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Descartes on Miracles

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Descartes said very little about miracles in his published writings, and the subject is all but absent in scholarly literature. I address this oversight by analyzing around 30 discussions of miracles that appear in Adam and Tannery's *Oeuvres de Descartes*, mostly from his letters. I argue that these discussions are of four types: non-literal hyperbolic uses of the term 'miracle', scientific counterfactual uses of the term, attempts to debunk miracle claims, and discussions of genuine miracles within traditional Christianity. The theme behind all of these discussions is that we should minimize claims about miraculous events as much as possible and accept that events occur within the ordinary course of nature, which we can understand mechanically through modern scientific inquiry. For the private Descartes, it is possible that he believed that all events with no exception follow the ordinary course of nature. But the public Descartes held that we must acknowledge that some events disrupt the ordinary course of nature, namely, miraculous events of traditional Christianity, which would be unwise to dispute. In this way, Descartes' public approach to miracles resembles that of Hobbes, Pascal, and Malebranche, who also deferred to the natural order of things except in rare cases.

Introduction

Most of the great philosophers of the modern period wrote on the subject of miracles, and they did so for good reason. The new science revealed that everything in nature operates with mechanistic precision, and these thinkers needed

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to decide what to preserve or abandon from traditional philosophy and theology that conflicted with that science. Miracles get right to the heart of this issue: does God violate the laws of nature through acts of special providence? Strangely, Descartes says nothing systematic about miracles, and what he does say either in his books or correspondence is in passing. The subject is also all but absent in Descartes scholarship. As Margaret Osler states, 'my reading of Descartes has not disclosed any other mention of miracles [aside from the one in *Le Monde*], despite his evident concern with a number of theological problems' (Osler 1985: 361). I hope to remedy this oversight by drawing together around 30 comments in Adam and Tannery's *Oeuvres de Descartes*[1] that he does make about miracles and setting them within the context of his views about God and the mechanistic world. I will show that Descartes has a definition of what counts as a miracle, and his passing discussions of the topic are of four sorts: non-literal hyperbolic uses of the term 'miracle', scientific counterfactual uses of the term, attempts to debunk miracle claims, and discussions of genuine miracles within traditional Christianity. How we interpret this last sort depends on distinguishing between Descartes' private views on miracles, which may have been skeptical, and the views he publicly expressed. In the latter case, his clear aim was to defer to the natural order of things and minimize miraculous claims as much as possible, while accepting only the core miracles in Christianity as genuine. In this way, his approach resembles that of Hobbes, Pascal, and Malebranche, who also deferred to the natural order of things except in rare cases.

Descartes' Mechanistic Worldview

Descartes was at the forefront of the modern view that the natural world operates mechanically. While philosophers and scientists since ancient times spoke about general laws of nature that governed all things, it was not until the seventeenth century that modern thinkers put forward specific laws. Daniel Garber states that Descartes 'may well be the first who actually tried to articulate the laws of nature in such a way that their consequences for how nature works can be set out and evaluated' (Garber 2016: 135).[2] John Henry similarly states that, by

1. In the quotations from Descartes below, I have used translations from CSM/CSMK when available. The remainder are newly rendered from AT.

2. Garber argues that mathematical explanations of physical phenomena also first emerged during the seventeenth century. However, the mathematical explanations were fundamentally independent of the discovery of laws of nature and not intertwined as one might think. Descartes is a case in point in that his laws of motion 'are given in purely qualitative terms in the text', rather than as quantitative mathematical expressions (Garber 2016: 139).

drawing on his background in mathematics, 'Descartes was effectively responsible for single-handedly introducing the notion of laws of nature into natural philosophy' (Henry 2004: 114). This mechanistic way of explaining the world recasts the question of miracles in a new way. It is not just a question of whether God intervened in the observed course of nature, but whether God contravened a very specific law of nature that we could identify at a specific location in space and time. Similarly, efforts at debunking miracle claims would also involve more precise explanations that showed how the phenomenon in question could occur naturally as a result of specific laws of nature.

Descartes' first effort at laying out such specific laws of nature was in his unpublished work *The World* (*Le Monde*), composed between 1629 and 1633. The 'world' he describes is a hypothetical sun-centered universe, and his aim is to offer a unified account of the physical world, involving the motion of the stars and planets, the phenomenon of light, and the operations of the human body. Descartes presents it as a 'fable' for the entertainment of his readers, and this raises questions about how much of his account, particularly the controversial parts, he intended to apply to the real world. We have reason to believe, though, that at least a large portion of his description does pertain to the actual world. For, he states that, even presented as a fable, he hopes that in the course of his discussion 'the truth will not fail to become sufficiently clear' (Descartes 1985: 1.90); that is, the truth as we find it in the actual world. Further, a decade later he incorporated much of *The World* in his published work *The Principles of Philosophy* (1644), where he was describing the actual world, not a fabled one.

An important feature of both works is his presentation of three laws of motion that account for the movement of all objects in the world. According to his account, God is not just the original source of all motion, but also the sustainer of motion as it transfers from one collection of material particles to another in a uniform way. The laws of nature that emerge from God's orchestration of matter in the physical world are immutable since God himself is immutable, as Descartes describes here in *The World*:

> From this it follows necessarily that from the time they [i.e., the parts of matter] began to move, they also began to change and diversify their motions by colliding with one another. So if God subsequently preserves them in the same way that he created them, he does not preserve them in the same state. That is to say, with God always acting in the same way and consequently always producing substantially the same effect, there are, as if by accident, many differences in this effect. And it is easy to accept that God, who is, as everyone must know, immutable, always acts in the same way. (Descartes 1985: 1.93, Chapter 7)

All parts of the physical world, then, operate uniformly as machines on the basis of these laws of motion alone, from the tiniest clusters of particles to the larger cosmos itself. The laws are uniform in two ways. First, for any instance of moving and colliding particles, a similar arrangement of particles will result in similar motion. We are, then, able 'to recognize effects by their causes' (Ibid.: 97). Second, Descartes argues that the laws of motion and their mathematical truths, which apply to the hypothetical world, would also apply to any other created world that we might conceive of: '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' (Ibid.). Such uniformity extends equally to the mechanical operation of human and animal bodies. In a portion of *The World* posthumously published as the *Treatise on Man* (*L'Homme*, 1662), Descartes discusses the intricacies of human anatomy in strictly mechanistic terms. Similarly, in Meditation 6 he compares the operations of the human body to that of a clock, as 'a kind of machine equipped with and made up of bones, nerves, muscles, veins, blood and skin' (Descartes 1985: 2.58–9). The physiological structure of a human is such that even if we did not have minds, he says, our bodies would move about and act just as they normally do, like machines. Further, when a human body is ill with dropsy, it is similar to a broken clock that fails to tell time, and in both cases there is a deviation from the mechanical nature of the object.

A central aspect of Descartes' mechanical view of the world is the rejection of the medieval Aristotelian concept of substantial forms, which was prevalent in his day. One such proponent was Descartes' critic Gisbertus Voetius, who, in his essay 'On the Natures and Substantial Forms of Things' (1641), criticizes the so-called 'new philosophy' of anti- Aristotelians. In this, he writes:

> When quantity and shape are reduced to efficiency and motion, which are usually attributed to active forms and their qualities, it must be seen that at some point young people will inadvertently accept the magical axiom hitherto rejected by all Christian theology and philosophy: There is a certain efficiency of quantity and shape, which is either by itself or with others an active principle of transformation. (Voetius 1641: 41).

On the theory of substantial forms, inorganic things rise or fall, or are hot or cold, based on their natural purpose that draws their elements to their respective ends. Organic things similarly grow or move as they are drawn towards their end. Thus, an animal like a bird is not a machine, but rather a combination of material stuff that is teleologically organized by an immaterial substantial form that draws the material elements towards its purpose. Whether inorganic

or organic, natural objects are not mechanically pushed from outside in cause-effect connections that involve efficient causes, but rather they are pulled from within by their final causes.[3]

Descartes explicitly rejects the theory of substantial forms. In a letter on this subject to Jean-Baptiste Morin, he says to his correspondent: 'I know that you will say that the form of the clock is only an artificial form, while the form of the sun is natural and substantial'. Descartes then replies that 'the substantial form of the sun...is an altogether philosophical entity which is unknown to me' (Descartes to Morin, 12 September 1638; CSM 1985: 3.122). In another letter, he advises Henricus Regis to avoid controversy by not explicitly rejecting the notion of substantial forms, but instead just giving alternative natural explanations. His readers will grasp his larger point, that is, that there are no substantial forms: 'those who understood your arguments would spontaneously draw from them the conclusions you had in mind' (Descartes to Regius, January 1642; CSMK 1991: 3.205). In spite of this sound advice, Descartes' own rejection of substantial forms was evident to his readers, an example of which is Martin Schoock's 1643 attack on Descartes in *Admiranda Methodus novae Philosophiae Renati Des Cartes*. According to Schoock, by confounding an animal like a dove with 'a clock or any mechanical work', anti-Aristotelians like Descartes aim to show that 'the same logos exists for the dove as for those kinds of works' (Schoock 1643). For Schoock, Descartes' basic argument is this: 'I conceive that the living animals, when all their substantial forms are exploded, have the same reasons (*rationem*) as that of clocks, considering only the arrangement of their parts in place of principles' (Ibid.). From Schoock's perspective, Descartes' mechanistic view of the world is a direct rejection of Aristotelean substantial forms.

Descartes' rejection of substantial forms is relevant to the subject of miracles in two ways. First, substantial forms and miracles are both metaphysical phenomena that run counter to a view of a self-contained natural world that operates on purely mechanical cause-effect relations like a clock. The very rejection of substantial forms raises questions about whether miracles too should be rejected. As we shall see, Descartes seeks to avoid reliance on miracles in the same way that he does substantial forms. Second, belief in both substantial forms and miracles is enforced by a powerful religious institution and culture, and disbelief in either carries serious consequences. In this way, the rejection of substantial forms is a test case for how far one can go in rejecting miracles.

3. Van Ruler states, 'The difference between the Scholastic idea of causation and the Cartesian is accurately described as a difference between the ideas of internal and external causation. In Fact, the unique characteristic of Descartes' theory of causation is the idea that every change is brought about by an external cause' (Van Ruler 1995: 136).

The advice Descartes gives to Regis for dodging the issue of substantial forms is very much like the approach Descartes himself takes for dodging miracles, as we shall also see.

Miracle as a Disruption of a Law of Nature

Descartes' mechanistic world view, then, is the backdrop to his account of miracles. As to how Descartes views miracles themselves, the starting point for any such discussion of his position is the following passage from *The World*:

> In order to eliminate any exception that may prevent this [ability we have to recognize effects from their causes], we shall, if you please, suppose in addition that God will never perform any miracle in the new world, and that the intelligences, or the rational souls, which we might later suppose to be there, will not disrupt in any way the ordinary course of nature. (Descartes 1985: 1.97)

Descartes says here that, to guarantee our ability to understand all the cause-effect relations in the world, we may assume that God (or any other rational being) does not perform miracles that disrupt the ordinary course of nature. This raises three questions for us: (1) what is his definition of a miracle? (2) what is the metaphysical status of the laws of nature that are not disrupted? and (3) is Descartes' denial of miracles about the fabled world or the actual world? We shall consider each.

1. Descartes' Definition of 'Miracle'

First, in the above, Descartes is presenting something like a definition of 'miracle', which is that it is an act of God or some other rational agent that disrupts the ordinary course of nature. In the context of this passage, the 'ordinary course of nature' is determined by the laws of nature, which we see in the very title of the chapter from which the above passage is taken: 'The Laws of Nature of this New World'. Foremost of those laws are his three laws of motion, and, beyond these are the 'eternal truths on which mathematicians have usually based their most certain and most evident demonstrations' (Ibid.). As a first condition of Descartes' definition of 'miracle', we have this: an act by God or some other rational agent that disrupts[4] laws of nature. This is similar to the definitions

4. The French word '*troubleront*' here might also be used in sentences like 'the construction work disrupts the flow of traffic' or 'the protester is disrupting the peace'.

of 'miracle' used by other modern philosophers,[5] including Hobbes,[6] Pascal,[7] Malebranche,[8] Spinoza,[9] Locke,[10] Hume,[11] and Voltaire.[12] With subtle differences, each of these philosophers sees miracles as a departure from the normal operations of nature. In addition to this first condition to Descartes' definition of 'miracle' we find a second condition in one of his letters. The context of his discussion is a tale concerning the image of St. Bernard that appears on a stone, and whether it was miraculous or 'whether the veins of the stone can represent it without a miracle.' Descartes goes with the latter explanation, since, as he states, 'why should God perform a miracle, if he did not want it to be known as a miracle?' (Descartes to Mersenne, June 19, 1639; AT 1897–1910: 2:557).

Thus, a miracle for Descartes is an act of God or some other rational agent that (a) disrupts the laws of nature, and (b) is recognizable to humans as such a disruption. We can go a step further and view Descartes' concept of a miracle as an act of divine special providence. Traditional Christian theology distinguishes between two manners in which God works within the world: general providence, which is through consistent laws of nature, and special providence, which is outside those laws, such as through miracles and divine inspiration of prophets and writers of scripture. Descartes does not appear to use either the terms 'general' or 'special' in reference to providence. However, in the *Passions of the Soul*, he describes divine providence in a way that matches the notion of general providence, that is, a preordaining of everything from eternity through

5. Leibniz is an exception among modern philosophers as to whether miracles by definition violate laws of nature: 'But we must remember what we have said above concerning miracles in the universe—that they are always in conformity with the universal law of the general order, even though they may be above the subordinate maxims' (Leibniz 1686/1989: 48).

6. Hobbes states, 'From that which I have here set down of the nature and use of a The definition miracle, we may define it thus: A MIRACLE is a work of God (besides his operation by the way of nature, ordained in the creation), done for the making manifest to his elect the mission of an extraordinary minister for their salvation' (Hobbes 1651/1994: 296–97).

7. Pascal states, 'Miracle. This is an effect which exceeds the natural power of the means employed. And non- miracle is an effect which does not exceed the natural power of the means employed' (Pascal 1670/1999: 106).

8. Malebranche states, 'And consequently God is not to be blamed for not disturbing the Order and Simplicity of his Laws by Miracles, which would be very welcome to our Exigencies, but very repugnant to the Wisdom of God, whom it is not lawful to tempt' (Malebranche 1680/1700: Part 2.43).

9. Spinoza states, 'But let it be supposed that a miracle is something that cannot be explained by natural causes' (Spinoza 1670/2007: 85).

10. Locke states, 'A miracle then I take to be a sensible operation, which being above the comprehension of the spectator, and in his opinion contrary to the established course of nature, is taken by him to be divine' (Locke 1702/1824: 256).

11. Hume states, 'A miracle is a violation of the laws of nature' (Hume 1748/2000: 10.1.12).

12. Voltaire states, 'A miracle is the violation of mathematical, divine, immutable, eternal laws. By the very exposition itself, a miracle is a contradiction in terms: a law cannot at the same time be immutable and violated' (Voltaire 1764/1901: 272).

strict causes and effects. He states that, as we reflect 'upon Divine Providence: we should reflect upon the fact that nothing can possibly happen other than as Providence has determined from all eternity. Providence is, so to speak, a fate or immutable necessity, which we must set against Fortune in order to expose the latter as a chimera which arises solely from an error of our intellect' (*Passions of the Soul*, 1649; CSM 1985: 1.380; AT 1897–1910: 11.438). The providence he describes here is a general one, which he states involves 'all the causes which contribute to each effect' (Ibid.). In contrast to this general divine providence, it is an easy inference to see Descartes placing miracles in the category of special providence that falls outside of general providence.

2. The Metaphysical Status of the Laws of Nature

Our second question pertaining to Descartes' notion of miracle is, what is the metaphysical status of the laws of nature that are not disrupted? That is, do miracles violate (a) only apparent laws of nature as humans recognize them or (b) actual laws of nature in the order of things themselves?

Osler argues that a partial answer to this question rests on the medieval debate between divine voluntarism versus Intellectualism; that is, whether God's will takes precedence over his reason or God's reason takes precedence over his will. On the voluntarist view, God's creative actions emerge directly from his will, with no intermediary laws, rules, or principles. As such, what you and I call 'laws of nature' are merely 'empirical generalizations about the observed behavior of particulars' (Osler1985: 350). On this voluntarist view, then, when God performs miracles through an act of his will, there technically are no objective laws that God is violating. Intellectualists see it differently. On their view, 'God created essences or laws which provide a built-in intelligibility to the natural order' (Ibid.). That is, while God's choice to create the world emanates from his will, God also created rational laws of nature that stand as intermediaries between God's will and the created world. For the intellectualist, when God performs miracles, they violate the intelligibility of these laws of nature. Osler argues that Descartes falls between these two camps. Contrary to intellectualism, 'Descartes denied that the eternal truths are independent of God', and, contrary to voluntarism, 'he also denied that they are merely generalizations about names applied to arbitrary groups of particulars' (Ibid.: 351). Rather, Descartes grounded the stability of laws of nature in God's immutability: he freely created those laws, but once created, they are eternal since his will is immutable. To word it more colloquially, God was free to create the laws of nature any way he wanted, but, upon their creation, he stubbornly refuses to change them.

An analysis of any modern philosopher's view of miracles would require a similar evaluation of the metaphysical status of the laws of nature, and the options would include more than the two that Osler offers. At the objectivist end of the spectrum, laws of nature might be Platonic forms, whereas at the subjectivist extreme they might be nothing more than the opinions of people who are totally in the dark about the true nature of things. In between these extremes are a dozen alternatives. Locke is an interesting case in point, with his definition of a miracle as 'a sensible operation, which being above the comprehension of the spectator, and in his opinion contrary to the established course of nature, is taken by him to be divine' (Locke 1702/1824: 256). Locke is skeptical of even scientists' ability to discover laws of nature, and all we are left with is our personal and subjective opinion about what those laws are. Consequently, for Locke, what counts as a violation of a law of nature is also subjective. Descartes, however, is more confident than Locke about the scientist's ability to discover truths of nature through the experimental process that he maps out in the *Discourse on Method*. For Descartes, then, the laws of nature are neither Platonic forms nor Lockean opinions. Instead, they are consistent dispositions within God's mind, which scientists can discover by following the proper method. A miracle, then, diverges from the otherwise consistent dispositions within God's mind that scientists can discover.

3. Denial of Miracles in Fabled or Actual World

Our third question about Descartes' view of miracles in the above passage is, does his denial of miracles pertain to just the fabled world or also the actual world?[13] The short answer is that we just cannot tell, and there are reasons for seeing it both ways. Consider first the view that his denial of miracles applies only to the fabled world and not the actual one. We noted earlier that much of the content of *The World* was carried over to his published work *Principles of Philosophy*. In the portion of the *Principles* that deals with the three laws of motion and God's immutability, Descartes makes room for revelation and acts of special providence that are outside the ordinary course of nature:

13. Osler argues that Descartes's denial of miracles in *The Word* was intended to also apply to the actual world. Her reasoning is this: 'the voluntarist mechanical philosophers, such as Gassendi, Charleton, Boyle, and Newton, explicitly insisted on the possibility of miracles in the form of God's direct intervention in the world, often in violation of the laws of nature or second causes. The contrast between Descartes' attitude and that of his more voluntaristic contemporaries provides indirect evidence that he wanted his readers to take his denial of miracles to apply to the real world' (Osler 1985: 361).

> For we understand that God's perfection involves not only his being immutable in himself, but also his operating in a manner that is always utterly constant and immutable. Now there are some changes whose occurrence is guaranteed either by our own plain experience or by divine revelation, and either our perception or our faith shows us that these take place without any change in the creator; but apart from these we should not suppose that any other changes occur in God's works, in case this suggests some inconstancy in God. (CSM 1985: 1.240)

In this, Descartes distinguishes two ways in which God is immutable: first, as God is in himself, and, second, as God operates in his works. In the above passage, he states that there are some changes in God's operation of his works that we either witness ourselves or know of through divine revelation. Presumably he is talking about miracles that run contrary to God's normal operations. Even so, Descartes continues, such divergent changes in no way show an inconsistency within God himself, who is immutable. Thus, in *The World*, the immutability of God's character implies that all of God's operations are immutable with no exception, which implies no miracles. However, in the *Principles*, the immutability of God's character allows for some divergence in his otherwise regular operations, which allows for miracles.

We might think, then, that this settles the issue: in *The World*, Descartes was just talking about the fabled world where there are no miracles, and in the *Principles* he is talking about the actual world where there are miracles. But there is good reason to question the sincerity of Descartes' concessions to miracles in the *Principles*, for the version of *The World* that has come down to us was both unpublished and composed long before Descartes was accused of atheism and skepticism by Voetius and Schoock in 1742 and 1743, respectively.[14] By contrast, the *Principles* was published after this controversy, with the expectation that all of Descartes' subsequent writings would be subject to intense theological scrutiny by his hostile readers. Thus, *The World* is likely to be the more candid expression of Descartes' views on disruptions of the ordinary course of nature, rather than the *Principles*.

When analyzing Descartes' view of miracles or any other controversial religious issue, we must distinguish between the public and private side of Descartes. The public side very much reflects his survival interests, which involved responding to Voetius's charges, and avoiding any statements that might reignite attacks of irreligion. This is especially so with the issue of mira-

14. Voetius, *Confraternitas Mariana* (1641) and Schoock, *Admiranda Methodus* (1643). Descartes replied to this in an open letter of My 1643, published under the title *Letter from Rene Descartes to that distinguished gentleman M. Gisbertus Voetius* (partially translated in CSMK 1991: 220–24).

cles. As Stephen Gaukroger states, 'The Church had a commitment to miracles on the grounds that they backed up its claims to be the sole bearer of truth, and this was a commitment it was unwilling to abandon' (Gaukroger 1995: 27). It would have been suicidal for the public Descartes to go against the Church's teachings on miracles, transubstantiation, or any religious or metaphysical view that was integral to the Church's interests. As to Descartes' private side, there is enough ambiguity in his writings to speculate about a range of possible heterodox views he might have held. He might have been an atheist who spoke of God as a metaphor for nature.[15] Or, he might have believed in a God who was little more than the force behind nature, similar to Spinoza. Or, he might have believed in a personal God who created a self-sustaining world, and then set it aside, similar to deists.[16] In each of these cases, there would be no room for miracles or any other act of divine special providence. It is of course possible that Descartes' private views on religion were exactly the same as his public views. But this is unlikely since, as we have already seen, Descartes advised Morin on how to cryptically reject the theory of substantial forms in his writings by simply not mentioning the concept. This suggests that Descartes' own statements on sensitive religious issues need at least some decrypting.

Fortunately, we do not have to resolve the issue of Descartes' public versus private sides. Even if he was religiously heterodox in private, what is probably more important is how he wished to publicly present himself, both in his published writings and in his personal letters to friends, the vast majority of whom were traditional believers. Even though he did write more openly in letters to sympathetic friends, he still needed to be on his guard in case those correspondence inadvertently became public.[17] Thus, we should not take Descartes' correspondence as truly private in a way that fully reveals his hidden beliefs. It is, then, within Descartes' published and unpublished writings that we seek to find some coherent account of his public views on miracles. On this score, we have more to work with than might initially appear.

15. Lina Kahn argues that Descartes had serious doubts about basic religious teachings, such as the immortality of the soul, and his correspondence suggests that 'God was to him only a concept' (1918: 56). She writes, 'the conflict between science and theology brought Descartes to the diplomacy of disguising his scientific ideas in a theological garb' (1918: 5).

16. The following statement is attributed to Pascal: 'I cannot forgive Descartes: in his whole philosophy he would like to do without God; but he could not help allowing him a flick of the fingers to set the world in motion; after that he had no more use for God' (Pascal 1670/1966: 303).

17. Two notable examples from Descartes' time of private letters that were used as evidence in prosecution are the trial of Mary, Queen of Scots in 1586 and the trial of the Gunpowder Plotters in 1605.

Discussions of Miracles in Descartes' Writings

Descartes discusses miracles in his writings from as early as 1620 on through his final years. The picture we get is a relatively consistent one, and his comments fall into four groups: (1) non-literal hyperbolic uses of the term "miracle", (2) scientific counterfactual uses of the term, (3) discussions which aim to debunk alleged miracle claims, and (4) discussions of genuine miracles within Christianity.

1. Non-literal Hyperbolic Uses of Miracle

Consider first a colloquial use of the term 'miracle' as a non-literal hyperbole, where it just means something like 'astounding', or a 'wonder', such as 'it's a miracle that you showed up on time.' There is no claim that the course of nature is actually being disrupted, and the meaning of the sentence would be the same if 'miracle' was swapped out for 'astounding'. Here are seven such cases presented chronologically. First, in a collection of memoranda titled 'Private Thoughts' from Descartes' time in the military, an entry from around 1619 indicates his intention to write a book with the proposed title 'Thesaurus Mathematicus'. He states that 'The work is aimed at certain people who promise to show us miraculous discoveries in all the sciences, its purpose being to chide them for their sluggishness and to expose the emptiness of their boasts' (CSM 1985: 1.2; AT 1897–1910: 10.214). Here 'miraculous' appears to mean 'astonishing'. On a related theme ten years later he describes what he calls 'the science of miracles': 'There is a part in Mathematics, which I call the science of miracles, for what it teaches us to be so sure about air and light, that we can show by its means all the same illusions, which it is said that the Magicians cause to appear by the aid of the Demons (Descartes to unknown correspondent, September 1629; AT 1897–1910: 1.21). He suggests that, through a mathematically precise investigation of physics, we might be able to create a convincing world of illusions, perhaps like what we can in fact create today through Hollywood magic or computer-generated virtual reality. The purpose would be for entertainment, which Descartes suggests would be better than 'the hours that I would lose in gambling, or in useless conversations' (Ibid.). He appears to use 'miracle' hyperbolically meaning 'wonder', but there may also be an implied debunking of magicians who might claim that their illusions are miracles. These, Descartes suggests, can be explained scientifically.

More briefly, here are his other hyperbolic uses of 'miracle'. Descartes states that other geometers would not be satisfied with his mathematical solutions even if he had 'the gift of working miracles' (Descartes to Mersenne, August 23,

1638; AT 1897–1910: 2.320). Descartes proposes a geometry problem that would take a miracle for someone to solve without the right data. He states, 'it is so difficult that it seems to me that an angel, who would not have data, could not come to the end without a miracle' (Descartes to Pollot, October 21, 1643; AT 1897–1910: 4.26–7). In his *Letter to Voetius*, Descartes says: 'nor do I wonder at you, who are accustomed to say of our Clergymen, that it is a miracle if they keep chastity in celibacy' (*Letter to Voetius*, 1643; AT 1897–1910: 8.22). Descartes states that the geometry of snowflakes are 'among the greatest miracles of nature' (*Meteora*, 1644; AT 1897–1910: 6.652). Reflecting on what it takes to become a successful scientist, Descartes suggests that scientists should not present a more impressive demonstration than what they have actually discovered. By contrast, he says hyperbolically, 'the tricks of the charlatans often deceive; and, if it may be said, the miracles themselves are adulterated by the Devil' (Descartes to William Boswell?; 1646; AT 1897–1910: 4.690). Here he seems to suggest that the astonishing demonstrations by pseudoscientists are selfishly motivated.

What we learn from these hyperbolic colloquial references to 'miracle' is that Descartes was comfortable with the term in ordinary conversation, which stands out in sharp contrast to his more technical uses that follow. We might hypothesize that he intentionally made these hyperbolic references to de-supernaturalize the word 'miracle'. That is, in a sense, he might have been attempting to redefine the term 'miracle' as an equivalent of 'astounding' or 'unbelievable', which would fit better with his mechanistic world view. While there is no evidence that he had this in mind, it would bring a consistent aim to his colloquial and technical uses of the term.

2. Counterfactual Uses of 'Miracle'

Descartes' second use of 'miracle' is as a literal counterfactual, such as 'it would be a miracle if ice did not melt in this hot weather.' Here 'miracle' is understood in its technical sense as a disruption in the ordinary course of nature, but it is presented only as a hypothetical with no claim that such a disruption took place. Here are five such cases presented chronologically, all of which involve scientific claims. His purpose is to present a mechanical explanation of some phenomenon that is so compelling that, under those conditions, it would take a violation of the laws of nature for the phenomenon not to occur.

When discussing evaporation on bodies of water, Descartes states counterfactually: 'how could it be, without a miracle, that in hot weather and in full midday, the sun, overlooking a lake or a marsh, failed to emit many vapors?' (*Les Meteores*, 1637; AT 1897–1910: 6.246). Next, Descartes proposes that tiny molecules of 'subtle matter' pass through the pores of bodies such as leather and

wood, and, counterfactually, it would 'need miracles to prevent them from moving in all the various ways they may be impelled' (Descartes to Morin, Sept. 12, 1638; AT 1897–1910: 1.565). Next, Descartes describes the anatomy of the heart and comments that when 'the valves with which they are fortified, should then be open, unless it is stopped by a miracle, blood must enter the heart' (Descartes to Jan Van Beverwyck; July 5, 1643; AT 1897–1910: 4.4). He is suggesting that the heart operates so mechanically that it would literally take a disruption of the laws of nature for it not to move blood through it. Similarly, Descartes describes two independent movements of a wheel on an axis, and states that the observer 'sees that this is clearly necessary, so much so that it would be a miracle if it happened otherwise' (Descartes to unknown correspondent, February 1646; AT 1897–1910: 4.359). Finally, in another letter to the same correspondent, Descartes states that he is attempting to explain the origin of the world and finds that his account fits much better with the truths of faith in Genesis than the Aristotelian interpretation. He states counterfactually that 'I discovered, not without a miracle, that the whole could be explained much better, according to my thoughts' (Descartes to William Boswell?; 1646; AT 1897–1910: 4.698). The message we get from these counterfactual uses is that they offer something like a test for the completeness of a mechanical explanation of some phenomenon. If the explanation is sufficiently complete, then it would take a literal miracle for the phenomenon not to occur.

3. Debunked Miracle Claims

His third use of the term miracle is again technical, and his discussions seek to expose false claims of miracles. These are particularly important for establishing the boundaries of his mechanistic world view, and how we should seek naturalistic explanations of things as much as possible. There are nine of these, presented here chronologically. In an early paper titled 'Study of the Good Mind' from about 1620, Descartes relates how, in its formative years, the Brotherhood of the Rose-Cross invented a miraculous story to boost its appeal to visitors. He states, 'So as not to leave their foundation without a miracle, they pretended that the grotto where their Founder rested was illuminated by a sun which was at the bottom of the cave, although it only received its light from the sun of the world' ('Studium Bonae Mentis', ca. 1620; AT 1897–1910: 10.195). The miracle claim, then, was just a sham to boost the Brotherhood's credibility. Next, in *Rules for the Direction of the Human Mind*, written around 1628, Descartes questions the sophistication of ancient mathematics, and that 'certain machines of theirs, which are celebrated among historians' may have been very simple, but nevertheless 'could easily be elevated by an ignorant and wonder-struck multitude to

the reputation of miracles' (AT 1897–1910: 10.376). CSM translates 'miracula' as 'marvels' (1985: 1:18), in which case this is an example of colloquial hyperbole. However, it probably makes more sense to see it as a miracle in the technical sense, where the ignorant masses actually believed that the ordinary course of nature was being disrupted. The debunking here is that the ignorant masses are just wrong.

Next is the discussion of St. Bernard's image on a stone, which we examined earlier and 'whether the veins of the stone can represent it without a miracle' (Descartes to Mersenne, June 19, 1639; AT 1897–1910: 2.557). Descartes prefers the naturalistic explanation of the resemblance. Next, Descartes advises Mersenne on how to respond to someone who claims that motion and shape are insufficient to explain the complex properties of physical bodies, such as wine, without bringing in miracles. Next, Descartes tells Mersenne: 'You can remove this difficulty by telling him that they have all been explained already, as have all the other properties perceptible by the senses. But not a word about miracles' (Descartes to Mersenne, October 28, 1640; AT 1897–1910: 3.214). After describing the physical nature of clouds, Descartes expresses hope that, in the future, his readers 'will see nothing in the clouds, the cause of which they will not easily notice, nor will they regard it as a miracle' (*Meteora*, 1644; AT 1897–1910: 720). Similarly, he argues that Comets operate by purely natural means and are 'neither to be regarded as a myth nor as a miracle' (*Principles of Philosophy*; 1644 Latin AT 1897–1910: 8.191; 1647 French AT 1897–1910: 9.190).

Next, the phenomenon of fire can also be explained from natural principles and physical causes that are 'known to all and admitted by all', without relying on 'miracles of sympathy or antipathy' (*Principles of Philosophy*, 1644; AT 1897–1910: 8.314–15). The use of 'miracle' here may only be colloquial depending on whether an advocate of sympathetic and antipathetic forces believed them to be inside or outside laws of nature. If inside, his use of 'miracle' is colloquial, and if outside he is debunking it. In either case, Descartes rejects these in favor of more science-based causal explanations. Next, Princess Elizabeth wrote to Descartes questioning the veracity of the miracle at Hornhausen Spring done by 'mercenary people', which, she suggested, should not 'persuade reasonable people' (Elizabeth to Descartes; October 10, 1646; AT 1897–1910: 4.523). Descartes responded in agreement that these are done by 'wretched people...who hope to make a profit from it'. He continues that the waters may have some natural benefits, but they are likely toxic and should be avoided (Descartes to Elizabeth, November 1, 1646; CSM 1985: 3.286; AT 1897–1910: 4.531–32). Finally, Descartes examines the claim that bodies of the blessed radiate some kind of light. He does not want to say that these rays are either bodies themselves or appear through 'the sheer force of nature', both of which would be false. However, he believes it is sufficient to say that 'the rays are corporeal, that is to say that they are proper-

ties of some bodies' which might serve to show that 'other similar properties can be put, by miracle, in the bodies of the Blessed' (Descartes to Mersenne, January 25, 1647; AT 1897–1910: 4.594). Thus, the rays themselves are not miraculous, but their occurrence in the blessed might suggest how the blessed could more miraculously have similar qualities. This is not an entire debunking, but it is important to remember that Mersenne, although a defender of Descartes, was a devout Catholic priest and Descartes is writing with Mersenne's beliefs in mind.

All of these efforts at debunking false miracles show his conviction that the world operates in a consistent natural way, and, if we try hard enough, we can arrive at scientific explanations of phenomena that might at first glance appear to disrupt the natural order of events. It is conceivable that this may be the full extent of Descartes' private view of miracles, which is that there simply are no genuine ones, and the proper scientific analysis of puzzling phenomena will reveal this. For his public views on miracles, however, we must continue.

4. Genuine Miracles

Descartes' fourth use of the term 'miracle' is in reference to ones that should be taken as genuine. Unsurprisingly, these all involve core Christian teachings, the denial of which would have serious consequences. Seven are presented here chronologically. The first is from his memoranda of 'Private Thoughts' from around 1620, which states: 'the Lord has made three miracles (*mirabilia*): something from nothing, free will, and God in man' (AT 1897–1910: 10.218). Because of its early date, there is not much philosophically that can be made of this. Creation and the incarnation would count as genuine miracles within his religious tradition. As to free will, it might be better to call this a 'wonder' (the primary meaning of '*mirabilia*') rather than a miracle. Next, God's act of creating and conserving the world comes up again in the *Discourse*. He argues that we should see creation as a miracle even if God created the world from Chaos, which then developed over time according to laws of nature, for conserving the world through the laws of nature is the same as creating the world. He states, 'we may believe without impugning the miracle of creation that by this means alone all purely material things could in the course of time have come to be just as we now see them' (*Discourse on Method*, 1637; CSM 1985: 1.133; AT 1897–1910: 6.45). The genuine miracle here is God both creating and conserving the world in a way that the world could not do on its own. Geoffrey Gorham argues that, in this passage, Descartes included conserving the world as a miracle along with creation itself as a means of blocking suspicions that he was a deist who believed that 'God's concurrence with nature amounts to nothing more than passively allowing the world to evolve into its current form' (Gorham 2004: 408).

Next is the Catholic doctrine of transubstantiation. In his reply to Arnauld's 'Fourth set of Objections' to the *Meditations*, Descartes interprets transubstantiation in a way that is more consistent with the new science and thereby reduces dependency on Aristotelean notions of accidents. As Descartes explains in this discussion, the traditional account of transubstantiation is that the substance of the bread and wine change into the substance of Christ, while the accidents of the bread and wine remain the same. Descartes' alternative explanation is that there is a surface surrounding the substance of the bread and wine, which, though not part of the substance itself, is like a boundary between the substance and physical particles that surround the surface. During transubstantiation, the substance changes to the body and blood of Christ, while the surface particles remain the same. To give an analogy, imagine that you had on your plate a breaded chicken nugget. An expert chef then comes along and replaces the chicken with tofu, leaving the breading exactly the same, so that it appears just like the original chicken nugget. This analogy is not exact, though, since Descartes clarifies that this surface is not just the outer perimeter of the object, but also extends into the pores within the object. Thus, he says, this boundary itself 'has absolutely no reality except a modal one' (*Meditations*, 1641; CSM 1985: 2.177; AT 1897–1910: 9.251).

Descartes maintains that this particle interpretation of transubstantiation is consistent with the Council of Trent's wording that the substance is changed, while the 'form' remains the same. For Descartes, this 'form' is none other than the surface that acts upon the senses. This, he says, solves many problems, including the gratuitous addition that 'the alleged real accidents existing apart from the substance of the bread [change] in such a way that they do not thereby themselves become substances' (Ibid.). This, he says, would involve a second miracle whereby accidents would exist apart from any substance. Accordingly, while Descartes still holds that the change of substance is a genuine miracle, he eliminates the need for that second miracle. This is the same strategy that he used when debunking the false miracles noted above by providing an alternative scientific explanation. In this case, though, he had no choice but to acknowledge that the change in substance was a genuine miracle, but he believed he had the latitude to debunk the second miracle. We might speculate that if Descartes was free to speak his mind on the subject of transubstantiation, he would have removed the miraculous change in substance also, perhaps just by seeing the entire eucharist ritual as symbolic. Considering the thousands of eucharistic rituals that took place daily within Europe's churches and monasteries, this would yield an enormous number of ongoing disruptions in the natural order. It was a victory for him to cut that number in half by eliminating the miracle of the free-floating accidents, but the victory was not a total one.

The next example appears in Descartes' response to attacks against him by Voetius in *Confraternitas Mariana* (1642). In response, Descartes accuses Voetius as being a self- proclaimed prophet, and contrasts him with the genuine prophets of the Old Testament who gained credence through 'great and indubitable miracles' (*Letter to Voetius*, 1643; AT 1897–1910: 8.124). This appears to be the only instance where Descartes references a Biblical miracle performed through a human, rather than by God directly. He is not necessarily expressing belief in the miracle, nor is he debunking it. But, at least for rhetorical purposes, he seems to recognize a story alleging a genuine miracle, which is something that Voetius, the would-be prophet, does not have to his credit.

Next, in a letter, Descartes again presents his new theory of transubstantiation based on physical particles. He explains that, in normal food consumption, particles of bread and wine mix with our blood, and this 'is done without a miracle.' But 'in the miracle of transubstantiation' this could not happen without Jesus' biological organs being present for the particles of bread and wine to mix with, which is impossible. Instead, during consecration, the particles of bread and wine 'supernaturally joined' with Jesus' soul. This would count as a genuine miracle since it could not be done through nature (Descartes to Mesland, February 9, 1645; AT 1897–1910: 4.168). Here is a case where Descartes is attempting to locate the precise laws of nature that would be violated through a miracle.

Next, in his correspondence with Frans Burman, Descartes discusses how humans prior to the great flood could have lived to such advanced ages. He responds that this is something which defeats the philosopher: and it may be that God brought this about miraculously, by means of supernatural causes and without recourse to physical causes (Descartes to Burman, April 16, 1648; CSMK 1991: 3.353; AT 1897–1910: 5.192). He dodges the issue here and only suggests as a possibility that this was through a genuine miracle. But the discussion shows two things. First, from Descartes' perspective, such longevity cannot be accounted for scientifically. Second, by not even attempting to offer a natural explanation, and not definitively saying it was miraculous, he leaves open the possibility that the stories of such longevity are not true. This, of course, is something that he could not say openly, but might be an indicator of his private views.

Finally, in another letter, Descartes argues that 'whatever we can know of God in this life, short of a miracle', is either deduced from principles of faith, which is obscure, or comes from natural notions which are 'only gross and confused on so sublime a topic'. For, the principles we draw on are in darkness and the uncertainty of all our reasoning. (Descartes to Newcastle?, March or April 1648; CSMK 1991: 3.331; AT 1897–1910: 5.136–37). The implication here is that there is a class of miraculous ways of knowing God through special providence, such as divine inspiration of prophets and writers of scripture. Such knowledge through special providence, then, fills a gap in our knowledge of God that is left

by the limitations of general providence. A corollary to this, though, is that if there were no special providence, then our knowledge of God would be pretty feeble. This might be revealing of Descartes' private views of God as he continued to chip away at special providence.

Concerning all of these 'genuine' miracles, then, it remains to be seen whether Descartes privately believed in them. But even if he was just playing it safe, he nevertheless publicly acknowledged them as genuine miracles that occurred outside of the ordinary course of nature, and it is the clarification of his public views that has been our primary order of business.

Conclusion

The theme behind all of Descartes' discussions of miracles is that we should minimize miraculous claims as much as possible and accept that events occur within the ordinary course of nature, which we can understand mechanically through modern scientific inquiry. For the private Descartes, it is possible that he believed all events with no exception followed the ordinary course of nature, but the public Descartes held that we must acknowledge that some events disrupt it, namely, miraculous events of traditional Christianity that would be unwise to dispute. Descartes' position on miracles is one that we might expect within the context of seventeenth-century European scientific inquiry. Indeed, we find similar themes in discussions of miracles by other modern philosophers at the time that minimize God's intervention in the natural order of things, such as those by Hobbes, Pascal, and Spinoza.[18]

Of the modern philosophers, though, Descartes' view of miracles is most similar to that of Malebranche. Both Descartes and Malebranche held that God sustains all causal relationships, although Malebranche is even more forceful about this by making it the foundation of his metaphysical theory of occasionalism.[19] Both philosophers also hold that God consistently orchestrates all causal

18. For example, Hobbes states, 'For in these times I do not know one man that ever saw any such wondrous work, done by the charm, or at the word or prayer of a man, that a man endued but with a mediocrity of reason would think supernatural. And the question is no more, whether what we see done be a miracle, [or] whether the miracle we hear or read of were a real work, and not the act of a tongue or pen, but in plain terms, whether the report be true or a lie' (Hobbes 1651/1994: 300). Pascal similarly states, 'Miracles are no longer necessary because we have already had them' (Pascal 1670/1966: 884). Spinoza argues that God never violates the natural order of things: 'Nothing, then, can happen in Nature to contravene her own universal laws, nor yet anything that is not in agreement with these laws or that does not follow from them. For whatever occurs does so through God's will and eternal decree' (Spinoza 1670/2007: 446).

19. Malebranche states his theory of occasionalism here: 'Thus, bodies have no action; and when a ball that is moved collides with and moves another, it communicates to it nothing of its own, for it does not itself have the force it communicates to it. Nevertheless, a ball is the natural

relationships according to strict laws of nature. Malebranche argues that the total laws of nature are small in number, which he says is a consequence of God's attribute of simplicity.[20] Finally, Malebranche also holds that God rarely diverges from these laws of nature through miracles.[21] Considering the influence that Descartes had on Malebranche, it is not surprising that their views on miracles are similar. In fact, this similarity might serve as a kind of confirmation that the picture presented here of Descartes' public view of miracles is an accurate one. The most noticeable difference between the two philosophers, though, is the persistent devotional approach that Malebranche takes when writing on God,[22] which is all but absent in Descartes. This contrast highlights a more reserved private side to Descartes on religious matters.

There is one last miracle reference in Descartes' letters that illustrates the profound clash of worldviews between traditional religion and the new science. In a letter to an unidentified correspondent, Descartes describes a conversation he had with Christina of Sweden about whether the universe is finite or infinite. Christina held it is finite, since Christianity maintains that the very purpose of the created cosmos is humanity, which is displayed in the miracles that God performs here for our benefit: 'The alliance of God with man in the incarnation of the Word, and so many miracles performed even to constrain the Sun in its course and its illumination, show well that humanity is the mistress of everything that makes up this great body that we see' (Descartes to unknown correspondent; May 11, 1647; AT 1897–1910: 10.621). By contrast, she argues, the alternate view that the universe is infinite undermines the foundations of Christianity. If it is infinite in size, then it is also infinite in duration, which rules out its creation and end as described in scripture. Further[23], if it is infinitely large, then our lives on

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cause of the motion it communicates. A natural cause is therefore not a real and true but only an occasional cause, which determines the Author of nature to act in such and such a manner in such and such a situation' (Malebranche 1674–5/1997: 448).

20. 'Order demands that the laws of nature by which God produces this infinite variety found in the world be very simple and small in number, as they in fact are, for this conduct bears the mark of an infinite wisdom' (Malebranche 1674–5/1997: 589).

21. 'For we must not have recourse to Miracles without Necessity. We ought to suppose that God acts herein by the simplest ways; and though the Lord of the Field ought to return Thanks to God for the Bounty, yet he ought not to imagine it was caused in a miraculous manner by a particular Will' (Malebranche 1680/1700: Treatise on Nature and Grace, Part 4.9).

22. For example, in a discussion of motion, Malebranche states 'Man, in himself, is nothing but weakness and infirmity. He cannot desire good in general, but by vertue of a continual impression from God, who does incessantly turn and force him towards himself…He could not so much as move his hand, if God did not communicate to his blood and to the aliment by which he is nourished, a part of that motion which he has spread through the whole mass of matter' (Malebranche 1677/1795).

23. In Chapter 6 of *The World*, Descartes suggests that the fabled world is infinitely extended (CSM 1985: 1.90), and he makes a similar case in *The Principles*: 'What is more we recognize that this world, that is, the whole universe of corporeal substance, has no limits to its extension' (CSM 1985:

earth are reduced to an insignificantly small size, and 'we will probably judge that all these stars have inhabitants, or rather lands around them, all filled with creatures smarter and better than us' and thus lose our opinion that we are 'of use to anything' (Ibid.).

As Christina lays out the problem, then, there is a conflict between the traditional Christian view of humanity's significance (which is supported by scripture, miracles, and other acts of divine special providence) and the new scientific view of an infinite cosmos that renders humanity insignificant. While Christina's target was the unidentified correspondent who defended the infinite universe theory, Descartes held this view too, perhaps unknown to Christina at the time. But this fact was certainly not lost on Descartes, who describes his conversation with Christina in great detail. The choice that Christina inadvertently presents to Descartes, then, is to either believe in the Christian miracles or believe in the new scientific view of an infinite cosmos, but Descartes cannot hold both. In the letter, Descartes states that at the time he thought of ways to reconcile the theory of an infinite universe with Christianity, but his explanations were only theoretical and he did not think Christina would take too well to them, so he just stayed quiet. Thus, Descartes' public side was silenced by his private side, and we will never know how he would have resolved the miracle issue in this case.

Competing Interests

The author has no competing interests to declare.

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1.232). Jasper Reid discusses Descartes' various arguments for this and concludes that Descartes' position rests on the basic intuition that 'Indefiniteness as such might only require the possibility of increase beyond any given point' (Reid 2019: 366).

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