

From the *Critique of judgment* to the hermeneutics of nature: Sketching the fate of philosophy of nature after Kant

PHILIPPE HUNEMAN

IHPST (Paris, CNRS), 13, rue du Four, 75006 Paris, France
(E-mail: huneman@wanadoo.fr)

Abstract. This paper proposes an interpretative framework for some developments of the philosophy of nature after Kant. I emphasize the critique of the economy of nature in the *Critique of judgement*. I argue that it resulted in a split of a previous structure of knowledge; such a structure articulated natural theology and natural philosophy on the basis of the consideration of the order displayed by living beings, both in their internal organisation and their ecological distribution. The possibility of a philosophical discourse on nature that is neither mathematical nor theological stemmed from this shift. I call “hermeneutics of nature” such a program, since it aims at unpacking an immanent meaning in nature that is not explicated by the sciences of nature, which are dealing with the laws of nature. The *Naturphilosophie*, undertaken by Schelling, as well as the philosophies of nature of Hegel and Schopenhauer, are several realizations of this program. I highlight the structural traits that they share, such as a pregnant sense of conflicts in nature, an emphasis on the riddles of gender, and above all a prominent status given to organisms as a clue to the meaning of nature. Finally, I try to sketch the ramifications of this hermeneutics of nature in contemporary philosophy, especially phenomenology, and argue that the coming philosophy of nature, as shown by the attempts of syntheses between phenomenology and ecology, seems to depart from this hermeneutical program.

The *Critique of Judgment* vindicated a specific status for living beings in the context of the natural sciences. This is a long-term result of Kant’s critical analysis of some main concepts of classical metaphysics, mainly the concept of purposiveness, and, behind that, the concept of contingent order. Briefly put, attributing purposiveness presupposes that we have noticed a device which is contingent regarding the general laws of nature. “Organisms are the natural purposes,” which means that they are those peculiar phenomena that cannot be studied outside of an epistemological presupposition of an internal finality. But Kantian purposiveness is a purpose without intention; for example, the finality of organisms does not entail that they stem from a divine intention, because purposiveness is a regulatory principle, namely, it is a presupposition proper to our judgment vis-à-vis the organisms, and not an objective property of the phenomenon. In biology, as much as in aesthetics, purposiveness means purposiveness without a purpose, *Zweckmäßigkeit ohne Zweck*. In short, Kant held two theses as the conclusion of his examination of biological judgment: Life does not prove any divine design, but requires a specific epistemological way of thinking.¹

I wish here to investigate some consequences of this position regarding the philosophical study of nature. First, I argue that German *Naturphilosophie* has been partially enabled by those results of the *Critique of Judgment*. It then held a particular species of a general position of reason facing nature, one that I call “hermeneutics of nature” – a position which derives from (but is not reducible to) the new relationships between metaphysics, science of nature, and study of life in the third *Critique*. This is a suggestion for approaching this history of post-kantian philosophy that we will follow up here.

First, I begin by presenting my argument in its broadest scope, stating what new space of thinking has been opened by the third *Critique*, and why *Naturphilosophie* belongs to this space. Then, I face two objections coming from the classical vision of *Naturphilosophie*. I emphasize several specific traits of this discourse as deriving from this Kantian lineage; I thus continue by stating the possible relationships between philosophy and natural science that have been shaped by this period of the history of philosophy. In the end, I suggest some prospects of the hermeneutics of nature in our present age, particularly after phenomenology.

1. The hermeneutics of nature and its possibility

The third *Critique* interrupted the presence of any theological element in nature. Previously, there was a kind of continuity between natural history, natural philosophy and theology. The natural philosopher or physicist gave laws; the naturalist classified; and the philosopher used to pick out in their discourses traces of the divine work (or forged a theory denying those traces): this is no more possible.

More precisely Gillespie² distinguished two traditions in natural theology, the first one relying on Newtonian physics and its demonstration of order, the second one stemming from natural history, and based on the amazing adaptations of organisms in their environment. The *Critique of Pure Reason* explicitly addressed the pitfalls of the former tradition. This was a long lasting concern for Kant, however, for his first work, the *Himmelstheorie*, has shown how the order appearing in the sky came from the mere action of laws of nature with no intention of order, a result that was the core of his metaphysical elaboration in the *Einsige Beweisgrund*. But the theological topic of the *Critique of Judgment* in this context was a rebuttal on the second tradition.

So, Kant broke this continuity between natural history, philosophy, and theology, which was expressed mainly in the physico-theological proofs of God through the order of nature. It should be noted that Leibnizian metaphysics was the most accomplished theoretical formulation of this epistemological

structure – and the most important target of Kant’s criticism. *Neither by its beauty, nor by its living beings, nature by itself (and the “by itself opposes the moral viewpoint) shows God’s existence:* this is the result of Kant’s third *Critique*. So, now, physics tells what nature is as ruled by the legislation of our understanding; “metaphysics of nature” exposes the principles of physics, which are the heart of this legislation. There is no room left for a discourse which would duplicate those modes of knowledge in order to read within nature the works of God because living beings are no longer bridges to such a discourse. Kant is particularly radical in §85 when he writes that “physical theology,” based on the consideration of finality in nature (which is a requisite of our reflexive judgment) cannot prove God and must end in a moral theology – which in fact, can prove God by itself. Hence, even if it could be rhetorically admitted, any physico-theology, in principle, is of no use.

Such traditional architecture of discourses has been defeated by a major criticism, the rejection of an *economy of nature*. Expressed plainly by the Linnean school,³ but pervasive throughout the whole XVII and XVIII natural history, was the conviction that in nature any organism and any species has a role, and contributes to the well-being of the whole.⁴ Proportions between species, as well as relationships between animals are the expressions of this divine economy. Criticizing the idea of a relative purposiveness, Kant destroyed the metaphysical basis of this conception by the end of the XVIIIth century. The idea of purposiveness means only and principally the internal purposiveness; it concerns wholes and parts within an organism.⁵ No one can say that plants are there in order to serve herbivores, and so on. In this way, organic creatures do not have any function regarding one another. Function and adaptation, as teleological concepts, are an originally internal affair. No economy of nature as divinely grounded can be deduced from the consideration of the adaptations in organic nature. The idea of utility, presupposed by this description of species using one another, does not exhaust what is meant by purposiveness, since utility often means useful *for something else*, and an *external* designer. In §65, defining natural purposes, Kant shifts from the vocabulary of means/ends to the lexicon of wholes/parts. This shift, albeit slightly emphasized, indicates his essential departure from the traditional metaphysics of purposiveness. It does so because he no longer presupposes that utility is the primary meaning of purposiveness, and that the human technological practice (adjusting means and ends) is its first measure.

It could be objected that in §67, Kant reintroduces relative purposiveness and therefore a hierarchy of organisms serving one another; but the whole philosophical point is that this reintroduction is conditional. Only on the basis of assessing internal purposiveness can one make use – mainly as a heuristic tool – of the idea that an organism fulfils a role for another one.⁶ Hence, the

system of nature that can be drawn on this basis is, so to speak, more regulative than the use of internal purposiveness. I would say that it is less necessary (in a weak sense of necessity) than the purposiveness as natural purpose, because we can conceive of organisms without conceiving a purposive system of nature, whereas we cannot conceive of the latter without presupposing the former. This relativization, or conditionalization of relative purposiveness, neutralizes the ontological use of the concept of economy of nature in traditional natural history such as Linnaeus, or in the physico-theological proof as a kind of argument from design.

It is important to notice that within science this refutation of relative purposiveness has been taken place simultaneously. It is mostly Cuvier, in his comparative anatomy, who expressed the idea that adaptedness is a matter of internal relationships between parts of an organism allowing the entity to survive in its environment. But this organism does not accomplish any role defined previously by God in the whole of nature.⁷ In his morphology, Goethe expresses the same idea, saying that no one could tell that the fish is made for water.⁸

But at the heart of the old economy of nature lied a conception of order within the whole of nature as well as in the organisms themselves called *design*, which ultimately led to a divine designer. Order in this classical thought meant the unity of natural history and theology, and the unified economy of nature with organismic design. Organisms are the nodal point of this structure in the sense that their manifest design (proving God) is such because it fulfils its role in the economy of nature (which also proves God). Physiology, natural history and theology are then tightly linked in a structure based on this idea of purposiveness as utility and design that the third *Critique* will deconstruct.⁹

The elements of such an economy were already assumed to exist in the divine understanding; God introduces those into nature. Kant nevertheless criticized the recourse to an infinite understanding: no infinite understanding can contain essences, because any thought of essence, as far as it is thought by us, is related to our finite thinking which is not constituted as an infinite one. For in our cognitive faculty concepts and intuition are separated, and this precise constitution of ours is a contingent fact (since another kind of cognitive faculty is conceivable). In this way, the Kantian double criticism of natural economy and of infinite understanding completely defeated the basis of the old consideration of nature.

A new configuration of knowledge thereby appears instead of the old one. Between science of nature (expressed in mathematical language) and philosophy (as a radical questioning about the basis, limits, and anxieties of reason such as Kant's) there is now room for another discourse on nature. Such a discourse will not have as a background the economy of nature and the figure

of order, and will not suppose an infinite understanding as the place for the ordered essences. Indeed, whereas what Kant calls “dogmatic metaphysics” conceives of the meanings and the essences as the objects of an infinite understanding, criticism conceives of them as immanent to the finite thought, hence without cancelling their own contingency. So this new discourse on nature will be *distinct* from natural science (since it will not be mathematically expressed), but will interpret nature in an *immanent* way, e.g. without tracing it back to a transcendent foundation of its order. It does this in the same manner as critical philosophy, which considers thoughts and meanings as immanent to the finite thinking, without relating them to a divine understanding that would apriori circumscribe the thinkable.

This discourse, which is a philosophical one, aims at thinking nature in an immanent but non mathematical way, e. g. at grasping a *meaning* which would be immanent in it, a meaning that the sciences of nature cannot capture because they just express *laws* – but a meaning which does not lead to or presuppose a creative God. The old structure was conjointly grounded on the physico-theological argument considering organisms and on the subsequent idea of natural economy. I therefore contend that the dissolution of this structure, through Kant’s critique (and, at the same time, through some corresponding shifts in the contemporary life sciences) entails nature becoming the object of a specific discourse, not scientific, immanent to nature itself, but a discourse that I would term the “hermeneutics of nature.” For two centuries, a portion of the philosophical discourse on nature has relied on this discourse.

2. Objections, answers and precisions

2.1. *The philosophy of nature and its origin in Kant’s Metaphysical Foundations*

This claim faces one obvious objection. It can be said that Kant allows for the philosophy of nature as developed by the post-Kantians because the *Metaphysical Foundations of Natural Science* deduces the two essential forces in nature, repulsion and attraction. It is a fact that Schelling, after Baader and in the *Einleitung zu dem Entwurf eines Systems der Naturphilosophie* (1799¹⁰), sought to reconcile those forces in a third one. Moreover, the late XVIIIth century scientists were dealing with this problem of a system of forces proper to matter in general, and among them Kant’s solution in the *Metaphysical Foundations* has been particularly powerful since it was embedded in his transcendental frame. Without a doubt, Schelling is part of this story, as Beiser reminds us.¹¹ In fact, the quest for a pair of original forces is

a crucial part of his *Naturphilosophie* program, which has been perpetuated in various successive forms. One of these forms is the *Weltseele*, where we find at the very beginning the partition between two absolute forces.¹² But, more generally, the essential position of philosophy of nature, as vindicated by Schelling at this time, refers to transcendental philosophy in the same way as Fichte insofar as the Not-I refers to the I. In other words, it presupposes a dialectics of the Ich – Un-Ich, of the Ich setting the Un-Ich.¹³ It is in this way that the transcendental position allows for philosophy of nature. It is a thesis grounded in the *Critique of Pure Reason*, according to which nature is defined by the lawful regularity of our understanding. In a word, so goes the objection, if Kantianism does enable philosophy of nature, this does not concern the third *Critique* but the first.

I will not contest that transcendental philosophy is the first condition of the actual philosophy of nature. But my argument emphasizes a second condition for this discourse.

Two points have to be made. First, the critique of natural economy, which dissociates nature and the physico-theological argument, and then allows philosophy to hold about nature an *immanent* discourse on nature – hence, a hermeneutics of nature –, is to be found only in the third *Critique*.

Second, the critique of the teleological faculty of judgment shows that natural science, as established in the *Metaphysical Foundations*, does not exhaust nature because of the case of living nature. Besides nomothetic knowledge of physics, there is room for something else, a discourse provided simply by reflexive judgment. According to Kant, this discourse differs from scientific discourse since it is grounded on regulative and not on constitutive principles. Hence it is more critical – part of a critique of judgment – than dogmatic (or, more critical than a doctrine, such as the *Metaphysical Foundations*).¹⁴ If the *Critique of Pure Reason* justifies that nature is based on the Self, it does not entail that something exists apart from the metaphysics of nature, e.g. from a priori principles and empirical physics ruled by them. It is solely the *Critique of Judgment* that allows this non-doctrinal knowledge and, in the same way, *indicates* that life will enjoy a privileged status in such a discourse.

What is this indication? In fact, what is at stake in the *Critique of Judgment* is what could be called the “excess” in nature – on the one hand, this includes excess of the empirical laws as they cannot be deduced from the general laws of nature (in the Introduction), on the other, it includes the excess of the norms of organisation since they cannot derive from the mechanical laws of nature (in the second part).¹⁵ Briefly put, life is in excess of nature pure and simple – epistemologically speaking – and therefore requires another kind of intelligibility, a form that Kant called “reflexive.” Embryology is a case in point. Knowledge of the embryological processes cannot be inferred from

the physical laws that condition those processes. Those inferences, indeed, could not allow us to make the distinction we make between normal and abnormal development (e.g. development leading to a monster) since both of them happen according to the same laws. Hence we do presuppose here that development aims at a goal (the type of the animal). This presupposition is peculiar to the knowledge of life, and since it is not justified by objective reasons but by the requirement to make our knowledge of embryology possible, it is reflexive.

Beauty and life (or organisms) are two forms of this excess of the rules of the understanding that Kant tried to figure out and analyse in this work. A fine grained analysis of the §77 shows that this thematic of excess reflects the form of the finitude of our power of thought. For this finitude consists exclusively in the fact that, for us, the particular cannot be deduced from the general, hence is *in excess of the general*.¹⁶ This paragraph attempted a genealogy of the concept of purpose from the fact of this finitude – as a requirement of our power of thought in order to conceive this excess.

But since nature in physics is defined by its conformity to laws,¹⁷ then the excess of life upon nature *überhaupt* means the excess of the *meaning* of nature upon the *lawful regularity* of nature, this lawful regularity being the source of scientific intelligibility. This is the reason why the third *Critique* allows *a hermeneutics of nature as an autonomous philosophical discourse* which is different from the scientific one.

Moreover, this filiation is somehow recognized by the authors themselves. The first paragraph of Schelling's *Entwurf* acknowledges two ways according to which philosophy overcomes the opposition between conscious and unconscious intelligence: immediately in the activity of genius, mediately in "some products of nature, to the extent that within themselves the compenetration (*Verschmelzung*) of the ideal and the real is perceived."¹⁸ But those two modalities derive exactly from the two parts of the *Critique of Judgment*: aesthetics (genius) and teleology (unity of ideal and real causation, e.g. organisms). And more generally, if we see the philosophy of nature as solely grounded on transcendental philosophy, and if we do not understand the crucial role played by the third *Critique*, how could we make sense of this statement by Schelling: "The *Critique of Judgment* is the deepest work of Kant, the one which would have given a totally different orientation to his whole philosophy if, instead of ending with it, he would have started by it."¹⁹ Claude Piché recognized that the third *Critique* has been a constant stimulation and concern for Schelling, so much so that in 1796 he undertook a commentary of this work, never realized but still distinguishable in the *Abhandlungen* from 1797.²⁰

More precisely, the mere possibility – the territory, Kant would say, of Schelling's *Naturphilosophie* is given here by the position called

“hermeneutics of nature,” but Schelling’s realization is one extremely important realization *within* this territory. So I will not contend that this *Naturphilosophie* as such derived from the shifts initiated by the *Critique of Judgment*. But when Schelling, in the *Entwurf* and all throughout his work in *Naturphilosophie* tries to formulate the status of the sought after philosophical first principles as articulated to the empirical gathering of physicists,²¹ he is considering precisely this new kind of discourse. Its possibility has been opened as hermeneutics, and he conceives its relationship to empirical research into laws of nature. Yet this epistemological theory of a multilayered discourse about nature is precisely the way Schelling conceives of his *own way* of elaborating this position. It is not to be confounded with the hermeneutical position itself.

2.2. *The anti-Kantian character of Naturphilosophie*

There is a second objection against my thesis, an objection which would remind us that Kantian philosophy and *Naturphilosophie* are usually conceived as antagonistic, the first one being much more sober than the second one. In fact, concerning biology, James Larson²² had established that from Kant to Schelling and his disciples, what was held as regulative by the former has been translated into constitutive by the latter. The question however concerns where the latter commences. More recently Robert Richards²³ has argued that as early as Blumenbach’s reading of Kant, the boundary between the constitutive and the regulative has been misinterpreted. It might appear that in the end Kant was quite alone in insisting on the sharp distinction between regulative and constitutive, and mainly for metaphysical reasons. This implies that *Naturphilosophen* and scientists in a more Kantian tradition, like Blumenbach or later Von Baer, were part of a same scientific cénacle. For this reason, the contemporary scorn for *Naturphilosophie*, after the triumphs of the analytic method and the positivist program in chemistry in the end of 19th century, hides, if not a contemporary relevance of such a program, then at least the entanglement of such a program with the transformations that were the incentives for Modern biology.²⁴ This would be good news for those trying to rehabilitate the scientific character of *Naturphilosophie*, but bad news for our attempt to highlight the consequences of Kant’s *Critique of Judgment* vis-à-vis *Naturphilosophie*.²⁵

Moreover, the rivalry between Kant and Herder, detailed by Zammito after Beiser,²⁶ implies that Herder’s philosophy of mind rather than Kant’s transcendental philosophy could account for the monistic philosophies of the German idealists and then for their philosophy of nature. However my point here is to take seriously the pervasive reference to Kant that all those figures made,

and to see how far Kant's distortions of some metaphysical concepts allowed the positions of the philosophers of nature. It could be that Kant would not have recognized their doctrines as deriving from his work and would have condemned them as the offspring of the Herderian aberrations. I argue, however, that conceptually speaking they have been partly made possible by the Kantian shifts in what he calls the territory of metaphysics.

On the other hand, the work of Goethe – first of all his *Metamorphosis of plants*, and then his comparative anatomy – has been of first importance for defining the aims and domains of *Naturphilosophie*. Robert Richards' long demonstration²⁷ of this importance is fairly convincing, and the fact that Goethe sounds more a like poet than a scientist is a retrospective delusion that prevents us from recognizing his real role; it is a delusion that his contemporaries did not share since as *Naturphilosophen* they were themselves convinced of the deep affinity existing between artists and scientists.²⁸

So, while agreeing with Zammito, Beiser and Richards, I just emphasize the fact that Kant's shifts within metaphysical concepts, and within the architecture of knowledge, allowed Schelling, Hegel, and most philosophers to develop a new kind of philosophical discourse about nature. This does not imply that such a discourse should contain Kantian *theses*; it can bear antagonistic consequences and still rely on a possibility opened by Kant's *thinking*.²⁹ And, in fact, within this space of thought called hermeneutics of nature, several opposite theses had been sustained, particularly by Schelling and Hegel. (More on this below.) My point bears not on the history of theses (in which case one would have to stress Kant's isolation); rather, my point concerns the logical filiations obtaining between concepts and problems.

3. The constraints on the hermeneutics of nature: Three leitmotives

3.1. Privilege of life

This genealogy of concepts implies not only that the possibility of a discourse on nature is prescribed by Kant's third *Critique*, but also that some thematic traits can be derived from the initial structure of a hermeneutics of nature.

First of all, life will have a cardinal status within this discourse. Previously, the concept of *order* was the recurrent link between natural history, theology, and metaphysics: Organisms exhibited an *internal* order and were part of a *general* order which is evidence for divine design. Kant's characterization of *Organisierte Wesens* in the *Critique of Judgment* radically transforms this concept of order. An organism is an entity which has to be apprehended in such a way that the parts should presuppose the idea of a whole to be understood,

and according to this idea that parts are reciprocally causes of their own production within this whole.³⁰ So an organism is a self-organizing entity that has a rather decisive *epigenetic* character.

More precisely, this Kantian claim is a sign of Kant's involvement in a research program opened by Wolff, and continued by Blumenbach and others. Details of this intellectual history are not relevant here,³¹ neither is the precise commitment of Kant to epigenesis.³² Let us say that since epigenesis belongs to the realm of reflexive judgment, Kant limits the bearings of this concept, especially concerning spontaneous generation, and that this allows him to subscribe to a restrained epigeneticism that he himself will call "generic preformationism."³³ This portion avoids the classical features of preformationism by asserting that living individuals are somehow a result.

However, this life as a self-organising process, after Kant, takes the place of the previous pervasive concept of order as a clue to the articulations and transitions within the general structure of knowledge. The organism becomes a general scheme for understanding nature. Regarding the systematic character of nature, primordial for *Naturphilosophie*, Schelling refers to Kant's concept of organism, in order to conceive the apriority of this science: "Since, in any organism everything holds and supports reciprocally one another, then this organisation must as a whole pre-exist to its parts, and the whole cannot stem from the parts, but the parts have to stem from the whole. It's not that we *know* nature a priori, but nature *is* a priori, namely all that is singular within it is determined from the whole, or from the idea of a nature in general."³⁴ On the basis of this scheme, Schelling will be able – contrary to Kant – to claim that nature itself is an organism, and Oken to equate life and being. In the *Bruno*, we read: "Universe embraces itself, and tends always to become similar to it, and constitutes a living being organised in a way that it cannot perish."³⁵ Earlier in *Von der Weltseele*, he contends that "as soon as our conceptions raise to an idea of nature as a whole, the opposition between mechanism and organism vanishes, this opposition which delayed for a too long time the progress of natural science" (VI) and that "the succession of all the organic beings happened by the progressive development of a unique organisation." (ib.)³⁶ And Oken in his *Naturphilosophie* (§87) writes: "but everything to which one can attribute life exists or manifests itself through its polar motion, in other words through life. Being and life are undissociable concepts; to the extent that when God acts, God creates life."³⁷ Steffens, this scientist so important for *Naturphilosophie*, this follower of Schelling's ideas, but author of his own speculations, and conducting his own experiments as well, wrote in exactly the same way: "Just as in any organic structure, each element, even the smallest, cannot be conceived except in its unity with the whole, the universe, even embraced in a historical perspective, has become for me

an evolving organism, of whose achieving can only be obtained through its highest formation, e.g. through man.”³⁸ Those are precisely the expressions of the *Weltseele* by Schelling : nature is an evolving organism, constituted by higher and higher degrees of a general organisation – whose highest point is consciousness.

Here again, two theses are entangled: a cosmological one, on the nature of the universe, and an epistemological one, denying the difference between mechanism and organism. “*One and the same principle links inorganic nature with organic nature.*”³⁹ This means that there is a difference of degree between inorganic and organic entities, and that in the same time the intellectual operations of understanding mechanisms are entrenched in organismic schemes.⁴⁰ It follows from statements such as this one: “Life is neither a property nor a product of organised matter, but inversely, matter is a product of life. Organism is not the property of some particular natural objects, but inversely, the particular natural objects are as much limitations or particular modes of intuitions of the general organisms. (. . .) The things are not the principle of the organisms, but inversely, the organism is the principle of things. The essence of all things (that are not simple phenomena, but approximate individuality in an infinite succession of degrees) is life; the type of life is accidental, and even what is dead in nature is not dead in itself, it is only latent life.”

This crucial status of life in the philosophy of nature inherits a dimension of the Kantian claim that purposiveness is a concept that we human beings with our finite power of thought, *necessarily have*. Hence, the concepts used to conceive life express what is essential to human thinking. Therefore, within nature life is distinctive because it refers to the finitude of the human thinking that apprehends living creatures.⁴¹ Kant vindicated a proximate and immanent relationship between finite thought and life, and the hermeneutics of nature will inherit this theoretical claim. In a word, the lesson of §77 of the *Critique of Judgment* would be : organisms, that we conceive as purposive, are that into which the very structures of our finite thinking are reflected, if I could hazard this abbreviated reading of the phrase “reflective judgment.” The task of the *Naturphilosopher*, mainly Schelling, was to cancel the assimilation between thinking and finite thinking, which was crucial to Kant’s demonstration, and coextensive with the concepts of reflexive judgment and regulative principles – but, to this extent, the correlation between thought and life remains. That is why when Hegel will say that Reason finds itself within life,⁴² or that life is easier to understand by reason than plain nature. Because they are somehow of the same essence (two ways of enacting the concept⁴³) he will only radicalize the Kantian claim of an origin of the notion of life within the deep structures of our thought. This point bears two consequences:

First, if life is perceived within nature, then life's reference to our thought allows a discourse that finds out in nature something akin to thought – hence, some *meanings* – whereas this discourse remains immanent to nature and does not seek elsewhere the foundation of its postulated order. Since life *is no more the summum of naturality itself*, a reference to life allows a philosophical discourse on nature to read in it something *else* than what *constitutes* it as phenomenal nature, e. g. *Gesetzlichkeit* or lawful regularity. A philosophical discourse on nature will take the form of a *hermeneutics of nature* because, after Kant, life acquired a specific position within the reflexive examination of our finite thought by itself. Therefore, when Schelling writes that for *Naturphilosophie* “nature is nothing else than the organ of self consciousness,”⁴⁴ or when Hegel conceives nature as the mind opaque to it, they both rely on this interpretation of life as a reflexive concept, proper to the necessities of finite thought, elaborated in the Third *Critique*.⁴⁵ (The precision “finite thought” is important because it proves that this conception radically differs from the traditional identification of life and infinite thinking in divine intellect, such as Aristotle and its scholastic commentaries. But the negation of Kant's restriction, here, is not the same as Aristotle's assumption, since it does not at all proceed from the same conceptual ground).

It is the same when Hegel and Schelling conceive of light as a kind of thought.⁴⁶ But the consequence is, of course, that they are no more Kantians at all, since nature as a whole is read in this hermeneutical framework, with this reference to thought, such that the boundary between organic and inorganic in nature, fundamental to Kant, now disappears. For example, Schelling writes: “there is a productivity with no conscience, but which is conscious productivity originally transformed, whose simple reflection is seen in nature, and which, from the viewpoint of the natural perspective, must appear as one and the same blind instinct that acts at various levels since crystallisation to the heights of the organic formations (where it returns again to crystallisation through *Kunsttrieb*).”⁴⁷ This is a complete reversal of Kant's §80 of the *Critique of Judgment*, where precisely crystallisation has to be prevented from being conceived along the same lines of the organic *Bildungstrieb*, a requisite also shared by Blumenbach.⁴⁸

The general conception of explanation, as it is drawn from the uses of empirical sciences, is also inverted in this hermeneutics. In the received view, mechanism is the easiest and clearest explanation that makes the organism so difficult to understand – that was an incentive for Kant's trouble about organisms in the third *Critique*. In the alternative hermeneutical view, the organism is the explanatory scheme, so it becomes clearer and easier to understand than the mechanism. Notwithstanding all their differences, Hegel, Schelling, and

Schopenhauer will agree on this point. Nature itself is an organism, that is why we can understand nature. The reason for this shift is that we switched from the viewpoint of lawful regularity to the viewpoint of meaning, which is proper to the hermeneutics of nature. Organisms and life then become epistemologically prior because they are the instance of the meaning itself, provided that they are akin to thought as such. That is obvious when one considers the Hegelian theory of life as the Concept for itself for the first time (which means : life is the Idea, but in its immediate state, so opaque to itself). This is no less clearly expressed by Schelling : “The organism is so little to be explained from the mechanism that mechanism is to be explained from organism (. . .), a world, an organisation, a general organism (. . .) a *world*, an *organisation* and a general organism are the *condition* (and as such the *positive*) of the *mechanism*.”⁴⁹ Rather than statements about life and organisms, I claim that those shifts express precisely the conversion of natural philosophy to hermeneutics.

The second consequence: Hermeneutics of nature differs radically from the broad vision of naturalist philosophers such as Cabanis or Diderot who conceived nature as a living whole, for example in the *Reve de d’Alembert* or the *Lettre à Fauriel*. After Kant, the philosophy of nature cannot build such a hylozoistic vision of nature since there is a gap between nature as such, and life – as a gap between meaning and lawful regularity. Metaphysically, this means the impossibility of “hylozoism” as stated in the *Metaphysical Foundations*. But here this rejection had been supplemented by the assumption of the epistemological originality of some beings (i.e. organised beings). Hence both claims lead to this assessment of a gap between meaning and lawful regularity in nature.

Even if naturalist or vitalist French Enlightenment philosophers privileged life, they could not conceive this peculiar status of life established by the hermeneutics of nature because they did not have this concept of life as stemming from the very structure of finite thought, and therefore, as a testimony to some radical features of human thinking. I guess that this could challenge the claim that Herder, who conceives himself as close to those vitalists, was conceptually conditioning the philosophy of nature. Historically his *Ideen* might have been an impulsion, but conceptually or logically this gap between nature and life, reflecting the gap intrinsic to human thought, was the radical feature that gave the philosophy of nature its “territory” within all the discourses on nature.⁵⁰ It is clear that Schelling was no vitalist, and that he struggled against vitalism as well as against materialism. The very meaning of this struggle is illuminated when we highlight the conceptual distance between French XVIIIth century naturalism and the hermeneutics of nature.⁵¹

3.2. *Tragedy, absurdity, and violence: finitude of nature*

The genealogy of the hermeneutics of nature then imposes another constraint on this discourse, namely, the leitmotiv of *conflict*, which is what is left over from Kant's emphasis on our finitude when organism became a constitutive concept. Nature is less order than violence – this is recurrent in the philosophy of nature, and we could read it in Schelling. For example in an early formulation, he writes: “The negative condition of the vital process is an antagonism of negative principles, which is entertained by the continuous influence of the positive principle (the first cause of life). If this antagonism is to be permanent in the living being, the equilibrium of principles has to be continuously disturbed inside it.”⁵² But we will find it also by Hegel as well as by Schopenhauer,⁵³ as we will see in more detail.

This leitmotiv could be considered as twofold. First, the privileged status of life within nature induces the constant possibility of a conflict between life and non-living nature. This reactivates a conceptual motto present by Stahl, and continuously referred to by the vitalistic physicians until Bichat.⁵⁴ It is not surprising therefore that Bichat's *Recherches* are as much a major reference for Schopenhauer as they are for Hegel.⁵⁵

I simply note the convergence of those philosophers that are in other respects so different, in order to confirm that we are here dealing with a *structural trait* of the philosophical discourse on nature, something prescribed within the conceptual possibilities of such a discourse, and not with particular doctrines. Schopenhauer formulates the process giving rise to the organic from the inorganic in the following words: “There is no victory without fight: the highest idea, or objectivation of the will, cannot happen without overcoming the lower ones, and it has to triumph over the resistance of those forces which, whereas reduced as slaves, still aspire to manifest their essence in an independent and complete manner.”⁵⁶

In Hegel's philosophy of nature, life, as the immediate form of the Idea, realized in nature,⁵⁷ is in itself negativity; hence, it carries in its essence this conflict that opposes it to brute matter. Hegel then draws the consequences of this situation: “the (elementary powers of objectivity) are. . . continuously ready to jump to begin their process within the organic body, and life is the constant fight against such a possibility.”⁵⁸ Thereby, “the living body is always on the edge of falling into a chemical process : acid stuff, water, salt, will to raise, but are always suppressed, and it is only in death, or in illness, that this chemical process can appear for itself.”⁵⁹ Schelling would say : “life is a constantly prevented extinction of the vital process”.⁶⁰

We see that Schopenhauer and Hegel do conceive this conflict in the same terms: *subordination* of the non-living stuff to living things, together with an

extenuation of the latter by the former. And for the two authors, living and non-living are moments of a *same process*: here, stages of the objectivation of the will *vs.* there, logical process of the Concept realized within nature. Both agree that this process is not a temporal one,⁶¹ and both contend that life requires another intelligibility than the non-living realm.

But for Hegel, physical phenomena pass over into the organic ones, for the reason that they are in themselves identical to them, so that they cannot but be defeated by them. For instance the water I drink becomes part of myself, entering into the processing of my metabolism. “Inorganic nature, enslaved by the living nature, undergoes this fate because it is in itself the same thing that life is for itself.”⁶² *Life is the truth of nature pure and simple*, that is why life can destroy and appropriate the nature. Schopenhauer says something different: life has an intrinsically higher force than non-living nature because it is a higher degree of the objectivating will.⁶³

However, the leitmotiv of conflict is wider than this vitalistic conflict. Hermeneutics here inherits the radical critique of natural economy by the third *Critique*, a critique that fit perfectly the trends in comparative anatomy at this time. “Everywhere in nature, says Schopenhauer, we see fight, war and alternative victories, and therefore we better understand the divorce of the will with itself.”⁶⁴ Conflict in nature is *pervasive* and does not lead to a stable order. Schopenhauer acknowledges that species are stable and coexist,⁶⁵ although individuals fight eternally. But this is no more the idea of an order through conflict, familiar to the natural economy. *What is emphasized now*, if we read Schopenhauer, is not the resulting order, but the *infinity and absurdity* of the eternal fight which divides the will from itself: “It is an unending, never satisfied, effort that is the essence of the plant, a continuous effort through more and more noble forms, until the seed which is, then, a new beginning, and this is repeated infinitely. *Never a true goal, never a final satisfaction, nowhere a place to rest*.”⁶⁶ This picture of nature is, once again, very close to the Hegelian idea of the bad infinite, which is pervasive in nature – infinity as lack of a term, which affects, for example, the genera of living creatures because they exist as successive infinite series.

Hegel used the concept of impotence, *Ohnmacht der Natur*, in order to express this essential feature of nature as the object of hermeneutics. *Ohnmacht* means, in the first instance, that since nature is the immediate realization of the Idea, *the Idea in exteriority* (time and space) is then somehow external to itself.⁶⁷ But this finitude of nature is, in the end, the exteriority of the particular vis à vis the universal. The kind is not the individual – think of a zoological species – hence the concept is always outside its object. The *Phenomenologie des Geistes* indicates two occurrences of this *Ohnmacht*: the metaphor of the “river of life,” remaining indifferent to the living individuals that fight and

die in the dark (chapter IV). Further (chap. VI), as Hegel shows how reason seeks itself in organic nature, he explains that the organic forms are contingent, namely, they cannot be ordered in a rational progressive series, since each time a species is realized in a given environment, this milieu affects with some singular traits the individuals that instantiate the species. What Hegel calls “Earth as an individual” alters the individuals attempting to realize a universal type. But this Hegelian *Ohnmacht* of nature, in the end, is a major effect of the Kantian origin of the hermeneutics of nature: it refers ultimately to the essential fact of finitude according to the Third *Critique*, namely, the contingency of the particular in front of the general (§77).

3.3. Gender puzzles

Hermeneutics of nature, then, carries a final leitmotiv: gender as a main sign of this finitude – as nature’s attempt and failure to overcome such a finitude. For Hegel, reproduction is the highest moment of the living being’s process. Here, it relates to another living being, so it recognizes itself in an Other; and the Universal – e.g. its species – exists for it through the mediation of this Other. However, because a species exists as the bad infinite of the sequence of generations, universal and particular cannot accord: the living being dies.⁶⁸ This death, nevertheless, means that life, and then nature itself, whose term consists in life – leaves room for the moment of Spirit.⁶⁹ This relationship between nature and spirit through failure of the gender process is properly Hegelian.⁷⁰ However, the peculiar status of sexuality is a general feature of the hermeneutics of nature.

For Schelling, genders are at the same time nature’s attempt to overcome its own separation, as well as its impossibility of overcoming it since those genders are themselves this very separation that they perpetuate. “Nature hates gender (*Geschlecht*), and, where it rises, it rises against her will. Gender’s separation is an unavoidable fate, that it has to cope with, and that it cannot overcome insofar as nature is organic.”⁷¹ By analysing both the *Naturphilosophen* Oken and Carus and contrasting their gender theories with the earlier one of Humboldt, Peter Hanns Reill⁷² recently made a convincing case that for the *Naturphilosophen*, unlike the Enlightenment vitalist thinkers, gender differences were a crucial intellectual focus since they could invest in them their own sought for polarities, oppositions, and meaningful schemas: “The *Naturphilosophen*’s longing for certainty clearly spilled over in to the world of gender relations. In fact, they may have become concentrated there, revealing in a purer light the yearning for order, clarity, and hierarchy that, I believed, directed their thoughts and feelings.”⁷³

It is known that Schopenhauer devoted a long analysis to those matters in the Supplement XLII, entitled “Metaphysics of love.” Notwithstanding the doctrine, let me simply note that the metaphysical weight of this question is inscribed in the main program of his hermeneutics of nature. This is surely the best example of a system placing the theme of sexual lust at the heart of its conception of nature: “Generation is somehow the most admirable of the artistic instincts, and the one whose work is the most surprising. Those considerations explain why sexual lust is characteristically so different from the other appetites: it is not only the strongest, it is also specifically of a more powerful nature than the other ones. It is everywhere and always tacitly presupposed, as unavoidable and necessary, and is not, unlike the other desires, a case of taste and mood: because it is this desire that forges the very essence of man. No motive would be robust enough, when conflicting with it, to pretend to supersede it with certitude. It is so much our principal worry that, when constrained not to satisfy it, we find no compensation in any other pleasure, and, in order to fulfil it, animal and man would face any danger, engage in every fight.”⁷⁴

The genealogy of this issue traces back to Kant himself. For him, gender relationship has a peculiar status because it is the only case in nature where internal purposiveness (function of reproductive systems) leads by itself to relative purposiveness (another living being of the opposite gender), so that one can answer to the question “why is this organism there?” when one considers the other sexually related organism.⁷⁵ But Kant’s perplexity continues until the *Opus postumum*, where sexuality seems an empirical addition to the metaphysical concept of organism.⁷⁶ It is on such issue that Kant found an opportunity to reject the pretensions of the rising *Naturphilosophie*, namely, the general use of gender metaphors: Schelling’s correspondences between male/female, magnetic poles, positive/negative, light/shadow, and so forth, are condemned in advance by Kant in a letter to Schiller⁷⁷ concerning Hube’s *Letters on the natural sciences*. “Those ideas,” says Kant, “are thoughts that happen in our mind from time to time, but we do not know what to do with them. It goes like that with nature’s organisation : the fact that any fecundity requires two sexes to perpetuate the human species always seemed amazing to me, and like an abyssal thought for human reason, because here one cannot appeal to a Providence that would have wanted this order for the sake of variety.”

4. The relationships between philosophy and science

For Kant as well as for the tenants of a hermeneutic of nature, the fundamental concepts of the natural sciences are essential for the philosopher, but not in the

same way. Kant elucidated the possibility of those concepts by confronting them with the requirements of human thought as such, whereas a hermeneutics of nature, achieved by Schelling, Hegel, or Schopenhauer, have to interpret those concepts in order to decipher what is told in them about the meaning of nature. So, in this perspective the science of nature is a discourse whose truth and meaning have to be uncovered by philosophy. Those three authors, however, accomplish this in three different ways. Whereas with the *Critique of Judgment* the criticism only allows an hermeneutics of nature, for this program the content – the matters of fact in nature – will prove relevant, e.g. will have to be worked through by philosophy (and not by tracing back the concepts informing it to their sources in finite thought).

The extreme position would be Schelling's. Philosophy does not produce the true theory but deduces the object of the scientific theory: "the great revolution brought about by the period (following classical metaphysics) consists in no longer dealing with the search for predicates (therefore creating a true theory about some objects) but in getting an insurance about the objects themselves. Still now, lots of people come to philosophy thinking that there are some statements or propositions that one can take home as a reward. But it is no more the case. The current philosophy consists in a deduction of the objects themselves, those objects that the old metaphysics presupposed simply in experience or ordinary conscience."⁷⁸ Schelling therefore speaks of the *construction* of objects – but this Kantian word, used by Kant to denote mathematical activity in the sensible intuition, connotes now the activity of a thought that is no longer finite, e.g. in which understanding and sensibility are no more separated.⁷⁹ Reill describes Schelling's and the *Naturphilosophen's* use of science in those terms: "(they) populated the phenomenal world with bipolar oppositions, supposedly recapitulating the *Ur-polarity*, drastically revising the content of the "normal" sciences from which they borrowed some of their individual concepts."⁸⁰ This "construction" of science by philosophy is meant by the recurring phrase "philosophical X," where X can be chemistry, mathematics or physiology; here, *Naturphilosophie* is thought to duplicate science with the meaning of science, which can only be delivered on the viewpoint of the philosopher.⁸¹ This transformation of science through philosophy is possible because of the gap between meaning and lawful regularity occurred after the third *Critique* and that we highlighted.

The Hegelian concept of "finite science" yields his own position. Science as such presupposes *the object as given*, therefore it is finite. So Hegel shares Schelling's idea that philosophy proceeds to the point where the object of science is not presupposed as given (by the science as such). Only philosophy can give its real status and bearings to science, since it exposes the signification of the object, constituted as a Result.⁸² Kant too, deduced the meanings and

their limits – for example, the meaning of “natural purpose”... – but for Kant, philosophy ceases before the *content* of science, although for Hegel, this scientific matter too is thought by philosophy. To this extent, Hegel’s philosophy of science could be seen as a *hyper-Kantianism*, a Kantianism that gives up the major Kantian distinctions (form-matter, regulative-constitutive, etc.), and therefore reach something very different from Kantianism.

But for Hegel the impossibility of bringing back the facts of nature, the facts established by natural science, to the Idea, does not mean a weakness of science or a finitude of our understanding, but rather the *Ohnmacht* of nature itself. Because of its own status as nature, which means the *entfremdet* Idea, nature cannot exactly match the rational determinations of the Concept. This is the consequence of Hegelian Logic: the *Wissenschaft der Logik* prescribes to the philosophy of nature its limits and its place in the totality of knowledge – as well as prescribing nature its place and status in the totality of the reality. On this basis, the philosopher can interpret the finite sciences – and this interpretation is the hermeneutics of nature. She makes the inverse gesture of the scientist’s; she begins with the concept – exactly in the way the *Encyclopädie* begins with the science of logic. While the naturalist claims to proceed from the empirical animal forms to the concept, the philosopher re-conceives science by beginning from the concept – which is the truth of the scientist’s knowledge. “The infinity of the animal forms is not to be taken so that the necessity of the orders in nature should be constant. This is the reason why one, on the contrary, must take as a rule the universal determinations of the Concept, and then compare the natural formations to those determinations.”⁸³ To start from the concept, to presuppose the logics, e.g. the science of the necessary motion of the meanings of thought, which does not presuppose anything else (except, from the viewpoint of the subject and not of the content, a *Phenomenology of Spirit* that explains how one reaches the position of the identity between being and thought that is proper to enounce and understand the logical discourse) – those are the requisites of the Hegelian reflexion of the sciences within the philosophy of nature.

Hegel cannot demand too much of the natural sciences in this position toward science. This is the difference from *Naturphilosophie*, and especially Schelling’s. Schelling is most committed to the contents of the natural sciences because he has a stronger confidence in the possibility of a rational interpretation of nature. For this reason, he speaks in terms of real forces and natural moments,⁸⁴ whereas Hegel has in his own way already de-naturalized those contents of the natural sciences because their intelligibility refers only to some logical moments (chemism, mechanism) of the *Wissenschaft der Logik*. That is why Schelling is compelled to make real correspondences between natural moments, such as light and life, or chemism and digestion, whereas for

Hegel those correspondences are mere arbitrary abstractions, and the reality of Schelling's attempt here should be caught only in the logical sphere.

For Schopenhauer too, the correspondence of matters of facts sought by science to philosophical concepts is necessarily required. More precisely, the proof of the truth of his system is that science would converge by itself towards a schopenhauerian thought, so that when one approaches the scientific contents from the philosophical intuition (given primarily in our experience of the lived-body) that the *In-sich* of the world is the will, then the scientist says the same thing as the philosopher, whether he knows it or not. This is precisely a corroboration of philosophy, while science and philosophy work in an independent manner, they also meet up, e.g. the results of the empirical sciences can be translated within the Schopenhauerian metaphysics of the will: "My metaphysics proves itself as being the only one that possesses a genuine common boundary with the physical sciences in the sense these come to meet it *by their own means*, so that they really encounter it, and that establishes their juncture."⁸⁵

In a way, Schopenhauer would be close to Schelling's position concerning natural science because philosophy has to reinterpret natural science with no logical requisites. It was with this intention that he wrote *Wille in der Natur*. But as science should be a confirmation of philosophical results, so that philosophy works by itself towards such results, there are no guarantees that the whole natural science can be such a confirmation. Schopenhauer's *Philosophie der Natur* would therefore be less confident than Schelling's *Naturphilosophie* although close to it in intention, while, like Hegel, he seeks traces of what is its core of truth within nature through natural sciences: the Will (instead of the Concept).

5. The hermeneutics of nature and modernity

This schema of the philosophical position regarding nature gave rise, I contend, to several kinds of philosophies of nature. My claim here is that it is still at work in more contemporary attempts to do the philosophy of nature since they are precisely elaborated on the basis of this hermeneutical position. The rise of phenomenology, which is the most powerful framework to undertake the philosophy of nature after the fall of German idealism, is absolutely consonant with this position of philosophy; for what is stake is still the meaning that could be in nature, akin to our thought – not as delivered by sciences, but as somehow indicated by them and totally immanent to nature. Put in this manner, the convergence of phenomenology and the hermeneutics of nature becomes obvious.

To give some indications about the pervasiveness of the hermeneutics of nature I briefly address two tentative philosophies of nature, one prior to and one belonging to phenomenology – namely Bergson and Merleau-Ponty. Concerning the latter I stress what is new and irreducible compared to the traditional hermeneutics of nature sketched above, and then I address the question of the current options for a hermeneutics of nature. I do this assuming that the current state of science is absolutely meaningful for any philosophical attempt of this kind according to the requisites that emerge with a hermeneutics of nature.

Concerning Bergson, the consideration of nature throughout *L'évolution créatrice* or *La pensée et le mouvant* parallels the position of philosophy regarding science that is proper to the hermeneutics of nature. Philosophy, through “intuition,” is supposed to revise what the inappropriate (because technically-oriented) viewpoint of intelligence introduced in science that misinterprets the content. The result is the emergence of a kind of familiarity or acquaintance between nature as such and thought. Here, however, neither is the mathematical reconstruction of nature in science taken for granted, nor does nature lead to the foundation of its order (no transcendent creation is needed to account for the *élan vital*). As a result, those characteristic features of a hermeneutics of nature are easily met in Bergson’s philosophy of nature; other leitmotifs compatible with this program would not be difficult to find. Regarding Bergson’s proximity to Schelling, Roger Hausheer notices: “The whole idea of an essentially spiritual or mind-driven universe, where, properly conceived, matter itself is truly intelligible only in the context of an intelligent creative being is wholly Schellingian.”⁸⁶ Moreover, he states that the doctrine of intuition – which is precisely the faculty capable of elaborating a hermeneutics of nature, as opposed to the understanding’s constructs, in Schelling’s view – is the crucial meeting point between those theories. This common epistemological assumption supports Bergson’s distinction between a false empiricism, relying on intelligence and misunderstood science, and a “true empiricism” that in the end converges with metaphysics. For Schelling metaphysics is precisely real empiricism as opposed to mathematical empiricism because metaphysics, as we saw, can assess the positive contents of science.

Bergson’s philosophy of nature is of interest here mainly because it has been one of the formative cornerstones of Merleau-Ponty. Together with the deep influence of Husserl, we know that Merleau-Ponty introduced a sense of the irreducible weight of the body and of natural things in philosophy. His assertion concerning the supplementation of transcendental history by transcendental geography means precisely that the presence of natural things, the irreducible heaviness of rocks and soil, are not included in the classical

husserlian static or genetic phenomenology, focusing on the transcendental syntheses that give rise to the meaning of the world.

It is known that from the *Structure du comportement* to the notes in the *Visible et l'invisible*, Merleau-Ponty has been more and more concerned with what is not understood by the transcendentially centred Husserlian phenomenology. As one of the most powerful attempt of settle a philosophy of nature in the Twentieth century, the relevance of the framework of a hermeneutics of nature would be significant if it is at work in it.

The use of Schelling by Merleau-Ponty at the beginning on his lectures on *Nature*, is quite telling. He uses Schelling to say something that motivated his recourse to Husserl in the *Phénoménologie de la perception*, namely his “opposition to reflexive philosophies.”⁸⁷ Trying to capture Schelling’s philosophy of nature, he uses words which are typically his: “what Schelling means is that we rediscover within nature in our perceptive experience before reflexion.”⁸⁸ His own project however is elaborated along the same lines of Schelling’s to the extent that he emphasizes the insistence of nature before any conception and reflexion, and the fact that this anteriority of nature is both the need and the difficulty of a philosophy of nature as such. For instance, philosophy, according to *The Visible and the Invisible*, “addresses this mixing of the world and ours that precedes any reflexion.”⁸⁹

All those famous metaphors, *l'être sauvage, l'être barbare*, are here to name this anteriority, the mute anteriority of nature. And in this original project that he never achieved, Merleau-Ponty joins in a genuine manner the intentions of Husserl and of Schelling. By emphasizing what is inchoative, the unpronounced meaning in nature, he conceives of a philosophy of nature in the same way Husserl of conceived phenomenology according to this classical sentence that he often quoted from the *Cartesian Meditations*: “it is experience, still pure of its sense, that we have to take to its expression.” That is precisely why he phrases Schelling’s project in terms that are so close to this Husserlian formula: “how to represent a meaning that impregnate the living being, but is not thought of as a meaning should be ?”⁹⁰

Here we recognize the hermeneutics of nature: this connexion between life and nature and meaning, this assumption of meaning within nature through the fact that we are living beings. By making Schelling close to his own program, Merleau-Ponty testifies that this program pertains to a hermeneutics of nature in some ways. Describing Schelling’s position, he is of course telling the core position of a hermeneutics : “what inhabits nature is not Spirit, but a beginning of meaning, in process of arrangement (*en train de s'arranger*) and which is not totally manifest (*degagé*)”⁹¹

Merleau-Ponty’s agenda is formulated within phenomenology, and shares with Husserl the idea that philosophy has to go back to the point where

objectivities are not constituted by science. Merleau-Ponty took from Husserl the concept of *Lebenswelt*, and then conceived of his own approach to nature in the same way. This position is quite new with respect to the other attempts of a hermeneutics of nature that we examined; it is surely one of the most original features of Merleau-Ponty's philosophy of nature if we place it among the other hermeneutics of nature. It accounts for its particular form, which first of all concerns its insistence on perception. In his reading of Schelling, the most important sign of his own philosophical orientation is the emphasis on perception as a presence of/to nature, which was not so pervasive in Schelling. A few lines after the sentence just quoted, Merleau-Ponty adds: "But for Schelling, everything stems from us, nature is borrowed from our perception (see the pure intuition by Bergson). We are the parents of a nature of which we are children. It is in man that things become by themselves conscious. But this relationship is reciprocal: man is the becoming conscious of things. Nature goes through a series of disequilibria, to the achieving of man which is its dialectical term." Although the end of this text is a brief summary of Schelling's theses in *Naturphilosophie* – and pertains absolutely to hermeneutics – the mention of perception is Merleau-Ponty's touch.⁹² (The connexion Schelling-Bergson- Merleau-Ponty is also relevant for a general discussion of hermeneutics of nature, but is left aside here.).

If we consider *The Visible and the Invisible* in Merleau-Ponty's career, he is to some extent realizing something parallel to what *Phénoménologie de la perception* did to classical phenomenology. In his first book, he obviously anchored Husserlian intentionality in my lived-body. This shift of transcendental philosophy is in some ways applied here to hermeneutics of nature. In his last work, the sensation of my flesh becomes part of nature, becomes the starting place of the hermeneutics of nature, because that is in the failing of self sensation that we can capture the essential failures of reflexion,⁹³ and then the pervasiveness of nature.

If Merleau-Ponty could be inscribed in the tradition of hermeneutics of nature, it is attested by his reading of Schelling and his discourse on nature's meaning and the unachieved novelty of his attempt could be that the essential affinity, which is at the heart of hermeneutics, between our thought and nature (through life), between meaning and nature, is displaced towards an affinity internal to sensation, the affinity of sensing and being sensed or, in other terms, this affinity that he tries to explicate by indicating that the red and seeing the red could be of the same flesh. That is why he uses the word *chair*, "flesh" – which refers prima facie to a human's body, to express this primitive intertwining– and why when he tries to define this *chair* he uses words from the ancient philosophy of nature: "Flesh is not matter, it is not spirit, not substance. We should use, to design it, the antique word "element," in the

sense that one used it to speak of water, air, earth and fire, namely in the sense of a *general* thing, half way between the spatio-temporal individual and the idea, a kind of embodied principle that imports a style of being anywhere a parcel of it is to be found.”⁹⁴

Merleau-Ponty’s philosophy of *nature brute*, in his last works, would be the last realization of the hermeneutics of nature. What then would be the prospect of such a program now? Here, even more than before, I will just offer some hints.

Although the genealogy of Darwinism is not so different from that of the hermeneutics of nature, namely, both stem partially from the failure of the traditional theologically based economy of nature, as it has been long recognised by Ospovat,⁹⁵ Darwinian biology was not really central in the hermeneutics of nature. A reason for this might be that the relationship between meaning and lawful regularity that was fundamental to the hermeneutical standpoint, does not exactly concern Darwinism, whose “laws” have not the same status that the laws of the sciences upon which Kant or Schelling or Schopenhauer theorized. More precisely, a reading of the meaning of nature might be in advance precluded by the Darwinian dismissal of a consciousness-oriented teleology in nature.

This is not totally conclusive, and someone might object that even in neo-Darwinism, a hermeneutic reading of science could easily be provided. Take, for example, the famous thesis by Richard Dawkins⁹⁶ according to which genes are the units of replication and selection, so that the whole evolution has to be understood as the more and more complicated way genes compete to get represented more than the others in the coming generations. This makes an obvious use of the idea of an *unintelligent design-free* finality. It is just this idea that has been worked out – from its Kantian first formulation – by the philosophers of nature. In the final analysis, it will not take a huge effort to make the most general Dawkinsian claims fit a schopenhauerian philosophy of the pervasiveness of a purpose-less will in nature.

But this is not at all new. What might be interesting for the current projects in philosophy of nature, pertains rather to some new directions in ecology. The first one is the blurring of the boundaries of organisms. This same Dawkins convincingly defended that since genes are, if not the units, nonetheless some units of selection, and since some genes have effects outside the body of their bearers, the organism is not always the relevant ecological or biological unity.⁹⁷ A fascinating work by Scott Turner⁹⁸ recently proposed that their physiology extends even beyond the visible boundary of organism, for example with the mound nests of African termites, the burrows of worms, the nests of birds, etc. Given that a correlation between individuality and organisation has been assumed by the hermeneutics of nature since Kant, taking into

account those new directions in Darwinian ecology might provide some inspirations in the philosophy of nature that go beyond the hermeneutic framework. Here, the ecological concern in recent phenomenology could meet this latest biology, for instance when David Wood insists on “the roles of boundaries in constituting the varieties of thinghood.”⁹⁹

The other new direction concerns the concept of *niche construction*, as recently worked out by Laland, Odlin Smee and Feldman.¹⁰⁰ The authors insist on the fact that by acting in their environment, for example building dams like beavers, or even only exchanging chemical materials with it by means of their systems of excretion, like worms, organisms do change the selective pressures that act on them. Against the classical Darwinian pictures of adaptation as a product of selection, and the individuals modeled through selection by their relationship with an environment, the niche construction hypothesis emphasizes the creative role of animal activity. Perhaps here a philosophical consequence of this would be that those teleological features of life (like adaptation), which after Kant the hermeneutics of nature interpreted by referring them to our faculty of knowledge, can be understood in some other way. A radical posthusserlian phenomenological insight would then stress the affinity between human and animal subjectivity rather than relying on our identification of animal “perception” with our mind, or by constructing the animal world on the basis of transcendental ego. Such an insight, maybe along the lines of Merleau-Ponty, might be enriched by those investigations. The perspective of what is called eco-phenomenology, which arose from a rejection of Husserlian or even Heideggerian transcendentalism, might find itself in concert with those new criticisms of orthodox Darwinism.¹⁰¹ Here I would diagnose a chance for the philosophy of nature to come.

The last and fundamental insight given by contemporary biology concerns the emphasis of *coevolution*. Rather than stressing the fact that environment – through the struggle for existence – is a clue to the nature and behaviour of the individual of a species, research work over three decades has highlighted some specific associations between two species as formative both of ecosystems and of the specific features of each species. Several patterns of coevolution have been identified that underlie important actual historical processes at all scales of life. The so-called arm-races between prey and predators¹⁰² or host and parasites, that have been studied all along the organic world and at any scale, acquired a huge methodological value for understanding evolution in general. The phenomena of symbiosis or mutualism began to appear throughout the whole organic realm.¹⁰³ Many biological major questions such as the origin of mitochondria or the origin of sex,¹⁰⁴ have received important answers in terms of coevolution.

If evolution is approached in this very fine-grained way by stressing the patterns of coevolution, we could draw philosophical consequences concerning the kind of affinity obtaining between humans and other living beings. Such an affinity might no longer rest on the category of *meaning*, which was at the heart of the hermeneutics of nature, but on the idea of *shared history*. This last insight provided by recent biology, and pervasive in ecology, might be the crucial concept that would at the same time connect philosophy of nature with neo-darwinism, and disconnect it from the hermeneutical viewpoint. I think something proper to phenomenological approaches to ecology, in contrast to classical phenomenology, is precisely the pre-eminence of associations as it is stated by Wood: “the so-called deep ecology is the product of an *uncontrolled* application of the methodological virtues inherent in the ecological perspective. The central virtue is the recognition of the constitutive quality of relationality. Things are what they are by virtue of their relations to other things. What looks like external relations are, if not internal, at least constitutive.”¹⁰⁵ Hence, some very recent approaches, particularly some ideas in ecophenomenology or some close ideas like the “natural contract” put forth by French philosophers,¹⁰⁶ are not as likely to be understood in the hermeneutical framework, but rather signs of the philosophy of nature taking into account the salience of coevolution. If those very, very sketchy hints are right, we might then experience a new paradigm for the philosophy of nature. What is left now is precisely to formulate it, by assessing the philosophical significance of those three radical changes in biological thinking.

Conclusion

By way of conclusion, let me emphasize that my paper was not a study of the philosophies of nature; rather, it is an interpretative hypothesis in order to explore the fate of the philosophies of nature after Kant; that is why I stressed the importance of the Kantian division between lawful regularity and meaning, since I judge it crucial for the very possibility of a philosophy of nature. My thesis is that the consequence of this genealogy was that most of the postkantian attempts in philosophy of nature have a hermeneutic tenor.

My conclusion emphasizes four points:

- Kant’s analysis of purposiveness opened up a space for thought that enabled philosophical interpretations of nature because it created a gap between nature’s lawful regularity and nature’s meaning.

- In German idealism, the philosophy of nature has been the research program of this hermeneutics of nature; and *Naturphilosophie*, Schopenhauer's "Will in nature," and Hegel's philosophy of nature has constituted three massive and divergent realizations of this program. Due to its Kantian genealogy, hermeneutics of nature in general presented several features, and above all, a special status for life, the overwhelming character of conflict and disorder, importance of gender, and a sensitivity to a kind of tragic meaning of nature.
- In the framework of phenomenology, new avenues emerged for the philosophy of nature for by itself phenomenology yields a peculiar kind of hermeneutics, that embodies a specific relationship to science. Merleau-Ponty's meditation on nature, *être sauvage* and flesh is an outstanding version of the phenomenological version of the hermeneutics of nature, since it emphasized the chiasmic status of perception that was traditionally not prominent.
- Finally the agenda for philosophy of nature could contain some hints that would part ways from the hermeneutical tour, since the new direction in Darwinian biology, particularly in ecology, highlights phenomena of co-evolution and niche construction that both puts into question the traditional ideas of organism and the salient role of human consciousness that were so pervasive in the hermeneutical approach.

Notes

1. Kant says – and this would be important from the view point of Kantian scholarship – *Organisierte Wesens* and not *Leben*, but here I endorse the perspective of his immediate readers, which allows this identification.
2. Neal C. Gillespie, "Divine design and the industrial revolution. William Paley's abortive reform of natural theology," *Isis*, 81, 306, 1990, pp. 215–229.
3. See texts by Linné and his pupils, *L'économie de la nature*. Limoges C. ed., Paris, Vrin, 1979.
4. On this very idea, several studies are illuminating. David Ospovat in "Perfect adaptation and teleological explanation" (*Studies in the history of biology*, 2, 1978) analysed the idea of fit between a organism and its role, stressing the idea of adaptation which is peculiar to the economy of nature and which will even be shared by Cuvier, although he rejected lots of features of the economy of nature. Along those lines are the analyses by Amundson, *The changing role of the embryo in evolutionary thought*, Cambridge university press, 2005. Some criticisms can be found in Caponi, "Los objetivos de la paleontología cuvieriana," *Principia* 8, (2), December 2004, pp. 234–258. Balan, in *L'ordre et le temps* (Paris, Vrin, 1980) tied this economy of nature to the idea of animal economy.
5. Paragraph 63.
6. For more details see Huneman P., "La critique du jugement téléologique et l'amétaphysique du vivant," *Proceedings of the Xth Kantcongress*, forthcoming.
7. This point has been forcefully made by Gustavo Caponi, who is eager to distinguish functional requisites, which are mostly physiologically defined by Cuvier, and adaptive

- role, which is only secondarily his concern, whereas it should be the fundamental one for the tenant of the economy of nature.
8. "The statment "the fish exists for the water" seems to me to say far less than "the fish exists in the water and by means of the water." The latter expresses more clearly what is obscured in the former; i.e. the existence of a creature we call "fish" is only possible under the conditions of an element we call "water," so that the creature not only exists in that element, but also develops there." ("Toward a general comparative theory" (1790), in *Complete works of Goethe.*, t. XII, Scientific works, pp. 54–55).
 9. Hume of course initiated this critique in the *Dialogue on natural religion*, who was also quoted by Kant; but due to questions of context, and also to the fact that Kant's work was more concerned by science, Hume's critique was much less relevant for philosophy of nature.
 10. Hereafter quoted *Entwurf*.
 11. "Schelling's *Naturphilosophie* has to be placed within a broader tradition, then, situated among all those late-eighteen-century thinkers who attempted to construct a more speculative philosophy on the basis of Kant's concept of matter." (*German Idealism. The struggle against subjectivity*, University of Chicago Press, 2004, p. 514).
 12. *Von der Weltseele*, pp. 3–4. Schelling deduced the second force by the requirement of limiting the first one, else it would become unable to be manifested: the reasoning is quite akin to Kant's in the *Metaphysical Foundations*.
 13. For the relationship between Schelling's *Naturphilosophie* and Fichte, see for example Bowie, *Schelling and modern Europe*, Routledge, 1993. See also Joan Steigerwald, "The dynamics of reason and its elusive object in Kant, Schelling, Fichte," *Studies in history and philosophy of science*, 2003, 34 (pp. 125–133). She writes : "Schelling's *Naturphilosophie*, with its positive and negative principles of pure productivity and constraint, was conceived in analogy with the pure, unconditioned activity of the I and its constraints in Fichte's transendantal idealism" (128). See also Piché Claude, "Fichte et la première philosophie de la nature de Schelling," *Dialogue* (XLIII), 2004.
 14. *Critique of judgement* §75. Kant's point is that since purposiveness is a feature of the possibility of our judgment, it concerns the possibility of our knowledge of the object rather than the object. Hence teleological judgment is reflexive, rather than constitutive (e.g., constituting the object, no matter how structured is our power of judgment). To this extent, each time we are teleologically judging, this means something about our power of judgment. This reflexivity of the judgment on purposes implies that the theory of purposes cannot be a doctrine of nature. More than that, it is part of our knowledge concerning our cognitive faculty, e.g. it is part of the Critique.
 15. The fact of the organism, is the fact that our knowledge of the parts cannot lead us to the knowledge of the whole, but on the other way round we have to presuppose something about the whole to know the parts (*Critique of Judgment* §65). In this case, the parts, their form and behaviour are ruled by norms that cannot be inferred from the universal laws of nature applied on them.
 16. "The universal supplied by our (human) understanding does not determine the particular; therefore even if different things agree in common characteristic, the variety of ways in which they may come before our perception is contingent. For our understanding is a power of concepts, i.e., a discursive understanding, so that it must indeed be contingent for it as to what the character and all the variety of the particular may be that can be given to it in nature and that can be brought under its concepts." (*Critique of Judgment*, Ak. V, §77, 406).

17. *Proleg.*, §14: "Nature is the existence (*Dasein*) of things, to the extent that it is determined according to laws."
18. *Erste Entwurf*. . . , §1.
19. Schelling, *Contributions to the history of modern philosophy*, SW. X, 177.
20. Claude Piché, "Fichte et la première philosophie de la nature de Schelling," *Dialogue* (XLIII), 2004, p.218 Piché recalls the outstanding importance of CJ's §76 for Schelling, a text where he could find an inspiration for his own concept of intuition (p. 223).
21. For an illuminating account of the Schellingian methodology and epistemology of *Naturphilosophie*, see Beiser, *German idealism*, pp. 526–528.
22. James L. Larson, "Vital forces: regulative principles or constitutive agents ? A strategy in German physiology, 1786–1802," *Isis*, 1979, 70, 235–249.
23. Robert J. Richards, "Kant and Blumenbach on the *Bildungstrieb*: a historical misunderstanding," *Studies in History and philosophy of biology and biomedical science*, 31, 1, 2000, 11–32.
24. On the emergence of a new romantic biology through *Naturphilosophie*, one can read the papers where H. P. Reill works out a notion of vitalism that encompass the resistances to mechanism in the Enlightenment and illuminates the transition to the romantic philosophy of nature. His recent book, *Vitalising nature in the Enlightenment* (University of California press, 2005) synthesises those attempts – see also his chapter 5 on the rise of *Naturphilosophie*.
25. Among the recent writers, Reill (op. cit.) is mostly opposed to asserting a continuity between Kant and *Naturphilosophie*; Kant, like Blumenbach, is much more belonging to the tradition he called Enlightenment vitalism.
26. Beiser F., *The fate of reason*, Chicago, University of Chicago Press, 1990, 150–155; Zammito J., *Kant, Herder and the birth of anthropology*, University of Chicago Press, 2002.
27. *The romantic conception of life*, University of Chicago Press, 2002, ch. 10. See also Nick Jardine, *Scenes of inquiry*, Oxford, Clarendon Press, 1991.
28. On Goethe as a scientist see Amrine, Wheeler & Zucker (eds), *Goethe and the sciences : a reappraisal*, Boston studies in philosophy of science, Dordrecht, Reidel, 1987.
29. Goethe himself recognized that the Third *Critique*, mostly by its search of a unified status for art and organic nature, has been of importance for his selfunderstanding.
30. *Critique of Judgment*, §65. For commentaries see Huneman P., "Reflexive judgment and embryology : Kant's shift between the first and the third *Critique*," *Understanding purpose. Collected essays on Kant and the philosophy of biology*. NAKS Publication series, University of Rochester Press, forthcoming.
31. For some accounts see Huneman, *art. cit.*; Sloan P., "Preforming the categories : Eighteenth-Century Generation Theory and the Biological Roots of Kant's A Priori," *Journal of the history of philosophy*, 40, 2, 2002, 229–253; Robert J. Richards, "Kant and Blumenbach on the *Bildungstrieb* : a historical misunderstanding".
32. Zammito J., "Kant's ambivalence towards epigenesis," *Understanding purpose*, Forthcoming.
33. *Critique of Judgment*, §81. On this phrase, see Lenoir T., *The strategy of life. Teleology and mechanism in Nineteenth Century German biology*, Dordrecht, Reidel, 1982, Chap.1; Sloan P., "Preforming the categories".
34. *Entwurf*, §4, 279. Organism is the way Schelling tries to overcome the opposition between dualism and materialism : all explanation is not mechanistic, but mechanism is part of an explanation directed towards organism, which is the true naturalistic explanation. Then,

we can be naturalists (never explaining things in nature by referring to something outside nature) and not dualists, but in the same time we have not to embrace materialism (since mechanism is not the real scheme of explanation). See Beiser, *German idealism*, pp. 518–519. That is why the generalised organism is both an epistemological and a metaphysical thesis.

35. The privilege of organic concepts has been progressively assessed by Schelling; chemical moments were pervasive in the first writings, and then organic concepts superseded them. See Mai Le Quan, “Chimisme et organisme dans la philosophie schellingienne de la nature.,” *Epistémologiques*, 2 (2002), 47–67. This also explains the privilege of chemistry in Schelling’s early *Naturphilosophie*, noted by P. H. Reill, *Vitalising nature*, 211sq.
36. On this doctrine see Beiser F., *German idealism*, pp. 515–519; Schlanger J., *Schelling et la réalité finie. Essai sur la philosophie de la nature et de l’identité*, Paris, Puf, 1966, ch. IV. Richards R., *Romantic conception of life*, ch.8. Since I am not undertaking a detailed study of Schelling’s philosophy of nature, and I am rather focusing on some kantian genealogy of the possibility of philosophy of nature, most of my references to Schelling will go to early work in *Naturphilosophie*, such as the *Weltseele* (quoted in the first edition) and the *Entwurf*. . .
37. On this theme in Oken see Reill, *Vitalising nature*. . . , p. 213.
38. *Was ich erlebte*, 1842, VI, 39. The romantic leitmotiv of a vitality proper to the whole nature is also contended by Ritter in his writings on galvanism, as soon as 1798. For instance, about galvanic chain : “it’s impossible that it is not pervasive throughout the totality of nature ! Where to find a sun, where to find an atom which would not be a part of it, which would not belong to such organic totality that does not live in any time, because it embraces in itself all the times.” (*Beweiss dass ein beständiger Galvanismus den Lebensprozess in dem Thierreich begleite*, 171).
39. *Weltseele*, XI; see also: “All the functions of life and vegetation are in such a relationship with the general modifications of nature, that we must seek the common principle of the one and the others in *one unique cause*. We see that the increasing flow of light has as a result a general movement in organic nature, that we cannot ascribe to the immediate influence of light, to the extent that we know its forces, but rather to a principle that is universally pervasive, and through which light is generated by unknown operations, as well as reciprocally light is used to excite ever again this principle. (. . .) (all the abovementioned examples) are examples that we could not explain unless we assume a *general continuity of all natural causes*, and a *common milieu* through the only mean of which all the forces of nature impinge upon the sensible being. But since this principle entertains the continuity between organic and inorganic world, and links the whole nature into a universal organisation, we recognize in such being what the oldest philosophy knew as the *common soul of nature*.” (305).
40. On this point see Beiser F., *German idealism*, 516–517. And Steigerwald J., “Dynamics of reason. . .”: “Hence the problem of “how matter in general is *originally* possible” is no different than “the problem of a possible universe.” Schelling thus denied the difference in kind that Kant contended existed between reflective judgments of complex systems, such as nature as a whole or organised bodies, and determinative judgments of supposedly simple physical bodies. For him, the difference between mechanical, chemical and organic phenomena was only a difference in degree of activity and organization.” (127).
41. This is, briefly said, the point made by §77, arguing that the concept of natural purpose is necessary to the extent that our understanding is analytical rather than synthetic, meaning

that it must go from the particular to the general. Only an infinite understanding could do it the other way round.

42. Hegel, *Phänomenologie des Geistes*, Chap. VI.
43. Hegel, *Wissenschaft der Logik*, §§1645–1646; *Enzyklopädie*, §367.
44. *Entwurf*, §2, 273, SW5.
45. see §§76–77.
46. “The eternal idea of all the material things, dear friend we have named it light.” (Schelling, Bruno). Hegel, *Encyclopädie*, §276.
47. *Entwurf*, §1, 272, SW3.
48. The importance of a limit between crystallization and organic processes is emphasized by Zammito, *Genesis*, pp. 215–221; Kant is grateful to Blumenbach for having demonstrated a gap between inorganic and organic processes, and hence having rejected Leibniz’s chain of being. See *Lectures on metaphysics*, “Since we have no other concept of the interior of other things than what proceeds in ourselves, which are representations and what follows from them, so (Leibniz) concluded from this that all monads would have representations (the actuality of something is not also to be assumed when it is possible), and called them powers which represent the universe or living mirrors of the universe. For if all monads were in the world, one would influence the other, but since they have nothing but mere representations, each has representations of all monads in the world. But one had to assume slumbering monads (*monads sopita*) which, to be sure, have representations but are not conscious of them. According to him these constitute the class of non-rational animals. But there were various degrees of the consciousness of the representations – distinct (*distincte*) – clear (*clare*) – obscure (*obscura*). The monads went from one state to another, from the distinct to the more distinct, until God. This is the so-called continuum of forms (*continuum formarum*), according to the analogy of the physical continuum (*continui physici*), where the minerals commence the order, through the mosses, lichens, plants, zoophytes through the animal kingdom until human being. This is nothing more than a dream whose groundlessness Blumenbach has shown.” (Ak. 28.762).
49. *Weltseele*, II, 349.
50. Beiser (*Fate of reason*, p.152ff) and, moreover, Zammito (*Kant, Herder. . .*) claimed that Herder’s view point was decisive for the coming philosophy of nature. But even if they are right concerning the theories, I am stressing here the conceptual possibility opened by some Kantian shifts.
51. For example : “Nature cannot (as it is rightly asserted against the tenants of a vital force) refrain any general law, and if some chemical processes happen in an organisation, they have to proceed according to the same laws than in inanimate matter.” (*Weltseele*, 82); and, along the same lines: “the essence of life does not consist in a force, but in a free game between forces, continuously entertained by some external influence.” (ib., 300) Reill stresses the straightforward opposition between *Naturphilosophie* à la Schelling, Oken, Carus etc., and Enlightenment vitalism from the XVIIIth century. “There is no doubt that Romantic *Naturphilosophie* could not have been constructed without concepts generated by Enlightenment vitalists. But in its goals, assumptions, and conclusions, Romantic *Naturphilosophie* differed radically from Enlightenment vitalism. The *Naturphilosophen* proposed an intellectual, moral and scientific agenda that stood in stark contrast to Enlightenment vitalism. (. . .) rather, Romantic *Naturphilosophen* attempted to evolve a different language of nature, accompanied by new definitions of matter, scientific method, and epistemology that contradicted those proposed by the Enlightenment

- vitalists. (. . .) The new adventure of reason sought to unite what Enlightenment vitalists have sundered.” (*Vitalising nature in the Enlightenment*, 200–202).
52. (*Weltseele*, 202). For Schelling’s theory see Bowie A., *Schelling and modern European philosophy : an introduction*, Routledge, 1993.
53. *Welt. . .*, II, §27.
54. Of course, we can remind here his famous sentence: “life is the set of the forces which resist death,” in the *Recherches physiologiques sur la vie et la mort*. On the meaning of Bichat’s work in the history of physiology see P. Huneman, *Bichat, la vie et la mort*. Paris, Puf, 1998.
55. Schopenhauer, *World as will and representation*, Suppl. X; Hegel, *Enz.*, Z.353, §355, Z.362.
56. *World. . .*, §27.
57. Concerning this point, see P. Huneman, “Rapports entre logique et philosophie de la nature chez Hegel: la question du vivant,” F. Dastur et C. Lévy éd., *Etudes de phénoménologie et de philosophie ancienne*, 3, 1999, pp. 289 sq.
58. *Enz.*, Z.218.
59. *Enz.*, Z.337.
60. SW 2, 540. Cf. Beiser *German idealism*. 545.
61. On the intemporality of this process in Hegel, see our “Rapports. . .”; on Schopenhauer, see Lovejoy, “Schopenhauer and evolution” (in Glass, Temkin, Strauss éd., *Forerunners of Darwin : 1745–1859*, Baltimore, J. Hopkins UP, 1959); by comparing the first edition of the *World. . .* and the *Parerga*, he shows that Schopenhauer, however, gets closer and closer to an evolutionary conception.
62. *Enz.* Z 365.
63. *World as will and representation*, §27.
64. *World.*, §27.
65. *World. . .*, §28.
66. *World.*, §56.
67. *Enz.*, Z. 376.
68. *Enz.*, §369.
69. *Enz.*, §376.
70. See our “Rapports. . .”.
71. *Entwurf*, SW 3, 324.
72. *Vitalising nature. . .*, pp. 229–236.
73. p.229.
74. *The world. . .*, Suppl. XLII.
75. *Critique of Judgment*, §69.
76. XXII, 547.
77. March 30, 1795, no. 656.
78. *Philosophy of Revelation*, 1, 3, SW XIII 102. For Schelling’s position, a clear statement is made by Beiser : “the role of a priori deduction is only to determine the systematic order or structure of the materials gathered from experience.” (*German idealism*, 528). One of the crucial differences with Hegel is the assumption about the width of this systematicity.
79. “To know an object is to determine the principle of its possibility, and to determine these is to be able to construct it, to reproduce its activity in thought.” (*Entwurf.*, 275) Since this paper is not a study of Schelling, we quote from various stages of his thought; however, although his several versions of *Naturphilosophie* are quite different (on those differences,

- see the commentators mentioned here, Richards, Beiser, Bowie, Schlanger. . .), the general position of philosophy towards science remains.
80. *Vitalising nature*. . ., p. 211.
 81. Concerning chemistry, Reill describes *Naturphilosophie* strategy in those terms: “As was their want, the *Naturphilosophen* generalized their definition of philosophical chemistry into a universal principle characterizing all phenomena, discovering oxidation and phlogistication everywhere in nature, accounting not only for “combustion and decombustion” but also for the “antithesis between the sun and the planets.” Chemistry therefore took a totally new meaning. Oken for example spoke of a “universal chemistry” (*Weltchemismus*).(*Universum als Fortsetzung*, 17)” (*Vitalising nature*, 211).
 82. For an assessment of Hegel’s position regarding the sciences, see Ken Westphal, “Philosophizing about nature: Hegel’s philosophical project”, forthcoming in F. C. Beiser ed., *The Cambridge companion to Hegel*, 2nd ed. Westphal writes : “One of Hegel’s aims in his *Philosophy of Nature* is to systematically order our most basic ontological and natural-scientific concepts and principles (§§246Z, 247Z, 249 & Z), beginning with the most abstract, undifferentiated, and universal (space and time, §§254–7), and working through a finely-grained series of steps (§249) towards the most complex, the organic life of animal species (§§367—376).”.
 83. *Enz. Z* 368.
 84. On those forces in Schelling, see Joan Steigerwald, “Epistemologies of Rupture: The Problem of Nature in Schelling’s Philosophy,” *Studies in Romanticism*, 41:4, 545–584; Judith Schlanger, *Schelling et la réalité finie*, ch. III.
 85. *The will in nature*, p.157: Further, Schopenhauer uses the metaphor of two miners digging each by himself, and in the end nevertheless meet each other. But in the preface of this book he claims that his convergence with science is more genuine than the one vindicated by Schelling’s *Naturphilosophie*, because “this result is obtained neither by constraining the physical sciences in order to make them face metaphysics, nor by abstracting secretly the latter from the former so that it will find apriori what would have been already learnt a posteriori: on the contrary, the two domains meet by themselves and with no preliminary agreement.” (p.163).
 86. “Fichte and Schelling,” *German philosophy since Kant*, A. O’Hear ed., Cambridge University Press, 1999.
 87. *Cours au collège de France sur la nature*, Seuil, 1995, p.61.
 88. *Cours sur la nature*, p.63.
 89. Paris, Gallimard, Tel, p.138.
 90. *Cours sur la nature*, p.63.
 91. *Cours sur la nature*, p.68.
 92. This introduction of Merleau-Ponty’s themes (perception and flesh) in Schelling’s *Naturphilosophie* is also met in the abstracts: “nature and consciousness can only communicate in us and by our being of flesh (être charnel).” (*Cours sur la nature*, p.363).
 93. See the most famous analyses of the seeing-seen or touching-touched (*voyant-visible, touchant-touché*): “it’s an always imminent but never in fact realized reversibility. My left hand is always about to touch my right hand touching things, but I never achieve this coincidence; it vanishes at the moment it happens, and then it’s always : either my right hand becomes the touched one, but then its grasp on the world is disrupted – or it keeps this grasp, but then I do not touch *it* genuinely, my left hand only touches its external wrap. (. . .) But this constant failing, this unpower that occurs to me, of exactly superposing one to the other, the touch of things by my right hand and the touch of things by my left hand,

- or, concerning the exploratory motions of the hands, the tactile experience of a point and the experience of the same “point” at the following moment (...) is not a failure : because if those experiences never exactly overlap, (...) it’s precisely because my two hands are parts of the same body, because it moves in the world (...)” (pp. 194–195).
94. *Le visible et l’invisible*, 183. For commentaries this see Godway E., “The being which is behind us: Merleau-Ponty and the question of nature.” *International studies in philosophy*, 1998, 30, 1, 47–56.
 95. Dov Ospovat, “Perfect adaptation and teleological explanation,” *Studies in the history of biology*, 2, 1978; *The Development of Darwin’s Theory: Natural History, Natural Theology, and Natural Selection, 1838–1859*. Cambridge: Cambridge University Press, 1981.
 96. *Selfish gene*, Oxford UP, 1976.
 97. *The extended phenotype*, Oxford University Press, 1982.
 98. *The extended organism*, Harvard UP, 2002.
 99. “What is ecophenomenology?” *Eco-phenomenology : back to the earth itself*, Brown C. and Toadvine T. eds., Albany, SUNY Press, 2003. On ecophenomenology see also Toadvine T., “Ecophenomenology in the new millennium,” *The reach of reflection: issues for phenomenology’s second century*, Crowell & Embree (eds.). And also Seamon D., *Dwelling seeing and designing : towards a phenomenological ecology*, 1993.
 100. *Niche-construction. The neglected process in evolution*, Princeton University Press, 2003.
 101. For a critique of Husserl and particularly Heidegger on the basis of their inability to make sense of earth in general, hence of ecological questions, see Ihde D., “Whole Earth measurements : how many phenomenologist does it take to detect a “Greenhouse effect”?,” *Philosophy today*, 1997, 41, pp. 128–134. Notice that we use a very different concept of hermeneutics than Ihde.
 102. For developments see Dawkins, *Selfish gene*.
 103. See the papers in *Coevolution*. Nitecki M. ed., University of Chicago Press, 1998; esp. by Van Valen, “How pervasive is coevolution ?” (pp. 1–19).
 104. Sagan & Margulis, *What is sex?*, NY, Simon I Shuster, 1997; Mark Ridley, *The red queen*, Penguin, 2000, chap. 1–2.
 105. *Art. cit.* Earlier, Wood has characterized the central concern of ecology in a way akin to what we pointed out as potential new paths in philosophy of nature: “The imperative of boundary-maintenance leads to such issues as *dependency, cooperation, symbiosis and synergy* (my emphasis). But also rupture, catastrophe, and transformation. All of these are, in an important sense, natural phenomena, phenomena that appear at different levels in nature.”.
 106. Serres *Le contrat naturel* (Paris, Grasset, 1989); Latour *We have never been modern* (*Nous n’avons jamais été moderne*, Paris, La différence, 1991).