

# Empirical Access to Life's Teleological Forces via an Active and Co-Constitutive Relation between Subject and Object

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“In the adult state, the human being or the animal shows only one of the forms that must be passed through from the first moment of becoming. But these are only the products of life. To understand life itself, the sharpness of glasses and knives is not enough. It wants to be slowly observed in its manifestations, and from quite different studies, from quite different regions shines the light that slowly but constantly brings these observations to greater clarity” (Von Baer, 1864, p. 82).

## Keywords

Immanuel Kant; Teleology; Autopoiesis; Organic development; Objectification; First-person perspective

## Abstract

This article proposes an approach to understanding life that overcomes reductionist and dualist approaches. Kant's analysis of the conditions of knowing an organism shows that attempts to explain its teleology and autopoiesis from the interactions of its components is problematic. Based on an analysis by Van de Vijver and colleagues, a co-constitutive relationship between the cognitive activities of the observer and the living features of the organism is described. Using the example of a developmental series, it is shown that within this active relational process, both autopoiesis and teleology of the organism manifest themselves on the mental level of the observer. The Kantian mode of objectification, which refers to the sensually perceptible appearance of an organism, can be supplemented by an active mode of relational objectification that encompasses the life of the organism. The analysis introduces a phenomenological first-person perspective on the study of life "from within", which enables an empirical investigation of the vital properties of an organism.

## Introduction

We are surrounded by and entirely dependent on a biosphere of complex life, and we are living beings ourselves. However, do we understand what life is? Can life and the multitude of organisms have emerged in a purely material world? For most of the 20th century, this perennial problem of science and philosophy (Schrödinger, 1944; Keller, 2002; Luisi, 2006) was thought to be solved. A mechanistic interpretation assumed that organisms emerged from complex prebiotic chemistry (Pross, 2016) and then evolved as genetically programmed, randomly varying and blindly selected survival machines

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(Huxley, 1942; Monod, 1971; Dawkins, 1976; Mayr & Provine, 1980). In recent decades, however, this view has been increasingly challenged (Strohman, 1997; Moss, 2004; Nagel, 2012; Sultan et al., 2021), and there is a lively debate about complementary views of life and its evolution in both biology and philosophy (Kauffman, 1996; Kauffman & Clayton, 2006; Thompson, 2007; Rosslénbroich, 2014; Laland et al., 2015; Walsh, 2015; Nassar, 2016; Noble, 2016; Nicholson & Dupré, 2018; Walsh, 2018; Gambarotto & Mossio, 2022; Gambarotto & Nahas, 2023; Walsh & Rupik, 2023).

Much of the debate revolves around the concepts of organismal autopoiesis (Maturana & Varela, 1980; Luisi, 2003; Thompson, 2007), autonomy (Moreno & Mossio, 2015), agency (Okasha, 2024; Virenque & Mossio, 2024) and the intrinsic purposiveness of organisms (Nicholson, 2013; Mossio & Bich, 2014). Attempts to define the properties of a minimal organism (Razeto-Barry, 2012; Soto et al., 2016) are related to the still unresolved question of the origin of life (Sutherland, 2017; Lane & Xavier, 2024; Preiner et al., 2020). However, despite deep and wide theoretical analyses (Kauffman & Clayton, 2006; Baedke, 2018) and intensive experimental research (Luisi, 2006; Hanczyc, 2020), artificial creation of living systems via a bottom-up approach is still impossible (Porcar et al., 2011; Chang et al., 2023).

Therefore, could it be that we need to understand living organisms differently after all? What would be an alternative approach?

Here, I discuss an epistemological perspective on the explanation of organisms, which opens the possibility to empirically observe life's teleological and formative force. The argument unfolds in 6 steps. I start from Immanuel Kant's analysis in the *Critique of Judgment* (Kant, 1790) and discuss its important methodological implications for the possibility of understanding organisms, which show that the wholistic life of organisms cannot be explained by the interactions of its components (section 1). I then refer to the work of Gertrudis Van de Vijver and colleagues (Van de Vijver et al., 2005; Van de Vijver & Haeck, 2024) to show how living organisms must be understood in a different way than material objects (section 2). This is demonstrated using an example of a botanic developmental sequence (section 3). I argue that in relation to organisms, subject-object dualism must be overcome in favor of a communicative epistemology constituted by the cognitive activity of the knower that corresponds to the living activity of the organism (section 4). Within this activity, an empirical, albeit non-sensual, first-person observation of the intrinsically organizing force of an organism opens up (section 5). Finally, I provide an outlook on an extended ontology of nature (section 6). In summary, I suggest a new understanding of the dictum that life can only be known through (mental) life.

## 1. Significance of Kant's analysis of the organism problem

The autopoiesis, autonomy, agency and teleology of living organisms are difficult to explain in physico-chemical terms. Material entities act on each other from the outside, while an organism "is able to perform a creative activity on itself, being not the product of exogenous forces, but of an internal action of self-production" (Bich & Damiano, 2007, p. 462). This problem was made perfectly clear by Immanuel Kant in his *Critique of Judgment* (Kant, 1790), and his analysis is still worthwhile to consider, especially since it implies an approach to an alternative view and even a potential solution.

Kant had shown that we have to think of organisms as self-producing, teleological organizations because otherwise we could not make any sense of them at all. We simply cannot conceive of a bird's wings, tail, or hollow bones as assembled by chance but must assume that their organization is intrinsically teleological, i.e., that the parts are organized according to the life of the whole (ibid., p. 360). In addition, we have to assume a self-forming, teleological force of the organism.<sup>2</sup> This concept is also required to understand organic development. Without the idea of self-forming power, we could not link different organic shapes, i.e., we were unable to relate a bird to its egg. Organisms are not only spatially but also temporally integrated wholes, and both organic structure and development presuppose the idea of a self-forming whole.

Teleological organization and development mean an effectiveness of the whole with respect to its parts (and, accordingly, of the goal with respect to its means). Since wholeness—especially when temporally integrative—cannot be perceived through the senses, teleology and self-formation can only be conceived of in terms of ideal causation (ibid., p. 373). Purposiveness, therefore, is an “ability to act, which is determined by concepts”: “A thing is possible only as an end where the causality to which it owes its origin must not be sought in the mechanism of nature, but in a cause whose capacity of acting is determined by concepts. What is required in order that we may perceive that a thing is only possible in this way is that its form is not possible on purely natural laws – that is to say, such laws as we may cognize by means of unaided understanding applied to objects of the senses – but that, on the contrary, even to know it empirically in respect of its cause and effect presupposes concepts of reason” (ibid., p. 369-370).

Kant was not arguing about the ontological possibility of a living being but about the problem of understanding it – “even to know it empirically”. Living organisms are certainly possible in nature. The problem is: How do we make sense of them? Kant, therefore, did not focus on the living object, as natural scientists do, but on *knowing the object*. In addition, being aware that the form of knowledge determines its content, Kant did not even focus on this content (i.e., the *idea* of a living organism) but on the conditions of its knowability. In the case of an organism, this condition is the implication of “concepts of reason”. Kant's question was not whether a living organism is teleological or not but how we know about its teleology (which we have to assume in order to know the organism empirically). This epistemological turn in the philosophy of biology has two important implications.

First, it is simply not possible to think of an organism without knowledge of its teleological wholeness. Even if this knowledge is not explicitly stated, it is nevertheless always implicitly present. Any attempt to

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<sup>2</sup> “An organized being is, therefore, not a mere machine. For a machine has solely *motive power*, whereas an organized being possesses inherent *formative power*, and such, moreover, as it can impart to material devoid of it - material which it organizes. This, therefore, is a self-propagating formative power, which cannot be explained by the capacity of movement alone, that is to say, by mechanism” (Kant, 1790, p. 374).

interpret organisms in mechanical terms and model them as physico-chemical machines ignores this necessary implicit knowledge and will therefore ultimately fail.<sup>3</sup>

Second, Kant had shown in the *Critique of Pure Reason* that the conditions of knowability of an object determine how the object appears to us: “The conditions of the possibility of experience in general are at the same time conditions of the possibility of the objects of experience” (Kant, 1787, p. B 197).<sup>4</sup> It is therefore clear that life cannot become “an object of experience”, unless we are able provide respective epistemological conditions. The question is how – and if at all – life itself can be experienced. I address this question below.

In summary, when we think of an organism, we imply its teleological and autopoietic organization because this is a necessary condition for knowing the organism at all.<sup>5</sup> However, these implicit “concepts of reason” are often not consciously reflected upon. Kant’s lasting contribution to the philosophy of life is that he made this implication and its necessity fully conscious. Can we follow Kant – and even go beyond him – not only to become conscious of the general necessity of organismic and teleological thinking with respect to an organism but also to awaken ourselves to *how* we think teleology and organic development concretely and vividly? For this, concrete and living thinking is necessary for the possibility of observing life itself.

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<sup>3</sup> One of the most influential ideas in this respect is Humberto Maturana’s and Francisco Varela’s attempt to interpret organisms as “living machines”: “Our approach will be mechanistic: no forces or principles will be adduced which are not found in the physical universe. Yet, our problem is the living organization, and therefore our interest will not be in properties of components, but in processes and relations between processes realized through components” (Maturana & Varela, 1980). – Evan Thompson wrote about this issue in his seminal book *Mind in Life*: “Although for many years he [Varela] had rejected the idea that autopoiesis involves anything teleological, in one of his last essays he revised his view. This essay, written with Andreas Weber, concerns the relations among autopoiesis, Kant’s conception of a natural purpose, and Jonas’s philosophy of the organism” (Thompson, 2007, p. 146). Thompson also reported on his personal communication with Varela: “[Varela] indicated that as time had gone by he had come to have a ‘broader view’. He had begun to see that ‘in a funny way you do recover a full fledged teleology ... but this teleology ... is intrinsic to life in action’. (...) In other words, teleology, in the sense of self-organized, intrinsic purposiveness, can be seen as a constitutive feature of the organism, (...) rather than only a form of our judgment, as Kant had held” (ibid., p. 454). – According to my interpretation, “seeing” purposiveness as a constitutive feature of the organism already means to imply “concepts of reason”.

<sup>4</sup> Kant made this especially clear with regard to the concept of causality: “[E]xperience itself, i.e., the empirical cognition of it, is only possible because we subject the sequence of phenomena and thus all change to the law of causality; consequently they themselves, as objects of experience, *are only possible* according to this law” (Kant, 1787, p. B 234) (italics added). Applied to the development of an organism, this sentence would read: “The empirical cognition of an organism is only possible because we subject the sequence of its appearances and thus its development to the law of teleology; consequently, an organism by itself, as an object of experience, is only possible according to this law.”

<sup>5</sup> This may be one reason for the often lamented use of teleological language in biology, especially in evolutionary and molecular genetic explanations, which is certainly problematic if it implies external teleology (Kampourakis, 2020; Werth & Allchin, 2020).

## 2. Another mode of objectification

If we think of objects, we usually refer to physical items that we perceive through the senses. According to Kant, such objects are not just “out there” but are constituted within the process of cognition. With respect to the material world, such objectification is achieved through the unification of sensual impressions with a priori concepts. The manifoldness of sensual impressions cannot by itself create the unity of an object.

“The combination (...) of a manifold in general can never come to us through the senses, and therefore cannot already be contained in the pure form of sensible intuition; for it is an act of the spontaneity of the power of representation, and since one must call the latter understanding, in distinction from sensibility, all combination, whether we are conscious of it or not, whether it is a combination of the manifold of intuition or of several concepts, and in the first case either of sensible or nonsensible intuition, is an action of the understanding, which we would designate with the general title synthesis in order at the same time to draw attention to the fact that we can represent nothing as combined in the object without having previously combined it ourselves and that among all representations combination is the only one that is not given through objects but can be executed only by the subject itself, since it is an act of its self-activity. (...) [W]here the understanding has not previously combined anything, neither can it dissolve anything, for only through it can something have been given to the power of representation as combined” (ibid., p. B 129-B 130).

“Combination does not lie in the objects (...) and cannot as it were be borrowed from them through perception and by that means first taken up into the understanding, but rather only an operation of the understanding, which is itself nothing further than the faculty of combining a priori” (ibid., p. B 134-B 135).

With regard to organisms, objectification in this sense is possible for their physical appearance but not for their organizing life. It is not possible to sensually observe the purposiveness of a bird’s organization in the same manner as one observes its wings, feathers, or bones. This is especially true for the successive development of an organism. One cannot observe an egg, a chick or a hen in the same place at the same time but has to connect these different stages by the concept of teleological development due to an internal, formative force. Teleological life cannot be objectified in the same way that we objectify physical objects. Living organisms, therefore, intrinsically “resist objectification” (Van de Vijver et al., 2005, p. 58). This resistance has been the reason for all vitalistic theories as well as for all attempts to find mechanistic explanations for life. While mechanistic explanations cannot succeed (as shown above), vitalistic theories are only based on theoretical inferences and cannot be confirmed by observation. However, if one considers *another mode of objectification*, observation of teleological organization and formative forces becomes possible. To demonstrate this idea, I refer to the work of Gertrudis Van de Vijver and colleagues.

Van de Vijver and Haeck wrote that the “slightly dramatic presence of living organisms in the world” (Van de Vijver & Haeck, 2024, p. 76) requires “the conceptual space... (to) change gear, moving from ‘knowledge about the object’ to ‘knowledge about knowledge’”. The attention to the organism appears to

be the point where the conceptual space is compelled to investigate its own structural procedures and dynamics –, i.e., (...) to fold back onto itself” (ibid., p. 61). These authors therefore suggested what can be called an epistemological turn in the philosophy of biology.

Their central idea is that knowledge about the organism differs from knowledge about physical objects in that it results from a “co-constitutive” relation between the knowing subject and the living object. Co-constitution means that “the knowing subject participates in the purposive essence of living systems by adding his own directionality. Any knowledge of living systems bears witness to both forms of directionality or purposiveness, linked, respectively to observer and observed” (Van de Vijver et al., 2005, p. 67). The idea is that we only know of the teleological organization of an organism by actively adding (“supplementing”) purposiveness to our cognition of it.<sup>6</sup> This “supplement of meaning” (ibid., p. 65), however, is not merely subjective because purposiveness is the essence of the organism.

The authors thus imply that one cannot understand organisms when considering them *only* as sensually perceptible, physical objects that are being determined (“objectified”) by a priori categories and concepts. The concepts of purposiveness, autopoiesis, agency, autonomy, etc., are not just being added from outside, as they were, to physically perceived organisms (under the Kantian notion “as if”). Instead, they correspond to an ontological side of the organism that is not perceivable through the senses and that only reveals itself *within the activity* of the knowing subject. Van de Vijver et al. therefore complement the Kantian concept of objectification by claiming an expanded “ontological space”, which is not only constituted by sensual impressions and determining concepts but also by a relational and conditional *communication* between the knowing subject and the known object. These considerations lead the authors to the notion that “whereas Kant saw the resistance of living systems to processes of objectification as an intrinsic obstacle to be overcome, here it is taken as the *means par excellence on the basis of which living systems can and will reveal their specificity and uniqueness*” (ibid., p. 67) (italics added). I consider this idea to be quite revolutionary. It points to the possibility of actually observing the “specificity and uniqueness”, i.e., the teleological organization and self-forming forces of organisms, that is, to empirically solve the age-old riddle of life.

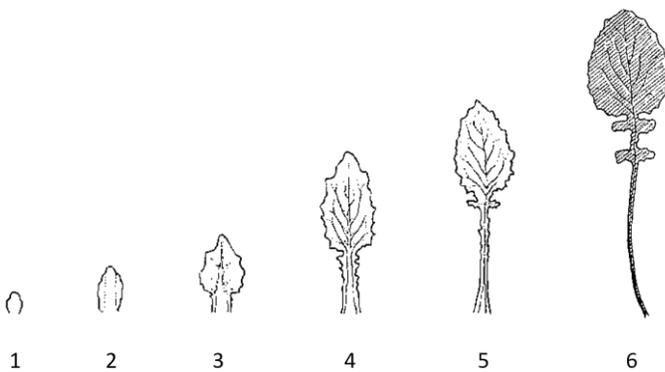
### 3. Creational supplementation of a developmental series

In agreement with Kant, Van de Vijver et al. claimed that to understand an organism, the knowing subject must actively supplement teleological meaning to the physical appearance of the organism. However, they go beyond Kant with their notion that this supplementation opens up a new “ontological space of conditionality”, a space “of experience on the one hand, and of objective knowledge on the other hand” (ibid., p. 60-61).

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<sup>6</sup> Weber and Varela had a similar point by stating that our own lived experience is the ground for any concept of teleology: “It is actually by experience of our teleology – our wish to exist further on as a subject, not our imputation of purposes on objects – that teleology becomes a real rather than an intellectual principle” (Weber & Varela, 2002, p. 110). “[T]he very ground of our existence is originally teleological and as such, in the ongoing coupling with the world brings forth meaning and categories” (ibid., p. 111).

To empirically observe these issues, consider a specific example, the ontological development of an individual plant leaf (Fig. 1). What are the conditions on the side of the object and on the side of the subject that are required to address these images as a developmental sequence? One perceives different, individual shapes, and one knows that they are sections from a continuous sequence of shape change. However, one cannot observe the process of shape transformation between the depicted shapes. This process is supplemented by the knowing subject. When shapes are *perceived*, the process that connects them is created—or rather, it becomes manifested by being created. This creation, however, although entirely dependent on the subject's activity, is not arbitrary. One knows exactly how to change one form to arrive at the next. For example, to move from the 5th shape to the 6th shape, one has to expand and somewhat round the blade, enlarge the small, two-sided extension beneath the blade, add another one, and prolong and thin the petiole. All of these procedures require the active engagement of the subject. There cannot be a question that one subjectively creates the same shape changes as the plant objectively does. Thus, the *condition of experience* of these developmental changes is that one actually creates them. The experience of the objective procedure requires its subjective production.<sup>7</sup>



**Fig. 1:** Sketch of the developmental stages of an individual leaf from common nipplewort (*Lapsana communis*) (Bockemühl, 1982).

A similar consideration applies to the teleology of development. Leaf buds (1) have the potential to develop into fully grown leaves (6); thus, the latter is a teleological goal of the former. The molecular, biochemical and cellular processes in the bud only occur *because* they are the basis for the further development of the leaf. The molecular and biochemical structures and processes are subject to physico-chemical laws that can be objectively determined. However, the teleological meaning of these processes and their organizational relations cannot be recognized through an objective analysis of the processes themselves. It must be supplemented by the subject. Nevertheless, it is not subjective (in the sense of non-ontological), because the described processes are surely the basis for and will (if undisturbed) lead to the further development of the leaf. The teleological meaning of the molecular processes in the leaf

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<sup>7</sup> Even if one does not actively perform the shape changes in one's imagination, the implicit knowledge about these dynamical changes guides the observation of the developmental sequence. Without this knowledge, the images would make no sense to us.

bud is therefore not objectifiable in a classical sense but becomes manifest and can be experienced as ontologically efficacious *within* this subjective supplementation.

The active creation of the transitions between the forms in Fig. 1 is the condition for their *experience*, and the supplementation of the teleological meaning is a condition for their *understanding* (there are others, too).

#### 4. Different modes of objectification

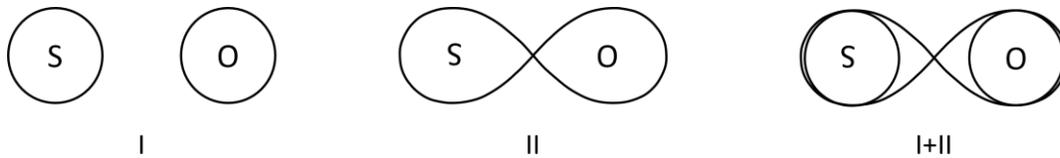
According to Kant, the conditions of appearance and comprehension of physical objects involve the merging of the manifoldness of sensual perceptions with unifying concepts through the judging activity of the subject. By this procedure, the manifoldness of perceptions is being “objectified”, that is, in a sense, separated from the subject. One could say that the subject actively (but unconsciously) places the objects into what appears to him as the outer “objective world”.<sup>8</sup> This kind of objectification, however, does not work for living beings. Of course, their material structures and properties can be objectified in this way, but not their living, teleological and self-forming organization. The teleological, “self-propagating formative power” of an organism (Kant, 1790, p. 374) cannot be perceived through the senses. Life itself cannot be looked at from outside, as it was. However, it is undeniably real.

According to Van de Vijver et al., Kant opened up the perspective of a different, relational mode of objectification for living systems: “Most innovating is Kant’s assumption that living systems intrinsically *resist* any attempt of objectification, and demand as such for an approach qualitatively different from the one developed in relation to non-living systems” (Van de Vijver et al., 2005, p. 58). Apparently, objectification is something different in biology than in the mechanical sciences (physics, chemistry, etc.). In biology, subject and object are more closely related to each other, as it were. They communicate.

With respect to the properties of organisms that are perceivable through the senses, the first (Kantian) mode of objectification can be applied. Through this, the subject comprehends what is physical about biological objects (Fig. 2, left). However, this is only their non-living part (that which remains of them in the moment of death). To comprehend the life of an organism, *another mode of objectification* must be added. In this mode, the subject does not entirely separate from the object but remains actively involved in its comprehension. At the same time, the activity of the object (its life) remains somewhat more within the *process* of being objectified, as it was. In the relational “ontological space of conditionality” of biology, both the subject and the object change their status: the subject becomes more active and creative, and the object becomes less passive, particular and dead. This mode of objectification is “the means par excellence on the basis of which living systems (...) reveal their specificity and uniqueness” (ibid., p. 67) (Fig. 2, middle). – To be sure, the second, relational and organismic mode of objectification does not replace the first, physical mode in biology but must be added to it (Fig. 2, right).

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<sup>8</sup> Van de Vijver & Noé wrote: “As the third (...) Critique can show, there is objectivity to the extent that an object is produced, in a very specific way, from within a living, contingently based, conditionality: an object is that which has been successfully ‘pushed outside’ of the sphere of the contingently based, largely implicit, practices of living subjects” (Van de Vijver & Noé, 2011, p. 98).



**Fig. 2:** Two different modes of objectification and their combination in the cognition of living organisms. S = subject, O = object.

As long as one only applies the first mode of objectification, one might say with Goethe: “To know and note the living, you’ll find it/Best to first dispense with the spirit:/Then, with the pieces in your hand,/Ah! You’ve only lost the spiritual bond”<sup>9</sup> (Goethe, 1808, p. 208). In addition, applying the second mode provides the “spiritual bond”.<sup>10, 11</sup>

In summary, I propose that the living, formative and teleologically organizing forces that are essential to an organism are an ontological reality. The recognition of these forces is not the result of a dualistic attitude aimed at reviving theoretical vitalism but rather is seen as a scientific approach since these forces can be experienced and studied in our own complementary mental activity.

## 5. Life itself as an empirical field of research

To proceed in a scientific way, one must define the area of empirical observations and the universal and necessary concepts that allow the determination of the objects of research and their lawful relations (Van den Berg, 2014). In contrast to physics and chemistry, this area of research in biology is not independent of the active engagement of observers. Van de Vijver and Haeck emphasized that organisms cannot be captured as if they “exist independently from *our doings*” (Van de Vijver & Haeck, 2024, p. 66). “Instead of referring to a knowing subject that develops knowledge *about* something, [the reciprocity between knower and organism] indicates, from within an *organic dynamic*, (...) a folding back onto *certain activities* (sensible and conceptual ones)” of the subject (ibid., our italics).

These authors thus express what I would like to raise to a central point: It is the *cognitive activity* of the knowing subject, with which it supplements the imperceptible *vital activity* of the organism. The life of organisms can be observed through the lively engagement of the cognizing human mind. While the Kantian mode of objectification allows the knowing subject to remain in a largely passive attitude, the second, organismic mode of relational objectification requires the active engagement of the subject.

<sup>9</sup> “Wer will was Lebendiges erkennen und beschreiben,/ Sucht erst den Geist herauszutreiben;/Dann hat er die Teile in der Hand,/Fehlt, leider! nur das geistige Band.”

<sup>10</sup> Goethe also once claimed: “Where Object and Subject meet, there is life.” [“Wo Objekt und Subjekt sich berühren, da ist Leben.”] (Goethe, 1827).

<sup>11</sup> Interestingly, at the same time as Kant was writing his *Critique of Judgment*, Goethe was working on his text *Metamorphosis of Plants* [*Versuch, die Metamorphose der Pflanzen zu erklären*] (Goethe, 1790, 1817, 1831). Both works were published at Easter 1790. In his work, Goethe used the method that we describe here for the observation of the forces and laws of life (Amrine et al., 1987; Bortoft, 1996; Förster, 2012).

Understanding life is not a matter of knowing about an object but about a (lawful) activity. This activity, although carried out by the subject, is not arbitrary but guided by natural phenomena (as I have shown in the discussion of Fig. 1). Thus, the first-person phenomenology of this supplementary activity opens up the field of empirical research into the forces and laws of living.

When one perceives an organism, one only sees (touches, tastes, smells, etc.) the *products* of its living activity. Life itself cannot be perceived through the senses. It is in fact supersensible, and yet it is a definitive reality. Nature, therefore, appears to be more than dead matter alone. However, although being supersensible, life is not something strange and mysterious but rather a reality that can be clearly experienced and described. My analysis shows how *life itself*, in its intrinsically organizing and forming force, can become an object of empirical research. To do so scientifically, one must observe and analyze “the types of engagement of the knowing subject” (Van de Vijver et al., 2005, p. 68) when this subject actively participates in the co-creation of the myriad different forms and processes in which life manifests itself.

## 6. Outlook on an extended ontology of nature

The fact that the living, teleologically organizing forces of an organism cannot be objectified in the sensual, Kantian mode is only one half of the organism problem. The other is the question of how living organisms are possible at all if nature is only conceived materially. Kant precisely stated this problem:

“[T]he universal idea of nature, as the sum of objects of the senses, gives us no reason whatever for assuming that things of nature serve one another as means to ends, or that their very possibility is only made fully intelligible by a causality of this sort. (...) [For] we do not take [nature] to be an intelligent being” (Kant, 1790, p. 359).

The assumption that nature consists only of the (unintelligent) sum of sensory objects, i.e., that it is only material, does not allow us to think of the possibility of living beings within it. Therefore, this assumption is probably not sufficient. Therefore, I suggest considering an additional (or extended) ontological space of nature that cannot be perceived through the senses of the woven and ever-weaving, intrinsically intelligent web of life.<sup>12</sup>

In their abovementioned publication, Van de Vijver et al. emphasized that the knowing subject is free to choose whether it wishes to “communicate” with the living organism or not. It can indeed “choose to deny the need for connecting with living systems” (Van de Vijver et al., 2005, p. 65). However, it is precisely through this possibility of choice that the subject can relinquish its relatively passive position in relation to physical nature and become a free and responsible co-creator in the web of life. We can try to

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<sup>12</sup> Thomas Nagel in his much-debated book *Mind and Cosmos* argued for a cosmological “teleological hypothesis”: “The teleological hypothesis is that these things [evolving organisms] may be determined not merely by value-free chemistry and physics but also by something else, a cosmic predisposition to the formation of life, consciousness, and the value that is inseparable from them” (Nagel, 2012, p. 123). Kant himself felt the need to integrate his epistemological analysis of organic teleology into the systematic unity of nature. In his *Opus postumum* he developed the idea of “moving forces” inherent in matter which encompass organizing forces (Förster, 2000).

look at organisms as mechanisms (although without success), but then we miss their essential property, namely, that they are alive. Ultimately, this is a question of life rather than of logic, not of true or false, but of healthy or sick.

In summary, I propose an empirical (but non-mechanical) solution to the problem of living organisms. The self-generating life and purposiveness of the organism can be experienced and analyzed as an ontological reality from a first-person perspective. This brings the organism closer to the mind and the mind closer to the organism compared to the classical dualism between mind and life.

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