

## **Referee's Report on the Habilitation Thesis: "The *a priori* in the Thought of Descartes" by Jan Palkoska, PhD.**

The stated aim of this habilitation thesis is to interpret and explain the conceptual pair of *a priori* and *a posteriori* in the work of René Descartes. To this end, the author investigates Descartes' overall conception of cognition and his understanding of the methods and aims of *scientia*, or systematic knowledge, in which these two concepts have their home. Descartes' understanding of the concepts of *a priori* and *a posteriori* is an important and neglected problem-area, and the author therefore offers to fill a significant gap in our understanding of Descartes. But the thesis goes much further than this, because in setting forth an interpretation of Descartes' approach to cognition and *scientia* in general, it allows us to perceive his philosophical corpus as a systematic whole.

The work is broken down into five chapters, and I will make comments on each before coming to a general evaluation.

### **Chapter One: Cognition and *Scientia***

This first chapter is a substantial contribution to the fundamental questions of Descartes' understanding of the mental faculties in connection with cognition. We find here significant and well-supported theses concerning Descartes' conception of ideas; his understanding of thinking (*cogitatio*); his conceptions of certainty and systematic knowledge (*scientia*); his theory of innate ideas; the meaning of "clear and distinct" perception; and the alleged circularity in his proof of the divine guarantee for divine knowledge. In each case the author offers extensive justification for the view he puts forward, showing how and why he differs from other interpretations in the secondary literature.

Several key points of the author's interpretation are apparent in this rich opening chapter. One is his intellectualist interpretation of imagination and sense in Descartes, which brings those two operations into line with the intellectual intension of "thought" (*cogitatio*) (p. 28-9). Another is his distinction between "implicit and explicit apprehension", which enables him to treat innate ideas as present in the mind from the beginning (thus properly 'innate' or inborn), but not explicitly apprehended until later (thus avoiding the far-fetched claim that the neonate must actually contemplate ideas of metaphysics or mathematics) (pp. 35-47). This distinction between implicit and explicit

apprehension will be drawn upon later in the thesis, for example when the author comes to consider judgements about simple natures (p. 105-6).

The interpretation of Descartes' innatism is significant, with the emphasis being put on the causal origin of the ideas in question. As he writes, "the source of innate ideas can ... be aptly described as the mind's reflexion upon its own operations and processes of thinking, or else inferences from such reflexions" (p. 31). Significant too, is the author's defence of a psychological interpretation of certainty in Descartes, i.e. as that which we cannot bring ourselves to doubt and which thus brings epistemological peace (p. 67). The author also argues that the threat of the "Cartesian circle", which has often been thought to vitiate Descartes' progress out of radical doubt, can be dispelled when we recognise that the proof of God's existence can be contained in a simple intuition, and that intuition (unlike deduction and other inferences) does not require the divine guarantee (pp. 68-74).

## **Chapter Two: Understanding and *Scientia***

This chapter examines the nature of the understanding in Descartes and its role in apprehending simple natures and the eternal truths. Of particular interest are the author's observation that the term "understanding" can refer in two different ways: broadly, as the passive faculty of mind in perceiving, in which case it includes perceptions of sense and imagination; narrowly, as the particular mode of that passive faculty when the intellect works in separation from the body (pure intellection). The author holds that it is the understanding in the first broad sense that is responsible for *scientia* and, in accordance with this general claim, he also puts forward the narrower claim that the imagination and sense can provide clear and distinct perceptions as well as the pure intellect (pp. 75-80), and, indeed, that there can be intuitions of sense and imagination, implying that these faculties may *directly* contribute to *scientia* (p. 85).

The author defends a realist, objectivist understanding of simple natures, as mind-independent realities, and he holds that the necessary relations between simple natures are to be conceived as necessary but non-analytic in nature. This leads to the question of what the necessity of these relations, which are known by intuition, consists in, for it so far "remains mysterious" (p. 109). To meet this challenge, the author draws upon Descartes' famous theological doctrine that God freely creates the eternal truths. This, he argues, implies that the propositional truths in question can be necessary, while not being grounded in the simple natures themselves, but in the "contingent fiat" of the

divine will. This is a highly stimulating suggestion, which would render the connections between simple natures necessary from our point of view, but not from God's.

It might be objected that by saying God creates the eternal truths, Descartes does not mean to assert that these truths are "contingent" from God's point of view (p. 111). We should remember that Descartes holds that will and understanding cannot be distinguished in God, and so an act of His will is, at one and the same time, a rational perception of His intellect. In addition, the nature of God's "freedom" raises questions of interpretation. The author has already usefully noted, in another context, that freedom can be understood "not so much in terms of control over whether one performs an action or not, but rather in terms of one's actions being self-determined" (pp. 53-4). A similar observation might apply to the free creation of the eternal truths by God. It would surely be wrong to envisage God choosing the actual eternal truths from a menu of possibilities, freely guiding his own performance of that choice. Rather the eternal truths flow from his unchanging nature and are thus, for God, "self-determined", and in this special sense "free". It is therefore questionable whether they are "contingent" and whether they could have been different. They would seem to be as fixed and unchangeable as the unchanging nature of God is—and God surely sees the necessity of his own determination of the actual eternal truths in this sense.

The remaining part of the chapter deals with deduction, and with the relation between deduction and intuition, demonstrating the radical divergence of Descartes' approach from the syllogistic account of discursive reasoning in Aristotle and his followers.

### **Chapter Three: The A Priori in Descartes: The Mathematical Line**

The third chapter sets out the link between Descartes' mathematical work and his use of the conceptual pair of *a priori-a posteriori*. It is argued that Descartes' ambition is to bring a methodological paradigm, employed with great success in arithmetic and geometry, to other disciplines, treating it as the sought-after method of *scientia*. The author is careful to distinguish Descartes' project of "extending" the method found in mathematics to other disciplines from a crude, popular interpretation, according to which he is deemed to be reducing other disciplines to mathematics, and thus encouraging a kind of "mathematicism" of those other disciplines (169-171). The salient point is rather that mathematics has been particularly susceptible to a universal

method—primarily because of the simplicity of its objects—a method that is not uniquely or peculiarly mathematical, and which can be established in other disciplines, rendering them *scientiae* too.

The author gives us a detailed and authoritative account of Descartes' innovations in geometry and algebra, noting the way he finds inspiration in the work of the Alexandrian mathematicians Diophantus and Pappus, and giving us a thorough account of how Descartes' own contribution in geometry builds on the developments in algebra in the early-modern period, particularly in the work of the pioneering Renaissance mathematician, François Viète. The author underscores the revolutionary shift in methodology that Descartes brings to his understanding of mathematical method. He is not just improving classical mathematical analysis, he is offering a new account—in terms of algebra—of what mathematical analysis should really be. This is a far-reaching paradigm-shift, for “the criteria of the intelligibility of mathematical objects are thus exempted from the Classical bonds of spatial intuitions of physical objects or collective intuitions of counted things and delegated instead to the relational domain of algebraic operations” (p. 209). This, implies, interestingly, that Kant's later attempt to found the mathematical sciences in spatial and temporal intuition was, *inter alia*, a conservative step back to the pre-Cartesian paradigm.

It is shown that Descartes had a practical approach to mathematics, treating maths as essentially a question of “problem-solving”. He was not interested in the questions of theoretical analysis and—in keeping with this practical bent—he valued algebra because he saw it as “the proper tool” for tackling the various problems that maths throws up (p. 222). This made him sceptical of the importance of the role of Classical synthesis, though that does continue to have a supportive role, as the understanding mind will need to move back and forth between algebraic relations and their numerical interpretation (p. 224).

Of particular interest in this connection is the discussion of the role of the imagination in mathematics (pp. 227-237). While the quantitative relations of algebra are known to the pure intellect, the imagination is required in employing auxiliary devices that maintain the proper interpretation of those quantitative relations. But the imagination also has more than an auxiliary role, for it enables abstractive “omission” of qualities when conceiving of mathematical objects. Thus the imagination is found to be essential to mathematics, and the whole faculty of understanding as passive perception is to be employed—not just the pure intellect—in our pursuit of

mathematical problem-solving. This is a persuasive and important finding, as the imaginative powers are sometimes treated dismissively in this context by commentators, and even Descartes himself can seem to disparage the epistemic value of the imagination in certain polemical contexts.

#### **Chapter Four: Towards a Universal Method of Discovery**

The fourth chapter begins by tackling the difficult question of what Descartes means by *Mathesis universalis*. In an extended treatment of the controversies among interpreters on this score, the author makes a convincing case for a narrow reading, according to which *Mathesis universalis* amounts to the programme of treating general algebra as the fundamental discipline in the field of mathematics (where mathematics comprises not just arithmetic and geometry, but also music and astronomy, and, it would seem, optics and mechanics). *Mathesis universalis* is not, then, to be confused with a systematic mathematical interpretation of the physical world, nor is it to be treated, more grandly, as the universal method of discovery.

We must look elsewhere for that universal method of discovery, so dear to Descartes' heart. The author thus embarks on the task of determining and reconstructing the universal method by paying close attention to the *Discourse*, with its accompanying scientific essays, and, above all, to the *Regulae*. The method is linked to his anti-Aristotelian conviction that the *scientiae* have a "peculiar unity", and it is shown how intuition and deduction are applicable to the method of all the different branches of this unity. *A priori* is then interpreted as the term that characterises cognitions which are attained by the procedure of analysis in this universal method of discovery.

#### **Chapter Five: The *A Priori* in Descartes: Integrating the Aristotelian Line**

In the relatively short final chapter, a certain link is established with the Aristotelian understanding of the conceptual pair of *a priori-a posteriori*. It is first argued that Descartes is led to use the term *a priori* when referring to cognitions attained by analysis because he is using the term with the same intension (though a quite different extension) as the Aristotelian tradition. *A priori*, in this tradition, refers to the causal ordering in proofs such that they work from causes to effects (rather than from effects to causes), and thus from what is prior. This would seem to be the core of the universal method, despite its radical departure from the syllogistic form by its reliance on the founding cognitive acts of intuition and deduction.

However, this cannot be the whole story, the author holds. There is, after all, a discrepancy between the characterisation of analysis as *a priori*, and the awkward fact that it would seem to often work from consequences to principles (and thus, as in *a posteriori* proofs, from effects to causes) which must now be explained. The point—if I understand—is that Descartes has reworked Aristotelian heuristic analysis so radically that it is now incommensurate with the Aristotelian assumption of a definite causal ordering. His misleading characterisation of analysis as *a priori* is thus treated as a “subtle hint, addressed to his Aristotelian tradition as regards the method of scientific inquiry” (p. 341). Thus Descartes’ usage is to be thought of as rhetorical and provocative rather than literal—a conclusion that somewhat perplexes, and which might be further explicated at the defence. It is then further argued, in the final section of the thesis, that Descartes’ use of *a posteriori* in the well-known passage about the analytical and synthetic methods in the Second Replies is actually a rogue use that should be dismissed as irrelevant (p. 354). This last conclusion will naturally disappoint a reader who is hoping for the elucidation of the meaning of *a posteriori* here, above all—which is not, of course, to say that it is not correct.

## **Evaluation**

This thesis constitutes a thorough and painstaking treatment of Descartes’ universal method and his understanding of *Scientia*, as well as his understanding of the cognitive powers of the mind. It offers to the reader a wide range of stimulating interpretative proposals that are always backed up by careful attention to Descartes’ own writings and to the secondary literature that surrounds them. The author has a profound grasp of those two sources, as well as showing notable erudition in the preceding Aristotelian tradition. Moreover, the author displays an understanding of Descartes’ mathematical work that is very rare among philosophers and, more importantly, he demonstrates how a knowledge of the mathematical context is indispensable for our understanding the central philosophical question of method. Though the thesis inevitably makes for demanding reading, it offers an abundant wealth of insight both for experts on Descartes and for philosophers who are working on methodology in science, and on epistemology and its history. The levels of detail, argument and systematic grasp of interconnecting problems in the discussion here are truly outstanding. This thesis, without any shade of doubt, constitutes an authoritative contribution to philosophy, of

international significance, and I thoroughly recommend that it be accepted for the habilitation.

*Jednoznačně doporučuji habilitační práci k dalšímu řízení.*

V Praze, 10.2.19.

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