Contingent Necessary Truths

Philipp Blum

Abstract

I will reassess the reasons Descartes gives for the startling claims that it may be rational to doubt necessary truths and that such truths are, in some sense, ultimately contingent. I argue that understanding these two interrelated tenets as arising from Descartes' use of what he calls the analytical method provides the background to, and an independent justification for, Descartes' method of doubt in the first *Meditation*, and that it gives us the resources for a charitable reading of the *Cogito* argument by which Descartes proves his existence as a mental substance. Understanding maximal doubt as doubt *per impossibile* allows for a way of establishing the so-called truth-rule independently of the later proof of God's veracity, squaring the so-called 'Cartesian Circle': the Cogito is prior in the analytical order, God is prior in the synthetical order. It also identifies a – in my view interesting, fruitful and unduly neglected – sense in which modal truths may defensibly be said to be contingent.

The Cartesian Circle

Descartes famously held that God could have made false necessary truths like those of mathematics, logic and metaphysics.[1] Even more famously, he staged a three-step sceptical argument in the first *Meditation* at the end of which its proponent, the first-person narrator of the *Meditations* (whom I will call "the Cartesian thinker" to distinguish her from the historical Descartes), is, or at least seems to be, rationally doubting everything, including mathematical, logical and metaphysical truths, only to establish a little later the most certain and paradigmatically knowable proposition, namely that she exists. It is a controversially debated question whether this procedure is consistent: if all eternal truths can rationally be doubted, then the *Cogito* is not indubitable; if it is, then there is at least one truth God (or an evil demon) could not have made false. The question of relative priority concerns both ontology and epistemology:

- What is the first principle of the Cartesian system: the existence of God or the existence of the Cartesian thinker?
- What is the foundation of all our knowledge: God's guarantee of the truth-rule or the rejection of the evil demon hypothesis through the *Cogito*?

Briefly put, my answer is that Descartes distinguishes two kinds of priority, in relation to what he calls the "analytic" and the "synthetic" methods respectively. In the analytic order, the *Cogito* is the first truth, and the *res cogitans* the existence of which it proves is the first being; in the synthetic order, however, it is God and His veracity which are prior to everything else.

1. In my discussion of Descartes' "voluntarism" (which others have called his "creationism" or his "modalism") I will make abstraction from its theological ramifications. I also refrain from making a terminological distinction between "eternal" and "necessary" truths.

The question of priority is of great importance for an evaluation of what has been called the *Cartesian circle*. This is the fallacy attributed to Descartes of not distinguishing sufficiently clearly epistemic from metaphysical modality and infering illegimately the latter kind of possibility from the former. It consists in the charge of having produced an argument along the following lines:

(i) I clearly and distinctly perceive that the idea I have of God implies His existence.
(ii) Whatever I clearly and distinctly perceive is true.
(iii) So God exists if I have an idea of Him.

The problem with this argument is that, on Descartes' own terms, the second premiss, the so-called "truth-rule" – like every other true proposition – depends on God's will and existence. Descartes therefore seems to be committed to the following two claims:[2]

(a) I can be certain that whatever I perceive clearly and distinctly is true only if I first am certain that God exists and is not a deceiver.
(b) I can be certain that God exists and is not a deceiver only if I first am certain that whatever I perceive clearly and distinctly is true.

The combination of the two claims entails that I cannot be certain of either the truth-rule or of God's existence. Like the so-called 'Memory Interpretation' of Doney (1955) and contrary to Gewirth (1941, 1970), Feldman (1975), van Cleve (1979) and many others, I propose to deny **(a)**. Unlike the memory interpretation and its more recent descendant – what Loeb (1992: 201) calls the "psychological interpretation" –, however, I do not want to restrict God's guarantee to truths about the past nor adopt a very weak reading of the truth-rule as establishing only psychological inability to doubt. On my interpretation, the truth rule concerns truths that are *in themselves* clear and distinct and that can therefore be doubted only *per impossibile*. That doubt concerning them is doubt per impossibile is shown by the *Cogito* and the *Cogito* itself thus suffices to establish the truth of the truth-rule (its applicability in concrete cases is another matter): truths that are by themselves clear and distinct just cannot be false. *In another sense*, however, these truths still depend on God: they could not exist without having been created by God, even though we cannot consistently take them to not having been created. This distinction – between the eternal truths really being what they are, i.e. eternally and necessarily true and their existence being contingent – is what allows us, and Descartes, to have our cake and eat it too.

The worry underlying the charge of circularity against **(a)**/**(b)** may be generalised, to a degree even where it may appear doubtful that it could every be solved: Descartes' project to rationally validate reason may seem doomed from the start if it is taken to be a reconstruction of the sciences on indubitable bed-rock which is secured by the same scientific methodology it itself is supposed to guarantee in turn. Given that "clear and distinct" is the highest possible qualification we may bestow on any of our beliefs (the highest 'epistemic modality', in the terminology I will use in the following), no argument seems possible to guarantee the truth of those beliefs – at best, any such argument could establish that we clearly and distinctly perceive that our clear and distinct beliefs must be true. It cannot, however, establish the truth, as opposed to the clearness and distinctness of the truth-rule itself, given the way we coined the term of art "clear and distinct". So either truth must be understood along coherentist lines, as not going any further than our epistemic modalities, or we must interpret the 'self-validation of reason' somewhat hypothetically, perhaps as a transcendental argument.

Taking this worry seriously amounts to a dismissal of the Cartesian project. We cannot do him justice if we presuppose a prior distinction between the realm of beliefs and subjective certainty, the realm of epistemology, and the realm of reality, objective truth and mind-independent modality, which is the realm of

2. This is the way van Cleve (1979: 55) frames the problem of the Cartesian Circle. It does not matter what exact reading is given to "first", if only it denotes a position in some strict order, be it epistemic or metaphysical, thereby ruling out the joing truth of both sides of the biconditional.

metaphysics. For it is precisely Descartes' project to make these two realms match by aligning epistemic with metaphysical modality, the truth-rule providing the bridge between the two. Presupposing at the outset that no such alignment is possible without identifying the one with the other is just failing to engage with Descartes' arguments. Epistemic necessities for Descartes are not just apparent or presumed necessities, not necessities given a stock of knowledge we take for granted and not merely psychological constraints on how we happen to think. Epistemic modality, if Descartes' arguments are of any worth, is much more. I think it worthwile to engage with him in the search for such a substantive and irreducible notion of epistemic modality, given the fact that even we, after half a decade of epistemic logic, have ourselves no clear idea of what epistemic modality might be.

Analytic vs. Synthetic Methods

There are many reasons to be skeptical about Descartes' argumentative project in the first part of the *Meditations* – to conclude substance dualism from the fact that even maximal doubt cannot encompass the doubter's existence. One particular, quite general one, is the following: how could such a radical metaphysical premiss *ever* follow from merely epistemological premisses, having to do with what a thinker, even a properly idealised one, can and cannot rationally do?[3]

More concretely and assuming that Descartes' overall argument has roughly the structure of a *reductio*: what are the conditions under which, having made a supposition *s*, and having shown that under this supposition, *s* could not have been supposed, we are entitled to conclude that *s* is false? Do we not have to make the additional supposition not only that *s*, but also that we are supposing *s*, and if so, how could we ever know *that*?

When faced with (something like) this objection, Descartes emphasises that he is using, in metaphysics and also quite generally, "the analytic method". He never quite explicitly says what the analytic method is, but he is emphatic that he is following it and that this fact is important for addressing certain objections:

"Et il est à remarquer, en tout ce que j'écris, que je ne suis pas l'ordre des matieres, mais seulement celui des raisons: c'est à dire que je n'entreprens point de dire en un mesme lieu tout ce qui appartient à une matiere, à cause qu'il me seroit impossible de le bien prouver, y ayant des raisons qui doivent estre tirées de bien plus loin des unes que les autres; mais en raisonnant par ordre *à facilioribus ad difficiliora*, j'en déduis ce que je puis, tantost pour une matiere, tantost pour une autre; ce qui est, à mon avis, le vray chemin pour bien trouver&expliquer la verité." (AT III 266^{16-26})

"It should be noted that throughout the work the order I follow is not the order of subject-matter, but the order of reasoning. This means that I do not attempt to say in a single place everything relevant to a given subject, because it would be impossible for me to provide proper proofs, since my supporting reasons would have to be drawn in some cases from considerably more distant sources than in others. Instead, I reason in an orderly way 'from what is easier to what is harder', making what deductions I can, now on one subject, now on another. This is the right way, in my opinion, to find and explain the truth." (Descartes 1991: 163)

For Descartes, analysis is the right method not only in philosophy, but also in mathematics (AT II $637^{12-17,24-27}$): it not only presents results already found, but proceeds "a facilioribus ad difficiliora", thereby showing *how* the principles have been found. He explicitly says that his *Meditations* show the analytic method at work.[4]

But what *is* the analytic method? The most prominent explanation of the distinction between the analytic and the synthetic method is in the *Second Replies*, where it is a sub-distinction within the 'method of the geometers'.

3. I do not to deny that we can *ever* derive metaphysical conclusions from epistemological premisses: I may, for example, infer that *p* from the premiss that I know that *p*, or can infer from the latter that the necessary metaphysical conditions for (the possibility of) such knowledge are satisfied. I find it instructive, however, that such premisses are not purely epistemological (quite generally, we can always add epistemological premisses to a valid argument from metaphysical premisses to metaphysical conclusions), and that they are not typically de re.

4. "Ego vero solam Analysim, quae vera & optima via est ad docendum, in Meditationibus meis sum sequuntus..." (AT VII 156^{21-23})

Analysis veram viam ostendit per quam res methodice & tanquam a priori inventa est, adeo ut, si lector illam sequi velit atque ad omnia satis attendere, rem non minus perfecte intelliget suamque reddet, quam si ipsemet illam invenisset.

Nihil autem habet, quo lectorem minus attentum aut repugnantem ad credendum impellat; nam si vel minimum quid ex iis quae proponit non advertatur, ejus conclusionum necessitas non apparet, saepeque multa vix attingit, quia satis attendenti perspicua sunt, quae tamen praecipue sunt advertenda. (AT VII 155^{23}–156^{5})

Synthesis è contra per viam oppositam & tanquam a posteriori quaesitam (etsi saepe ipsa probatio fit in hac magis a priori quam in illâ) clare quidem id quod conclusum est demonstrat, utiturque longâ definitionum, petitionum, axiomatum, theorematum, & problematum serie, ut si quid ipsi ex consequentibus negetur, id in antecedentibus contineri statim ostendat, sicque a lectorem quantumvis repugnante ac pertinaci, assensionem extorqueat; sed non ut altera [demonstrandi ratio] satisfacit, nec discere cupientum animos explet, quia modum quo res fuit inventa non docet. (AT VII $156^{6\text{-}16}$)

L'analyse montre la vraye voye par laquelle une chose a esté methodiquement inventée, & fait voir comment les effets dépendent des causes; en sorte que, si le lecteur la veut suivre, & jetter les yeux soigneusement sur tout ce qu'elle contient, il n'entendra pas moins parfaitement la chose ainsi démontrée, & ne la rendra pas moins sienne, que si luy-mesme l'avait inventée.

Mais cette sorte de demonstration n'est pas propre à convaincre les lecteurs opiniastres ou peu attentifs: car si on laisse échaper, sans y prendre garde, la moindre des choses qu'elle propose, la necessité de ses conclusions ne paroistra point; & on n'a pas coûtume d'y exprimer fort amplement les choses qui sont assez claires de soy-mesme, bien que ce soit ordinairement celles ausquelles il faut le plus prendre garde. (AT IX/I 121)

La synthese, au contraire, par une voye toute autre, & comme en examinant les causes par leurs effets (bien que la preuve qu'elle contient soit souvent aussi des effets par les causes), démontre à la verité clairement ce qui est contenu en ses conclusions, & se sert d'une longue suite de definitions, de demandes, d'axiomes, de theoremes & de problemes, afin que, si on luy nie quelques consequences, elle face voir comment elles sont contenuës dans les antecedens, qu'elle arrache le consentement du lecteur, tant obstiné & opiniastre qu'il puisse estre; mais elle ne donne pas, comme l'autre [manière de démontrer], une entiere satisfaction aux esprits de ceux qui desirent d'aprendre, parce qu'elle n'enseigne pas la methode par laquelle la chose a esté inventée. (AT IX/I 122)

Analysis is here said to be the method of invention, leading to what is clear by itself, while synthesis is the method of demonstration and exposition, dialectically useful but not ultimately explanatory. The French translation, authorised by Descartes, makes clear that analysis is "a priori" in the sense of going from effects to causes, while synthesis is "a posteriori" in the sense of 'deducing' 'effects' from their causes. It thus aligns the analytic/synthetic dichotomy with the one used in the so-called 'Padua school', distinguishing on the basis of the *Analytica Posteriora* the method of resolution, which goes from what is prior to us to what is prior in itself, from the method of composition, which proceeds in the other direction.

In *Analyt. Post.*, Aristotle draws the distinction as one between understanding *that* and understanding *why*:

> Understanding the fact and the reason why differ, first in the same science – and in two ways. […] In a second way if, although the deduction does proceed through immediates, it proceeds not through the explanation but through the more familiar of the converting terms. For there is no reason why the non-explanatory counterpredicated term should not sometimes be more familiar, so that the demonstration will proceed through this term. (*APst* I 13 78a22ff.)

We are given the following example:

The planets don't twinkle.	The planets are near.
What does not twinkle, is near.	What is near, does not twinkle.
The planets are near.	The planets don't twinkle.

The syllogism on the left side infers the cause from the effect, and uses the 'more familiar' second premiss, inferring not in virtue of "the explanation" (the nearness of the planets), but in virtue of the "more familiar" of the terms (the non-twinkling). On the right hand-side, by contrast, the effect is demonstrated from the cause, and we are given the reason why the planets appear to us the way they do.

Analytical and synthetical methods as methods of proof

The dichotomy appears in the thirteenth book of Euclid's *Elements*:

> Analysis is the assumption of that which is sought as if it were admitted <and the arrival> by means of its consequences at something admitted to be true. Synthesis is an assumption of that which is admitted <and the arrival> by means of its consequences at something admitted to be true. (Heath 1968: 442)[5]

Proclus, in his commentary on the *Elements* explicitly says that the methods only differ in direction:

> …certainly beauty and order are common to all branches of mathematics, as are the method of proceeding from things better known to things we seek to know and the reverse path from the latter to the former, the methods called analysis and synthesis. (translation after Morrow (1970: 6–7))

Descartes' primary source for the methodological dichotomy was probably Pappus of Alexandria[6] which he cites in his dedication of the *Meditations* (AT VII 4^{17}). For Pappus, the difference between analysis and synthesis is one of direction: analysis proceeds from the explanandum to its explanatory grounds and takes us from the phenomenon to be explained (what is most clear to us) to the most general principles that are most clear in themselves. Synthesis proceeds in the reverse direction: starting from self-evident principles, it demonstrates (in paradigm cases deductively) what we wanted to have explained. Pappus explains this in his *Collectio* as follows (citing the Commandinus translation):

"'Resolutio igitur est via a quaesito tamquam concesso per ea, quae deinceps consequuntur [*dia tôn hexês akolouthôn*] ad aliquod concessum in compositione: in resolutione enim id quod queritur tamquam factu ponentes, quid ex hoc contingat [*to ex ou touto symbainei*], consideramus: & rursum illius antecedens, quousque ita progredientes incidamus in aliquod iam cognitum, vel quod fit è numero principiorum. […] In compositione autem per conversionem ponentes tamquam iam factum id, quod postremum, in resolutione sumpsimus: atque hic ordinantes secundu naturam [*kata physin*] ea antecedentia, que illic consequentia erant & mutua illosum facta compositione ad quasiti finem pervenimus, & hic modus vocatur compositio."" (Pappus von Alexandria 1589: 328–329)

Now, analysis is the path from what one is seeking, as if it were established, by way of its consequences, to something that is established by synthesis. That is to say, in analysis we assume what is sought as if it has been achieved, and look for the thing from which it follows, and again what comes before that, until by regressing in this way we come upon some one of the things that are already known, or that occupy the rank of a first principle. […] In synthesis, by reversal, we assume what was obtained last in the analysis to have achieved already, and, setting now in natural order, as precedents, what before were following, and fitting them to each other, we attain the end of the construction of what was sought. This is what we call 'synthesis'. (Pappus von Alexandria 1986: 93)

When Descartes in the *Second Replies* characterises the distinction between analytic and synthetic methods as a sub-distinction within the 'method of the Geometers', he particularly stresses the heuristic value of the analytic method:

> …satis enim advertimus veteres Geometras analysi quadam usos fuisse, quam ad omnium problematum resolutionem extendebant, licet eandem posteris inviderint. (AT X $373^{12\text{-}15}$)
> Hac solâ [Synthesis] Geometrae veteres in scriptis suis uti solebant, non quod aliam [Analysis] plane ignorarent, sed, quantum judico, quia ipsam tanti faciebant, ut sibi solis tanquam arcanum quid reservarent. (AT VII $156^{17\text{-}20}$)

While the reversability, turning the analytic discovery into a synthetic proof, is key to its use in mathematics (and favours, in my view, an interpretation according to which the methods deal with the transformation of

5. I am quoting Heath's translation even though he thinks that "there must apparently be some corruption in the text". The German translation by Engfer (1982: 75–76) is startingly different: "Eine Analysis ist die Zugrundelegung des Gesuchten als anerkannt um seiner auf anerkannt Wahres führenden Folgerungen willen. Eine Synthesis ist die Zugrundelegung des Anerkannten [*to homologoumenon*] um seiner auf Vollendung oder Ergreifung des Gesuchten führenden Folgerungen willen."

6. That's why he refers to both analysis and synthesis as the "geometrical method" (AT X 373^{12-15}) and uses it as his primary source of inspiration not only for metaphysics, but also for the *Géometrie* (AT VI 372^{10-24}) and the *Dioptrique* (AT I 559^{14-24}).

equations), it is potentially problematic, because circular, in its use in science and metaphysics. Descartes replies to this charge in a letter (22nd of February 1638) to Morin:

Vous dites aussi que *prouver des effets par une cause, puis prouver cette cause par les mesmes effets, est un cercle logique*, ce que j'avoüe; mais je n'avoüe pas pour cela que c'en soit un [cercle logique], d'expliquer les effets par une cause, puis de la prouver par eux: car il y a grande difference entre *prouver* & *expliquer*. A quoy j'adioute qu'on peut user du mot *demonstrer* pour signifier l'un & l'autre…. (AT II 197^{25}–198^{6})

You say also that there is a vicious circle in proving effects from a cause and the proving the cause by the same effects. I agree: but I do not agree that it is circular to explain effects by a cause, and then prove the cause by the effects; because there is a big difference between *proving* and *explaining*. I should add that the word 'demonstrate' can be used to signify either…(Descartes 1991: 106)

Here, the explanatory potential of the analytic method is stressed, which is also the reason why it is useful in science.

Synoptically, we thus get the following picture:

Analysis	*Synthesis*
resolutio	compositio
demonstratio quia	demonstratio propter quid
syllogismos tou hoti	syllogismos tou dioti
proof of the cause from the effect	proof of the effect from the cause
explanation of the fact	explanation of the reason why
rationes cognoscendi	rationes essendi
from the conditioned to the condition	from the conditions to the conditioned
from first_1 to first_2	from first_2 to first_1
"'démontrer"' in the sense of "explain"	"'démontrer"' in the sense of "deduce"
"'fait voir comment les effets dépendent des causes"'	"'comme en examinant les causes par leurs effets"'

The Cartesian method

The analytic method matters for Cartesian science insofar as Cartesian metaphysics tries to uncover the most general principles of physics,[7]In the *Discours*, Descartes says about the method the fruits of which are shown in the *Essais*:

…de conduire par ordre mes pensées, en commençant par les obiets les plus simples & les plus aysez a connoistre, pour monter peu a peu, comme par degrez, iusques a la connoissance des plus composez; et supposant mesme de l'ordre entre ceux qui ne se precedent point naturellement les uns les autres. (AT VI 18^{27}–19^{2})

…to direct my thoughts in an orderly manner, by beginning with the simplest and most easily known objects in order to ascend little by little, step by step, to knowledge of the most complex, and by supposing some order even among objects that have no natural order of precedence. (Descartes 1985: 120)

In practice, this means that he attempts to show the explanatory potential of first principles by sketching an abstracting model that shows them at work:

Mais l'ordre que j'ay tenu en cecy a esté tel. Premierement, j'ay taché de trouver en general les Principes, ou Premieres Causes, de tout ce qui est, ou qui peut estre, dans le monde, sans rien considerer, pour cet effect, que Dieu seul, qui l'a creé, ny les tirer d'ailleurs que de certaines semences de Veritez qui sont naturellement en nos ames. Aprés cela, j'ay examiné quels estoient les premiers & plus ordinaires effets qu'on pouvoit deduire de ces causes: et il me semble que, par la, j'ay trouvé des Cieux, des Astres, une Terre, & mesme, sur la terre, de l'Eau, de l'Air, du Feu, des Mineraux, & quelques autres telles choses, qui sont les plus communes de toutes & les plus simples, & par consequent les plus aysées a connoistre. Puis, lorsque j'ay voulu descendre

7. "…ces six Méditations contiennent tous les fondements de ma Physique." (AT III 298^{1-2})

a celles qui estoient plus particulieres, il s'en est tant presenté a moy de diverses, que je n'ay pas creu qu'il fust possible a l'esprit humain de distinguer les Formes ou Especes de cors qui sont sur la terre, d'une infinité d'autres qui pourroient y estre, si c'eust esté le vouloir de Dieu de les y mettre, ny, par consequent, de les rapportes à nostre usage, si ce n'est qu'on viene au devant des causes par les effets, & qu'on se serve de plusieurs experiences particulieres. En suite de quoy, repassant mon esprit sur tous les objets qui s'estoient jamais presentez a mes sens, j'ose bien dire que je n'y ay remarqué aucune chose qui je ne peusse assez commodement expliquer par les Principes que j'avois trouvez. Mais il faut aussy que j'avouë, que la puissance de la Nature est si ample & si vaste, & que ces Principes sont si simples & si generaux, que je ne remarque quasi aucun effect particulier, que d'abord je ne connoise qu'il peut en estre deduit en plusieurs diveres façons, & que ma plus grande difficulté est d'ordinaire de trouver en laquelle de ces façons il en depend. (AT VI 63^{30}–65^{3})

But the order I have adopted in this regard is the following. First, I tried to discover in general the principles or first causes of everything that exists or can exist in the world. To this end I considered nothing but God alone, who created the world; and I derived these principles only from certain seeds of truth which are naturally in our souls. Next I examined the first and most ordinary effects deducible from these causes. In this way, it seems to me, I discovered the heavens, the stars, and an earth; and, on the earth, water, air, fire, minerals, and other such things which, being the most common of all and the simples, are consequently the easiest to know. Then, when I sought to descend to more particular things, I encountered such a variety that I did not think the human mind could possibly distinguish the forms or species of bodies that are on the earth from an infinity of others that might be there if it had been God's will to put them there. Consequently, I thought the only way of making these bodies useful to us was to progress to the causes by way of the effects and to make use of many special observations. And now, reviewing in my mind all the objects that have ever been present to my senses, I venture to say that I have never noticed anything in them which I could not explain quite easily by the principles I had discovered. But I must also admit that the power of nature is so ample and so vast, and these principles so simple and so general, that I notice hardly any particular effect of which I do not know at once that it can be deduced from the principles in many different ways; and my greatest difficulty is usually to discover in which of these ways it depends on them.(Descartes 1985: 143–144)

Just before showing us these fruits, he says that in the synthetic presentation, the order of invention is reversed:

Car il me semble que les raisons s'y [in der *Dioptrique* und den *Meteores*] entresuivent en telle sorte que, comme les dernieres sont demonstrées par les premieres, qui sont leurs causes, ces premieres le sont reciproquement par les dernieres, qui sont leurs effets. Et on ne doit pas imaginer que ie commette en cecy la faute que les Logiciens nomment un cercle; car l'experience rendant la plus part de ces effets tres certains, les causes dont je les deduits ne servent pas tant a les prouver qu'a les expliquer; mais, tout au contraire, ce sont elles qui sont prouvées par eux. (AT VI $76^{11\text{-}22}$)

For I take my reasonings to be so closely interconnected that just as the last are proved by the first, which are their causes, so the first are proved by the last, which are their effects. It must not be supposed that I am here committing the fallacy that the logicians call 'arguing in a circle'. For as experience makes most of these effects quite certain, the causes from which I deduce them serve not so much to prove them as to explain them; indeed, quite to the contrary, it is the causes which are proved by the effects. (Descartes 1985: 150)

In the *Traité de Lumière*, he qualifies the epistemic irresistibility of the first principles by their being distinctly conceived:

…qu'outre les trois loix que j'ay expliquées, je n'en veux point supposer d'autres, que celles qui suivent infailliblement de ces veritez eternelles, sur qui les Mathematiciens ont accoûtumé d'appuyer leurs plus certaines & plus évidentes demonstrations: ces veritez, dis-je, suivant lesquelles Dieu mesme nous a enseigné qu'il avoit disposé toutes choses en nombre, en pois & en mesure; & dont la connaissance est si naturelle à nos ames, que nous ne sçaurions ne les pas juger infaillibles, lors que nous les concevons distinctement; ny douter que, si Dieu avoit creé plusieurs Mondes, elles ne fussent en tous aussi veritables qu'en celuy-ci. De sorte que ceux sçauront suffisamment examiner les consequences de ces veritez & de nos regles, pourront connoistre les effets par leurs causes; &, pour m'expliquer en termes de l'Ecole, pourront avoir des demonstrations *à Priori*, de tout ce qui peut estre produit en ce nouveau Monde. (AT XI $47^{9\text{-}28}$)

…apart from the three laws I have expounded, I do not with to suppose any others but those which follow inevitably from the eternal truths on which mathematicians have usually based their most certain and most evident demonstrations – the truths, I say, according to which God himself has taught us that he has arranged all things in number, weight and measure. The knowledge of these truths is so natural to our souls that we cannot but judge them infallible when we conceive them distinctly, nor doubt that if God had created many worlds, they would be as true in each of them as in this one. Thus those who are able to examine sufficiently the consequences of these truths and of our rules will be able to recognize effects by their causes. To express myself in scholastic terms, they will [be] able to have *a priori* demonstrations of everything that can be produced in this new world. (Descartes 1985: 97)

About the method in the *Essais*:

> Mon dessein n'a point esté d'enseigner toute ma Methode dans le discours où je la propose, mais seulement d'en dire assez pour faire juger que les nouvelles opinions, qui se verroient dans la Dioptrique&dans les Meteores, n'estoient point conceuës à la legere…,Je n'ay pû aussi monstrer l'usage de cette methode dans les trois traittez que j'ay donnez, à cause qu'elle prescrit un ordre pour chercher les choses qui est assez different de celuy dont j'ay crû devoir user pour les expliquer. (AT I $559^{14\text{-}24}$)

Of any help in metaphysics?

In the *Regulae*, the reduction of what is complex to what is simple was simply called "the method".

Tota methodus consistit in ordine et dispositione eorum, ad quae mentis acies est convertenda, ut aliquam veritatem inveniamus. Atque hanc exacte servabimus, si propositiones involutas&obscuras ad simpliciores gradatim reducamus, et deinde ex omnium simplicissimarum intuitu ad aliarum omnium cognitionem per eosdem gradus ascendere tentemus. (AT X $379^{15\text{-}21}$)

The whole method consists entirely in the ordering and arranging of the objects on which we must concentrate our mind's eye if we are to discover some truth. We shall be following this method exactly if we first reduce complicated and obscure propositions step by step to simples ones, and then, starting with the intuition of the simples ones at all, try to ascend through the same steps to a knowledge of all the rest. (Descartes 1985: 20)

In the *Recherche*, this is advertised as a main advantage of the right method:

Omnes enim veritates se invicem consequuntur, & mutuo inter se vinculo continentur, totum arcanum in eo tantum consistit, ut a primis & simplicissimis incipiamus, & deinde sensim, &, quasi per gradus usque ad remotissimas & maxime compositas progrediamur. (AT X 526^{29}–527^{1})

…all truths follow logically from one another, and are mutually interconnected. The whole secret is to begin with the first and simplest truths, and then to proceed gradually and as it were step by step to the most remote and most complex truths. (Descartes 1989: 419–420)

Descartes formulates the question he is interested in in terms of certainty. He wants to uncover the most certain of our beliefs, a paradigmatically knowable proposition.[8] What is most clear and certain in itself is what is most resistant to doubt. Descartes' famous 'methodological doubt', then, is nothing but the application of the analytic method to metaphysics.[9] It leads us from what is most familiar to us, i.e. sensory testimony, and what we are psychologically unable to doubt, to what is most clear and certain in itself (and *for this reason* indoubtable), i.e. the *Cogito* and our existence as thinking substances.

And he retrospectively criticises the *Discours* for not cashing out this advantage of the analytic method:

8. That is why he presents a potential negative result of this search as a valuable *addition* to our knowledge: "…pergamque porro donec aliquid certi, vel, si nihil aliud, saltem hoc ipsum pro certo, nihil esse certi, cognoscam." (AT VII 24^{7-9}) Obviously, this is not a conclusion a sceptic could draw.

9. Doubting that p, for Descartes, is not trying to believe $\neg p$, but trying to suspend judgement on whether p. Only that on which we cannot suspend judgement may be most certain to us. This inability to get rid of certain beliefs, however, may have different causes: it may be due to an idiosyncratic epistemic make-up or to the intrinsic plausibility of the beliefs themselves. That it is always due to the former is exactly the suspicion raised by the evil demon hypothesis.

…la principale cause de son obscurité [of the proof of God's existence in the *Discours*] vient de ce que ie n'ay osé m'étendre sur les raisons des sceptiques, ny dire toutes les choses qui sont necessaires *ad abducendam mentem à sensibus*: car il n'est pas possible de bien connoistre la certitude & l'evidence des raisons qui prouvent l'existence de Dieu selon ma façon, qu'en se souvenant distinctement de celles qui nous font remarquer de l'incertitude en toutes les connoissances que nous avons des choses materielles…(AT I 560^{13-21})…the principal reason for its obscurity is that I did not are to go into detail about the arguments of the sceptics, or say everything which is necessary 'to withdraw the mind from the senses'. The certainty and evidence of my kind of argument for the existence of God cannot really be known without distinctly revalling the arguments which display the uncertainty of all our knowledge of material things…(Descartes 1991: 86)

In the *Meditations*, he tries to do better, introducing methodological doubt right from the start:

"Quin & illa etiam, de quibus dubitamus, utile erit habere pro falsis, ut tantò clariùs, quidnam certissimum & cognitu facillium sit, inveniamus." (AT VIII/I 5^{12-14})

"Il sera mesme fort utile que nous rejettions comme fausses toutes celles [de nos croyances] où nous pourrons imaginer le moindre doute, afin que, si nous en découvrons quelques-uns qui, nonobstant cette precaution, nous semblent manifestement vrayes, nous facions estat qu' elles sont aussi tres-certaines, & les plus aisées qu'il est possible de connoistre." (AT IX/II 25)

It is by invoking methodological doubt, the "rules of Logic", that the *Cogito*, understood as the proof of my existence as a thinking thing, may by the same token be taken to show that the *res cogitans* is 'easier to know' than the *res extensa*, even though we all start off as sensualists and believe only in the testimony of our senses:

Cùm primum ex rationibus in his Meditationibus expositis mentem humanam realiter a corpore distingui & notiorem ese quà m corpus, & reliqua collegissem, cogebar quidem ad assensionem, quia nihil in ipsis non cohaerens, atque ex evidentibus principiis juxta Logicae regulas conclusum, advertebam. (AT VII 440^{1-6})

Lorsque j'eu la premiere fois conclu, en suite des raisons qui sont contenuë dans mes Meditations, que l'esprit humain est réellement distingué du corps, & qu'il est mesme plus aisé à connoistre que luy, & plusieurs autres choses dont il est là traité, je me sentois à la vérité obligé d'y acquiescer, pource que je ne remarquois rien en elles qui ne fust bien suivy, & qui ne fust tiré de principes tres-evidens, suivant les regles de la Logique. (AT IX/I 238–239)

This is Descartes' reason for not proving the immortality of the soul in the Second *Meditation*:

Sed quia forte nonnulli rationes de animae immortalitate illo in loco [in secunda meditatio] expectabunt, eos hîc monendos puto me conatum esse nihil scribere quod non accurate demonstrarem; ideoque non alium ordinem sequi potuisse, qu?m illum qui est apud Geometras usitatus, ut nempe omnia praemitterem ex quibus quaesita propositio dependet, antequam de ipsâ quidquam concluderem. (AT VII 12^{16}–13^{5})

Mais parce qu'il peut arriver que quelques-uns attendent de moy en ce lieu-l? [dans la seconde Méditation] des raisons pour prouver l'immortalité de l'ame, j'estime les devoir maintenant avertir, qu'ayant tasché de ne rien escrire dans ce traitté, dont je n'eusse des demonstrations tres-exactes, je me suis veu obligé de suivre un ordre semblable ? celuy dont se servent les Geometres, sçavoir est, d'avancer toutes les choses desquelles dépend la proposition que l'on cherche, avant que d'en rien conclure. (AT IX/I 9)

ANALYTIC GEOMETRY it's resolutio, because it goes backwards – connection to analytic geometry:

> Ainsi, voulant resoudre quelque problesme, on doit d'abord le considerer comme desja fait, &donner des noms a toutes les lignes qui semblent necessaires pour le construire, aussy bien a celles qui sont inconnuës qu'aux autres. Puis, sans considerer aucune difference entre ces lignes connuës&inconnuës, on doit parcourir la difficulté selon l'ordre qui montre, le plus naturellement de tous, en quelle sorte elles dependent mutuellement les unes des autres, iusques a ce qu'on ait trouvé moyen d'exprimer une mesme quantité en deux façons: ce qui se nomme un Equation…[…] Et on doit trouver autant de telles Equations qu'on a supposé de lignes qui estoient inconnuës. (AT VI 372^{10-24})

ORDER OF PROOFS OF THE EXISTENCE OF GOD About the difference between the *Meditations* and the *Principles* he says in the conversion with Burman about the claim of *Med.* III that the *only* argument for God's existence proceeds from his idea in me:

Aliud autem illud argumentum Medit. V procedit a priori et non ab effectu. Illud autem in Meditationibus sequitur hoc argumentum, quia auctor illa duo ita invenit ut hoc praecedat, quod in hac Meditatione deducit, aliud autem sequatur. In Principiis autem illud praemisit, quia alia est via et ordo inveniendi, alia docendi; in Principiis autem docet et synthetice agit. (AT V 153)

By contrast, the other argument in the Fifth Meditation proceeds *a priori* and does not start from some effect. In the *Meditations* that argument comes later than the one here; the fact that it comes later, while the proof in this Meditation comes first, is the result of the order in which the author discovered the two proofs. In the *Principles*, however, he reverses the order; for the method and order of discovery is one thing, and that of exposition another. In the *Principles* his purpose is exposition, and his procedure is synthetic. (Descartes 1991: 337–338)

To uncover the paradigmatically knowable proposition he thinks he needs to be able to answer the sceptic, Descartes thus uses what he takes to be the *analytic method*, allegedly used by the ancients to *find* the theorems then synthetically presented and taught e.g. in Euclid's *Elements*. The analytic method was taken by Descartes to be the method of discovery of the ancient mathematicians, an almost magical algorithm enabling us to discover the true and most general principles on which any science is based. Starting from what is most familiar to us, and basing every step only on what is already available (in the order of reasons, not of subject matter), it leads us to what is most clear and certain *in itself*.

Hyperbolic doubt

Descartes, as it is well known, wanted to rebuild the sciences on a secure foundation he tried to uncover in metaphysics. In his *Meditationes de Prima Philosophiae* he gives us an account of what he takes to be the "premier principe de la philosophie" (AT VI 32^{22-23}) and what I will henceforth call the *Cogito*. The privilege of the *Cogito* resides in its resistance to what Descartes calls '*scepticism*'.

Descartes' sceptic is not only someone who doubts that we have any knowledge, i.e. any beliefs meeting a certain given standard of justification, but what one might call a *Pyrrhonian* sceptic, someone who doubts the existence of a standard of knowledge, not only of beliefs meeting such a standard.[10] Descartes thought it worth while to (try to) prove the sceptic wrong not because he doubted that we have any knowledge. Instead he aimed to show that and how we can *defend* our knowledge claims against someone who questions their legitimacy. He wanted to prove our entitlement to them by showing that they are not only true, but justifiedly taken to be so. Not satisfied with the mere fact *that* the sceptic is wrong – because there is something we know – he wanted to show *why* the sceptic is wrong. To achieve this, he had to show more than just that we know something; he had to show that we know that we know something, i.e. that we know that the sceptic is wrong. This is the task of the *Cogito*: to prove the untenability of universal doubt by refuting the evil demon hypothesis and *thereby* to establish a standard of knowledge.

To induce, in us and in the Cartesian thinker, the most general and far-reaching doubt one may entertain (AT VII 158^{13}) and thus to uncover the most certain of our beliefs, Descartes mounts a sceptical argument in three steps in *Meditation* One, leading to the 'bracketing' (on grounds of dubitability) of larger and larger classes of truths, for reasons Descartes takes to be valid and rational (AT VII 21^{26-30}). In a first step, the Cartesian thinker of the *Meditations* notes the existence of sensory illusions:

10. The distinction is Sextus's: "Pyrrhonian skepticism is a more radical position [than academic skepticism]. It holds that the academics are dogmatic even to affirm the impossibility of certain knowledge and denies that propositions differ in their probability. A judgement of probability can be made only by someone who possesses a standard of knowledge and truth. But the existence of such a standard is just what the pyrrhonians question. Since probability cannot guide our choices, they propose to follow custom." (Curley 1978: 12)

Nempe quidquid hactenus ut maxime verum admisi, vel a sensibus, vel per sensus accepi; hos autem interdum fallere deprehendi, ac prudentiae est nunquam illis plane confidere qui nos vel semel deceperunt. (AT VII 18^{15-18})

Tout ce que j'ay receu iusqu'á present pour le plus vray & assuré, je l'ay appris des sens, ou par les sens: or j'ay quelquefois éprouvé que ces sens estaient trompeurs, & il est de la prudence de ne se fier jamais entierement á ceux qui nous ont une fois trompez. (AT IX/I 14)

The conclusion drawn in the last clause, *never* to rely on sense perception ("a sensibus") nor on testimony ("per sensus"), may seem a little too quick.[11] It makes sense, however, if we place it in its epistemological context: if my senses are not always reliable, then this method of forming beliefs is not fool-proof; barring further information, I must consider it as at any instant potentially unreliable. I am not justified in assuming the reliability of my senses *unless* I have at my disposal a way of knowing that they are reliable at the times when they are. I cannot, however, detect such optimal sensory conditions without relying on my senses: bracketing their evidence, I cannot establish their reliability. This is why I am forced to conclude **A2** from **A1**:

A1 It is possible that my senses deceive me.
A2 It is always possible that my senses deceive me.

The Cartesian thinker has to go further than even this, however. He cannot justifiably assert of *any* instance of sense perception that his senses did not deceive him on that occasion. To do this, he would have to know that conditions were optimal – which he cannot, if he has not prior sensory assurance that they were. Because the proposition that they conditions are optimal is itself doubtable, he must treat it as if it were false (AT VII 18^{4-10}) – he must assume the worst case scenario, that his senses always deceive him:

A3 It is possible that my senses always deceive me.

Many have doubted that the Cartesian thinker could rationally entertain something like **A3** – if I need my senses to establish that they deceived me on another occasion, they argue, the hypothesis of permanent sense deception does not make sense. Though it is clear that Descartes is not *committed* to **A3** and that neither **A3** nor **A2** can plausibly said to follow from **A1**, such worries, I think, misunderstand the nature of Descartes' project. To get a clearer picture of why the Cartesian thinker, in virtue of noticing that he cannot resist, in principled grounds, the generalisation of **A1** to **A2**, is warranted in supposing **A3**, we need to say more about what Descartes means by "doubting".

Though Descartes requires reasons for doubting, he requires those to be neither true nor assertable by the Cartesian thinker. He explicitly says to Bourdin that reasons for doubting may themselves be doubtable:

"Eae enim sunt satis validae rationes ad cogendum nos ut dubitemus, quae ipsae dubiae sunt, nec proinde retinendae, ut jam supra notatum est. Atque validae quidem sunt, quandiu nullas alias habemus, quae dubitationem tollendo certitudinem inducant." (AT VII 473^{27}-474^{3})
"Verissimum enim est, nihil admittendum esse ut verum, quod non possimus probare esse verum, cùm de eo statuendo vel affirmando quaestio est; sed, cùm tantùm de effodiendo vel abdicando, sufficit quòd suspicemur." (AT VII 553^{18-22})

There may be reasons which are strong enough to compel us to doubt, even though these reasons are themselves doubtful, and hence are not to be retained later on, as I have just pointed out. The reasons are strong so long as we have no others which produce certainty by removing the doubt. (Descartes 1989: 319)
The maxim 'We should not admit anything as true unless we can prove it is true' is perfectly correct when it is a question of establishing or affirming some proposition; but when it is merely a matter of renouncing a belief (or digging out a trench), then mere suspicion is all that is required. (Descartes 1989: 378)

They are reasons for doubting in the sense that they present the Cartesian thinker with scenarios he is in no position to exclude. The Cartesian thinker cannot exclude the possibility of universal sense deception merely on the basis of the observation that the assertability of "my senses deceive me" requires some veridical sense perceptions.

11. The transition is even hastier in the *Discours*: "Ainsi, à cause que nos sens nous trompent quelquefois, je voulus supposer qu'il n'y avait aucune chose qui fût telle qu'ils nous la font imaginer." (AT VI 31^{30}-32^{3})

But neither can he *deny* their veridicality – *when* they are reliable – justify my knowledge claims based on them. So the sceptic needs to take another step.

This second step is known as the "dream argument":

> Quasi scilicet non recorder a similibus etiam cogitationibus me aliàs in somnis fuisse delusum; quae dum cogito attentius, tam plane video nunquam certis indiciis vigiliam a somno posse distingui, ut obstupescam, & fere hic ipse stupor mihi opinionem somni confirmet. (AT VII 19^{17-22})

> Mais, en y pensant soigneusement, je me ressouviens d'avoir esté souvent trompé, lors que je dormais, par de semblables illusions. Et m'arrestant sur cette pensée, je voy si manifestement qu'il n'y a point d'indices concluans, ny de marques, assez certaines par où j'en puisse distinguer nettement la veille d'avec le sommeil, que j'en suis tout etonné; & mon estonnement est tel, qu'il est presque capable de me persuader que je dors. (AT IX/I 15)

Contrary to the first, this second step rules out the possibility that there are conditions under which knowledge claims about material objects are justified. Trusting my senses to establish their reliability is a perfectly respectable procedure; but I am never entitled to trust my senses to answer the question whether I might be sleeping now. I can only know that p by present sensory evidence if certain conditions C hold – but I can find out whether C, for the conditions C' which have to obtain for that may differ from C. Not so with dreaming: I cannot find out that I am dreaming – for *if* I am dreaming, I cannot find out anything whatsoever. As I can never find out that I am dreaming (at that time), I can never know that I am awake (at that time), not being able to rule out a possibility I would not detect if it were actual.[12]

Whereas the argument from sensory illusion undermined any knowledge claims based on sensory evidence, the dream argument carries the doubt further by making any knowledge about material things unclaimable: it thereby undermines any contingent knowledge claim whatsoever, including most examples of what has been called *the contingent a priori*. There is, for any such proposition, whether a priori or not, a circumstance in which it would be false and I may dream that this circumstance obtains.[13] As with the first step, the Cartesian thinker infers **B2** from **B1**, and then finds no grounds to rule out **B3**:

B1 It is possible that I am now dreaming.
B2 It is always possible that I am dreaming (then).
B3 It is possible that I am always dreaming.

That I am always dreaming, then, describes an epistemic possibility for the Cartesian thinker of the *Meditations* – not in the sense of describing a world in which he, for all he knows, might be (for he may also know that he is, from time to time, awake), but in the sense of expressing a belief he can never rule out on the basis of present evidence alone. The dream argument, then, leaves almost nothing untouched, sparing only necessary truths, which are true in all circumstances, and a fortiori true in all circumstances one may dream to obtain. Getting rid of these is the aim of the next step.

The third and final step in Descartes' argument is the *malin génie* hypothesis:

> Verum tamen infixa quaedam est meae menti vetus opinio, Deum esse qui potest omnia, & a quo talis, qualis existo, sum creatus. Unde autem scio illum non fecisse ut nulla plane sit terra, nullum coelum, nulla res extensa, nulla figura, nulla magnitudo, nullus locus, & tamen haec omnia non aliter quàm nunc mihi videantur existere? Imô etiam, quemadmodum judico interdum alios errare circa ea quae se perfectissime scire arbitrantur, ita

12. What then about the coherentist criterion Descartes provides us with in the *Sixth Medititation*? It only works given the assumption that there is a time t when I am not sleeping – and this we know only after having established the legitimacy of at least one knowledge claim: "Potest verò Atheus colligere se vigilare ex memoriâ anteactae vitae; sed non potest scire hoc signum sufficere ut certus sit se non errare, nisi sciat se a Deo non fallente esse creatum." (AT VII 196^{11-14})

13. It is not required that my conception is a coherent one: most of us dream very weird things. It might seem difficult to imagine dreaming that I am not here now or that I am not Philipp Blum but in fact it is not. I may dream that I am dead or a multiply located universal, that I look into my passport and find another name written in it, that I look into the mirror and see nothing etc. That reasons to doubt are not required to be coherent overall scenarios, as long as they achieve their intended effect which is helping us to get rid of our beliefs, marks another respect in which pyrrhonian differs from academic scepticism.

ego ut fallar quoties duo & tria simul addo, vel numero quadrati latera, vel siquid aliud facilius fingi potest?" (AT VII 21^{1-11})

Toutesfois il y a longtemps que j'ay dans mon esprit une certaine opinion, qu'il y a un Dieu qui peut tout, & par qui j'ay esté creé & produit tel que je suis. Or qui me peut avoir assuré que ce Dieu n'ait point fait qu'il n'y ait aucune terre, aucun Ciel, aucun corps estendu, aucune figure, aucune grandeur, aucun lieu, & que neantmoins j'aye les sentimens de toutes ces choses, & que tout cela ne me semble point exister autrement que je le voy? Et mesme, comme je juge quelquefois que les autres se méprennent, mesme dans les choses qu'ils pensent scavoir avec le plus de certitude, il se peut faire qu'il ait voulu que je me trompe toutes les fois que je fais l'addition de deux & de trois, ou que je nombre les costez d'un carré, ou que je juge de quelque chose encore plus facile, si l'on se peut imaginer rien de plus facile que cela. (AT IX/I 16)

The Cartesian thinker here entertains the possibility that he might be fooled even in things he considers most certain – due to the manipulation of an omnipotent evil demon who perverts his epistemic instincts and makes him spontaneously assent to propositions which are in fact false.[14] The evil demon hypothesis is thus more than the supposition that I might err in the most certain of my beliefs – it is the far scarier supposition that I might err in them *precisely because* I hold them to be the most certain. It is for this reason that the Cartesian thinker is led to infer **C2** from **C1**, and is in no position (yet) to exclude **C3**:

C1 It is possible that I am deceived in what I consider most certain.
C2 In all my beliefs am I possibly deceived.
C3 It is possible that I am deceived in all my beliefs.

Because **C3** states an epistemic possibility, all our knowledge claims are undermined, including our presumed knowledge of simple mathematical (AT VIII/I 6^{8-20}), logical and other necessary truths, throwing the Cartesian thinker into a state of despair. The doubt induced by consideration of the evil demon hypothesis is thus maximal.[15]

This is where the 'psychological' (or better: psychologistic) interpretation (and the 'memory' interpretation before it) go wrong:

More generally, how can the Cartesian thinker doubt the certainty (or the knowledge) that p without thereby doubting p? Such doubt, if possible at all, would certainly not qualify as 'methodical'.

We will see below that, by proceeding a facilioribus ad difficiliora, the analytic method brings with it a distinction between two senses of "primary": it starts from what is *prima facie primary*, i.e. most familiar to us, carrying us to what is *primary in itself*, the true ground on which a given body of (alleged) knowledge rests. The world, in itself, i.e. independently of our beliefs about it, has a certain epistemological structure; some truths are *by themselves* more evident, certain and epistemologically basic than others. The epistemic activities of humans, on the other hand, exhibit another, and possibly divergent, pattern. Custom, training

14. That the possibility envisaged is one of a perversion of what one might call our'epistemic instincts', our spontaneous and almost inevitable belief in certain very simple and (seemingly) evident propositions, is made even clearer in the *Discours* and the *Principes*: "Et parce qu'il y a des hommes qui se méprennent en raisonnant, même touchant les plus simples matières de géométrie, et y font des paralogismes, jugeant que j'étais sujet a faillir autant qu'aucun autre, je rejetai comme fausses toutes les raisons que j'avais prises auparavant pour démonstrations."(AT VI 32^{3-9}); "Dubitabimus etiam de reliquis, quae antea pro maximè certis habuimus; etiam de Mathematicis demonstrationibus, etiam de iis principiis, quae hactenus putavimus esse per se nota: tum quia vidimus aliquando nonnullos errasse in talibus, & quaedam pro certissimis ac per se notis admisisse, quae nobis falsa videbantur; tum maximè, quia audivimus esse Deum, qui potest omnia, & à quo sumus creati." (AT VIII/I 6^{8-15})

15. Descartes calls it "summa de omnibus dubitatio" (AT VII 158^{13}). Cf. also his comments on the relevant passage to Burman: "Reddit hîc [VII 22^{22}] auctor hominem tam dubium, et in tantas dubitationes conjicit ac potest…" (AT V 147) The inclusion of mathematics is explicitly stated at AT VIII/I 6^{8-20}. Curiously, both Kennington (1971: 444) and Soffer (1987: 41) have denied that mathematical statements are doubted in *Meditation* One, partly on dubious methodological and systematic grounds which will be discussed below.

and talent bring it about that some truths are more accessible, more easily graspable and more familiar to (some of) us. It is the task of the right *method* to make these two orderings match, i.e. to make what is most familiar in itself most familiar to us. This is the rationale of the method of doubt.

The evil demon hypothesis is the suspicion that the epistemic capacity underwriting the possibility of such a transition is fatally flawed: that we may in principle be incapable of matching our epistemic instincts, what we find plausible or evident, to what really *is* plausible or evident (in itself). The sceptical scenario, then, is that what I find most plausible might be false precisely *because* I find it plausible.[16]

The Cartesian sceptic (the philosophical opponent of the *Meditations*) is not someone who believes or says that everything we believe is false. Instead, he believes that all our knowledge claims (our beliefs of the form "I know that *p*") are unwarranted, i.e. that there are possible situations (**A3**, **B3**, **C3**) we are not justified to exclude where they are false – not so much because what we claim to know would be false in that situation, but because we would, in the imagined circumstances, not know it. The possibility we are called upon to exclude by the sceptic, then, is not one in which what we believe to know is false, but the possibility that our knowledge claims are true only by chance, that the link between belief and truth underwriting them, while obtaining in the actual world, is not within our epistemic reach and cannot be conclusively established to hold. The doubt, then, is that if we know something, then we know it only by chance. The sceptic thereby challenges our entitlement to all our knowledge claims – not by producing a scenario in which they are false, but one that makes them unjustified and thus unclaimable in the methodological context of a refoundation of our whole system of beliefs.

three reasons for the universality of the doubt at the end of Med I: – textually – charitability: with the help of "cogito ⊢ sum", we do not want to establish the indubitability of 'sum' (from the premiss that 'cogito' is indubitable), that would be a failure of transmission of warrant; rather, we want to show that the indubitability of 'sum' **rests on** an abstractive conception of what is said to exist, and thus show that it can be analytically expanded into 'sum res cogitans' (by introducing some kind of formal accusivate object, as in x dances -> x dances a dance). – systematically: it's possible, even if there is a counterfactually stable concnetion between CD and truth, we can doubt that there is

The Coherence of Universal Doubt

Bourdin, in the *Seventh Objections* remarks that nothing can be indubitable in the Cartesian system, since everything *had* been rationally doubted by the Cartesian thinker in *Meditation* One. In reply, Descartes says that Bourdin's mistake is to think that dubitability is an intrinsic property of knowables:

"Notandumque ipsum ubique considerare dubitationem & certitudinem, non ut relationes cognitionis nostrae ad objecta, sed ut proprietates objectorum quae perpetuo ipsis inhaereant, adeo ut ea, quae semel dubia esse cognovimus, non possint unquam reddi certa." (AT VII 473^{17-22})

"It should be noted that throughout he [Bourdin] treats doubt and certainty not as relations of our thought to objects, but as properties of the objects which inhere in them all the time. This means that if we have once realized that something is doubtful, it can never be rendered certain." (Descartes 1989: 318–319)

Descartes here alludes to the relational account of certainty he gave in the *Second Replies* according to which whether a truth is certain or not depends on our relations to it, not only on the truth itself:

16. As with the other two sceptical hypotheses, it does not have to be coherent to achieve its intended effect: it does not have to depict a possibility which might in fact obtain. It is enough if it describes a situation which the Cartesian thinker is in no position to *rule out*. Descartes himself takes a malin génie to be *impossible*: both because he shows its incoherence in the Second Meditation and because it is incompatible with the true nature of God. Cf. his remarks to Burman:"Loquitur hîc [AT VII 22^{25}] auctor contradictoria, quia cum summâ potentiâ malignitas consistere non potest." (AT V 147) It has to be noted, however, that showing that the malin gènie hypothesis is impossible, is *not* Descartes' main aim – even a hypothesis entertainable only *per impossibile* undermines our knowledge claims, if it keeps popping up. We have to be able to *show* that it is impossible, thereby vaccinating ourselves against it.

"Vel enim, ut vulgo omnes, per *possibile* intelligitis illud omne quod non repugnat humano conceptui; quo sensu manifestem est Dei naturam, prout ipsam descripsi, esse possibilem, quia nihil in ipsâ supposui nisi quod clare & distincte perciperemus debere ad illam pertinere, adeo ut conceptui repugnare non possit. Vel certe fingitis aliquam aliam possibilitatem ex parte ipsius objecti, quae, nisi cum praecedente conveniat, nunquam ab humano intellectu cognosci potest, ideoque non plus habet virium ad negandum Dei naturam sive existentiam, quàm ad reliqua omnia, quae ab hominibus cognoscuntur, evertenda." (AT VII 150^{19}-151^{3})

"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." (Descartes 1989: 107)

The distinction between what 'non repugnat humano conceptui' ("ne répugne point à la pensée humaine" (AT IX/I 118))[17] and what is possible 'ex parte ipsius objecti' is made in reply to the charge that the ontological proof is premissed on the coherence of the idea of God (AT VII 127^{12-14}). Descartes' point, as the context makes clear, is that the ontological proof only presupposes that the idea we have of God is *de facto* coherent, not that it is known to be coherent. Only the latter, but not the former, presupposes a proof of God's benevolence. The coherence of the idea we have of God is put on a par with necessary truths and the *Cogito* itself, things which have been doubted in *Meditation* One:

"Par enim jure, quo negatur Dei naturam esse possibilem, quamvis nulla impossibilitas ex parte conceptûs ["de la part du concept ou de la pensée"] reperiatur, sed contrà omnia, quae in isto naturae divinae conceptu complectimur, ita inter se connexa sint, ut implicare nobis videatur aliquid ex iis ad Deum non pertinere, poterit etiam negari possibile esse ut tres anguli trianguli sint aequales duobus rectis, vel ut ille, qui actu ["actuellement"] cogitat, existat; & longe meliori jure negabitur ulla ex iis quae sensibus usurpamus vera esse, atque ita omnis humana cognitio, sed absque ullâ ratione, tolletur." (AT VII 151^{3-13})

"For as far as our concepts are concerned there is no impossibility in the nature of God; on the contrary, all the attributes which we include in the concept of the divine are so interconnected that it seems to us to be self-contradictory that any one of them should not belong to God. 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." (Descartes 1989: 107)

It is in this way that the use of the analytic method allows for a distinction between two orders of epistemic priority. MORE

The *Principles* are said to satisfy the desideratum that their axioms can be understood *by themselves*:

> …ces Principes doivent avoir deux conditions: […] l'autre, que ce soit d'eux que depende la connoissance des autres choses, en sorte qu'ils puissent estre connus sans elles ["'les autres choses"'], mais non pas reciproquement elles sans eux; & qu'apres cela il faut tacher de déduire tellement de ces principes la connoissance des choses qui en dependent, qu'il n'y ait rien, en tout la suite des deductions qu'on en fait, qui ne soit tres-manifeste. (AT IX/II 2^{19-29})

In the characterisation of the dichotomy of methods in the *Second Replies* quoted above, Descartes/Clerselier paraphrases the "necessity" of the conclusions of the analytic method by their being clear "de soy-mesme".

17. To my ears, "repugnat" and "répugne" are stronger than "conflict".

17. This passage has been cited as "the strongest evidence" for the conceptualist reading of Cartesian epistemic modality, to be discussed below (Bennett 1994a: 647–648). However, it weakens rather than supports the conceptualist reading Bennett advocates: we have no other guide to possibility than clear and distinct perception of the coherence of certain ideas – but this only makes us *equally* certain of modal truths than we are, e.g., of mathematical or metaphysical truths. The 'possibility which relates to the object itself' is not a "contrivance, something faked up for purposes of argument" (Bennett 1994a: 648), but plays an important rôle: it is the purpose of Descartes' method to align conceivability with (real) possibility and a substantive thesis of his modal epistemology that such an alignment can be achieved.

We cannot but assent to what we clearly and distinctly perceive – such perceptions are epistemically irresistible to us. At the same time, however, we can doubt what we could, but do not, so perceive; and, what is more, we can suppose that the beliefs in question do not merit their status, that their irresistibility is not backed up by their truth but rather the effect of an evil demon fooling us by perverting our epistemic instincts.[18]

Not only some of his contemporaries, but also many of Descartes' commentators believe that such universal a doubt undermines the stability of the whole Cartesian project.[19] There is, however, nothing *in general* problematic with rule-circular justification, nor is there any *general* problem in establish, by using a richer range of ressources, what can be done with less.[20] We may also quite unproblematically entertain metaphysical hypothesis which we could not entertain if they were actual. We may talk, e.g., about possible worlds where no language-using creatures exist.

Doubting *per impossibile*

How can we doubt what is epistemically irresistable? Let me count the ways …

There are at least four ways how we can doubt what is epistemically irresistable to us: self-detachment, meaning-skepticism and second-order doubt, procedural doubt and doubting *per impossibile*.

Self-detachment. I can entertain hypotheses that preclude their entertainability. The *Meditations* is the most complete and elaborate exposition of Descartes' metaphysics; it is, second, the story of a certain person I call the 'Cartesian thinker' who sets out to doubt her beliefs, proving her existence and rebuilding the 'edifice of her beliefs' on supposedly firmer grounds; this Cartesian thinker is not identical to the first-person persona of the Meditations, the person who sits by the fire, touches the wax, remembers what he did yesterday – the former rather reflects on the latter, observing and commenting his cognitive exercises; last but not least, the *Meditations* are a philosophical exercise, a thought-experiment, that Descartes asks his readers to perform for themselves. We thus have to distinguish:

the first person of the *Meditations* who doubts of everything – until he stumbles at the beginning of the Second Meditation over the epistemic irresistibility of "sum";

the Cartesian thinker, reasoning about her intellectual development, who will finally establish "sum" as the most certain of her former beliefs, thereby establishing "cogito ergo sum" as a basic truth and showing that the malin gènie hypothesis is impossible;

the reader of the book Descartes wrote, who will will finally uncover the *Cogito*, an argumentative method to vaccinate ourselves against scepticism;

18. For a vivid description of the kind of epistemic irresistibility in question, cf. Kemmerling (1993).

19. Cf. Kennington (1971: 441–442): "Finally, the finitude of the power of the Evil Genius is demanded by the argument if the Evil Genius were omnipotent, the law of noncontradiction would be suspended, and all further reasoning would have to cease." Similar qualms have been mounted by R. Walker (1986: 45): "…if truth is a matter of correspondence [that's how he rightly interprets Descartes] *no* argument could be a decisive refutation of the *malin génie* hypothesis […] since any argument has to rely upon assumed premisses and principles of inference." Carriero (1987: 15–16): "Moreover, viewing Descartes as seeking to defend us from the epistemic onslaught of an omnipotent being leaves him engaged in a project that is futile on its face. It would be a quite weak omnipotent being indeed who lacked the power to convince us of the self-evidence of whatever premise he chose or of the validity of whatever reasoning he wanted. Therefore, if the anti-skeptic should ever produce an argument beyond our criticism, the skeptic would still be free to plead that our inability to criticize the anti-skeptic's argument is simply the result of the deceiver's nefarious activity." and Olson (1988: 407): "Descartes did hold the curious view that God freely created the eternal truths and could have made contradictories true. So it seems that, if God is a deceiver, then the law of non-contradiction is dubitable. Thus, if God is a deceiver, no argument could be formulated. Indeed, all reasoning would have to cease."

20. It is, e.g., standard mathematical practice to reason about a formal system drawing on resources not available in the system under scrutiny. We may give intuitionistically unacceptable proofs of the completeness of some system of intuitionistic logic, prove various theorems about proof systems having no or only very weak induction axioms by "ordinary mathematical induction" (cf. e.g. Smullyan 1992: 62 for an instructive example).

Descartes himself who tries to show to the actual reader how he found what he takes to be his philosophical insights.

This distinction of levels is important for the assessment of claims of performative inconsistency or circularity: what is a dead-end for the Cartesian thinker is not necessarily one for Descartes, nor for the reader. The Cartesian thinker is concerned with the *dubitability* of his beliefs, not with the actual doubting of them. Descartes is concerned with *reasons* for doubting certain beliefs (AT VII 21^{26-30}), not with the inducing of certain brain states in his readers. 'Mad' doubt is excluded from the start, and justifiably so.[21]

It is because the Cartesian thinker wants to determine the dubitability of his beliefs, and not just try to doubt them, that it is rational for him to rule out beliefs he can find the slightest reason to doubt (AT VII 18^{4-10}). It is the first person (the referent of "I" in the direct speech passages of the *Meditations*) that we are asked to imaginatively project ourselves into, but it is the findings of the Cartesian thinker that Descartes wants to convince us of – the distinction is necessary because the epistemic irresistibility of "sum" does not limit maximal doubt, but rather refutes its entertainability. What the Cartesian thinker discovers in the *Cogito* is not that she must exist or that maximal doubt is not universal, but rather that some of the things the first person doubted in *Meditation* One were doubted per impossibile, because the skeptical possibility **C3** is one in which universal doubt could not be entertained. The point is not that we must exist in order to doubt our existence, but that doubting our existence is an internally instable state to be in. It is this *procedural* refutation of the evil demon hypothesis that the Cartesian thinker, looking back to the cognitive exercise just performed, sums up with "cogito ergo sum". In contemporary epistemology, skeptical scenarios that would not be entertainable were they actual ("I do not exist", "I do not think", "I am not here now", "No one speaks", "There is no thought", "Nothing exists" etc.) are often described in terms of a distinction between what is true in them and what is true of them.[22]

Descartes achieves such a distinction by portraying, in the *Meditations*, not a worked out metaphysical system as he does in the *Principia*, but the successive discovery of epistemically ordered metaphysical truths by what I have called the Cartesian thinker, i.e. the narrator who starts off on his intellectual journey as a sensualist and gradually becomes convinced of more and more parts of the Cartesian system of metaphysics.

Doubting truths. I can doubt that "sum" expresses a truth.

Doubting justification. The Tortoise expresses doubt in Achilles' *Modus Ponens* argument by forcing him to ever going on including new premisses (Carroll 1895). Doubts about the soundness of a particular inference may force us to include the conditional corresponding to it as a further premiss, thereby giving us a new inference the soundness of which can again be called into question. Applied to an instance of modus ponens, the resulting series of inferences might then look like this:

$$\frac{p \quad p \to q}{q} \qquad \frac{p \quad p \to q \quad (p \wedge (p \to q)) \to q}{q} \qquad \frac{p \quad p \to q \quad (p \wedge (p \to q)) \to q \quad (p \wedge (p \to q) \wedge ((p \wedge (p \to q)) \to q)) \to q}{q} \qquad \ldots$$

One of Carroll's points is that any doubt regarding one of these inferences is a doubt regarding all of them – we cannot therefore convince ourselves of the validity of one of them by relying on another if we do not have independent reason to regard the other one as valid. What we need, instead, is to enable our doubting conversational partner to see the inference *as a proof* of p. To see it as a proof, the doubter has to read the sequence of sentences as composing an inference, not just a more complicated conditional – that the sequence constitutes an inference is not itself said by it – not even by the horizontal line (which we may

21. I borrow this terminology from (Lewis 1980) for psychological states that are realised by the same brain states as is doubt for normal subjects but have a different functional or causal role.

22. Cf. e.g. Williamson (2002). The distinction is Prior's.

read as "therefore"). The relation of logical consequence, in other words, is not *said* to obtain between the premisses and the conclusion in the proof, but is expressed. When Achilles doubts that the conclusion of the first proof, while granting its premisses, he is not displaying a misunderstanding of what the sentences, or the whole argument, mean; instead, he refrains from taking it the way it is meant.

Doubting *per impossibile*. Doubting *per impossibile* is not the entertaining of an impossibility as coherent, but the entertaining of a scenario which de facto is impossible, but refraining from entertaining it as impossible. Notational dependency matters just because it is unavoidable. We cannot ever be sure that our formalisation matches the 'true' propositional structure of what we are grasping and we cannot therefore be certain that some idea we have (not only seems to be but) is a clear and distinct one.

Doubting *per impossibile* should not be understood as the entertaining of an impossibility as coherent, but as entertaining a scenario which de facto is impossible, but refraining from entertaining it as impossible. Before having been shown that the sequence of sentences constitutes a proof, Achilles is epistemically blameless – he is in his epistemic right to doubt the conclusion, even though it logically follows from premisses he accepts. There is, of course, something about it he did not grasp – he misses the point of the exercise, but then so do quite often our first-year logic students. The point he misses is the syntactic, as opposed to the semantic difference between the material conditional and the horizontal line. The syntactic difference lies in the fact that the horizontal line, even if read "therefore", is here deployed as a rule. That we realise that Achilles' doubts are misguided – and not that "$p \wedge (p \rightarrow q)) \rightarrow q$" is a logical truth – allows us to recognise his doubt as a case of doubting per impossibile: it is the entertaining of a situation (that the conclusion does not follow from the premisses) which is in fact impossible, but it is still a case of coherent doubting because the situation is not imagined as actual, but as merely possible. Achilles just asks a question – because the question is ultimately unanswerable, he succeeds in creating doubt. In the same way, the first person of the *Meditations* entertains, in his first meditation, a series of questions – sentio istud aut illud?; sentio aut imagino?; opino aut intelligo? – which are in their context unanswerable: the Cartesian thinker realises that any answer would presuppose the reliability of the very same belief forming mechanism that is in question.

How to prove one's existence

Why the SUM INTUITION IS NOT ENOUGH The Cartesian thinker, we may safely assume, will always find "2+2=4" clear and distinct and do so simply by finding it impossible to suppose otherwise. How, after all, would we have to describe a sceptical scenario where 2 and 2 added together give anything else than 4?

There is, it should be noted, another crucial difference between "2+2=4" and "sum". Because I cannot positively imagine the falsity of the first, I cannot coherently ascribe its negation to God, but I can do so with the negation of "sum": I can coherently think, and even know, that God could have failed to create me.

Distinction: between "sum" and "cogito", and between *Sum* and *Cogito*.

The aim of the *Cogito* is to establishing a clear and distinct perception of oneself, as independent of everything else. This perception, it is true, is first had in the *Sum*, and then cross-examined in the rest of the second meditation; it is established, however, as clear and distinct, only in the third meditation.

A major exegetical problem with the *Cogito* is that there are many versions. The version in the *Meditations*, which will mostly concern us, is the following:

"Sed mihi persuasi nihil plane esse in mundo, nullum coelum, nullam terram, nullas mentes, nulla corpora; nonne igitur etiam me non esse? Imo certe ego eram, si quid mihi persuasi.

Sed est deceptor nescio quis, summe potens, summe callidus, qui de industriâ me semper fallit. Haud dubie igitur ego etiam sum, si me fallit & fallat quantum potest, nunquam tamen efficiet, ut nihil sim quamdiu me aliquid esse cogitabo. Adeo ut, omnibus satis superque pensitatis denique statuendum sit hoc pronuntiatum, *Ego sum, ego existo*, quoties a me profertur, vel mente concipitur, necessario esse verum." (AT VII 25^{2-12})

"Mais je me suis persuadé qu'il n'y a rien du tout dans le monde, qu'il n'y avait aucun ciel, aucune terre, aucuns esprits, ni aucuns corps, ne me suis-je donc pas aussi persuadé que je n'étais point? Non certes, j'étais sans doute si je me suis persuadé, ou seulement si j'ai pensé quelque chose.
Mais il y a un je ne sçay quel trompeur tres-puissant & tres-rusé, qui employe toute son industrie à me tromper tousiours. Il n'y a donc point de doute que je suis, s'il me trompe; et qu'il me trompe tant qu'il voudra il ne saurait jamais faire que je ne sois rien, tant que je penserai être quelque chose. De sorte qu'après y avoir bien pensé, et avoir soigneusement examiné toutes choses, enfin il faut conclure, et tenir pour constant que cette proposition: *Je suis, j'existe*, est nécessairement vraie, toutes les fois que je la prononce, ou que je la conçois en mon esprit.' (AT IX/I 19)

This is the Cartesian thinker speaking, recalling his universal doubt of the last *Meditation* and realising that he did not doubt his own existence and that it is indeed impossible do so – not only that he cannot doubt without existing,[23] but that he cannot even try (and therefore take it to be possible) to do so, i.e. that the thought "I do not exist" is – in a particular way – necessarily false.

The cited passage makes it clear that the indoubtability of "I exist" is given a peculiar status. Even though they are not explicitly mentioned by their canonical description, the necessary truths were subject to the general doubt evoked in the first paragraph.[24] This peculiar status is not exhausted by other a priori or performatively "self-verifying" claims, nor by such on which the Cartesian thinker has first person authority.

What, then, is it that distinguishes "I am" from other candidate sentences as "I am here now" (Röd 1982: 49–50), "I am in pain" or "I am making a statement" (Frankfurt 1970: 104)? The first may be false, e.g., in cases of deferred reference or context shift – which may even occur in dreams. The second is not indoubtable, but at most indoubtable when true. The third, even if it is indoubtable, cannot be the *only* indoubtable statement.[25] Even "This is a statement", however, is less indoubtable than "I am", for statements are ontologically dependent entities, not able to exist without someone who makes them. Nobody thus can rationally think that this is a statement without thinking that something different from this statement exists.

The peculiar status of "sum", then, resides in its ontological inconsequentiality, i.e. the fact that it may rationally taken to be the only true existence claim.[26]

Recognising the epistemic irresistability of his belief that he exists (his "sum"-intuition, as I will call it), gives the Cartesian thinker a belief of the truth of which he cannot help being convinced. This was not

23. As the section label in the *Principes* might suggest: "VII. Non posse a nobis dubitari, quin existamus dum dubitamus; atque hoc esse primum, quod ordine philosophando cognoscimus." (AT VIII 6^{31-32}) / "7. Que nous ne sçaurions douter sans estre, & que cela est la premiere connoissance certaine qu'on peut acquerir." (AT IX/II 27) Descartes makes it clear in his replies to Hobbes and Gassendi that existential generalisation is not what he is interested in at this step of the argument (AT VII 175^{25}-176^{8} and 352^{6-18}, cf. also AT II 37^{26}-38^{21}).

24. The existence of the corporeal world, the subject matter of geometry, is a mathematical fact.

25. This raises the interesting question of the alleged primacy of singular over general beliefs, a thesis Descartes relied on when arguing that he did not (syllogistically) infer "I think; therefore I am" from "whatever thinks, is" but was convinced of the truth of the former by a simple mental insight (AT VII 140^{12}-141^{2}, IX/I 205^{25}-206^{5}, V 147). To evaluate this claim of epistemological primacy of singular beliefs, let us consider the following example of Harrison: "If a man believes that he believes that the earth is flat, it is possible for him to believe that this is the only thing he believes. […] But if he believes at least one thing, it is *not* possible for him to believe that this is the only thing he believes." (Harrison 1984: 329) Someone who believes that the earth is flat and that this is his only belief has at least one false belief. The person trying to believe that the very belief he is trying to entertain is his only one faces a more difficult problem, however: he cannot ascribe the belief in question to himself. For any such self-ascription would ascribe two beliefs, that he has only one belief and that this is the one.

26. Given the epistemic priority of singular over general beliefs mentioned in fn. 25, this is why "I am" is epistemically irresistable in a way "there is at least one thing" is not: "I am" retains its plausibility even when taken to be my only belief, while "there is at least one thing" requires a specialisation.

was Descartes was after, however: the "fundamentum inconcussum" he tries to uncover is a belief *one can claim to know* even when faced with the most witty sceptic producing the most general sceptical scenario imaginable. This paradigmatic knowledge claim is not "sum" alone – doubtable, if only per impossibile, and indeed doubted by the first person of the *Meditations* at the end of *Meditation* One – but "I think; therefore I am".[27]

In what does this differ from the "sum"-intuition? In that it gives us a reason to think that the intuition we cannot help having is right. This does not mean, however, that "therefore" has the force of a conditional, a turnstile or indicates some kind of conclusion.[28] "Cogito" provides adequate grounds for "sum": its truth is necessary and sufficient for recognising "sum"'s indoubtability.[29] With "cogito ergo sum" we not only express an intuition, but make a knowledge claim – and a peculiar one in that we cannot make it falsely.

Even this, however, will not suffice: proving the sceptic wrong by showing how to make a true knowledge claim even in the scenario the sceptic considers possible is not enough. Descartes wants to show his reader *how* to prove the sceptic wrong, provide him with a tool to prove his own existence (*not* the one of the Cartesian thinker) even when under the impression of the most general doubt imaginable. This, in my opinion, crucial step from "sum", the belief we cannot but take to be true, through "cogito ergo sum", which is the paradigmatic knowledge claim, to the claim that "cogito ergo sum" *is* paradigmatic in this sense is taken only at the beginning of the Third *Meditation*:

(1) "Quid verô? Cùm circa res Arithmeticas vel Geometricas aliquid valde simplex & facile considerabam, ut quôd duo & tria simuljuncta sint quinque, vel similia, nunquid saltem illa satis perspicue intuebar, ut vera esse affirmarem?	"Mais lorsque je considérais quelque chose de fort simple et de fort facile touchant l'arithmétique et la géométrie, par exemple que deux et trois joints ensemble produisent le nombre de cinq, et autres choses semblables, ne les concevais-je pas au moins assez clairement pour assurer qu'elles étaient vraies?
(2) Equidem non aliam ob causam de iis dubitandum esse postea judicavi, quàm quia veniebat in mentem forte aliquem Deum talem mihi naturam indere potuisse, ut etiam circa illa deciperer, quae manifestissima viderentur.	Certes si j'ai jugé depuis qu'on pouvait douter de ces choses, ce n'a point été pour autre raison, que parce qu'il me venait en l'esprit, que peut-être quelque Dieu avait pu me donner une telle nature, que je me trompasse même touchant les choses qui me semblent les plus manifestes.
(3) Sed quoties haec praeconcepta de summâ Dei potentiâ opinio mihi occurrit, non possum non fateri, si quidem velit, facile illi esse efficere ut errem, etiam in iis quae me puto mentis oculisquàm evidentissime intueri.	Mais toutes les fois que cette opinion ci-devant conçue de la souveraine puissance d'un Dieu se présente à ma pensée je suis contraint d'avouer qu'il lui est facile, s'il le veut, de faire en sorte que je m'abuse, même dans les choses que je crois connaître avec une évidence très grande.

27. I take this to be roughly equivalent to "*Ego sum, ego existo*, quoties a me profertur, vel mente concipitur, necessario esse verum." "Cogito ergo sum" appears in the *Discours* version of the *Cogito*: "Mais, aussitost aprés, je pris garde que, pendant que je voulois ainsi penser que tout estoit faux, il falloit necessairement que moy, qui le pensois, fusse quelque chose. Et remarquant que cete verité: *je pense, donc je suis*, estoit si ferme & si assurée, que toutes les plus extravagantes suppositions des Sceptiques n'estoient pas capables de l'esbransler, je jugay que ie pouvois la recevoir, sans scrupule, pour le premier principe de la Philosophie, que je cherchois." (AT VI 32^{15-24})

28. This seems to me to explain why Descartes calls both "sum" and "cogito ergo sum" pieces of *intuitive* knowledge (for the latter: AT VII 122^{7-11}, IX/I 205^{20-25}), while at the same time *demonstrating* his own existence from the sole premiss of his thinking.

29. Again, this does not make it a premiss of some sort of formal argument. Suppose it is not doubted that there is a sole tired person, of unknown sex, in the house. Given this, "The sole person in the house is male" provides an adequate ground for "he is tired".

(4) Quoties verô ad ipsas res, quas valde clare percipere arbitror, me converto, tam plane ab illis persuadeor, ut sponte erumpam in has voces:

Et au contraire toutes les fois que je me tourne vers les choses que je pense concevoir fort clairement, je suis tellement persuadé par elles, que de moimême je me laisse emporter à ces paroles:

(5) fallat me quisquis potest, nunquam tamen efficiet ut nihil sim, quandiu me aliquid esse cogitabo; vel ut aliquando verum sit me nunquam fuisse, cùm jam verum sit me esse;

Me trompe qui pourra, si est-ce qu'il ne saurait jamais faire que je ne sois rien tandis que je penserai être quelque chose; ou que quelque jour il soit vrai que je n'aie jamais été, étant vrai maintenant que je suis,

(6) vel forte etiam ut duo & tria simul juncta plura vel pauciora sint quàm quinque, vel similia, inquibus scilicet repugnantiam agnosco manifestam.

ou bien que deux et trois joints ensemble fassent plus ni moins que cinq, ou choses semblables, que je vois clairement ne pouvoir être d'autre façon que je les conçois.

(7) Et certe cùm nullam occasionem habeam existimandi aliquem Deum esse deceptorem, nec quidem adhuc satis sciam utrùm sit aliquis Deus, valde tenuis &, ut ita loquar, Metaphysica dubitandi ratio est, quae tantùm ex eâ opinione dependet.

Et certes, puisque je n'ai aucune raison de croire qu'il y ait quelque Dieu qui soit trompeur, et même que je n'aie pas encore considéré celles qui prouvent qu'il y a un Dieu, la raison de douter qui dépend seulement de cette opinion, est bien légère, et pour ainsi dire métaphysique.

(8) Ut autem etiam illa tollatur, quamprimum occurret occasio, examinare debeo an sit Deus, &, si sit, an possit esse deceptor; hac enim re ignoratâ, non videor de ullâ aliâ plane certus esse unquam posse."

Mais afin de la pouvoir tout à fait ôter, je dois examiner s'il y a un Dieu, sitôt que l'occasion s'en présentera; et si je trouve qu'il y en ait un, je dois aussi examiner s'il peut être trompeur: car sans la connaissance de ces deux vérités, je ne vois pas que je puisse jamais être certain d'aucune chose."

This is the passage I claim to be the *Cogito*. While having his "sum"-intuition, the first person of the *Meditations* (*A*) proves his existence. Recalling the impossibility of doubting his existence and looking back to his "sum"-intuition, the Cartesian thinker (*B*) proves "cogito ergo sum". For us, the foreknowledgeable and charitable readers (*C*), this amounts to a proof of the existence of a thinking substance. Here is a reconstruction of the argument:

	A	B	C
(1)		clear and distinct beliefs are indoubtable (by me)	*B* takes "cogito ergo sum" to be indoubtable (in itself)
(2)		no other beliefs are claimed by my to be indoubtable (in itself) with more right than these	"cogito ergo sum" is not doubtable (in itself), unless *B* is fooled
(3)	the evil demon hypothesis seems coherent	I can, however, only entertain it *per impossibile*	*B* can at least entertain it
(4)	I cannot help having the "sum"-intuition	but even in that I could be fooled by an evil demon	
(5)	I clearly and distinctly perceive that I cannot be fooled while I am having this intuition	*A* can indeed not be fooled while having this intuition	
(6)	I cannot even doubt the indoubtability of "sum"	*A* is clearly and distinctly perceiving his unability to doubt "sum"	"sum" is in fact indoubtable (in itself), so *B* is right
(7)		*A* uncovered a hidden contradiction in the evil demon hypothesis	the evil demon hypothesis is not clear and distinct

(8) *B* is not fooled, "cogito ergo sum" *is* clear and distinct (in itself)

It is in (5) that *A* has the relevant insight that the hypothesis that he does not exist is "repugnant to reason", i.e. contains a hidden contradiction. *B*, however, who already had the "sum"-intuition before, knows from the beginning that the only way to doubt one's own existence, if there is one, is *per impossibile*. He detects the hidden contradiction in the evil demon hypothesis, noticing that even such a being could not make *A falsely* believe that he does not exist. *B* observes that any project of doubting one's own existence fails, thereby grasping the (necessary) truth of "I think, therefore I am". *C* observes that *B* has maximal evidence for this, for it resists his trying to assume the existence of an evil demon. If it would be false, then, this could only be due to the workings of precisely such an evil demon – a hypothesis effectively ruled out by *A*. So, *C* concludes, that it was because of his *knowledge* of "I think; therefore I am" that *B* was able to rule out the evil demon hypothesis. That's why "I think; therefore I am" is not only knowable and true but also provides the grounds to effectively rule out scepticism.[30]

Meeting the sceptical challenge was not an end in itself for Descartes, but a means to prove his central metaphysical doctrines, i.e. substance dualism, the existence of God and the immortality of the soul, from their "true reasons". How then does our reconstructed *Cogito* help him in that? In two ways: by grounding the synthetic and deductive order arising from the analytic method, from the most evident (in itself) back to its consequences, which are familiar to us, and by establishing a certain dependence of the Cartesian thinker's existence from the fact that he is thinking.

The necessity of my own existence

Discussion of the Lichtenberg objection, to be added Wednesday.

From the *Cogito* to the truth-rule

There is an important connection between clarity and distinctness and dubitability: even though truths that are in themselves clear and distinct need not be clear and distinct for us, and thus *can* be doubted, they can only be doubted per impossibile, even though this does not need to be always transparent to us. It is, however, transparent to us if we correctly apply the analytic method. Herein lies an important presupposition: that the analytic method, as it is employed in the first *Meditation* allows us to keep track of epistemological, and perhaps even metaphysical dependencies.

This is what Descartes explicitly claims in the seventh set of *Replies*, commenting on "Certissimum est hujus sic praecise sumpti notitiam non pendere ab iis quae existere nondum novi; non igitur ab iis ullis, quae imaginatione effingo." (AT VII 28^{1-2}):

…scripsi enim, fieri non posse ut ea, quam jam habeo, notitia rei, quam novi existere, pendeat a notitiâ ejus, quod existere nondum novi. […] Nam sane perspicuum est, rei, quae cognoscitur ut existens, notitiam illam, quae jam habetur, non pendere a notitiâ ejus, quod nondum cognoscitur ut existens; quia hoc ipso quòd aliquid percipiatur ut pertinens ad rem existentem, necessario etiam percipitur existere. (AT VII $514^{24-26;30}$-515^{5})

…I wrote that the knowledge I already have of something I know to exist cannot possibly depend on the knowledge of things of whose existence I am as yet unaware. […] It is transparently clear that the already acquired knowledge of a thing which is recognized as existing does not depend on the knowledge of that which we have not yet recognized as existing; for the very fact that something is perceived to belong to an existing thing necessarily implies tha tit is perceived to exist. (Descartes 1989: 350)

30. While *A*'s insight, the "sum"-intuition, is categorical, *B* becomes aware of the truth of a conditional: assuming its antecedent in a thought experiment (staging *A* as his counterpart), he notes that the conclusion is inevitable. It is only *C* who is in a position to note that *B*'s thought experiment is *doomed to* fail, thereby establishing that *B* can truly claim to know "I think; therefore I am".

The *Cogito*, in which the analytic method 'culminates', then aligns the *ordo cognoscendi* with the *ordo essendi*, allowing Descartes to proceed in a way such that he does not have to presuppose anything which was not previously demonstrated. The transition, within this order, from thinking (entertaining the evil demon hypothesis) to existence (realising that the evil demon hypothesis is not entertainable without pragmatic inconsistency), becomes indicative of real dependence. The dependence of the Cartesian thinker's existence on the first-person's thinking is, first, dialectical. Only by granting the premiss that he is thinking can we prove her existence. Second, it is epistemological: we, and the Cartesian thinker, need no other belief about him than the one that he is thinking to prove that he exists – in this way, we prove his existence *as a thinking thing*. Third, it is one of Descartes' later doctrines that any such 'distinction of reason', where we clearly and distinctly perceive that two things can exist without each other, is underwritten by a 'real difference' – the ontological independence of two substances. We are not, of course, at this stage of the argument in a position to know that some such doctrine is true; but it is enough that it *is* true. *If* it is true (and this in turns depends on the validity of the ontological proof of the existence of God), then we can truly claim *in retrospect* to have demonstrated the existence of *res cogitans*. And this is quite much, too much perhaps, but in any case another issue.

The situation is importantly different with the truth-rule, however. The truth rule is, but the real distinction is not established by the *Cogito*. If the first *Meditation* instantiates (a correct way of applying) the analytic method, then we are justified in reserving our highest epistemic modality ("clear and distinct") for just those truths that withstand even the strongest of all possible doubts. We have seen reasons both to believe in the antecedent and to take Descartes to be convinced of it, so the question of the universality of maximal doubt becomes the question whether there are any clear and distinct beliefs at all. The *Cogito* is the claim that the belief I express by "I think; therefore I am" falls into this category and indeed is its paradigm exemplar. By showing us how to overcome the most general doubt, Descartes provides us with a foundation and justification of the analytic method – it is in this sense that he validates reason. He also achieves something else: not only is everything that is clearly and distinctly perceived doubted at the end of *Meditation* One (this is built into the evil demon hypothesis), but it is also the case that whatever can *only* be doubted by this most general doubt is (by itself) clear and distinct.

The hyperbolic doubt entertained by the Cartesian thinker reaches as far as the truth-rule, which is why Descartes is able to take the latter to be established as soon as the maximal sceptical scenario has been shown to be incoherent by the *Cogito*. This means that claim (**a**) – the dependency of the truth-rule on God's veracity – has to be restricted: it only concerns things that we perceive clearly and distinctly and which are not by themselves also clear and distinct. This is compatible with God being called upon only to guarantee the truth of those propositions that we cannot doubt without invoking the idea of an omnipotent being fooling us as much as it is able to (AT III 65^{5-8}, VI 38^{15-21}, 39^{3-7}, VII 69^{10-15}, VIII/I 6^{8-11}) – to withhold judgment in cases of epistemic irresistibility, we need to invoke the evil demon hypothesis.

MORE ARGUMENT IS NEEDED: – I HAVE: everything clear and distinct is doubted – BUT I NEED: everything only doubtable by the Evil Demon is clear and distinct

Because the evil demon hypothesis is internally incoherent, however, we are still entitled to believe them, unless we suppose that they only seem clear and distinct without, by themselves, really being so. To exclude this latter possibility, God is needed.[31] Even if God only guarantees the applicability of the truth-rule in these cases, not its truth itself, it remains the case that we cannot say, except in the case of the *Cogito*, that some given proposition must be true because it is clear and distinct. As with other necessary truths, this would mean to limit God's omnipotence.

31. This gives us another reason to believe that the hyperbolic doubt of the Cartesian thinker at the end of *Meditation* One encompasses mathematics and logics is internal to the logic of Descartes' overall argument: Descartes is quite clear that mathematical beliefs fall under the truth-rule: only God guarantees the truth of mathematical propositions (AT VII 15^{17-19}, 70^{10-18}). Necessary truths are doubted in *Meditation* One because the maximal doubt entertained at the end of it precisely questions the divine guarantee of the truth of clear and distinct perceptions.

This concludes the first part of my argumentation: necessary truths are doubted in *Meditation* One, and nevertheless their truth follows from their inner nature (their being clear and distinct); this explains why, and how, they are necessary. In another sense, however, they are not…

The Divine Creation of Eternal Truths

The content, motivation and systematic rôle of Descartes' doctrine of the creation of eternal truths has been subject to intense debate, both among Descartes scholars and general philosophers. The doctrine does not overtly appear in the major works, but enters the stage only in eight letters and two *Replies*.[32] Three main interpretations of the doctrine have been proposed. I will discuss them in decreasing order of generality, together with the textual evidence they rely on.

The most straightforward and farest reaching interpretation, which Curley (1984: 576) calls "standard" and which is defended e.g. by Frankfurt (1977: 29), Plantinga (1980) and van Cleve (1994), ascribes to Descartes what Plantinga calls *unlimited possibilism*, i.e. the view that there are no necessary truths at all:

(**c**) Everything is possible: $\forall p \Diamond p$.

This reading might be backed, e.g., by the following passage from the third letter to Mersenne:

> "Vous demandez aussi qui a necessité Dieu à créer ces veritez [eternelles]; et je dis qu'il a esté aussi libre de faire qu'il ne fust pas vray que toutes les lignes tirées du centre à la circonference fussent égales, comme de ne pas creer le monde." (AT I 152^{19-23})

The possibilist interpretation along the lines of (c) has both systematic and exegetical problems. The systematic problems stem from the fact that the Cartesian system is replete with propositions called necessary by their proponent.[33] On the exegetical side, this reading makes it difficult to see the contrast between the equally voluntarist doctrines of Descartes and Gassendi, described by themselves as sharp.[34] Some, like Bennett (1994a: 645), have even concluded that Descartes' voluntarism, on this interpretation, turns "into a rogue elephant crashing desctructively through the rest of Descartes' work" and has "horrendous systematic consequences" (Curley 1984: 593).

Another, weaker, interpretation which Plantinga calls *limited possibilism* and which is defended e.g. by Geach (1973), Curley (1984) and Barnes (1996) is the following:[35]

(**d**) Everything is possibly possible $\forall p \quad \Diamond\Diamond p$.

Limited possibilism seems supported by the following passage in a letter to Mesland:

> "Pour la difficulté de concevoir, comment il a esté libre & indifferent à Dieu de faire qu'il ne fust pas vray, que les trois angles d'un triangle fussent égaux à deux droits, ou generalement que les contradictoires ne peuvent estre ensemble, on la peut aisement oster, en considerant que la puissance de Dieu ne peut avoir aucunes bornes; puis aussi, en considerant que nostre esprit est finy, & creé de telle nature, qu'il peut concevoir comme possibles les choses que

32. These are, in chronological order, four letters to Mersenne: 15.4.1630 (AT I 145^{7}-146^{19}), 6.5.1630 (AT I 149^{21}-150^{27}), 27.5.1630 (AT I 151^{1}-153^{3}), 27.5.1638 (AT II 138^{1-15}), a letter to Hyperaspistes (AT III 429^{3}-430^{10}), the Fifths (AT VII 380^{1-13}) and Sixths Replies (AT VII 435^{22}-436^{25}), a letter to Mesland 2.5.1644 (AT IV 118^{6}-119^{14}), a letter to Arnauld 29.7.1648 (AT V 223^{31}-224^{17}) and a letter to More 5.2.1649 (AT V 272^{13}-273^{6}).

33. See Curley (1984: 574ff.) for an account of the different problems with combining possibilism with other parts of Descartes' system.

34. This at least according to the interpretation M. Osler (1995: 148) gives of Gassendi's views: "According to Descartes, the eternal truths are necessary, even though God created them freely and their existence depends entirely on him." (Osler 1995: 153)

35. Curley (1984: 593), following Gueroult (1953: 26–29), restricts (d) to propositions p about contingently existing entities, a restriction Frankfurt (1977: 34) forcefully criticises.

> Dieu a voulu estre veritablement possibles, mais non pas de telle, qu'il puisse aussi concevoir comme possibles celles que Dieu auroit pû rendre possibles, mais qu'il a toutesfois voulu rendre impossibles. Car la premiere consideration nous fait connoistre que Dieu *ne peut avoir esté determiné* à faire qu'il fust vray, que les contradictoires *ne peuvent* estre ensemble, & que, par consequent, il a pû faire le contraire; puis l'autre nous assure que, bien que cela soit vray, nous ne devons point tascher de le comprendre, pour ce que nostre nature n'en est pas capable. Et encore que Dieu ait voulu que quelques veritez fussent necessaires, ce n'est pas à dire qu'il les ait necessairement vouluës; car c'est toute autre chose de vouloir qu'elle fussent necessaires, & de le vouloir necessairement, ou d'estre necessité à le vouloir." (AT IV 118^{6}-119^{1}, italics mine)

The problem with this interpretation is that, first, it collapses into unlimited possibilism, at least in the form exposed by Curley[36] and, second, that it either seems to ascribe to Descartes some very bizarre non-normal modal logic (cf. Curley 1984: 592),[37] or, at least, commits him to a denial of the **S4** axiom that whatever is necessary is necessarily necessary, and, a fortiori, of the **S5** axiom that whatever is possible is necessarily possible:

S4 Nothing is contingently necessary: $\Diamond\neg\Box p \rightarrow \neg\Box p$.
S5 Nothing is contingently possible: $\Diamond\neg\Diamond p \rightarrow \neg\Diamond p$

To be sure, Descartes allows that God may change the modal status of a proposition, i.e. that he may bring it about that something necessary be contingent or that something contingent may be necessary. This is just to say that God might have made more or less truths necessary than he did.[38] This denial of the claim that God is bound by the modal status of some propositions is just a special case of Descartes' insistence that God's omnipotence really is a power to bring about everything He wants – it has nothing particular to do with iterated modalities and there is even some doubt that Descartes had a clear and distinct grasp of them.[39]

There is a third interpretation to be discussed, one endorsed by Ishiguro (1986) and Bennett (1994a), which we might call the "conceptualist" interpretation.[40] Conceptualism claims that inconceivability, in Descartes' view, implies strict impossibility – that even God could not have made true some particular proposition like $2+2=5$ we clearly and distinctly perceive to be impossible:

> "…the doctrine that God made us unable to conceive of certain things, and this was his making those things impossible. We could say that God created modal truths *by* making us unable to conceive of impossibilities, but let us be careful not to think of this in terms of means to ends." (Bennett 1994a: 646)

36. van Cleve (1994) shows that the argument given by Curley (1984: 580-1) can be strengthened to show not just (d), but (c). Van Cleve calls the principle underlying such criticism the *Dependency premiss*: "…to whatever extent it is plausible to make necessity dependent on some factor F, it is also plausible to make the simple truth of what is necessary likewise dependent on that factor." (van Cleve 1994: 62) and he also notes that this problem is common to all forms of modal contingentism (cf. below).

37. Jonathan Barnes (1996: 181–182) has presented a persuasive argument against such a move: even if Descartes had (that is, relied on in his reasoning) some non-standard logic, the problem of ultimate contingency in the eyes of God would just re-surface with respect to *its* theorems.

38. Barnes' formalises these claims with the help of Pörn's operator "$xE:p$" ("x brings it about that p") (cf. 1970; 1977). Unfortunately, as Barnes (1996: 167, n. 18) notes, it is a theorem of Pörn's system that any agent can bring about any logical truth – God's distinctive rôle is lost. The formalisation has the further drawback that Descartes does not derive modal voluntarism from God's omnipotence, but from the fact that everything, including eternal truths, depends on Him (as Bennett 1994a: 642–643 has emphasised). A formalisation in terms of a dependency relation would therefore seem more appropriate.

39. As Barnes (1996: 175) points out, Descartes construed modalities as verbs and sometimes adverbs, but not as operators. Iterated adverbs are a very intricate thing. There is some evidence, however, that he had a relatively clear grasp at least of non-iterated modalities. That he is aware, e.g., of $\Box p \equiv \neg\Diamond\neg p$, is shown by this translation of "…non possit non esse a causâ summe perfectâ" (AT VII 14^{26-27}) by "qu'elle doive nécessairement venir d'une cause souverainment parfaite".

40. Wilson (1978: 125) comes close to such an interpretation when she writes: "Descartes did regard the 'necessity' we perceive in mathematical propositions as in some sense and degree a function of the constitution of our minds – themselves finite 'creatures'", though the evidence is not unequivocal.

They interpret Descartes as claiming, in the passages cited, not more than the following: *if* God had given us different minds, different things might appear (and thus be) possible or impossible for us. God, *if* he had wanted, could have made our present modal concepts inapplicable and have given us different concepts instead:

> "…our conceptual limits could have been different, but we cannot have a specific thought about any such difference." (Bennett 1994a: 664)
> "…the necessity of a truth like 1+2=3 is conditional […] because it is necessary only given that God freely chose to make our minds in a certain way. […] We cannot conceive of the particular state of affairs that makes true the negation of an eternal truth, or the negation of any truth that is conditional on how our mind is constituted." (Ishiguro 1986: 466, 467)

The problem with this interpretation is that it ascribes, by making the modal status of any proposition mind-dependent, to Descartes too psychologistic a doctrine.[41] Descartes did not think that we are trapped in our God-given conceptual set-up. Quite on the contrary, he makes the Cartesian thinker in *Meditation* One explicitly reason about other ways our minds might have been organised.

The conceptualist reading, analyzing modal concepts "in terms of what does or does not lie within the compass of our ways of thinking" (Bennett 1994b: 647), trivialises the Cartesian thesis that modal theorizing gives us a priori access to necessity. It deflates, e.g., the Cartesian thinker's claim that after the *Cogito* argument he is now convinced that he by necessity exists (AT VII 25^{13}), to a mere ascertainment of his unability to conceive of himself as non-existent.[42] Rather than "harmoniz[ing] as well as possible" with the arguments for the divine guarantee of the truth-rule (Bennett 1994a: 641) and providing "a solid basis for Descartes's modal epistemology" (Bennett 2001: 63), the conceptualist reinterpretation of Cartesian modality rather preempts any need for any of them.

Against higher-order contingency

Discussion of modal conventionalism and its problems with **S4**, to be provided Wednesday.

In contemporary philosophy, there has been an extensive discussion whether or not modal conventionalists have to deny **S4**. Three versions of conventionalism can be distinguished:

possibilist If $\Box p$, then there is a convention C such that "p" is true by C.
limited possibilist If $\Box p$, then there is a convention C such that "$\Box p$" is true by C.
conceptualist If $\Box p$, then there is a convention C such that such that "p" expresses a necessary truth.

The problem is one common to all types of modal conventionalism: is C itself necessary? If so, it is not properly called a "convention"; if not, then **S4**, the necessity of necessity, goes over board.

Contingency of truth and contingency of being

To arrive at a fourth, and I believe the correct, interpretation of Descartes' view on the contingency of modal truths, let us reconsider the argument for possibilism, as presented by Plantinga[43] and suggested by

41. This psychologist or subjectivist strand is equally present in some variants of possibilism, cf.: "The necessities human reason discovers by analysis and demonstration are just necessities of its own contingent nature. In coming to know them, it does not necessarily discover the nature of the world as it is in itself, or as it appears to God." (Frankfurt 1977: 32).

42. If, as Bennett (2001: 62) says, "it is absolutely impossible that *P*" *means* for Descartes "no human who is thinking efficiently can add *P* to his system of beliefs without running into outright contradiction", then the necessity of the Cartesian thinker's existence becomes an uninteresting, and uncontroversial, psychological fact of him.

43. Cf.: "And if God could have brought it about that $2 \cdot 4 = 8$ should have been false, then $2 \cdot 4 = 8$ could have been false and is not necessarily true." (Plantinga 1980: 102)

the passage from the letter to Mersenne quoted above:

$$\frac{\begin{array}{c}\text{God was free to make } p \text{ false.}\\ \text{Whatever is possible for God is possible } \textit{tout court}.\end{array}}{\text{It is possible that } p \text{ is false.}}$$

The problem with this argument is that the second premiss is not only not to be found in Descartes' work, but quite explicitly denied by him. It would be preposterous, according to him, to limit God's power, including his power to bring about the impossible, in any way. In the same way that we cannot say that what is necessary for us is also necessary for God, we cannot say that what is possible for God is possible for us – this would limit his creative power to what is possible for us. This claim is to be found in a short passage of a letter to More which will provide us with the clue to the creationist doctrine Descartes endorses:

"Ego verò, cùm sciam meum intellectum esse finitum, & Dei potentiam infinitam, nihil unquam de hac determino; sed considero duntaxat quid possit à me percipi vel non percipi; & caveo diligenter ne iudicium ullum meum à perceptione dissentiat. Quapropter audacter affirmo Deum posse id omne, quod possibile esse percipio; non autem e audacter nego illum posse id, quod conceptui meo repugnat, sed dico tantum implicare contradictionem." (AT V 272^{16-25})

"For my part, I know that my intellect is finite and God's power is infinite, and so I set no bounds to it; I consider only what I can conceive and what I cannot conceive, and I take great pains that my judgment should accord with my understanding. And so I boldly assert that God can do everything which I conceive to be possible, but I am not so bold as to deny that He can do whatever conflicts with my understanding – I merely say that it involves a contradiction." (Descartes 1970: 241)[44]

So there is, according to Descartes, the following asymmetry between our judgments of possibility and of impossibility:

(e) Given God's benevolence, it is not the case that $\forall p(\Diamond p \rightarrow (p \text{ is conceivable}))$,
(f) even if it is the case that: $\forall p((p \text{ is conceivable}) \rightarrow \Diamond p)$.

(f) means that we are justified in relying our epistemic instincts with respect to possibilities as a guide to truth. Its conceivability-to-possibility link *depends* on God's benevolence and our clear and distinct idea of his omnipotence.[45] The asymmetry between (e) and (f) is due to the fact that God's powers transcend our conceptual limits. The converse direction, however, the inference from a perceived contradiction to an impossibility claim, is illegitimate, for it imposes constraints on the power of God and takes man to be the measure of what is possible and what is not: a true believer should not *dare* to say that what appears contradictory for him is impossible for God:

44. Cottingham, Stoothoff and Murdoch translate the second sentence somewhat more accurate as "I consider only what I am capable of perceiving, and what not, and I take great pains that my judgment should accord with my perception.", but unnecessarily weaken the third to "…I am not so bold as to assert the converse, namely that he cannot do what conflicts with my perception of things" (1991: 363). Descartes is not just refraining from an assertion that would limit God's powers, but refraining from a denial that His power has any limits.

45. In the *First* and *Second Replies*, Descartes says that possible existence is contained in the idea of everything we clearly and distinctly understand (AT VII 163–164, VII 166), in the *Fourth Replies* that God can bring about everything I clearly and distinctly perceive (AT VII 219). He repeates the point in a letter to Mersenne March 1642 (AT III 544–545). We also find the doctrine in other works: He writes, e.g., in *Le Monde*: "Si j'y mettois la moindre chose qui fût obscure, il se pourroit faire que, parmy cette obscurité, il y auroit quelque repugnance cachée, dont je ne me serois pas apperceu, & ainsi que, sans y penser, je supposerois une chose impossible; au lieu que, pouvant distinctement imaginer tout ce que j'y mets, il est certain qu'encore qu'il n'y eust rien de tel dans l'ancien monde, Dieu le peut toutesfois créer dans un nouveau: car il est certain qu'il peut créer toutes les choses que nous pouvons imaginer." (AT XI 36^{15-24}) He also accepts the general principle: "Deum enim agnoscentes, certi sumus ipsum posse efficere quidquid distinctè intelligimus." (AT VIII/I 28^{23-25}) and he writes in the *Notae in Programma*: "Ubi notandum est, hanc regulam, *quicquid possumus concipere, id potest esse*, quamvis mea sit, & vera, quoties agitur de claro & distincto conceptu, in quo rei possibilitas continetur, quia Deus potest omnia efficere, quae nos possibilia esse clare percipimus; non esse tamen temere usurpandam, quia facile sit, ut quis putet se aliquam rem recte int elligere, quam tamen praejudicio aliquo excaecatus non intelligit." (AT VIII/II 351^{28}-352^{6})

"Mais je ne lasseray pas de toucher en ma Physique plusieurs questions metaphysiques, & particulieremant celle-cy: Que les vérites mathematiques, lesquelles vous nommés eternelles, ont esté establies de Dieu & en dependent entieremant, aussy bien que tout le reste des creatures. […] On vous dira que si Dieu avoit establi ces verités, il les pourroit changer comme un Roy fait ses lois; a quoy il faut respondre qu'ouy, si sa volonté peut changer. – Mais ie les comprens comme eternelles & immuables. – Et moy ie iuge le mesme de Dieu. – Mais sa volonté est libre. – Oui, mais sa puissance est incomprehensible; & generalement nous pouvons bien assurer que Dieu peut faire tout ce que nous pouvons comprendre, mais non pas qu'il ne peust faire ce que nous ne pouvons pas comprendre; car ce seroit temerité de penser que nostre imagination a autant d'estendue que sa puissance." (AT I 145^{5-10}, 145^{28}-146^{10})

"However, in my treatise on physics I shall discuss a number of metaphysical topics and especially the following. The mathematical truths which you call eternal have been laid down by God and depend on him entirely no less than the rest of his creatures. […] It will be said that if God had established these truths he could change them as a king changes his laws. To this the answer is: Yes he can, if his will can change. 'But I understand them to be eternal and unchangeable.' – I make the same judgement about God. 'But his will is free.' – Yes, but his power is beyond our grasp. In general we can assert that God can do everything that is within our grasp but not that he cannot do what is beyond our grasp. It would be rash to think that our imagination reaches as far as his power." (Descartes 1991: 22–23)

The motivation behind (e) is just that we cannot, for any p, justifiably say that it has not been in God's power to effect $\neg p$, given that we have a clear and distinct idea of his omnipotence. This is also confirmed by the following passage of the letter to Arnauld, where he claims that the impossibility of the vacuum does not set any limits to God's powers:

"…ex eo quòd recurramus ad potentiam Divinam, quam infinitam esse scientes, effectum ei tribuimus, quem involuere contradictionem in conceptu, hoc est à nobis concipi non posse, non advertimus. Mihi autem non videtur de ullâ unquam re esse dicendum, ipsam à Deo fieri non posse; cùm enim omnis ratio veri & boni ab eius omnipotentiâ dependeat, nequidem dicere ausim, Deum facere non posse ut mons sit sine valle, vel ut unum & duo non sint tria; sed tantùm dico illum talem mentem mihi indidisse, ut à me concipi non possit mons sine valle, vel aggregatum ex uno & duobus quòd non sunt tria, &c., atque talia implicare contradictionem in meo conceptu." (AT V 223^{27}-224^{9})

"…[the difficulty in recognizing the impossibility of the vacuum] arises because we have recourse to the divine power: knowing this to be infinite, we attribute to it an effect without noticing that the effect involves a contradictory conception, that is, is inconceivable by us. But I do not think that we should ever say of anything that it cannot be brought about by God. For since every basis of truth and goodness depends on his omnipotence, I would not dare to say that God cannot make a mountain without a valley, or bring it about that 1 and 2 are not 3. I merely say that he has given me such a mind that I cannot conceive a mountain without a valley, or a sum of 1 and 2 which is not 3; such things involve a contradiction in my conception." (Descartes 1991: 358–359)

Instead of confirming the conceptualist interpretation, this passage shows that Descartes presents (e) as a fall-back position: in the face of an apparent absurdity, he recommends us to stay with the weaker "I cannot take it to be possible that p" instead of "p is impossible" by which we would contradict God's omnipotence.[46]

It is also confirmed, e.g., by the last sentence of the pertinent passage in the first letter to Mersenne: "Mais je ne laisseray pas de toucher en ma Physique plusieurs questions metaphysiques, & particuleremant celle-cy: Que les vérites mathematiques, lesquelles vous nommés eternelles, ont esté establies de Dieu & en dependent entieremant, aussy bien que tout le reste des creatures. […] On vous dira que si Dieu avoit establi ces verités, il les pourroit changer comme un Roy fait ses lois; a quoy il faut respondre qu'ouy, si sa volonté peut changer. – Mais ie les comprens comme eternelles & immuables. – Et moy ie iuge le mesme de Dieu. – Mais sa volonté est libre. – Oui, mais sa puissance est incomprehensible; & generalement nous pouvons bien assurer que Dieu peut faire tout ce que nous pouvons comprendre, mais non pas qu'il ne peust faire ce que nous ne pouvons pas comprendre; car ce seroit temerité de penser que nostre imagination a autant d'estendue que sa puissance." (AT I 145^{5-10}, 145^{28}-146^{10})

What are we to make of all this? We first have to distinguish two ways in which modal truths, i.e. true sentences of the form $\Box p$ or $\Diamond p$, may be called contingent. On the first reading, the one endorsed by possibilism, contingency pertains to the (unmodalised) proposition p that is called a modal truth. Every

46. That this is the correct interpretation of the passage cited has been argued by Jonathan Barnes (1996: 172).

eternal truth, then, is possibly false. On the second reading, the one endorsed by limited possibilism, it is the modalised proposition $\Box p$ *itself* which is called contingent. Every eternal truth, then, is possibly not what we take it to be, i.e. a necessary truth.

Doubting per impossibile whether p is possible, and may even be rationally required, if we do not know whether what we are grasping has itself modal force, i.e. whether it is of the form q or $\Box q$. The question, with respect to clearly and distinctly perceived truths which impress themselves upon us with the highest epistemic modality, is whether the modality perceived qualifies the *content* or rather the *act* of apprehension. This partly depends on the way the truth in question is given to us.[47] Our doubting of a necessary truth may be rational insofar as it is grounded on this act/result ambiguity. There is no such duality for God, for knowing something and willing it to be true are for Him the same act. So the act and the content of the act cannot be distinguished.[48]

Cartesian Epistemic Modality

There are two other features of Descartes' theory of modality which seem to confirm my interpretation. The first, noted by Barnes (1996: 175–176), is that Descartes sometimes, most explicitly in his conversation with Burman (AT V 160), puts his voluntarist doctrine in past tense: the eternal truths are necessary, so nothing *can* make them false, but they are subject to God's will in so far as he *could have made* them false. Unfortunately, Barnes interprets the past tense as iterated modality, thereby collapsing his interpretation into limited possibilism. There is, to be sure, some need for re-interpretation: Descartes cannot mean such formulations literally, for God, according to him, cannot change and does not act in time. The eternal truths, as he points out to Mersenne (27.5.1630, AT I 152), have not been created by time, but "ex hoc ipso quod illas ab aeterno esse voluerit & intellexerit, illas creavit". It cannot, therefore, be strictly true that "la modalité de cette proposition [that 2+2=4] a changée", as Barnes (1996: 177) recognises. There is another interpretation available, however.

Consider the by now notorious story of Kripke's 'discovery' of a posteriori necessities:"Water is H_2O", Kripke told us, is necessary. At first, this seems counterintuitive. Are we not able to imagine possible worlds where it is false; is not Putnam's Twin Earth a world in case? It is not, says Kripke, for by "the world where water is XYZ" we are *misdescribing* something which we should rather call a "way our world might have turned out", but did not. *Given* that it did not, it could not have: "water is H_2O" is, *if* true, necessarily true. What we are imagining when we imagine water having another chemical structure than it actually has is not a possible world, a way our world could have been, but an impossible world, a way our world could have turned out but did not. Twin Earth, if it is to be possible, is not a world with water, but a world with a clear, drinkable liquid in its lakes and oceans, that we *would have called* "water" if we lived there. As we live here not there, however, the liquid we referred to when we actually fixed the reference of "water" had the chemical structure H_2O and so "water", being a 'rigid designator', *actually* refers in all worlds to H_2O, though it could have done otherwise. For Kripke (1972: 307, 103), the "might" in "water might not be H_2O" is *merely* epistemic and represents "a present state of ignorance or uncertainty": given

47. Bernard Williams (1978: 80–81) has stressed the importance of notation in the context of Cartesian epistemology: "But the formulation [of attributions of certainty] explicitly in terms of propositions brings out something which is important and which is indeed implicit in Descartes's own treatment, that his certainty depends not just on what states that he is in, but on how they are described. Take some state described as his having an experience *as of* seeing a table, or its seeming to him that he sees a table: then under that description, Descartes claims, he is certain of it. But that very same experience *could* be caused by the physical presence of a table, and if it is described in such a way as to imply that it is so caused – for instance, if it is described as the experience *of seeing a table* – then he is not certain of it." Descartes' explicitly acknowledges epistemic asymmetries even between necessarily equivalent truth, e.g. in the *Second Replies* where he claims that it is possible to perceive clearly and distinctly that a triangle in a semicircle is rectangular without thereby perceiving that the Pythagorean theorem holds of it, while every clear and distinct perception of the latter *ipso facto* is a perception of the former (AT VII 224^{22}-225^{2}).

48. This way of phrasing the doctrine comes close to what Descartes' says in his letters to Mersenne 6.5. and 27.5.1630 (AT I 149, 152).

the evidence before the empirical investigation of the nature of water, it could have turned out that water is not H_2O – but in this case "water" would not mean what it actually means. The qualification "given the evidence" is hence crucial, for given *our* evidence, it is no longer true that water could have turned out not to be H_2O.[49]

The uncertainty in question is not just whether the liquid before me is water – it is equally, and more importantly, an uncertainty whether the liquid before me *belongs to a natural kind*. For all I know the liquid before me could be something which has its internal structure contingently, a functional kind say. I may thus very well doubt that the liquid in front of me is H_2O, and I may even describe my state of ignorance as doubting whether water is H_2O (from the outside, as it were), as long as I am prepared to take back my doubt on being told that the thing before me is a sample of *water* (this being a natural kind). Whether or not an epistemic impossibility (our inability to imagine that this very stuff has another chemical composition than it actually has) matches a metaphysical impossibility (of water being something different from H_2O) depends on how "it is given to us".

This act/result-interpretation is also confirmed by the way the Cartesian thinker formulates his modal insights and Descartes' more general conception of *de re* modality. Consider, e.g., the *Cogito* passage of the *Meditations*:

> "Nondum verô satis intelligo, quisnam sim ego ille, qui jam necessario sum." (AT VII 25^{24-25})

The French translation, authorised by Descartes, startlingly reads: "Mais je ne connais pas encore assez clairement ce que je suis, moi qui suis certain que je suis." (AT IX/I 19^{34-35}) Analogous formulations may be found all over the *Meditations*.[50] In the conversation with Burman and elsewhere, Descartes repeatedly claims that impossibility or contradiction resides "in our ideas alone".[51] It is only where the act of apprehension and its content coincide, as it is with God's will and understanding, and as it is, for us humans, with the *Cogito*, where we can have a guarantee that what we perceive to be impossible really *is* possible.

Conclusions

I hope that my interpretation also allows for a weaker reading of the truth-rule. In itself, it does not establish – quite absurdly, given that clear and distinct perception is a purely epistemic notion – that what I clearly

49. Kripke (1972: 141–142, 332) claims that "it might have turned out that p" entails "it could have been the case that p" It seems incorrect to me to say, as Chalmers (1995: 17) does, that "Kripke allows that it might *turn out* that Hesperus is not Phosphorus". Cf. also: "…it seems reasonable to say that if the XYZ world *turns out* it be actual, then it will *turn out* that water is XYZ." (Chalmers 2002: 612) All Kripke allows for is that it *might have turned out* in a world in which we had not discovered that it could not.

50. He repeats e.g. in the *Seventh Replies* that the existence of the *res cogitans* is necessary: "…quod initio, cùm supponerem mentis naturam nondum mihi esse satis perspectam, illam inter res dubias enumerarim; postea verò, advertens rem quae cogitat non posse non existere, illamque rem cogitantem nomine mentis appellans, dixerim mentem existere…" (AT VII 473^{7-12})

51. Cf. the following passage from his conversation with Burman: "Ideae pendent quidem a rebus, quatenus eas repraesentant; sed interim non est in rebus contradictio, sed in solis ideis nostris, quia ideas solas ita conjungimus ut sibi repugnent. Non autem repugnant sibi invicem res, quia omnes existere possunt, et sic una non repugnat alii; in ideis autem contra sit, quia in iis res diversas, et quae sibi non repugnant seorsim, conjungimus, et ex iis unam efficimus, et sic contradictio oritur." (AT V 161) He reiterates the point in the replies: "Omnis enim implicantia sive impossibilitas in solo nostro conceptu ["seulement dans notre concept ou pensée"], ideas sibi mutuo adversantes ["qui se contrarient les unes les autres"] male conjungente, consistit, nec in ullâ re extra intellectum positâ esse potest, quia hoc ipso quòd aliquid sit extra intellectum, manifestum est non implicare, sed esse possibile. Oritur autem in nostris conceptibus implicantia ex eo tanùm quòd sint obscuri & confusi, nec ulla unquam in claris & distinctis esse potest." (AT VII 152^{12-20}) This has been noted by Bouveresse (1983: 301): "De facon générale, pour Descartes, la non-contradiction formelle n'est pas un principe de possibilité. Le seul critère de l'existence possible est la présence d'une idée claire et distincte. Si nous avons une telle idée, nous n'avons pas besoin d'une démonstration de non-contradiction. Et si nous n'avons pas d'idée claire et distincte, une démonstration formelle de compatibilité entre les constituants de l'idée ne prouve rien quant à l'existence possible." Like Frege in his exchange with Hilbert, Descartes is simply unable to see the value of proving to be coherent that which we claim or see to be true. As with Frege, this does not mean that Descartes' notion of truth has to be coherentist, contrary to what Frankfurt (1970: 49) asserted: "The substance of his [Descartes'] "metaphysical doubt" concerning clear and distinct perception […] is the fear that judgements based on clear and distinct perceptions may be mutually inconsistent." Frankfurt has later changed his mind, cf. Frankfurt (1978: 37).

and distinctly perceive cannot fail to be true. Instead, it provides me with a criterion of assertability, a rule of evidence, validating the transition of spontaneous assent to *justified* believing something to be true. It thereby enshrines what has been accomplished by the proof that the *Cogito* cannot be doubted even by the furthest-reaching sceptical scenario imaginable. This establishment that even maximal doubt cannot be total justifies the Cartesian thinker in taking his spontaneous assent to be a sign of truth, and not just a caprice of his possibly perverted nature. The *Cogito* thus establishes that clear and distinctly perceived propositions are justifiably taken to be true and hence are possible, while only the proof of the existence of God assures us that what we justifiably take to be true is indeed true. The *Cogito* thus shows that total scepticism about one's own epistemic instincts is incoherent; that such a scepticism is not only incoherent but unnecessary, is another thing for which a proof of God's existence is required.

So Descartes' point is just that it is – not only epistemically, but also metaphysically – more difficult to rule out possibilities than to rule them in. So, after all, he would perfectly agree with Horatio that there indeed are more things between heaven and earth than is dreamt of in his – and our – philosophy.

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