

How Did Leibniz Reestablish Substantial Forms in 1678-79?

いかにしてライプニッツは1678-79年に実体的形相を復興したのか?

枝村 祥平
Shohei EDAMURA

〈要旨〉

Leibniz once ceased to hold that there are substantial forms in bodies, but in 1678-9 he started to believe that they actually exist in bodies, and they provide unities and activities of bodies. This point was reiterated in the *Discourse of Metaphysics* of 1686. According to Michel Fichant, the discovery of the conservation law is deeply connected with the rehabilitation of substantial forms. But according to Daniel Garber, the discovery and the rehabilitation are almost independent. In this paper, I argue that Leibniz's discovery of the conservation law actually had a great impact upon his rehabilitation of substantial forms.

〈キーワード〉

17世紀哲学史, ライプニッツ, 多元論, 物理学, 実体的形相

1. Introduction

Leibniz reestablished substantial forms in 1678-79. Leibniz once ceased to hold that there are substantial forms in bodies, but he started to believe that they actually exist in bodies, and they provide unities and activities of bodies. He confirmed so in the *Discourse of Metaphysics* of 1686. According to Michel Fichant, the discovery of the conservation law is substantially relevant to the rehabilitation of substantial forms. But against Fichant, Daniel Garber argues that the discovery and the rehabilitation are almost independent. In this paper I argue that Leibniz's discovery of the conservation law actually had a great impact upon his rehabilitation of substantial forms. In the first section, I briefly explain Leibniz's concept of substantial form in 1678-79. In the second, consisting of three subsections, I introduce distinct arguments of Leibniz to show that there are substantial forms in bodies, and evaluate these arguments to show how much they are related to the conservation law. In the third section, I conclude one of these arguments shows that the conservation law is necessary for it, and it is the strongest among these three in that it shows a robust connection between how a certain quantity is conserved in

nature and the existence of substantial forms.

2. What is Substantial Form?

Since Aristotle, many philosophers believed that an individual substance consists in form and matter, and this view was typically emphasized in the tradition of the medieval scholastic philosophy. Form is associated with actuality, conceivability and some specific shape. A specific thing is individuated by having such and such form. On the other hand, matter is associated with potentiality and inconceivability. Any matter can be formed in many different ways, and in this sense it can be any one of more actualized things, but only potentially.

Since Descartes, Hobbes, and other eminent philosophers of the 17th century, many philosophers started to doubt the existence of substantial forms. For these philosophers, the concept of substantial form is too obscure and cannot be clearly understood, and substantial forms seemed to be superfluous in the sense that physical phenomena can be explained without them. As well known, Descartes doubted that a dog has its own substantial form or soul. According to him, some animal is considered as a dog simply because the whole body has

some physical structure, and its parts function for producing the behaviors of a dog. Leibniz was impressed by Descartes' view, and claimed that there are no scholastic substantial forms. In a letter to Jakob Thomasius of 1668, he suggested that there are substantial forms, but these forms are nothing but geometrical figures of bodies (A II i, 11). Here he accepted the modern mechanistic philosophy, according to which body only has shape, size, and motion.

However, Leibniz changed his view, and started to suggest that there are substantial forms as principles of activity. Leibniz's rehabilitation of substantial form is perhaps best known from some sections of the *Discourse of Metaphysics*, written in 1686. In the section 10, Leibniz wrote:

It seems that the ancients, as well as many able men accustomed to deep meditation who have taught theology and philosophy some centuries ago (some of whom are respected for their saintliness) have had some knowledge of what we have just said; this is why they introduced and maintained the substantial forms which are so decried today. (AG 42)

For Leibniz, “the belief in substantial forms has some basis” (ibid.). These forms should not be introduced to explain motions of balls, for instance, since they can be explained mechanically. But through substantial forms we “properly know the first principles or elevate our minds sufficiently well to the knowledge of incorporeal natures and the wonders of God” (ibid.). In the following section, Leibniz suggested that he had noticed the importance of the old philosophy “after having [himself] carried out certain studies” (AG 43). Seemingly, Leibniz started to suppose that there are substantial forms before writing the *Discourse*. And Michel Fichant argued that Leibniz did so in 1679, right after writing *De corporum concursu* (later on DCC) of 1678. In DCC, Leibniz showed that the quantity of mv^2 is conserved in the course of collision. More specifically, when Body A (whose mass is M_a , and whose velocity is V_a) and Body B (whose mass is M_b , and whose velocity is V_b) collide to each other, the quantity of $M_aV_a^2 + M_bV_b^2$ is always constant. According to Fichant, DCC also has an essential form for Leibniz's rehabilitation of substantial forms. Let us see his interpretation in detail.

Fichant summarizes the development of how Leibniz dealt with substantial forms. According to Fichant, Leibniz actually did not rehabilitate substantial forms right after writing DCC of January 1678. Fichant mentioned to another text *De motu tractationis conspectus* (later on *De Motu*) of February 1678, in which Leibniz examined movement from a metaphysical view point as well as others (Fichant 1998, p. 180). But according to Fichant, Leibniz's discussion in *De Motu* is still occasionalistic as one in *Pacidius Philalethi*, since he seems to postulate an action of God for explaining future movements:

Hic praeter considerationem spatii impenetrabilitatis adhibetur consideratione auctoris, nam ex hac sola absolve potest, non vero ex sola consideratione spatii et impenetrabilitatis. Nam motor ille non ager sine ratione. (Gerland 114; Fichant 1998, p. 180)

De Motu strongly suggests that Leibniz did not rehabilitate substantial forms right after writing DCC. According to the passage, we cannot figure out how bodies move only by considering space and impenetrability, and thus we need to postulate “the consideration of the Author.” To be sure, this passage may be read as suggesting that God just planned to create bodies with immanent forces that cannot be explained only in terms of space and impenetrability, with an implication that bodies do not consist in shape, size, and impenetrability. However, Leibniz also wrote that “this motor would not act without reason.” “This motor” seems not be the immanent force of a body, since it is not specifically mentioned before. So it probably refers to God, which suggests that God himself acts for moving bodies.

Though the previous passage seems to show that Leibniz had an occasionalistic view, not all the passages of *De Motu* suggest that Leibniz firmly believed in that view. In the later part of *De Motu*, Leibniz mentioned to “power [potentia]”:

Nam ex comitantibus resultant vestigia, non vero ex vestigiis concomitantiae. Itaque duo videntur esse effectus Motus unus in Mente, nempe apparentias, alter in alio corpore, nempe potentiae. (Gerland 115; Fichant 1998, p. 182)

Here Leibniz suggested that there are two realms, namely,

phenomenal and real realms. Appearances belong to the former, and exist in perceiving minds. But bodies and their powers belong to another realm. Hereby Leibniz suggested that bodies, which have some mind-independent reality, exist with immanent powers for acting. What Leibniz suggested seems not consistent with his previous occasionalistic view. Thus we can take *De Motu* as a complex text, in which two remarkably distinct ideas are found. Perhaps it is a transitory text, and Leibniz was in a process of developing a new view when he wrote it. And according to Fichant, Leibniz was committed to the existence of substantial forms after writing it.

However, against Fichant, Daniel Garber argued that there is no evidence to show that Leibniz's investigation of the conservation law has a significant impact upon his rehabilitation of substantial forms. In his paper "What did Leibniz learn about body in January 1678?", Garber compares the metaphysics of body in the mid-1670s and that of the mid- and late 1680s. As for the mid-1670s, Garber wrote that Leibniz already introduced the principle that "the effect involves its cause" in a fragment from 1 April 1676, found in *De Summa Rerum* (A VI iii, 490; Garber 2009b, pp. 71-72). Moreover, Leibniz also wrote that "God always conserves the same quantity of motion in the universe," commenting on Part II 36 of Descartes' *Principia* (A VI iii, 215 = RA 25). This comment was written in winter 1675/6 or early 1676. Thus Garber suggests that Leibniz already noticed that some quantity is conserved in the universe before writing DCC.

In this paper, I attempt to see how Leibniz justified the claim that there are substantial forms, and argue that pace Garber, there is some connection between the conservation law and the rehabilitation. When he rehabilitated substantial forms, I think, he not only thinks that substantial forms are possible, but they actually exist. So we need to see his arguments to show that there are substantial forms. I found three distinct arguments as the following.

3. Three Arguments for the Existence of Substantial Forms

3.1 Unity Argument

I introduce three arguments of Leibniz to show that there are substantial forms in bodies. First, I introduce an argument based upon the assumption that a unity requires

a substantial form. We can find the argument in the following passage:

Unless there were a soul, i.e., a kind of form, a body would not be an entity, since no part of it can be assigned which would not again consist of further parts, and so nothing could be assigned in body which could be called this something or some one thing. That it is the nature of a soul or form to have some perception and appetite, which are passions and actions of the soul, and why; namely, because souls result from God thinking of things, that is, they are imitations of his ideas. All souls are inextinguishable, but precisely those are immortal which are citizens in the Republic of the Universe, i.e., those of which God is not only Author, but King. (A VI iv, 1988-9 = RA 233-5) (Summer 1678 - Winter 1678-79?)

Leibniz seems to hold at least three claims in the passage. First, any entity needs to be one thing. Second, one thing needs to have an intrinsic unity. Third, any intrinsic unity needs to come from a substantial form. Therefore, if a body is an entity, it needs to have a substantial form. On the basis of this passage, we can formulate the unity argument in the following way:

The unity argument

- 1 Without a form, any part of a body consists of further parts.
- 2 If any part of a body consists of further parts, the body is not an entity.
- 3 If a body is an entity, there is a form in it. (from 1-2)

This argument does not fully establish the existence of substantial forms in bodies. The conclusion is given only when a body is an entity. In brief, it shows that if a body is real and taken as an entity, then the reality must be from indivisible unities. Also, the unity argument does not a benchmark to show that Leibniz took a new view. Leibniz already presented a similar idea in *De Summa Rerum* saying that bodies need minds to unite them. For him, body would not have any unity without mind, and lose its reality. But since body is supposed to have some reality, it

needs to have a mind to unite it. Since a similar argument is found in DSR of 1675-76, we should seek another argument to see what is new in Leibniz's view of 1678-79.

3.2 Action Argument

I introduce an argument to show that forces are nothing but forms:

Body is a movable extended thing, or body is extended substance. It can be demonstrated that these definitions coincide, for I define substance as that which can act; but the action of an extended thing is by motion, namely, local motion. (A VI iv, 245 = RA 245) (Summer 1678-Winter 1680-81)

Leibniz used a strong word “demonstrate” here, but we cannot clearly understand his demonstration for the existence of substantial forms. He just demonstrates the equivalence of two sentences. Still, we can understand that the passage suggests that some assumptions show that bodies are substances, and they have substantial forms. The argument seems to be formulated as the following. First, an extended body has a motion. Second, motion is an action. Third, any acting thing is a substance. Therefore, an extended body is a substance.

The action argument

- 1 Body is a movable extended thing.
- 2 A movable extended thing can act by motion.
- 3 That which can act is a substance.
- 4 Therefore, body is a substance. (from 1-3)

One problem is that Leibniz did not explicitly talk about substantial forms. He just implied that body is a substance. But in another passage, he was committed to the view that a substance has its form. Here form is the principle of action, which is needed for a substance. So maybe from this passage, we can be sure that Leibniz believed in the existence of substantial forms. Still, this does not show how exactly the conservation law is related to the rehabilitation of substantial forms. Leibniz argued that bodies have actions since they have local motions. It seems that insofar as bodies have local motions, they have “actions” even if the quantity of their force is not conserved. Here we cannot show that Leibniz's

rehabilitation of substantial forms is based upon his discovery of the conservation law.

3.3 Equality Argument

As we have seen, the two previous arguments do not establish the existence of substantial forms on the basis of the conservation law. But I think Leibniz had another argument to show that there are substantial forms based upon the assumption that the conservation law holds. The argument is introduced by the following passage:

Now there follows the subject of incorporeals. There turn out to be certain things in body which cannot be explained by the necessity of matter alone. Such are the laws of motion, which depend on the metaphysical principle of the equality of cause and effect. Here therefore the soul must be treated, and it must be shown that all things are animated. (A VI iv, 1988 = RA 233) (Summer 1678-Winter 1678-79?)

Leibniz postulates the existence of “souls” that animate all the things. These souls animate not only animals and plants, but inorganic things. Thus souls in this context can be taken as substantial forms. And Leibniz shows the existence of substantial forms on the basis of “the laws of motion.” I think Leibniz assumed that the conservation law is one of the laws of motion. According to the conservation law, the speeds of two elastic bodies that collide to each other need to be such that the sum of mv^2 is constant before and after the collision. Since the speeds of the two bodies are certainly related to their motions, the conservation law is considered as one of the laws of motion.

Now, we need to see how the conservation law “depends” upon the metaphysical principle of cause and effect. I think Leibniz suggested that there should be some metaphysical entity that causes bodily phenomena, and there should be some principle which the metaphysical entity needs to observe in such a way that bodily phenomena are caused by the entity observe some formula. In my interpretation, Leibniz thought if the motion of a body always follows some law for a certain period of time, the motion should be caused by some entity that observes the law. And the conservation law tells that bodily phenomena follow some formula for a certain period of

time. Leibniz discussed the conservation law when he estimated the speed of a body falling down from a certain height. In this context, the falling body needs to observe the conservation law for a certain period of time. For instance, if a ball falls down from the height of 4.9 meter, then one second later it will hit the ground. The speed of the ball needs to observe the conservation law anytime during the free fall.

And in my interpretation, Leibniz did not assume that the metaphysical cause of bodily phenomena is God himself, since if he perpetually produce all the bodily phenomena all by himself, then he would do miracles every moment. Leibniz believed the metaphysical cause of bodily phenomena is the immanent nature of bodies. And this immanent nature is called substantial form. Considering what I have discussed, the equality argument can be formulated as the following:

The equality argument

1 The conservation law holds.

2 If the conservation law holds, then the metaphysical principle of the equality of cause and effect also holds since the former depends upon the latter.

3 If the metaphysical principle holds, then there must be some metaphysical entity that acts in accordance with the principle.

4 There must be some metaphysical entity that acts in accordance with the metaphysical principle. (from 1-3)

To sum up, the equality argument allows Leibniz to believe that if phenomena follow some kind of law, then phenomena show the existence of a persisting being that observes the law. And Leibniz empirically knew that phenomena actually follow the conservation law. These two points are logically sufficient to establish the existence of a persisting being. If we take it to be a substantial form, then the equality argument is sufficient for Leibniz's rehabilitation of substantial form. Our discussion still did not show the equality argument was essential for Leibniz's rehabilitation, or the argument was the only path for the rehabilitation. But at least the argument is a way to establish the existence of substantial forms.

Of course, some may doubt one of the assumptions of the argument, and doubt the conclusion as well. For

instance, according to Berkeley, any movements of bodies are considered as phenomena in a perceiving mind. If so, even if bodies appear to follow the conservation law, the metaphysical principle of the equality of cause and effect does not hold since body does not have any mind-independent reality, and there is no effect produced by an antecedent cause.

Perhaps Leibniz accepted a strong version of the assumption 1, according to which the conservation law holds in a realm that is external to perceiving minds. As Fichant notes, Leibniz noticed that there are two realms to consider. Leibniz suggested that an effect of a collision exists in a perceiving mind, and another effect of collision exists in body as well (Garland 115; Fichant 1998, p. 182). So, when Leibniz assumes that the conservation law holds, he seems to think that it holds in both of the realms.

4. A Critical Exposition of Garber's Interpretation

So far I have argued that the equality argument requires the conservation law to show the existence of substantial forms, and it is the most powerful argument among those I introduced so far. So I am ready to argue that in fact the conservation law is needed to reestablish substantial forms.

Unlike my interpretation, however, Daniel Garber argues that the discovery of the conservation law is basically independent of the rehabilitation of substantial forms. To defend my interpretation, I would like to see three problems of his interpretation.

First, Garber seems to justify his interpretation for Leibniz's view of 1676 on the basis of a later text. Garber suggests that "the exertion" which a person makes is a model of the causal agency for Leibniz in 1676. He wrote that "already in 1676 one clear model Leibniz had for causal agency in motion, the exertion a person makes and feels in walking, requires something beyond a Cartesian conception of inert matter" (Garber 2009b, p. 80). As we have seen, substantial form is considered as the principle of action. If Garber's suggestion is right, then Leibniz's consideration of the exertion is more relevant to the rehabilitation of substantial forms rather than his investigation of physics, including the discovery of the conservation law. Let us see the text Garber refers to:

For example, in a long piece on motion and

mechanics, which was probably written in 1676, Leibniz worries at length about the subject to which motion should be attributed, since when two bodies are changing with respect to one another, we often cannot determine which of the two to which we should attribute the motion. He begins with the observation that “it is obvious that motion should be attributed to the one of the two bodies in which is situated the cause of change” (A VI, 3, 104). The example Leibniz gives of such a cause is extremely suggestive: “... when they walk, they believe that they approach the town rather than that the town approaches them because they feel in themselves a certain tiredness and work” (A VI, 4, 104; cf. A VI, 4, 2019, written summer 1678 to winter 1680/1). (Garber 2009b, p. 78)

Garber’s interpretation does not explain the time lag between Leibniz’s consideration of the exertion (1676) and the rehabilitation of substantial forms (1678-79). Perhaps it is possible that Leibniz needed some years to apply his idea inspired by the consideration of the exertion, but we still do not know why Leibniz needed to spend two or three years to change his mind. Another problem is that Garber’s interpretation does not show why Leibniz was inclined to suppose that even inorganic bodies contain substantial forms. Leibniz’s consideration of the exertion implies that

human bodies, and perhaps animal bodies, contain substantial forms as principles of action. For these reasons, I do not follow Garber’s interpretation here.

Abbreviation

A. = *Sämtliche Schriften und Briefe*. Herausgegeben von der Deutschen Akademie der Wissenschaften zu Berlin. Darmstadt, 1923 ff., Leipzig, 1938 ff., Berlin, 1950 ff. Cited by series, volume, and page.

AG. = *G.W. Leibniz: Philosophical Essays*. Trans. and ed. R. Ariew and D. Garber. Hackett.

Gerland. = *G.W. Leibniz: Nachgelassene Schriften physicalischen Inhalts*. Leibzig.

RA. = *The Labyrinth of Continuum*. Trans. and ed. R. Arthur. Yale University Press.

References

Adams, Robert Merrihew. 1994. *Leibniz: Determinist, Theist, Idealist*. Oxford University Press.

Fichant, Michel. 1998. “Mécanisme et métaphysique: le rétablissement des formes substantielles (1679)” In *Science et métaphysique dans Descartes et Leibniz*. PUF, pp. 163-204.

Garber, Daniel. 2009a. *Leibniz: Body, Substance, Monad*. Oxford University Press.

Garber, Daniel. 2009b. “What Did Leibniz Learn about Body in January 1678?” In Mark Kulstad and Mogens Laerke eds. *The Philosophy of the Young Leibniz*. Franz Steiner Verlag (Studia Leibnitiana SH-35), pp. 67-82.

[Kanazawa Seiryō University, Associate Professor]