

## Descartes on Body, Force and Duration

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As well-known, Descartes argued that a body is an extended substance. According to him, body has a shape, size, and motion. These are modes of its essential attribute, extension. Unlike these, force and duration cannot be simply understood as modes of an extended substance. Force is considered as the cause of a spatial motion, and it is different from a mere change of position in space. Also, duration is often contrasted with extension. Something endures in the course of time scales, but not in extended space. Nevertheless, I understand that according to Descartes, both force and duration belong to a body. In this paper, I first argue that Descartes thought that a body has a force [*vis*] in it. A body does not only move, but it has some intrinsic force provided by God to move itself. A body or extended substance is also understood to have duration. It is not completely continuous duration for a long time, since it is perpetually recreated by God. But it is a short-term duration at the very present, which is experienced by the human mind, and belongs to a material thing as well.

### 1. Body and Force

According to Descartes, extension is the essential attribute of a body. There are many bodies that have different figures, but all of them are extended. Now it is relatively easy to understand shape and size as modes of extension. A specific shape is ascribed to a body in accordance with how it is extended. But it is not the case with force. Although spatial position is conceived through the relation among extended things, and to this extent it is conceived as a mode of an extended thing, there is a difficulty in understanding the cause of a bodily motion as a mode of the body on the basis of the concept of extension.

Distinguished philosophers after Descartes argued that force cannot be a mode of extension. According to them, a body or extended thing is inert, and cannot move by itself. In *The Search after Truth*, Malebranche argued that though extension is conceived as the essence of matter, and it allows us to conceive figure and divisibility, it does not provide no distinct idea of what could be the cause of a bodily motion (LO.243-244).<sup>1</sup> Likewise, Leibniz argued that “there is

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<sup>1</sup> Even before Malebranche wrote *The Search after Truth* (1674-75), Louis de La Forge argued that only God can move a body in *Traité de l'esprit de l'homme* (1664) (OP.240; Garber, 2001, p. 189; Nadler, 2011, pp. 92-93).

something passive in body over and above extension” and body has “a certain active force or entelechy” (AG.250).<sup>2</sup> More precisely, he argued that extension is not the essential attribute of body since it is a collection of many non-extended substances that are capable of acting by themselves.

Now if Descartes assumed that body only has a mode of extension in it, and force is not such a mode, he must not have believed that body has a force in it. But I interpret that Descartes held that body has an intrinsic force on the basis of the following passages. First, in the letter to Mersenne of 28 October 1640, Descartes implied that body moves itself. Discussing the view of Father J. Lacombe concerning the motion and divisibility of a body, Descartes agreed with his view that body moves itself:

“[Father Lacombe] is right in saying that it is a big mistake to accept the principle that no body moves of itself. For it is certain that a body, once it has begun to move, has in itself for that reason alone the force to continue to move, just as, once it is stationary in a certain place, it has for that reason alone the force to continue to remain there.”<sup>3</sup> (AT.III.213 = CSM. III.155)

Here he argued that a body has a force to continue the same movement unless it is impelled to move otherwise by another thing. Although he introduced the law of inertia in the passage, Descartes did not simply hold that a body cannot change its motion since it is completely passive, and does not have any force to act by itself. He rather argued that a body has its own force, by virtue of which it continues to move to the same direction.

Second, in the *Principles of Philosophy* (hereinafter *Principles*) written in 1644, Descartes implied that a body has its force of continuing a movement. The second part of the *Principles* examines the nature of material things, and he intensively discussed motion from Proposition 23. After declaring that God is the primary cause of motion, he discussed how God makes bodies move in accordance with the laws of nature. In the context of explaining the third law about collisions of bodies, Descartes suggested that a body has a force for moving:

*“The third law: if a body collides with another body that is stronger than itself, it loses none*

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<sup>2</sup> Jorge Secada introduces Leibniz’s view that the notion of an extended thing must involve that of non-geometrical quality that is diffused (L.390, 392; Secada, 2000, p. 244; Broad, 1975, p. 55).

<sup>3</sup> “Il a raison de dire qu’on a eu grand tort d’admettre pour principe, que nul cors ne se meut de soy mesme. Car il est certain que, de cela seul qu’un cors a commencé à se mouvoir, il a en soy la force de continuer à se mouvoir; ainsi que, de cela seul qu’il est arrêté en quelque lieu, il a la force de continuer à y demeurer.” I slightly modified the translation.

*of its motion; but if it collides with a weaker body, it loses a quantity of motion equal to that which it imparts to the other body.*

The third law of nature is this: when a moving body collides with another, if it has a force of continuing in a straight line and the force is less than the resistance of the other body, it is deflected so that, while the quantity of motion is retained, the direction is altered; but if it has a force of continuing is greater than the resistance of the other body, it carries that body along with it, and loses a quantity of motion equal to that which it imparts to the other body.”<sup>4</sup> (AT.VIIIa.65 = Pr.II.40 = CSM.I.242)

Here Descartes implied that a moving body has “a force of continuing a straight line [*vim ad pergendum secundum lineam rectam*].” The force may be less than the resistance of another body that collides with the body. And the force may be greater than the resistance of the other body. But in either case, the body certainly has its own force to move.

*Principles* has another passage that suggests that a body has its intrinsic force. Proposition 43 of the *Principles* has a detailed discussion of the resistance of a body:

*“The nature of the force which all bodies have to act on, or resist, other bodies.*

In this connection we must be careful to note what it is that constitutes the force of any given body to act on, or resist the action of, another body. This force consists simply in the fact that everything tends, so far as it can, to persist in the same state, as laid down in our first law. Thus what is joined to another thing has some force of resisting separation from it; and what is separated has some force of remaining separate. Again, what is at rest has some force of remaining at rest and consequently of resisting anything that may alter the state of rest; and what is in motion has some force of persisting in its motion[...].”<sup>5</sup> (AT.VIIIa.66 =

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<sup>4</sup> *“Tertia lex: quod unum corpus, alteri fortiori occurrendo, nihil amittat de suo motu; occurrendo verò minus forti, tantum amittat, quantum in illud transfert.*

Tertia lex naturae haec est: ubi corpus quod movetur alteri occurrit, si minorem habeat vim ad pergendum secundum lineam rectam, quam hoc alterum ad ei resistendum, tunc deflectitur in aliam partem, & motum suum retinendo solam motus determinationem amittit; si vero habeat majorem, tunc alterum corpus secum movet, ac quantum ei dat de suo motu, tantundem perdit.” I slightly modified the translation.

<sup>5</sup> *“In quo consistat vis cujusque corporis ad agendum vel resistendum.*

Hic verò diligenter advertendum est, in quo consistat vis cujusque corporis ad agendum in aliud, vel ad actioni alterius resistendum : nempe in hoc uno, quòd unaquaeque res tendat, quantum in se est, ad permanendum in eodem statu in quo est, juxta legem primo loco positam. Hinc enim id quod alteri conjunctum est, vim habet nonnullam, ad impediendum ne disjungatur; id quod disjunctum est, ad manendum disjunctum[...].” I slightly modified the translation.

Pr.II.43 = CSM.I.243-4)

Here Descartes introduced a more general argument. According to him, the force of resistance and the force of moving are explained as forces to “persist in the same state.” A moving body keeps its motion since it has a power to persist in the same state. Likewise, a resisting body is hard to move since it has a force to keep the state of rest. In either case, a body has some force to produce its future state, and it provides a reason why the body will have such a state.

Finally, Descartes suggested that a force remains in matter in the letter to Henry More of August 1649:

“But when I said that the same amount of motion always remains in matter, I meant this about the force which impels its parts, which is applied at different times to different parts of matter in accordance with the laws set out in articles 45 and following of Part Two.”<sup>6</sup>  
(AT.V.405 = CSM.III.382)

Descartes explained the reason why bodies observe the conservation law of motion. Bodies that collide to each other have their forces, and the total amount of the forces remains constant. It does not increase or decrease after the collision. He then suggested that the total amount of motion is conserved since the force that moves parts of matter remains constant.

## 1.2 Possible Objections

So far I have introduced passages that imply or suggest that according to Descartes, a body has its force to cause its motion. However, there are some passages that seem to suggest that the force of a body is not in it. One of them is the following from the same letter to Henry More that suggests that the human mind has a force to move its body:

“The transfer which I call ‘motion’ is no less something existent than shape is: it is a mode in a body. The force causing motion may be the force of God himself preserving the same amount of transfer in matter as he put in it in the first moment of creation; or it may be the force of a created substance, like our mind, or of any other such thing to which he gave the force to move a body. In a created substance this force is a mode, but it is not a mode in God. Since this is not easy for everyone to understand, I did not want to discuss it in my

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<sup>6</sup> “[...]Cùm autem dixi tantumdem motûs in materiâ semper manere, hoc intellexi de vi eius partes impellente, quae vis nunc ad vnas partes materiae, nunc ad alias se applicat, iuxta leges in artic. 45 & sequentibus Partis secundae propositas.”

writings.”<sup>7</sup> (AT.V.404 = CSM.III.381)

The passage shows that according to Descartes, the human mind is able to move the body. Although it does not say anything about an inorganic body, it may look to suggest that an inorganic, mind-less body cannot move itself. But the passage is consistent with the view that an inorganic body also has a force to move itself.

So far I have examined a passage that might be read as inconsistent with my interpretation that a body has an intrinsic force to move. But some distinguished commentators argue that Descartes did not assume that a body has a force in it referring to other passages. Gary Hatfield defends the view that according to Descartes, only “immaterial substances, such as the human mind, angels, and God” are causally efficacious (Hatfield, 1979, p. 114). In this view, material substances, angel and human bodies aside, are merely moved by God. Although Hatfield notices that Descartes used the term “force” in some passages, he argues that Descartes was not committed to the existence of a force in the created world. Among the points he presented, I notice the following three as decisive. First, Hatfield points out that Descartes treated gravity as the cause of a bodily motion in a letter to Cavendish without holding that gravity is a real quality of a body (AT.IV.559; Hatfield, 1979, p. 138), since Descartes in fact provided a mechanical explanation of how bodies fall (AT.VIIIa.212 = Pr.IV.20). Hatfield argues that this suggests that Descartes introduced “force” following the ordinary use of language, but he actually did not believe that a body has a force. Second, Hatfield takes note of the fact that Descartes took the laws of nature, not forces, as the secondary cause of motion (Hatfield, 1979, p. 123). According to Hatfield, this provides a good reason to assume that Descartes did not take forces as real causes of bodily motions. Thus he presented the interpretation that the laws of nature are treated as the secondary cause since God directly moves bodies (and to this extent he is the primary cause of motion), he does so following the laws of nature. An intrinsic force of body is not included in this picture. Third, Hatfield argues that according to Descartes, the force of a body is nothing but its “tendency to persist in its state,” which is further explained by God’s custom to move bodies in accordance with the laws of nature (*ibid.*, p. 126).

Although Hatfield introduces significant reasons for taking his reading as plausible, we can present some arguments against his points. First, although Descartes introduced an explicit

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<sup>7</sup> “*Translatio*, illa, quam motum voco, non est res minoris entitatis quam sit figura: nempe est modus in corpore. Vis autem mouens potest esse ipsius Dei conseruantis tantumdem translationis in materiâ, quantum à primo creationis momento in eâ posuit; vel etiam substantiæ creatæ, vt mentis nostræ, vel cuiusuis alterius rei, cui vim dederit corpus mouendi. Et quidem illa vis in substantiâ creatâ est eius modus, non autem in Deo; quod quia non ita facile ab omnibus potest intelligi, nolui de istâ re in scriptis meis agere[...].” I slightly modified the translation.

reduction of gravity, he never provided such an account for force. This suggests that Descartes took force as much more fundamental than gravity. And indeed, Descartes introduced force to explain how particles are driven by other particles in such a way that they seem to be attracted by gravity. For instance, Descartes wrote that celestial globules must exert “all their force” to displace terrestrial particles (AT.VIIIa.213 = Pr.IV.23). Second, even if God has a custom to create bodies moving in accordance with the laws of nature, it is entirely possible that he creates bodies with intrinsic forces to move them. That is to say, it may be the case that the intrinsic forces of bodies move them in such a way that all of their movements follow the laws of nature. Third, although Hatfield suggests that the tendency of a body to move toward some direction can be reduced to God’s custom to act in accordance with the laws of nature, he did not provide an argument for interpreting that Descartes *actually did* the reduction. Rather, this tendency is understood as the force of a body to actualize the change of position.

Lastly, I examine another interpretation that has a tension with my view. As Hatfield does, Daniel Garber does not interpret that Descartes held that a body has its intrinsic force. According to Garber, Descartes assumed that God provides a force for a body, and yet the force does not exist within the body.<sup>8</sup> He introduces “the divine impulse view” that every moment God creates an impulse that is external to a body, and yet moves it in accordance with the laws of nature (Garber, 1992a, p. 278). He takes the terms “impulse [*impulsus*]” and “force [*vis*]” as univocal. And he argues that according to Descartes, a body does not have an intrinsic force or impulse that causes its motion. On the basis of this interpretation, Garber argues that according to Descartes, a body *actually does not* have a force:

[...]God will act on the world in such a way as to keep moving bodies moving, and resting bodies at rest. This can be *described* by saying that bodies, *as it were*, have a force to continue their motion, or exert a force to maintain their rest. But this is not to attribute anything real to bodies over and above the fact that God maintains their motion and as a consequence they obey a law of the persistence of motion. (Garber, 1992a, p. 298)

Thus Garber takes note of passages that suggest that according to Descartes, a body has a force. But he argues that Descartes did not mean to demonstrate that bodies actually do have a force. For Garber, there are passages showing that bodies do not have a force, and his interpretation

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<sup>8</sup> Garber also points out that Descartes once wrote that a body has an “active faculty” that causes sensory ideas in the *Sixth Meditation*, he did not so later in the *Principles* (Garber, 1992b, p. 322). But this point should not be taken to present the view that a body completely lacks a force to move itself, given that in this context Descartes was concerned with how a body causes ideas in the human mind.

seems to be the best way to understand them as consistent. A representative passage that may support Garber's reading is the following:

“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.”<sup>9</sup> (AT.V.404)

Here Descartes argued that a body is “impelled by God.” This statement may look to imply that God directly moves a body, and no force or impulse is needed for moving it. But the statement is actually consistent with the view that God produces a force and infuses it into a body.

So far I argued that passages which seem to support Garber's interpretation are actually consistent with my view. Moreover, there are other passages that have a tension with his interpretation. Garber differentiates his view from Gary Hatfield's that for Descartes, force is “literally in God and not in bodies at all” (Hatfield, 1979; Garber, 1992a, p. 294). Garber argues that Descartes ascribed a force to bodies in some passages, and Hatfield's view does not fit with them:

“But [Hatfield's view] sits very poorly with the explicit attributions Descartes makes of force to bodies, the impact-contest forces he makes reference to in stating and elucidating law 3, and the force to persist in motion that Descartes attributes explicitly to bodies themselves in writing to Mersenne[...].” (Garber, 1992a, p. 294)

But I think the same point can be made to Garber's “divine impulse view.” In other words, the passages which I introduced above do not fit well with his interpretation, either. Descartes did not write that a force does not exist in God. Rather, he simply stated that bodies have a force. This, at least if we take it as face value, contradicts Garber's interpretation, as well as Hatfield's.

## **2. The duration of a body**

So far I have discussed the force in a body. In my interpretation, Descartes held that a body has its intrinsic force. In other words, it has some potential to change the current state. So it

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<sup>9</sup> “*Confidero materiam sibi libéré permissam & nullum aliundè impulsus suscipienlem*”, *vt plané quiescentem*. Illa autem impellitur à Deo, tantumdem motûs fîue tranflationis in eâ conseruante, quantum ab initio posuit.”

may be the case that the force of a body causes its state of the next moment. This provides the impression that if the present body is identical to the body of the next moment, given that the state of the latter is caused by the force of the former. If so, the body endures from moment to moment. Although I do not entirely endorse this view, I interpret Descartes as holding that a body has extremely short duration in which it is in the process of changing. One of the most convincing evidence for my reading is the following passage of the *Principle* concerning duration:

*“All the objects of our perception may be regarded either as things or affections of things, or as eternal truths. The former are listed here.*

All the objects of our perception we regard either as things, or affections of things, or else as eternal truths which have no existence outside our thought. The most general items which we regard as things are *substance, duration, order, number* and any other items of this kind which extend to all classes of things.”<sup>10</sup> (AT.VIIIa.22-23 = Pr.II.48 = CSM.I.208)

Here Descartes suggested that the idea of duration is universal in the sense that it is applied to any real thing. Thus we can understand that it is also applied to a body or corporeal substance. Descartes wrote the passage for contrasting general items with specific ones that pertain to some specific substance. In a later part of the *Principles*, he declared that the idea of duration is clearly and distinctly perceived:

*“How we can also have a distinct understanding of duration, order and number.*

We shall also have a very distinct understanding of *duration, order* and *number*, provided we do not mistakenly tack on to them any concept of substance. Instead, we should regard the duration of a thing simply as a mode under which we conceive the thing in so far as it continues to exist.”<sup>11</sup> (AT.VIIIa.26 = Pr.II.55 = CSM.I. 211)

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<sup>10</sup> *“Omnia quae sub perceptionem nostram cadunt, spectâri ut res rerumve affectiones, vel ut aeternas veritates; & rerum inumeratio.*

Quaecunque sub perceptionem nostram cadunt, vel tanquam res, rerumve affectiones quasdam, consideramus; vel tanquam aeternas veritates, nullam existentiam extra cogitationem nostram habentes. Ex iis quae tanquam res consideramus, maxime generalia sunt *substantia, duratio, ordo, numerus*, & si quae alia sunt ejusmodi, quae ad omnia gênera rerum se extendunt.”

<sup>11</sup> *“Quomodo duratio, ordo, numerus etiam distinctè intelligantur.*

Duratio, ordo, & numerus, à nobis etiam distinctissimè intelligentur, si nullum iis substantiae conceptum affingamus, sed putemus durationem rei cujusque esse tantùm modum, sub quo concipimus rem istam, quatenus esse perseverat.”



In the previous proposition, Descartes argued that we have distinct ideas of thinking and corporeal substances. We clearly understand the attributes of thought and extension, and the possibility of a substance consisting in one of these attributes. Likewise, he argued that we have distinct ideas that are ascribed to substances, such as duration, order and number. In contrast, for Descartes, the concept of scholastic substantial form is obscure, and it cannot be rightly applied to an external thing. In other words, an extended body actually does not have a substantial form. But the idea of duration is different, and an extended body actually has it.

## 2.2 A Possible Objection

So far we have seen passages implying that a body has some duration. But there are also some passages that seem to suggest that bodies do not have duration. First, in the *Principles*, Descartes argued that a portion of time is independent of another portion:

*“The fact that our existence has duration is sufficient to demonstrate the existence of God. It will be impossible for anything to obscure the clarity of this proof, if we attend to the nature of time or of the duration of things. For the nature of time is such that its parts are not mutually dependent, and never coexist.”*<sup>12</sup> (AT.VIIIa.13 = Pr.II.21 = CSM.I.200)

Here Descartes referred to a phenomenological experience of the human mind. He argued that what we experience at present is independent of any past or future experience. As he argued in the *Meditations*, our present experience does not guarantee that we have similar experiences in the future (AT.VII.48-49). It is entirely possible that our minds suddenly disappear and we cease to have experiences at some near future. This claim is related to what Descartes wrote in the *Second Set of Replies*, namely that “it is not a greater thing to create something than to preserve it” (AT.VII.166 = CSM.II.117). He suggested that God creates something at a moment, and completely recreates it at the next moment. Here one may be tempted to interpret that the present is disconnected with future, and both mind and body do not have any continuous duration. But the passage does not specify the nature of the present. Although it implies that one part of time is independent of another part, it may be the case that the part itself has some short inner duration. As Martial Gueroult notes, Descartes characterized an instant as “shortest

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<sup>12</sup> *“Existentiae nostrae durationem sufficere, ad existentiam Dei demonstrandam.*

Nihilque hujus demonstrationis evidentiam potest obscurare, modo attendamus ad temporis sive rerum durationis naturam quae talis est, ut ejus partes à se mutuò non pendeant, nec unquam simul existant[...].”

time [*brevisimum tempus*]" (Pr.III.63; Gueroult, 1968, p. 272).<sup>13</sup> This should not be taken as a duration-less moment. Descartes took note of a phenomenological experience of passing time. When the human mind thinks, it experiences its action and the duration of the action. And the human mind is not the only enduring created substance: the force of a body is changing it at an instant.

### Concluding Remark

Descartes attempted to simplify the natural science in such a way that we only need to utilize clear and distinct ideas in scientific researches. Thus he eradicated the concept of substantial form in this discipline. But he never gave up explaining the cause of changes in the world of nature. Unlike Newton, he always attempted to provide causal explanations as sufficient as he could. And although he could have argued that God directly moves bodies without any mediation of force, he actually did not deprive bodies of force. He did not assume that a body is completely inert, while it is somewhat problematic that an extended substance has a causal power to change itself. Moreover, Descartes did not think that a body completely lacks duration. Although they perpetually recreated by God, they are always in the process of moving by virtue of their forces, and to this extent they endure.

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<sup>13</sup> Martial Gueroult contrasts his view with Jean Laporte's that according to Descartes, time is discontinuous (Gueroult, 1968, p. 274; Laporte, 1988 cf. Wahl, 1998). In this contrasted view, present completely lacks duration, and the successive experiences of the human mind are analogous to a movie that consists of a series of motionless pictures. In Gueroult's interpretation, the human mind is actually changing at an instant.

### **Abbreviations of Primary Texts and Translations**

- AG: *G.W. Leibniz Philosophical Essays*. Translated and edited by R. Ariew and D. Garber. Indianapolis: Hackett, 1989.
- AT: *Oeuvres de Descartes*. Edited by C. Adam and P. Tannery. Paris: L. Cerf, 1897-1913. Cited by volume and page.
- CSM: *The Philosophical Writings of Descartes*. Translated and edited by J. Cottingham, R. Stoothoff, and D. Murdoch. Cambridge: Cambridge University Press. Cited by volume and page.
- L: *G.W. Leibniz Philosophical Papers and Letters*. Translated and edited by L.E. Loemker. Dordrecht: Reidel, 1976.
- LO: *The Search after Truth*. Translated and edited by T.M. Lennon and P.J. Olscamp. New York: Cambridge University Press, 1997.
- OP: *Louis de La Forge: Oeuvres philosophiques*. Edited by P. Clair. Paris: Presses Universitaires de France, 1974.
- Pr: *Principia philosophiae*. Cited by part and proposition.

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