

Conceivability, inconceivability and cartesian modal epistemology

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Abstract In various arguments, Descartes relies on the principles that conceivability implies possibility and that inconceivability implies impossibility. Those principles are in tension with another Cartesian view about the source of modality, i.e. the doctrine of the free creation of eternal truths. In this paper, I develop a ‘two-modality’ interpretation of the doctrine of eternal truths which resolves the tension and I discuss how the resulting modal epistemology can still be relevant for the contemporary discussion.

Keywords Descartes · Modal epistemology · Conceivability · Possibility · Inconceivability · Impossibility · Eternal truths

1 Introduction

The principle that *whatever is conceivable is also possible* has both a long history and an acute topicality. While it has its origins in Medieval philosophy (Boulter 2011), it is still discussed today as a principle of modal epistemology,¹ and constitutes a key premiss in the controversial “zombie” argument in the philosophy of mind (Chalmers 1996).

When we think about great philosophers from the early modern period who used this principle, Hume is probably the first to come to mind. In the *Treatise*, he famously

¹ See (Yablo 1993; Chalmers 2002) for two influential discussions and Vaidya (2015) for a recent survey.

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presented it as an “establish’d maxim in metaphysics” (Hume 2000, p. 26) and used it extensively in arguing against several metaphysical doctrines.² Yet a century before, Descartes also repeatedly used arguments conforming to the two following schematic principles:

(C2P) If I find it clearly and distinctly conceivable that p , then it is possible that p .

and

(I2I) If I find it inconceivable that p , then it is impossible that p .³

As we shall see in greater detail, Descartes’ arguments for the Real Distinction between the soul and the body, and against atomism involve (C2P); and (I2I) is needed in his argument against the possibility of vacuum.

Descartes’ commitment to these principles raises two main problems. First of all, what are the *connections* between conceivability and possibility, and between inconceivability and impossibility, that justify the use of (C2P) and (I2I)? Why should our capacities and incapacities regarding our faculty of conception have anything to do with what is possible and what is impossible? Just like any philosopher who uses (C2P) or (I2I) in her metaphysical arguments, Descartes needs an answer to that question for his argumentative practice to be well-founded. Let us call this problem the Modal Connection Problem.

The second problem is specific to Descartes’ philosophy. It is well known that Descartes defended the view that God freely created the so-called “eternal truths”, i.e. the truths of logic, mathematics and about the essences of things, and that He was free to make them necessary.⁴ In some formulations of the doctrine, Descartes explicitly says that God *could have made them false*:

that the power of God cannot have any limit ... shows us that God cannot have been determined to make it true that contradictories cannot be true together, and therefore that he could have done the opposite. (to Mesland, 2 May 1644, CSMK p. 235, AT4 p. 118)

² For example, Hume argues in this way against the infinite divisibility of extension (Hume 2000, pp. 26–27), against the necessity for any event to have a cause (Hume 2000, p. 56), against the immortality of the soul (Hume 2000, p. 153). See Lightner (1997) for a study of Hume’s use of conceivability and inconceivability arguments.

³ The formulation of these principles is not Descartes’; but the texts, which we will examine shortly, clearly show that Descartes is committed to these principles, as we have formulated them.

⁴ This view is first stated in a series of letters to Mersenne in the spring of 1630 (15 April, CSMK p. 23, AT1 pp. 145–146; 6 May, CSMK pp. 24–25, AT1 pp. 149–150; 27 May, CSMK pp. 25–26, AT1 pp. 151–153). It also appears in the *Replies* (CSM2 p. 261, AT7 p. 380; CSM2 pp. 293–294, AT7 pp. 435–436), in subsequent letters to Mesland (2 May 1644, CSMK p. 235, AT4 pp. 118–119), Arnauld (29 July 1648, CSMK pp. 358–359, AT5 p. 223–224) and More (5 February 1649, CSMK pp. 363–364, AT5 pp. 272–273), and in the *Conversation with Burman* (CSMK p. 348, AT5 pp. 165–166).

On the basis of this and other similar passages,⁵ several commentators have attributed to Descartes the view, known in the literature as “Universal Possibilism”,⁶ that:

(UP) For all proposition p , it is absolutely possible that p .

Now it should be clear that Descartes’ endorsement of (UP) would have disastrous effects on (C2P) and (I2I). (C2P) would be true but vacuously so, since its consequent would be true for any p , even logically inconsistent propositions. The antecedent would then be irrelevant to the truth of (C2P), which would lose any epistemological import. The result on (I2I) is even more disastrous, since it follows from (UP) that the consequent of (I2I) is always false, regardless of the truth of the antecedent. On the very reasonable assumption that some propositions are inconceivable, this entails that the universal closure of (I2I) is false.

It has to be said, however, that the attribution of (UP) to Descartes is at least controversial.⁷ But even if one refuses to attribute (UP) to Descartes, one still has to deal with the passages where Descartes explicitly accepts that God *could* have made eternal truths false, even though such falsehoods are inconceivable to us. So even if (UP) is discarded, one still has to explain what the modal force of this “could” is, and it is *prima facie* not easy to provide an explanation which fits with (C2P) and (I2I) and the way Descartes uses both principles in his metaphysical reasonings. Even commentators who do not favour (UP) have been sensitive to this difficulty:

Of course, if we were to invoke the doctrine of the creation of eternal truths, we might say that a really omnipotent being could cause the mind and the body to exist apart even if that were not logically possible. But in the *Meditations* Descartes is careful not to invoke that extravagant conception of omnipotence, and we would do him no service by bringing it in. (Curley 1978, p. 198)

My main goal in this paper is to give a coherent interpretation of Descartes’ modal epistemology which does justice both to his endorsement of (C2P) and (I2I), and to the perplexing formulations of his doctrine of eternal truths. In so doing, I will keep an eye on the relevance of this problem for contemporary modal epistemology.

In order to do that, a clarification of Descartes’ commitment to (C2P) and (I2I) is required (Sect. 2), as well as a clarification of Descartes’ understanding of conceivability and inconceivability (Sect. 3) and possibility and impossibility (Sect. 4). Then I turn to the Modal Connection Problem and the analysis of two solutions given by Descartes (Sects. 5 and 6), both of which are found *prima facie* problematic when conjoined to the doctrine of eternal truths. I then provide an interpretation of this doctrine according

⁵ See in particular the letter to Mersenne of the 27th of May 1630 (CSMK p.25, AT1 p. 152) and the *Sixth Replies* (CSM2 p. 294, AT7 p. 436).

⁶ See Frankfurt (1977) and Plantinga (1980) for the classic statement and defence of that view. Alanen (1991) defends Frankfurt’s interpretation against some objections by Curley (1984), but does not ultimately endorse the view.

⁷ Other concurrent interpretations have been proposed, some of which explicitly assert that some propositions are absolutely necessary according to Descartes (Guérout 1968, pp. 22–39). Curley (1978, p. 593) follows Guérout on this point. See Alanen (2008) for a recent survey.

to which it is coherent with Descartes' use of (C2P) and (I2I) and provides Descartes with a solution to the Modal Connection Problem (Sect. 7). Although this solution is highly dependent on theological considerations, I finally discuss its relevance for contemporary modal epistemology (Sect. 8).

2 Descartes' conceivability and inconceivability arguments

I suggested earlier that Descartes is committed to (C2P) and (I2I). The goal of this preliminary section is to substantiate that claim and lay down the main data concerning Descartes' philosophical use of these principles.

We find in Descartes many instances of conceivability arguments (i.e. arguments crucially relying on an inference from conceivability to possibility) and inconceivability arguments (i.e. arguments crucially relying on an inference from inconceivability to impossibility).

Descartes uses conceivability arguments when he needs to show that two entities are separable, or in Cartesian technical terms, that they are Really Distinct,⁸ according to the following pattern:

- (Sep) 1. *A* is conceivable without *B* and *B* is conceivable without *A*.
 2. Therefore *A* can exist without *B* and *B* can exist without *A*.

The best example of this kind of argument is to be found in the *Sixth Meditation*, when Descartes gives his first argument for the Real Distinction between his soul and his body:

...the fact that I can clearly and distinctly understand one thing apart from another is enough to make me certain that the two things are distinct. ...On the one hand I have a clear and distinct idea of myself, in so far as I am simply a thinking, non-extended thing; and on the other hand I have a distinct idea of body, in so far as this is simply an extended, non-thinking thing. And accordingly, it is certain that I am really distinct from my body, and can exist without it. (CSM2 p. 54, AT7 p. 78)⁹

Descartes relies on a similar reasoning when he argues for the indefinite divisibility of extension:

...if there were any atoms, then no matter how small we imagine them to be, they would necessarily have to be extended; and hence we could in our thought divide each of them into two or more smaller parts, and hence recognize their divisibility. For anything we can divide in our thought must, for that very reason, be known to be divisible; so if we were to judge it to be indivisible, our judgement would conflict with our knowledge. (*Principles* 2.20, CSM1 p. 231, AT8 p. 51)

⁸ In the *Second Replies*, Descartes defines the relation of *Real Distinction* as follows: "Two substances are said to be really distinct when each of them can exist apart from the other" (CMS2 p. 114, AT7 p. 162).

⁹ This argument is repeated several times under Descartes' pen, each time with an explicit move from conceivability to possibility. See CSM2 p. 54, AT7 p. 78; CSM2 pp.119–120, AT7 pp. 169–170; CSM1 p. 213, AT8 pp. 28–29.

Descartes passes very quickly on the move from divisibility in thought to divisibility in the thing. However, it is clear from an earlier letter to Gibieuf that this move can be decomposed according to a similar pattern:

- (Div) 1. A is conceivable apart from B
 2. A can exist apart from B and B can exist apart from A .

Here is what Descartes writes to Gibieuf:

From the simple fact that I consider two halves of a part of matter however small it may be, as two complete substances, whose ideas are not made inadequate by abstraction of my intellect, I conclude with certainty that they are really divisible. (to Gibieuf, 19 January 1642, CSMK pp.202–203, AT3 p. 477)

Considering a part of matter as a ‘complete substance’ in Descartes’ technical language means to be able to conceive it as standing on its own, apart from anything else.¹⁰ Hence, the fact that I can divide in thought a line segment A into two parts B and C entails that I can conceive B apart from C and C apart from B . Then, according to (Div), we can conclude that B can exist apart from C and C apart from B , which is equivalent to saying that A is divisible into B and C .

Descartes is also keen on inferring impossibilities from the inability to conceive things. The following argument, used by Descartes to discard vacua from his physics, is a good example:

... it is no less contradictory for us to conceive of a mountain without a valley than it is for us to think of the concavity apart from the extension contained within it, or the extension apart from the substance which is extended; for, as I have often said, nothingness cannot possess any extension. Hence, if someone asks what would happen if God were to take away every single body contained in a vessel, without allowing any other body to take the place of what had been removed, the answer must be that the sides of the vessel would, in that case, have to be in contact. For when there is nothing between two bodies they must necessarily touch each other. And it is a manifest contradiction for them to be apart, or to have a distance between them, when the distance in question is nothing; for every distance is a mode of extension, and therefore cannot exist without an extended substance. (CSM1 pp. 230–231, AT8 p. 50)

An empty spatial region, for Descartes, is just as inconceivable as a mountain without a valley, because a spatial region is extended, and extension requires an extended substance. An empty spatial region, therefore, cannot be conceived as empty. This

¹⁰ It can happen that we conceive clearly and distinctly something without something else, by an abstraction of the mind. For example, I can focus my attention on the property *having three angles*, as opposed to the (necessarily co-instantiated) property *having three sides*. But I can only do that by an operation of the intellect which abstracts away some properties from the idea I have of the object of my conception. This operation of abstraction makes this conception inadequate (an adequate conception would contain all the properties the object has). It is important that we do not use conceptions obtained by abstraction when we apply (C2P), for otherwise we can easily infer the separability of things which are in fact inseparable. See the *Fourth Replies* for a clarification of this point (CSM2 pp. 155–156, AT7 pp. 221–222).

is enough for Descartes to conclude that a vacuum, understood as an empty spatial region, is impossible.

These examples suffice to show that Descartes endorsed (C2P) and (I2I) as general principles of inference and that he used them to argue for and against substantive metaphysical theses. They also suggest that Descartes endorsed a conceivability-based account of our knowledge of possibility and an inconceivability-based account of our knowledge of impossibility. However these examples do not show by themselves how Descartes understood the notions of conceivability, possibility, inconceivability and impossibility. Further analysis is required to see clearly what the content of Descartes' own version of (C2P) and (I2I) precisely is.

3 Conceivability and inconceivability

As a matter of fact, Descartes has in mind a very specific notion of conceivability which is importantly different from what other modal epistemologists understand by that term. Hume, for example, also promoted a version of (C2P), but “conceivability”, under his pen, is taken to be just a synonym for what we can *imagine*:

’Tis an establish’d maxim in metaphysics, *That whatever the mind clearly conceives includes the idea of possible existence*, or, in other words, *that nothing we imagine is absolutely impossible*. (Hume 2000, p. 32)

Contemporary modal epistemologists who promote conceivability-based accounts usually follow Hume on this point. For example, Yablo’s own brand of conceivability is also explained in terms of imaginability:

p is conceivable for me if I can imagine a world I take to verify *p*.¹¹ (Yablo 1993, p. 29)

Descartes does not take that route. Conceiving is sharply distinguished from imagining. He does recognize that sometimes imagination can help us conceive extended objects and their properties, for example when we are studying Euclidean geometry. But this is not always the case, as shown by the example of the conceivable but unimaginable chiliagon in the *Sixth Meditation* (CSM2 p. 50, AT7 p. 72). When we turn to metaphysical matters, such as the nature of the soul or God, then imagination is not reliable anymore. As Descartes writes to Mersenne, “the imagination, which is the part of the mind that most helps mathematics, is more of a hindrance than a help in metaphysical speculation” (25 December 1639, CSMK p. 141, AT2 p. 622).

Cartesian conceivability amounts to a kind of rational, non-sensory intuition that something is possible. The terminology used by Descartes is not totally constant on this

¹¹ See also the note 55, p. 27, where Yablo distances himself from Descartes: “Some philosophers use ‘imagine’ so that imagining a thing is *imagining* it, that is, conjuring up an appropriate sensory presentation. I do *not* require a sensory-like image for imagining, and certainly not a distinct such image for distinct imaginings. (Compare Descartes on the unimaginability of chiliagons at CSM II, pp. 50, 69, 264)”. Yablo seems to imply that his disagreement with Descartes about the unimaginability of chiliagons is essentially verbal, but this is debatable. If imagining and conceiving are two distinct psychological kinds, then the terminological choice of taking “imagination” as an umbrella term for both is at best misleading.

matter. When writing in Latin, he alternatively uses the verbs *concupere*,¹² *percipere*,¹³ and *intelligere*.¹⁴ However, all those terms refer to an act of the intellect. When writing in French, for example in his correspondence, Descartes uses most frequently the verb ‘concevoir’,¹⁵ and so does his official translator.¹⁶ In some specific contexts, the difference between *intelligere* and *concupere* is important. We can understand the infinite, but we cannot conceive it, properly speaking. The only thing we can conceive is the indefinite, i.e. the fact for any natural number n , we can conceive another natural number m such that $m > n$. The same goes for God’s power, which we can understand, but not conceive.¹⁷ To conceive something, we must be able to “represent it to ourselves” (CSMK p. 339, AT5 p. 154). This is not compulsory when we merely understand things. But it is essentially in connection with the infinite or God’s attributes that this distinction is relevant. When we restrict our attention to finite creatures and their properties, we usually can conceive what we understand.

Many of our contemporaries will remain unconvinced by this kind of appeal to non-sensory intuitions,¹⁸ but it is not difficult to find clear examples, borrowed from elementary logic or mathematics. Given two definite objects, it is conceivable that there is a set having exactly these two objects as elements. Given any natural number n , it is conceivable that there is another number m such that $n < m$. These intuitions are manifestly non-sensory. It is plausible that they derive from our understanding of the concepts of set or of number, rather than from any imaginative exercise.

To this extent, Descartes’ way of construing conceivability has some affinity with contemporary modal epistemologies based on rational intuition, such as George Bealer’s (2002). According to Bealer, the source of our knowledge of the possibil-

¹² “... ex his debere concludi ea omnia quae clare et distincte concipiuntur ut substantiae diversae, sicuti concipiuntur mens et corpus, esse revera substantias realiter a se mutuo distinctas; hocque in sexta concludi” (AT7 p. 17).

¹³ “Et quidem jam ad minimum scio illas, quatenus sunt purae Matheseos objectum, posse existere, quandoquidem ipsas clare et distincte percipio. Non enim dubium est quin Deus sit capax ea omnia efficiendi quae ego sic percipiendi sum capax; nihilque unquam ab illo fieri non posse judicavi, nisi propter hoc quod illud a me distincte percipi repugnaret” (AT7 p. 71).

¹⁴ “Et primo, quoniam scio omnia quae clare et distincte intelligo, talia a Deo fieri posse qualia illa intelligo, satis est quod possim unam rem absque altera clare et distincte intelligere, ut certus sim unam ab altera esse diversam, quia potest saltem a Deo seorsim poni” (AT7 p. 78).

¹⁵ See for example how Descartes explains the argument against atomism to Gibieuf: “Et si on me disoit que nonobstant que je les puisse concevoir, je ne sais pas, pour cela, si Dieu ne les a point unies ou jointes ensemble d’un lien si étroit, qu’elles soient entièrement inséparables, et ainsi que je n’ai pas raison de le nier; je répondrais que, de quelque lien qu’il puisse les avoir jointes, je suis assuré qu’il peut aussi les déjoindre de façon qu’absolument parlant, j’ai raison de les nommer divisibles, puisqu’il m’a donné la faculté de les concevoir” (AT3 pp. 477–478).

¹⁶ See the French versions of the arguments mentioned above: (AT9 pp. 62, 131–132; AT9-2 pp. 51–52) for the Real Distinction arguments in the *Meditations* and the *Principles of Philosophy*. See (AT9-2 p. 74) for the argument against atomism and (AT9-2 pp. 72–73) for the argument against vacuum in the *Principles*.

¹⁷ The Conversation with Burman (CSMK p. 339, AT5 p. 154) is very clear on this point. See also Beyssade (1981) for a detailed analysis of this topic.

¹⁸ According to van Inwagen, for example, “philosophers who think that they can hold such concepts or states of affairs as these [i.e. a being both concrete and necessarily existent] before their minds and determine by some sort of intellectual insight whether they are possible are fooling themselves” (Inwagen 1995, p. 12).

ity of p is a certain kind of non-sensory intuition that p is possible.¹⁹ On Bealer's view, evidence of possibility is provided by rational intuitions of possibility: I can conceive that p just in case I have a rational intuition that it is possible that p . And this is just what a rationalist account of conceivability amounts to. Van Cleve (1983), for example, takes it that it is conceivable for S that p iff S sees that p is possible, where seeing is understood as a kind of "intellectual vision" (p. 36).

The idea that conceivability can be explained as an intuition of possibility is in line with Descartes' understanding of it. For Descartes makes it clear that the notion of possible existence is implicit in the clear and distinct conception of something:

It must be noted that possible existence is contained in the concept or idea of everything that we clearly and distinctly understand (*First set of replies*, CSM2 p. 83, AT7 p. 116)

A difference with contemporary writers is that Descartes usually takes conception to be an attitude directed toward *objects* rather propositions. The kind of possibility which is ascribed to the object of an act of conception is the possibility of its existence, rather than the possible truth of a proposition. What we can conceive, for Descartes, are typically things, describable by noun phrases rather than embedded sentences, e.g. a chiliagon, the nature of my soul, the nature of a piece of wax, a mountain without a valley. Yet, Descartes sometimes uses quite complex descriptions to characterize the objects of his conceptions, for example when he says that he can conceive his soul without his body, or that he cannot conceive a mountain without a valley. In these cases, it seems that the act of conceptions are directed towards states of affairs rather than objects. Now Descartes did not seem to be very worried by formal distinctions of this sort. He was happy to use the word "idea" both for ideas of objects and ideas of propositions (CSMK p. 186, AT3 p. 395) and he believed that the linguistic descriptions we give of our mental acts are to a certain extent arbitrary and do not carve mental content at its joints (CSMK p. 187, AT3 pp. 417–418). And since conceiving an object A and conceiving that there is an A can be seen as equivalent descriptions of the same mental act, according to the foregoing quote, we can take this difference to be negligible. With this caveat in mind, we will continue treating Cartesian conceivability as a propositional attitude and stick to the formulation of (C2P) we started with.

The kind of rational intuition of possibility that conceivability amounts to for Descartes is further specified by the notions of "clarity" and "distinctness". Not all

¹⁹ As a matter of fact, Bealer does not classify his own account as a conceivability-based account since he believes that the vocabulary of "conceivability" is misleading and should be abandoned. For Bealer takes "conceivability", probably too literally, to refer itself to a modal fact, namely the *mere possibility* of having a conception. And he complains that mere possibilities cannot count as evidence, so that a decent modal epistemology should not leave any room for conceivability as a source of modal knowledge (Bealer 2002, pp. 75–76). But, of course, merely possible conceptions do not play any evidential role in conceivability-based accounts. Actual conceptions play that role. The reason why conceivability (rather than conception) is mentioned in these accounts, is that there *cannot* be any genuine conception of an impossibility. So conceivability, by contraposition, entails possibility. But we do not know whether something is genuinely conceivable until we have actually conceived it. So we take Bealer's complaint against "conceivability" to be merely verbal.

conceptions satisfy this twofold condition and only those which do satisfy it allow us to infer possibilities.

Clear and distinct perceptions have two characteristic features. The first one is that they are assent-compelling: if I can clearly and distinctly conceive X , then I cannot but believe that X is possible. This first characteristic amounts to a purely psychological fact. The second characteristic is that they are *epistemically optimal* in the following sense, nicely summarised by Frankfurt:

What is it, exactly, for a person to perceive something clearly and distinctly? It consists in his recognizing that the evidence he has for some proposition, or his basis in experience for accepting the proposition, is logically definitive and complete. He perceives clearly and distinctly that p when he sees that his evidence for accepting the proposition is conclusive, in the sense that it is consistent and that no body of evidence which would warrant rejecting or doubting p is logically compatible with the evidence or basis he already has. Given the evidence or basis for p that he already has, in other words, he need not fear that the addition to it of further evidence will require him to change his mind. (Frankfurt 1978, p. 28)

In the *Meditations*, the notion of a clear and distinct perception is introduced via a prototypical example, namely the conception Descartes has of himself as a thinking substance in the *Second Meditation*.

In the *Principles of Philosophy*, Descartes makes an effort to define the notions of clarity and distinctness and distinguish them from one another:

I call a perception ‘clear’ when it is present and accessible to the attentive mind - just as we say that we see something clearly when it is present to the eye’s gaze and stimulates it with a sufficient degree of strength and accessibility. I call a perception ‘distinct’ if, as well as being clear, it is so sharply separated from all other perceptions that it contains within itself only what is clear. (CSM1, pp. 207–208, AT8 p. 22)

Here we learn that clarity and distinctness can come apart. Clarity can be absent from a perception when it does not present a definite object to us, however attentive we are to its content. This can happen for example with the materially false ideas of the senses, such as the idea of coldness where it is not clear to us whether this idea represents a positive property or the negation of a contrary property, e.g. hotness (CSM2 p. 163, AT7 p. 234).

But clarity is not sufficient in itself to provide epistemic optimality. Distinctness is also necessary. A distinct perception must be clear and must contain nothing but what is clear. For example if I feel a sharp pain in my foot, I have a clear perception of that pain, but a confused one if this perception represents this pain as a part of my foot. For the only thing that I perceive clearly, in Descartes’ view at least, is a mental event. So in order to have a clear and distinct perception of pain, I must separate that specific perception of pain as a mental event and nothing else, from the confused perception that this pain comes from my foot.

Thus, very few of the conceptions we spontaneously form of things possess these specific epistemic properties, according to Descartes. It can even happen that we *think* we have a clear and distinct conception of something, without having an actual clear and distinct conception of it. In other words, conceivability is not epistemically transparent, by Descartes' own admission.

Whether we are ever in a position to ascertain that we have a clear and distinct perception is a difficulty for Descartes. He insists that a *method* is required for isolating the clear and distinct perception from the obscure and confused ones:

As for the method enabling us to distinguish between the things that we really perceive clearly and those that we merely think we perceive clearly, I believe, as I have already said, that I have been reasonably careful to supply such a method. (CSM2, p. 260, AT7 p. 379)

Descartes probably has in mind the way in which he provided in the *Second Meditation* a clear and distinct perception of himself as a thinking substance (which is importantly different from the confused conception of himself as a man he initially had). But it is unclear whether these indications suffice as a method. This is a point on which Descartes has been criticized by his contemporaries and successors, most notably Gassendi and Leibniz, and we cannot hope to settle the issue here.²⁰ We will simply grant, if only for the sake of discussion, that we have a way to ascertain that our conceptions of things are clear and distinct.

To sum up, “I find it clearly and distinctly conceivable that *p*”, in Descartes' understanding of (C2P), is to be analysed as “I have a clear and distinct perception that it is possible that *p*”, where “having a clear and distinct perception” denotes an assent-compelling, epistemically optimal but not epistemically transparent mental act.

Descartes' treatment of inconceivability indicates that finding it inconceivable that *p* is stronger than not finding it clearly and distinctly conceivable that *p*.²¹ The union of the soul to the body is a fact that Descartes recognizes as not clearly and distinctly conceivable,²² but this does not make it *inconceivable*. And so Descartes can consistently hold that the union is actual, and *a fortiori* possible, while it is not clearly and distinctly conceivable.

If we go back to the texts where Descartes infers an impossibility from an inconceivability, the way he phrases his judgements of inconceivability are rather of the form: “it is contradictory to conceive clearly and distinctly ...”. The stock example is the case of “the mountain without a valley”:

²⁰ A discussion of Leibniz' critique, with relevant sources, can be found in (Couturat 1901, pp. 196, 202–203). See (LoLordo 2005) for a study of Gassendi's critique.

²¹ On this point Descartes is in agreement with contemporary conceivability theorists such as Yablo (1993) who distinguishes three statuses regarding conceivability: conceivability, inconceivability and undecidability (which gathers non-conceivability and non-inconceivability).

²² In the letter to Princess Elizabeth of the 28th of June 1643, Descartes acknowledges that “what belongs to the union of the soul and the body is known only obscurely by the intellect alone or even by the intellect aided by the imagination, but it is known very clearly by the senses” (CSMK p. 227, AT3 pp. 691–692). In other words, the union is something we can feel or experience confusedly (albeit clearly) but not something we can conceive clearly *and* distinctly.

It is no less contradictory for us to conceive of a mountain without a valley than it is for us to think of the concavity apart from the extension contained within it, or the extension apart from the substance which is extended (CSM1 pp. 230–231, AT8 p. 50)

What makes some proposition p inconceivable to me is that I can clearly and distinctly perceive that q follows from p and at the same time that not- q follows from p , for some q . Here “follows from” is to be understood in terms of a relation of *topical* rather than logical entailment. This means that the entailment depends on facts related to the subject matter of the proposition to be conceived.²³ For example, if what is conceived is a triangle having some property, then the entailment will not rely only on logical rules of inference, but also on axioms of Euclidean geometry. Equivalently, if we treat inconceivability as an objectual attitude, I find an object A inconceivable just in case I can clearly and distinctly perceive that *being B* and *being not-B* both follow from *being an A*, for some B . For example, *a round square* is inconceivable, for we can easily derive a contradiction from it, using axioms of geometry.

This analysis correctly predicts that *a vacuum*, at least as conceptualized by Descartes, i.e. as an extended region of space empty of material substance, is inconceivable. For from the fact that a region of space is extended, it topically follows, for Descartes at least, that there is some material substance which is extended within that space. So both *being filled by a material substance* and *being empty of any material substance* both follow from *being a vacuum*. This analysis also predicts that the union of the body to the soul, though not clearly and distinctly conceivable, is not inconceivable. For the union to be inconceivable, one should be able to find a clear and distinct topical entailment from *being the union of a soul and a body* to some property B and its negation. For example, one might try to use the fact that a motion can only be caused by contact and the fact that the soul is unextended to argue that the union entails a contradiction, i.e. that the soul can and cannot cause bodily motions.²⁴ But Descartes made it clear that he took the notion of the union between the soul and the body to be primitive, that is irreducible to the notions of thought on the one hand and to the notion of extension on the other.²⁵ All we get from Elizabeth’s argument is that the power of the soul to move the body cannot be understood *in the same way as* the power of bodies to move bodies. Assuming that body-to-body causation is the only way to clearly and distinctly conceive how a body can be moved, the only result one gets is that the union is not clearly and distinctly conceivable but not that it entails

²³ This notion of topical entailment is borrowed from Edelberg (1990, pp. 506–507). Although Edelberg does not mention it, Descartes defines in the *Regulae* a relation of necessitation between simple natures, for example between *being shaped* and *being extended* which exactly corresponds to what he calls “topical entailments” (CSM1 p. 45, AT10 p. 421). The examples used by Descartes make it clear that this notion of necessitation applies both to propositions and properties.

²⁴ This is essentially the objection urged by Princess Elizabeth of Bohemia in her correspondence with Descartes. See AT3 p. 661.

²⁵ See the letter to Elizabeth of the 21st of May 1643 (CSMK p. 218, AT3 p. 665).

a contradiction. Thus the union of the soul to the body is neither conceivable nor inconceivable.²⁶

Thus “I find it inconceivable that p ” in (I2I) is to be analysed as “I clearly and distinctly perceive that q follows from p and that not- q follows from p , for some q ”. Since inconceivability is analysed as a conjunction of clear and distinct perceptions, it inherits the epistemological properties of clear and distinct perceptions: inconceivability is assent-compelling (in the sense that I am compelled to assent to the *impossibility* of what is inconceivable to me), epistemically optimal (in the sense that I cannot have a better knowledge of the topical inconsistency of p) but not transparent (in the sense that I can believe wrongly that p is inconceivable).

We are now in a better position to grasp how Descartes understood his own versions of (C2P) and (I2I). The only elements missing from a full understanding are the modal notions linked to conceivability and inconceivability by (C2P) and (I2I), namely possibility and impossibility.

4 Possibility and impossibility

What we need to do now is to clarify the content of the modal notions which appear on the right-hand sides of (C2P) and (I2I). Since we are interested in those principles insofar as they are used in various arguments, the best way to grasp adequately the content of these notions is to look closely at the content of the conclusions of these arguments:

- (1) My soul *can* exist without my body and my body without my soul.
- (2) Anything extended *can* be indefinitely divided n times, for any natural number n .
- (3) No region of space *can* be empty of matter.

How should we understand the emphasized modals in these sentences?

It is clear that Descartes is stating *metaphysical* claims here, so a purely epistemic reading of these modals is out of the question. It is quite clear, also, that Descartes is not concerned with (narrow) logical modality. His point is obviously not that the sentence

- (4) My soul exists without my body and my body without my soul
is not logically false, i.e. false in virtue of its logical form alone, or that

²⁶ It might be objected, from a contemporary point of view, that this explanation concedes too much to Descartes’ metaphysics by relying on such controversial “facts” as the identification of matter to extension or the requirement of contact for physical causation. But introducing topical entailments in the analysis of Cartesian inconceivability does not necessarily mean that we should take Descartes’ own view of the relevant topical facts for granted. If we have a better understanding of these topical facts than he had, we can form other judgements of inconceivability, which will perhaps not be Cartesian in their letter, but will nonetheless follow the analysis of Cartesian inconceivability we have proposed.

- (5) Some region of space is empty of extended substance is logically false in this sense.²⁷

Descartes is more plausibly concerned here with the nature and properties of *things*, namely his soul and his body, matter and space, and what could or could not be the case for them, given their nature. It has become customary to use the term “metaphysical modality” to denote what is possible and necessary in virtue of the identity of things.²⁸ So it seems *prima facie* plausible to assume that Descartes wants to put forward claims of metaphysical modality.

Yet, in an important passage from the *Second Replies* Descartes seems to disavow a “metaphysical” understanding of modality, which would relate directly to the identity of things:

If by ‘possible’ you mean what everyone commonly means, namely ‘whatever does not conflict with our human concepts’, then it is manifest that the nature of God, as I have described it, is possible in this sense, since I supposed it to contain only what, according to our clear and distinct perceptions, must belong to it; and hence it cannot conflict with our concepts. Alternatively, you may well be imagining some other kind of possibility which relates to the object itself; but unless this matches the first sort of possibility it can never be known by the human intellect, and so it does not so much support a denial of God’s nature and existence as serve to undermine every other item of human knowledge. (CSM2 p. 107, AT7 pp. 150–151)

Descartes here contrasts a “familiar” notion of possibility, which relates the possibility of a thing to the consistency of its concept (and which he accepts), with an alternative notion of possibility, which relates directly to the thing itself (and which he rejects). This passage has been taken by Jonathan Bennett to support the attribution of a *conceptualist* analysis of modality to Descartes:

Roughly speaking: ‘It is absolutely impossible that P’ means that no human can conceive of P’s obtaining while having P distinctly in mind; and similarly for P’s possibility and its necessity. In each of these analyses, ‘no human can’ must be understood in causal, psychological terms, and not as involving the absolute or logical modalities that are being analyzed. On this account, the statement about ...what we can conceive provides all the content we are entitled to give to our modal statements. (Bennett 1994, p. 647)

²⁷ One could object that Descartes explicitly says that it is “contradictory” to conceive of such regions of space (CSM1 p. 230, AT8 p. 50). It is not equivalent to saying that the sentence expressing this conception is “logically false”? Not quite. It should be clear from the preceding section that the contradictory character of this conception does not rely on its logical form alone. Some topical knowledge is needed to derive a contradiction, just like some geometrical knowledge is needed to derive a contradiction from the sentence “I can draw a round square if I want to” which is not logically false, in the sense of being false in virtue of its logical form alone.

²⁸ Here is how Kit Fine describes this standard notion of metaphysical necessity: “This is the sense of necessity that obtains in virtue of the identity of things (broadly conceived). Thus, in this sense it is necessary not only that anything red is red or that nothing is both red and green, but also that I am person or that 2 is a number.” (Fine 2002, p. 264).

The kind of conceptualist analysis that Bennett attributes to Descartes is clearly incompatible with our metaphysical interpretation, for it amounts to reducing modalities to psychological capacities. However the above-quoted passage, which by Bennett's own admission is the best evidence he has (p. 647), does not support such a strong reading. Descartes is addressing here an objection to the effect that he should add the premise that God is possible to his ontological proof, for "it does not follow from this [i.e. that existence belongs to the nature of God] that God in fact exists, but merely that he would have to exist if his nature is possible, or non-contradictory" (CSM2 p. 91, AT7 p. 127). The objector makes it clear that he has in mind a notion of possibility which is synonymous with conceptual consistency. And Descartes does not see how he could have a clear and distinct conception of something inconsistent, so he naturally wonders if the objector does not have another notion of possibility in mind. Descartes' point, then, is that if this alternative notion of possibility is directly tied to the object, *without the mediation of our 'human concepts'*, then of course, it may be the case that his consistent, clear and distinct conception of God corresponds to nothing possible. But such a view would face several difficulties from Descartes' point of view. First, it is unclear how we could be justified in believing that something we can consistently conceive is nevertheless impossible, should the case arise. Second, someone who holds this would have to acknowledge that conceptual consistency provides an insufficient justification for our judgements of possibility, which conflicts with (C2P). Third, one can generalize this point to the justification of all our knowledge, as Descartes explicitly does:

Hence, if we deny that the nature of God is possible, we may just as well deny that the angles of a triangle are equal to two right angles, or that he who is actually thinking exists; and if we do this it will be even more appropriate to deny that anything we acquire by means of the senses is true. The upshot will be that all human knowledge will be destroyed, though for no good reason. (CSM2 p. 107, AT7 p. 151)

Thus, for all these reasons, Descartes' rejection of that second notion of possibility, which relates to the object itself, seems highly reasonable. But does this amount to accepting the specific kind of conceptualist analysis that Bennett recommends? Nothing in the quoted passages justifies the *reduction* of modal claims to claims about our psychology. The only thing that follows is that metaphysical possibility, i.e. what is compatible with the natures of things, and conceptual possibility, i.e. what is consistent with our concepts, have to be aligned so that no conceptual possibility is metaphysically impossible. But this is just another way of saying that what is conceivable should be metaphysically possible.

So we should reject Bennett's attribution of this conceptualist analysis to Descartes and maintain the view that the possibilities and impossibilities Descartes is interested in are metaphysical in character, while acknowledging that these metaphysical possibilities should be aligned with what we can consistently conceive. This is exactly what we should expect from Descartes, given his argumentative practice, and it does not conflict with the view that (1), (2) and (3) express metaphysical modalities.

Now, in the usual, standard understanding of metaphysical modality, it is generally assumed that metaphysical possibility and impossibility are absolute, in the sense that if it is metaphysically possible that p , then there should be a situation in which p , no matter how remote from the actual circumstances, as long as the nature of the entities referred to in p are preserved. Similarly, it is absolutely impossible that p iff there cannot be any circumstance, no matter how remote from the actual circumstances, where p is true.

If we put these notions of absolute possibility and impossibility in the hands of a theist, like Descartes, who believes that God necessarily exists and is omnipotent, we should expect the following bi-conditional to hold:

- (6) It is absolutely possible that p iff God can bring it about that p .

Now Descartes relies on the right-to-left direction of this conditional when he wants to explain the force of the modals in (1) and (2). Such explanations are needed because in both case, it is not clear by what kind of power the relevant possibility could come to be actualized. For example we constantly experience the *union* of the soul to the body. We cannot think of any natural power or process which could separate them. What does it mean to say that they *could* be separated?

...the fact that I can clearly and distinctly understand one thing apart from another is enough to make me certain that the two things are distinct, *since they are capable of being separated, at least by God*. The question of what kind of power is required to bring about such a separation does not affect the judgement that the two things are distinct. (CSM2 p. 54, AT7 p. 78, our emphasis)

Descartes' point, in a nutshell, is that if *at least* God is able to separate my soul from my body, then this is *enough* to substantiate the claim that they *could* be distinct.

This reference to God's ability to bring about things which cannot, or at least cannot evidently or presumably be brought about by natural powers, indicates that the notion of possibility that is relevant to the conclusions of his conceivability arguments is indeed absolute.

One may observe that some contemporary authors use (6) as a heuristic to elicit intuitions about metaphysical possibilities (Kripke 1980, pp. 153–154). But this is nowadays understood as a mere heuristic, whereas Descartes is *literally* committed to (6). Taking the difference seriously, it becomes dubious whether Descartes' notion of possibility really matches the standard notion of metaphysical possibility one finds in the contemporary literature of modality, for the usual notion of metaphysical modality is *not* tied to the existence and the omnipotence of God in this literal way, whereas Descartes' notion of metaphysical possibility is thus tied. One might fear that the kind of possibilities and impossibilities that Descartes wants to track with his powers of clear and distinct conception are not the ones contemporary (atheist) epistemologists are concerned with. If this is right, then the relevance of the whole discussion for contemporary epistemology is jeopardized.

The best response to this worry is to make it clear that (6) does not express a *conceptual analysis* of metaphysical possibility, but only a necessary equivalence which depends on substantial additional metaphysical views (the existence and omnipotence

of God). If this were a conceptual analysis, then the coherence of Descartes' notion of metaphysical possibility would be tied to the existence of a Cartesian God. But (6) is rather the consequence of an analysis of metaphysical possibility as absolute possibility *plus* some independent theistic commitments. That additional philosophical views can modulate the extent of metaphysical possibility should not be surprising. Some views about laws of nature lead philosophers to argue that metaphysical possibility coincides with nomological necessity (Shoemaker 1998). Other philosophers who accept the doctrine of haecceitism in its most extreme form (i.e. the view that the way things are qualitatively places no constraints at all on the way they are non-qualitatively) will say that it is metaphysically possible that Socrates be a poached egg.²⁹ Thus even in the contemporary debate, philosophers who agree about the meaning of the notion of metaphysical possibility can disagree over its extension in specific cases because of other philosophical disagreements. It should be no surprise, then, that Descartes' theistic commitments have a similar effect on the extension of metaphysical possibility, ruling out the possibility that God does not exist, and making bi-conditionals such as (6) necessary. So we should interpret the modals in (1) and (2) as expressing metaphysical, absolute possibility according to its standard meaning, even though the extent of metaphysical modality is modulated by Descartes's theistic views.

When we turn to the claims of impossibility, such as (3), which Descartes defends with the help of (I2I), the situation is a little more delicate. In a letter to Henry More, where he explains in detail his views about the impossibility of vacuum, Descartes seems to be implying that this impossibility is not absolute:

I boldly assert that God can do everything which I perceive to be possible, but I am not so bold as to assert the converse, namely that he cannot do what conflicts with my conception of things - I merely say that it involves a contradiction. And so, since I see that it conflicts with my way of conceiving things for all body to be taken out of a container and for there to remain an extension which I conceive in no way differently than I previously conceived the body contained in it, I say that it involves a contradiction that such an extension should remain there after the body has been taken away. I conclude that the sides of the container must come together (CSMK p. 363, AT5 p. 272)

Descartes clearly wants to leave it open that *in general* God might be able to bring about even what conflicts with our clear and distinct conception, presumably because God's power is incomprehensible to us.³⁰ But if (6) is in force, then this uncertainty concerning God's ability to create vacua seems to imply that, after all, vacua are not absolutely impossible. This would mean that the modality expressed by the last "must" in the last sentence is not absolute.

If this reasoning is correct, then we have a deep asymmetry between the claims of possibility established by (C2P) and the claims of impossibility established by (I2I). The first ones are clearly absolute, but not the latter (or at least not clearly so). This

²⁹ For a (somewhat sympathetic) discussion of extreme haecceitism, see (Lewis 1986, pp. 239–240).

³⁰ That God's power goes beyond our comprehension and that, consequently, we should never assert any sentence of the form "God cannot do ..." are recurrent themes in Descartes. See in particular the letter to Arnauld of July 29 1648 (CSMK pp. 358–359, AT5 pp. 223–224).

asymmetry also has epistemological implications, since it would follow that (C2P) is a guide to absolute possibility whereas (I2I) is not a guide to absolute impossibility; or perhaps there is no guide to absolute impossibility if God's omnipotence is incomprehensible to us.

This asymmetry is something which is explicitly recognized by Descartes, so we will take it as part of the data which need to be accounted for, rather than a difficulty to be dispelled. Since the connection between God's omnipotence and absolute modality is the source of this asymmetry, we should not expect to have an explanation for it until we have a clear account of divine omnipotence according to Descartes, that is until Sect. 7.

Having done our best at this point to analyse Descartes' notions of conceivability, inconceivability, possibility and impossibility, we can now turn to the problem of the *justification* of the principles (C2P) and (I2I). Why did Descartes believe they were sound?

5 Modal connection (1): divine veracity and omnipotence

At the beginning of the *Sixth Meditation*, Descartes expresses his commitment to (C2P) and (I2I) and provides an explicit derivation of (C2P) from doctrines he takes to have established in the previous *Meditations*:

... at least I now know they [i.e. material things] are capable of existing, in so far as they are the subject-matter of pure mathematics, since I perceive them clearly and distinctly. For there is no doubt that God is capable of creating everything that I am capable of perceiving in this manner; and I have never judged that something could not be made by him except on the grounds that there would be a contradiction in my perceiving it distinctly. (CSM2 p. 50 ; AT7, p. 71)

Here (C2P) is derived from the divine guarantee that everything the meditator perceives clearly and distinctly is true, which is defended in the *Fourth Meditation*. In the *Fifth Meditation*, Descartes concludes that the extended nature of bodies, and all the natures of bodies which are determinates of extension (e.g. being a triangle, etc.) are "true and immutable" natures (CSM2 p. 44, AT7 p. 64), since extension can be perceived clearly and distinctly (and God, benevolent as He is, did not want to deceive us when we conceive of things to the best of our representational capacities). Calling these natures "true and immutable" is saying that they are mind-independent essences of objects, even though this does not entail at this point that there are or could be such objects in the extra-mental world. This contrasts both with ideas which would be merely inventions of our minds, such as chimeras, and so-called "materially false" ideas, like the idea of cold, which represent "non-things as things" (CSM2 p. 30, AT7 p. 43).³¹

The remaining question at the end of the *Fifth Meditation* is whether this nature is instantiated in the world. A first step towards the positive answer Descartes gives in the

³¹ This idea is so confused, according to Descartes, that it is impossible to know whether it represents a positive property of bodies, i.e. heat. Insofar we take it to represent a positive quality in a body, whereas it really is a privation, this idea of cold is materially false since it represents a non-thing as a thing.

Sixth Meditation is to show that it *can* be instantiated, in virtue of God's omnipotence (the second step being that it *is* actually instantiated). So from the fact that we can conceive clearly and distinctly of extended things, extended things are possible. And since the reasoning which yields this result is perfectly general, we can extract from this passage a step by step derivation of the possible existence of some thing *A* starting from its clear and distinct conceivability:³²

1. *A* is clearly and distinctly conceivable. (Hypothesis)
2. *A* is a true nature. (by 1 and divine veracity)
3. God can bring about *A*. (by 2 and God's omnipotence)
4. *A* is absolutely possible. (by 3 and (6) above)
5. If *A* is clearly and distinctly conceivable, then *A* is metaphysically possible. (by 1-4)

The derivation of (C2P), as understood by Descartes, thus requires two godly ingredients. The first part is the doctrine of divine veracity. The second is the doctrine of God's omnipotence. None of these ingredients are available to the atheist modal epistemologist, but let us, for the sake of discussion at least, accept Descartes' theistic commitments and focus for the time being on the inner workings of his modal epistemology.³³

One important thing to notice at this point is that a lot hinges on the extent of God's omnipotence. Suppose Descartes' God does have the power to bring about anything, even the logically inconsistent, as proponents of the (UP) interpretation believe. Then anything whatsoever will be metaphysically possible. This, as we saw, makes (C2P) vacuously true and reduces its epistemological significance to nothing. If, however, it can be shown that Descartes' understanding of divine omnipotence does not entail (UP), then this difficulty vanishes. Again, we leave that problem aside for Sect. 7.

Do the ingredients of the derivation of (C2P) also enable a derivation of (I2I)? It is noteworthy that in the same passage, at the beginning of the *Sixth Meditation*, Descartes also gives a general statement of (I2I):

I have never judged that something could not be made by him except on the grounds that there would be a contradiction in my perceiving it distinctly. (CSM2 p. 50, AT7 p. 71)

This statement does not strictly follow from what he says just before. Does it follow from similar principles? We showed earlier that *A* is inconceivable if both *B* and not-*B* follow from *A*, for some *B*, which is stronger than not being clearly and distinctly conceivable. Now divine veracity, as understood so far, allows us to infer that *A* is a true nature if it is clearly and distinctly conceivable. But this leaves it open that things which are not clearly and distinctly conceivable, and perhaps even things which are inconceivable, also have a true nature, in spite of our inability to conceive them properly. In order to rule that out, we can strengthen the doctrine of divine veracity, and construe it as entailing the following biconditional:

³² For the study of this derivation, we will follow closely Descartes' own description of his acts of conception as objectual rather than propositional attitude. As mentioned earlier, this variation is insubstantial.

³³ What an atheist can keep from Descartes' modal epistemology will be explained in Sect. 8.

(7) A is clearly and distinctly conceivable iff A has a true nature.

Then we can safely infer that A , if inconceivable, does not have a true nature. And if God's omnipotence is understood as entailing the following biconditional

(8) God can bring about A iff A is a true nature

then we can conclude that God cannot bring about A , according to the following derivation:

1. A is inconceivable. (Hypothesis)
2. A is not a true nature. (by 1 and (7) above)
3. God cannot bring about A . (by 2 and (8) above)
4. A is absolutely impossible. (by 3 and (6) above)
5. If A is inconceivable, then A is absolutely impossible. (by 1–4)

The remaining questions relate to the reasons we have to attribute (7) and (8) to Descartes. Let us start with (8). The insight behind it is that the task of bringing about A when A does not have a true nature is in fact a pseudo-task. The incapacity to achieve a genuine task would indeed be a failure of omnipotence. But not so when the task is in fact a pseudo-task. A passage in Descartes' late correspondence with Henry More supports this reading:

For we do not take it as a mark of impotence when someone cannot do something which we do not understand to be possible, but only when he cannot do something which we distinctly perceive to be possible. (CSMK p. 363, AT5 p. 273)

Yet, it should be clear that this reading of (8) does not set any limits to God's power and is perfectly consistent with the texts where Descartes acknowledges that God's power goes much beyond what we can conceive. This means that if God's omnipotence, independently of what we can or cannot conceive, is so strong that it enables Him to bring about the logically inconsistent, according to (UP), then (I2I) would still be threatened, even if (8) is true.

If we turn to (7), we also face difficulties. For (7) seems to imply that we should have a clear and distinct idea of every true nature. In other words, for God not to be deceptive, He should have endowed us with a conceptual repertoire such that for every true nature, we are in a position to conceive clearly and distinctly of A . Do we find support for this reading in Descartes' text? In the *Fourth Meditation*, where the doctrine of divine veracity is elaborated, we find the following passage which gives only *partial* support for (7):

He [God] could, for example, have endowed my intellect with a clear and distinct perception of everything about which I was ever likely to deliberate ... (CSME2 p. 42, AT7 p. 61)

Given that my intellect is finite, and that God's power is infinite, there is good reason to believe that all the things about which I am likely to deliberate form only a proper part of the set of all the natures God can create and instantiate. For example a man, *qua* union of a body and a soul has a nature, but we cannot conceive it clearly

and distinctly. So the left-to-right direction of (7) is not warranted. Consequently, the first step of the derivation of (I2I) is not either.

To conclude this section, the *Meditations* provide a sound derivation of (C2P) from assumptions already argued for, namely divine veracity and divine omnipotence. These same assumptions do not provide a similarly conclusive derivation of (I2I). Moreover, since both derivations rely on divine omnipotence, they are vulnerable to the problem of making (C2P) vacuous and falsifying (I2I) if Descartes' views about divine omnipotence really entail (UP).

It should be remembered, however, that the *Meditations* do not bring any support to (UP), the main evidence in its favour being spread in Descartes' correspondence. Yet Descartes started defending his doctrine of eternal truths in 1630, well before the *Meditations*, and this doctrine makes a few apparitions in the *Replies*. So the hypothesis that Descartes withheld this doctrine in the *Meditations* is hardly plausible and the difficulty, therefore, is real.

6 Modal connection (2): the way of divine creation

Descartes had another explanation of the connection between conceivability and possibility on the one hand and inconceivability and impossibility on the other. Paradoxically enough, this explanation follows from his doctrine of the divine creation of eternal truths, the same doctrine which seems to lead him to (UP).

The main part of this doctrine, as we saw, is that the modal status that attaches to the propositions of logic, mathematics and to the essential truths is the result of God's free choice. But the doctrine has another part, which relates this modal status to our mental capacities: God also created our minds in such a way that we invariably *find* those eternal truths necessary or, in other words, that we cannot conceive them to be false:

There is no single one that we cannot grasp if our mind turns to consider it. They are all inborn in our minds just as a king would imprint his laws on the hearts of all his subjects if he had enough power to do so. (to Mersenne, 15 April 1630, CSMK p. 23, AT1 p. 145)

In the letter to Mesland of May 1644, Descartes makes it clear that the free establishment of modal status by God and the claim that conceivability entails possibility are closely connected parts of a single doctrine:

I turn to the difficulty of conceiving how God would have been acting freely and indifferently if he had made it false that the three angles of a triangle were equal to two right angles, or in general that contradictories could not be true together. It is easy to dispel this difficulty by considering that the power of God cannot have any limits, and that our mind is finite and so created as *to be able to conceive as possible the things which God has wished to be in fact possible, but not be able to conceive as possible things which God could have made possible, but which he has nevertheless wished to make impossible*. (to Mesland, 2 May, 1644, CSMK p. 235, AT4 p. 118, our emphasis)

Here we seem to have all the elements of a general solution to the Connection Problem. Like the solution of the *Meditations*, God is the middle term responsible for the connection. But this connection is different. The nature of conceivability and inconceivability is the result of God's creation of our mind and the nature of possibility and impossibility are the result of God's creation of modal status itself. Another difference with the solution of the *Meditations* is that the solution afforded by the free creation of eternal truths seems general enough to cover both (C2P) and (I2I).

Yet, this same letter contains some elements which have led commentators to attribute (UP) to Descartes. First, although he clearly states that what God made impossible should be inconceivable to us, Descartes adds that what God made impossible He also *could have made possible*, had He chosen to do so. The remaining question is whether these things He could have made possible but did not still count as absolutely impossible or should be seen as possible. The following chain of inferences is tempting:

1. God could have made it possible that p .
2. Therefore it is not absolutely impossible that p .
3. Therefore it is absolutely possible that p .

Unless a good reason is offered to break this chain, Descartes' modal epistemology is in deep trouble.

There are two ways to look at the present situation. One way of looking at it is that the best justification Descartes has to offer in favour of (C2P) and (I2I) is part of the very same doctrine, the doctrine of eternal truths, which threatens to undermine (C2P) and (I2I) and therefore destroy his modal epistemology. Another, less pessimistic way to consider the situation is to say that if a coherent interpretation of the doctrine of eternal truths that does not entail (UP) is available, then we can hope to save Descartes modal epistemology from this threat.

7 Omnipotence without (UP)

The key to solving all these difficulties is to focus on the modal status of the negations of eternal truths. For they are the kind of propositions for which we observe this divergence between what God *made impossible* and what *he could have made possible*. They are also the kind of propositions which would be responsible for the vacuity of (C2P) and the failure of (I2I). So let us focus on them.

Various competing interpretations of the modal status of these propositions have been proposed. On the (UP) interpretation, Descartes' doctrine of eternal truths entails that all negations of eternal truths are possible. If this interpretation is correct, then (C2P) is vacuously true and (I2I) is massively violated. But this interpretation does not seem to do full justice to what Descartes actually writes in the letter to Mesland. When speaking of negations of eternal truths, Descartes explicitly says that (a) God could have made them possible but that (b) God *made them impossible*. The latter claim, taken literally, entails that such falsehoods *are* impossible. That is how God wanted them to be and that is how he made them.

One way to accommodate a literal reading of (b) with a literal reading of (a) would be to endorse the "restricted possibilism" interpretation, according to which

(RP) For any proposition p , it is absolutely possibly possible that p , even if it is not absolutely possible that p .

Thus the negations of eternal truths are not possible, as required by (b), but only possibly possible, as required by (a).³⁴ (RP) is not altogether incoherent, since there are modal logics in which

(9) $\Diamond\Diamond p$

is valid, for any proposition p , whereas

(10) $\Diamond p$

is not.³⁵

So on this view, eternal truths are necessary but not necessarily necessary. And their negations are impossible, but not necessarily impossible. This amounts to abandoning (S4), which is contrary to the standard view of the logic of absolute modality.³⁶

A problem with this interpretation is that Descartes not only says that God could have made eternal truths possibly false. He also writes at the beginning of the same letter to Mesland that (c) God could have “made it false that the three angles of a triangle were equal to two right angles, or in general that contradictories could not be true together” (CSMK p. 235, AT4 p. 118). So, after all, it seems that negations of eternal truths could have been true.

Articulating a coherent interpretation which simultaneously does full justice to (a), (b) and (c) is notoriously difficult. By claiming at the same time that God could have made “ $2+2=4$ ” false and that he nevertheless made the negation of “ $2+2=4$ ” impossible, Descartes seems to be on the verge of contradicting himself. Insisting that God’s omnipotence is incomprehensible to us anyway should not help, because God’s incomprehensible greatness and omnipotence may perhaps allow Him to bring about things inconceivable to us, but it should not allow *us* to accept contradictory propositions, even if those propositions are about *Him*.

The main cause of this predicament, in my view, is that the two aforementioned interpretations seem to presuppose that only *one* absolute modality is expressed in the aforementioned passages. Such a reading is a consequence of adopting implicitly the two following bridge principles:

(11) If God could have made it the case that p , then $\Diamond p$.

³⁴ Such an interpretation was first suggested by Geach (1973, p. 11) and later refined by Curley (1984).

³⁵ These include systems such as **S6**, **S7** and **S8**. One obtains **S6** and **S7** by adding (9) to the axioms of **S2** and **S3**, respectively. **S8** is obtained by adding $\Box\Diamond p$ to the axioms of **S3**. It is to be noted that their modal theory is highly counter-intuitive in that it requires the introduction of “non-normal” worlds, where everything is possible and nothing is necessary. For further details, see Hughes and Cresswell (1972, pp. 281–284).

³⁶ Although standard, the view that **S5** is the logic of absolute possibility is not universally accepted. According to Salmon (1989, 1984), the modal principles (S5) and (S4) and even (B) have false instances. So, if (RP) represents adequately Descartes’ view, then Descartes is not alone in recommending a logic of absolute possibility weaker than **S4**. The motivations of Descartes and Salmon are however very different.

- (12) If God made it the case that Op , then Op , where O is any modality ($\Diamond, \Box, \neg\Diamond$, etc.).

If such bridge principles are valid, then the letter to Mesland is just inconsistent. But nothing in this text forces us to assume that we readers should be able to interpret it only with one modality. It is easy to bring in this kind of assumptions when we readers wonder whether Descartes held that absolutely everything is possible or if the doctrine of eternal truths leaves some space for some necessary truths. But asking this kind of questions presupposes that one antecedently has a good grasp of what “possible” and “necessary” mean. And since the doctrine of eternal truths is really about the nature of modality, it can be misleading to start reading this text with such presuppositions in mind.

On the contrary, the text naturally invites us to consider two distinct modalities.³⁷ First, there is the modality relevant to God’s freedom to create. One does not create freely unless one has alternative options, that is, *possible* courses of action one could choose. Second we have the modalities that are the target of God’s creative act. They are the modalities that result from God’s legislation regarding modal status. Let us use \Diamond_1 to express the first kind of possibility and \Diamond_2 for the second one. Since God is absolutely free in his selection of eternal truths, the first operator should obey the following principle:

- (13) $\Diamond_1 p$, for any p .

This could raise difficulties when we consider such propositions as “God did not choose freely which truths were necessary”. It is unclear whether we should accept that this proposition is possible₁ for it seems flat out incoherent to say that God could have freely chosen not to freely chose which truths are necessary. One possible way out of this difficulty would be to say that the incoherent character of this kind modal₁ proposition is after all not surprising since we should not expect to understand everything about God’s nature. Descartes says as much to Mesland as a response to a similar objection:

I agree that there are contradictions which are so evident that we cannot put them before our minds without judging them entirely impossible, like the one which you suggest: ‘that God might have brought it about that his creatures were independent of him’. But if we would know the immensity of his power we should not put these thoughts before our minds, nor should we conceive any precedence or priority between his intellect and his will. (CMSK p. 235, AT4 p. 119)

Excluding such a proposition from the range of the alternatives on the grounds that it is incoherent would amount to limiting God’s will on logical grounds and therefore give priority to God’s intellect over His will. The doctrine of the free creation of eternal truth therefore requires that no proposition should be excluded from the alternatives. The fact that this leads to accept paradoxical consequences (for us) is in line with the

³⁷ This kind of ‘two-modality’ interpretation was put forward by [McFetridge \(1990\)](#), which we follow here and elaborate upon. In particular we thereafter consider (and reject) possible objections to the interpretation which were not discussed in McFetridge’s initial paper.

spirit of the doctrine and should not be seen as a difficulty, from Descartes' point of view at least.

The second type of modality, on the other hand, obeys the following general principle:

$$(14) \quad \Diamond_2 p \text{ iff it is conceivable that } p.$$

Given these two distinct modal operators and their interpretation, we can derive the main theses of the Cartesian doctrine of eternal truths. For any eternal truth p we have:

$$(15) \quad \Diamond_1 p$$

$$(16) \quad \Diamond_1 \neg p$$

$$(17) \quad \Diamond_2 p$$

$$(18) \quad \neg \Diamond_2 \neg p \text{ (i.e. } \Box_2 p \text{)}$$

$$(19) \quad \Diamond_1 Op, \text{ where } O \text{ is any modality}_2 (\Diamond_2, \Box_2, \neg \Diamond_2, \text{ etc.})$$

In particular, we can derive the following principles, for any p :

$$(20) \quad \Diamond_1 \Diamond_1 p \rightarrow \Diamond_1 p$$

$$(21) \quad \Diamond_2 \Diamond_2 p \rightarrow \Diamond_2 p$$

The derivation of (20) is straightforward: by (13), we have $\Diamond_1 p$, for any p and this is enough for us to get (20), since a material conditional is true iff its antecedent is false or its consequent is true.

Let us turn to (21). Suppose that $\Box_2 \neg p$. This means that p is not conceivable and that $\neg p$ is an eternal truth. Now let us ask ourselves if $\Box_2 \neg p$ is itself an eternal truth too. If it were not, we would have absolutely no difficulty to conceive its negation, i.e. $\Diamond_2 p$, since eternal truths were implanted in our minds by God so that we find them necessary. But we clearly have this kind of difficulty. We simply cannot conceive that $2+2=5$ should be false, but only contingently so. Therefore $\Box_2 \neg p$ is also an eternal truth. It follows, by (18), that $\Box_2 \Box_2 \neg p$. We have shown that if $\Box_2 \neg p$, then $\Box_2 \Box_2 \neg p$. It follows, by contraposition, that if $\Diamond_2 \Diamond_2 p$, then $\Diamond_2 p$.

What the formulae (20) and (21) show is that the idea that some negations of eternal truths could be possibly possible without being possible is just an artefact of the conflation of the two kinds of modalities. But this pattern does not characterize any of the two distinct modalities when they are considered separately. The correct way to analyse the underlying intuition is that for any eternal truth p , we have simultaneously (18) and

$$(22) \quad \Diamond_1 \Diamond_2 \neg p$$

which is an instance of (19).

So we can consistently account for the facts that for any eternal truth p , (a) God could have made $\neg p$ possible, (b) God made $\neg p$ impossible and (c) God could have made p true. For (a) is expressed in our symbolization by (22), (b) by (18) and (c)

by (16), all which are guaranteed by our interpretation. And we can account for this without having to reject (S4) for either modality.

However, this ‘two-modality’ interpretation faces some important difficulties concerning the nature of \Diamond_1 as a modality. Does it make any sense to consider \Diamond_1 as a *modality* at all? First, part of the content of Descartes’ doctrine seems to be that modality itself is a result of a divine creation, so that there can be no modal status before God’s creation to characterise God’s freedom. As Alanen puts it:

What is implied by Descartes’ thesis is that there are no possible or necessary truths before or independently of God’s voluntary act of creating them. (Alanen 1991, p. 74)

So our “two-modality” interpretation should really reduce to a “one-modality” interpretation according to this view. Kaufman shows one way to do so, by reading the “could” of “God could have made it possible that p ” (when p is an eternal truth) in terms of indifference, when indifference is understood as something (allegedly) non-modal:

- (3*) For any eternal truth P , it is not the case that there were any independent factors preventing God from willing not- P or impelling him to will P . (Kaufman 2002, p. 38)

Kaufman then adds that

- (3*) has the advantage that it doesn’t entail anything about the possibility (or possible possibility) of not- P . (Kaufman 2002, p. 38)

The problem with the idea of dropping \Diamond_1 out of the picture, as a *modality* at least, is that it seems to deprive the doctrine of an essential part of its content which seems irreducibly modal to us, although this modality is of course of a different kind than the modalities instituted by God.³⁸ Providing a full conceptual analysis of modality is too big a project for us here, but we can still indicate that God’s creation, in Descartes’ doctrine, has at least an element of *alternativeness*. This is something even Kaufman has to admit, when considering the *distinct* cases of God willing not- P and God willing P . Alternativeness may not be sufficient for a full-fledged notion of modality, but we are getting dangerously close to it. The very idea of analysing (or at least modelling) modality in terms of possible worlds closely ties modality to alternativeness.

Another reply we could give to Kaufman is that his analysis of indifference is itself full of modal notions: ‘independence’, ‘preventing’ and ‘impelling’ all have some modal content. So it seems that \Diamond_1 still deserves to be called a modality after all and indicates that Descartes’ doctrine does have some special modal content, which has to be captured by that unusual modality.

Still another possible objection to the two-modality interpretation is that a modality such as \Diamond_1 which can be prefixed to any p whatsoever and is such that no statement of the form $\neg\Diamond_1 p$ or of the form $\Box_1 p$ can be true, is completely vacuous. Why insist on introducing this peculiar modality? Now the reason why this modality was introduced

³⁸ This qualification constitutes the substance of our “two-modality” interpretation.

in the first place is that Descartes does use some modal expressions which are best interpreted as having those peculiar properties. Our main reason for introducing this modal operator \Diamond_1 is not that it has an interesting modal logic, but rather that it has to be distinguished from its better behaved companion \Diamond_2 if we want to make sense at all of what Descartes says to Mesland.

Assuming that the “two-modality” interpretation is correct, we can now come back to the impact it has on the inference from conceivability to possibility and from inconceivability to impossibility. We now have two versions of (C2P) and two version of (I2I):

(C2P₁) If I find it clearly and distinctly conceivable that p , then it is possible₁ that p .

(C2P₂) If I find it clearly and distinctly conceivable that p , then it is possible₂ that p .

(I2I₁) If I find it inconceivable that p , then it is impossible₁ that p .

(I2I₂) If I find it inconceivable that p , then it is impossible₂ that p .

In our interpretation, (C2P₁), (C2P₂) and (I2I₂) are sound, but not (I2I₁). Descartes’ argumentative practice requires the soundness of (C2P₂) and (I2I₂), which are guaranteed according to our interpretation. For when Descartes argues about the nature of the human soul, of matter and of space, he argues about the modal entities of these entities as they were created by God, not as He could have created them in virtue of His sovereign indifference and incomprehensible omnipotence. The respect for God’s omnipotence requires the soundness of (C2P₁) and the *unsoundness* of (I2I₁), which are also guaranteed.

The interpretation also explains why we observe an apparent asymmetry between possibility and impossibility both at the metaphysical and at the epistemological level. At the metaphysical level, the asymmetry was that Descartes’s claims of possibility, i.e. (1) and (2), seemed to be claims of absolute possibility, whereas it was very unclear that his claims of impossibility, i.e. (3), should be regarded as claims of absolute impossibility, because that would seem to restrict God’s omnipotence. What explains the appearance of an asymmetry is that we have, for any p ,

$$(23) \quad \Diamond_2 p \rightarrow \Diamond_1 p$$

but not

$$(24) \quad \neg \Diamond_2 p \rightarrow \neg \Diamond_1 p.$$

At the epistemological level the asymmetry corresponds to the fact that (C2P₁) is sound whereas (I2I₁) is not. This is why Descartes, in the above-quoted letter to More, can “boldly assert that God [can₁] do everything which [Descartes] perceive[s] to be possible”, but not the converse, and at the same time infer the impossibility₂ of vacuum on the basis of its inconceivability (CSMK p. 363, AT5 p. 272).

Let us take stock. If our interpretation is correct, (C2P₂) and (I2I₂) have a common foundation on God’s free determination of the modal status of truths about essences and the divine creation of our minds, such that we *find* the negation of those necessary

truths impossible. This modality, which we called “modality₂”, governs the created world. No created state of affairs and no human thought can violate these necessities₂. From the standpoint of the created world, this modality is absolute. But the fact that God’s institution of this modality₂ was free implies that there is another kind of modality, possibility₁. This modality₁ expresses the fact that the necessity we know and understand, i.e. necessity₂ has a ground which is itself not necessary in the same sense, i.e. not necessary₂, but which is, on the contrary, contingent₁. This element of contingency is characteristic of Descartes’ second and more comprehensive solution to the Modal Connection Problem.

8 Modal epistemology without God?

We have made some efforts to provide a coherent picture of Descartes’ modal epistemology which explains, from a historical point of view, how it meshes with his metaphysics of modality and how it drives his actual modal reasonings. In this last section, we ask whether, in spite of its deep theological commitments, Descartes’ solution to the Problem of Modal Connection, or at least some aspects thereof, can still be relevant to contemporary modal epistemology.

As we have seen, most of the current conceivability-based accounts draw on a Humean notion of conceivability. Some neo-rationalist philosopher, “moderate” or otherwise, could probably be interested in a kind of Cartesian conceivability-based epistemology.³⁹ One major difficulty to make Descartes’ modal epistemology attractive to a contemporary philosopher is of course its theological setting.⁴⁰ However, it is possible to detach the theological foundations of Descartes’ modal epistemology from some other parts of his account which may be still attractive for some contemporary conceivability-epistemologists.

Yablo, in a sympathetic study of Descartes’ argument for the Real Distinction between the mind and the body (Yablo 1990), proposes a way to see Descartes’ justification for (C2P) which does not appeal to God’s omnipotence or veracity.

First, Yablo points out that from Descartes’ point of view, conceivability is the *only* guide we have to judge of what is possible (1990, p. 178). This is manifest from what he writes to Gibieuf:

You will say perhaps that the difficulty remains, because although I conceive the soul and the body as two substances which I can conceive separately, and which I can even deny of each other, I am still not certain that they are such as I conceive them to be. Here we have to recall the rule already stated, that we cannot have any knowledge of things except by the ideas we conceive of them; and consequently, that we must not judge of them except in accordance with these ideas, and we must even think that whatever conflicts with these ideas is absolutely impossible and involves a contradiction. (to Gibieuf, 19 January 1642, CSMK p. 202, AT3 p. 476)

³⁹ Moderate rationalists (BonJour 1998; Bealer 2002), as opposed to classical rationalists such as Descartes, insist that reason is fallible, although it is still taken as the primary source of justification.

⁴⁰ See however Della Rocca (2005) for a recent attempt to minimize the importance of God in Descartes’ epistemology.

Descartes makes it clear that according to him, it is only by way of clear and distinct ideas that one might hope to acquire modal knowledge:

- (IC) If conceivability is not at least a reliable (if not infallible) guide to possibility, then we cannot have any knowledge of what is possible.

The second element of Yablo's suggestion relies on the doctrine of divine veracity. As we have seen in Sect. 5, one route Descartes takes to justify (C2P) is to derive it from God's veracity and God's omnipotence. And this, I contended, is enough to solve the Modal Connection Problem for conceivability and possibility (although it is not for (I2I)). But as Yablo observes, there is one practical consequence of the doctrine of divine veracity which can be retained, even by an atheist:

At this point, another Cartesian idea becomes important, that we can never reach false conclusions, about modal matters or matters of any other kind, except through the misuse of our faculties. According to the usual story, Descartes claims certain knowledge of this principle on the basis of his certain knowledge of God's veracity. Lacking that recourse, I can't pretend to the same knowledge. Nor do I even believe the principle as stated. What I do think is that something like a 'no gratuitous error claim' is implicit in our daily practice, in the form of a ban on gratuitous attributions or error. Not that doubts must always be backed up by a story about how the thinker has misused her faculties; obviously it is possible to reach a false conclusion through no fault of one's own. But the suspicion that a judgment, modal or otherwise, is erroneous does ordinarily need to be grounded in a reason to think that error in this case was significantly likely. (Yablo 1990, p. 180)

In other words, (C2P) should be seen as a defeasible inference rule. When inferring the possibility of p from the clear and distinct conceivability of p , one is *prima facie* justified to do so. But if one finds a reason to doubt the reliability of the clear and distinct conceivability of p as an evidence of its possibility, then the inference should be withdrawn.

What could such reasons be? If one has independent justification for the impossibility of p , then the clear and distinct conceivability of p ceases to be evidence for the possibility of p . One might wonder how this can happen if (IC) is true. What Yablo has in mind here is the infamous Kripke-Putnam cases of conceivable impossibilities, such as Hesperus not being Phosphorus or water not being H_2O (Kripke 1980; Putnam 1975). These cases raise difficult issues for conceivability theorists. By viewing (C2P) as a defeasible rule, one can circumvent these errors, provided that we have some independent means to identify and prevent them. And Yablo, in the same paper and others (Yablo 1993, 2006), discusses such models of modal error.

So although (C2P) is not justified if taken to assert an entailment between conceivability and possibility, it has a defeasible variant which is sound:

- (C2Pd) If A is conceivable, then infer that A is possible, unless A fits a previously identified model of modal error.

Yablo does not explicitly consider the case of (I2I), but this principle can also be justified in a similar way. First, Descartes accepted the Indispensability of Inconceivability in addition to the Indispensability of Conceivability, as the above-quoted letter to Gibieuf shows. So, as Cartesians, we are entitled to the following principle:

- (II) If inconceivability is not at least a reliable (if not infallible) guide to impossibility, then we cannot have any knowledge of what is impossible.

In Sect. 5 we saw that the doctrine of divine veracity is not sufficient to justify (I2I). The crucial element of justification comes from a part of the doctrine of the free creation of eternal truths which says that God made our minds in such a way that we will find conceivable what he made possible. Now if God drops out of the picture, then of course, this justification is lost. But what remains is an idea of the kind of thing that must be responsible for a failure of (I2I). The free creation doctrine highlights the fact that the ground for our intuitions of inconceivability is itself contingent.⁴¹ The justification works insofar as this contingent ground is aligned with the similarly contingent ground of the modal status of eternal truths. Thus, once God is left out of the picture, the major source of fallibility for (I2I) is the contingency of our mental constitution. For even if we do not believe that God is responsible for what we can and cannot conceive, it is still plausible that these capacities depend on the contingent constitution of our cognitive equipment. So it may be the case that our minds are so constituted that we find some genuine possibilities inconceivable.

The fallibility of inconceivability as guide to impossibility can however be circumvented, in the same way we circumvented the fallibility of conceivability, namely by building models of modal error. If we find p inconceivable while we have independent reason to believe that p is possible, then we should withdraw the inference to the impossibility of p and try to understand why (I2I) failed in that case.

What could such reasons be? It sometimes happens in the conduct of scientific inquiry that the best evidence we have entails that some proposition which we find inconceivable, because it violates what we take to be some deeply entrenched conceptual truths, is nevertheless true, and therefore possible. For example, experimentally verified violations of Bell inequalities in quantum mechanics strongly suggest that some physical objects can (in some sense) influence each other no matter how distant they are from each other, which seems at first inconceivable to us.⁴² Such cases may be taken to be counterexamples to (I2I). But this kind of failure can be circumvented by providing a model which explains why (I2I) leads to a false conclusion in that case, and which can be applied to other similar cases. This leads to the following defeasible version of the Inconceivability Principle:

- (I2Id) If p is inconceivable, then infer that p is impossible, unless p fits a previously identified model of modal error.

⁴¹ To be more precise, we should write “contingent₁”, because, if our interpretation of the doctrine is correct, it is not the same kind of modality as the one which is tracked by conceivability and inconceivability.

⁴² For a presentation of these results, see for example the first chapter of (Maudlin 1994).

In addition, although it was not part of Descartes' intention to suggest that inconceivability was *historically* contingent,⁴³ this idea fits naturally in the kind of framework we are now exploring. It is plausible that the development of new scientific theories can lead us to revise some of our judgements of conceivability. At some point in the history of mathematics, infinitesimals were regarded as inconceivable (Berkeley 1734). However, model theory, in the hands of Abraham Robinson, and category theory, in those of William Lawvere, enable us to give rigorous and coherent definitions of infinitesimals (Bell 1988), making them conceivable after all, *pace* Berkeley.

This kind of modal epistemology is able to justify the kind of metaphysical arguments that Descartes used. However, it does so by bypassing the Modal Connection Problem, rather than offering a genuine solution to it, in the sense that (C2P) and (I2I) (or defeasible variants thereof) are not derived from a view about how possibility and conceivability are connected. A match between conceivability and possibility on the one hand, and inconceivability and impossibility on the other, should be reached after a piecemeal examination of modal errors. This rather suggests that a solution to the Modal Connection Problem is in fact not necessary in order to be entitled to use of (C2P) and (I2I) in our modal reasonings. Still, this view retains some significant aspects of Descartes' original solution, such as the indispensability of conceivability and inconceivability, (an atheistically acceptable substitute of) divine veracity and the particular contingent status of conceivability and inconceivability.

9 Conclusion

Descartes' use of (C2P) and (I2I) in metaphysical arguments needs a solution to the Modal Connection Problem. An additional problem is to make this solution consistent with Descartes' peculiar views about modality, according to which God could have made possible, or even true, what he made impossible.

The 'two-modality' interpretation of these views shows that these views are self-consistent and consistent with Descartes' use of (C2P) and (I2I). In addition, the Cartesian doctrine according to which God freely created the eternal truths provides support to (C2P) and (I2I), since God created our minds in such a way that we find conceivable what he made possible₂ (but could₁ have made impossible₂) and that we find inconceivable what he made impossible₂ (but could₁ have made possible₂).

Two elements emerge from the general picture. First, the solution to the Connection Problem relies on a common source both for conceivability (respectively inconceivability) and possibility (respectively impossibility), namely God Himself. Second, this source is in some important way contingent, although the modal status of the source (modality₁) is of a distinct kind from the modal statuses thus grounded (modality₂).

Although the second element can be attractive to a contemporary conceivability-theorist who is sensitive to the contingency of our conceivability and inconceivability intuitions, the first is clearly not. We have shown however that by giving atheistic counterparts of some Cartesian epistemological principles such as divine veracity, and by considering defeasible versions of (C2P) and (I2I), it is possible to detach the second

⁴³ See Bouveresse (1983, pp. 309–310) for a discussion of this point.

element from the first one. The Cartesian elements leading to the defeasible versions of (C2P) and (I2I) even suggest that Descartes planted the seeds for the view that a coherent conceivability-based modal epistemology can bypass the Connection Problem altogether. The ultimate success of this kind of approach to modal epistemology, however, is a question for another paper.

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