

RENÉ DESCARTES' PARRICIDE: THE CHALLENGE OF CARTESIAN PHILOSOPHY OF NATURE AND PHILOSOPHY OF MIND TO ARISTOTLE'S AUTHORSHIP

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Abstract. It is commonly held that René Descartes' mind-body dualism introduced a new outlook on human beings and their place in nature. In what follows, I will argue that it is rather his monistic view of the corporeal substance that paved the way to the modern and contemporary dilemmas on the relation between human minds and physical bodies. Against the Aristotelian view of the living body as an ensouled or enformed matter, Descartes states that the living body is nothing but a local modification of a single indefinitely extended thing, as any other body in the physical world. In challenging the *auctoritas* of "the Philosopher" of the Schools, Descartes however shows a certain bond with the Aristotelian philosophy in which he grew up; but it is exactly for this "filial bond" that he has been able to change, *from within*, the scholastic worldview.

Keywords: Descartes, Aristotle, mind, soul, body, psychology, physics, philosophy of mind

But I am desirous also that it should be observed that, though I have here endeavoured to give an explanation of the whole nature of material things, I have nevertheless made use of no principle which was not received and approved by Aristotle.
René Descartes¹

Introduction

The transition from the medieval to the modern worldview was a lengthy, gradual, and complex process that did not occur overnight. Within this long lasting period, René Descartes (1596-1650) embodies the pivotal phase of the transition.²

Descartes defines his philosophical system in contraposition to the medieval Aristotelian-based tradition in which he himself was instructed.³ In recognition of its widespread acceptance, Descartes conceives the Aristotelian tradition as a "vulgar philosophy" (*vulgaris philosophia*;⁴ *philosophie vulgaire*⁵). Against it, in the *Discours de la méthode* (1637), he proposes to "seek no knowledge other than that which could be found in [him]self or else in the great book of the world."⁶ Nevertheless, to acquaint his philosophy to his opponents and reply their objections, Descartes is obliged to

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make use of scholastic terminology and show that he is not ignorant of Aristotle's philosophy.⁷

The influence of the scholastic philosophy on Descartes' new philosophical programme has been noted for a while already.⁸ In what follows, I focus on Descartes' challenge of Aristotle's perspective on human nature. I argue that Descartes' bond with the *auctoritas* of "the Philosopher," far from preventing him from making his criticism, represents instead a powerful means to conduct it effectively.

His new outlook on human beings, i.e. mind-body dualism, is traditionally considered at the origin of the contemporary debate on the so-called "mind-body problem;"⁹ in this paper I aim at showing that the modern and contemporary dilemmas on the relation between human minds and physical bodies are rather the result of Descartes' monistic conception of the body.

To this end, I will first address Descartes' conception of *res cogitans* (§ 1), by showing that it is built on the rejection, on the one hand, of Aristotle's conception of the *psuche* as the principle of life-functions, and, on the other, of his definition of *nous* as the rational and intellectual power of human beings.

Then, I will take into consideration Descartes' conception of *res extensa* (§ 2): whereas for Aristotle, three-dimensional extension is just the primary subject of mathematical properties, for Descartes, we will see, it is the fundamental substance of the physical world.

Finally, I will examine Descartes' thesis that the living body is not different from any other body in the physical world: it is simply a determinate region of a continuous underlying stuff (§ 3). This is the true "revolution" of Descartes' philosophy. For it is by stripping off the living body of life that Descartes provided the "modern" conception of nature and human beings, and, at the same time, created the problem of their relation to something that exceeds the mechanisms of matter in motion: *conscientia*.

1. *Psuche, Nous, and Res Cogitans*

The systematic rejection of beliefs that are open even to the slightest doubt – the so-called "Method of Doubt" – is for Descartes a vehicle for the discovery of a reliable starting point for philosophy: "Je pense, donc je suis" [I think, therefore I am] is the solid foundation of his new philosophical system.¹⁰ He provides an extensive exposition of how he discovers this first self-evident principle in his philosophical masterpiece, the *Meditationes de prima philosophia* (1641). The work consists of the account of the mind's rejection of preconceived opinions and its quest for the foundations of a scientific system of knowledge. Only by individually following the prescribed path will each reader be able to reach knowledge, first of his own existence and essence (Second Meditation), then of God's existence and veracity (Third and Fourth Meditations), and finally of the essence and existence of corporeal things (Fifth and Sixth Meditations).

In the Second Meditation, what guarantees the certainty of the statement "I am, I exist" is the very fact that I am at this moment entertaining the possibility that I might be deceived – that is to say, that I am engaged in a process of *cogitatio*:

I am, I exist – that is certain. But for how long? For as long as I am thinking. For it could be that were I totally to cease from thinking, I should totally cease to exist. At present I am not admitting anything except what is necessarily true. I am, then, in the strict sense only a thing that thinks [*res cogitans*]; that is, I am a mind [*mens*], or intelligence [*animus*], or intellect [*intellectus*], or reason [*ratio*] – words whose meaning I have been ignorant of until now. (AT VII, 27).

In his attempt to a “solitary search for truth,” Descartes does not leave the denigrated language of the Schools so far behind as he claims. This strategy has a specific purpose, namely that of stripping the traditional terms of their meanings.

Philosophers in the tradition of Aristotle were costumed to use the Latin and Greek words corresponding to soul (Lat. *anima*; Gr. *psuche*) and mind (Lat. *mens*, *intellectus*; Gr. *nous*) to designate, respectively, the principle of life and the rational principle.¹¹

In his psychological treatise *de Anima*, Aristotle defines *psuche* as “the form and first actuality of a natural body furnished with organs.”¹² Aristotle conceives of the relation of the soul to the body as a special case of the relation of form to matter – a thesis that today is known as “psychological hylomorphism,” from the Greek terms for matter (*hule*) and form (*morphe*).¹³ Being correlative as form to matter, and as actuality to potentiality, soul and body cannot be, nor can be known, apart from one another. The body possesses by nature the potentiality for bringing into realisation all the functions of the soul, because it is furnished with the means, i.e., the organs, whereby these functions can be exercised. The soul is the “form” of such a body, because it is what defines the body as what it is, i.e. as a “body potentially possessing life;” it is the actual possession (“first actuality”) of the intrinsic capacity for living of an organic body.

For Aristotle, living bodies do not possess all the same type of life, that is, the same *psuche*. The life of plants consists simply in self-nourishment, growth, and reproduction (nutritive faculty); the life of animals consists also in perception, desire, and locomotion (sensory-motor faculty); human beings possess in addition thought (rational faculty). The soul is the unitary principle (*arche*) of the aforementioned soul-faculties, and thus the primary cause by virtue of which the living beings “live, perceive, and think.”¹⁴

This ancient conception of the soul can be found also in the late scholastic textbooks with which Descartes was familiar, such as the *de Anima* commentaries of the Coimbraans [Conimbricenses], Francisco de Toledo [Franciscus Toletus] (1532-1596), and Antonio Rubio [Antonius Rubius] (1548-1615).¹⁵ In the *Meditationes*, Descartes presents it as one of the preconceived opinions that he himself held before engaging in his attempt to “demolish everything and start again right from the foundations.”¹⁶

The next thought [to come to mind spontaneously and quite naturally whenever I used to consider what I was] was that I was nourished, that

I moved about, and that I engaged in sense-perception and thinking; and these actions I attributed to the soul [*ad animam*]. (AT VII, 26).

Being now determined to question all the opinions that may obscure the truth, Descartes also rejects the idea that the soul is the principle of life-functions:

But what about the attributes I assigned to the soul? Nutrition or movement? Since now I do not have a body, these are mere fabrications. Sense-perception? This surely does not occur without a body. (AT VII, 27).

According to Descartes, nutrition, movement and sense perception are to be considered as bodily functions, and thus do not belong to a disembodied “I.” Purified of the life-functions most closely related to corporeity, the Cartesian soul is characterised only by the activity of *cogitatio*.

In order to distinguish his own, new, conception of the soul, in the Fifth Set of Replies Descartes provides a close criticism of the Ancients' ambiguous usage of term *anima*:

Thus, those who first gave “soul” its meaning probably didn't distinguish between two sources of energy or activity that are in us: the one by which we are nourished and grow and unthinkingly perform all the other actions that we have in common with the brutes, and the one by virtue of which we think. So they used the one word “soul” to name both. [...] Whereas I, realising that what leads to our being nourished is radically different from what leads to our thinking, have said that when the word “soul” is used to name to both of these sources it is ambiguous. If we want to take “soul” in its special sense, as meaning the “first actuality” or “principal form of man,” then it must be understood to apply only to the source in us of our thinking; and to avoid ambiguity I have generally used the term “mind” for this. (AT VII, 356).¹⁷

For Aristotelians before Descartes the “first actuality or principal form of man” – i.e. what sets off human being from other animals – is the rational faculty. To Aristotle, *nous* appears as a pure capacity that does not inform any specific bodily organ.¹⁸ The idea that thinking is not the activity of any dedicated organ, however, does not imply that for Aristotle it is wholly independent of the body; rather, Aristotle recognises that thinking requires perception and *phantasia*, which are “embodied forms” (*logoi enulois*),¹⁹ i.e., inextricably psycho-physical functions. Aristotle himself confesses that the determination of *nous*' relation to the body is “necessary, and yet by no means easy,”²⁰ and that concerning *nous* “nothing is still clear.”²¹

In the *de Anima*, the arguments in favour of the separability of thought from the body alternate with the arguments in favour of their close connection. Aristotle's distinction between a *nous* that “becomes all things” and a *nous* that “makes all things”

– the so-called *nous poietikos* –, rather than clarify the impasse, makes it even more confuse. This distinction, which in the *corpus* covers only 16 lines Bekker (*de An.* III 5, 430^a10-25), in the history of thought covers pages and pages of different, and often conflicting, interpretations. The exegeses proposed by Aristotle's direct disciple, Theophrastus (370-284 BC), and by one of his greatest commentators, Alexander of Aphrodisias (II-III c.), clearly illustrate the controversies *nous* raises.

Theophrastus deals with the problem in Book 5 of his treatise *On Physics*: according to what has been preserved of the text by Themistius (317-388), for Theophrastus the passive and the active intellect are two aspects of the rational soul, which is immanent in man and thus mortal.²² Alexander of Aphrodisias, instead, considers the active intellect as something ontologically separate from the nature of man, i.e., a divine substance;²³ instead the passive intellect – which Alexander calls “material” (*bulikos*) – supervenes upon the mixture of the elements of the body and thus it is dependent on this and mortal.²⁴

The Aristotelian conception of *nous* is also discussed in Middle Ages and Early Modern Age, especially for the topic of immortality.²⁵ Facing the problem of the nature of the rational (human) soul, Descartes requires an account that avoids the heretical consequences of Alexandrism and Averroism, two key interpretations of Aristotle's view on *nous* that were both condemned by the Fifth Lateran Council (1513).²⁶ Alexandrism held that the human intellect (i.e. the *bulikos nous*) acts by means of bodily faculties, and thus cannot survive the death of the body. According to Averroism, instead, the rational soul is separable from the body and immortal, but it is not individual and merges with the Universal Intellect after death. Descartes' own solution is to consider the individual rational soul as completely independent of the body and unextended; no physical causes, therefore, would be capable of destroying it: it is immortal.

But, before stating what might be seen as a “prudent” conclusion (with respect to theological matters),²⁷ Descartes had to alter the reader's Aristotelian beliefs about the faculty of *nous*.²⁸ Aristotle defines the rational faculty as “the part of the soul whereby it knows and thinks.”²⁹ Descartes' definition of *res cogitans* seems to be instead much broader:

But what then am I? A thing that thinks. What is that? A thing that doubts, understands, affirms, denies, is willing, is unwilling, and also imagines and has sensory perceptions. (AT VII, 28).

Intellectual reflection (“doubting, understanding, affirming, denying”), volition (“willing, unwilling”), imagination and perception: the defining features of *res cogitans* would appear to an Aristotelian as heterogeneous functions, belonging to different soul-faculties, namely *nous*, *orexis* (desire), *phantasia* (perceptual appearance and imagination) and *aisthesis* (sense perception). To Descartes, instead, these apparently disparate characters of mental life present a common feature. He appears to identify the essential feature of the “mental” with *conscientia*, i.e. the power of the rational soul to reflect of its own thoughts and experiences.³⁰

In the formal definition of thought (Lat. *cogitatio*; Fr. *pensée*) provided in the Second Set of Replies Descartes explains:

I use the term *thought* to include everything that is within us in such a way that we are immediately aware of it [*immediate consci sumus*]. Thus all the operations of the will [*voluntatis*], the intellect [*intellectus*], the imagination [*imaginationis*] and the senses [*sensuum*] are thoughts. (AT VII, 160).

This definition appears also in the most comprehensive presentation of Descartes' philosophical system, the *Principia Philosophiae* (1644):

By the term *thought*, I understand everything which we are aware of [*nobis consciis*] as happening within us, in so far as we have awareness [*conscientia*] of it. Hence, thinking is to be identified here not merely with understanding [*intelligere*], willing [*velle*] and imagining [*imaginari*], but also with sensory awareness [*sentire*]. (PP I, art. 9, AT VIII, 7).

Descartes is overturning the standard meaning of Aristotelian key terms in order to access to a brand new world, inhabited by few self-reflective beings and, as we shall see, many lifeless bodies. To enter in this world, one would do better to take Descartes' advice and "leave our world wholly for them ["the learned"] to argue about and to speak solely of what would happen in a new world."³¹

2. *Hyle and Res Extensa*

Even Descartes' contemporaries regarded him as propounding a philosophical system that threatened to subvert the traditional approach to natural and living beings:

The professors reject this new philosophy for three reasons. First, it is opposed to the traditional philosophy which universities throughout the world have hitherto taught on the best advice, and it undermines its foundations. Second, it turns away the young from this sound and traditional philosophy, and prevents them reaching the heights of erudition; for once they have begun to rely on the new philosophy and its supposed solutions, they are unable to understand the technical terms which are commonly used in the books of the traditional authors and in the lectures and debates of their professors. And lastly, various false and absurd opinions either follow from the new philosophy or can be rashly deduced by the young – opinions which are in conflict with other disciplines and faculties, and above all with orthodox philosophy. (AT VII, 592-593).

This testimony, known as the "Utrecht Decree," was issued in 1642 by the Senate of the University of Utrecht, where one of Descartes' disciples, Hendrik De

Roy [Henricus Regius] (1598-1679), held his lectures on the Cartesian “new philosophy.”³² Designed by the champions of Scholasticism, the Utrecht decree testifies to the strong opposition of the schoolmen to the Cartesian doctrines.³³ They were considered as “false” and “absurd” for three main reasons: firstly, they threatened to subvert the traditional approach; secondly, they did not employ the technical terms used in textbooks, lectures and debates; and thirdly, they were in conflict with those stated by “traditional” authors.

The most significant point in this document is the reference to Descartes’ “corruption” of the young: after studying his philosophy, students cannot anymore understand the technical terms of the Aristotelian philosophy, being thus prevented from “reaching the heights of erudition.” The Aristotelian vocabulary represented the basis of the university instruction, the alphabet in which both the cultural world and the physical world were written. Under this light, Descartes’ linguistic innovation may be seen as a Trojan horse sent to the Schools to demolish their foundations from within. As Descartes confides to his close friend Marin Mersenne (28 January 1641), he hopes that “those who read them [his writings] will gradually accustom themselves to [his] principles and recognise the truth in them before they notice that they destroy those of Aristotle.”³⁴

A crucial feature of the Aristotelian philosophy that Descartes comes increasingly to criticise is its reliance on explanations involving qualitative notions. According to Aristotle, the basic constituents of all the natural bodies are four elements, i.e. fire, air, water, earth, characterised by pairs of four basic qualities (*dunamis*): hot and cold, moist and dry.³⁵ Such notions are for Descartes “obscure” and “indistinct;” and since it is a fundamental requirement for Descartes that all the terms used in philosophy are, instead, “clear” and “distinct;” they should be rejected. Therefore, he sets aside the four elements and qualities and holds that there is only one kind of matter.

In the Sixth Meditation, once assured of the existence of a benevolent God,³⁶ Descartes can conclude that the physical world exists. Now the Meditator should move on and catch its essential properties. According to the model of classical philosophy, the essential properties of an object are those that are stable and immutable; but this requirement is clearly not respected by the qualitative notions grasped through sensory experience. In the Second Meditation, when still in a state of doubt about the existence of physical objects, he states a very famous example, the example of the wax:

Let us take, for example, this piece of wax. It has just been taken from the honeycomb; it has not yet quite lost the taste of honey; it retains some of the scent of the flowers from which it was gathered; its colour, shape and size are plain to see; it is hard, cold and can be handled without difficulty; if you rap it with your knuckle it makes a sound. In short, it has everything which appears necessary to enable a body to be known as distinctly as possible. But even as I speak, I put the wax by the fire, and look: the residual taste is eliminated, the smell goes away, the colour changes, the shape is lost, the size increases; it becomes

liquid and hot; you can hardly touch it, and if you strike it, it no longer makes a sound. But does the same wax remain? It must be admitted that it does; no one denies it, no one thinks otherwise. So what was it in the wax that I understood with such distinctiveness? Evidently none of the features which I arrived at by means of the senses; for whatever came under taste, smell, sight, touch or hearing has now altered – yet the wax remains. (AT VII, 30).

The information provided by senses is not truthful, as shown by the fact that all the sensible qualities of the wax are subject to alteration. Thus, Descartes proposes to “subtract” these sensible features, which do not belong permanently and necessarily to the wax. By stripping away all the sensible qualities of the wax, one is left with the conception of something spatially *extended*. The many shapes and qualities the wax can take on are thus just modifications or “modes” of one essential attribute: *extension*.

I am able distinctly to imagine that quantity that philosophers commonly [*vulgo*] call continuous [*quantitatem (...) continuam*], or the extension in length, breadth, or depth [*extensionem in longum, latum et profundum*], that is in this quantity, or rather in the object to which it is attributed. Further, I can number in it many different parts, and attribute to each of its parts many sorts of size, figure, situation and local movement, and, finally, I can assign to each of these movements all degrees of duration. (AT VII, 63).

Individual physical items – planets, human bodies, animals, trees, etc. – are for Descartes nothing other than local modifications of a single indefinitely extended thing, as he clearly states in the *Principia*:

The nature of matter, or body considered in general [*naturam materiae, sive corporis in universum spectati*], consists not in its being something which is hard, or heavy or coloured, or which affects the senses in any way, but simply in its being something which is extended in length, breadth and depth [*res extensa in longum, latum et profundum*]. [...] It can be shown that weight, colour, and all other such qualities that are perceived by the senses as being in corporeal matter [*materia corporea*], can be removed from it, while the matter itself remains intact; it thus follows that its nature does not depend on any of these qualities. (PP II, art. 4, AT VIII, 42).

Extension is regarded as “the nature of matter, or body considered in general.” The implied interchangeability of *materia* and *corpus in universum spectatum* is worth noting. “Body considered in general” denotes what is common to all the individual bodies *qua* bodies and alone persists through every possible natural change – in short, what the Aristotelian calls matter (*hulé*). It is not surprising, then, that in Descartes, *corpus* takes over from *materia* the function of denoting the substrate of

change.³⁷ What is true of the substrate of change in all its manifestations and under all conceivable conditions consists solely in three-dimensional extension. Just as *cogitatio* constitutes the nature of mind, so *extensio* constitutes the nature of body.

By stripping away all the sensible qualities of physical bodies, Descartes obtains simply *res extensae*, whose properties are modes of extension. It is thus Descartes' conception of body as an "extended thing" (*res extensa*) that brings about his scientific programme of rejecting loose qualitative notions in favour of precisely measurable features.

Also in Aristotle the logical technique of "subtraction" (*aphairesis*) is used to identify the primary subject of any given attributes; in particular, he applies it to identify the primary subject of mathematical properties. The procedure is explained in the first Chapter of the *de Memoria et Reminiscentia* by the comparison of drawing a geometrical figure, e.g. a triangle.³⁸ The geometer may draw a triangle with a determinate size but think of the intelligible entity that is represented without making use of the actual size of the drawing, as it is irrelevant in proof. Equally, in constructing a mathematical concept, we put before our eyes something having magnitude without making use of it. In thinking of, say, triangles, we put before our eyes the mental image of a particular triangle (e.g. a certain-sized isosceles triangle), and strip off all the features that are irrelevant to the universal concept of triangle (e.g. its finite magnitude, being isosceles). Through this procedure one feature is singled out from all other features: we may think of the triangle "*qua* magnitude alone," i.e. as *extension*.

Some ancient commentators of Aristotle's physical treatises such as, e.g., Simplicius (c. 490-c. 560) and Philoponus (c. 490-c. 570), started to conceive three-dimensional extension (the so-called "prime matter") as the essence of matter,³⁹ giving rise to a well-established philosophical tradition, which may have prepared the way for Descartes' conception of matter.⁴⁰ But for Aristotle, extension was just the primary subject of mathematical properties. Sometimes he calls it "intelligible matter" to distinguish it from "sensible matter," which is instead the matter proper to natural (physical) substances. Whereas intelligible matter is matter considered exclusively under the respect of quantity – discrete (i.e., numbers) or continuous (i.e., magnitudes of one, two or three dimensions) –, sensible or physical matter is matter considered *qua* qualified by sensible features and changeable.⁴¹ This difference was well-known also by the Aristotelians at the time of Descartes. For example, Franciscus Toletus occasionally uses the term *corpus mathematicum* to denote *corpus* as quantity, contrasting it with *corpus naturale* or *corpus physicum*:

Body is twofold. One is "natural," the other "mathematical." Mathematical body is quantity itself, having the three dimensions of length, breadth, and depth, insofar as it is considered *per se*, stripped off all other sensible accidents, but only terminated by some figure; [mathematical] body, they say, is of the category of quantity. [...] Physical body is substance itself that has such dimensions, but with sensible qualities, and subject to changes; and this body is in things, and is a substance. (Toletus *in Ph.* 4c2q1, *Opera* 4: 106rb-107va).⁴²

Aristotle holds that the natural philosopher and the mathematician start in their investigations from the very same primitive datum, viz., the natural body; but whereas the mathematician subtracts from it all its sensible features in order to obtain only quantity (extension), the natural philosopher studies the physical body as such, i.e. as a sensible matter endowed with a form. In natural phenomena, Aristotle thinks form and matter are inseparable from each other because matter and material processes are “for the sake of something,” and this “something” is the form.⁴³

The phrase “for the sake of” introduces the final cause of a certain natural phenomenon, its goal or *telos*; it also introduces the account of its being. Take, for example, the *telos* of the hand. According to Aristotle, the hand serves various functions, because it can be, at will, “talon, hoof, and horn; it is spear, and sword, and whatsoever other weapon or instrument you please.”⁴⁴ Now, human being is the only animal endowed with hands; but this is not explicable in purely “material” (mechanical) terms, by saying, for example, that human beings have hands because they do not have legs in front. The regulative principle for Aristotle’s scientific enquiry into natural and living beings is that “nature does nothing in vain.” Nature would not give hands to nonhuman animals, because they are not capable of making use of them; if nature gave hands to nonhuman animals, they would be useless – and this would be a waste. But nature is an excellent housekeeper and gives instruments (*organa*) only to those who can make use of them, without wasting anything which might be put to good use.⁴⁵ Man “owes his hands to his superior intelligence. For the most intelligent of animals is the one who would put the most instruments to use; and the hand is [...] an instrument for further instruments.”⁴⁶ The hand is defined as an “instrument for further instruments:” this is the hand’s essence; and this is its form and goal.

In the above-mentioned passages we may have the impression that Aristotle treats nature as an Intelligent Artificer; but Aristotle’s “nature” cannot be considered the same as Plato’s Demiurge or Christians’ God. For according to Aristotle, nature is something *immanent* in natural beings; it exists and operates as “a certain principle and cause of motion and rest in the thing to which it belongs primarily, in its own right and not accidentally.”⁴⁷ Nevertheless, in medieval scholastic philosophy the doctrine of final causes begun to imply that an explanation of the physical universe and its entities could in principle be found by looking at the function or purpose of them in the overall design of a benevolent Creator. It is against this medieval reinterpretation of Aristotle’s teleology that Descartes moves his criticism. To gain an understanding of God’s purposes, he thinks, is something impossible to human beings:

We cannot pretend that certain of God’s purposes are more out in the open than others; all are equally hidden in the inscrutable abyss of his wisdom. (AT VII, 375).

The search for final causes in nature is for Descartes impious and vain.⁴⁸ Moreover, in attributing intrinsic goals to natural beings and processes, Descartes argues, the Aristotelians are treating them as if they had “little souls” (*petites ames*).⁴⁹

Just as the idea of Aristotle's nature as a benevolent Creator, also the identification of natural teleology with human intentionality is a misrepresentation of Aristotle's original position. "Aristotle's teleology does not consist in a puerile ascription of intentions to vegetables," as Jonathan Barnes ironically points out.⁵⁰ According to Aristotle, for a natural being to have a *telos* means to possess something that is peculiar to it and represents its proper function, the reason why it exists and exists in a specific fashion. A teleological explanation is nothing other than a functional based account, i.e., an account of a certain item according to the function it performs in an organisation.

3. Living Bodies and Automata

Descartes' criticism of the appeal to ends in natural philosophy may be not fair to Aristotle's original position; nevertheless, it is crucial from the standpoint of later natural philosophy. As early as 1629, Descartes decided to produce a comprehensive treatise explaining "all the phenomena of nature – i.e. all of physics."⁵¹ His universal explanation of the structure and behaviour of everything in nature relies on the "commonest and most ancient" principle of all:

Bodies move, and have various sizes and figures, according to whose diversity their motions also vary, and by their mutual collision large bodies are divided into smaller bodies, and change in figure. (*PP IV*, art. 200, AT VIII, 323).

Though matter is impenetrable, portions of it move at different speeds from other portions: this, for Descartes, is enough to account for the vast complexity and diversity of the physical universe. According to him, this basic, simple, principle has much more explanatory efficacy than the quirky (and useless) distinctions provided by the Aristotelians:

[This] is much better than [...] explaining matters by inventing all the sorts of strange objects which have no resemblance to what is perceived by the senses, such as "prime matter," "substantial forms" and the whole range of qualities that people habitually introduce, all of which are harder to understand than the things they are supposed to explain. (*PP IV*, art. 201, AT IX B, 319-320).

Descartes maintains that the laws of matter and motion, i.e., the laws of mechanics, are uniform throughout the physical universe. In today's terms, this answers to the requirement of the so-called "Principle of the Explanatory Adequacy of Physics," according to which physics – the "unified body of scientific theories of the sort we now accept" – provides "a true and exhaustive account of all physical phenomena."⁵²

The body of scientific theories accepted at the time of Descartes are the laws of corpuscular mechanics. These universal laws, according to Descartes, are confirmed by reliable "everyday experience."

However, we cannot determine by reason alone [*sola ratione*] how big these pieces of matter are, or how fast they move, or what kinds of circle they describe [...]. We are thus free to make any assumptions on these matters, with the solo proviso that all the consequences of our assumption must agree with experience [*cum experientia*]. (PP II, art. 46, AT VIII, 100).

Descartes uses mechanical models to explain the features and behaviour of physical entities: the action of light is like that of a number of lead balls arranged in a flask;⁵³ the particles of celestial matter behave in the same fashion as the air in a bladder or balloon,⁵⁴ while the terrestrial particles behave as droplets of water in a tub.⁵⁵

In the Fifth Part of the *Discours*, Descartes advances a mechanical model also of the (human and nonhuman) animal body:

This [Descartes' physiological explanation of animal movement] will not seem at all strange to those who know how many kinds of automatons, or moving machines, the skill of man can construct [...]. And here I specially stayed to show that, were these such machines exactly resembling organs and outward form an ape or any other irrational animal, we could have no means of knowing that they were in any respect of a different nature from these animals; but if any such machines bore a resemblance to our bodies, and imitated our actions as closely as possible for all practical purposes, we should still have two very certain means of recognising that they were not real men. The first is that they could never use words or put together other signs as we do in order to declare our thoughts to others. For we can certainly conceive of a machine so constructed that it utters words, and even utters words corresponding to bodily actions causing a change in its organs (e.g. if you touch it in one spot it asks you what you want of it, if you touch it in another it cries out that you are hurting it, and so on). But it is not conceivable that such a machine should produce different arrangements of words as to give an appropriately meaningful answer to whatever is said in its presence, as the dullest of men can do. Secondly, even though such machine might do some things as well as we do them, or perhaps even better, they would inevitably fail in others, which would reveal that they were acting not through understanding but only from the disposition of their organs, for whereas reason is a universal instrument which can be used in all kinds of situations, these organs need some particular disposition for each particular action; hence it is for all practical purposes impossible for a machine to have enough different organs to make it act in all the contingencies of life in the way in which our reason makes us act. (AT VI, 56-57).

As any other body in the physical world, the living body is for Descartes nothing but an extended thing (*res extensa*). Reduced to a modification of the universal three-dimensional extension, the living body is merely a kind of mechanism that is governed by the selfsame laws and principles that govern the whole nature, the mechanical laws of matter in motion.⁵⁶

If there were a moving machine bearing the image of an ape (or a man), it would be indistinguishable from a flesh-and-blood ape (or from a flesh-and-blood man), and would have physiological processes identical to those of the real ape (or man). Such a mechanical body would eat, digest, breath, move around, and react appropriately to all stimuli. It could even utter words corresponding to certain bodily changes: “if you touch it in one spot it asks you what you want of it, if you touch it in another it cries out that you are hurting it, and so on.”

That would be impossible for Aristotle. According to him, the living body is a body of a very specific kind, for it contains, within itself, the principle of all its life-functions, i.e. the soul. The soul-body unity is radically different from the form-matter unity of other hylomorphic but inanimate compounds. Take, for example, an axe: it has a certain matter, e.g., iron, and a certain form, i.e., the particular disposition of the material components, which allows the axe to perform the function for the sake of which it exists, i.e., splitting wood. But the “axe-form” is not something the iron possesses within itself, in its own right; it is rather the result of the skill of an external agent, e.g., a blacksmith, who sets before himself something quite definite, the “axe-form,” and then models a certain material, iron or bronze, accordingly. Moreover, the axe does not possess the power to split on its own initiative; its “splitting power” is brought into full realisation (second actuality) by something other than itself, e.g., by an external agent that actually uses the axe for splitting wood. After all, Aristotle admits, “the axe is simply an axe:”⁵⁷ it is a lifeless instrument, and not a “natural body of a particular sort, having in itself the principle of motion and rest,”⁵⁸ as the living body is.

According to Descartes the “artificial man” described in the *Discours* would be indistinguishable from a real man, where its behaviour is concerned; but only so long as one does not try to engage it in conversation. The distinguishing features of (real) human beings are the linguistic competence and the capacity for deliberation; in Descartes’ own words, the capacity of “us[ing] words or put[ting] together other signs as we do in order to declare our thoughts to others” and the capacity of “acting [...] through understanding.” An automaton, although perfectly constructed, will never show a linguistic competence or a practical behaviour similar to our own, because it has a fixed and limited repertoire of responses.

What the artificial man lacks is *reason*, a universal tool that provides human beings with the ability to “act in all the contingencies of life.” So, human beings can think and express their thoughts in linguistic competence and actions because they possess a rational soul. The rational soul is conceived as a superaddition –created and infused by God – that gives humans awareness of their thoughts and experiences, and make them able to reply sensibly to what is said and make rational plans.

Aristotle would agree with Descartes that practical behaviour and linguistic competence are the distinguishing features of human beings. Concerning practical

behaviour, Aristotle considers deliberation (*bouleusis*) as a kind of syllogistic reasoning belonging only to human beings.⁵⁹ Nonhuman animals cannot decide on future actions; their behaviour is rather determined by the actual perception or by the perceptual appearance of something to be pursued or avoided “here and now.” In human beings, instead, what is to be pursued or avoided is determined by means of practical reasoning.⁶⁰ Deliberation represents a fundamental moment of practical reasoning. After having established a goal, one should identify one or more possible courses of action to achieve it in a given situation:⁶¹ this is the peculiar function of deliberation, which implies calculation about the future in the light of the present.⁶² Through deliberation, one is able to “foresee” possible courses of action and weigh up different possibilities, reject some and conserve others, and establish hierarchical relations among the selected actions into a single large project to arrive at a final determination, represented by a single mental image of the course of action to be performed.⁶³

Also for Aristotle, as for Descartes, the possession of language separates out human beings from other animals. In the first Book of the *Politics*, Aristotle distinguishes human language (*logos*, “speech”) from animal language (*phone*, “voice”).⁶⁴ This distinction can be compared to that of Descartes between human language and the language of an *automaton*, since, according to him, animals, having no soul, are merely mechanical bodies. As we have seen, Descartes bases its distinction on the ability, peculiar only to human beings, to respond sensibly to everything that is said. Aristotle’s distinction, instead, is based on what speech and voice refer to: both, in fact, indicate something, but voice has an “emotional” meaning (“it is an indication of pleasure or pain”⁶⁵), while speech has a “moral” meaning (“it is intended to set forth the expedient and inexpedient, and therefore likewise the just and the unjust”⁶⁶). This depends primarily on what human beings and animals can do. All animals possess the power of perception, and therefore they are also able to perceive pleasure and pain; only some of them (*viz.*, those that take on air)⁶⁷ can make use of voice to communicate to one another their own perceptions. Man is the only one capable of moral perception and therefore he is the only one to whom speech is useful, because it is by means of speech that he can communicate to others his own moral perceptions, whose sharing constitutes the political community. This is why nature has endowed only human beings with the capacity for speech: only humans can make use of it.

For the sake of speech, human being is endowed by nature with peculiar anatomical structures. In fact, while the emission of voice depends only on the larynx, speech depends also on tongue and lips, because these bodily parts produce consonants, through which the vocal sounds emitted by the larynx are articulated.⁶⁸ In human beings tongue and lips are particularly suited for this function: their tongue is the freest, the broadest, and the softest of all, so that “it can roll back and dart forward in all directions;”⁶⁹ their lips are supple to produce letters.⁷⁰ Also teeth, in humans, are adapted for the purposes of speech, since the front teeth contribute a great deal to the formation of the sounds.⁷¹ These are just some examples of how, according to Aristotle, the rational soul determines, from a teleological point of view, a greater complexity in human bodies compared to nonhuman animal bodies. Human

body is structured in a certain way and has certain features for the sake of *nous*, the peculiar character (*to idion*) of the human species.⁷²

Therefore, Aristotle would certainly agree with Descartes that man's distinguishing feature is reason. What instead he would object to Descartes is his reductionist conception of the living body as a determinate region of a continuous underlying stuff, as any other body in the physical world.

Concluding Remarks

Descartes' monolithic conception of bodies has challenged the Aristotelian approach to nature and living beings. Grounded on his theory of nature as extended matter, the living body is nothing but an *inert* body that he conceives as a mere mode of extension. He strips off living bodies of all their peculiar features that depend on the possession of life. By separating the body from life, he obtains an organism, an assembly of automatic processes; it is a "body-corpse," dissectionable and analysable, consisting of relatively autonomous parts and studied by different medical specialties.⁷³ On the other hand, life is not anymore the form and intrinsic goal of the body. Its "inferior" functions of nutrition, digestion, reproduction, growth and decay, sense perception, and movement are now explained mechanically. There is only one function that exceeds the modern quantitative and mechanical explanations, because its essence is specifically qualitative and escapes cause-effect determination: *conscientia*.

For some scholars, mind-body dualism represents Descartes' attempt to quiet doubts about his impiety and libertinage by diverting attention from the objectionable aspects of his thought, and focusing instead on the compatibility of his scientific ideas with theological verities.⁷⁴ This might be true;⁷⁵ but even so, as a matter of fact, the "prudent" account of the nature of human beings provided in the *Meditationes* constructed a puzzle, the so-called "mind-body problem," and offered – though maybe unintentionally – a solution, commonly known as "Cartesian Dualism."⁷⁶

As the sole bearer of *conscientia*, the mind is not only a distinct *res* from the extended one (the body), but it also represents something "private" that has a direct access in our own case by means of "introspection." This method, characterised by an inward examination of our thoughts and feelings, is clearly distinct from the scientific-experimental one adopted in physical investigations. Therefore, Cartesian Dualism favoured both an ontological distinction between mind and body, and an epistemological distinction between the sciences dealing with them, respectively psychology and physics.⁷⁷

Most contemporary philosophers would disown Cartesian dualism; but even those who explicitly renounce it are often profoundly influenced by it. This is the case, for example, of theories of mind such as the Double-Aspect Theory, Functionalism, and Supervenience.⁷⁸ They have in common the rejection of the so-called "Type Identity," the thesis that all mental properties and kinds are physical properties and kinds. They accept, instead, the thesis that there are realities (*physical*, according to Functionalism and Supervenience; *neutral* or *composite* according to the Double-Aspect Theory), which may also possess non physical, mental properties. Mental properties and psychological laws are not reducible to physical properties and physical laws: the mental is explanatory autonomous. Therefore, these theories of mind fall precisely in

that “Descartes’ error”⁷⁹ they wish to avoid: the clear distinction, if not ontological, however epistemological or conceptual, between the mental and the physical.

We owe it to Descartes that we think of mind and matter as the two great, mutually exclusive and mutually exhaustive, divisions of the universe we inhabit.⁸⁰ A return to the position that Descartes has beaten, i.e. Aristotle’s psychological hylomorphism, has been attempted by philosophers and scientists of the twentieth century dealing with the mind-body problem.⁸¹ Nevertheless, the heredity of Descartes has prevented them from really understanding the psychophysical unity that is peculiar to human affections and activities according to Aristotle; they read Aristotle under a Cartesian lens, i.e., remaining within the dualistic frame outlined by Descartes.⁸² In this, Descartes succeeded in obtaining his purpose: to accustom his readers to his doctrines, and, in so doing, to destroy those of Aristotle.⁸³

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¹ Descartes, R., *Principia Philosophiae* [PP] IV, art. 200, AT VIII, 323. References to Descartes’ works use the pagination of Adam and Tannery’s edition: *Œuvres de Descartes*, publiées par C. Adam et P. Tannery (Paris: Vrin, 1964-1974), 12 vols. [hereafter: “AT,” followed by volume and page number]. Translations are by *The Philosophical Writings of Descartes*, trans. by J. Cottingham, R. Stoothoffand, D. Murdoch (Cambridge: Cambridge University Press, 1984).

² Cf. Cottingham, J., *Descartes* (Malden, MA and Oxford: Blackwell, 1986), 1.

³ See Descartes’ contemptuous comparison between the Scholastics and the ivy on a tree: “They are like the ivy which never strives to rise above the tree that sustains it, and which frequently even returns downwards when it has reached the top; for it seems to me that they also sink, in other words, render themselves less wise than they would be if they gave up study, who, not contented with knowing all that is intelligibly explained in their author, desire in addition to find in him the solution of many difficulties of which he says not a word, and never perhaps so much as thought.” (Descartes, R., *Discours de la Méthode*, AT VI, 70.).

⁴ Cf. Descartes to Mersenne, 3 October 1637, AT I, 421.

⁵ Cf. Descartes to De Launoy, 22 July 1641, AT III, 420.

⁶ Descartes, R., *Discours de la Méthode*, AT VI, 9.

⁷ In this regard, see the interesting correspondence between Descartes and Jean Baptiste Morin (February-November 1638) in Ariew, R., *Descartes among the Scholastics* (Leiden and Boston: Brill, 2011), 28-31. See also Baldassarri, F., “Libri inutili, compendi e libri ‘primarii’. Descartes tra lettura e scrittura della filosofia,” *Giornale critico della filosofia italiana* 12/2-3 (2016): 324-342.

⁸ Bibliography on Descartes’ relation to scholastic knowledge is extensive. See, at least, the fundamental Gilson, E., *Index scolastico-cartésien* (New York: B. Franklin, 1912) and Garber, D., *Descartes’ Metaphysical Physics* (Chicago: University of Chicago Press, 1992); for the last years, see Ariew, R., (2011). See also Belgioioso, G., “L’Aristotele degli *Essais*,” in *Descartes: Il Metodo e i Saggi*, eds. G. Belgioioso et al. (Roma: Enciclopedia Italiana, 1990), 41-62.

⁹ There is a general agreement among historians of philosophy to attribute the origin of the mind-body problem(s) to Cartesian dualism; by way of example, I limit myself to mentioning

Di Francesco, M., *Introduzione alla filosofia della mente* (Roma: Carocci, 2002), 35; Kim, J., *Philosophy of Mind* (Oxford: Westview, 2006), 3; Nannini, S., *L'anima e il corpo. Un'introduzione storica alla filosofia della mente*, (Roma-Bari: Laterza, 2002), 22-24.

¹⁰ Cf. Descartes, R., *Discours de la Méthode*, AT VI, 32.

¹¹ There is an extensive body of literature devoted to this matter. I found particularly helpful the studies by Des Chene, D., *Life's Form: Late Aristotelian Conceptions of the Soul* (Ithaca: Cornell University Press, 2000); Edwards, M., *Time and the Science of the Soul in Early Modern Philosophy* (Leiden-Boston: Brill, 2013); Perler, D., *Transformations of the Soul: Aristotelian Psychology 1250-1650* (Leiden-Boston: Brill, 2009).

¹² Cf. Aristotle, *de An.* II 1, 412^b5-6. References to Aristotle's works use the title abbreviations of *Greek-English Lexicon (LSJ)*, eds. H. G. Liddell, R. Scott, H. S. Jones, With a Revised Supplement (Oxford: Clarendon Press, 1996), and the pagination of Bekker's edition: *Aristoteles graece*, ex recensione Immanuelis Bekkeri (Berolini: apud Georgium Reimerum, 1831), 2 vols. If not otherwise indicated, the translations are all mine.

¹³ Cf., e.g., Williams, B., "Hylomorphism," *Oxford Studies in Ancient Philosophy* 4 (1986): 189-199.

¹⁴ Aristotle, *de An.* II 2, 414^a12-13.

¹⁵ See *Commentarii Collegii Conimbricensis Societatis Jesu in tres libros de Anima Aristotelis Stagiritae* (Coimbra, 1598); Franciscus Toletus, *Commentaria una cum quaestionibus in tres libros Aristotelis de Anima* (Venice, 1574); Antonius Rubius, *Commentarii in libros Aristotelis de Anima, una cum dubiis et quaestionibus hac tempestate in scholis agitari solitis* (Alcalá, 1616). For an analysis of these commentaries, see Edwards, M., "Body, Soul and Anatomy in Late Aristotelian Psychology," in *Matter and Form in Early Modern Science and Philosophy*, ed. G. Manning (Leiden: Brill, 2012): 33-75. For Descartes' familiarity with these texts, see Descartes to Mersenne, 30 September 1640: "I beg you to send me the names of the authors who have written textbooks of philosophy and to tell me which are the most commonly used, and whether they have any new ones since twenty years ago. I only remember some of the Conimbricenses, Toletus and Rubius." (AT III, 185).

¹⁶ Descartes, R., *Meditationes de prima philosophia*, AT VII, 17.

¹⁷ See also Descartes to Regius, May 1641, AT III, 371-374, where Descartes corrects Regius' traditional classification of soul-faculties.

¹⁸ Cf. Aristotle, *de An.* III 4, 429^a18-27.

¹⁹ Aristotle, *de An.* I 1, 403^a25.

²⁰ Aristotle, *de An.* I 1, 403^a3-12.

²¹ Cf. Aristotle, *de An.* II 2, 413^b24-25.

²² Cf. Theophrastus *ap.* Themistius, in *de An.* 108.22-24 (ed. Heinze).

²³ Cf. Alexander of Aphrodisias, *de An.* 88.17-89.21; 107.29-34; 108.16-23; 110.22-24; 111.29-36 (ed. Bruns).

²⁴ Cf. Alexander of Aphrodisias, *de An.* 90.14-16 (ed. Bruns).

²⁵ On the controversies on the immortality of the soul, see the recent study by Sgarbi, M., *Profumo d'immortalità: Controversie sull'anima nella filosofia volgare del Rinascimento* (Roma: Carocci, 2016). See also the fundamental studies by Nardi, B., *Saggi sull'aristotelismo padovano: Dal secolo 14. al 16* (Firenze: Sansoni, 1958), and di Napoli, G., *L'immortalità dell'anima nel Rinascimento* (Società Editrice Internazionale, 1963).

²⁶ Cf. Gaukroger, S., *Descartes: An Intellectual Biography* (Oxford: Clarendon Press, 1995), 348.

²⁷ See Wilson, C., "Descartes and the Corporeal Mind: Some Implications of the Regius Affair," in *Descartes' Natural Philosophy*, eds. S. Gaukroger, J. Schuster, J. Sutton (London: Routledge, 2000), 659-679.

²⁸ Cf. Hatfield, G., "Descartes' Naturalism about the Mental," in *Descartes' Natural Philosophy*, eds. S. Gaukroger, J. Schuster, J. Sutton (London: Routledge, 2000), 630-658 (630).

²⁹ Aristotle, *de An.* III 4, 429^a10-11.

³⁰ Cf., e.g., Kenny, A., "Descartes' Myth," in *The Metaphysics of Mind* (Oxford: Clarendon Press, 1989), 1-16. For a discussion of the standard and the revisionist interpretations of this passage (the former including, the latter excluding, sense perception and imagination from the category of the "mental"), see the recent study by Scott, D., "Descartes's 'Considerable List': A Small but Important Passage in His Philosophy," *International Philosophical Quarterly* 57/4 (2017): 381-399.

³¹ Descartes, R., *Discours de la Méthode*, AT VI, 42.

³² On the faithfulness of De Roy's teachings to Descartes' thought, and in general on the relation between them, see Verbeek, Th., "The Invention of Nature: Descartes and Regius," in *Descartes' Natural Philosophy*, eds. S. Gaukroger, J. Schuster, J. Sutton (London: Routledge, 2000), 149-167; Wilson, C., (2000); Clarke, D., "The Physics and Metaphysics of the Mind: Descartes and Regius," in *Mind, Method, and Morality: Essays in Honour of Anthony Kenny*, eds. J. Cottingham and P. Hacker (Oxford, 2010), 187-207; Bos, E.-J., "Henricus Regius et les limites de la philosophie cartésienne," in *Qu'est-ce qu'être cartésien?*, ed. D. Kolesnik-Antoine (Lyon: ENS Éditions, 2013), 53-68.

³³ Cf. Cottingham, J., (1986), 14-17. De Roy's support for the introduction of Cartesian natural philosophy into Utrecht University sparked hostility also on Descartes, who, in response, provided a more philosophical treatment of his doctrines. On the "Utrecht Crisis," see esp. Verbeek, Th., *La Querelle d'Utrecht* (Paris: Les impressions nouvelles, 1988).

³⁴ Descartes to Mersenne, 28 January 1641, AT III, 298.

³⁵ Hot and cold, moist and dry are the basic qualities of perceptible (tangible) bodies because they are reciprocally passive and active, and all the other qualities are reducible to them (cf. Aristotle, *GC* II 2, 329^b6-330^a29). According to Aristotle, the so-called "elements" (viz. earth, water, air, and fire) are only apparently elementary or simple bodies, being in reality composed out of the four basic *dunamis*: this is why he prefers to speak of the composition of the body out of the qualities rather than out of the elements (cf. Aristotle, *PA* II 1, 646^a13-24).

³⁶ In Descartes' philosophical system God plays an absolutely central role. The very possibility of achieving any genuine knowledge of the material world depends, for Descartes, on prior knowledge of God's existence and veracity. It is not my concern, here, to enter in the details (and problems) of Descartes' demonstration of God's existence. For an introduction to the topic, see Cottingham, J., (1986), 47-78; Agostini, I., *L'idea di Dio in Descartes: dalle Meditationes alle Responsiones* (Milano: Mondadori, Firenze: Le Monnier Università, 2010).

³⁷ Cf. Des Chene, D., *Physiologia: Natural Philosophy in Late Aristotelian and Cartesian Thought* (Ithaca and London: Cornell University Press, 1996), 349.

³⁸ Cf. Aristotle, *Mem.* 1, 449^b30-450^a9.

³⁹ Aristotle's concept of prime matter (*prote hule*) is connected to his analysis of substantial change, that is, generation and corruption (Aristotle, *Pb.* I 7, 189^b30-191^a22). In this context, he defines matter as "what ultimately underlies a thing; it is that from which something comes to be and which remains as a non-accidental component in the thing's make-up" (192^a31-32). According to Simplicius' interpretation (*in Pb.* 229, 6; 230, 19-20, 26-27, 31; 232, 24; 537, 13; 623, 18-19 ed. Diels) and Philoponus' treatise *De aeternitate mundi* (Xi 1-8, pp. 405-445 ed. Rabe), this underlying stuff is the three-dimensional extension that is the common subject of which all sensible things are made.

⁴⁰ On this philosophical tradition, see Donati, S., "La dottrina delle dimensioni indeterminate in Egidio Romano," *Medioevo* 14 (1988): 149-233; Pasnau, R., *Metaphysical Themes. 1274-1671* (Oxford-New York: Clarendon Press, 2011), 60-71. On the Scholastic debate on prime matter and its independence of form, see Ariew, R., (2011), 127-146.

⁴¹ Cf., e.g., Aristotle, *Metaph.* Z 10, 1036^a9-12.

- ⁴² Cit. in Des Chene, D., (1996), 349n.
- ⁴³ Cf., e.g., Aristotle, *Pb.* II 2, 194^a27-33; 8, 199^a30-32; 9, 200^a30-b8.
- ⁴⁴ Aristotle, *PA* IV 10, 687^b2-4.
- ⁴⁵ Cf. Aristotle, *PA* IV 10, 687^a11-12; *GA* II 6, 744^b16-17.
- ⁴⁶ Aristotle, *PA* IV 10, 687^a18-21.
- ⁴⁷ Aristotle, *Pb.* II 1, 192^b20-23.
- ⁴⁸ Cf. Descartes, R., *Meditationes de prima philosophia*, AT VII, 55.
- ⁴⁹ Descartes to Mersenne, 26 April 1643, AT III, 648.
- ⁵⁰ Barnes, J., *Aristotle: A Very Short Introduction* (Oxford: Oxford University Press, 2000), 119.
- ⁵¹ Descartes to Mersenne, 13 November 1629, AT I, 70. The treatise was ready for publication already by 1633: the first part, entitled *Le Monde* [*The World*], dealt with the origins and structure of the physical universe; a concluding section, now known as *L'Homme* [*Treatise on Man*], dealt with human physiology. But at once Descartes decided to refrain from publishing his work. In June 1633, the Inquisition in Rome issued a formal condemnation of Galileo Galilei's *Dialogo sopra i due massimi sistemi del mondo, ptolemaico e copernicano* [*Dialogue on the Two Chief Systems of the Universe, the Ptolemaic and the Copernican*], which attacked a number of Aristotelian doctrines. "I desire to live in peace and to continue the life I have begun under the motto 'Bene vixit, qui bene latuit,'" he confessed to his friend Mersenne in a letter of April 1634 (AT I, 285). A sample of *Le Monde* was given, anonymously, to the public in 1637, as part of a treatise entitled *Les Météors* [*Meteorology*]. "I did not want my name to appear on the title page, in order to do everything I could to protect myself from the envy and hostility which, though quite undeserved, I realised would fall on me as a result of the publication of these specimen essays" (AT VII, 575). (The other essays are *La Dioptrique* [*Optics*] and *La Geometrie* [*Geometry*], whose introduction is the *Discours*).
- ⁵² Lewis, D. K., "An Argument for the Identity Theory," *The Journal of Philosophy* 63/1 (1966): 17-25.
- ⁵³ Descartes, R., *PP* III, art. 63, AT VIII, 114.
- ⁵⁴ Descartes, R., *PP* III, art. 92, AT VIII, 146.
- ⁵⁵ Descartes, R., *PP* IV, art. 26, AT VIII, 216.
- ⁵⁶ On Descartes' misuse of Aristotle's concept of self-motion, see Byers, S., "Life as 'Self-Motion': Descartes and 'the Aristotelians' on the Soul as the Life of the Body," *The Review of Metaphysics* 59 (2006): 723-755.
- ⁵⁷ Aristotle, *de An.* II 1, 412^b15.
- ⁵⁸ Aristotle, *de An.* II 1, 412^b16-17.
- ⁵⁹ Cf. Aristotle, *Mem.* 2, 453^a7-14; *HA* I 1, 488^b24-26.
- ⁶⁰ Nonetheless, under certain circumstances (e.g. when *nous* is temporarily clouded over by emotion, or disease, or sleep: cf. *de An.* III 3, 429^a4-8), human beings follow appearances contrary to reasoning: see e.g. Aristotle, *de An.* III 10, 433^a10-12.
- ⁶¹ Cf. Aristotle, *MA* 7, 701^a23-25; *EN* VI, 1141^b14-21; 1142^a20-23; VII, 1146^b35-1147^a10, 25-26.
- ⁶² Cf. Aristotle, *de An.* III 7, 431^b7-8.
- ⁶³ Cf. Aristotle, *de An.* III 7, 431^b2-10; 11, 434^a5-10.
- ⁶⁴ Cf. Aristotle, *Pol.* I 2, 1253^a9-18.
- ⁶⁵ Aristotle, *Pol.* I 2, 1253^a10-11.
- ⁶⁶ Aristotle, *Pol.* I 2, 1253^a14-15.
- ⁶⁷ Voice is defined as "a sound produced by an animate being," and sound is nothing but a displacement of air: cf. Aristotle, *de An.* II 8, 420^b5-421^a6.
- ⁶⁸ Cf. Aristotle, *HA* IV 9, 535^a28-b1.
- ⁶⁹ Cf. Aristotle, *PA* II 17, 660^a17-27.

⁷⁰ Cf. Aristotle, *PA* II 16, 660^a2-7.

⁷¹ Cf. Aristotle, *PA* III 1, 661^b13-15.

⁷² Cf. esp. Aristotle, *PA* IV 10.

⁷³ Cf., e.g., Canguilhem, G., "Machine and Organism," in *Incorporations*, eds. J. Crary and S. Kwinter (New York: Zone, 1992), 45-65; Hutchins, B. R., "Descartes and the Dissolution of Life," *The Southern Journal of Philosophy* 54/2 (2016): 155-173.

⁷⁴ Cf., e.g., Wilson, C., (2000).

⁷⁵ Cf., e.g., the dedicatory letter to *Meditationes* (1641), AT VII, 2-3; Second Set of Replies, AT VII, 153.

⁷⁶ Cartesian Dualism, as it is understood by philosophers and scientists of mind today, entails two interrelated claims. (i) Substance Dualism: The mental and the physical are separate substances of two fundamentally and irreducibly distinct kinds. (ii) Causal Interactionism: Mental states causally interact with physical states, both causing such states and being caused by them.

⁷⁷ Introspection was indeed the method of the first scientific school of psychology, i.e. Structuralism, led by Wilhelm Wundt in Germany since 1879 (when he founded the first formal laboratory for psychological research at the University of Leipzig).

⁷⁸ Simply put, the Double-Aspect Theory states that the mental and the physical are two (independently identifiable) aspects of a single underlying substance that, in itself, is neither mental nor material, but neutral or composite. According to Functionalism, mental states are functional states of the physical systems that realise them; mental states are compositionally plastic: the same mental state can be realised in a variety of (functional isomorphic) physical systems ("multiple realisation thesis"). Supervenience is a form of "nonsymmetric covariation:" there cannot be difference in mental states without a difference in physical states. Mental states "supervene" on (i.e. are dependent on, but irreducible to) physical states; they "emerge" from a more basic level as new causal powers obeying their own laws (i.e. laws which are not deducible from physical laws). Cf. Di Francesco, M. (2002); Lowe, E. J., *An Introduction to the Philosophy of Mind* (Cambridge: Cambridge University Press, 2000); Kim, J. (2006). See also Caston, V., "Epiphenomenalism, Ancient and Modern," *Philosophical Review* 106 (1997): 309-363 (esp. 310-319).

⁷⁹ The phrase refers to the title of a famous work by Antonio Damasio, *Descartes' Error: Emotion, Reason, and the Human Brain* (New York: Putnam, 1994). Although Damasio recognises in Cartesian Dualism the "error" that has invalidated the studies and research in medical and philosophical fields, he also maintains a conceptual distinction between the mental and the physical sphere, and reduces the former to latter: sensory impressions, for example, are considered by him merely as "neural representations" due to "invisible micro-structural changes" that occur at the level of the cerebral cortex. It seems to me that it is possible to attribute to Damasio the thesis of the dependence of the mental on the physical but not vice versa: this idea resembles very closely the thesis of the "nonsymmetric covariation" peculiar to Supervenience (see note 78 above).

⁸⁰ Cf. Kenny, A., (1989), 1.

⁸¹ On the relevance of Aristotle's psychological hylomorphism to the contemporary philosophy of mind, see esp. Berti, E., "Aristotele e il 'Mind-Body Problem'," *Iride* 11/23 (1998): 43-62; *Aristotele nel Novecento*, Con una prefazione alla nuova edizione (Roma-Bari: Laterza, 2008); "The Contemporary Relevance of Aristotle's Thought," *Iride* 3/6 (2011): 23-35.

⁸² For an analysis of the contemporary interpretations of Aristotle's psychological hylomorphism, see Mingucci, G., *La fisiologia del pensiero in Aristotele*, Prefazione di E. Berti (Bologna: Il Mulino, 2015), 269-284.

⁸³ Cf. AT III, 298 (cit. above).