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From “world” to “organism”.  
The schematism of the regulative use  
of reason

The regulative use of reason described in the *Critique of the teleological power of judgment* provides the foundations to the contemporary debate discussing the relationship between philosophy and biology through a revival of Kant’s contributions. The principle of objective purposiveness guiding the teleological use of reason can indeed be interpreted as an heuristic principle applicable to scientific research. The regulative features of reason appear, however, to also establish a closer link to the constitutive use of understanding, with the result of allowing the use of rational ideas, not as vague methodological provisions, but rather as norms stating the premises of scientific laws. The potential use of rational ideas as logic principles is discussed in the *Appendix to the transcendental dialectic*, and the similarities between this passage of the first *Critique* and §§ 61-8 of the *Critique of the power of judgment* are as such to justify their parallel reading. Recently, Peter McLaughlin has also claimed that the 1790’s sections present the full deduction of the regulative use of reason as anticipated, but not fully achieved, in the *Appendix to the transcendental dialectic* (McLaughlin 2014: 559).

The aim of this article is thereby to compare the two definitions of regulative idea, in the first and third *Critique*, and show the actual continuity in the two discussions (Teufel: 2014). It shall also be ar-

gued that, while assessing the limits of the mathematical explanations of the world, a significant evolution within the above sketched continuity is achieved, shifting Kant's arguments from the idea of "world" to the idea of "organism". Consequently, I shall argue that, as the regulative use of the idea plays a fundamental role in the application of logic principles, similarly the idea of organism, despite being formulated on the acknowledged insufficiency of mathematics, lays the ground to the constitutive use of the judgement on nature and allows the application of the principle of causality in natural sciences. It is arguably not the case, however, that the regulative idea is subordinated to the constitutive judgement. It is rather the idea-based use of the notion of nature that logically precedes the category synthesis.

The shifting from the idea of world to the idea of organism corresponds, as it shall be argued in details, with the transition from *erklären* to *denken*, that is from the conditions of possibility of an *explanation* of nature to the conditions of *thinking* nature, in other words the transition from the logic necessity of understanding the empirical multiplicity to the anthropological necessity to sort out some order in nature. Such transition has far from negligible consequences and, what is more, does not prevent the reflecting judgement and the teleological interpretation of the organism from being applied to natural sciences as cooperating elements to the constitutive activity of the logic judgement. In short, in order to explain nature the first requirement is to be able to think it. In this regard, the regulative use of the idea is made legitimate within the formulation of the judgement, be it logic or reflecting, through a common schematism of the hypothetical use of reason.

### 1. *The regulative idea of reason*

In the second part of the *Critique of the power of judgment*, while defining the internal purposiveness of the organism, Kant claims that “an idea has to ground the possibility of the product of nature” (Kant 2000: 377 [248]). The idea allows extending purposive organisation to the whole of nature:

it is therefore only matter insofar as it is organized that necessarily carries with it the concept of itself as a natural end, since its specific form is at the same time a product of nature. However, this concept necessarily leads to the idea of the whole of nature as a system in accordance with the rule of ends, to which idea all of the mechanism of nature in accordance with principles of reason must now be subordinated (at least in order to test natural appearance by this idea). (Kant 2000: 379 [250])

The *Analytic of the teleological power of judgment* is therefore devoted to show to what extent an explanation of nature based upon the principle of objective purposiveness is necessary to the understanding of natural totality. For the same reason the notion of organism as unitary system complying to an end is introduced. As Kant already writes in the *Appendix to the transcendental dialectic*, the understanding is not actually able to gather the multiplicity in its totality, whereas the ideas of reason – provided that they are employed only constitutively and never regulatively – are certainly a dialectical illusion, but one that is “indispensably necessary” (Kant 1998: A 465/B 473 [591]).

In the *Critique of pure reason*, the idea is taken to ensure the systematic unity of knowledge; the particular object can be determined by categories, but the universality of the rule can be enforced only through the hypothetical use of reason, whose aim is precisely the

approximation of rules' usage to universality (Kant 1998: A 647/B 675 [592]). The unity of the idea is therefore "the touchstone of truth for its rules" (Kant 1998: A 647/B 675 [593]), as/since "the understanding alone does not attain to rules" (Kant 1998: A 648/B 676 [593]). The unity of the rules of nature, as provided by the idea, and their universal extension – as arguably their truth – are nevertheless only hypothetical. The idea cannot have objective reality, despite being assumed a priori as necessary. The necessary features of regulative ideas of reason rely mainly on the impossibility of a chaotic presentation of the phenomenal world. Reason cannot infer the unity of rules from the contingent structure of nature, and, on the other hand, without the law of reason there would be no consistent use of the understanding, since no sufficient criteria would be available to guarantee empirical truth. In this regard, the rational idea of the unity of nature is objectively valid and necessary. A logic necessity is at stake guaranteeing the correct functioning of the understanding and establishing a condition of possibility – then the a priori ground – of the judgement of knowledge.

Clearly, the nature of things itself as organized beings suggests the unity of the empirical multiplicity. Furthermore, the infinite natural variety does not prevent us from assuming a principle of homogeneity. The idea of the unity of nature appears however as a unity law of transcendental kind, that is to say as a logic law based on pure principles and with no correspondence in any given empirical object, although it stands to ensure the applicability to sensibility of the categories of the understanding. According to this viewpoint, the ideas of reason behave in analogy to the schemes of imagination. In other words they are a method allowing the systematic unity of the use of the understanding (Kant 1998: A 665/B 693 [602]).

In the second part of the *Appendix*, which is also the most relevant to my argument, Kant announces a deduction of the ideas of reason, which is required if ideas “are to have the least objective validity, even if it is only an indeterminate one” (Kant 1998: A 669/B 697 [605]). Such deduction is meant to achieve some sort of transcendental schematism and legitimate the use of the idea of reason as “a schema, ordered in accordance with the conditions of the greatest unity of reason” (Kant 1998: A 670/B 698 [605]). The deduction is announced and scheduled, however it is only outlined. Kant simply states that:

the things in the world must be considered as if they had gotten their existence from a highest intelligence. In such a way the idea is only a heuristic and not an ostensive concept; and it shows not how an object is constituted but how, under the guidance of that concept, we ought to seek after the constitution and connection of objects of experience in general. [...] And this is the transcendental deduction of all the ideas of speculative reason, not as constitutive principles for the extension of our cognition to more objects than experience can give, but as regulative principles for the systematic unity of the manifold of empirical cognition in general. (Kant 1998: A 671/B 699 [606])

This simple claim is clearly not enough to provide a compelling deduction of the idea of reason, as it just refers to some more exhaustive discussion. Nevertheless, from the second part of the *Appendix* some meaningful elements can be drawn especially in regards to the interpretation of the first paragraphs of the *Critique of the teleological power of judgment*. First of all, Kant defines the objectivity of the regulative idea of reason, thanks to which it is also possible to interpret the principle of objective purposiveness. A form of indeterminate objectivity is at stake which refers to some possible empirical

use of reason "by opening up new paths into the infinite (the undetermined) with which the understanding is not acquainted, yet without ever being the least bit contrary to the laws of its empirical use" (Kant 1998: A 680/B 708 [611]).

Secondly, it is now clear that a deduction is necessary mainly in regards to the idea of world, and not really for the idea of soul or God, since nature is actually the only given object concerning which reason needs regulative principles. Cosmological ideas are in fact the only ones to admit an empirical, yet regulative, use.

Finally, Kant defines – possibly more explicitly here than what he is going to do in 1790 – the relation of conformity to an end and the efficient cause: "the speculative interest of reason makes it necessary to regard every ordinance in the world as if it had sprouted from the intention of a highest reason" (Kant 1998: A 686/B 714 [614]). Given such a regulative prescription, it should be clear that no possible error is at stake, especially since a simple hypothesis is called upon which establishes an analogy and not a constitutive statement – "where we expected a teleological connection (*nexus finalis*), a merely mechanical or physical one (*nexus effectivus*) is to be found" (Kant 1998: A 687/B 715 [615]). On the other hand, it is clearly impossible to show that a natural structure is deprived of purpose; there is indeed some sort of objective necessity suggested by the structure of nature itself, which lends itself to be regulated according to the rational idea. The regulative use of the idea of the unity of nature is therefore "owing to the interest we take in these judgments, is also alluring and natural" (Kant 1998: A 704/B 732 [623]), and its unique goal is to "penetrate into the deepest inwardness of nature in accordance with all possible principles of unity" (Kant 1998: A 702/B 730 [622]). The idea of the unity of nature is then a logic necessity, which thereby requires a deduction, and which is grounded upon the

intellect's need to sort out the empirical multitude in its infinite variety.

## 2. *Ordering chaos*

What does it mean that the necessity to sort out some order in nature is a logic necessity? The regulative use of the rational idea has its ground in the finitude of the understanding, or better in the awareness that the true constitution of the object is too deeply hidden for us to be able to ever reach a full and true understanding of its nature (Kant 1998: A 668/B 696 [604]). Nevertheless, the process of knowledge is a process of synthesis, which corresponds to the possibility "that the appearances themselves are actually subject to such a rule, and that in the manifold of their representations an accompaniment or succession takes place according to certain rules" (Kant 1998: A 100 [229]). Already in § 13 of the *Transcendental deduction* Kant mentions the possibility, however, that the pure forms of sensibility, i.e. space and time, could also not be attuned to intellectual categories:

For appearances could after all be so constituted that the understanding would not find them in accord with the conditions of its unity, and everything would then lie in such confusion that, e.g., in the succession of appearances nothing would offer itself that would furnish a rule of synthesis and thus correspond to the concept of cause and effect, so that this concept would therefore be entirely empty, nugatory, and without significance. Appearances would nonetheless offer objects to our intuition, for intuition by no means requires the functions of thinking. (Kant 1998: A 90/B 123 [223])

Concepts could then be absent and appearances could give themselves to the understanding in a chaos without rules. Objects would

then appear to the subject as deprived of reference to the categories. As a result, Kant concludes that categories are not a necessary condition for the object to be given in intuition (see La Rocca 2004), “hence objects can indeed appear to us without necessarily having to be related to functions of the understanding, and therefore without the understanding containing their a priori conditions” (Kant 1998: A 90/B 122 [222]).

Appearances, then, do not necessarily present themselves according to the conditions of unity prescribed by the understanding. Phenomena could fail to respond to the concepts of cause and effect, which would then be empty and meaningless categories, and experience could present itself so confusedly that no synthetic rule, such as causality (see Kreines 2009), could be possibly recognized in the apprehension of phenomena. However, some form of space-time order, yet a non-conceptual one, is always possible, even in the most chaotic states of nature. Should it happen that phenomena do not comply to the conditions of conceptual unity, the presentation of objects in our intuition would still be possible. Kant therefore anticipates already in the *Deduction* of the first *Critique* that the subject may face the impossibility to “top-down” apply its intellectual categories, hence having a chaotic and disordered representation of the experience, yet rendered through the minimal order of space and time. Such a warranty of unity is arguably to be referred to the idea of reason (see Massimi 2014).

It should also be remarked that, in the *Introduction* to the third *Critique*, the logic necessity to sort out nature acquires a new meaning and is discussed as an anthropological need. Kant investigates experience here according to its general concept, not anymore in relation to the formality of logic judgement, but rather according to the transcendental subject’s need for regularity in the infinite multi-

plicity of empirical phenomena: "the power of judgment itself makes the technique of nature into the principle of its reflection *a priori*, [...] but only in order to be able to reflect in accordance with its own subjective law, in accordance with its need, but at the same time in accord with laws of nature in general" (Kant 2000: 214 [17]).

Whereas in the *Appendix to the transcendental dialectic* the idea of unity was somehow put to use in the knowing activity of the understanding, in the *Critique of the power of judgment* the perspective of enquiry is slightly different. In 1790, Kant appears to be investigating not what could guarantee the synthetic activity of the understanding, but rather what happens when the understanding is unable to provide an understanding of nature as organic experience. While in the first *Critique* Kant's argument starts off from universal categories, in the third *Critique* the reflecting judgement places the subject mainly in front of the empirical particular object.

There are mainly two elements revealing the distance between the *Introduction* to the third *Critique* and the *Critique of pure reason*. First, Kant claims that, in order to achieve a systematic synthetic unity, the transcendental, *a priori*, objective laws are not sufficient, as they make experience possible exclusively according to the principles of the synthetic unity of phenomena. A principle is instead required, the principle of purposiveness, establishing an empirical unity of experiences while subsuming empirical laws. Secondly, the systematic unity of experience is not objectively achieved, as it is the case when categories grasp phenomena, but only subjectively. Experience is taken as a system based on empirical laws only inasmuch as the subject perceives in nature a purposiveness in relation to its own knowing abilities. The conformity to purposes, therefore, is certainly a principle of the subject's abilities, which is however to be

found in nature. What is given is not the unity of transcendental apperception anymore, but the particular object of nature.

The foundation of the transcendental system is, thereby, identified by Kant through the development of an "interconnection, as in a system, into the aggregate of empirical laws as such, by attributing to nature a relation to this need of ours" (Kant 2000: 205 [10]). The unity of nature, which allows to overcome the chaos of the natural variety, is not then a transcendental unity, achieved by the reduction of the multiplicity to the concept, but it is rather an empirical unity, which allows the totality of experience to be grasped through the principle of purposiveness. In the third *Critique*, Kant actually places the subject in front of the disorder of the world, as well as in front of the natural formlessness, as it is the case for the judgment on the sublime. It is then clear that the judgement, here the reflecting one, is based upon the rational idea of the unity of nature. Rather than to the unity of nature – as in the *Appendix* – Kant here refers to the "unity of experience", establishing a system of empirical laws. While describing the experience as *System nach empirischen Gesetzen*, Kant, in fact, writes that

there is still possible such an infinite multiplicity of empirical laws and such a great heterogeneity of forms of nature, which would belong to particular experience, that the concept of a system in accordance with these (empirical) laws must be entirely alien to the understanding, and neither the possibility, let alone the necessity, of such a whole can be conceived. Nevertheless particular experience, thoroughly interconnected in accordance with constant principles, also requires this systematic interconnection of empirical laws, whereby it becomes possible for the power of judgment to subsume the particular under the general, however empirical it may be, and so on, right up to the highest empirical laws and the forms of nature corresponding to them, and thus to regard the aggregate of particular experi-

ences as a system of them; for without this presupposition no thoroughly lawlike interconnection, i.e., empirical unity of these experiences can obtain. (Kant 2000: 203 [9])

Within the perspective of the *Critique of the power of judgment*, nature is not assessed based on its relation with objects, but "merely in accordance with the analogy with an art, and indeed in subjective relation to our cognitive faculty" (Kant 2000: 201 [7]). Kant thus shows to understand nature not only as mechanism, that is to say as aggregate, but also as technique, that is to say as art which sorts its forms according to principles. Furthermore, this notion of nature is connected to our faculty of knowledge, the connection being subjective. Within this framework, the idea of world gives way to the more advanced idea of organism.

In the *Critique of pure reason*, Kant writes that "we have two expressions, world and nature, which are sometimes run together (*ineinanderlaufen*)" (Kant 1998: A 418/B 446 [465]; see Marcucci 2004: 120). As Claudio Cesa remarked (Cesa 2008: 17), in the first *Critique* the concept of world, as unique and universal, seems to subsume the concept of nature. Differently, in § 86 of the *Critique of the power of judgment* Kant discusses again the idea of world but according to the subjectivist framework:

If it thinks over the existence of the things in the world and the existence of the world itself, even the most common understanding cannot reject the judgment that all the many creatures, no matter how great the artistry of their arrangement and how manifold the purposive interconnections by which they are related to each other may be, indeed the whole of so many systems of them, which we incorrectly call worlds, would exist for nothing if there were not among them human beings (rational beings in general), i.e., the judgment that without human beings the whole of creation would be a

mere desert, existing in vain and without a final end. (Kant 2000: 442 [308-309])

From this passage an idea of world can be drawn, which does not exclusively correspond to the phenomenal givenness, spatially and temporally ordered, whose ground is the noumenon as described in the first *Critique*. The idea of world is instead structured in relation to the subject's need to detect regularities in the experienced nature, following the teleological orientation observed in the empirical multiplicity.

The regularity impressed by the intellectual and rational structure of the subject, furthermore, cannot grasp nature in its entirety; the conceptual grid is not able to describe, if not within given limits, the multiplicity of natural phenomena.

Within this framework, a new reading can then be attempted of Kant's claims in the *Erste Einleitung* concerning nature as "experience as a system in accordance with empirical laws" (Kant 2000: 203 [9]), which establishes an order within the infinite variety of phenomena. "Within this perspective – writes Cesa – Kant could take up Lucretius' image of '*natura daedala rerum*'" (Cesa 2008: 19), that is to say nature as art, and thereby discuss the world's chaos. By *natura daedala rerum* Kant means, indeed, a form of nature which is apprehended according to its variety and its disorder, and which is ordered based on a fully subjective principle, deprived of logic necessity. That is why it is art and no longer mechanics.

Concerning the complexity of Kant's concept of world, it is worth recalling, as Gerardo Cunico suggests, "that the world is an idea, and precisely an idea simultaneously guiding and expressing a unitary interpretation of the whole of experiences (of things and phenomena, of natural and morale events) as a system of relationships" (Cunico

2008: 211). The idea of world formulated in the first *Critique* allows to point to a further development. Facing the chaos of the empirical particular experience, the subject can sort out some order in nature based on the teleological accordance between object and faculty.

### 3. *The insufficiency of mathematics*

The unity of the empirical world is not fully achieved through logic thinking, but rather requires further articulation through the reflecting judgement. As Giorgio Tonelli explains (Tonelli 1959), already in pre-critical writings the first attempts at proving natural unity through the concept of final cause are made. In the text on living forces (Kant 1910a), Kant displays full adhesion to an understanding of nature according to the continuity principle, rejecting the hypothesis that the causality of movement exclusively relies on an external element. In the text on *Naturgeschichte* (Kant 1910b), the discussion of the positions of Leibniz leads him to assume as necessary hypotheses some laws of nature explaining the organic world through the model of purposiveness. This text already reveals the originality of Kant's perspective compared with other teleological theories of the second half of the Eighteenth century. Kant's philosophy of nature is consistently devoted to the conciliation of efficient causes and final causes, by combining mechanism and teleology and laying the ground for what Timothy Lenoir defines as "teleomechanism" (Lenoir 1989). Kant's teleomechanism also ensures the continuity between the *Appendix* and the *Critique of the teleological power of judgment*. Furthermore, it explains to what extent the reflecting judgement can be employed in logic-necessity-ruled natural sciences. Logic causality and final causality are inevitably interwoven.

Kant's position and the need for the combination of two different theoretical perspectives rely on the acknowledgment of the limits of

the mathematical knowledge of the cosmos and on the impossibility to explain nature exclusively through the laws of the understanding. Kant first endorses a non-mechanistic position (see Tonelli 1959: 51), advocating the impossibility to explain the cosmos through "few and simple mechanic laws", and by consequence establishing an association between living organisms and infinite objects as not-mathematically-knowable objects. What is more, as mathematical explanations cannot account for the complexity of the natural, a teleological explanation cannot provide knowledge of the infinite multiplicity of nature, but it can only describe it through analogies. Kant's teleology is then defined ex negative, starting from the acknowledged impossibility to provide a mechanistic-causal explanation of nature, as well as from the recognised limits of teleological descriptions, which cannot provide forms of logic knowledge. Only based on these assumptions, it is possible to interpret nature as organized and orientated toward an end, through the hypothesis that nature itself is endowed of intention while constituting natural forms as organisms (see Feloj 2014).

As McLaughlin writes, space, time, and causality are for the understanding the conditions of possibility of the objects of experience. A chaotic world, with infinite empirical laws, or totally deprived of any form of regularity, can be determined thanks to space or to the causality principle. However, without any unity of the world as presupposition of our experience we would be hardly able, as cognitive subjects, to formulate judgements. The unity of nature is therefore a necessary assumption, a condition of possibility of judgement. It is not constitutive, nevertheless it is necessary. It is not, moreover, a psychological necessity, but rather an epistemic one. It is finally a transcendental necessity (McLaughlin 2014: 557).

As a result, the entire teleological method is grounded upon the acknowledgement of the limits of the understanding and on the impossibility to actually know the infinite totality of nature. The idea of world discussed in the *Appendix* appears then to have triggered a full enquiry, which is actually concluded in the third *Critique*, on the insufficiency of the logical principle of the understanding when it comes to the sorting out of nature, as well as on the subject's need for finding an applicable order to the empirical chaos. The idea of world is arguably solved into the teleologically justified idea of organism.

#### 4. *The necessity of the natural organism*

The transition from mechanic evaluation to the technique of nature provides the ground for Kant's tackling of the lexicon of biology in the third *Critique*, as well as for the formulation of a theory of the organism (see among others: Breitenbach 2009; Zuckert 2007; Boniolo 2007; Zammuto 2006; Watkins 2001). In the *Erste Einleitung* the distinction between aesthetic judgement and teleological judgement is based upon the opposition between formal technique and real technique. While the formal technique of nature is that implied in the aesthetic judgement, by real technique of nature Kant means the purposiveness of nature “through concepts”, that is the possible assessment of a natural phenomenon through the concept of purpose and according to the idea that its internal organization matches some natural end, which determines the causality of its production. Such an approach to nature defines Kant's notion of organism (see Šustar 2010).

The concept of purpose, regulating the internal structure of a product of nature, requires a reference to the laws of experience, which may be grasped only a posteriori. Furthermore, since the te-

leological act of judging makes reference to the concept of purpose, which is a concept of reason, a representation of the object derived from the agreement of imagination and understanding is not sufficient. The understanding should here enter into a relationship with reason. These two requirements concerning the teleological judgement may seem mutually inconsistent. The concept of purpose or final cause regulating nature may be given only a posteriori in the experience, however the intervention of the supersensible faculty of reason is also required. This very dynamics recalls the one described in the *Appendix* and nevertheless judgement does not rely here on a priori principles, but it is rather formulated a posteriori. How then the rational idea can have regulative validity? The recognised involvement here of some sort of schematism of reason might suggest a good solution. Kant solves this inconsistency by appealing to the concept of final cause and claiming that the teleological judgement, which interprets nature according to the concept of purpose, does not establish some judgement "according to universal and mechanical laws". The concept of final cause, therefore, although it presupposes the rational concept of purpose, is employed as a concept of the power of judgement, such as a logical principle of reason. Concerning art products, Kant claims, it is possible to establish what was the artist's aim while creating his/her work, but certainly this is not possible concerning the products of nature. It is however possible to sort out nature as if it was oriented to an end and as if it was an ordered unity. Such a possibility is the premise to the investigation of nature through the notion of organism. Despite the fact that the principle of objective purposiveness is not of constitutive kind, it is however the fundamental ground for doing scientific research according to necessary and universally valid laws. The notion of objectivity here employed entails a reference, not only to the internal con-

stitution of the organic object, but also to the definition given in the *Appendix*. It is indeed an indeterminate objectivity complying to a possible empirical use of reason in the infinite variety of the multitude "with which the understanding is not acquainted, yet without ever being the least bit contrary to the laws of its empirical use" (Kant 1998: A 680/B 708 [611]).

The laws employed to explain nature are not real, they are not actually present in the objects, and the notion of law is not, here, ontological truth. This theoretical assumption has meaningful consequences for the definition of the organism. In § 65 of the *Critique of judgment*, Kant defines the organism by stating: "one says far too little about nature and its capacity in organized products if one calls this an analogue of art [...] perhaps one comes closer to this inscrutable property if one calls it an analogue of life". Kant rather weakens this idea with some cautious additions: "but then one must either endow matter as mere matter with a property (hylozoism) that contradicts its essence, or else associate with it an alien principle standing in communion with it (a soul)" (Kant 2000: 374-5 [246]).

Life is however an essential property of the organism, that can be explained only through teleology; teleology is instead an explanation grounded in reason, not in the object, and, although the real law of nature cannot be known, the teleological explanation makes the application of scientific laws to nature possible. In this regard, the notion of life shaping the idea of organism arguably entails some distinctive elements setting it apart from the idea of world. Life ensures a finalistic orientation within the organic object, and such an orientation allows to overcome both the chaotic variety typical of nature and the insufficiency of logic thinking as it comes to the full grasping of nature. The definition of organism as previously outlined is in my view the true achievement of the *Appendix to the transcen-*

*dental dialectic*. From the discussion of the rational idea of world as regulative principle – an idea entailing a still indeterminate and vague idea of nature – Kant's theoretical path leads to the teleological definition of organism as totality founded upon objective purposiveness. The distinctive life of the organism allows a regulative use of the rational idea to the aim of interpreting and providing order to the chaos of nature.

By following this path, some light could be shed on the hypothetical use of reason, as well as on the teleological power of judgement. It was also shown that the idea is taken in the two *Critiques* according to the same intention guiding the *Transcendental schematism*. The idea, of world and of organism, is taken as a scheme, that is to say as a method allowing in the logic realm the application of a universal rule guaranteeing the functioning of categories, and in the teleological realm the finalistic ordering of the empirical particular experience.

In addition, while emphasizing the strong continuity between the idea of world and the idea of organism, a thorough investigation on the close and necessary twine between the regulative use and the constitutive use of judgement is made possible. While the reflecting judgement is integrated where mathematical thinking is no longer able to explain nature and is able to shed light on the transcendental synthesis underpinning the logic judgement, the constitutive use of the understanding and its dynamics lead to the first formulation of the regulative use of reason underpinning the reflecting judgement. Moreover, McLaughlin's convincing insight was taken up concerning precisely the relation between the *Appendix* and the third *Critique*, notably inasmuch as it claims that the regulative idea of reason, despite being constitutive, it is nevertheless transcendental, objectively valid and necessary. Although very often rational principles are taken

as merely heuristic, they are not exclusively methodological hints, justified only by their success or utility in the scientific practice. Despite not contributing to the cognitive determination of the objects, they are nevertheless constitutive principles for the rationality of the scientific practice itself. The idea of the unity of nature is not a simple recommendation of reason concerning how to go about in scientific research, as it is rather a norm generated by the interests of reason and prescribed to the understanding (McLaughlin 2014, 561-3; see also Ginsborg 2015). Moreover, Kant himself claims that the idea of nature in its regulative features is “a logical principle, in order, where the understanding alone does not attain to rules, to help it through ideas, simultaneously creating unanimity among its various rules under one principle” (Kant 1998: A 648/B 676 [593]).

As Michael Friedman remarks (Friedman 2014: 545), Gerd Buchdahl’s claim (Buchdahl 1972) is less convincing as it argues that the notion of necessity in the *Critique of the teleological power of judgment* has nothing to do with the causality guiding the constitutive use of the understanding. The regulative use of judgment is undoubtedly aimed at the constitutive necessity expressed in natural sciences entailing a mathematical exact complying to categories and pure principles of understanding (Friedman 2014: 553). This relation is well explained by the continuity between the *Appendix* and the first sections of the *Critique of the teleological power of judgment* and by the evolution leading from the idea of world to the idea of organism. While Friedman argues in favour of an interpretation of the reflecting judgement as subordinate to the synthetic-intellectual judgment, my argument emphasizes instead Kant’s position according to which “to the idea of the whole of nature as a system in accordance with the rule of ends [...] all of the mechanism of nature in accordance with principles of reason must now be subordinated” (Kant

2000: 250 [379]). As a result, the idea is now taken as “indispensably necessary” to the concept (Kant 1998: A 465/B 473 [591]).

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