other." (art. 80).[97] As for hate, it is the natural opposite of love: it is wanting to feel separate and refusing to share in something other than oneself, seeking to remain alone in oneself (art. 80).

Just as love has nothing to do with desire, even though it almost always generates desire, joy must be carefully distinguished from pleasure, which is a purely physical feeling, devoid of what makes passion a "passion", that is, again, the ability to move the soul. The latter effect can be obtained only if the soul conceives in some way the current presence of a "good" that belongs to the soul itself "insofar as it is united to the body" – and this is precisely the definition of joy (art. 94). The distinction between pleasure and joy illuminates the cognitive side of passions, which does not exclude the neurophysiological mechanism but rather constitutes its counterpart.[98] The importance of the cognitive aspect is attested by the constant presence of representational terminology in Descartes's analyses of the passions: wonder is induced by the representation of the object as rare, love by the representation of the union of the subject with the object, desire by the will to achieve what is represented to us as good, etc. Not that passion is reduced to this representation. Passion remains an internal feeling of the soul, but, at the same time, it is connected to a perception endowed with representational content and therefore able to orient the will.[99]

In one case, however, the balance between the corporeal aspect of passion and its mental side seems to tip decisively in favour of the latter. Descartes admits indeed the existence of "internal emotions of the soul" independent of the action of animal spirits or the brain (art. 91 and 147–8). This seems to open a breach in the definition of passion as a mental effect of a bodily modification.

97 *AT* XI, 387; *CSM* I, 356.

98 M. Neuberg insists especially on the physiological aspect: "Le *Traité des passions de l'âme* de Descartes et les théories modernes de l'émotion", *Archives de philosophie*, 1990, pp. 479–508; on the cognitive aspect, see Lilli Alanen, *Descartes's Concept of Mind*, Cambridge, Harvard Univ. Press, 2003, pp. 167–89.

99 See also S. Greenberg, "Descartes on the Passions: Function, Representation and Motivation", *Noûs*, 2007, pp. 714–34.

Nor is this an isolated instance: Descartes had already spoken of an "intellectual joy" in the *Principles* and in the letter to Chanut of 1 February 1647, where he also distinguishes between a passionate love and an intellectual love, such as the love of God.[100] In these texts, however, what remains in the background is precisely the affective side of the phenomenon in question. In the *Passions*, by contrast, the "internal emotions of the soul" attest to the existence of a purely mental affective sphere, parallel and sometimes even interfering with the corporeal one.[101] In Article 147, Descartes offers the famous examples of the widower who, deep down, coldly rejoices over his wife's death, even though he is upset and shows all the external signs of sadness and mourning; and the spectator who, at the theatre, rejoices inwardly at a tragedy that nevertheless moves him to tears (where the originality lies not so much in the examples – the second is a literary *topos*[102] – as in the explanation that Descartes offers in terms of two levels of affectivity). The "internal emotions of the soul" would seem to justify the possibility of a detached look at the evils of the world, considering them from the outside, as at the theatre, without becoming completely involved and indeed enjoying a superior intellectual joy, similar to the joy that "the Stoics could not deny to their sage".[103] However, Descartes never went all the way in this attempt to make the emotions of the soul the "moral" and incorporeal version of the passions: this will be confirmed, in Part 3, by his analysis of generosity.

Just as wonder is the gateway to the world of passions, desire, by influencing our actions, determines the practical outlet of human affectivity. The upheavals of the soul caused by passions have the function, as we have seen, of influencing the will and, consequently, the actions of man. Containing passions will therefore mean, first of all, limiting the desires to which they give rise. The passage from psychology to moral themes, so far substantially absent from the *Passions of the Soul*, thus occurs in the domain of desire. The latter is a primitive passion without an opposite, since aversion, which for Aquinas was the contrary of desire, is nothing other, for Descartes, than a form of desire, or a desire to distance ourselves from something that we judge to be bad (art. 87).

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100 See *Principles*, 4th Pt., § 190; Descartes to Chanut, 1 February 1647 (*AT* IV, 601–603). See Damien Lacroux, "Intellectual Emotion, Passion, and the Relevance of Cartesianism to Cognitive Science", in *The Cartesian Brain*, pp. 221–246.

101 On Descartes's position on double affectivity, and its developments in Spinoza, cf. J.-M. Beyssade, Études sur *Descartes*, cit., pp. 337–62, and Denis Kambouchner, *Descartes: l'homme des passions*, Paris, A. Michel, 1995, I, pp. 345–67.

102 It is already to be found in Plato's *Philebus* (48 *a*) and in the *Confessions* of St. Augustine (III, 2); Descartes mentions it in the *Compendium musicae* (*AT* X, 89).

103 *Principles*, 4th Pt., §190.

Desire, then, more than a passion in the strict sense, is a function of the affective apparatus that diversifies into as many species as there are objects toward which it is directed (art. 88), maintaining the strongly active circulation of animal spirits and making the body capable of carrying out the will of the mind. Thus, in the case of desire, the neurophysiological explanation provided by Descartes concerns not so much the causes, but rather the consequences of the passion with respect to the body, with a substantial reversal of the causal order: it is the mind, here, that guides the body and directs the motion of the animal spirits.

Be that as it may, the question of the control of passions has now been transformed into that of the control of desires. The first step in this direction, Descartes writes, consists in understanding what depends on us and what does not, renouncing everything that is not within our reach (art. 144–146). This appears to be a return to the Stoic intellectualist perspective that was already present in the provisional morality of the *Discourse* and had re-emerged in the correspondence with Elizabeth. However, at a deeper level, things have changed, since Descartes now believes that something else – beyond mere thoughts – must contribute to making human lives morally worthy.

6 Virtue, Happiness, Generosity

An aura of incompleteness has always hovered over Descartes's moral thought and various interpretative theories have been developed – or could be developed – to explain it: that of biographical contingency (death prevented him from completing his plan); that of insincerity or reticence (*larvatus prodeo*: morality is too delicate a terrain to venture into without due prudence); that of fragmentation or lack of originality (scattered doctrines, difficult to harmonise with each other); that, finally, of the provisional nature of his theory that becomes a constitutive characteristic, never overcome (there would thus be no substantial difference between the *Discourse on the Method* and subsequent writings). Everything depends ultimately on what one seeks in an ethical theory. Descartes's ethics is above all a doctrine on how to live well and in this sense it is the most important fruit of the "tree of knowledge": it does not provide categorical imperatives or abstract rules that are presumed to be universal but outlines a general model of humanity to be followed in practice. In this approach, Descartes is closer to the ethics of the ancients than to that of Kant.[104]

104 On this issue and on the related debate among interpreters, see M. de Araujo, *Scepticism, Freedom and Autonomy: A Study of the Moral Foundations of Descartes' Theory of*

In his discussions with Elizabeth and Christine – as we have seen – Descartes had drawn inspiration from the moral debates of antiquity on the concept and the possibility of a "supreme good".[105] This quintessentially classical theme allowed him to revisit the age-old dispute between Stoics and Epicureans: the former convinced that the supreme good for human beings lies in virtue, the latter identifying it with pleasure, or happiness. Descartes adopts an in-between conciliatory position – at least, such was his intention. Virtue alone is not sufficient but must be accompanied by some kind of inner satisfaction; pleasure, for its part, cannot constitute the supreme good because it often arises from ignorance and therefore risks being ephemeral. However, unlike Kant, for whom afterlife could be the only place for a possible "synthesis" between virtue and happiness, Descartes tries to unite them already on this earth. His is a humanistic ideal, and it is not surprising that he has often been accused of Pelagianism (the heresy which regards humans as self-sufficient in their search for the good). An accusation that he indignantly rejects,[106] but which is not entirely unfounded. Descartes's most "Pelagian" stance is perhaps precisely his attempt to merge virtue with the "satisfaction of the soul", adopting a Stoic approach seasoned with Epicureanism, but then freeing himself from both traditions thanks to the originality of his conception of the mind/body relationship.[107]

In the final expressions of Descartes's thought on moral matters, we observe a progressive weakening of the rationalistic ideal based on scientific progress as a source of moral good. This perspective, still present in the first of the three maxims sent to Elizabeth in 1645, never entirely disappears but it is partially overshadowed by another theme, already present in previous texts and now increasingly central: the conscious use of free will in moral choices as a criterion of virtue and, consequently, as a condition of inner happiness. It remains to be explained how this result can be achieved. The answer will come precisely from the domain of the "body", long underestimated in its moral implications until the correspondence with Elizabeth, but now, after the analysis of

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Knowledge, Berlin, De Gruyter, 2003, p. 142 ff. For a different perspective, that of a reappraisal of Descartes's moral theory with the key of "deontologism", see Noa Naaman-Zauderer, *Descartes' Deontological Turn: Reason, Will, and Virtue in the Later Writings*, Cambridge, CUP, 2010.

105 Descartes to Elizabeth, 18 August 1645 (*AT* IV, 271–278). See also Descartes to Christine, 20 November 1647 (*AT* V, 81–86).

106 Descartes to Mersenne, May 1637 (*AT* I, 366) and March 1642 (*AT* III, 544). See also Arnauld's judgment quoted above, p. 151, note 84.

107 On Descartes's rejection of both Stoicism and Epicureanism, driven by a "perfectionist" approach to ethics, see Frans Svensson, *Descartes's Moral Perfectionism*, London, Routledge, 2024.

the passions, fully integrated into moral discourse, being the primary source of earthly well-being. The answer emerges at the beginning of the Third Part of the *Passions of the Soul*, in the analysis of the passion of "generosity", which is the most original trait of the work and perhaps Descartes's last great philosophical invention (being possibly a later addition to the first draft shown to Elizabeth).[108]

The "generosity" (*générosité*) of the *Passions of the Soul* must not be understood in the most common meaning of this word (in English and in French). Rather, Descartes uses the term in the sense of the Aristotelian and then Thomistic "magnanimity", that is, greatness of soul (art. 161). He prefers "generosity" to the latter term because of the etymological reference to *genus*, that is, to the nobility of origin – a reference that could not fail to please the aristocratic female readers he imagined engrossed in his work. However, perhaps mindful of the *incipit* of the *Discourse on the Method*, in which he had shown himself willing to grant good sense and right reason to everyone, Descartes adds that everyone can be educated to generosity, thus immediately correcting what he had just stated. "Generosity", as Descartes defines it, is nothing other than a kind of legitimate "self-esteem": it means valuing oneself rightly and taking satisfaction at having freely chosen what one has judged to be best. At the same time, "generosity" means recognizing others as having a similar condition to ours, and therefore being well-disposed to their choices and decisions, without ever despising them. For Descartes, this is the only way that allows us "to pursue virtue in a perfect manner" (art. 153–154).[109]

The generous person is, therefore, one whose acts are motivated only by "good will", that is, by the awareness and the firm intention of using his/her free will to the best of his/her ability. This allows him/her to rejoice in his/her own conduct with a self-satisfaction that is the source of supreme bliss, that is, "a kind of joy which I consider to be the sweetest of all joys, because its cause depends only on ourselves" (art. 190).[110] After many hesitations and provisional or unsatisfactory positions, Descartes finally finds in the conscience of the individual the most reliable criterion of moral action and, at the same time, the meeting-point of virtue and happiness. Not knowledge of the truth, according to a rationalistic ideal that he had sometimes championed (but which excludes a large part of humanity from the path of virtue), but rather the simple will to do good constitutes the foundation of morality.[111] In short, virtue is an individual and private

108 See Geneviève Rodis-Lewis, *Le Développement de la pensée de Descartes*, pp. 191–202.

109 *AT* XI, 446; *CSM* I, 384.

110 *AT* XI, 471; *CSM* I, 396.

111 In the dedication of the *Principles* (*AT* VIII–1, 2–3) Descartes still maintained that those who are endowed with greater intellectual enlightenment can reach a greater degree

affair that is played out – like the *cogito* – in the conscience of the individual, where it is linked to the "self-satisfaction" in which happiness fundamentally consists. The result is a kind of moral solipsism – parallel to the metaphysical solipsism of the *cogito*[112] – that Descartes tries to mitigate by reference to the duties towards others that the generous person feels as his own. The fact remains that generosity is related not so much to compassion, which is in any case a form of sadness (art. 185–187), as to pride, with which it shares the same characteristic of being, ultimately, an affective phenomenon based on one's self: they are both a mixture of wonder, love and joy for oneself and for one's own good actions and qualities. The only difference between generosity and pride lies in the fact that the self-esteem of the generous person is "justified" and not vain and vicious like that of the proud (art. 160).

The treatment of generosity marks Descartes's greatest distance from Stoicism. Not so much due to the moral traits with which he paints the figure of the generous person (all in all quite conventional and not without analogies with that of the Stoic sage), but rather due to their psychophysiological foundation: virtue in fact finds its root in a passion, that is, in what the Stoics considered to be the obstacle to a moral life and the enemy to be defeated. This Stoic conception had been revived by Augustine and the Augustinian tradition and immediately linked to the Christian dogma of original sin as a sign of human corruption. Aquinas himself, despite opposing the Stoic conception of the passions and despite having no difficulty in considering the passions themselves as entirely natural phenomena, refused to lend them a moral status: "passion", according to him, "cannot be a moral virtue".[113] Contrary to Christian theologians, Descartes not only holds that the passions are "all good" (there is not the slightest trace of original sin in his philosophy – another Pelagian trait),[114] but adds that they can be virtuous. Generosity, in particular, is "the key to all the other virtues and a general remedy for every disorder of the passions" (art. 161, 211).[115]

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of wisdom; but cf. Descartes to Christina, 20 November 1647: "knowledge [...] is often beyond our strength; for this reason we have nothing left but our will to dispose of absolutely" (*AT* V, 83). Cf. M. Gueroult, *Descartes selon l'ordre des raisons*, II, p. 261 ff.

112 On generosity and the *cogito*, see: J.-L. Marion, "Le *Cogito* s'affecte-t-il?", in *Questions cartésiennes*, pp. 153–87 (and pp. 189–219 on the "solitude of the *cogito*").

113 Aquinas, *Summa Theologiae*, I^{a} II^{ae} *q.* 59, *a.* 1: "*virtus moralis non potest esse passio*". This is because: 1) passion depends on the sensitive appetite; 2) it is morally neutral and its goodness or malice depends on whether or not it agrees with reason; 3) virtue, to be such, must depend on a rational choice.

114 On this point, see also Emmanuel Faye, *Philosophie et perfection ...*, pp. 325–40, and cf. Denis Kambouchner, *Descartes et la philosophie morale*, Paris, Hermann, 2008, pp. 199–224 ("Une métaphysique sans mal").

115 *AT* XI, 454; *CSM* I, 388.

If generosity can reconcile the rift between mind and body, morality and happiness, Stoicism and Epicureanism, it is because it is simultaneously a passion and a virtue: a two-faced Janus that, thanks to its double nature, is able to act as a bridge between the world of animal spirits and that of consciousness. Generosity is a virtue, because it consists in a habit of the mind "that disposes it to have certain thoughts" (art. 161).[116] But it is also a passion, because it depends on the movement of animal spirits in the brain and is maintained and strengthened by that movement (although this phenomenon is not as obvious as that associated with pride – art. 160). Generosity, therefore, can become habitual, last over time and be active on the terrain of the passions, giving a solid foundation to virtue, precisely because it has a material cause.[117] Therefore, to become generous, one must arouse within oneself appropriate bodily movements, by reflecting carefully on the importance of free will and the vanity of worldly goods (art. 161). The theory of generosity, in short, marks Descartes's final response to all those – including himself – who attempted to take no account of the body in their project of morality: far from doing without the body or opposing it, virtue arises precisely from certain material configurations, which the mind must try to stimulate in the brain to which it is united.[118] At the same time, man's capacity to make morally virtuous choices and to experience joy and satisfaction with his own behaviour depends on these cerebral configurations.

One might ask, of course, whether generosity alone suffices as a "general remedy" (art. 161) to tame the excesses of the passions and make them an instrument of human happiness. Even Descartes must have had doubts about this. So much so that, throughout *Passions of the Soul*, he proposes at least three other remedies for controlling the passions, one at the end of each part of the treatise. The first two have already been mentioned: 1) psychological training

116 *AT* XI, 453; *CSM* I, 387. On the definition (of clear Aristotelian origin) of virtue as "habit", see also Descartes to Elizabeth, 15 September 1645 (*AT* IV, 296).

117 In Denis Kambouchner's words. "A strong soul is not one which manages to overcome the passion by purely intellectual means, or by the exercise of a pure will independent of everything else – two hypotheses which in fact make no sense – but one whose attachments and habits are both duly reflected and strongly registered in the brain and body" (D. Kambouchner, "Power of the Soul and Imagination. A Psychophysiological Hypothesis", in *The Cartesian Brain*, 2025, pp. 41–53.

118 According to J.-L. Marion, *Questions cartésiennes*, p. 179, n. 21, Descartes "hesitates" to consider generosity as determined by bodily movements. But, if this were not the case, generosity could never generate a virtuous habit capable of effectively counteracting the passions. For Marion's latest treatment of this topic, see Id., *On Descartes' Passive Thought: The Myth of Cartesian Dualism* [2013], Chicago and London, The University of Chicago Press, 2018, especially pp. 225–240.

aimed at recodifying the mind's reactions to bodily stimuli (art. 50); 2) "inner emotions", that is, a retreat of mind into itself, in a perspective which potentially conflicts with that of generosity, even if the opposition is never treated as such by Descartes (art. 147–148). 3) The third "general" remedy is to be found at the end of the treatise, but this time Descartes consciously opposes it to the first, of which he now grasps all the difficulty. The third remedy is about "delay", or the attempt to resist not so much the passion – which in many cases triggers an irreversible and unchangeable bodily mechanism no matter how much effort is made (as in the case of tickling) – but the desire that it arouses; it is therefore about taking time, suspending every action and possibly deferring it (art. 211).

Among these different "remedies", or among these different approaches to the theme of the dominion of the mind over the passions, Descartes does not seem to have chosen clearly and definitively. The result, once again, is a certain indeterminacy, perhaps also due to interruptions in the drafting of the work and to additions made at the last moment. On the other hand, the strategy of controlling the passions is necessarily a composite strategy: there is no single triumphant weapon, but rather a whole range of techniques to be put into action depending on the case. The *Passions of the Soul*, in addition to being an innovative philosophical text, has also and above all a practical function, as does the correspondence on moral themes in which Descartes engages with Elizabeth, Chanut and Christine. All these writings are instructions for living happily; they include a medicine for the mind-body compound that is based on physics and metaphysics but rests ultimately on the primitive idea – as such not further analysable – of the union between the *res cogitans* and the *res extensa*. A union that can be felt but not explained rationally and of which the dynamics are, ultimately, difficult to predict and even harder to fully master. Yet it is precisely on the union of mind and body – and especially on the passions – "that all the good and evil of this life depends" (art. 212 – title).

Conclusion: Descartes's Mind/Descartes's Body

All this and more Descartes may have intended to discuss with Queen Christine, although we do not know whether he even had time to show her the freshly printed volume of the *Passions of the Soul*. His stay in Stockholm, after a comfortable and promising start thanks to the hospitality of the Chanut family, would prove unhappy. In the Swedish winter – Descartes writes in his last letter of which we have the complete text – men's thoughts "freeze like water".[1] The winter of 1649–1650 would not be, like so many others, a winter of meditation but of exhausting early risings: the Queen had him woken up at five in the morning and made him cross a bridge swept by an icy wind – the latter is possibly a theatrical invention of Baillet's – to discuss philosophy with him.[2] Descartes soon longed to return to his "desert", that is, to Egmond, his last and much regretted Dutch residence.[3]

Christine also pressed him with requests that were unusual for a philosopher. According to Baillet, she commissioned the text of a ballet to celebrate the Peace of Westphalia, which had ended the Thirty Years' War a year earlier.[4] In reality, it is not known whether Descartes actually wrote this not-so-memorable *Birth of Peace* (*La Naissance de la Paix*), staged on 18 December 1649 on the occasion of the sovereign's twenty-third birthday, or whether he simply communicated it to one of his correspondents to fill out the parcel he was sending (as can be read in the letter to Brégy which constitutes the only basis for Baillet's questionable attribution).[5] What is certain is that, until a few years earlier, Descartes did not want to compose verses, fearing (prophetically, if he was the author of the *Birth of Peace*) that he would end up like Socrates, who died shortly after having begun to practice the art of poetry.[6] It is also known

1 Descartes to Brégy, 15 January 1650 (*AT* V, 467).

2 Cfr. G. Moyal, P. Myrén, "La Résidence de Descartes à Stockholm. Etat des recherches". *Nouvelles de la réublique des Lettres*, 1995, I, pp. 79–91.

3 Descartes to Brégy, 15 January 1650 (*AT* V, 467).

4 Baillet, *Vie*, II, p. 395.

5 See *AT* V, 457. According to R. Watson, *Cogito, Ergo Sum*, p. 296 ff., the *Birth of Peace* (*AT* V, 616–27) is by Hélie Poirier or another court poet (and this attribution cannot be excluded, despite the protests of G. Rodis-Lewis, *Le Développement …*, pp. 212–220). Lars Gustafsson's paper, "Was Descartes Queen Kristina's Peace Advocate? The Authorship of *La Naissance de la paix*", *Studia Neophilologica*, 2018, 90/1, pp. 71–89, provides a historical and political context for the work but does not significantly contribute to the ongoing debate about Descartes's possible authorship. However, as is confirmed by Leibniz's testimony, Descartes certainly devoted his efforts to another theatrical play with a bucolic subject (*AT* XI, 661).

6 Descartes to Huygens, 17 February 1645 (*AT* IV, 776).

that he tried in every way to avoid court life, being expressly exempted from it by the Queen in exchange for private morning lessons. On the other hand, The *Birth of Peace* has nothing specifically Cartesian: the soul is defined as a "divine flame" that "gives life to the body" – a pure absurdity in the context of Descartes's physics and physiology – and everything else is very conventional and rhetorical. However that may be, it may have been Descartes's last printed work. The last *project* he conceived was that of an Academy of sciences to be founded by Queen Christine in Sweden:[7] an academy from which he excluded all foreigners by statute, perhaps to avoid being included among its members. This precaution, however, would soon prove unnecessary.

In January 1650, Descartes developed a respiratory illness, probably caught from Chanut. True to his principles, he refused bloodletting and run-of-the-mill remedies, trusting nature's healing power. At the last moment, when he was probably no longer able to understand and express his will, he was subjected to a specific medical therapy that did not improve his condition: he died in Stockholm on 11 February 1650 at 4 o'clock in the morning. Indebted to his friend Van Zurck, defrauded by siblings, misled by the announcement of a French pension and Christine's promised gifts (perhaps secularized church lands), he was in near poverty. He was also unloved by the Queen's courtiers: only Chanut and a French priest comforted him while on his deathbed. Some have even suspected that he was murdered, but, conspiracy theories aside, pneumonia was probably his only killer.

Death stilled Descartes's mind but not his body. Initially, it was buried in Stockholm in the cemetery dedicated to those who did not belong to the Lutheran religion. The skull was later removed and stolen, while the rest of the remains, after a few years, began a complicated return journey to Paris. They were buried in 1666 in the church of Saint-Étienne-du-Mont, before being transferred in 1819 to Saint-Germain-des-Prés, where they are still to be found. In 1882, a purported "skull of Descartes" was also returned to France, after being put up for auction: it is currently kept and showcased at the Musée de l'Homme in Paris. In 2020, researchers at Lund University Historical Museum in southern Sweden announced the finding of a different fragment which they believed to belong to Descartes's skull. To date, no DNA test has been made to confirm the authenticity of the relic, which would rob France of the head of its greatest philosopher.

However, Descartes had spent little of his adult life in France. He had always wanted to be a cosmopolitan and a citizen of the world, as attested

7 The text of the project is reproduced by Baillet and in *AT* XI, 663–5.

by the pseudonym (*Polybius Cosmopolitanus*) he had imagined in his youth for one of his unfinished works. Perhaps he was simply too "generous" – in the sense he gave to that term – to feel himself a member of any homeland. His last thoughts were possibly for the "desert" of Egmond, that he mentioned with nostalgia and dark presentiments a few days before falling ill. But he was denied return there, alive or dead.

A Descartes Chronology

1596

Born in La Haye (now Descartes) on 31 March, to Joachim Descartes, a counselor in the Parliament of Brittany, and Jeanne Brochard, who would die in childbirth the following year.

1607

Around Easter, he enrolls at the Jesuit college of La Flèche, where he remains until approximately 1615, following the traditional course of studies.

1616

On May 21, he enrolls at the University of Poitiers; on November 10, he obtains a baccalaureate and a license in canon and civil law by defending specialised theses on testamentary law (*Theses ex utroque jure de testamentis ordinandis*), preceded by an extensive Latin dedication to his maternal uncle, René Brochard.

1618

He enlists in the army of Maurice of Nassau, the Protestant stadtholder of the Dutch United Provinces, and resides in Breda from April. On November 10, he meets Isaac Beeckman, with whom he collaborates on various mathematical research projects and to whom he dedicates his first philosophical work, the *Compendium Musicae*.

1619

He begins traveling through Northern Europe. In the summer, he is in Frankfurt for the election of Emperor Ferdinand II. He possibly enlists in the troops of the Catholic Duke Maximilian of Bavaria, at war against the Protestant Elector Palatine, Frederick V, recently elected King of Bohemia. In November, he

retreats for the winter to Neuburg, where he begins meditating on the sciences. On the night of November 10–11, he experiences the famous three dreams, described in the *Olympica*.

1620

During the winter, he plans to write and publish a mathematical treatise and establishes contact with German mathematicians in Ulm, including Johann Faulhaber. However, by spring, he resumes traveling across Europe without yet publishing anything.

1621–1624

A period of travels, about which little is known. He resides in France from 1622 to 1623. By June 1624, he returns to his native region.

1625–1627

He travels to Italy in Spring 1625, then settles in Paris, participating in the circle of Marin Mersenne and forming relationships with, among others, Guez de Balzac, Silhon, Morin, and Gibieuf. In the autumn of 1627, he meets Cardinal Bérulle and other scholars and scientists of the time, who encourage him to continue and publish his research.

1628

He probably works on "Rules for the Direction of the Mind", which he leaves unfinished. In autumn, he travels to Holland, where he settles in the following months and remains – except for three brief trips to France (1644, 1647, 1648) – until the year before his death, frequently changing places.

1629

In the first nine months of the year, he works on a "small metaphysical treatise," now lost. Prompted by his Dutch friend Reneri, he begins studying the

optical phenomenon of "parhelia," which leads him to deepen his research in physics. He plans a comprehensive work on natural phenomena.

1630

In spring, he begins a correspondence with Mersenne centred on the divine creation of eternal truths. He severs ties with Beeckman, who had disseminated the *Compendium Musicae* while claiming authorship of some doctrines contained in it. He begins systematically working on the physics treatise conceived the previous year: *The World, or Treatise on Light*.

1633

After the condemnation of Galileo by the Holy Office, he abandons plans to publish *The World*, of which the draft was nearly complete.

1637

He publishes *Discourse on the Method*, followed by three scientific essays: "Dioptrics", "Meteors", and "Geometry". In May, Beeckman dies. Descartes receives objections and critiques from various philosophers, scientists, and mathematicians: Plemp, Froidmont, Fermat, and – the following year – Roberval and Morin.

1639

In November, he begins working on a metaphysical work, which occupies him until the following spring: the future *Meditations*.

1640

He sends the manuscript of the *Meditations* to Regius, his first Dutch follower, and then to the Scholastic theologian Caterus, who provides objections. In November, he sends Mersenne a copy of the text with Caterus's objections and his replies, requesting circulation among philosophers and theologians.

Meanwhile, he already plans a comprehensive philosophical manual: the future *Principles of philosophy*.

1641

In the early months of the year, through Mersenne, he receives further objections to the *Meditations* – from Mersenne himself, Hobbes, Arnauld, and Gassendi – to which he responds meticulously. The *Meditations on First Philosophy* (*Meditationes de prima philosophia*), followed by six sets of *Objections and Replies*, are published in August in Paris, edited by Mersenne. Meanwhile, Regius begins distancing himself from Descartes in public disputes in Utrecht.

1642

He receives objections from the Jesuit Father Bourdin, which – along with Descartes's replies – are included in the second edition of the *Meditations*, published in Holland in May under a slightly modified title. He probably drafts the unfinished manuscript *The Search for Truth*, published after his death.

1643

He begins an intense correspondence with Princess Elizabeth of the Palatinate on metaphysics, psychology, and ethics. Controversies sparked by Regius intensify; in Utrecht, Descartes is accused of scepticism and atheism by his adversaries Voetius and Schoock.

1644

From spring to autumn, he is in Paris, where he meets Claude Clerselier (his future posthumous editor) and Hector-Pierre Chanut (brother-in-law of the former and future French ambassador to Stockholm). In July, the *Principles of Philosophy* and a Latin translation of the *Discourse on the Method* and its accompanying essays (except "Geometry") are published in Amsterdam. In November, he moves to Egmond-Binnen, near Alkmaar, his final Dutch home.

1645

A trial against Descartes's doctrines takes place in Groningen, but the verdict is favourable, exposing the machinations of Voetius and Schoock.

1646

The dispute with Regius continues as the latter publishes his *Fundamenta Physices*. Prompted by Elizabeth of the Palatinate, Descartes begins working on the *Passions of the Soul*, drafting an initial outline.

1647

New anti-Cartesian controversies arise in Leiden, and he travels to France in summer. French translations of the *Meditations* (by the Duke of Luynes for the main text and Clerselier for the *Objections and Replies*) and the *Principles* are published in Paris; the latter includes an important prefatory letter to the translator, Abbot Picot. He writes letters on morality to Elizabeth, Chanut, and Queen Christina of Sweden, while also working on *Primae Cogitationes circa Generationem Animalium* and the *Description of the Human Body*.

1648

He disavows Regius in *Notae in Programma Quoddam*, to which the former disciple promptly responds – the final act of their dispute. He meets theologian Frans Burman, who records their discussion (the text will be published posthumously as *Conversation with Burman*). He exchanges significant letters with Arnauld and, from December onwards, with Henry More. In summer, he returns to France for the last time. On September 1, Mersenne dies in Paris.

1649

He is persistently invited to Sweden by Queen Christina. After initial reluctance, he accepts, arriving in autumn. In his absence, the *Passions of the Soul* is published in Paris and Amsterdam. Meanwhile, in Stockholm, Descartes

engages in morning philosophical discussions with the queen. Commissioned, he writes a pastoral play and possibly the libretto for the ballet *The Birth of Peace*.

1650

On February 1, he presents his final project: the statutes for an Academy of sciences to be founded in Stockholm. He falls ill with pneumonia and dies on February 11, comforted by a Catholic priest and his friend Chanut.

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Descartes: The Story of a Mind offers a rigorous, historically grounded reappraisal of René Descartes's intellectual development. Rejecting fixed labels and anachronistic formulae, Gianluca Mori portrays a thinker in motion—shaped by uncertainty, dialogue, and evolving contexts. Drawing on lesser-known texts, correspondences, and polemics, this book foregrounds the fragmentary, dialectical nature of Descartes's philosophy. From early influences to the unity expressed in the tree of knowledge, the book reconstructs a dynamic Cartesian trajectory that bridges metaphysics, science, and ethics, revealing a mind perpetually negotiating its boundaries amid the shifting debates of the seventeenth century.

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