CHEMISTRY AND SCHELLING'S ANSWER TO THE ANTINOMY OF REFLECTIVE POWER OF JUDGMENT

Chemie und Schellings Antwort auf die Antinomie der reflektierenden Urteilskraft

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Abstract: Kant's treatment of organic phenomena in the third *Critique* is relatively well-known. Less known is that Schelling offered an original answer to the same problems in his early writings on the philosophy of nature. Even less known is the significance of his rethinking of the role of chemistry in his approach to organic phenomena. In this article, after outlining the problem of organic phenomena at the end of the eighteenth century, I reconstruct Schelling's account of chemistry against the background of Kant's theory of matter. I show that, while Schelling endorses Kant's verdict that chemistry is not a proper science, he nevertheless assigns to it a far greater scope and explanatory power than Kant does. After that, I briefly sketch Schelling's solution to the problem of organic phenomena while stressing the significance of his thinking about chemistry for this solution.
Keywords: Schelling; German Idealism; Philosophy of Nature; Kant.

Zusammenfassung: Kants Behandlung der organischen Phänomene in der dritten *Kritik* ist relativ bekannt. Weniger bekannt ist die Tatsache, dass Schelling eine eigenständige Antwort auf dieselben Probleme in seinen frühen Schriften über Naturphilosophie gegeben hat. Noch weniger bekannt ist die Tragweite seiner Umdeutung der Funktion der Chemie in seinem Lösungsansatz zur Problematik organischer Phänomene. In diesem Artikel, skizziere ich das Problem der organischen Phänomene am Ende des achtzehnten Jahrhunderts, um dann Schellings Theorie der Chemie vor dem Hintergrund von der Kantischen Theorie der Materie zu verorten und nachzuvollziehen. Ich zeige, dass Schelling der Chemie viel größere Reichweite und erklärende Kraft zuweist, obwohl er das Urteil Kants akzeptiert, dass Chemie keine eigentliche Wissenschaft ist. Dann skizziere ich kurz Schellings Lösung des Problems der organischen Phänomene und betone zugleich die Bedeutung seiner Gedanken über Chemie für diese Lösung.
Schlüsselwörter: Schelling; Deutscher Idealismus; Naturphilosophie; Kant.

Introduction

In this paper I attempt to reconstruct Schelling's transformation of Kant's problem which leads to the antinomy of reflective judgment in the second part of the *Critique of the Power of Judgment*. This account was Schelling's response to the challenge posed to the mechanical explanations by the shift of attention towards such organic phenomena as growth, regeneration, and self-maintenance during the eighteenth century. This challenge occasioned not only Kant's discussion in the third *Critique*, but also the response of many scientists of the time, in particular, the development of the

vitalist accounts of organisms. I reconstruct Schelling's transformation of this problem and his attempt to solve it by using his philosophy of chemistry developed on the basis of Kant's theory of matter. My reading is reconstructive, because Schelling himself does not explicitly combine the steps required for transforming and solving Kant's problem in the way I do here. However, every step is present in Schelling's texts, and Schelling's account of the organism clearly presupposes his considerations on chemistry.

Section I provides a reconstruction of the historical context and considers Kant's confrontation with the problem of organic phenomena which in the *Critique of Judgment* results into the antinomy of reflective judgment.

In section II I provide an account of Schelling's theory of chemistry which underlies his new approach to organic phenomena and his new solution of the problem with which Kant and the eighteenth century scientists were struggling. In particular, I explain why, and in what sense, chemistry for Schelling occupies a more central place than mechanics.

In section III I discuss Schelling's alternative formulation of the conflicting views of organic phenomena and provide an outline of his own account of those phenomena. I indicate that Schelling's shift of focus towards chemistry allows him to overcome the seeming irreconcilability of the Kantian antinomy without resorting to the supersensible or relegating the specific character of organisms to a merely subjective status. Furthermore, I argue that, unlike vitalist theories, Schelling accounts for the problematic organic phenomena in terms of the particular form of causal chains which are exhibited by chemical processes in organisms. Schelling's *explanans* for the specific character of organic phenomena is the circular, self-sustaining character of these causal chains, and their sensitivity to the influence from outside.

I

In the course of eighteenth century the issue of the peculiarity of living organisms was widely discussed by both philosophers and natural scientists[1]. These discussions were occasioned, among other things, by the discovery of the remarkable regenerative capacities of animals such as polyps. In the German context this issue of

[1] In this and the next four paragraphs I use some material from Kabeshkin (2017) while bringing the discussion up to date with the literature.

regeneration was made central especially by Abraham Trembley[2] and, later, by Johann Friedrich Blumenbach, who drew on Trembley's work and performed experiments on polyps themselves. Blumenbach has linked the observed regeneration of polyps to various phenomena encountered in other organisms, such as healing of injuries in general, gradual formation of embryos, reproduction through budding in mosses and the like[3]. Blumenbach himself found it necessary to introduce the concept of *Bildungstrieb,* or formative drive, in order to account for reproduction (including both regeneration of damaged parts and propagation), growth and nourishment. A number of other natural scientists of that time likewise adopted some principles in addition to those at work in inorganic bodies in order to explain phenomena associated with organisms. Such principles were often called 'vital forces' or 'vital principles', and the position that relied on acceptance of such forces or principles came to be known as vitalism[4]. Other scientists rejected the appearance of (and the arguments for) incompatibility between such organic phenomena and mechanistic principles and claimed that the seemingly problematic organic phenomena can be fully explained mechanistically after all[5].

Now, the organic phenomena referred to above presented a particularly acute problem for Kant, since on the one hand he was firmly committed to the mechanistic view of the phenomenal world, while on the other hand he was unwilling to claim that there could ever be a Newton for a blade of grass who would explain organisms mechanistically (5:400)[6]. Let me briefly discuss both of these points, starting from the latter one.

In the second part of the *CPJ* Kant suggests that organisms pose a challenge to the project of providing mechanical explanations of all phenomena. In §64 of that book he provides an example of a tree that exhibits the organic phenomena which pose a

[2] See Gambarotto (2018, p. 2).
[3] On Blumenbach's experiments and conclusions see Larson (1979, pp. 240-241); Lenoir (1982, pp. 20-22); Richards (2002, pp. 216-222); Steigerwald (2002, pp. 92-98); Gambarotto (2018, pp. 10-14); Zammito (2018, pp. 211-214).
[4] See, e.g., Lenoir (1982); Richards (2002, Chapters 5-7); Steigerwald (2013).
[5] No doubt some of them were also ready to put the new advances in chemistry to work in explaining organic phenomena. These advances functioned as an important stimulus for Schelling's thinking on chemistry and organic phenomena. See Durner (1985) for a good overview of the developments in chemistry in that period and their influence on Schelling.
[6] When citing Kant I will refer to the volume and page of the German *Akademie* edition. For the *Critique of Pure Reason* the references are, in keeping with the usual practice, to the pagination of the two original editions, indicated by A for the 1781 edition and B for the 1787 edition. I use the following abbreviations for Kant's works: *CPJ* for *Critique of the Power of Judgment*; *MFNS* for *Metaphysical Foundations of Natural Science*. Unless otherwise noted, I use translations listed among the references.

challenge to mechanical explanation. These phenomena include propagation, nourishment and growth, and reciprocal dependence of the parts of an organized body upon each other, as well as what Kant calls "the self-help of nature" (5:372), when other parts of an organism take over the functions of an injured organ.

To Kant phenomena such as these force us to judge that organisms are what he calls natural purposes (*Naturzwecke*). That is, phenomena like these suggest that mechanical laws alone cannot explain existence and functioning of the organisms and, as phenomena later puts it in his formulation of the antithesis of the antinomy between the maxims of reflective judgment, "judging them requires an entirely different law of causality, namely that of final causes"[7].

However, at the same time Kant believed that, on the one hand, because of the discursive character of our understanding we are restricted to explanations of material wholes by reference to the properties of, and causal interactions between, their parts. As he puts it, "without this [the mechanism of nature] no insight into the nature of things can be attained" (5:410) for us. On the other hand, Kant thought that material bodies themselves, insofar as they are material, are fully governed by mechanical laws which he takes himself to have deduced in the Mechanics chapter of the 1785 *MFNS*[8].

In the Dynamics chapter of that book Kant argues that matter must be conceived as being fundamentally constituted by two forces which act in opposite directions, namely by the repulsive and the attractive forces. It is only in virtue of being constituted by these two forces that matter is capable of filling the space to a determinate degree. Indeed, in the *MFNS* Kant takes himself to accomplish the construction of body, which is for him "a matter between determinate boundaries" (4:525), which are specified by

[7] Since my exposition of Kant's problem with organisms serves primarily as a background for my later discussion of Schelling, I avoid many of the interpretative problems discussed in recent Kant scholarship. Important contributions on the issues touched here include Allison (1991); Breitenbach (2006) and (2008); Förster (2012, Chapter 6); Ginsborg (2001); Ginsborg (2004); Goy (2015); Goy (2017); Kreines (2005); McLaughlin (1990); Zuckert (2007, Chapters 3 and 4).

[8] Kant scholars differ in their interpretation of the meaning of the concept of mechanism which is at work in the antinomy of the reflective judgment. Some of them, for example Allison (1991, pp. 27-28), McLaughlin (1990, pp. 152-154) and Förster (2012, pp. 142-145), argue that of it is the limitation of our discursive understanding to mechanistic explanations which underlies the antinomy. Ginsborg (2001 and 2004), on the other hand, takes "mechanism" to refer to the mechanical laws of matter derived in the *MFNS*. Yet other commentators, such as Breitenbach (2006 and 2008) and Zuckert (2007, pp. 101-107), attempt to explain the relationship between these two claims. Zuckert argues rather forcefully that on the basis of Kant's account of matter in the *MFNS* it is possible to explain why, for material objects, parts must be prior to the wholes. Thus, on Zuckert's account, which I find rather convincing, the sense of mechanism which is at work in the *MFNS* is more basic. In any case this sense of mechanism is more relevant to Schelling's account discussed here.

the surface at which the repulsive and attractive forces are at equilibrium. For our further discussion of Schelling it is also important to note that Kant thinks that, while the attractive force depends only on the quantity of matter, the repulsive force, and thus the quantitative relation between these forces, may be different for different substances. Indeed, he uses this possibility to explain differences in specific weight between different substances without resorting to the hypothesis that these differences are due to the different proportion of filled and empty spaces within bodies.

Taking himself to have accomplished the construction of the body out of the two fundamental forces which belong to the concept of matter, Kant proceeds to derive laws of interaction of bodies in the Mechanics chapter of the *MFNS*. These laws roughly correspond to those of the Newtonian physics[9], but the interactions of bodies are now taken to be grounded in forces which constitute them. For example, the fact that two colliding bodies change each other's velocity is now explained not by reference to the property of impenetrability which bodies possess, but to the repulsive force. Kant therefore takes mechanical laws to be grounded in his a priori construction of matter and thus to be apodictically certain. One of these laws that is particularly important for us is the law of inertia, which Kant glosses as meaning that "every change in matter has an external cause" (4:543). Chemistry, however, is not, according to Kant, a proper science, but at best "a systematic art" (4:468), since its laws cannot be constructed a priori[10].

In the Dialectic of Teleological Power of Judgment of the *CPJ* Kant explicitly sets up a conflict between mechanism and teleology in the form of an antinomy. The thesis of this antinomy claims that "[a]ll generation of material things and their forms must be judged as possible in accordance with merely mechanical laws" (5:387), whereas the antithesis states that "[s]ome products of material nature cannot be judged as possible according to merely mechanical laws (judging them requires an entirely different law of causality, namely that of final causes)" (5:387). It is not the purpose of this paper to present a detailed discussion of the antinomy and its Kantian resolution. However, it is important to stress that Kant takes thoroughgoing commitment to

[9] But see Stan (2013) for a challenge to the view that Kant attempts to justify Newtonian laws in the *MFNS*.
[10] For discussions of the possible reasons for Kant's denial of the status of the proper science to chemistry see McNulty (2014) and van den Berg (2011).

mechanism to conflict with our experience of organisms. This experience suggests that the organism is both a cause and an effect of itself, that is, a whole whose parts are "combined into a whole by being reciprocally the cause and effect of their form" (5:373), or a natural purpose. Kant's precise reasons for his claim that teleology conflicts with mechanism cannot be fully discussed here. I suggest, though, that at least an important part of the conflict in the antinomy is that the thesis, by asserting the universality of mechanistic explanations, implies that we must judge all changes in matter to have external causes, whereas the antithesis treats certain (namely organic) phenomena as being in some way self-caused and thus not being fully determined by external causes. We will see how Schelling transforms the terms of this antinomy when he sets up something like an antinomy of his own[11] related to the same organic phenomena.

To summarize, by the end of the eighteenth century there was a recognized problem of reconciling the observable properties of organisms with the scientific worldview which was until recently dominated by mechanical philosophy[12]. In the next section, I will discuss Schelling's account of chemical phenomena which, as I will then argue in section III, underlies his transformation of this problem.

II

In the first edition of the *Ideas for a Philosophy of Nature*, Schelling accepts the Kantian account of the concept of matter and its analysis in terms of the two fundamental forces discussed above. He writes that the task of providing such an analysis and deriving the basic laws of mechanics from the concept of matter "has been performed with such lucidity and completeness, in *Kant's Metaphysical Foundations of Natural Science,* that nothing further requires to be done at this point" (1988, pp. 84-85). What is interesting for us now is how Schelling puts this concept of matter to work in order to account for chemical phenomena.

[11] This is to speak loosely, since an antinomy is not just any set of incompatible theses for which there are strong arguments. An antinomy requires that both thesis and antithesis "carry with them… a natural and unavoidable illusion" (A422/B449-50) which is necessitated by the structure of our cognitive faculties.
[12] Although, as I have indicated above, from the mid-eighteenth century multiple authors who can be vaguely identified as vitalists appeared. In addition to the literature mentioned above see also Reill (2005) for a nice discussion of this new paradigm in thinking about nature.

Schelling shows an interesting ambivalence towards the status of chemistry. On the one hand, he agrees with Kant that chemical laws cannot be constructed, and thus that chemistry lacks an apodictic foundation. Thus, it is not a proper science in the Kantian sense: "It may reduce all the phenomena of its craft to qualities of basic substances, to affinities of these, and the like, just so long as it does not take on a scientific tone" (1988, p. 208).

On the other hand, however, Schelling rethinks the relationship between mechanics and chemistry in such a way that mechanically explicable phenomena come to be thought as merely a limiting case, while chemistry deals with a more universal class of phenomena. According to Schelling, the difference between chemistry and mechanics is that the latter

> presupposes a determinate, unaltered relationship of the dynamic forces, and relates to bodies, i.e., to matter within determinate limits, whose moving forces await an impact from without, if the body is to move. Chemistry, on the other hand, considers matter in its becoming, and has as its object a free play – and thus also a free motion – of the dynamic forces among themselves, without impact from outside (1988, p. 222).

What does Schelling mean by the free play of the dynamic forces and why does it distinguish chemistry from mechanics? Well, Schelling says that all qualities of matter arise when its forces deviate from equilibrium (1988, p. 216). Now, since he also relates chemistry to qualities of matter ("chemistry is properly concerned only with the qualities of matter" (1988, p. 216), it is clear that in chemical phenomena forces of matter deviate from equilibrium, whereas in mechanics they are at equilibrium. This can be clarified by examples. When two billiard balls collide—a paradigm of mechanical interaction—these balls themselves are stable bodies, and the interaction occurs between these balls as wholes. As Schelling puts it, "a body in which the dynamic forces are in *equilibrium* can only act *en masse* by means of mechanically repellent (impactive) forces" (1988, p. 257). By contrast, in chemical reactions, the constituents of one body unite with the constituents (or the whole) of another body. To be sure, this process in a sense requires external causes (1988, p. 265), namely bringing together of the properly related substances and also, as will be explained below, disturbing equilibrium in those substances. Once that is done, however, the reaction happens by itself and without anything like a mechanical communication of motion. Thus, for

Schelling, chemical reactions proper violate the law of inertia because an external cause is not required for the reaction itself.

In the last chapter of the *Ideas* Schelling provides what he calls the "Outline of the First Principles of Chemistry" (1988, p. 252), where he sketches the general conditions of chemical processes as well as their laws and outcomes. Let us take a look at this sketch.

First of all, Schelling defines substances as homogeneous if "the quantitative relationship of the basic forces is the same" (1988, p. 252) in these substances. By contrast, substances are heterogeneous if the relationship of basic forces in one of them "is the inverse of that relationship in the other" (1988, p. 253). Here Schelling develops Kant's line of thought which allowed Kant to explain differences of densities of different substances without appealing to empty spaces in them. Recall that Kant argued that repulsive force may be originally different for different substances. Because the attractive force is the same for all substances, but the repulsive force may be different, the relationship between them may also be different for different substances. Schelling seems to take such a difference not as a mere hypothesis but as a fact, and, as we just saw, he defines homogeneity and heterogeneity of substances in terms of this difference. He further makes a qualification that homogeneity does not require strict sameness of the relationship of basic forces in them: it suffices if that relationship is not inverse (or, rather, that it is sufficiently different from the inverse).

Now, Schelling specifies the "general conditions of a chemical process" (1988, p. 253): according to him, every chemical process is simply an interaction of the basic forces in two bodies. Moreover, a chemical process can occur only between heterogeneous bodies, that is, between those in which the quantitative relationship of the basic forces is inverse (or sufficiently close to being inverse), and never between homogeneous bodies. This condition explains the empirically observed facts described by the term current in chemistry of that time, 'chemical affinity': substances which are taken to have affinity with each other have a relationship between their basic forces which is close to inverse, and the closer it is to inverse, the stronger the affinity between the substances. Thus, Schelling provides a rather elegant theory which has a significant explanatory power.

Furthermore, Schelling says that "[e]very chemical motion is an *endeavour towards equilibrium*, so in order to give rise to such a motion, the *equilibrium* of the forces in the two bodies must be disturbed" (1988, p. 254). The two ways to disturb the equilibrium which Schelling mentions are dissolving at least one of the two bodies and heating the bodies by fire. As a result of this the force with which the bodies cohere becomes smaller than "the force with which they endeavour to enter into equilibrium one with the other" (1988, p. 254). Since the equilibrium between repulsive and attractive forces in both bodies is disturbed, they no longer occupy determinate spaces as separate bodies. During the chemical process the degrees of repulsive forces "are brought back to a *common* degree" (1988, p. 259), which ultimately leads to the restoration of equilibrium within the limits of the new body, the product of the reaction. In other words, during the chemical process, the reacting bodies cease to exist as bodies, and the new body comes into being. As Schelling puts it, "we have to picture every such [chemical] process to ourselves as the *becoming* of a matter, and chemistry is for this reason an *elementary science*, because by means of it, that which in dynamics is only an object of the *understanding* becomes an object of *intuition*" (1988, p. 257)[13]. That is, Schelling's Kantian-style dynamics constructs the body out of the fundamental forces philosophically, whereas in a chemical reaction a body arises actually and in a way accessible to our senses out of the play of fundamental forces.

Chemistry, then, while not amenable to a priori treatment, and in this sense being inferior to mechanics, is more fundamental in virtue of its subject matter: while mechanics deals with already constructed bodies, chemistry deals with their construction out of the fundamental forces. This rethinking of chemistry and of its status underlies Schelling's reformulation of the reductionist position concerning organic phenomena which corresponds to the thesis in Kant's antinomy of reflective judgment, and his resolution of the problem which was posed by that antinomy.

III

In the *First Outline of a System of the Philosophy of Nature* Schelling formulates two opposing ways to approach the problem of organisms, suggesting an allusion to

[13] See also the discussion in Durner (1997, especially p. 358).

Kant's antinomy[14]. The opposition Schelling sets up here is that between what he calls the system of physiological materialism and the system of physiological immaterialism. Physiological materialism is, according to Schelling, captured in the proposition "organic activity is determined through its receptivity" (2004, p. 60). Physiological immaterialism or vitalism holds the opposed principle "the receptivity of the organism is determined by its activity" (2004, p. 62). Schelling characterizes these systems in the following way.

Physiological materialism claims that "[t]he organic activity is… through and through dependent upon the influence of external (material) causes" (2004, p. 57). All functions of the organism "occur completely and entirely according to laws of matter" (2004, p. 57). This formulation sounds a lot like the thesis of Kant's antinomy. Now, the difference is that for Schelling the laws of matter here are primarily of chemical, and not mechanical, kind: "The influence of external causes on the organism, as well as on the organic activity, is itself consequently *of a chemical sort*. All functions of the organism follow from chemical laws of matter, and life itself is a *chemical process*" (2004, p. 57).

Vitalism, on the other hand, defends the claim that the organism, unlike lifeless matter, itself actively determines what influences it and what does not:

> No one can in any way experience the pure effect of any material as such, in—and on—the organism, for the effect is determined both in mode and degree through the activity of the organism. Matter cannot operate according to its forces freely and uninhibitedly in the organism… Whatever steps into the sphere of the organism adopts, from this moment forward, a new mode of action, alien to it, which it does not abandon until it is given back to anorganic nature (2004, p. 60).

This is supported by reference to essentially the same sort of phenomena as those which were perceived as problematic to reconcile with mechanism by Kant and the eighteenth century scientists: nourishment, growth, organic self-maintenance and regeneration. Now, according to vitalism, this change of behavior of matter inside the organism cannot be explained by reference to material causes, since all matter as such is subject to the same laws everywhere, and thus there is no difference between organisms and inorganic objects insofar as they are material. Therefore, according to vitalists, there

[14] Warnke (1998, p. 212) notices this similarity of Schelling's setup to Kant's antinomy. See, however, note 11 above. Schelling's answer to the problem of organic phenomena is also discussed in Kabeshkin (2017).

has to be some immaterial factor which is at work only within organisms, such as the vital force or the formative drive[15].

Schelling's own solution to this conflict is similar to vitalism in that it aims at explaining, and not explaining away, the problematic phenomena, but it is also similar to reductionism in that it rejects immaterial forces or drives. According to Schelling, what is specific to organisms and thus is not captured by the reductionist approach is the self-sustaining character of chemical processes in the organism. As we saw earlier, and as Schelling reminds us here, for the chemical process "the existence of at least two heterogeneous bodies" (2004, p. 110, footnote) is a necessary condition. Now, the result of the chemical process is that these "two bodies pass into one identical subject" (2004, p. 109), the new chemical compound. Thus, during the course of the chemical process, the conditions under which it is possible (the presence of chemical compounds which may enter into a reaction with each other) are destroyed. To be sure, Schelling here operates with a somewhat limited concept of the chemical process, but the point may be generalized: for any chemical processes there are determinate conditions which disappear as a result of this process. In an organism, on the other hand, chemical processes happen continuously. Thus, conditions of all recurring chemical processes in the organism have to be constantly reproduced by other chemical processes happening in the organism, and the same goes for these other processes, and so on. Chemical processes in an organism, then, happen in a cycle, such that the outcome of one process (or several processes) creates conditions for another process[16]. As Schelling expresses it in his previous work on natural philosophy, *Von der Weltseele*:

> Assuming that we agree with you [the reductionists] that life consists in a chemical process, still you should concede that no chemical process is permanent, and that ultimate restoration of rest with each of such processes reveals that it is really only striving toward equilibrium. Chemical motion lasts only as long as the equilibrium is disturbed[17].

It is the self-sustaining character of activity intrinsic to the organism (due to the circular form of its causal chains), then, and not the existence of immaterial factors

[15] See the discussion at Schelling (2004, p. 61).
[16] Schelling often speaks of cyclical form of chains of causal processes in the organism. For example, Schelling (1988, pp. 40-41); Schelling (1978, pp. 126-127).
[17] Schelling (1856-61, I, 2, 500) my translation. See also a good discussion of this topic in Heuser (1989, pp. 20-24).

which operate only within organisms, that begins to explain what is special about organisms.

Now, this is not enough to explain specifically organic phenomena such as self-maintenance, self-reproduction, growth, or nourishment. Indeed, the continuation of the chemical cycle in the organism requires constant rekindling, as indicated in the quotation above, so it is not explained by the structure of chains of chemical processes alone. At this point a fuller discussion must consider Schelling's account of organisms and their relation with their environment[18]. Here an example has to suffice. Let us very briefly discuss self-maintenance of the organism, one of its key problematic properties.

According to Schelling, the organism, as opposed to dead matter, preserves itself by keeping stable its inner environment in spite of the changes in external conditions. A simple example is our reactions to changes of temperature in our immediate environment:

> At each moment the organic system establishes an antagonism against every external effect that holds the former in equilibrium. (For example, the living body retains its proper degree of temperature in the highest temperatures, not because the universal law of the communication of heat is *canceled* with respect to it (this is impossible), but because it maintains equilibrium with the forces impinging from outside through opposed operations—(e.g., by increasing the capacity of the fluids circulating in it, by accelerating processes that absorb much heat)) (2004, p. 63).

The point here is that the effects of external influences on the organism get canceled. However, this happens neither because the organism is not subject to universal laws of matter (it is), nor because some special force is at work within the organism. Instead, the organism maintains its condition by countering external influences by activities of its own. The effect of external factors is not what it would have been had those factors acted upon inorganic matter. Rather, those factors bring about an increase of activity of the organism, and the outcome of that activity may be viewed as an indirect effect of the influence of external factors. As Schelling puts this last point, "[g]enerally expressed: every external effect on the organism is an indirect effect" (2004, p. 63).

[18] I consider that account in some detail in Kabeshkin (2017).

Indeed, Schelling puts this point in even stronger terms by stating that the effect brought about by external influences on the organism is opposite to what it would have been if it were not for the activity of the organism:

> External nature will struggle against life; most external influences which one takes as life-promoting, are really destructive for life… But this struggle of external nature preserves life, because it always excites the organic activity anew, rekindles the flagging contest. In this way, every external influence on the living which threatens to subject it to chemical forces becomes an *irritant*, i.e., it actually brings forth exactly the opposite effect which, according to its nature, it should produce (2004, p. 62).

External influences, for Schelling, rather than having their usual effect, rekindle organic activity by recreating the conditions of the chemical processes in the organism.

This explanation of organic self-maintenance is not a reductive explanation where organic properties would be fully explained by chemical processes. While Schelling makes it clear that there is nothing but chemical processes in the organism, and thus so are the interactions of external factors with the organism, the indirect result of these interactions can only be described at the level of the whole organism as rekindling of its life. However, in order not to be merely metaphorical in speaking of this 'rekindling', Schelling needs to employ his account of chemistry. We already saw that every chemical process, the system of which constitutes the organism's functionality, is "an endeavour towards equilibrium" (1988, p. 254). Although the cyclical system of these processes is more stable than individual processes, Schelling does indicate that the activity of the organism tends towards the "state of indifference" (2004, p. 123). Now, external influences inhibit this tendency towards equilibrium by constantly recreating conditions of the individual chemical processes which constitute organic activity. Thus, this interaction of the organism with its environment, its openness to external influences, in other words, its sensibility, is a condition of organic activity which can only be properly talked about at the level of organism, and not at the chemical level. Nevertheless, this solution to the problem posed by peculiar organic phenomena builds upon Schelling's shift of focus to the chemical, rather than simply mechanical, nature of processes in living organisms. Thus, Schelling's account of

chemistry in the 1797 *Ideas* discussed in the previous section serves as a precondition to this response to the Kantian problem of organic phenomena[19].

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