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Early Modern Philosophers and the Renaissance Legacy

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EARLY MODERN PHILOSOPHERS
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Editors

Early Modern Philosophers and the Renaissance Legacy

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Chapter 10

The Return of Campanella: La Forge versus Cureau de la Chambre

Emanuela Scribano

Abstract In his *Traité de l'esprit de l'homme*, Louis de La Forge argues that everything that can be observed in a living body can be explained without resorting to any form of knowledge. La Forge's target, never explicitly mentioned, is Marin Cureau de La Chambre, who in his work as a whole had developed the thesis that animals act through the presence of a form of knowledge that is different from that of the intellect and that can be attributed to the body. In claiming the necessity of a form of knowledge in organic events, Cureau was answering to a problem raised by Campanella in his *De sensu rerum*. La Forge's contention that no knowledge is required to explain nature is addressed against the permanence of Renaissance vitalism in the name of the original inspiration of Cartesian new science.

The physician Louis de La Forge built his entire work around the divulgation, defence and completion of the thought of Descartes. In the course of this endeavour he was, in the name of Descartes, required to refute the notion that knowledge of the mechanisms of the living body is the necessary condition for producing them. At around the same time Arnold Geulincx formulated the principle “*Quod nescis quomodo fiat id non facis*”, that is, an effect can be produced only by he who knows how it is done.¹ Geulincx elaborated this principle within a Cartesian context and it rapidly became an organic element in the arguments supporting occasionalism of Cartesian inspiration. What I wish to demonstrate here is, firstly that La Forge sustained the opposite thesis, using instruments drawn from Cartesian philosophy, and secondly that in doing so La Forge intended to defend Descartes' physiology against a form of vitalism which was fuelling the opposition to Cartesian science in Parisian philosophic and scientific circles.

¹The principle was formulated for the first time in 1663 in the *Disputatio physica* 3, in Geulincx (1965–1968), II, 502–503. Geulincx takes up the principle again in *Ethica*, First Treatise, in Geulincx (1965–1968), III, 30–37, in *Annotationes*, *ibid.*, III, 203–222, in *Metaphysica vera*, *ibid.*, II, 147–157. I have sought to demonstrate the origin of the principle *Quod nescis* and its radical opposition to Cartesian philosophy in Scribano (2011).

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The Animals, the Captain and the Ship

Descartes' *L'Homme* was published as a result of the collaboration between Clerselier and La Forge. In 1662 Schuyt had published the Latin translation of Descartes' text under the title *De homine*, supplementing it with a lengthy preface, also in Latin. In 1664, Clerselier published Descartes' text in the original French with a preface and accompanied by the extensive notes by Louis de La Forge, followed by the *Description du corps humain*. Clerselier also included an appendix with the French translation of Schuyt's preface; he was, incidentally, extremely critical of Schuyt's edition.²

In their prefaces to the text both Clerselier and – to an even greater extent – Schuyt devoted considerable space to the theory that animals are devoid of thought whereby Descartes ruled out any possible assimilation between man and animals, thus safeguarding as best as possible the immateriality of the mind belonging to man alone. According to the two editors of *L'Homme*, Cartesian physiology offers the strongest argument against animals possessing a soul and hence thought. Indeed it demonstrates that human biological events and instinctive behaviour are accounted for independently from the action of any psychic principle. The acceptance of Cartesian physiology leads to the conclusion that the presence of a mind is not necessary to account for any behaviour on the part of animals, since the mind is not even necessary as a cause for the behaviour that men have in common with them.³

The independence of bodily mechanisms from any immaterial principle is also abundantly underscored by La Forge in his notes to *L'Homme*. Simultaneously with the said notes La Forge was also working on the *Traité de l'esprit de l'Homme*, in which he intended to explain not only the functioning of the human body but also the operations of the mind and its union with the body. The *Traité* was published with the date 1666, but was actually printed in November 1665, just a year after the publication of *L'Homme*. In the *Traité*, La Forge refers to the notes to *L'Homme* apropos the study of the human body. He endorses the view that Cartesian physiology offers the best arguments for explaining animal behaviour without having to resort to a mind. Nevertheless, the target of La Forge's contention is different from that against which Clerselier and Schuyt argued, extolling the advantages of the Cartesian theory of animal-machines. Rather than failing to attribute to animals an immaterial soul, he denied that the body is capable of thought.

² On the text of *L'Homme* see Meschini (2011), 165–204.

³ Claude Clerselier, in Descartes (1664) Préface, *in fine*. I quote from La Forge (1999), 52: "Comme la grande ressemblance qui est entre les hommes et les bestes, soit dans la conformité de leurs corps, soit dans la conformité de leurs actions, est cause que l'on croit qu'elles agissent par un principe interieur en quelque façon semblable au nostre, c'est à dire, par une Ame qui sent et qui connoist, il me semble que pour combattre ce prejuge [...] un des plus puissants moyens est de faire voire que la plupart des choses mesmes qui se font en nous, se font sans le ministere de l'ame, et ne sont point connu par elle [...] et partant qu'elles ne laisseroient pas de se faire, quand il n'y auroit en nous aucun principe connoissant [...]."

La Forge devotes three chapters of the *Traité* – III, IV and V – to demonstrating that everything that is immaterial, and only that which is immaterial, can think, and that everything that is material, and only that which is material, is extended, in opposition to the philosophers that attribute thought to matter.⁴ Such philosophers include those who, like Hobbes, admit no other substance than that which is material. However, the opinion of those who accept the existence of immaterial substances while maintaining that material substances can also think and that spiritual substances too are extended, is equally erroneous. These philosophers, like the materialists, dispute the very foundation of Cartesian metaphysics, namely the opposition between thought and matter, which is why La Forge sees them as the most formidable opponents. To support their theories they tend to draw on the instinctive behaviour of animals which calls for a form of knowledge, and hence of thought. Since animals do not possess an immaterial soul, the knowledge that their instinctive actions display must belong to the body. A form of knowledge similar to the instinctive knowledge of animals would then be necessary to explain all the phenomena of life.

La Forge defines the distinctive characteristics of the theory he intends to refute. People calling into question the boundary between thought and extension argue that:

- (i) Animals act as the result of the presence of a form of knowledge. This knowledge is not intellectual, and therefore can be ascribed to the body without undermining the distinction between spirit and matter.
- (ii) Unless some form of knowledge is ascribed to animals one cannot account for their instinctive behaviour.
- (iii) Hence, either a living body has a form of knowledge or it is governed by an external Intelligence.
- (iv) If a living body were deprived of knowledge, it would be deprived of life too.⁵

The second is the argument La Forge considers the strongest. Indeed, it appears difficult not to attribute to animals feelings and knowledge like those of humans, since animals perform similar actions to humans. To undermine this argument one has to resort to Descartes, demonstrating that everything that can be observed in a living body can be explained without resorting to any form of knowledge. In this, La Forge's argument does not diverge from that sustained by Clerselier and Schuyf, but he does add an ulterior argument. If it is argued that knowledge is necessary to

⁴La Forge (1666), in La Forge (1974), 120: "L'on ne sçauroit [...] sans contradiction attribuer aucune Pensée au Corps, ni aucune Estendue à L'Esprit."

⁵Ibid.: "nos parties aduerses disent trois choses. La premiere, que la connoissance sensitive qu'ils attribuent à quelques corps est d'un genre tout à fait different de celle de l'entendement; La seconde, que sans cette connoissance les actions des brutes ne sçauoient s'expliquer, et partant qu'il faut reconnoistre, ou que les Corps sont capables de quelques pensées, ou établir une Intelligence pour la conduite de chaque animal; La troisième, que suivant nostre opinion, les Corps ne seroient pas seulement prives de la pensée, mais encore de la vie, puis qu'elle se rencontre aussi dans les substances Spirituelles."

explain the behaviour of animals, one cannot stop at the knowledge of the end the animal intends to achieve. The animal also needs to know the physical mechanisms through which the action is produced.

La Forge appropriates the famous paragon between the mind and body and the captain and the ship. This comparison, which Thomas Aquinas considered emblematic of the relationship between mind and body in Platonist theory, was rejected by Descartes in Meditation VI as being unable to explain how bodily movements are transformed into mental sensations.⁶ La Forge takes up this analogy and uses it against those who consider that knowledge is necessary to cause bodily movements in a living organism. Those who think in this way commit themselves to using the model of the relationship that exists between the captain and the ship: in effect, the captain uses his knowledge to pilot the ship. But the model has to be followed through to its logical conclusion. It is not enough for the captain to know where he wants to steer the ship for the ship to sail towards its destination. The captain also has to know how the ship works in order to steer it along its course.⁷ Consequently, if knowledge were a necessary condition to explain animal behaviour, not only ought animals to be aware of their intentions, but also of the way in which the animal spirits, the nerves and the muscles have to move to pursue such ends.⁸ However, in this way we would have to attribute to the animal a much greater knowledge than that which man knows to be necessary to move his body. Indeed, we know that a human being moves his body without his mind knowing how to produce those movements. Hence, knowledge is not required to cause biological events or instinctive actions in either animals or humans. In short, the model of the captain and the ship, used to support the theory that a form of knowledge is required to cause bodily movements, is in itself the best refutation of the theory it is intended to illustrate.

La Forge returns to a more detailed discussion of the ship and captain model later on, in Chap. XV, which is devoted to the union between the human mind and the body. Not only does animal behaviour not require any knowledge in order to be produced, but not even voluntary human actions require it. The will is sufficient for certain effects to be produced in the body without the mind knowing them, precisely because the mind is not connected with the body in the same way a captain is with

⁶R. Descartes *Meditationes de prima philosophia*, in Descartes, AT, VII, 81: “Docet etiam natura, per istos sensus doloris, famis, sitis etc., me non tantum adesse meo corpori ut nauta adest navigio [...]” See Manzini (2003).

⁷La Forge (1974), 122: “Seroit-ce assez [...] pour expliquer le mouvement d’un vaisseau qui seroit porté tantost en Syrie, et tantost en Affrique, de dire que le Pilote qui est dedans a dessein d’y aller, et qu’il a connoissance de la route qu’il doit tenir, ne faudroit-il pas outre cela qu’il sceust parfaitement bien l’usage de tous les instruments du Vaisseau, et qu’il eust l’adresse de s’en bien servir pour agir en vray Pilote et le pouvoir bien conduire; et si par malheur il ignoroit ces choses, ne seroit-on pas obligé de reconnoistre une autre cause du mouvement du Vaisseau, que le seul dessein du Pilote et la connoissance qu’il auroit des chemins si l’on voyoit qu’il suivit fort bien la route?”

⁸Ibid.

his ship.⁹ It follows that, even if we were to attribute to animals knowledge on a par with our own, this would be of no use at all in explaining their behaviour.¹⁰

According to La Forge, the Cartesian rejection of the analogy of the captain and the ship implies that knowledge of the neuromotor processes is never necessary to produce the movements of the body, including in the latter biological events, instinctive behaviour common to both men and animals and voluntary human actions.¹¹

La Forge's Adversary

Whom does La Forge have in mind? There was no shortage of people who ascribed knowledge to animals in order to explain their behaviour, but who was it who maintained that the knowledge of the end is necessary and sufficient to explain the behaviour of animals? Who claimed that such knowledge is not intellectual and hence can be ascribed to the body? Who posited the alternative of ascribing to animals either knowledge or the dominion of an external Intelligence? Who put knowledge on a par with life? Finally, who was it that maintained that the body is capable of knowledge and that spiritual substance is extended?

Taken together such tenets unequivocally pinpoint La Forge's target. It was Marin Cureau de La Chambre, the King's doctor. Cureau de La Chambre had been engaged in an important and lengthy dispute with Pierre Chanet on the subject of animal instinct. In 1643 Chanet had published *Considérations sur la Sagesse de Charron*, a refutation of Charron's theory whereby the behaviour of animals displays knowledge and reason. According to Chanet, although knowledge is necessary to explain the instinctive behaviour of animals, such knowledge must comprise an awareness of the bodily mechanisms through which instinctive behaviour is produced in both animals and humans. Not even men possess such knowledge and hence instinctive actions both human and animal have to be traced back to God, the only entity to which the scientific knowledge essential for producing bodily movements can be attributed.¹² Cureau had refuted Chanet's arguments in a brief treatise,

⁹ Ibid., 223: "Et enfin, ce n'est pas simplement en voulant mouvoir les diverses parties de son Vaisseau qu'il (le Pilote) a la puissance de le faire avancer, et d'en changer la situation; mais c'est par une connoissance distincte qu'il a des instrumens dont il se doit servir, et par l'employ qu'il en fait; au lieu que l'Esprit de l'Homme n'a de sa nature aucune connoissance des moyens nécessaires pour mouvoir son corps; et quand mesme il l'auroit, elle luy seroit inutile; la seule Volonté qu'il en a estant suffisante pour cet effet."

¹⁰ Ibid.: "Vous pouvez voir de cecy que les Mechaniques et l'Anatonie, dont la science est tres-utile pour connoistre comment le Corps a la puissance de se mouvoir, sont tres-inutiles pour concevoir comment la pensée de l'Homme a le pouvoir de le faire; et qu'ainsi c'est une chose non seulement inutile, mais mesme ridicule, de vouloir expliquer par elle le mouvement des membres des Bestes."

¹¹ Sandrine Roux maintains that Descartes' own rejection of the paragon of the captain and his ship already implies the rejection of knowledge as a condition of causality in voluntary movements. See Roux (2015).

¹² Chanet (1643), 64–92.

Quelle est la connoissance des bestes et jusqu'où elle peut aller, published as an appendix to the second volume of the *Caractères des passions* which appeared in 1645. In this work Cureau argued that a minimal knowledge is sufficient to produce animal behaviour, namely the mere awareness of the goal to be achieved, so that this minimal knowledge may be attributed to animals, which are devoid of intellect and operate purely through imagination.¹³ Furthermore, the imagination is a material faculty and for this reason is distinct from the intellect.¹⁴

Therefore, both Cureau and Chanet were convinced that knowledge was necessary to explain instinctive behaviour. The opposition between them hinged on the type of knowledge required and, consequently, on who possessed it. Cureau reduced it to an awareness of the end to be pursued, attributing it to the animal and to a material faculty; Chanet, on the other hand, claimed that a perfect knowledge of the corporeal mechanism was required and hence settled upon God as its repository.

The polemics between Cureau de la Chambre and Chanet on animal intelligence ended in 1647 with Cureau's *Traité de la connoissance des animaux*. Almost twenty years later, however, Cureau resumed the issue in the *Système de l'âme*, published on 27 May 1664. The printing of Descartes' *L'Homme* with La Forge's notes was completed on 12 April 1664, so that it would have been impossible for him to have had Cureau's text in mind as he was drafting these notes. A second edition of Cureau's *Système*, without significant changes, was published in 1665. In this work he argued that the same knowledge required to account for animals' instinctive actions was necessary for all biological phenomena.¹⁵ In this way Cureau expanded and rendered explicit a theory already mentioned in the *Traité de la connoissance*

¹³Cureau de La Chambre (1645b) appended to Cureau de La Chambre (1645a). Chanet replied with Chanet (1646). Cureau responded in turn with Cureau de La Chambre (1647).

¹⁴Cureau de La Chambre (1989b), 323: "[...] l'imagination est au rang des choses materielles"; Cureau de La Chambre (1989a), 214: "[...] l'Entendement est une puissance séparée de la Matière [...] et [...] elle est différente de l'Imagination qui est dans l'ordre des choses materielles."

¹⁵Cureau de La Chambre (1664), 173–176: "les actions de l'Ame Vegetative tombent sous la question de l'Instinct [...] on donne ce nom-là aux actions qui se font par une obscure et secrète Connoissance [...]. Or puisque cette cause est commune à toutes [les choses], il est certain que si nous la pouvons connoistre en quelqu'une, ce sera *la mesme* qui fera agir toutes les autres; et nommément la Vegetative qui est celle qui nous occupe maintenant. Cherchons-la donc dans les Animaux, c'est-à-dire, dans l'Ame Sensitive où il semble qu'elle est plus manifeste, et où l'on en a fait de plus exactes et de plus frequentes observations." Italics mine. See also, 160: "[...] il faut presupposer qu'il y a une Connoissance dans l'Homme, où les Sens ni la Raison n'ont point de part, et qui se remarque principalement dans la faculté Vegetative. Car il est impossible de considerer tant de diverses actions qu'elle fait, et l'ordre et les mesures qu'elle y garde, qu'on ne soit contraint d'avouër qu'il y a quelque connoissance qui regle et qui conduit une si belle oeconomie. Quand il n'y auroit que ce qui se passe dans la premiere conformation du corps, où le nombre, la figure et la situation des parties sont si justes et si regulieres; cela ne seroit-il pas capable de persuader que la cause qui en a la direction, est bien sçavante, et qu'elle fait les choses avec plus de connoissance, que la raison mesme ne pourroit faire, quand elle s'en voudroit mesler toute seule?" For the knowledge that regulates the life of the plants, see 216. Initially inanimate things are compared to vegetables and animals (ibid., 174–175), but later Cureau concludes that the inanimate bodies have only the "ombre de la Connoissance" rather than true knowledge since, unlike living things, they are passive, 217. See also, 222 ff.

des animaux: namely the continuity of nature from minerals to animals, the entire natural world being traversed by different degrees of knowledge.¹⁶

In his work as a whole Cureau had developed the arguments which La Forge now set himself to refute in the *Traité de l'esprit de l'homme*: animals act through the presence of a form of knowledge that is different from that of the intellect, which can be attributed to the body; animals possess only the knowledge of the end they intend to pursue; without this form of knowledge one could not account for the instinctive behaviour of animals; either a living body has a form of knowledge or it is governed by an external Intelligence¹⁷; if a living body were deprived of knowledge, it would be deprived of life too.¹⁸ In the *Système*, Cureau himself had argued at length in favour of the extension of the soul, thus in La Forge's eyes putting the finishing touch to his attempt on the distinction underpinning the entire edifice of Cartesian metaphysics.¹⁹ Finally, if the target of the controversy is Cureau de La Chambre La Forge's contention is easier to understand, interested as he was in the absence of *knowledge* in animals rather than the absence of *sensitivity*, which was instead the most shattering aspect of Descartes' theory of animals.

La Forge refutes Cureau's arguments one by one. There is no form of knowledge different from that of the intellect; hence if living bodies had knowledge they would also have to have a non-material mind.²⁰ If knowledge were an essential prerequisite to explain the movement of the living body it would require a knowledge much greater than simply that of the end to be achieved. Finally, the life of spiritual substances is governed by principles that cannot be reduced to the purely corporeal principles that produce life in animals and plants.²¹

¹⁶ See Cureau de La Chambre (1647), chap. 2, *Que la perfection des choses est commencée dans celles qui leur sont inferieures*, 45 ff.

¹⁷ Cureau de La Chambre (1664), 163–164: “Tout le monde voit et admire la sage conduite de cette Faculté (vegetative), et il n’y a personne qui n’advoué qu’elle agit avec un ordre et une justesse merveilleuse qui marque une grande Connoissance. Ce n’est donc pas en cela que consiste la difficulté, c’est de savoir si cette Connoissance est un effect de la Faculté Vegetative, ou si elle part d’une plus noble cause. De la rapporter à la Vegetative il n’y a point d’apparence, puisque personne ne l’a mise au rang des Facultez connoissantes. [...] De façon qu’il faudroit en ce cas recourir à une Cause exterieure et intelligente qui poussast toutes ces choses à faire leurs actions, et qui y mist la regle et la justesse que l’ont y remarque.”

¹⁸ *Ibid.*, 217: “tout ce qui est vivant connoist, et [...] tout ce qui connoist est vivant.” The argument that La Forge is referring to, whereby life belongs in the first place to a spiritual soul, may perhaps be derived from this passage, 167: “En effet ce sont actions vitales qui font partie de la vie, et toutes les actions de vie doivent estre produites par un principe de vie: or il n’y a point d’autre principe de vie que l’Ame mesme, et par consequent c’est elle seule qui les fait.”

¹⁹ Indeed Book V of the *Système de l’âme* is entitled *De l’Extension, Des Parties, De la Figure et de la Grandeur de l’Ame*.

²⁰ La Forge (1974), 121. La Forge assumes an agnostic attitude as regards the soul of animals. The question that can be answered is not whether or not animals possess a soul, but whether a certain animal behaviour requires a spiritual and knowing soul in order to be produced, which La Forge emphatically denies, *ibid.* Here La Forge aligns himself with the agnostic position adopted by Descartes in the letter to Henry More of 5 February 1649, in AT V, 276–77.

²¹ La Forge (1974), 124.

The Spectre of Campanella

Cureau's work appears to La Forge a stepping stone towards an open materialism. After having refuted those who admit the existence of spiritual and material substance, but deny any distinction attributing thought and extension to both, La Forge devotes a chapter to countering those who admit the existence only of corporeal substances and consider that thought is a property of matter.²² Here, in passing, La Forge observes that those who maintain that thought is a property or a consequence of the body come close to Campanella's way of thinking and hence to a philosophy that is rejected by all people "de bon sens."²³

It is probable that, in evoking the spectre of Campanella, La Forge still had Cureau de La Chambre in mind. Cureau had had personal relations with Campanella,²⁴ and many pages of Cureau's *Système de l'âme* were in effect impregnated with the influence of the *De sensu rerum*. Challenging Aristotle, Campanella had argued that the sensitive soul is material, and Cureau was of the same opinion.²⁵ Like Campanella, Cureau considered all living phenomena to require some form of knowledge. Like Campanella, Cureau thought this knowledge to be internal to the living body itself. Posing the alternatives of a knowledge internal to the living body or external to it, Campanella had opted for the former since the latter would have impaired divine perfection. He argued that if the works of God are perfect, God must have provided them with the means necessary for their survival, first and foremost with the knowledge of what is beneficial or harmful to self-preservation.²⁶ Cureau proposed exactly the same alternative as Campanella, applying it to living beings: since living phenomena require knowledge, either the living being itself has

²²Ibid., Chap. 6: "Autre preuve contre ceux qui ne reçoivent que des substances corporelles."

²³Ibid., 127: "De dire que la Pensée constitue l'essence du Corps, ou qu'elle en soit une suite, on ne le peut sans attribuer la connaissance à tous les corps, ainsi que faisoit Campanella: mais comme personne de bon sens ne suit cette opinion, je ne m'amuse pas aussi à la refuter."

²⁴Cureau had been in contact with Campanella on the question of the flooding of the Nile. See *Judicium C.V. Thomae Campanellae De Causa Inundationis Nili allata* in Cureau de La Chambre (1665), 199–212, concerning Cureau de La Chambre (1634). See Firpo (1947), 126–133, and Darmon (1985), 27–29. The direct relations between the two are documented by two passages in letters from Campanella to Pierre Séguier, dated 13 September 1636 and 16 February 1637, that is at the time that Campanella was publishing the second and third editions of *De sensu rerum*, dedicated to Cardinal Richelieu. See Campanella, *Lettere* (2010), 467 and 645–646. The first edition of *De sensu rerum* dated to 1620. See the introduction by G. Ernst to Campanella (2007). I should like to thank Germana Ernst for having informed me about the relevant passages in Campanella's letters.

²⁵Campanella (1637), book II, chaps. 7 and 8. On Campanella's thesis about sensibility and conscience, in relation with Descartes' thought, see Paganini (2008), 126–169.

²⁶Ibid., 11: "At plurimi Deo tribuunt huiusmodi actus, qui intrinsece in rebus operatur [...] Ego vero respondeo, praedictas opiniones omnes aut perperam declarari, aut errorem continere. Si enim omnia opera Dei perfecta sunt [...] fateri oportet, eas rebus vires ab eo largitas esse, quae ipsarum conservationi sufficiant. Quoniam vero nulla facultas tam necessaria est in tanta rerum varietate, quam cognocendi similia, quibus servamur, et contraria, quibus destruiamur, necesse est hanc sentiendi vim innatam esse rebus cunctis."

this knowledge or God has. Like Campanella, Cureau recalls that the Platonists had opted for the second alternative – both quote Avicenna – whereas others had rejected it.²⁷ The “others” mentioned by Cureau, and with whom he agrees, consider that divine perfection entails attributing creatures enough knowledge to independently guide their own actions. Such “others” undoubtedly include Campanella, and Cureau explicitly sides with him by using the very same argument. The dates allow us to confirm that the fear of a revival of Campanella’s animism, which La Forge expressed in 1665, were justified by Cureau’s most recent publication.

Cureau’s polemic with Chanet, which terminated in 1647, had merely prefigured an extension of knowledge to biological phenomena as a whole, through the allusion to a natural continuity extending from minerals through to man. It was only in the *Système de l’âme* that Cureau revealed his complete adherence to Campanella’s animism. Nor was this the only novelty of the *Système*, since in this work Cureau also decided to explicitly attack Cartesian physiology by challenging the theory of the pineal gland.

As a result of his position as the king’s physician and a founder member of the Académie des Sciences, Cureau de La Chambre found himself in the thick of the medical debates engaging the most prominent scientists. Among these we should recall a figure whose intellectual career was closely bound up with that of Cureau: the physicist and writer Pierre Petit. In 1660 Petit had published in Paris a treatise entitled *De motu animalium spontaneo liber unus*²⁸ in which he had utilised some of Cureau’s ideas to explain bodily movements. In opposition to Chanet, Cureau argued that the imagination of the animal was equipped with innate images that provided it with the practical knowledge required for instinctive behaviour.²⁹ Utilising Cureau’s account of instinct, Petit set out to explain all biological events and voluntary movements through a form of knowledge transmitted to the parts of the body via images. According to Petit, such images instantly convey knowledge of the agent’s intentions from the brain to the limbs; the presence of the images sent from the brain means that the parts of the body involved know what they have to do and therefore can succeed in doing it.³⁰ An eloquent example of this is the marks

²⁷ Cureau de La Chambre (1664), 164–5: “Neantmoins il y en a d’autres qui ne peuvent approuver cette opinion. Car quoy qu’elle soit appuyée sur la Bonté et sur la Providence de Dieu ... ils croyent qu’elles est injurieuse à sa Toute-puissance et à sa Sagesse, qui a deû donner à ses ouvrages toute la perfection qui leur estoit convenable. De sorte que chaque chose estant parfaite quand elle a la vertu de faire les actions qui luy sont propres; il estoit de la gloire du Createur de luy donner cette vertu, et de ne la rendre pas inutile en faisant de luy-mesme l’action qu’elle doit produire.”

²⁸ Petit (1660).

²⁹ Cureau de La Chambre (1989b), 344–346.

³⁰ Petit (1660), 153: “Eadem enim imaginatio, quae in cerebro imperat, in membris exequitur, postquam imperij species per spiritus animales propagata, ad ipsam pervenit. Exempli causa, libet nunc exarare has literas, eodem ipso momento scriptionis species ad eos manus nervos pervenit, qui ad eam actionem comparati sunt, simul quae iis nervis inest imaginatio per speciem acceptam, quid velim, cognoscit: cognitoque consilio spiritus musculis digitorum contentos ciet iis motibus, qui ad exarandas has vel illas literas pertinent.”

impressed on the foetus, a phenomenon for which, according to Petit, no one has ever provided a satisfactory explanation.

Cureau, in turn, borrowed Petit's account of how the mind can move the body in his *Système de l'âme*. When the imagination wants to move an arm, it forms an image of the movement it wants to produce. This picture spreads like a flash through the parts of the body and joins the natural images that are impressed on the muscles necessary for such movements, which resemble the picture formed by the imagination. The two images come together to move the muscle assigned to that particular movement.³¹

A logical corollary of this explanation of body movements is the rejection by Petit and Cureau of the central role of the brain in perception. In the *De motu* Petit criticised the Cartesian doctrine of the pineal gland, after which Cureau in the *Système* challenged the theory of the pineal gland as extravagant and contrary to experience.³² Each part of the body has sensitivity and hence a form of knowledge.³³ In order to demonstrate that sensation is independent of the brain, Cureau was one of the first to draw attention to the phenomenon of irritability.³⁴ The rejection of the centrality of the brain is another aspect that links Cureau to Campanella, who had in his turn asserted that "bones, hair, nerves, blood and spirit, all feel, refuting Aristotle."³⁵

Descartes Versus Campanella

With his *Système de l'âme* Cureau joined the fray a month after the publication of *L'Homme* with La Forge's notes. The editors of *L'Homme* had set themselves a challenging commitment. Descartes' unpublished work was called upon to refute the criticisms that since the philosopher's death had begun to cluster around the physiology to be derived from the printed works, the *Discours de la methode*, the *Dioptrique* and the *Passions de l'âme*. This was the gauntlet thrown down by Clerselier and La Forge: to provide Descartes' work with weapons to defend itself

³¹ Cureau de La Chambre (1664), 489–491.

³² Ibid., 468: "Je ne veux pas perdre le temps à refuter une opinion qui s'est introduite depuis peu sur ce sujet, parce qu'elle est contraire à l'expérience, et n'est pas mesme concevable. Car elle veut que la Glande qui est au milieu du Cerveau se meuve incessamment [...]."

³³ Ibid., 208.

³⁴ Ibid., 209–210: "Il ne faut que remarquer l'*irritation* que la malignité des humeurs donne à la Nature en toutes les parties; les efforts et les mouvemens qu'elle leur fait faire pour chasser ce qui les incommode, comme sont les palpitations, les changemens de pouls, les vomissemens, les diarrhées et mille autres semblables qui se font à l'insceu du Cerveau et de la Faculté Sensitive. Car tout cela montre que la Nature est irritée: et il n'y a rien de si commun en la bouche des Medecins, que cette façon de parler; mais elle ne put estre irritée qu'elle ne sente, et qu'elle ne connoisse ce qui l'offense." Italics mine.

³⁵ Campanella (1637), book II, chap. XIII, 58: "Ossa, pilos, nervos, sanguinem et spiritum, omnes sentire contra Aristotelem."

against an adversary that might have grown and thrived in the absence of a more thorough physiological text such as *L'Homme*. In his criticism in the *Système de l'âme* of a physiology that placed the brain at the centre of biological and motor phenomena, Cureau went to swell the ranks of scientists such as Petit and Steno's teacher Thomas Bartholin, who had challenged significant aspects of Cartesian physiology.³⁶ And as if this were not enough, the year following the publication of the *Système de l'âme*, another and even more formidable adversary joined the enemy ranks in the person of the rising star of physiology, Nicolas Steno.

In 1665 Steno gave a famous lecture in Paris at Thévenot's house, in which he anticipated the results of his anatomical research on the brain; these were then published in 1669 in the *Anatomie du cerveau*, in which Steno criticised Descartes' theory of the pineal gland.³⁷ Both Cureau and Petit were probably in the audience at Thévenot's house, together with a group of Cartesians of strict observance.³⁸ In 1669 the publisher of the *Anatomie du cerveau* actually dedicated it to Cureau de La Chambre, whereas Steno's teacher Bartholin had associated Petit and Steno as supporters of the notion of sensitivity spread throughout the body.³⁹ La Forge had explicitly challenged Bartholin in his notes to *L'Homme*.⁴⁰ Nevertheless, far from extinguishing the anti-Cartesian fire, the edition of *L'Homme* with La Forge's notes appears to have poured oil on the flames. This led to the decision to tackle one of the philosophical cornerstones of the enemy camp: the knowledge attributed to the living body in order to explain its movements. This is exactly what La Forge proposed to do in the *Traité de l'esprit de l'homme*.

³⁶On Thomas Bartholin see Porter (1963), 99–125. A thorough review of the editions of Bartholin's *Anatomia reformata* between 1641 and 1674 is to be found in Meschini (1998), 75–80. See also Trevisani (1992), 223.

³⁷Franco A. Meschini has convincingly argued that the target of the *Discours sur l'anatomie du cerveau* was not only Descartes but also – or more importantly – La Forge's notes to *L'Homme*. See Meschini (1998), 85–98.

³⁸A list of those who probably attended Steno's famous lecture is to be found in Meschini (1998), 22–23. It is probable that writers close to Descartes such as Géraud de Cordemoy, Jaques Rohault and Claude Clerselier were also present.

³⁹Bartholinus (1673), 477: “*P. Petitus non cerebrum tantum imaginationis esse sedem, sed eandem in omnes corporis nervos continuari liberaliter concedit. Non multum dissimilis est Stenonius, cui animales operationes omnes non soli cerebro, sed spinali quoque medullae, tanquam primae scaturigini, adscribuntur.*”

⁴⁰La Forge (1999), 308. In the *Traité*, La Forge was to insist on the central role of the brain in sensing, seeking to explain the error of those who denied it. See La Forge (1974), 221. The pineal gland's movements causing sensations in the mind do not allow us to grasp their true causes, i.e. movements of the brain, “mais elles nous représentent l'action de l'objet, ou comme dans l'objet mesme, et hors du corps, ou du moins dans l'extrémité de quelqu'un de nos Membres.” Perceiving sensations in their remote origin (which would be ineffective if they did not reach the brain) is at the origin of the error that ascribes a sensitive faculty to the parts of our body: “nous avons attribué la faculté de sentir aux parties de nostre Corps, ou du moins nous avons cru que l'Ame l'exerçoit dans les organes extérieurs, d'autant que les pensées des Sens nous représentent l'action des objets, comme dans nos Membres extérieurs, et non pas comme dans le cerveau.”

The Captain and the Musician

An understanding of the context of the battle for hegemony in the field of physiological studies allows us to more fully grasp the logic behind the arguments La Forge uses against those who maintain that biological and instinctive phenomena can be explained purely through knowledge of bodily mechanisms. As we have seen, La Forge reasons that if knowledge were necessary to explain animal movement, then it would have to be the perfect knowledge that the captain needs in order to be able to steer his ship. In this way, not only did La Forge use Descartes against those who attributed knowledge to animals, but also challenged the devaluation of knowledge necessary to explain such behaviour. This devaluation was implemented by the writers such as Petit and Cureau who exerted themselves to attribute a form of knowledge to bodies, and was essential to their strategy.

Both Cureau and Petit attempted to reply to a problem raised by Campanella in *De sensu rerum*. According to Campanella, everything requires knowledge in order to perform the functions aimed at self-preservation. But how can the human mind move the body when it is ignorant even of its anatomy? “I am surprised that man is so ingenious and that his mind can guide his body, even without knowing how it does so.”⁴¹ It was a quandary that Campanella was unable to fully resolve, and Cureau shared this difficulty.⁴² The difference was that, like Petit, Cureau felt he had an answer to the problem that had tormented Campanella: how can the mind move the body if it does not know the mechanisms whereby the movement is produced? Both Petit and Cureau strove to show that the knowledge required to move the body was not the perfect knowledge of the body’s mechanisms. According to Petit, “it is not necessary for the imagination to understand all the relations of the movements and which muscles are required by each movement.” Who can possibly know how all the different muscles function? It is enough to know the purpose, what one wishes to do, and immediately the spirits linked with the imagination move in the manner proper to each function.⁴³ Already in the controversy with Chanut Cureau had argued that animals produce their instinctive actions purely through the

⁴¹ Campanella (1637), 95: “Admiror equidem hominem tanto praeditum ingenio, animamque eius regentem corpus, nec tamen ipsam scire, qua ratione regat. Fiunt intra nos tot concoctiones, separationes, aggregationes, nutrificationes, assimilationes, nec tamen intelligere possumus, quomodo fiunt; et quidem nos ipsi, qui animae sumus, hos actus operamur, nec tamen nostra opera, nec operationes nostras scimus.”

⁴² Cureau de La Chambre (1664), 488: “Car c’est une chose merveilleuse que l’Ame ne sçait point qu’elle ait des muscles, ni combien elle en a, ni quel usage ils peuvent avoir; et neantmoins quand elle veut remüer un membre, de plusieurs dont il est composé et qui font de mouvemens contraires, elle choisit si justement ceux qui sont propres à l’action qu’elle veut faire, qu’elle ne prend jamais l’un pour l’autre.”

⁴³ Petit (1660), 153–155: “Porro id praestare non est cujuslibet notionis, sed ejus tantum, quae practica est, hoc est, induta circumstantiis boni, vel mali, item loci, temporis, aliisque ejusmodi, quibus ad agendum determinamur. [...] Atque haec sufficit cognitio ad moderandos partium motus: neque enim necesse est comprehensas haberi imaginatione omnes movendi rationes, et qui ad quosque motus musculi faciant. Quotusquisque enim novit musculorum usus et differentias, aut

knowledge of the end they wish to achieve.⁴⁴ In the *Système de l'âme* the theory that a scientific knowledge of physical mechanisms is not necessary to produce bodily movement is taken up again and expanded. Through the natural or acquired images that are stored in the memory, the imagination of the animal knows which movements it intends to produce in the limbs without being aware of how the muscles have to act to produce such movements. The image of the movement that the animal wishes to achieve spreads through the body, joining up with the images similar to that movement that are inscribed only in the muscles capable of generating it. This explains how the animal is able to produce a specific movement despite being unaware of which muscles are required for it. The same thing happens with a harpsichord player. He is aware of which sound he wants to produce and which keys he has to play although he is unaware of the mechanism whereby the struck key produces precisely that sound.⁴⁵ It is not the analogy of the captain and his ship but that of the musician and the harpsichord that best illustrates the relation between the mind and the movement of the body.

La Forge is well aware that this strategy can provide a powerful argument in support of the theory that knowledge is a necessary condition for producing animal movement. If in order to produce physical movements it is necessary and sufficient to know the proposed intention and which parts of the body are to be moved, without knowing the physiological mechanisms behind such movement, this strengthens the notion of an animal knowledge that can be assimilated to that of man. This is why La Forge insists that, if knowledge is indeed required to move the body, then this must be the perfect knowledge that allows the captain to steer his ship, and not that of someone who obeys orders without knowing why or who plays a musical instrument without understanding its mechanics.⁴⁶ In short, the knowledge that is claimed to be necessary to move the body must be of the kind that Chanut and not Cureau referred to. Chanut, however, drew from it an argument for attributing such knowledge to God. La Forge, on the other hand, concludes that *no* knowledge is required to move a body, as demonstrated by Descartes. Not only is the mind not a captain, but bodily movement is not traced back to *any* captain at all, not even the supreme captain, God.

qua ratione membra moveantur? Sufficit, id quod agendum est, finem inquam non ignorari: mox enim conjuncti imaginationi spiritus moventur, ut unicuique functioni consentaneum est.”

⁴⁴Cureau de La Chambre (1989b), 344–346.

⁴⁵Cureau de La Chambre (1664), 493: “[...] il en est comme d’un Homme qui jouë du Clavessin: il connoist bien les accords qu’il veut faire, et sçait les touches qu’il doit abattre; mais il ne void et ne connoist point les sautereaux qui remüent les chordes; quoy que les touches qu’il a abatuës, fassent mouvoir les sautereaux. L’Imagination sçait aussi les mouvemens qu’il faut donner aux membres; les Images qu’elle forme sont les touches qui esbranlent les Images naturelles qui sont dans les Muscles; et les Muscles sont comme les sautereaux qui font le mouvement des membres.”

⁴⁶La Forge (1974), 122, see note 7. Malebranche too took up a stance opposed to Cureau’s thesis, claiming that there is no knowledge inferior to the scientific and hence no instinctive knowledge. See Malebranche (1972), 24.

Conclusion

The challenge of Campanella's animism, regenerated through the pages of Cureau, drove La Forge to take up a stance that placed him way out on the side lines from what was to become mainstream occasionalism, marshalling under the banner of "Quod nescis quomodo fiat id non facis" as an authentically Cartesian principle. This is a point that needs to be underscored. Although La Forge was an early subscriber to a form of occasionalism,⁴⁷ he did not use the "Quod nescis" principle to call the mind-body interaction into question. Indeed, La Forge's rejection of the need for knowledge to produce bodily movement was made in the name of Descartes himself, of his physiology and his refusal to compare the mind to a captain.

Nevertheless, from the very start the position adopted by La Forge the better to attack Cureau's vitalism was paralleled by the alternative that was to furnish grist to the mill of occasionalism. In his preface to the Latin edition of Descartes' text, Florentin Schuyl had rejected the theory that animals had to be attributed a mind and hence knowledge, since the knowledge necessary to produce animal movement was the prerogative of the divine mind. Schuyl quoted the motto "Opus naturae est opus intelligentiae", and referred to God and not animals the knowledge necessary to account for their behaviour: "the knowledge that allows animals to act does not belong to the animals, but to the author of nature whose wisdom is celebrated by all creatures."⁴⁸ Schuyl felt that Descartes' comparison of the body to a machine, while ruling out that the machine possessed an intelligence, also implied that an intelligence was nevertheless indispensable to explain its functioning. Schuyl too was entrapped by the alternative posed by Campanella and taken up again by Cureau: a form of knowledge is indispensable to explain the regularity of nature, and this knowledge is either in nature as Campanella and also Cureau were convinced, or in God, as – according to Schuyl – Descartes believed.

La Forge's conviction that *no knowledge* was required to explain nature continued to be marginal and disparaged, and with it the path chosen to stifle the revival of Campanella's vitalism in the name of loyalty to Descartes.

Translation from the Italian Aelmuire Helen Cleary.

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⁴⁷On La Forge's occasionalism see Bardout (2002) and Nadler (2011), 104–114.

⁴⁸Descartes, (1662), 8r: "Tantum autem affinitatem Nobis cum Bestiis non intercedere, neque etiam illas tantae dignitatis esse constabit, uti existimo, si probatum fuerit, Cognitionem, qua aguntur bestiae, non illarum esse, sed ipsius Authoris Naturae, cujus sapientiam omnes creaturae celebrant: juxta decantatum illud: *Opus naturae est opus intelligentiae*. Secundum hanc providentiam gravia deorsum, levia sursum feruntur: totumque hujus Mundi horologium tam ordinate circumagitur. Haec Tulipa, licet omni propria cognitione destituta, folia sua matutino Soli explicat, quae, ne à nocturno frigore semini fiat injuria, vesperi colligit, atque constringit."

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