DESCARTES EMBODIED
Reading Cartesian Philosophy through Cartesian Science

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What Descartes Should Have Told Elisabeth

A typical textbook account of the philosophy of mind in the seventeenth century goes something like this. Descartes believed in two kinds of stuff, mental stuff and material stuff, substances distinct in nature that go together to constitute a single human being. But Descartes also took it for granted that these two substances were capable of genuine causal interaction, that minds can cause bodily events, and that bodies can cause mental events, i.e., that acts of will can genuinely cause changes in the state of the human body, and that the state of the sensory organs and the brain can cause sensation and imagination in the mind. But, the story goes, Descartes went astray here and vastly underestimated the philosophical problems inherent in his position. Descartes, it is claimed, repressed, or even worse, simply ignored the central question his position raises: How is it even possible that an immaterial substance, like the mind, could conceivably act on an extended substance like the human body? According to the standard account, later philosophers recognized the inherent unintelligibility of Descartes’ position and started one of the largest cottage industries in the history of philosophy, the attempt to provide satisfactory solutions to the mind-body problem, intelligible accounts of how mental and physical events are related to one another.

Realizing the unintelligibility of the doctrine of causal interactionism, this cottage industry produced such noteworthy products as occasionalism, dual-aspect theory, pre-established harmony, and so on, all in the attempt to fill in the gap in Descartes’ dualist program.1

This general outline can (and has) been challenged; the actual history of philosophy is much richer than any of its rationalized reconstructions. Sympathetic commentators usually call attention to an important pair of letters that Descartes wrote to the Princess Elisabeth in 1643,2 where Descartes takes up just this question, the intelligibility of mind-body interaction, and offers a philosophically interesting and sophisticated account of why he thinks that the notion of mind-body interaction is perfectly intelligible on its own terms, and why it neither needs nor admits of clarification.3

Now, the letters to Elisabeth are carefully thought out responses to the very questions that troubled later philosophers about Descartes’ view, and as such, they deserve careful study. But there is a curious difficulty in using these letters as the key to Descartes’ position. No one seems to have noticed that Descartes is just not entitled to the answer he gives Elisabeth; despite Descartes’ clear endorsement, the answer he gives Elisabeth is blatantly inconsistent with other well entrenched aspects of the Cartesian system.

The defense of this claim will be the central task of this essay. I shall begin with an exposition of the account Descartes gives of mind-body interaction in the letters he wrote to Elisabeth in May and June of 1643, letters that form the first line of defense for Descartes’ interactionism among those commentators who are committed to defending Descartes’ position. After a short digression on a curious analogy Descartes makes between his position and the Scholastic account of heaviness and free fall, I shall examine Descartes’ answer to Elisabeth in some detail, and argue that it is inconsistent with the foundations Descartes gives to his theory of motion. Finally, I shall attempt to sketch out an answer that Descartes could have given to Elisabeth in 1643, an answer that seems both philosophically interesting, and consistent with the rest of his writings.

1 This standard account dates back to the seventeenth century. For an account of this reading in the texts of Spinoza, Leibniz, and Malebranche, see, e.g., Jean Laporte, Le Rationalisme

2 Descartes to Elisabeth, 21 May 1643, AT III 663–68; Descartes to Elisabeth, 28 June 1643, AT III 690–95.

Before entering into the argument proper, though, I would like to make a few prefatory remarks concerning the issues I intend to take up, and the issues I don't. The issue that I intend to focus on is that of the intelligibility of mind-body interaction. The issue is, admittedly, a fuzzy one, as fuzzy as the notion of intelligibility itself. But historically speaking, it is an important one, as the reaction of Descartes' contemporaries and successors shows. To make the question a bit more precise, I shall construe it, as Descartes and his contemporaries often seemed to do, as the problem of whether the notion of mind-body interaction is somehow intelligible on its own terms, or whether its intelligibility requires an explication, analogy, or analysis in terms of some other distinct variety of causal interaction, itself more basic, or, at least, better understood. To be more precise still, given the prominence of the notion of impact in the then mechanistic world view, the question of the intelligibility of mind-body interaction quickly becomes a question of whether mind-body interaction can be understood without somehow relating it to the way in which bodies cause changes in one another through impact. The question of intelligibility should be distinguished from the closely related question of whether or not the mind and body do, as a matter of fact, actually interact with one another. Though Descartes and his contemporaries and critics often link the two questions for obvious reasons, they are really somewhat independent.

One can hold that, despite the intelligibility of mind-body interaction, minds and bodies do not, as a matter of fact, interact with one another. Philosophically, some reason must be given over and above the bare intelligibility of interactionism for adopting that position. Descartes does have an answer to this question, and an interesting one: It is experience, he claims, "the surest and plainest everyday experience," as he writes to Arnauld, that convinces us of the truth of interactionism.

But as important as this question is, it will not interest me here. My concern will be with bare intelligibility.

Even more specifically, my main focus will be the bare intelligibility of the causal link in only one direction. Descartes' interactionism has two aspects: the mental causation of bodily events (volition) and the bodily causation of mental events (sensation and imagination). While both aspects are important, I shall be concerned mainly with the former, mind-body rather than body-mind causation. In part this is to narrow the range of the discussion. But more important, the account of body-body causation that I shall argue, runs through Descartes' writings on physics makes it, to my mind at least, virtually impossible to understand how he conceived of body-mind causation. The reasons for this will become clearer as the argument progresses, I hope, and I shall point them out when the time comes. But this is an issue that I would like to sidestep in this essay.

And finally, there is one last issue I would like to sidestep. It will become apparent that mind-body interaction is closely connected with the question of the unio substantiæ, as Descartes called it, the substantial or real union between the mind and body. As a consequence of his doctrine, strictly speaking, one should not talk about a causal interaction between two different things, a mind and a body; one should talk about the causal explanation of certain behavior or states of a single thing, the mind-body union, in terms of mental acts of will or the physical states of the body. But while I recognize that an understanding of Descartes' doctrine of the unio substantiæ is important to a full understanding of Descartes' position on sensation and voluntary action, I shall try as much as possible to avoid this tangled issue. And, consequently, I shall follow Descartes' usual practice, and that of his correspondents, and consider the problem as one of making intelligible the interaction between two substances.

I. The Doctrine of the Three Primitive Notions

Any attempt to come to terms with Descartes' thought on mind-body interaction must begin with a few short letters exchanged between Descartes and the Princess Elisabeth, the most explicit discussion of the

4 There are, of course, other ways in which the question of the intelligibility of mind-body interaction could be raised. One could take it to be a question about how interaction can be reconciled with certain commonsensical notions about causality, in particular with the so-called "realty principle" (the cause must, in some sense, contain everything that is in the effect), or with the intuition that causal relations can only hold among things that are sufficiently similar. On this question see, e.g., Richard A. Watson, op. cit., passim, but especially pp. 35-36; Louis Loeb, From Descartes to Hume (Ithaca, 1981), pp. 134-135; and chapters 1 and II of Ellen O'Neill's unpublished Ph.D. dissertation, Mind and Mechanism (Princeton, 1985). Another kind of incoherence involves the question as to how mind-body interaction can be reconciled with a law-governed conception of the material world like Descartes'. On this question see, e.g., Louis Loeb, op. cit., pp. 134-135; and Daniel Garber, "Mind, Body, and the Laws of Nature in Descartes and Leibniz," Midwest Studies in Philosophy 8 (1983), essay 7 in this volume.

5 Descartes for Arnauld, 29 July 1648, AT V 222.

6 For an account of the substantial union of mind and body and some aspects of its relation to the problem of interaction, see, e.g., Genevieve Rodis-Lewis, L'Oeuvre de Descartes (Paris, 1971), vol. 1, pp. 351-65; and the numerous references cited there; and Henri Goubier, op. cit.
problems raised by Descartes' interactionism in the corpus of his writings. The exchange begins with a question Elisabeth raises. She asks Descartes to explain:

how the mind of a human being can determine the bodily spirits [i.e., the fluids in the nerves, muscles, etc.] in producing voluntary actions, being only a thinking substance. For it appears that all determination of movement is produced by the pushing of the thing being moved, by the manner in which it is pushed by that which moves it, or else by the qualification and figure of the surface of the latter. Contact is required for the first two conditions, and extension for the third. [But] you entirely exclude the latter from the notion you have of the body, and the former seems incompatible with an immaterial thing. 7

Or, as Elisabeth put the question when, unsatisfied with Descartes' first answer, she wrote for further clarification:

And I admit that it would be easier for me to concede matter and extension to the mind than it would be for me to concede the capacity to move a body and be moved by one to an immaterial thing. 8

The problem Elisabeth has is an obvious and understandable one; she finds it impossible to conceive of how a non-extended mind can cause changes in an extended body. On the other hand, she finds the mechanist's concept of how one body can change the motion of another body at least reasonably unproblematic. There appears to be no mystery for Elisabeth with the phenomenon of impact that constitutes the basic concept in a mechanist physics like Descartes' own. What she seeks is some connection between the two domains, a way of understanding the seemingly incomprehensible mechanism of mind-body interaction in terms of the relatively more intelligible phenomenon of body-body interaction.

Descartes' reply is reasonably clear. Put briefly, Descartes denies that the mechanical explanation of change in terms of impact is relevant to the question as to how mind acts on the body. The claim is that we have a special notion in terms of which we understand mind-body interaction, a notion distinct from the notions in terms of which we under-

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7 Elisabeth to Descartes, 6/16 May 1643, AT III 661.
8 Elisabeth to Descartes, 16/20 June 1643, AT III 685. Other contemporary critics and correspondents made the same point to Descartes. See, e.g., Gassendi's remarks in his Fifth Objections, AT VII 331; Arnauld to Descartes [July 1648], AT V 215; More to Descartes, 11 December 1648, AT V 238-39.

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Descartes argues as follows in his first reply to Elisabeth:

First I observe that there are in us certain primitive notions which are, as it were, the originals on the pattern of which we form all of our other thoughts. ... First, there are the most general ones, such as being, number, and duration. ... Then, as regards body in particular, we have only the notion of extension, which entails the notions of shape and motion; as regards mind in particular, we have only the notion of thought, which includes the conceptions of the intellect and the inclinations of the will. Finally, as regards the mind and body together, we have only the notion of their union, on which depends our notion of the mind's power to move the body, and the body's power to act on the mind and cause sensations and passions. I observe next that all human science consists solely in clearly distinguishing these notions and attaching each of them to the things to which it applies. For if we try to solve a problem by means of a notion that does not apply, we cannot help going wrong. Similarly, we go wrong if we try to explain one of these notions by another, for since they are primitive notions, each of them can only be understood by itself. The use of our senses has made the notions of extension, shape, and movement more familiar to us than the others; and the main cause of our errors is that we commonly want to use these notions to explain matters to which they do not apply. For instance, we try to use our imagination ... to conceive the way in which the mind moves the body after the manner in which one body is moved by another. ... So I think that we have hitherto confounded the notion of the mind's power [force] to act on the body with the power one body has to act on another. 9

Descartes' full answer to Elisabeth is what might be called the doctrine of the three primitive notions. General notions aside, we have within us three basic ideas, that of mind, that of body, and that of their union. Each is separate, each is distinct, and each has its own domain of application; each is per se intelligible, and cannot be explained in terms of other primitive notions. Elisabeth's mistake is that of trying to explain one notion, that of mind-body interaction, which pertains to the primitive notion of the union of mind and body, in terms of impact, which pertains to another primitive notion, that of extension or body, something that is neither necessary, since each notion is per se intelligible, nor possible, since the notions are completely distinct. Mind-body interaction can be grasped only by grasping the unity of mind and body. Since the primitive notion of mind-body units is made "familiar and easy to us".

9 Descartes to Elisabeth, 21 May 1643, AT III 665-66. See also Descartes to Elisabeth, 28 June 1643, AT III 691-92; and Pr I 48. 
only through the senses, Descartes recommends that the young Princess 
\textit{abstain} from philosophy, and re-enter everyday life.\footnote{This is the general theme of the letter, Descartes to Elisabeth, 28 June 1643, AT III 690–95.} We have a notion that is per se intelligible in terms of which to understand interaction, and if anyone, like Elisabeth (or Arnauld, or Gassendi, or More, or Regius ...), fails to see this, it must be because their minds are confused and cluttered. What is called for is a bit of therapy, not argument or explanation. Go about your daily life, and you will find the appropriate notion, just as the unreflective man in the street does.

This is how Descartes tries to explain himself. It can, admittedly, look somewhat suspicious, as if Descartes is simply declining to deal with a serious problem, claiming to understand something that is just unintelligible. Worse than that, Descartes looks as if he is patronizing the sincere but penetrating young Princess who, many later readers have judged, actually got the better of the older and more distinguished Descartes in this exchange.

But I don’t think that this is fair. I agree with Descartes’ sympathetic commentators in seeing Descartes as offering a philosophically sophisticated answer to Elisabeth’s serious question. The doctrine of the three primitive notions is an interesting and not implausible claim about what is going on in the mind, about our native endowments. It is, furthermore, a claim that coheres well with the epistemology and account of our mental faculties that Descartes already worked out in the unpublished \textit{Regulae} and the then recently published \textit{Meditations}.

Descartes’ answer is a philosophically serious answer. While it may not ultimately hold up under philosophical scrutiny (what answer to what problem, alas, has?), it cannot be dismissed as begging the question or patronizing the questioner. On this much I agree with a number of friends of Descartes. But the defense of the intelligibility of Cartesian interactionism cannot end here. For the answer Descartes gave to Elisabeth, while interesting and, perhaps, defensible, is flawed in an important way; it is, I claim, not the answer that should have been offered by the author of \textit{Le Monde} and the \textit{Principia}.

II. The Heaviness Analogy

Before making good on my claim, though, I would like to digress for a few pages, and point out one comparison that Descartes does think illuminates the account of mind-body interaction, a comparison that involves the Scholastic account of free fall or heaviness. In fact, I want to deal with a question that ascends to this raises: How is this comparison different from the one that Elisabeth suggests? How is the use of this comparison consistent with Descartes’ apparent claim that comparisons can be of no use in illuminating mind-body interaction? But in addition to dealing with these questions, I want to point out something that this discussion of Descartes’ suggests, a way of looking at Descartes’ conception of mind-body interaction that will be helpful in understanding the account of that notion that, I shall argue, better suits Descartes’ system than the one he offered.

On the Scholastic account of heaviness, at least as Descartes understood it, the heavy body is impelled to the center of the earth by the \textit{real quality of heaviness}, something distinct from the body itself, something incorporeal.\footnote{For an account of the Scholastic theory of form and quality as Descartes understood it, and one of his principal lines of attack against it, see Etienne Gilson’s classical essay, "De la critique des formes substantielles au doute méthodique" in his \textit{Études sur le rôle de la pensée médiévale dans la formation du système cartésien} (Paris, 1930), pp. 141–90.} This account, which Descartes thinks is intelligible and generally understood,\footnote{At least he usually conceives this. Descartes takes a different position in his letter to Regius, January 1643, AT III 506, 507.} can be helpful in getting his correspondents to understand his conception of mind-body union and interaction. Thus, Descartes writes to Elisabeth:

\begin{quote}
When we suppose that heaviness is a real quality of which all we know is that it has the power \textit{(force)} to move the body that possesses it towards the center of the earth, we find no difficulty in conceiving how it moves the body or how it is united to it. We do not suppose that the production of this motion takes place by a real contact between two surfaces, because we experience in ourselves that we have a specific notion to conceive it by. I think that we misuse this notion when we apply it to heaviness, which as I hope to show in my physics [i.e., the yet to be published \textit{Principia Philosophiae}]. is not anything really distinct from body; but it was given us for the purpose of conceiving the manner in which the mind moves the body.\footnote{Descartes to Elisabeth, 21 May 1643, AT III 667–68. Descartes uses similar comparisons in other writings as well. See, e.g., Descartes to Hyperaspistes, August 1643, AT I 424; Descartes to [Arnauld], 29 July 1648, AT V 222–23; and the \textit{Letter of Mr. Descartes to Mr. C.L.R.} [i.e., Gersdorff], AT I 525.}
\end{quote}

It is important here to appreciate the difference between the analogy that Descartes appeals to, and the comparison Elisabeth makes between
mind-body and body-body interaction, a comparison that Descartes rejects. Descartes’ criticism of Elisabeth is that she is attempting to understand one primitive notion in terms of another, something that can only lead to grief. But the situation is altogether different with the Scholastic analogy to which Descartes appeals. As Descartes claimed in his reply to the Sixth Objections, in a passage to which he calls Elisabeth’s attention, the common idea of heaviness, the idea the Scholastics and the common man and the idea that Descartes himself had in his naive and sense-bound youth, is, in fact, derived from the idea we have of mind. Descartes writes:

The chief sign that my idea of heaviness was derived from that which I had of the mind is that I thought that heaviness carried bodies toward the center of the earth as if it contained some cognizance [cognition] of this center within it. For it could not act as it did without such cognizance, nor can there be any such cognizance except in the mind.  

Thus, Descartes can claim, as he did to Elisabeth in the passage I quoted earlier, our notion of how the real quality of heaviness acts on the body to which it is attached must be derived from the notion we have of how the mind acts on the body. Now, since Descartes assumed that his readers were conversant with the Scholastic account of heaviness, he thought that he could use this familiar doctrine to call his skeptical reader’s attention to the notion of mind-body union and interaction, and point out that, despite their claims of not being able to conceive how an incorporeal mind could act on an extended body, they really do have the notion in question. This is what he explained to Arnauld, to whom he offered the same analogy in 1648, five years after the letters to Elisabeth:

So, it is no harder for us to understand how the mind moves the body than it is for them [i.e., the Scholastics] to understand how such heaviness moves a stone downwards.  

Whether or not this explanatory device was successful, it is clear that Descartes is entitled to use it. Unlike the comparison Elisabeth presses, the comparison between mind-body causation and mechanical causation, in Descartes’ comparison there is no real analogy, no comparison

between two different notions. Rather, Descartes claims, there is an identity. The same notion, that of mind-body union and interaction is at issue in both contexts. Only in one of those contexts it is misapplied.

This is all a fairly straightforward and unproblematic exposition of what Descartes was up to, of why Descartes thought the analogy drawn from Scholastic science was helpful, and, unlike the analogy Elisabeth tries to draw from mechanist science, unproblematic. But I would like to point out an interesting aspect of Descartes’ use of the heaviness analogy. The account that Descartes gives of the Scholastic theory of heaviness makes the primitive notion of mind-body unity and the correlative notion of mind-body interaction conceptually basic in an extremely interesting sense. Descartes’ claim is that the Scholastic scientist is just projecting his innately given conception of his own composite nature onto the inanimate world, unless the Scholastic scientist had this primitive notion pertaining to the union of mind and body, he couldn’t understand the explanations he gives of phenomena in the inanimate world. That is, as Descartes understands it, our comprehension of Scholastic explanations in terms of substantial forms and real qualities is parasitic on the notions we have of mind-body unity and interaction. The notion we have of the interaction between mind and body is a kind of paradigm notion, a notion that is intelligible on its own terms (i.e., through the closely related notion of mind-body unity), but in terms of which at least some other seemingly distinct varieties of causal explanation are intelligible. Two things are worth noting about this paradigm. For one, it should be pointed out that though mind-body interaction is a paradigm with respect to Scholastic explanations, Descartes is unambiguous in thinking that Scholastic explanations in terms of forms and qualities are bad explanations. The Scholastic projection of mind and mental activity onto the material world is an illicit projection, in Descartes’ judgment. And second, and more important, it should be noted that although mind-body interaction is a paradigm for causal explanation, it is not the only paradigm, it is not universally applicable. There are, Descartes seems to claim in his reply to Elisabeth, some causal explanations, those that involve the mechanical interactions of bodies with one another, that cannot be understood through our understanding of mind-body interaction; our understanding of voluntary action in animate beings can no more

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14 Sixth Replies, AT VII 448. 15 Descartes for [Arnauld], 29 July 1648, AT V 222–23. 16 We don’t know Arnauld’s reaction, but the tactic wasn’t particularly successful with Elisabeth. See Elisabeth to Descartes, 10/20 June 1645, AT III 684.

17 This is exactly parallel to the account Descartes often gives of the common belief that material things are really red, or hot, or sweet. See, e.g., Pr 1 66–71.
clarify mechanical explanations than vice versa. Or so, in any case, Descartes tells Elisabeth.

III. Motion, Impact, and God

Let us return now to the main thread of my argument. In section I I presented Descartes’ answer to Elisabeth’s worries about the intelligibility of mind-body interaction. However, I suggested there that there is something radically wrong with the answer that Descartes gave Elisabeth; it is an answer, I claim, that goes against some of Descartes’ most deeply held beliefs about the foundations of physics. Now I must make clear just what I have in mind.

I would like to begin by focusing in on the comparison Elisabeth attempts to draw between mind-body interaction and body-body interaction, i.e., impact. Elisabeth finds body-body interaction perfectly intelligible. What she is asking Descartes, in effect, is to explain the one in terms of the other; she wants Descartes to explain how a nonextended and incorporeal mind can literally make contact with and impel an extended body. Descartes’ answer is to say that body-body and mind-body interaction are both intelligible, but on their own terms, that each must be comprehended through its own primitive notion, body-body interaction through the notion of extension, and mind-body interaction through the notion of the unity of mind and body.

Let us examine these claims of Descartes’. Since we are dealing with claims that relate to primitive notions and the notions that derive from, are comprehended through, fall under, etc., these primitive notions, we must first inquire into how it is that the primitive notions are related to the less primitive notions that fall under them. Descartes, if you remember, characterizes the relation as follows:

First I observe that there are in us certain primitive notions which are, as it were the originals [comme des originaux] on the pattern of which [sur le patron desquels] we form all of our other thoughts [connaissances].

Descartes is none too clear in this passage. But at very least, I think that Descartes means to say that if a given idea Q falls under a primitive notion P, then having P is in some sense necessary for having Q, and that no primitive notion distinct from P is necessary for having Q. P is the original of and pattern for Q in at least this minimal sense.

18 Descartes to Elisabeth, 21 May 1643, AT III 665.

19 One might even suggest that when Descartes says that mind and body are united, this claim simply means that they are capable of appropriate causal interaction. See, e.g., Henri Goubier, op. cit., p. 335. For a contrary view, that the mind-body union results in a third substance, a substance over and above the mental and material substances that make it up, see, e.g., G. Radin-Lewis, op. cit., vol. I, p. 353 and the references cited in vol. II, p. 349, note 49 or Janet Broughton and Ruth Mattern, “Reinterpreting Descartes on the Notion of the Union of Mind and Body,” Journal of the History of Philosophy 16 (1978), pp. 23-32.

20 See, e.g., Pt I 53, 61.
If we consider how motion must be understood... in accordance with the 'truth of the matter,' we must say that it is the translation [translatio] of one part of matter, or of one body from the vicinity of those bodies which immediately touch it and which are regarded as being at rest, into the vicinity of others. And I say... strictly speaking that it is a mode [of body], not something substantial, just as shape is a mode of a thing with shape, and rest is a mode of a thing at rest.21

Similarly, Descartes wrote to Henry More:

The translation that I call motion is a thing of no less entity than shape: It is a mode in a body.22

Consequently, one can say that motion is understood through the primitive notion of extension in roughly the same way as shape is.23

But, it should be noted, Elisabeth's question didn't deal with motion per se. The comparison she is attempting to press is not a comparison between mind-body interaction and motion, i.e., the translation a body undergoes with respect to other bodies, but between the way in which a mind can cause motion in bodies, and the way in which bodies can cause motion in other bodies. That is, the comparison is not between interaction and motion, but between two purported ways of causing motion. And while motion itself may be a mode of body, something comprehended through the notion of extension, change in motion and its causes are something altogether different.

Now, how are we to understand body-body interaction, the way in which one body can change the speed or direction of another body's motion through impact? Elisabeth takes this to be intelligible in and of itself and to be in need of no further explanation. And although Descartes seems to concur with this in his answer to her, quite a different answer emerges from his more careful writings on physics from early to late. A way into Descartes' position is through the question: What are the laws that govern the behavior and interaction of bodies, and why do bodies obey the laws they do? One might, as some of Descartes' contemporaries tried to do, answer this question either through empirical studies24 or through an analysis of the nature of body and motion.25 But for Descartes, the laws that govern bodies in motion and impact must derive from the causes of motion.

But what are the causes of motion for Descartes? He answers this question in very general terms in a letter to More that I quoted earlier. Descartes writes:

The translation which I call motion is a thing of no less entity than shape: it is a mode in body. The force causing motion [ins... motus] may be that of God Himself conserving the same amount of translation in matter as He put it in the first moment of creation; or it may be that of a created substance, like our mind; or of any other thing to which He gave the force to move a body.25

The causes of motion, then, are God, or minds.27 Now, the mental causation of motion is something of great importance to Descartes, as we have seen already. But in physics, it is the divine causation of motion that is mostly at issue. And it is from an understanding of how God causes motion that the laws of motion are derived.

Descartes begins his discussion of the causes of motion and the laws it obeys with the following statement:

15 This seems to be the strategy Thomas Hobbes adopts, e.g., in De Corpore, chapter 13. This is also the strategy that Leibniz sometimes attributed to his own youthful works in physics, the Thesaurus Matheseos and the Hypothese Physica Nova. See, e.g., Leibniz's remarks at the time these works were being written, in Leibniz to Oldenburg, 13/23 July 1676, in Leibniz, Sämtliche Schriften und Briefe (ed. Preussischen Akademie der Wissenschaften), series II, vol. I (Darmstadt, 1926), p. 59, or Leibniz's letter on this early program in P. P. M. Ashtekar, "Leibniz's Philosophy of Physics" (1965), in G. W. Leibniz (ed. C. I. Gerhardt), Mathematische Schriften, vol. VI (Halle, 1860), p. 240, translated in P. P. Weiner (ed.), Leibniz Selections (New York, 1951), p. 128. In some of his polemical writings against the Cartesians, Leibniz gives the misleading impression that for Descartes, too, the laws of motion are to be derived from the nature of body. See, e.g., the essay that Weiner has entitled, "Whether the Essence of a Body Consists in Extension," in Leibniz (ed. C. I. Gerhardt), Die Philosophischen Schriften, vol. IV (Berlin, 1880), pp. 69-66, translated in Weiner, op. cit., pp. 100-2.

16 Descartes to More, August 1649, AT IV 403-4.

17 P. H. J. Hornen has suggested that the "other things" to which God gave the ability to cause motion in bodies are just other bodies. See the excerpt from his Cosmologia translated as "Descartes's Mechanicism" in Willis Doney, ed., Descartes (Garden City, 1977), pp. 353-65, esp. p. 359. But it is interesting that in the sections of Principia II that deal with the causes of motion, properly speaking, sections 39 and following, bodies are not mentioned as genuine causes. However, in Pr II 40 Descartes does mention, in addition to human minds, angelic minds as possible causes of motion. Angelic minds as causes of motion also come up in the letter Descartes wrote to More that immediately precedes the one from which I quoted. See Descartes to More, 15 April 1649, AT IV 347. This suggests that the "other things" in question in the August 1649 letter are not bodies, but angels.

21 Pr II 25. See also Pr II 27.

22 Descartes to More, August 1649, AT IV 403.

23 Despite what Descartes says, this cannot be quite right, since motion, unlike shape, involves time or, at very least, change.

24 Though the question is highly debated, this is at least one reading of what Galileo thought he was up to. For this reading, see, e.g., Stillman Drake, Galileo Studies (Ann Arbor, 1979), especially Drake's polemical introduction. For Descartes' nutshells assessment of Galileo's work, see Descartes in Montaigne, 31 October 1648, AT II 480.
After having considered the nature of motion, we must consider its cause, and that is twofold: first, indeed the universal and primary cause, which is the general cause of all motions in the world; and then the particular cause, by which it happens that individual parts of matter acquire motions which they did not have before. And it seems obvious to me that the general cause in question is nothing else but God Himself.  

The distinction between the universal and particular causes that Descartes announces here makes it look as if he is dealing with a distinction between a prime-mover God who is the first cause, setting the world in motion, and other corporeal causes, which result in the world changing from moment to moment. But this is not the picture at all. The universal and general cause, God, not only sets the world in motion, but preserves motion in the world; the secondary causes to which Descartes refers, as it turns out, are not causes of motion over and above God, but rather three laws in accordance with which God Himself preserves motion in the world from moment to moment.

In order to understand just how this works, we must remember that for Descartes, the world must be preserved from moment to moment by God, if it is not to pass out of existence. But since preservation and creation are the same thing, Descartes argues, this is to say that God must continually re-create the world for it to persist. So, Descartes' God is not merely the prime mover; He is the general cause of motion insofar as it is His continual activity. His changing of the relative places of bodies from moment to moment while keeping them in existence constitutes motion in the world. Consequently, the laws that bodies in motion obey must derive from the way in which God continuously re-creates the world. And this, indeed, is just how Descartes derives those laws. The first general principle Descartes notes is his famous conservation of motion law. This law is derived from the immutability of God. Descartes argues that:

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88 Pr II 36. See also Descartes to [the Marquis of Newcastle], October 1645, AT IV 348.
89 See Meditation III, AT VII 48–49; Second Replies, AT VII 165; Pr I 16.
90 The continual re-creation account of God’s activity creates a curious difficulty for the mental causation of events in the material world. When God is re-creating the material world from moment to moment, He must put each material thing somewhere when He re-creates it. But if it is God who determines the position of bodies from moment to moment, how is it possible for minds to affect the momentary position of a body? There seems to be no room for minds to act on Descartes' continual recreation picture. Nicolas Malebranche develops this difficulty into an argument for occasionalism in the seventh of his Entretiens sur la métaphysique.

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We must understand God to be perfect not only insofar as He is immutable, but also insofar as He works with the greatest constancy and immutability. Whence it follows that it is most consistent with reason that we think that from this alone that God moved the parts of matter in different ways when He first created them, and now conserves all that matter in the same way and for the same reason He created it before, that He would also conserve the same amount of motion in it always.  

This is Descartes' "master law" of motion. But the secondary laws are also derived, as the master law was, from God's activity. Descartes writes:

And from this same immutability of God, certain rules or laws of nature can be understood, which are secondary and particular causes of the different motions which we notice in individual bodies.

The dependence of the first two of the secondary laws on God's immutability as a cause of motion is evident. These laws, the so-called Cartesian laws of inertia (laws of persistence would be more accurate) mandate that certain states in bodies, the state of motion itself in the first law, and the state of moving in a particular direction in the second, persist. These follow directly from the immutability of God, who, Descartes writes, "preserves motion precisely as it is at that very moment of time in which he conserves it."

The third law, the law dealing with impact and the way in which one body can change the state of another body, is somewhat more difficult. In order to continue to argument, Descartes must argue that the immutability of God requires that He change the motion of a given body under certain circumstances, when, for example, it is hit by another body of appropriate size and speed (force of going on). And this, indeed, is how Descartes argues. The intuition is this. The fact that there is no space devoid of body, together with the fact that God created a world of bodies in motion entails that if God is to preserve motion in the world, as His immutability requires, He must change the motion of at least some bodies as they encounter one another. Thus Descartes writes in the Principia, in defense of his law of impact:

All places are filled with body and at the same time the motion of every body is rectilinear in tendency; so clearly, when God first created the world, He must not only have assigned various motions to its parts, but also have caused their mutual impulses and the transference of motion from one to another, and since He now preserves motion by the same activity and according to the
same laws, as when He created it, he does not preserve it as a constant inherent property of given pieces of matter, but as something passing from one piece to another as they collide. Thus the very fact that creatures are continually changing argues for the immutability of God.36

Descartes’ reasoning here is hardly a model of clarity and distinctness. But at least this much is clear: For Descartes, impact and the changes in bodily motion that result from impact are nothing but the changes that God must make in re-creating the world from moment to moment in order to accommodate the motion of bodies to one another. Strictly speaking, bodies in motion are not real causes of change in impact, it would appear; motion transferred, motion begun, and motion ended in impact must derive from God himself, shuffling bodies about as part of the process of “conserving the same amount of translation in matter as He put in it the first moment of creation,” as he wrote to More.37

(Here, by the way, is the reason why body-mind causality must be problematic for Descartes, as I suggested earlier. The picture one gets from the physics is one of inert matter being shuffled around from moment to moment by an active God and, from time to time, by active incorporeal minds. But given the inertness of matter on this picture, in what sense can one say that the body can cause changes in mental stuff?)

The discussion of the last few pages has taken us a bit out of our way. I started with the claim that Descartes seems to make to Elisabeth, that body-body causation must be understood through the primitive notion of extension. I claimed that while this may be true of motion simpliciter which is, indeed, a mode of body, the case of body-body interaction or impact is more complex, at least as analyzed in Descartes’ writings on physics. An account of impact led us from motion simpliciter to its causes, to God and the way in which He acts on the world in shuffling bodies about from moment to moment. So, it seems, a full understanding of body-body interaction requires that we understand not only motion, a mode of extension, but the way in which God acts on the world. But under which of Descartes’ three primitive notions does this fit?

Descartes never takes this question up in quite those terms. But a very similar question does arise in the all too brief correspondence with More at the end of Descartes’ life. One of More’s deepest criticisms of Descartes concerns the doctrine that the essence of material substance is extension. More argues that material substance is not mere extension, but tangible or impenetrable extended stuff. As part of his attack, More makes the claim that spirits and even God are extended.38 In the case of God, More argues:

Now, the reason why I judge that God is, in His way, extended is that He is omnipresent and intimately fills the whole machine of the universe and each of its individual parts. For how could He imprint motion on matter, which He once did, and which He actually does now, according to you [i.e., Descartes], unless He now as it were touches the matter of the universe, or at least once did? . . . God is thus in His way extended, and consequently, God is an extended thing.39

Descartes’ answers to More’s general attack are quite interesting, and bear interesting relations to his responses to Elisabeth’s general worries about how incorporeal substances can move extended bodies.40 But most interesting is his answer as to how we can conceive of a nonextended God as being able to act on an extended world. Descartes writes:

It is no disgrace to a philosopher to believe that God can move a body, without regarding God as corporeal; it is no more a disgrace to Him to think the same of other incorporeal substances. Of course I do not think that any mode of action [modus agendi] belongs univocally to both God and creatures, but I must confess that the only ideal I can find in my mind to the way [modus] in which God or an angel can move matter is the one which shows me the way in which I am conscious I can move my own body by my own thought.41

This comes as close as one could like to answering my question. The way God acts upon the world in sustaining motion and rearranging bodies in impact must, it seems, be derived from the conception I have of how I act upon my body; it, too, must be derived from the primitive notion of the unity of mind and body. Descartes’ answer to Elisabeth,

36 See, e.g., More to Descartes, 11 December 1648, AT V 238–40; More to Descartes, 5 March 1649, AT V 301; More to Descartes, 23 July 1649, AT V 379.
37 More to Descartes, 11 December 1648, AT V 238–39. This seems similar to a point Spinoza makes in defense of his claim that God must have the attribute of extension. See Ethics I, prop. 15, scholium, in Spinoza (ed. Carl Gebhardt), Opera (Heidelberg, 1925), vol. II, p. 57.
38 Compare, e.g., the discussion of the sense in which God is extended in potestas in the letters to More (Descartes to More, 15 April 1649, AT V 342; Descartes to More, August 1649, AT V 402) with Descartes’ remarks to Elisabeth about the sense in which it is proper to say that mind is extended (Descartes to Elisabeth, 28 June 1645, AT III 694).
39 Descartes to More, 15 April 1649, AT V 342.
thus, cannot have been the correct answer, the answer that he should have given, on his own principles. Body-body interaction is not fully intelligible under the primitive notion of extension. A full understanding of bodies in impact, of how one body can alter the motion of another, requires that we understand how God acts on the world. And this, in turn, requires that we be familiar with the way our minds act upon our bodies. So, if there is something wrong with the comparison that Elisabeth tries to draw between mind-body and body-body interactions, it cannot be what Descartes says it is; it cannot be an illicit intermingling of discrete primitive notions. For the same primitive notion is ultimately involved with both.

IV. What Descartes Should Have Told Elisabeth

The argument of the previous section undermines Descartes' answer to Elisabeth. Elisabeth's attempt to understand interaction through impact is not wrong for the reason Descartes says it is; Elisabeth is not confusing concepts that fall under different primitive notions. This much is clear. But the most interesting question still remains to be faced: how does this observation affect the claim for which Descartes is trying to argue? In responding to Elisabeth, Descartes is attempting to establish that mind-body interaction is per se intelligible, or, at least, intelligible through the closely related notion of mind-body unity, and that Elisabeth's attempt to connect mind-body interaction with body-body interaction is neither possible nor needed. I have shown that the argument he offers for these claims through the doctrine of the three primitive notions is not, on Descartes' own terms, correct. But what becomes of the claims themselves? Ironically enough, I think that my Cartesian refutation of Descartes' actual response to Elisabeth, if anything, strengthens his position. The considerations concerning motion and impact drawn from Descartes' writings on the foundations of physics suggest a line of defense for the claims in question which is more consistent with the rest of his works than the one he offered to Elisabeth, and which is, I think, philosophically stronger than the one he actually used. I should point out here that I make no claim that Descartes ever used, or even saw the argument that I will try to develop in this section. All I claim is that it is an argument he could have used, and perhaps, should have used.

Let me begin setting out this new and improved answer to Elisabeth by recalling the earlier discussion of the analogy that Descartes appeals to, and, in doing so, the analogy with the Scholastic account of heaviness. I pointed out that what allows Descartes to use that analogy is his claim that in this case we are not dealing with two different notions, but only one. The claim is that the Scholastic account of heaviness is comprehensible because it involves a projection of our composite nature onto the inanimate world. The real quality of heaviness is thought of as a kind of mind, united to the heavy body in just the way that the human mind is united to the human body, and, it is claimed, we conceive of heaviness acting on the heavy body in drawing it to the center of the earth in just the way we conceive of the mind acting on the body. Thus, the Scholastic mode of explanation is parasitic on the idea we have of mind-body interaction in the sense that if we didn't understand how minds act on animate bodies, then we wouldn't understand how forms or qualities act in inanimate bodies. Furthermore, one can, perhaps, say that the notion we have of mind-body interaction is a paradigm notion with respect to the Scholastic account of heaviness, and, more generally, with respect to all Scholastic explanations in terms of form and quality, insofar as our understanding of these modes of explanation involves a projection of our notion of mind-body interaction onto the world of inanimate things.

The discussion of motion and impact suggests that something similar can be said about the relation between mind-body interaction and the mechanical conception of explanation in terms of impact. Now, it is true that the notion of mind-body interaction is not a paradigm notion with respect to impact in quite the same way as it is with regard to the Scholastic conception of heaviness. While the notion of mind-body interaction does enter into a full understanding of interaction, it is not a simple projection of our composite nature onto the inanimate world, as the Scholastic theory is. The notion of mind-body interaction enters in at only the deepest level of analysis of the notion of impact, when we attempt to understand how God, the first and continuing cause of motion in the world, the real cause for the changes in the motion of bodies in impact, can act upon the material world. Consequently, impact cannot be used as Descartes tries to use the Scholastic theory of heaviness, to call attention to the idea of interaction he claims we all have. But, the notion we have of impact is like the notion we have of the Scholastics account of heaviness in an important respect. Elisabeth, like most of her contemporaries, at least those sympathetic to the new mechanist science, took impact to be per se intelligible, in fact, the very model of intelligibility. What Descartes' analyses of motion and its laws purport to show is that this is not so. A full understanding of motion in the material world requires reference to God and His action on the
material world, and through this, requires reference to our mind's action on our bodies. In this way we can say that the notion of impact, like the Scholastic notion of heaviness, is parasitic on the notion we have of mind-body interaction; for impact as for the Scholastics' heaviness, mind-body interaction is a notion without which the notion of body-body interaction is, strictly speaking, unintelligible, despite appearances to the contrary. And though mind-body interaction is not paradigmatic in the easy and obvious way that it is with respect to Scholastic science, a full understanding of body-body interaction requires an appeal to the way our minds can move our bodies.

This suggests an interesting line of defense for Descartes' position on the intelligibility of mind-body interaction. Mind-body interaction seems to be, for Descartes, a paradigm for both mechanist and Scholastic causal explanation. Since there were the two main competitors at the time, we can say that, for Descartes, mind-body interaction is the paradigm for all causal explanation, it is that in terms of which all other causal interaction must be understood. And in this there lies a defense for the intelligibility of interaction altogether different from the one, based on the doctrine of the three primitive notions, that he offered to Elisabeth. Mind-body interaction must be basic and intelligible on its own terms since if it were not, then no other kind of causal explanation would be intelligible at all; to challenge the intelligibility of mind-body interaction is to challenge the entire enterprise of causal explanation. Furthermore, we cannot give a simpler or more easily understood account of causal interaction than mind-body interaction because there are no more basic or more inherently intelligible ways of explaining the behavior of anything open to us. We cannot appeal to analogies with impact to clarify mind-body interaction, as Elisabeth does, not because of any confusion of primitive notions, but because we must work the other way: body-body interaction must ultimately be understood through the notion we have of the way in which the mind acts on the body.

I should repeat that, despite suggestions of a position like this in the writings on motion, Descartes never said anything like this, to the best of my knowledge. But it is a philosophically interesting answer, one that is open to him and, I think, more consistent with his conception of causal interaction in the physical world than the account that he actually offered. It is, I think, the way of understanding interaction that Descartes should have offered Elisabeth.

In his *Traité de l'esprit de l'homme* (1664), Louis de La Forge, one of Descartes' early followers, wrote:

*I hold that there is no creature, spiritual or corporeal, that can change [the position of a body] or that of any of its parts in the second instant of its creation if the creator does not do it himself, since it is he who had produced this part of matter in place A. For example, not only is it necessary that he continue to produce it if he wants it to continue to exist, but also, since he cannot create it everywhere, nor can he create it outside of every place, he must himself put it in place B, if he wants it there, for if he were to have put it somewhere else, there is no force capable of removing it from there.*

(*Traité*, p. 240)

De La Forge's argument is an interesting one. He begins with two premises. The first is the doctrine of divine sustenance, that God must sustain the existence of every body, indeed, of every thing, mind or body, at every moment of its existence. Second, de La Forge assumes as a result, it would seem, that God causes motion in the material world by re-creating bodies in different places at different times. From this de La Forge draws the conclusion that only God can move a body. When God sustains bodies, He must sustain them in some place or other; He cannot sustain them everywhere, nowhere, or in any way independently of some place or other. And so causes of motion beside God, causes of motion as our own minds are supposed to be, are neither possible nor

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needed; if motion and rest are direct results of God’s sustenance of the material world, it would seem that there can be no room for other causes.

The position de La Forge is trying to establish here is a variety of occasionalism, and the argument I have sketched is one among many which Descartes’ followers used to establish the claim that God is the only genuine cause in the material world, at least. On this view, causal relations between two bodies, or between a mind and body, are not true causal links, but only occasional causal links which depend for their efficacy on God actually to impart the appropriate motion to the appropriate body. What is especially interesting is that de La Forge starts from what many commentators assume to be genuinely Cartesian doctrines to establish his conclusion. Descartes emphasizes in a number of places that “we have no force through which we conserve ourselves,” and so for this we must turn to God, who “continually reproduces us, as it were, that is, conserves us” (Pr I 21). Descartes appeals to this doctrine of divine conservation in proving his laws of nature, both in Le Monde and in the Principia Philosophiae, arguing that God is the first and continuing cause of motion in the world, and that acting with constancy in preserving His material creation, He must necessarily sustain the world in such a way that certain general constraints on motion are satisfied; quantity of motion is thus conserved, as is motion along a straight path (Pr II 358–359). The close connection between God’s sustenance of the world and His role as cause of motion in the inanimate world have led a number of commentators to see something like de La Forge’s view in Descartes, the view that God’s role as a cause of motion in the world is inseparable from His role as a sustainer of the world, that God causes motion by creating bodies in different places at different times.

De La Forge’s premises seem to belong to Descartes as well. But, if so, then it would appear that, like it or not, Descartes too must be committed to de La Forge’s conclusion that God can be the only cause of motion in His material world, that, contrary to our “most certain and most evident experience,” mind cannot really cause motion in the world (AT V 222). This is the question I would like to examine in this essay. In the end, I shall argue that, when we understand Descartes’ doctrine of divine sustenance and of the way God enters the world as a cause of motion, we shall see that, wherever de La Forge’s views lead him, Descartes need not be committed to occasionalism, at least not in this way. When we understand just how God causes motion, we shall see that Descartes’ God can leave plenty of elbow room for other causes to produce their effects, indeed, produce them as directly as God Himself does.

I

It will be helpful to begin the story with a brief discussion of Descartes’ doctrine of divine sustenance. Descartes writes in Meditation III:

All of the time of my life can be divided into innumerable parts, each of which is entirely independent of the others, so that from the fact that I existed a short time ago, it does not follow that I ought to exist now, unless some cause as it were creates me again in this moment, that is, conserves me. [AT VII 49 (CSM II 33)]

Now, Descartes argues, “plainly the same force and action is needed to conserve any thing for the individual moments in which it endures as was needed for creating it anew, had it not existed” [AT VII 49 (CSM II 33)]. Clearly such a power is not in us; if it were, Descartes reasons, I would also have been able to give myself all the perfections I clearly lack [AT VII 168 (CSM II 118)]. And so he concludes that it must be God that creates and sustains us [AT VII 111, 165, 168, 369–70 (CSM II 80, 116, 118, 254/5); Pr I 21]. This conclusion, of course, holds for bodies as well as for us. It is not just souls, but all finite things that require some cause for their continued existence. And, as with the idea of ourselves, “when I examine the idea of body, I perceive that it has no power [vol] in itself through which it can produce or conserve itself” [AT VII 118 (CSM II 84); cf. AT VII 110 (CSM II 79)]. And so we must conclude that the duration of bodies, too, must be caused by God, who sustains the material world He created in the beginning.

Descartes conceives of God’s continual sustenance of his creatures as their efficient cause: “I should not hesitate to call the cause that

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2 For a brief account of occasionalism among seventeenth century Cartesians, see chapter 5 of Jean-François Bertaut, L’Advenu philosophie Givaud de Condillac (1655–1684) (The Hague: Martinus Nijhoff, 1973). There are a number of varieties of occasionalism. Here I am only concerned with the claim that God is the only genuine cause of motion in the material world.

3 The numerous references to Descartes’ texts will be given in the footnotes.

sustains me an efficient cause" [AT VII 109 (CSM II 79)]. But God’s causality here is in one respect importantly different from other efficient causes that we are familiar with from our experience. In reply to Gassendi’s Fifth Objection, Descartes distinguishes between two sorts of efficient causes, a *causa secundum fieri*, a cause of becoming, and a *causa secundum esse*, a cause of being. Roughly speaking, as Descartes understands the notions, a *causa secundum esse* is a cause which must continue to act for its effect to continue, unlike a *causa secundum fieri*, which produces an effect that endures, even after the cause is no longer in operation or even in existence. An architect, thus, is the cause of becoming with respect to a house, as is a father with respect to his son. But Descartes claims

> the sun is the cause of the light proceeding from it, and God is the cause of created things, not only as a cause of becoming, but as a cause of being, and therefore must always flow into the effect in the same way, in order to conserve it. [AT VII 969 (CSM II 254/5)]

And, so just as we ordinarily think that the sun must continue its illumination for daylight to persist, so must God continue His activity in order for the world and its motion to be sustained. This continual sustenance is also unlike the more ordinary efficient causes in so far as it requires a kind of power beyond the capacities of created things. Whereas finite things may be able to stand as the efficient causes **secundum fieri** of things in the world, only God, strictly speaking, can stand as their cause **secundum esse**. As we noted earlier, in Meditation III Descartes declares that: “plainly the same force and action is needed to conserve any thing for the individual moments in which it endures as was needed for creating it anew, had it not existed” [AT VII 49 (CSM II 93)]. From this Descartes infers that “it is also one of those things obvious by the light of nature that conservation differs from creation only in reason” [AT VII 49 (CSM II 33)]. That is, the activity and power needed to sustain a thing in its existence is identical to the activity and power necessary to create anything from nothing [cf. also AT VII 165, 166 (CSM II 116, 117)]. Elsewhere he puts the point a bit differently, suggesting that conservation is to be understood as the “continual production of a thing” [AT VII 243 (CSM II 169); cf. Pr II 43], or, more guardedly, suggesting that God as it were (veluti) continually reproduces His creatures [Pr I 21; cf. AT VII 110 (CSM II 79)].

In the following section, we shall investigate how Descartes’ God causes motion while sustaining the world. But, before turning to that question, I would like briefly to discuss an issue closely related to the questions under discussion here, that of temporal atomism. A number of commentators take Descartes’ language quite literally when he says that God must continually re-create His creatures. On their view, Cartesian time must, as a result, be a series of discrete timeless instants, created one after another like the frames of a motion picture. Such a view seems inevitably to lead to a position like de La Forge’s. The cartoonist creating an animated cartoon can cause his creatures to move only by drawing them in different positions in successive frames; so too for God, it would seem, were we to conceive of Him as the grand cartoonist with respect to His creation. In this way, God’s sustenance would seem to be inseparable from His role as cause of motion, and all genuine causes of motion other than God would seem to be frozen out.

But it is not at all clear that Descartes held such a position. In a recent study, Jean-Marie Beyssade has argued that Descartes’ God sustains the continuously flowing time of our experience. On Beyssade’s view, time for Descartes is much like body, infinitely divisible and not composed of any ultimate elements, elements such as the durationless temporal atoms are supposed to be. Beyssade does not deny, of course, that Descartes is concerned with timeless instants in a number of important contexts, and, indeed, that he even talks about God conserving bodies as they exist at a given instant [AT XI 44 (CSM I 96); Pr II 99]. But, Beyssade argues, such instants are not, strictly speaking, *parts* of duration. A hunk of extended substance can be divided into innumerable parts. But, for these divisions to be genuine *parts* of a body, they must be extended as well. Points, lines, surfaces, and geometrical objects that lack extension in length, width, and breadth, are not *parts* of a body, but *limits* or *boundaries*. So, Beyssade suggests:

> In the same way, every duration or part of duration contains a before and after . . . ; the instant is its limit or boundary. If we are not mistaken, Descartes always takes this word (“instant”) and its Latin original “instans” in the strict sense of a limit. (La philosophie première, p. 348; cf. p. 353)

5 Descartes does concede, under challenge, that the sun may not be an especially good

6 See, e.g., the references cited in note 4.

Durations, no matter how small, can be parts of an enduring world, and thus can be candidates for God’s sustaining activity. But, although there may be instants in duration as boundaries of finite durations, instants, Beyssade suggests, cannot be parts of an enduring world; they cannot compose durations, nor can we intelligibly talk about God creating a single instant by itself without creating the duration it serves to bound, any more than we can talk about God creating a two-dimensional surface, a mode of body, without the body that it bounds [AT VII 250/1, 433 (CSM II 174, 292)].

With this in mind, it is easy to see that there is really nothing in Descartes’ texts that unambiguously implies temporal atomism. The idea that all the parts of time are independent, the view we saw earlier in Meditation III, certainly does not; the parts of time in question there might plausibly be read as genuine parts of time, parts with duration, parts which are independent in the sense that God could create any stretch of time without creating preceding or succeeding portions of time. One can give similar readings to other passages in which Descartes talks about the independence of the present time from other moments or moments from one another. Even where Descartes talks of creating the things anew at every moment, even where Descartes makes it clear that God sustains things as they are in a timeless instant, there is no need to attribute temporal atomism to him. To say that God re-creates the world at every instant is to say that every instant can be regarded as the beginning, as the boundary of a newly created world. But, although every instant can be regarded as a moment of creation, it does not follow that what is being created is a bare instant or a sequence of bare instants, or that God could create an atemporal instant without creating a duration for that instant to bound.

But, just as Descartes was not committed to temporal atomism, neither was he committed to its denial; I know of few passages that cannot be plausibly interpreted either way. Indeed, I know of no passage to suggest that Descartes was particularly interested in the question of temporal atomism, one way or the other. And so it seems improper to argue from Descartes’ supposed temporal atomism to the claim that God causes motion through re-creating bodies in different positions at different times. If we want to know how God causes motion for Descartes, we should face the question directly.

9 In December 1639, Descartes tells Meresenne that he owns “une Somme de S. Thomas,” though it is not altogether clear to me whether this means a copy of Aquinas’s Summa Theologica or a summary of Aquinas. See AT II 630.
between their two notions of continual creation. The Thomist God conserves
the being of a world of substantial forms and essences. . . . But, on the con-
trary, in Cartesianism, there are no substantial forms any more. (Commentaire,
p. 341)

Gilson goes on to argue that, lacking substantial forms, Descartes, unlike the Scholastic, is doomed to a movie-show world of still frames, mocking the continuity of time and motion that the Scholastic is genu-
inely entitled to. Gilson's full argument is too complex to enter into here. But I would like to explore his initial observation a bit.

Descartes does, for the most part, reject substantial forms and this
does indeed make a difference, as Gilson emphasizes. But what differ-
ence it makes depends on how the notion is understood, and what it is
that takes the place of the absent forms. Now, the notion of a substan-
tial form is a basic notion in Aristotelian thought, and there are impor-
tant differences of conception among Scholastic thinkers with regard
to that notion. But, to understand the importance of the rejection of
substantial forms to Descartes' thought, we must begin with an account
of what the notion meant to him.

In very general terms, a substantial form is that which, joined to
matter (the materia prima of the Scholastics, ultimately) results in a
complete substance. But, more substantively, substantial form is that from
which the characteristic behavior of the various sorts of substances
derives. And, so Descartes notes, writing to his then disciple Henricus
Regius in January 1642, "they [i.e., forms] were introduced by philoso-
phers to explain the proper action of natural things, of which action
this form is the principle and the source" (AT III 506). Or, as the Con-
minian Fathers wrote in a book Descartes likely learned from as a
schoolboy,

There are individual and particular behaviors [functiones] appropriate to
each individual natural thing, as reasoning is to human beings, neighing is
to horses, heating to fire, and so on. But these behaviors do not arise
from matter . . . Thus they must arise from substantial form. (Gilson, Index,
§209)

More concretely, Descartes views substantial forms as substances of a
sort: "By the name 'substantial form' I have understood a certain sub-
stance joined to matter, and with it composing something whole that is
merely material" (AT III 502). And the sorts of substances they are is
mental substance, Descartes thinks, "like little souls joined to their

bodies" (AT III 648). And so Descartes characterizes the Scholastic
account of heavi ness which he himself once held as follows:

But what especially showed that the idea I had of heavi ness was derived from
that of mind was the fact that I thought that heavi ness bore bodies toward
the center of the earth as if it contained in itself some knowledge of it [i.e.,
the center of the earth]. For this could not happen without knowledge, and
there cannot be any knowledge except in a mind. [AT VII 442 (CSM II 298)]

If substantial forms are supposed to explain the characteristic behavior
of bodies of various sorts, then we must be thinking of them as inten-
tional entities, agents of a rudimentary sort, things capable of forming
intentions and exercising volition, little souls joined to matter. And so
the Scholastic doctrine of form and matter is, in a sense, just the image
of the Cartesian human being, an unextended soul united to extended
body and projected out onto the material world. Indeed, Descartes often
uses the supposed familiarity of the Scholastic model of heavi ness (which
everyone would have learned at school) to persuade those who have
trouble with mind-body interaction on his view that they already under-
stand how interaction is possible; if one can understand the Scholastic
account of heavi ness, then one can understand how the soul can move
the body, Descartes reasons, since the two cases are just the same. 13

It should be evident from Descartes' account of substantial form that
he does not reject forms altogether. Given that the human mind is the
very model of a form, it is not surprising to find Descartes saying from
time to time that the human soul is "the true substantial form of man" (AT II 505); indeed, it is "the only substantial form" he recognizes [AT
III 503; cf. AT IV 346, AT VII 356 (CSM II 246)]. Descartes from time
to time also uses Scholastic terminology and talks of the soul "informing" the body [AT IV 168; AT X 411 (CSM I 40)]. In this sense, Gilson
perhaps overestimates the difference between the world Descartes' God
sustains and that which Aquinas's sustains, insofar as both contain at
least some substantial forms. 14

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12 The remark in question relates to real qualities, strictly speaking, qualities that follow
directly from forms. But, in his polemics against the Scholastics, Descartes drew no distinc-
tion between substantial forms and real qualities.

13 For a fuller account of this, see §§ of Daniel Garber, "Understanding Interaction: What
15-32, essay 8 in this volume.

14 For a recent discussion of the human soul as substantial form in Descartes, see Marjorie
Greene, "Die Einheit des Menschen: Descartes unden Scholastikern," Dialectica, XL
But it is significant that Descartes' world has many fewer forms than Aquinas's does, that Descartes rejects all forms but those which pertain to human beings. This raises something of a problem for Descartes, however. The substantial form was that in terms of which the characteristic behavior of a body of a certain sort was to be explained. But, without form, what is to explain why horses neigh and fire heats, why cannon balls fall and smoke rises? In one sense, the replacement for explanation in terms of form is explanation in terms of size, shape, and motion — mechanical explanation. Indeed so, but the story does not end there. In order to explain the behavior of a body (say a cannon ball) mechanically, we must know more than just the size, shape, and motions of its parts and the surrounding medium; we must also know the relevant laws of motion, how a body as such can be expected to behave, what results when two bodies of given sizes, shapes, and motions encounter one another in collision, etc. Descartes replaces the multiplicity of Aristotelian substances, each with its own form and distinct characteristic behavior, with one kind of body which fills the entire universe and behaves everywhere in accordance with the same laws (cf. Pr II 23). But, in the absence of Scholastic substantial forms, Descartes must find some way of explaining the characteristic behavior of material substance, the laws of motion. And it is here that God enters as the "universal and primary [cause of motion], which is the general cause of all motions there are in the [physical] world" (Pr II 36). God is the cause of motion, what takes the place of the Scholastic forms Descartes banished from the inanimate world of nonhuman beings.

But this, of course, leads us back to the question I posed earlier in this essay: How does God cause motion in the world? And how is God's role as cause of motion related to His role as sustainer of body?

To answer this first question, we must, I think, reflect on how souls and the other forms Descartes attributed to the Scholastics were thought to cause motion. We must keep in mind here that the issue is under a cloud, so to speak, and it may turn out that, because of an argument like the one de La Forge gave, Descartes is not entitled to hold that the human soul causes motion. But, prima facie and despite the doubts of a number of his readers, Descartes certainly thought the question relatively unproblematic. Writing to Arnauld on 29 July 1648, Descartes noted:


16 This, in any case, is what he insisted on in writing to Elizabeth. See AT III 668-668, 689-695. What exactly he meant here is not entirely clear.

causes of motion, a mode in bodies assumed to be sustained by the
divine Sustainer who is the unique substantial cause.

God enters Descartes' physics to do the business substantial forms did
in the Aristotelian system, as he understood it, to cause bodies to behave
in their characteristic ways. And, I claim, when doing the business of
forms, Descartes' God is understood to cause motion in just the way
forms were taken to do it, that is, on Descartes' account, in just the way
that we do it: by way of an impulse that moves matter in a way that we
can comprehend only through immediate experience. This is not at all
clear as late as 1644 when, in proving his laws of nature in the Principia,
Descartes' account of God as cause of motion is deeply (and obscurely)
twined with his account of God as sustainer of the world (Pr II
36-42). But, by April 1649, Descartes wrote to Henry More:

Although I believe that no mode of acting belongs univocally to God and to
His creatures, I confess nevertheless, that I can find no idea in my mind which
represents the way in which God or an angel can move matter, which is dif-
ferent from the idea that shows me the way in which I am conscious that I
can move my own body through my thought. (AT V 547)

And, so Descartes suggests to More, God is conceived to move bodies
in just the way we do, using the same primitive notion we use to under-
stand how we move our own bodies.

If this is how we conceive of God as a cause of motion, then, it would
seem, we are conceiving of Him as a modal cause when it comes to
motion. Conceived as such, there would appear to be a distinction
between God as sustainer of the world, a substantial cause keeping
things in existence, and God as cause of motion, a modal cause causing
bodies to have the particular motion they have, determining, at least in
part, their modes. The difference between these two roles God plays
for Descartes comes out again in the correspondence with More. In his
letter of 5 March 1649, More asked Descartes if "matter, whether we
imagine it to be eternal or created yesterday, left to itself, and receiv-
ing no impulse from anything else, would move or be at rest?" (AT V
316). Descartes answers in his letter of August 1649: "I consider 'matter,
left to itself, and receiving no impulse from anything else' as plainly
being at rest. But it is impelled by God, conserving the same amount of
transference in it as He put there from the first" (AT V 404). The
picture that comes through here is a simple one. Bodies can be con-
served with or without the divine impulse. Without the impulse, they
would not move in motion. God's conservation of body seems sepa-

rable from His role as cause of motion, and as cause of motion, He
seems to act as we would in the circumstances; God's motion seems to
result from a divine act of will, a divine shove.

III

Now that we understand something of how God causes motion, we can
return to the question originally posed and offer an answer.

As de La Forge construed Descartes' views on God, continual re-
creation, and God's role as cause of motion, Descartes seems pushed
inherently toward occasionalism and the view that God is the only
cause of motion in the world; if God causes motion by re-
creating bodies in different places at different times, then there seems
to be no room for finite causes to act. But by now it should be clear
why Descartes need not be committed to such a view.

I have argued that, for Descartes, God enters as a cause of motion in
order to replace the Scholastics' substantial forms, and, in that role, he
can (and, in the More letters, at least, is) construed as acting in just the
way forms were thought to cause motion, that is, in just the way we cause
motion. As such, God both sustains bodies in their being and sustains
bodies in their motion. But, it is important to note, these two activities
seem to be quite distinct; in the one case, God is acting as a modal cause,
in the other, as a substantial cause. This is an extremely important
observation. There is no substantial cause but God, nor can there be,
since no other being has the ability to create and sustain the universe.

But, although God is a modal cause with respect to motion, there is no
reason to hold that God is the only such cause. God is conceived to act
as we do in causing motion; just as the finite cause of motion does not
exclude others, so the fact that God causes motion does not seem to
exclude other causes. This seems true even when we are talking about
causing motion in the same body. Just as two human beings can exert
their contrary impulses on the same bit of matter, so can we impose an
impulse contrary to the one God imposes. Indeed, we do so every time
we life a stone, on which God is imposing an impulse to move toward
the center of the earth.

And so Descartes would have to agree with de La Forge that God
cannot sustain bodies that are in no place at all or in indeterminate
places; the very possibility is absurd. But, I think Descartes might insist,
although God sustains bodies that have place, it is not the act of sus-
taining them that gives them place. What gives them place and the
motion that puts them in different places at different times is impulse or the lack thereof, a cause quite distinct from that by which bodies are sustained. These impulses may come from God Himself, but they might come from other causes, like our own minds [cf. AT V 409/41]. And, when they come from God, they are not to be identified with the cause by which He sustains the bodies He moves.

There are a number of important questions relevant to the topic at hand which space will not permit us to discuss. Most important, it would be valuable to discuss the relations between the conception of motion and its divine cause which I have been developing with the discussion of motion and rest and their laws in Part II of the Principles and in chapter 7 of The World – the sense in which motion and rest are distinct and the sense in which they are not, the sense in which motion and rest are states, and the way in which motion and rest give rise to forces that come into play at the time of collision. My story will not be complete until we see how the way in which Descartes’ immutable God causes motion leads him to the conception of motion (and its associated forces and laws) which underlies his program in natural philosophy.

But, incomplete as my preliminary sketch of Descartes’ position may be, it allows us to see one important feature that differentiates Descartes’ metaphysics of motion and his use of God as cause of motion from that of his avowedly occasionalist followers. What lies behind occasionalism as advanced by de La Forge and by many Cartesians of his generation is a deep worry about causality in the world of finite things; what comes up again and again is the view that finite things are incapable of any genuine causal efficacy, that producing an effect is beyond the power of any finite thing. God enters as the only being capable of producing any change in the world.18 Descartes’ view is quite different. Descartes never rejects finite causes as such; indeed, it is on the model of one particular finite cause, us, that all causes are understood, conservation excepted.19 When God enters as a cause of motion, it is simply on account of the fact that some finite causes needed to do the job are not available. But, even when God undertakes this task, it seems to me that Descartes can quite well hold that finite causes of motion are in no way squeezed out. Mind, indeed, can remain as direct a cause of motion for Descartes as God Himself.

19 See Garber, “Understanding Interaction.”

DESCARTES AND OCCASIONALISM

The doctrine of occasionalism was, of course, central to seventeenth-century metaphysics. On this widely held view, the changes that one body appears to cause in another on impact, the changes that a body can cause in a mind in producing a sensation, or that a mind can cause in a body in producing a voluntary action are all due directly to God, moving bodies or producing sensations in minds on the occasions of other appropriate events. And so, on this view, the tickling of the retina and subsequent changes in the brain are only the “occasional causes” of the sensory idea I have of a friend in the distance; the real cause is God, who directly moves my sense organs when the light approaches them, moves the parts of the brain when the sensory organs are moved, and then produces the sensory idea I have in my mind of another person’s face when my sense organs and brain are in an appropriate state. Similarly, it is God who is the actual cause of my arm’s movement when I decide to raise it to wave; my volition is only an occasional cause.

Now, occasionalism was widely held among many of Descartes’ followers; it can be found in various forms in Clauberg, Clereslier, Cordemoy, de La Forge, Geulinx, and, most notably, in Malebranche.1

1 For general accounts of occasionalism among the members of the Cartesian school, see, for example, Joseph Prout, Essai sur l’atomisme et l’occasionalisme dans la philosophie cartésienne (Paris: Paulin, 1907); Henri Gouhier, La vocation de Malebranche (Paris: J. Vrin, 1946), chapter III; Jean-François Bataille, L’avocat philosophe Géraud de Cordemoy (The Hague: Martinus Nijhoff, 1973), pp. 441–456; and Rainer Specht, Commercialis mensis et corporis: über Kausalvorstellungen im Cartesianismus (Stuttgart-Bad Cannstatt: Friedrich Frommann Verlag, 1966), chapters II and III.
And throughout its seventeenth-century career it is closely associated with Descartes' followers. But to what extent is it really Descartes' own view? To what extent is it fair to attribute this view to the founder of the Cartesian school? This is the question that I shall explore here.

I. A Letter to Elisabeth

I will begin my investigation with a passage from a letter that Descartes wrote to the Princess Elisabeth on 6 October 1645:

All the reasons which prove the existence of God and that He is the first and immutable cause of all the effects which do not depend on the free will of men, prove in the same way, it seems to me, that He is also the cause of all of them that depend on it [i.e., free will]. For one can only prove that He exists by considering Him as a supremely perfect being, and He would not be supremely perfect if something could happen in the world that did not derive entirely from Him. . . . God is the universal cause of everything in such a way that He is in the same way the total cause of everything, and thus nothing can happen without His will.

This passage would seem to be quite clear in asserting that God is the real cause of everything in the world; if "nothing can happen without His will," as Descartes tells Elisabeth, then surely it is reasonable to infer that Descartes was an occasionalist.

He may, in the end, turn out to be an occasionalist, but I think that this passage is not so clear as it may look at first. When reading this, it is very important to place it in context, and understand what exactly Descartes was addressing in the passage. In this series of letters, Descartes is trying to console Elisabeth in her troubles. In a letter of 30 September 1645, she wrote:

2 Indeed, when it first appears, it is closely associated with Descartes himself. It is an integral part of de La Forge's commentary on Descartes' _Treatise on Man_, and it is one of the central points of a letter Cerseleri, Descartes' literary executor, wrote to de La Forge in December 1660, a letter that appeals to the authority of "nos tro Maitre" on a number of occasions and that Clercier published alongside Descartes' own letters in one of his volumes of the philosopher's collected correspondence. On de La Forge, see Gouhier, _La vocation de Malebranche_, pp. 93-94; for the Clercier letter, see Claude Clercier, _M. Descartes . . . (tome III)_ (Paris, 1667), pp. 540-46. I am indebted to Alan Gabbey for calling the Clercier letter to my attention.

3 AT IV 319-14. This letter appeared in the first volume of Clercier's edition of Descartes' correspondence in 1657.

Descartes' reply, as quoted above, is that all things, including human beings acting freely, are under the ultimate control of an omniscient, omnipotent, and benevolent God. In saying this, Descartes does not take himself to be saying anything particularly original; it is, indeed, a theological commonplace. While these kinds of theological issues have led thinkers in various theological traditions to take the issue of occasionalism seriously, it is not appropriate to infer the full-blown metaphysical doctrine of occasionalism from this commonplace observation, and conclude that Descartes held that God is the only real cause in nature; his words to Elisabeth are meant as consolation, not metaphysics.

The question of Descartes' occasionalism is still open. To settle it we have to turn to a more detailed investigation of his metaphysical and physical writings. I will divide the investigation into three parts, discussing first the case of body-body causation (one billiard ball hitting another), then mind-body causation (voluntary motions in human beings), and finally body-mind causation (sensation).

II. The Case of Body-Body Causation

I will not pause (too) long over this case. It seems to me as clear as anything that, for Descartes, God is the only cause of motion in the inanimate world of bodies, that bodies cannot themselves be genuine causes of change in the physical world of extended substance. To understand why, let me turn for a moment to Descartes' reflections on motion and its laws.

4 AT IV 309.


Descartes' conception of physics must be understood as being in opposition to an Aristotelian one, as a substitute for the kind of physics that was taught in the schools. Basic to the physics of the schools was the notion of a substantial form. According to the Aristotelian physics, each kind of thing had its own substantial form, and it was through this that the basic properties of things were to be explained. And so fire rises and stones fall because of their forms, for example. In this way, things were thought to have basic, inborn tendencies to behavior; physics consisted in finding out what these basic tendencies were and in explaining the manifest properties of things in those terms.

A basic move in Descartes' philosophy, something he shared with other contemporary adherents of the so-called mechanical philosophy, was the elimination of these substantial forms, these basic explanatory principles. But how, then, are we to explain the characteristic behavior of bodies? Descartes' strategy was simple; instead of locating the basic laws that govern the behavior of things in these forms, he placed them in God. That is, it is God, not substantial forms, that will ground the laws that govern bodies.

How God grounds the laws of motion is illustrated in the proofs that Descartes gives for them. These proofs are grounded in his celebrated doctrine of continual re-creation. Descartes writes in Meditation III:

All of the time of my life can be divided into innumerable parts, each of which is entirely independent of the others, so that from the fact that I existed a short time ago, it does not follow that I ought to exist now, unless some cause as it were creates me again in this moment, that is, conserves me.  

Now, he argues,

plainly the same force and action is needed to conserve any thing for the individual moments in which it endures as was needed for creating it anew, had it not existed.  

Clearly such a power is not in us; if it were, then, Descartes reasons, "I would also have been able to give myself all of the perfections I clearly lack." And so, he concludes, it must be God that creates and sustains us.  

This conclusion, of course, holds for bodies as well as it does for us. It is not just souls, but all finite things that require some cause for their continued existence. And as with the idea of ourselves, "when I examine the idea of body, I perceive that it has no power [vis] in itself through which it can produce or conserve itself." And so, we must conclude that the duration of bodies, too, must be caused by God, who sustains the physical world He created in the beginning.

This view of divine sustenance underlies Descartes' derivations of the laws of motion, both in The World of 1633 and in the Principles of Philosophy of 1644. Arguing for his conservation principle in the Principles (for example, the law that God maintains the same quantity of motion in the world), Descartes writes:

We also understand that there is perfection in God not only because He is in Himself immutable, but also because He works in the most constant and immutable way. Therefore, with the exception of those changes which evident experience or divine revelation render certain, and which we perceive or believe happen without any change in the creator, we should suppose no other changes in His works, so as not to argue for an inconstancy in Him. From this it follows, that it is most in harmony with reason for us to think that merely from the fact that God moved the parts of matter in different ways when He first created them, and now conserves the totality of that matter in the same way and with the same laws [eademque ratione] with which He created them earlier, He always conserves the same amount of motion in it.  

Similarly, consider his argument for the law that a body in motion tends to move rectilinearly, as that argument is given in the Principles:

The reason [causa] for this rule is ... the immutability and simplicity of the operation through which God conserves motion in matter. For He conserves it precisely as it is in the very moment of time in which He conserves it, without taking into account the way it might have been a bit earlier. And although no motion takes place in an instant, it is obvious that in the individual instants that can be designated while it is moving, everything that moves is determined to continue its motion in some direction, following a straight line, and never following a curved line.  

The picture in both of these arguments is reasonably clear: God stands behind the world of bodies and is the direct cause of their motion. In the old Aristotelian philosophy, the characteristic behavior of bodies was explained through substantial forms; in Descartes' new, up-to-date
mechanism, forms are out, and God is in; in Descartes’ new philosophy, the characteristic behavior of bodies is explained in terms of an immutable God sustaining the motion of bodies.

I think that it is reasonably clear, then, that in the material world, at least, God is the only genuine causal agent. There are some further subtleties in the argument that I will set aside for the moment, returning to at least one of them later. But before moving on to the somewhat more difficult cases of mind-body and body-mind causation, I would like to pause a moment and examine one complexity in the case.

Though it is clear that God is the real agent of change, the real cause of motion in the physical world, it is not at all clear how He does it, how He pulls it off. Though it is not appropriate to argue it in full detail here, it seems to me that there are at least two somewhat different models that one can find in Descartes for this.14 On one model, God sustains the world by re-creating a succession of discrete, timeless world stages, one after another, like frames in a movie film. On this view, God is conceived to cause motion by re-creating bodies in different places in different frames of the movie, as it were. We might call this the cinematic view of how God causes motion. But Descartes sometimes suggests something a bit different. On this alternative view, what God sustains is a world of bodies existing continually in time. Now, in this world, some bodies are at rest, while others are in motion. Those in motion, Descartes sometimes suggests, receive a kind of impulse from God. Writing to Descartes on 5 March 1649, More asked if

matter, whether we imagine it to be eternal or created yesterday, left to itself, and receiving no impulse from anything else, would move or be at rest?15

Descartes answered:

I consider “matter left to itself and receiving no impulse from anything else” as plainly being at rest. But it is impelled by God, conserving the same amount of motion or transference in it as He put there from the first.16

On this view, what might be called the divine-impulse view, God causes motion by impulse, by a kind of divine shove.

It is interesting to try to understand how Descartes thought of God as a cause of motion. But this distinction I have tried to make between

the cinematic view and the divine-impulse view of God as a cause of motion will come in very handy when we are discussing Descartes’ thoughts on mind-body causation, to which we must now turn.

III. The Case of Mind-Body Causation

The problem of mind-body causation is, of course, a central concern of Cartesian scholarship; there are few issues in his philosophy about which more ink has been spilled. But my interest in it here is relatively narrow: To what extent does Descartes think that there can be genuine mental causes of motions in the physical world, and to what extent does he believe, with the majority of his followers, that God is the true cause of motion in the world of bodies?

Here, as on the issue of body-body causation, I believe that the case is reasonably clear: For Descartes, I think, mind can be a genuine cause of motion in the world, indeed, as genuine a cause as God Himself.

But though the case is, in the end, clear, it is not without its complications. As a number of later philosophers have noted, Descartes’ views on God’s role as continual re-creator, that which underlies the derivation of the laws of motion, as we have seen, would seem to lead us directly to a strong version of occasionalism, where God can be the only cause of change in the physical world. The argument is formulated neatly by Louis de La Forge:

I hold that there is no creature, spiritual or corporeal, that can change [the position of a body] or that of any of its parts in the second instant of its creation if the creator does not do it Himself, since it is He who had produced this part of matter in place A. For example, not only is it necessary that He continue to produce it if He wants it to continue to exist, but also, since He cannot create it everywhere, nor can He create it outside of every place, He must Himself put it in place B, if He wants it there, or if He were to have put it somewhere else, there is no force capable of removing it from there.17

The argument goes from the doctrine of continual re-creation, authentically Cartesian, to the conclusion that God can be the only cause of motion in the world. When God sustains a body, He must sustain it somewhere, and in sustaining it where He does He causes it to move or be at

14 For a fuller development of this idea, see Garber, Descartes’ Metaphysical Physics, chapter 9, or Daniel Garber, “How God Causes Motion: Descartes, Divine Sustenance, and Occasionalism,” Journal of Philosophy 84 (1987): 587–60, essay 9 in this volume.
15 AT V 316. 16 AT V 404.
rest. And so, it seems, there is no room for any other causes of motion in the Cartesian world, in particular, mind; if mind is to have a role to play in where a given body is from moment to moment, it must work through God, who alone can sustain a body and who is ultimately responsible for putting a body one place or another.\(^{18}\)

This argument is not decisive, I think. First of all, however good an argument it might be, I see no reason to believe that Descartes ever saw such consequences as following out of his doctrine of continual re-creation. But, more than that, I do not think that the argument is necessarily binding on Descartes. It is certainly persuasive, particularly if one takes what I called the cinematic view of God as a cause of motion, the view in which God causes motion by re-creating a body in different places in different instants of time. But the argument is considerably less persuasive if one takes what I earlier called the divine-impulse view of God as a cause of motion. On that view, God causes motion by providing an impulse, much as we take ourselves to move bodies by our own impulses. If this is how God causes motion, then His activity in sustaining bodies is distinct from His activity in causing motion, and there is no reason why there cannot be causes of motion distinct from God.\(^{19}\)

There can be causes of motion for Descartes other than God. But it still remains to be shown that he thought that there are such causes. The question comes up quite explicitly in Descartes' last response to Henry More:

That transference that I call motion is a thing of no less entity than shape is, namely, it is a mode in body. However the force (vis) moving a (body) can be that of God conserving in matter as He placed in it

\(^{18}\) Though the argument concerns motion, states of body, and their causes, it would seem to hold for the causes of states of mind as well; insofar as the divine Sustainer must sustain minds with the states that they have as much as He must sustain bodies in the places that they occupy. To these arguments from continual re-creation, one might also call attention to the several passages in which Descartes uses the word occasion to characterize particular causal relations (see Prost, Faux). But as argued in Goubert, La vocation de Malebranche, pp. 83–88, this is hardly worth taking seriously as an argument. See also Jean Laporte, Le rationalisme de Descartes (Paris: Presses Universitaires de France, 1950), pp. 275–86. For general discussions of the term, see Battrill, L'avocat philosophe, pp. 141–46, and Gérard de Cordemoy, Œuvres philosophiques, ed., P. Clair and F. Girbau (Paris: Presses Universitaires de France, 1968), p. 322, n. 10; for a general discussion of the language of indirect causality in Descartes and the later Scholastics, see Specht, Commercium mentis et corperis, chapters II and III.

\(^{19}\) This argument is developed at greater length in Garber, "How God Causes Motion."

Descartes is here quite clear that some created substances, at the very least our minds, have the ability to cause motion. Furthermore, there is no suggestion in this passage that minds can cause motion in bodies only with God's direct help, as the occasionalists would hold. Indeed, our ability to cause motion in the world of bodies is the very model on which we understand how God does it, Descartes sometimes argues. Writing to Henry More in April 1649, he remarks:

Although I believe that no mode of acting belongs univocally to God and to His creatures, I confess, nevertheless, that I can find no idea in my mind which represents the way in which God or an angel can move matter, which is different from the idea that shows me the way in which I am conscious that I can move my own body through my thought.\(^{21}\)

It would then be quite strange if Descartes held that minds are only the occasional causes of motion in the world. At least two passages in the Principles also suggest that he meant to leave open the possibility that, in addition to God, minds could cause motion in the world. In defending the conservation principle, for example, Descartes argues that we should not admit any changes in nature "except for those changes, which evident experience or divine revelation render certain, and which we perceive or believe happen without any change in the creator."\(^{22}\) Such a proviso would certainly leave open the possibility that finite substances like our minds can be genuine causes of motion. Similarly, in presenting his impact law (law 3) in the Principles II 49, Descartes claims that the law covers the causes of all changes that can happen in bodies, "at least those that are corporeal, for we are not now inquiring into whether and how human minds and angels have the power (vis) for moving bodies, but we reserve this for our treatise On Man."\(^{25}\) Again, Descartes is leaving open the possibility that there may be incorporeal causes of bodily change, that is to say, motion. And so, I think, we should take him completely at his word when on 29 July 1648 he writes to Arnauld:

\(^{20}\) AT V, 403–4.  
\(^{21}\) AT V, 347.  
\(^{22}\) Principles of Philosophy II 36.

\(^{25}\) Principles of Philosophy II 40.
That the mind, which is incorporeal, can set a body in motion is shown to us every day by the most certain and most evident experience, without the need of any reasoning or comparison with anything else. 24

Minds can cause motion in Descartes' world; there is genuine mind-body causation for him, it would seem. But before going on to examine the last case, that of body-mind causation in sensation, I will pause for a moment and examine a question raised by the passage from the letter to More that we have been examining: What is the "something else to which [God] gave the power [qui] of moving a body" to which Descartes refers? Angels are certainly included, the passage from Principles II 40 suggests; angels are also a lively topic of conversation in the earlier letters between Descartes and More. Indeed, when Descartes is discussing with him how we can comprehend God as a cause of motion through the way we conceive of ourselves as causes of motion, Descartes explicitly includes angels as creatures also capable of causing motion, like us and like God. 25 It is not absolutely impossible that Descartes meant to include bodies among the finite substances that can cause motion. 26 But I think that it is highly unlikely. IfDescartes really thought that bodies could be causes of motion like God, us, and probably angels, I suspect that he would have included them explicitly in the answer to More; if bodies could be genuine causes of motion, this would be too important a fact to pass unmentioned. As I noted earlier, Descartes' whole strategy for deriving the laws of motion from the immutability of God presupposes that God is the real cause of motion and of change of motion in the inanimate world of bodies knocking up against one another; this reading of Descartes' view of inanimate motion seems too secure to be shaken on the basis of a possibly oblique remark in a letter.

Before going on to discuss the next case, I will take up one more brief issue. It is a standard view that, for Descartes, mind cannot cause motion in a body because it would violate his conservation law, that the total quantity of motion in the world must always remain constant. And so, it is claimed, minds can change the direction with which bodies move but cannot change the actual motion that they have. This

is certainly a position that many of Descartes' later followers held. But I see no reason to believe that he himself ever maintained such a view. The argument is a bit complex, and I cannot develop the details here. 27 But briefly, there is no passage in Descartes that suggests in any but the weakest way that he ever held such a position, and there are other passages that strongly suggest that he did not. Furthermore, Descartes' conception of the grounds of the laws of motion in divine immutability would seem to impose no constraint on finite causes of motions, like minds. As I noted earlier, Descartes grounds the laws of motion in God's immutability; because God is immutable, He cannot add or subtract motion from the world. But though the conservation principle may constrain God's activity, it does not in any way constrain ours; in our mutability and imperfection, we are completely free to add or subtract motion to or from the world.

IV. The Case of Body-Mind Causation

We have established, I think, two reasonably clear cases: For Descartes, God is responsible for all motion in the inanimate world, while in the world of animate creatures, creatures like us who have souls, minds can cause motion in bodies. The last case we have to take care of is that of body-mind causation, the situation in which the motion of a body causes sensations in a mind. Again, our question is this: Is there genuine causality in this circumstance, or must God link the cause to the effect?

Here, unfortunately, I know of no easy way of settling the question about Descartes' views. It seems to me that he should be committed to the position that the body cannot be a genuine cause of sensation in the mind. It seems to me that if the motion of bodies is due directly to God, and if bodies cannot be genuine causes of changes in the states of other bodies, then it follows that bodies cannot be genuine causes of changes in minds either. This, at least, is the logic of Descartes' position. While, to the best of my knowledge, there is no passage in his

24 AT 222.
25 See AT V 347.
27 In Daniel Garber, "Mind, Body, and the Laws of Nature in Descartes and Leibniz," Midwest Studies in Philosophy 8 (1984): 105-33, essay 7 in this volume, I argue that, in fact, the laws of motion that Descartes posits for inanimate nature do not hold for motion caused by minds, and that, in this way, animate bodies, bodies attached to minds, stand outside the world of physics. I argue that the position widely attributed to Descartes, that the mind can change the direction in which a body is moving but not add or subtract speed (thus apparently violating the conservation principle) is not actually his view.
writings that settles the question with assurance, there is some reason to believe that this is a view that Descartes may have come to hold by the late 1640s, at least.

The evidence I have in mind is connected with the proof Descartes offers for the existence of a world of bodies. The argument first appears in 1641 in Meditation VI.28 “Now there is in me a certain passive faculty for sensing, that is, a faculty for receiving and knowing the ideas of sensible things. But I could make no use of it unless a certain active faculty for producing or bringing about those ideas were either in me or in something else.” So the argument begins. Descartes’ strategy is to show that the active faculty in question is not in me (i.e., my mind), or in God, or in anything but bodies.

This [active faculty] cannot be in me, since it plainly presupposes no intellect, and these ideas are produced without my cooperation, and, indeed, often involuntarily. Therefore it remains that it is in some substance different from me. . . . This substance is either body, or corporeal nature, namely, that which contains formally everything which is in the ideas of bodies objectively, or it is, indeed, in God, or some other creature nobler than body in which it [i.e., corporeal nature] is contained eminently.

To show that bodies really exist, Descartes will eliminate the latter two possibilities, and show that the active faculty must be in bodies themselves, or else God would be a deceiver.

The argument in Meditation VI clearly asserts that bodies have an “active faculty” that corresponds to the “passive faculty” of sensation; the clear implication is that the body that exists in the world is the cause of my sensation of it. The same basic argument comes up again, a few years later, in Part II, section 1, of the Principles of Philosophy of 1644, where it begins as follows:

Now, it can scarcely be doubted that whatever we sense comes to us from some thing which is distinct from our mind. For it is not in our power to bring it about that we sense one thing rather than another; rather, this [i.e., what we sense] plainly depends on the very thing that affects our senses.

As in the Meditations, Descartes goes on to examine the question as to whether the sensation might proceed from me, from God, or from something other than bodies. Talking about that from which the sensory idea proceeds, he says:

[W]e clearly understand that thing as something plainly different from God and from us (that is, different from our mind) and also we seem to ourselves clearly to see that its idea comes from things placed outside of us, things to which it [i.e., the idea] is altogether similar, and, as we have already observed, it is plainly repugnant to the nature of God that He be a deceiver.

And so, Descartes concludes, the sensory idea proceeds from a body.

The argument is the Principles is obviously similar to the one in the Meditations. But there is at least one crucial difference. The argument in Meditation VI starts with the observation that I have “a certain passive faculty for sensing”; what we seek is the active faculty that causes the sensations I have, and the ultimate conclusion is that that active faculty is found in bodies. But, interestingly enough, in the argument of the Principles there is no appeal to an active faculty. Indeed, the terminology Descartes uses to describe the relation between our sensation and the body that is the object of that sensation seems studiously noncausal; we all believe, Descartes tells us, that “whatever we sense comes to us [advenire] from something which is distinct from our mind,” that the idea of body “comes from [advenire] things placed outside of us.” The concern I have attributed to Descartes here is suggested further by a variant that arises between the Latin version of Principles II 1, which we have been discussing, and the French version published three years later in 1647. In the Latin, the crucial phrase reads as follows:

We seem to ourselves clearly to see that its idea comes from things placed outside of us.29

In the French translation, the phrase reads:

it seems to us that the idea we have of it forms itself in us on the occasion of bodies from without.30

One must, of course, be very careful drawing conclusions from variants between the Latin text and Picot’s French translation; while some alternatives are clearly by Descartes, it is often unclear whether a given


29 Principles of Philosophy II 1, translation of Latin version.

30 Principles of Philosophy II 1, translation of French version; emphasis added.
change is due to the author or to his translator. But this change is consistent with the trend already observed between Meditation VI and Principles I. Latin version, and weakens the causal implications further still. Rather than asserting that the idea comes from the thing, the French text says only that it "forms itself in us on the occasion of bodies from without." Furthermore, while it is by no means clear how to interpret the word occasion in Descartes' vocabulary, the word is certainly suggestive of what is to become a technical term in later Cartesian vocabulary, that of an occasional cause, a cause whose effect is produced through the activity of God. 31

It is difficult to say for sure why the two arguments differ in this respect, and one should always be open to the explanation that, as Descartes suggests in a number of places, metaphysical issues are taken up in the Principles in a somewhat abbreviated and simplified fashion, and that the Meditations must be regarded as the ultimate source for his considered views in that domain. 32 But it is tempting to see in this variation the shadow of an important philosophical question Descartes was facing. It is possible that he eliminated the reference to an active faculty precisely because he was no longer certain that bodies could correctly be described as active causes of our sensations. The language he substitutes is, of course, consistent with bodies being active causes of sensations, as he may well have believed; but it is also consistent with a weaker view, on which our sensations come from bodies, but with the help of an agent, like God, distinct from the bodies themselves, which, in the strictest sense, are inert.

There is another place that is sometimes thought to support the attribution of occasionalism to Descartes. The passage I have in mind is the celebrated one from the Notae in Programma (1647):

Nothing reaches our mind from external objects through the sense organs except certain corporeal motions... But neither the motions themselves nor the shapes arising from them are conceived by us exactly as they occur in the sense organs, as I have explained at length in my Dioptrics. Hence it follows that the very ideas of the motions themselves and of the shape are innate in us. The ideas of pain, colors, sounds, and the like must be all the more innate if, on the occasion of certain corporeal motions, our mind is to be capable of representing them to itself, for there is no similarity between these ideas and the corporeal motions. 33

The use of the word "occasion" in this context (as well as in a previous sentence on the same page) does lend some support to the claim that the use of the corresponding French word in the French translation of the Principles, published in the same year, is no accident, and may be significant for the way in which Descartes is thinking about body-mind causality. But it is important to recognize that the claim that the sensory idea is innate in the mind is, I think, irrelevant to the issue of Descartes' occasionalism. His worry here is not (primarily) the causal connection between the sensory stimulation and the resulting sensory idea; what worries him is their utter dissimilarity, the fact that the sensory idea is nothing like the motions that cause it. To make an analogy, consider, for example, a computer with a color monitor capable of displaying complicated graphics and pictures. Suppose that if I tap in a certain sequence of keystrokes, a picture of the Notre Dame in Paris appears on the screen. One might perhaps want to point out that the actual sequence of motions (i.e., the keystrokes) that causally produce the picture in no way "resembles" the picture, and one might reason from that fact to the claim that the picture must be innate in the machine, that is, stored in its memory. But one probably would not want to reason from that to the keystrokes are not in some sense the direct cause of the picture's appearing, that the keystrokes did not really elicit the picture; and one certainly would not want to infer that it was God who somehow connected the keyboard with the screen of the monitor. I think that the situation is similar with respect to Descartes' point in the passage quoted from the Notae in Programma; in this case, as in the computer case, Descartes' main point is simply that sensory ideas cannot come directly from the motions that cause them, but must, at best, be innate ideas that are elicited by the motions communicated to the brain by the sense organs.

But even though this passage does not lend much support to the view that Descartes may have come to see God as connecting bodily motions with sensations, neither does it detract from the evidence I presented earlier. And so, while the evidence is not altogether satisfactory, it seems reasonable to think that while Descartes may have seen bodies as genuine causes of sensations at the time that the Meditations was

31 See the reference given in note 18 above in connection with the word occasion.
32 On the relations between the Meditations and Part I of the Principles, see, for example, AT III 233, 259; AT V 291; and AT IXB 16.
33 AT VIII 359.
published in 1641, by the publication of the *Principles of Philosophy* a few years later he may have changed his view, holding something closer to what his occasionalist followers held, that God is the true cause of sensations on the occasion of certain motions in bodies.

V. Was Descartes an Occasionalist?

In the earlier parts of this essay we have examined three different sorts of causal relations as treated by Descartes in his thought. While it seems clear that mind can be a genuine cause of motion in the physical world, it also seems clear that God is the real cause of change in the inanimate world of physics, and it seems probable that God is the real cause behind body-mind interaction, the causation of sensations in the mind. It thus seems clear that while Descartes may share some doctrines with the later occasionalists of the Cartesian school, he is not an occasionalist, strictly speaking, insofar as he does allow some finite causes into his world, minds at the very least.

Might we say, on this basis, that Descartes is a quasi-occasionalist, an occasionalist when it comes to the inanimate world, though not in the world of bodies connected to minds? The doctrine of occasionalism is certainly flexible enough to allow this. But even if we choose to view Descartes in this way, we must not lose sight of an important difference between Descartes and his occasionalist followers.

For many of Descartes’ later followers, what is central to the doctrine of occasionalism is the denial of the efficacy of finite causes simply by virtue of their finitude. Clerelser, for example, argues for occasionalism by first establishing that only an incorporeal substance can cause motion in body. But, he claims, only an infinite substance, like God, can imprint new motion in the world “because the infinite distance there is between nothingness and being can only be surmounted by a power which is actually infinite.”

Cordemoy argues similarly. Like Clerelser, he maintains that only an incorporeal substance can be the cause of motion in a body, and that this incorporeal substance can only be infinite; he concludes by saying that “our weakness informs us that it is not our mind which makes [a body] move,” and so he determines that what imparts motion to bodies and conserves it can only be “another Mind, to which nothing is lacking, [which] does it [i.e., causes motion] through its will.” And finally, the infinitude of God is central to the main argument that Malebranche offers for occasionalism in his major work, *De la recherche de la vérité*. The title of the chapter in which he presents his main arguments for the doctrine is “The most dangerous error in the philosophy of the ancients.” And the most dangerous error he is referring to is their belief that finite things can be genuine causes of the effects that they appear to produce, an error that, Malebranche claims, causes people to love and fear things other than God in the belief that they are the genuine causes of their happiness or unhappiness. But why is it an error to believe that finite things can be genuine causes? Malebranche argues as follows:

As I understand it, a true cause is one in which the mind perceives a necessary connection between the cause and its effect. Now, it is only in an infinitely perfect being that one perceives a necessary connection between its will and its effects. Thus God is the only true cause, and only He truly has the power to move bodies. I further say that it is not conceivable that God could communicate to men or angels the power He has to move bodies.

For these occasionalists, then, God must be the cause of motion in the world because only an infinite substance can be a genuine cause of anything at all.

But, as I understand it, Descartes’ motivation is quite different. He seems to have no particular worries about finite causes as such. If I am right, he is quite happy to admit our minds and angels as finite causes of motion in the world of bodies. Indeed, it is through our own ability to cause motion in our bodies that we have the understanding we do of God and angels as causes of motion. When God enters as a cause of motion, it is simply to replace a certain set of finite causes, the substantial forms of the Schoolmen, which, Descartes thinks, are unavail-

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34 Clerelser, *Lettres de M. Descartes...* (1644), p. 642. Clerelser argues that while a finite incorporeal substance, like our mind, cannot add (or destroy) motion in the world, it can change its direction, because, unlike motion itself, “the determination of motion... adds nothing real in nature... and says no more than the motion itself does, which cannot be without determination” (ibid.). This, though, would seem to conflict with what Descartes himself told Clerelser in the letter of 17 February 1645; that motion and determination are two modes of body that “change with equal difficulty” (AT IV 185).


able to do the job. He argued that the substantial forms of Scholastic philosophy were improper impositions of mind onto matter and must, as such, be rejected. But, one might ask, if there are no forms, what can account for the motion that bodies have, for their characteristic behavior? What Descartes turns to is God. In this way he seems less a precursor of later occasionalism than the last of the Schoolmen, using God to do what substantial forms did for his teachers.39

39 Portions of this essay have also appeared in Garber, Descartes’ Metaphysical Physics.

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SEMEL IN VITA

The Scientific Background to Descartes’ Meditations

Descartes opens Meditation I with his persona, the meditator, reflecting on the project to be undertaken. Descartes writes:

I have observed for some years now how many false things I have admitted as true from my earliest age, and thus how dubious are all of those things that I built on them; and so, I observed that once in life [semel in vita] everything ought to be completely overturned, and ought to be completely rebuilt from the first foundations, if I want to build anything firm and lasting in the sciences. (AT VII 17) 1

And with this, the project has begun. Descartes’ meditator quickly begins by rejecting the commonsense epistemological principles on which everything he formerly believed rested, and quickly sets about putting the world back together again. Of course, one of the central projects undertaken in this connection must be the replacement of the epistemological principles rejected with new, more trustworthy principles. Just as Descartes’ meditator undermined his former beliefs by undermining the epistemology on which they were based, he will rebuild his world by rebuilding its epistemology. New epistemological principles thus seem to be the very “first foundations” on which he will build something “firm and lasting in the sciences.” But an obvious question to raise about this, the opening sentence of the Meditations, and about the project that follows out of it, is why? Why does Descartes believe it necessary even once in life to rebuild all of our beliefs in the way he suggests? Why does Descartes feel called to such an epistemo-

1 All textual citations will be given in the body of the essay.