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Is it Plausible to Distinguish between “Intraorganic” and “Interorganic” Relations within Leibniz’s Theory of Organic Matter?¹

In the following remarks, I would like to justify the title of my paper developing a textual analysis of some passages of the *Animadversiones in G.E. Stahl’s theoriam medicam*. In this regard I would also like to commemorate the 300th anniversary of the last part of that controversy, which was completed by Leibniz in 1711 by drafting the last part of the *replicationes* to Stahl.

In the controversy with the physiologist from Halle, Leibniz offers us, in the last section of the *replicationes*, a kind of a *summa* of his ideas concerning the realm of organic nature. He also discusses some classical issues, such as the distinction between organic and inorganic, the relationship of mechanism with finalism, and the structural correspondence between vital spirits and appetites of the soul. In short, he reconsiders almost every aspect of his doctrines, that have to do with the issues that stem from the definition of “living” (both theoretical and empirical).

Let us try to reconstruct the main points of this section, beginning with some preliminary statements. First of all, every *organism* is, according to Leibniz, a *mechanism*². That is, one should not simply say, as Stahl does, that each organism is “supported” by a mechanism or “requires” a mechanism. This is not true because every organism, literally, *is* a mechanism. That is to say, it formally coincides with a structured framework of endless organic machines³.

There is, in fact, a misunderstanding which rests on the very notion of “mechanism”. Namely, there is a misconception of the relation between “finality” and “mechanism” that must first be cleared. According to Stahl, some things happen in nature according to “an end” and others take place “by chance”. Yet, precisely on this view, Leibniz, reconstructing the argument of Stahl, distinguishes between “organic” from “mechanical phenomena”.

According to Stahl, organic phenomena are those in which the active presence of a purpose is recognizable, while the mechanical ones are deprived of such goal-oriented activity. But this is the weak side of Stahl’s argument. One

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² “Organismum nihil aliud esse formaliter quam mechanismum, etsi exquisitiorem et diviniorem”: see G.G. Leibnitii *Animadversiones circa Assertiones aliquas Theoriae Medicae Verae clari Stahl’s, cum ejusdem Leibnitii ad Stahlianas observationes responsionibus*, in Dutens, vol II, 2, pp. 131-161, here p. 144.

³ *Ibid.* For a commentary on this passage and, more generally, for a reconstruction of the semantic spectrum gravitating around the terms “*machina*”, “*machinamentum*”, “*mechanismus*” in Leibniz, see R. Palaia: “Macchine infinite e organismi: ‘machina-machine’ negli scritti leibniziani”, in: *Machina XI colloquio Internazionale del LIE*, Atti a cura M. Veneziani, Firenze 2005, pp. 385-398.

can't set "mechanism" against "finalism" in a world where even the "motion of a speck of dust stirred by the wind" is always destined by God to happen (i.e., "to serve a certain effect, according to a specific causal order")⁴.

Here Leibniz develops a double line of concepts. First, a previously developed issue concerning the presence of organic within inorganic matter comes back. According to this latter argument, even inorganic bodies, i.e., those which are apparently disordered, like a stone or a pond, have within themselves a hidden world of sharpness, a world of order (Leibniz refers here to the well-known example of the pond full of living fish, which is not alive in itself). Secondly, he adds something new: Leibniz stresses the fact that the performance of each finalistic internal process in the animal-machine constantly needs to match a coordinated external end (let us say "environmental"). It is precisely in this intrinsic meeting between *internal goals* (coming from the structure of the machine) and *external purposes* (coming from the concomitant environmental conditions) that the divinity of nature manifests itself in the clearest way.

We will later develop this peculiar argument presented by Leibniz, but for now it is sufficient to point out that:

"machines have purposes and effects by virtue of their structure, whereas purposes and effects of aggregates arise from the series of things that participate, and thus from the encounter of different machines"⁵.

Pursuing this line of reasoning, there seems to be "a big difference between machines and aggregates", or between what is organized because it has purposes and effects by virtue of its structure and that which appears to be a simple "bulk" without purposes and effects of its own⁶.

Nevertheless, let us follow the arguments presented by Leibniz step by step. First of all, the distinction made by Stahl between "organic phenomena" and "mechanical phenomena" doesn't seem to be consistent (or, at least, not on the basis of the arguments presented by him). Indeed, every inorganic aggregate (i.e., inanimate) also hides in itself countless machines of nature, that is to say, organic devices that, even if not reciprocally coordinated *ad unum*, are bearers of an immanent finality.

"There is no bulk, however rough or small, that in itself does not contain any organic body, namely a machine of nature, because all things are imprinted

⁴ See *Animadversiones*, p. 144.

⁵ "Machinae fines et effectus habent vi suae structurae, at aggregatorum fines et effectus oriuntur ex serie rerum concurrentium; atque adeo ex diversarum machinarum occursum": *ibid.*

⁶ For a commentary on this passage, see M. Fichant: "Leibniz et les machines de la nature", in: *Studia Leibnitiana*, XXXV/1 (2003), pp. 1-28, here p. 21.

with traces of divine wisdom – and therefore finality, including the physical one, takes place everywhere”⁷.

From this point of view, we could say that any form of aggregation hides the presence of “organisms”. This term could perhaps be translated as “machinery”, because it indicates the presence of an underlying goal-oriented form of organization. All this, however, is not yet sufficient to achieve the level of an accomplished (individual) substantiality, because these various, and properly speaking infinite, forms of organization, lack mutual coordination. It is only when the level of “organization” combines itself with the level of “unity” that the aggregate becomes actually living.

Thus, “organism” refers not so much to a biological individual (i.e., to a concrete living being), but rather to the fact of being organized. It does not refer to a substantial definition, but rather it describes a way of being. If the term “machine” refers to the composition of an aggregate in which the whole/part relationship is defined in a functional sense (the machine is a junction of parts and performs a certain kind of operation), the organism, on the contrary, is always a machine (in this sense I allow myself the use of the term “machinery”). It is a form of organization, in which the whole/part relationship remains steady at any level of observation (microscopic or macroscopic).⁸

More specifically, the organic aggregate becomes an actual living being only when the *intra-organic* relations subsisting within the countless organisms, which are present in an organic body, become reciprocally connected (thus creating a chain of *inter-organic* relations). That happens when the forms of organization that spread everywhere become the expression of a single systemic organization, to which corresponds, on a formal level, the concomitant presence of an entelechial activity which has become *dominant*.

In this case, we no longer have a mass endowed with forms of organization, scattered through the endless folds of matter. Rather, we have a soul-like individuality in which inter-organic organization is now reflected by the presence of a dominant monad. This latter formally guarantees substantial unity, and thus the life of the entire body.

I applied in this context a technical terminology that is currently used by scholars, i.e., the distinction between intramonadic and intermonadic relations.

⁷ “Nulla est massa tam rudis aut tam parva, quae non in se contineat aliquod corpus organicum seu machinam naturae, quia nihil est, in quo non impressa sint divinae sapientiae vestigia, itaque ubique fines etiam physici locum habent”. See *Animadversiones*, p. 144. See also *ibid.*: pp. 154-155: “Et licet Entelechias primitivas non attribuam, nisi corporibus organicis, tamen omnia corpora Entelechias primitivas continent, quia etiam continent in se corpora organica, etsi nobis non semper perceptibilia. Quod etiam Sapientiae Autoris summi consentaneum est, nullum revera sit chaos in materia, nihil inordinatum, nihil machinae, organorum, ordinis, finis, experts”.

⁸ On this topic, as well as on the issue largely debated concerning the dating of the word “organism” in the writings of Leibniz, see E. Pasini: “Both Mechanistic and Teleological. The Genesis of Leibniz’s Concept of Organism, with Special Regard to His ‘Du rapport general de toutes choses’”, in: H. Busche (ed.): *Departure for Modern Europe. A Handbook of Early Modern Philosophy (1400-1700)*, Hamburg 2011, pp. . 1216-1235

This subtle difference indicates, in the first case, the relationship between an individual and its internal representational states, and in the second sense, the external relations that each individual maintains with other monadic individuals (i.e., the monadic individual “Albert” with “Alexander”)⁹.

On a different level, I think that this distinction could be particularly useful also to specify the different types of relations that are generally classified as “organic”. There are, in fact, more specific kinds of relationships which take place only within living entities. Something similar is expressed by Gilles Deleuze when, speaking of organic matter, he notes that “An organism is defined by endogenous folds, while inorganic matter has exogenous folds that are always determined from without or by the surrounding environment”¹⁰.

In comparison with the previous remarks, however, Leibniz does not confine himself to the issue of the organic’s latency within the inorganic matter. Rather, he also considers the complementary side, namely, the issue of the inorganic’s latency within the organic matter. In the same way that organic elements hide in any material aggregate, organic bodies lie in inorganic elements too.

Leibniz writes:

“However, not every part of an organic body is itself an organic body. So even if the heart retains its motion for some time after it was explanted from the body, this does not show that the heart is an animated body: a simple mechanism is sufficient to continue this movement for a while, even in the absence of perception and appetite”¹¹.

It is important to stress this example of the heart, because it is often taken up in the controversy, even up to the conclusion. From the standpoint of Leibniz it means – I seem to understand – that being organic is not a property which belongs to the part in respect to the whole, and even less is it a property of matter over form. On the contrary, it is the whole/part relationship which is constantly organic in a living substance. Again, it is the issue of organization that proceeds only by previous organization.

That also means, using the words of such a noble interpreter as Deleuze, that living beings are fully-achieved, “machined”, unlike mechanical aggregates. And that happens not because of the presence of machines within a living being (because these latter, as we saw, are spread everywhere), but because of the living being’s mutual relationship with the internal machines. This latter is infinite. That is to say, it remains always steady. This is despite the fact that the whole body is actually structured as a “flow” of bodies that are constantly renewed.

⁹ See M. Mugnai: “Leibniz’ Theory of Relations”, in: *Studia Leibnitiana, Supplementa XXVIII*, Stuttgart 1992, pp. 14-15.

¹⁰ See G. Deleuze: *The Fold. Leibniz and the Baroque*, trans. by T. Conley, London 1993, p. 7.

¹¹ “Sed non quaevis pars corporis organici corpus organicum est; ideo, etsi motum aliquandiu retineat cor ex corpore avulsum, non ideo hinc probatur cor esse corpus animatum; sufficit enim nudus mechanismus ad hunc motum nonnihil continuandum, etsi perceptio et appetitus absint”. *Animadversiones*, p. 157.

“A mechanism is faulty not for being too artificial to account for living matter, but for not being mechanical enough, for not being adequately machined. Our mechanisms are in fact organized into parts that are not in themselves machines, while the organism is infinitely machined, a machine whose every part or piece is a machine, but only “transformed by different folds that it receives”¹².

In other words, it is as if Leibniz identifies two meanings of the term organic: a stronger one and a weaker one. In the strong sense, “organic” means “animated”, but in the concrete sense of being alive. That is to say, using technical terms, being endowed with a dominant monad. And therefore, according to this, the narrow sense of “living” (in the sense of being “entirely organic” or “animated”) refers to organisms such as plants, animals, and, of course, human beings. According to the weaker meaning of the term, “organic” simply means “animated”, but in the sense of being “endowed with entelechy”.

In the *New System of Nature*, Leibniz speaks of “*formes enfoncées dans la materie*” referring to the world of simple entelechies. We must be careful not to confuse the simple entelechies, he says, with “other forms or souls”, namely neither with the spirits nor with the rational souls. These latter, in fact, belong to a “higher order and have an incomparably greater perfection”¹³. So the heart, independently from the body, even if it is interwoven with entelechies (as indeed happens to every inorganic body, such as a stone) can’t be considered “animated” by itself (in the peculiar sense of “living”). Although its internal tissues are indeed full of “animation”, it nevertheless lacks a dominant monad.

As J.E. Smith and P. Phemister correctly observe, Leibniz conceptually distinguishes the organic body, namely the mass or secondary matter, from the living animal itself. The latter involves the active presence of a dominant monad, while the organic body operates like any other mechanism¹⁴. Leibniz writes, in fact, to accomplish the above mentioned argument:

“Rather, it is true that within the heart or within any part of an animated body (and also of any mass) it is full of organic bodies, though mostly not perceptible and that these bodies are always animated or actuated by themselves. Otherwise matter couldn’t be accomplished everywhere and even the same mechanism wouldn’t take place”¹⁵.

¹² See G. Deleuze, *The Fold*, p. 8. Concerning the idea that animals’ bodies are like a river, which constantly flows, see *Animadversiones*, p. 147.

¹³ See GP IV, p. 479.

¹⁴ The reference is to the letter to De Volder of 20 June 1703: GP II, p. 252. See J.E. Smith – P. Phemister: “Leibniz and the Cambridge Platonists. The Debate over Plastic Natures”, ed. by P. Phemister and S. Brown, in: *Leibniz and the English-Speaking World*, Dordrecht 2007, p. 99.

¹⁵ See *Animadversiones*, p. 157 “*Illud verum est, cordi et cuilibet parti corporis animati, imo et cuilibet massae, corpora organica completa, etsi plerumque insensibilia inesse, eademque esse animata semper seu per se actuata. Et nisi hoc esset, materia ubique actuata esse non posset, nec ipse Mechanismus locum haberet*”.

As usual, the example of the pond works here (which is not animated or living as a whole) and of the pond's inhabitants (each of them individually animated). Moreover, the account of the divisibility of bodies *ad infinitum* is especially at work, and more developed in comparison to the former objections. Stahl is a fierce opponent of the idea that a body might include in it an infinite number of other bodies and he holds this Aristotelian doctrine for being responsible for the so many troubles that afflict contemporary medicine. The physiologist of Halle is much more inclined to an underlying gassendism, according to which bodies are compounds but are not further divisible to minimal elements.

Leibniz, on the contrary, according to the classical argument opened in the *New system* of 1695¹⁶, identifies in the factor "infinity" the possibility of distinguishing the category of "natural" from the huge domain of mechanical "artefacts". And yet, to be fair with Stahl, one must also say that such an argument is not really developed by Leibniz in the text, as indeed, the issue of a "dominant monad", with respect to the infinite colonies of "subordinate" monads, is not even mentioned in Leibniz's text .

We will later examine the reasons for these deficiencies. Now it is important to take up the thread of the argument which we left off, namely the question of the relationship between mechanism/finality. Having established that any mechanism involves in itself the presence of a sort of a "sub-machinery" (i.e., of latent structures arranged according to a goal), it follows that the difference between 'organic' and 'mechanism' cannot be discussed within the perspective of purposes. First, because "finality, including the physical one, takes place everywhere"¹⁷. Second, and above all, because even the "external determination" from which bodies appear to be affected (i.e. the concomitant, inorganic, environmental conditions) are actually part of the context in which the organism unfolds its internal action.

It is for this very reason that Leibniz, later in the text, supports a strong argument, absolutely peculiar to his philosophy, which deserves to be fully quoted here:

"Although the body is affected by many external determinations, even these, however, appear to be since long secretly enveloped in the body. That happens because of the mutual relation of things, that is to say because of the communication of bodies and by reason of the current division of matter to

¹⁶ See: GP IV, p. 482. It is hardly necessary to recall that the infinite divisibility of bodies is discrete rather than continuous. If in the case of ideal beings, such as mathematical ones, the whole precedes the part, in the physical world, it is vice versa, i.e., it is the part that precedes the whole. Thus, for example, while the properties of a straight line are "reciprocal" ("the line is defined as that in which the part is similar to everything", see *Animadversiones*, p. 151), in physics, the part must not be conceived as an undifferentiated point, but rather as the "fold" of a fabric, which carries within it traces of a configuration, which is different from time to time. It should also be remembered, however, that these arguments, though mentioned on several occasions, are not actually exhaustively nor widely covered in the text of the *Animadversiones*.

¹⁷ See *Animadversiones*, p. 144.

infinity. The assumption is, in fact, that everything is full and somehow fluid, so that everything is affected by any other, however distant"¹⁸.

Here we are facing one of the deepest theoretical-cores of the Leibnitian thought. Properly speaking, there is nothing absolutely "external" for the organism. Even the inorganic environmental conditions (such as the heat of the sun, the nourishment coming from the mulberry's leaves for silkworms, etc.) are themselves functions of a coordination preestablished by God for the development and the maintenance of what is living. So, to quote an example made by Leibniz at the beginning of his speech, although a silkworm, by virtue of its internal structure, is able to develop a "goal" and a "work" (*opus*) according to its essential nature, one must nevertheless recognize that:

"Indeed, one could not even accomplish a completely internal work, such as silk production, without the contribution of external factors, such as the heat of the sun, the nourishment coming from mulberry's leaves and others of this kind"¹⁹.

In other words, as hinted above, it is the whole question of the relationship between organic and inorganic that must be reconsidered and re-articulated on the basis of different reasons than those advanced by Stahl. And that is to say, in one sense, one cannot distinguish "organic" from "inorganic" on the basis of just a categorial contrast, setting mechanical concepts against finalistic ones. Leibniz on the contrary writes:

"Although in organic bodies there is a more evident order [than in inorganic bodies], it does not follow, however, that in other bodies [inorganic] there is any purpose, since organic bodies (assuming as well the absolute providence) might be regarded as nothing more than machines, in which the creative skill and the intention of God are expressed more clearly"²⁰.

Given the pervasive ubiquity of organic features in nature, in some cases there are phenomena which manifest more obvious purposes than others. That is why, when we speak of organic bodies, we refer to such an internal finality, which is missing in the case of other inorganic aggregates (such as stones, swimming pools, and inanimate objects in general). And it is always in this sense that we usually say, with an improper use of language, that silk is "useful for"

¹⁸ *Ivi*, p. 154.

¹⁹ *Ivi*, p. 144.

²⁰ *Ivi*, pp. 143-144. Laurence Carlin has brought out the causal bond of efficiency existing between the representation of purposes and the perception of means. In other words, according to Carlin, the relationship between final and efficient causality is more complex than might appear at first sight. There is indeed a dimension of "efficiency" that plays an active role in the unfolding of represented purposes and, as a complement, we must consider that "efficient causality" is not always synonymous to "mechanical causality". To check the development of this thesis, see L. Carlin: "Leibniz on Final Causes", in : *Journal of the History of Philosophy*, 44/2 (2006), pp. 217-233.

being transformed into clothes: because we acknowledge in it just an “external” purpose and not an “internal” one. As is well known, the issue of the distinction between internal and external purposes will be developed later by Kant, in the *Critique of judgment*. It would be interesting to establish a correspondence, or a sort of a parental relationship, between the Leibnitian doctrine of finality and the Kantian re-examination, but unfortunately this task is very difficult to do, at least on terms of textual references²¹.

In any case, since entelechial forms are spread everywhere and matter is everywhere “actualized” by these entelechial forms, there is a second sense, according to which inorganic is essentially part of the organic world. In fact, it is not only the purely “inorganic” that does not exist in nature (given that each body hides within it ingredients of latent animation); but precisely because a hidden finality is spreading everywhere, it follows that the organic stretches its borders to embrace also the seemingly external determinations (*prima facie* inorganic), rendering them (i.e., the external determinations) as moments of its internal – organic - development.

In other words and according to the highest sense of the preestablished harmony, there is a sense, although secret (it is not by chance that in the previous quotation Leibniz recalls the theological element of *pericoreisis*), according to which the inorganic can be considered as a function of the organic world. And therefore, inorganic might be considered not as an opposite term of organic, but like a concomitant, an environmental condition of it.

Naturally, given the absolute pervasiveness of entelechial forms in nature, and given the corresponding nesting-model of bodies (“everything is full”), it remains to be explained why, although everything is full of “animation”, not every body is equally “living”²². But this is an issue that in the *replicationes*, as in the entire text of the *Animadversiones*, is not addressed. This can certainly be surprising if one considers that in the same period, Leibniz cogitates intensively on the question of the dominant monad that “renders *one* the animal machine”²³. To confute the physiologist of Halle, it was probably not necessary to use highly sophisticated tools, about which perhaps Leibniz himself had some interior doubts²⁴.

However, what really matters with reference to Stahl, is the result of this complex theoretical work, which implies a new conceptual redefinition: the vitalistic phenomena of nourishment, self- maintenance, and reproduction can easily be defined through the use of mechanical concepts²⁵. In particular, it is not

²¹ About the reception of Leibnitian themes in the third critique of Kant, see the analysis, that I partially share, developed by A. Model: *Metaphysik und reflektierende Urteilskraft bei Kant. Untersuchungen zur Transformierung des leibnizischen Monadenbegriffs in der «Kritik der Urteilskraft»*, Frankfurt am Main 1987.

²² On the nesting-model of bodies, see O. Nachtomy: *Possibility, Agency, and Individuality in Leibniz's Metaphysics*, Dordrecht 2007, p. 226.

²³ See the often-quoted passage of the letter to De Volder on June 1703: GP II, p. 252.

²⁴ It is well-known, among scholars, that Leibniz often constructs his arguments *ad hominem*.

²⁵ In previous observations, Leibniz distinguished between the act of “vegetating” from the act of “living”, arguing that in order to explain the first it is sufficient to refer to a purely “physical” or

true that the tonic movement of bodies might be directly acted upon by the causal influence of the soul. The “movement” (which pertains to the body only) is one thing, and the “action” (which pertains to the soul only) is another. Leibniz, therefore, is now able to present to his opponent, as a kind of a counter-explanation to his unjustified hypothesis, the description of a complex mechanism, which clarifies the mechanical roots of animals’ movements. The latter relies on the pivotal notions of “*impetus*” and “*spiritus*”. Namely, what is presented is an analysis of the organic microdevices that structure the vegetative capacities of bodies and this explanation is implemented through the results of his studies on dynamics.

The vitalistic movements of bodies are justified by the very presence of animal spirits (*spiritus animales*), without any need to postulate an internal or direct intervention of the soul. Vitalistic movements occur by virtue of the mere presence of entelechies: the presence of a dominant monad is not strictly requested. In other words, the physiological functionality of animal spirits does not require the whole body to be “alive” (or “animated”). In this sense, the example of an explanted heart (which still pulses) becomes the paradigm of a conceptual distinction that may sound absurd to our contemporary ears, but which is perhaps the most valuable inheritance of the entire controversy. It is one thing to talk about “organism” (meant as the mechanical organization of a body) and it is quite another to talk about “life” (meant as individual unity, not deducible by mechanical factors)²⁶.

The mechanical functioning of the bodily organs can find its own “vegetative” justification, regardless of the presence of a central soul. At the same time, vitalistic processes might become fully intelligible once they are considered as autonomous, unlike the centralized paradigm proposed by Stahl. There is no need to involve the activity of the soul everywhere, because within bodies derivative forces and entelechial centres are spread everywhere.

The soul, in its turn, is not of a plastic nature, it is not an *archeus*, and not even an hylarchic principle. All of these are “chimerical causes”, which involve a form of materialism and prevent, all in all, the understanding of the uniqueness of the concept of life - since each animal is both living *and* organized. If Stahl were right, one could say that every part of the body might have its own soul. After the explantation, the heart would continue its pulses because of an internal division

“mechanical” action such as that implemented by a mere “vegetative force”. See *Animadversio*, p. 138: “Ego haec ad vegetandi vim referebam, qua corpus vivum sese perficit, nutrit, reparat, propagat, quod ex ipsa structura machinae consequi puto; etsi anima ubique conspirante. Et videmus aliquid vegetationi analogum in corpore maxime fluxili, sed minime vivo, nempe flamma, quae sese nutrit propagatque, et alimento deficere incipiente, miris motibus discurrit, id agens ut se tueatur. [...]Sed de vocabulo litigare nolim. In arbitrio auctoris est vitam appellare, quod alii vegetationem”.

²⁶ On this line of interpretation, see J.E. Smith - P. Phemister: “Leibniz and the Cambridge Platonists”, pp. 99-100; e J. Roland: *Corps organique et constitution de l’individualité chez Leibniz*, Thèse de Doctorat, Soutenue à l’Université Paris Ouest-Nanterre-La Défense, Paris 2009, pp. 263-271 and particularly p. 270.

of the soul into two parts. But that would mean that the soul is something divisible and therefore material. That is to say, to betray its essence²⁷.

²⁷ "Il est donc naturel que l'animal ayant toujours été vivant *et* organisé (comme des personnes de grande pénétration commencent à la reconnaître) il le demeure aussi toujours". See "System nouveau de la nature"; GP IV, p. 481. Italics Mine.