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Believing in organisms: Kant's non-mechanistic philosophy of nature

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ABSTRACT

In this paper, I defend a non-mechanistic interpretation of Kant's philosophy of nature. My interpretation contradicts the robust tradition of reading Kant as a mechanist about nature – or as someone who endorses the view that we can know the internally purposive causality characteristic of organisms has no place in nature. By attending closely to Kant's remarks about the possibility of internal purposiveness in nature and to key premises from Kant's arguments in the Antinomy of Teleological Judgment, we shall see that it is not only plausible, but preferable, to believe that internally purposive things (i.e., organisms) exist in nature. Making room for such a belief leaves Kant with a philosophy of nature that simultaneously aligns with and surpasses the philosophies of nature offered up by his Early Modern predecessors.

Introduction

With the advancement of scientific theories and technologies in Early Modernity, philosophers begin to seriously weigh the possibility that nature can be explained in exclusively mechanistic terms. Some philosophers of the era (e.g., Descartes and Hobbes) affirm that nature is wholly determined by mechanism, whereas others who succeed them (e.g., Post-Kantians such as Schelling and Hegel) contend that nature must be non-mechanistic in important respects. Inspired by the picture of nature in Kant's *Critique of Pure Reason* and *Metaphysical Foundations of Natural Science*, most readers align Kant with the first group of philosophers, who deny that there is room for certain kinds of non-mechanistic causality in nature.

Those who subscribe to a mechanistic interpretation of Kant say that he banishes the special kind of teleology that organisms exhibit from nature. *Moderate* mechanistic readers, claim that, since we cannot empirically cognize the internally purposive causality characteristic of an organism, we cannot know that organisms exist.[1] Moreover, because we cannot know whether this form of causality exists in nature and we do have empirically cognitive access to mechanistic forms of causality, we ought to believe that any apparently teleological activity the things we call organisms exhibit will one day be explained in fully mechanistic terms.

Strong mechanistic interpreters take things a step further. Whether or not we can grasp the causality characteristic of them, the things we call organisms are presented to us as objects of empirical cognition. If something is an object of empirical cognition, then the laws of physics give us an exhaustive picture of what that object is and why it exists. If the laws of physics furnish us with a picture of reality according to which objects are nothing but matter in motion, it follows that those things that seem to exhibit an internal purposiveness are nothing but matter in motion. In short, to the strong mechanistic reader, Kant's philosophy leads us to the realization that *we can know* there is no room for the internal purposiveness characteristic of organisms in nature.[2]

In general, mechanistic readers attribute an updated version of the Early Modern mechanistic picture of nature to Kant. To these interpreters, it is either possibly or necessarily the case that all the lower life forms we take to be alive are mere matter in motion. Frogs, trees, dogs, and beetles only superficially differ from clocks, trains, and other inanimate objects, for the deepest causal mechanisms driving both kinds of being are really the same. Mechanistic readings seem natural to adopt

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[1] A representative sample includes McLaughlin (1990), Zammito (1992), Zuckert (2007), Ginsborg (2015), Wood (1999), and Kreines (2015).

[2] As I outline in Section 2, Peter McLaughlin's reading of Kant in *Kant's Critique of Teleology* seems to push him towards a strong mechanistic reading of the text. Robert Richards also appears to attribute a strong mechanistic understanding of nature to Kant throughout *The Romantic Conception of Life* (Richards 2010, p. 158).

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when we consider some of Kant's remarks on organisms and teleology. Kant states that the concept of a natural end has no objective reality because we cannot cognize the world-cause that would make the existence of such ends possible (i.e., an intelligent God).[3] Generally, these readers emphasize, Kant makes any judgment of teleology in nature a *reflecting* judgment, and while reflecting judgments tell us something about the subject, they tell us nothing about objects. Mechanistic readers also insist that Kant says Newton's Laws of Mechanics explain the alterations of *all* material things, and the things we call organisms certainly appear to be material things.[4] Last, notice that, for all mechanistic readers, Kant leaves no room for a genuine, standalone life science. Living things are distinct from non-living things in that their activity is, in part, conditioned by internal principles and not merely external mechanistic causal principles.[5] To say that all entities that seemingly express a non-mechanistic, internally purposive causality can or will eventually be exhaustively explained in terms of mechanistic laws of motion is to suggest that any science of life is, at best, a placeholder for physics.

Though the *First Critique* and the *Metaphysical Foundations* have tempted many toward a mechanistic reading, Kant's remarks in the *Critique of the Power of Judgment* may steer us in another direction altogether. In this text, Kant frequently mentions that there are proper occasions to apply the concept of a natural end in our investigations of nature and that observation presents us with examples of organisms.[6] Kant also affirms that "the mere mechanism of nature is incapable of providing an explanatory ground of the generation of organized beings" (*CPJ* 5:389), that "we can never adequately come to know the organized beings and their internal possibility in accordance with merely mechanical principles of nature" (*CPJ* 5:400, my emphasis), and that "the mechanism of nature … Is not by itself sufficient for conceiving of the possibility of an organized being" (*CPJ* 5:421–2).[7] Statements like these contradict the strong mechanist push to reject the very possibility of organisms and appear to presuppose a picture of nature and the organism that may undermine even a moderate mechanistic reading.

In this paper, I offer a *non-mechanistic* interpretation of Kant's doctrine of nature. I show that Kant actually urges us to believe that the internally purposive causality characteristic of organisms does have a place in nature. Against strong mechanistic readers, Kant nowhere endorses the claim that we can *know* there is no such causality in nature. Against moderate mechanistic readers, I demonstrate that Kant's views on nature and the things we call organisms motivate a positive belief in the existence of organisms in nature.[8]

Section 1 provides a glossary of key terms that are essential to my arguments, including cognition [*Erkenntnis*], knowledge [*Wissen*], belief [*Glaube*], mechanism, purposiveness [*Zweckmäßigkeit*], internal purposiveness, relative purposiveness, and organism.[9] Section 2 draws upon the terms defined in Section 1 to schematically lay out the strong mechanistic, moderate mechanistic, and non-mechanistic interpretations of Kant's doctrine of nature. In section 3, I raise several complications that arise from mechanistic interpretations. For one, Kant plainly states that experience leads us to the concept of an organism and that nature furnishes us with examples of organisms (3.1). Additionally, in the Antinomy of Teleological Judgment, Kant states that we can never prove the principle that all material things are generated in accordance with mechanistic laws only (3.2). Finally, he distances himself from those philosophers who have affirmed that there are no organisms in nature (3.3). In section 4, I outline my non-mechanistic reading of Kant's doctrine of nature. While mechanistic readers are right to maintain that we can neither empirically cognize organisms directly nor know that organisms exist, the text leaves open the possibility that we may *believe* in the existence of the organism in nature (4.1). Furthermore, it is fully consistent with the text to hold that the target of our belief is a natural object, not merely a mental act such as a judgment (4.2). We do not merely believe in the usefulness of some reflecting judgment for the sake of our cognitive economy. When we believe in the organism, we make a positive commitment to the existence of a certain kind of natural entity. Section 5 closes with reflections on how this reading interacts with other aspects of Kant's theoretical and practical philosophy. Notably, my reading suggests that a standalone life science is possible for Kant, because its target phenomenon (the internally purposive activity of the organism) exists in nature and cannot be explained by Newtonian physics.[10]

1. A glossary of key terms

This section contains a glossary of key terms - cognition [*Erkenntnis*], knowledge [*Wissen*], belief [*Glaube*], mechanism, purposiveness [*Zweckmäßigkeit*], internal purposiveness, relative purposiveness, and, finally a term that Kant does not himself use but is useful for our purposes, organism. After defining these terms, I articulate the strong mechanistic, moderate mechanistic, and non-mechanistic readings of Kant's philosophy of nature.

[3] See *CPJ* §75.

[4] In the *Metaphysical Foundations of Natural Science*, the scope of the Laws of Mechanics extends to all material things. The First Law of Mechanics scopes over "all changes of corporeal nature" (*MFNS* 4:541), the Second Law applies to "every change in matter" (*MFNS* 4:543), and the Third Law to "all communication of motion" in matter (*MFNS* 4:544). If we think of the "mechanism of nature" as all of nature insofar as it is governed by the Laws of Mechanics and find that, everywhere we turn, we can explain the changes material objects undergo in terms of mechanism, that seems like compelling evidence for the claim that we can determine nature is thoroughly mechanistic.

[5] "Life is the faculty of a substance to determine itself to act from an internal principle, of a finite substance to change, and of a material substance to motion or rest, as change of its state. Now we are acquainted with [*kennen wir*] no other internal principle in a substance for changing its state except desiring, and no other internal activity at all except thinking, together with that which depends on it, the feeling of pleasure or displeasure, and desire or willing." (*MFNS* 4:544, translation modified).

[6] I survey these passages directly below, in Section 3.

[7] Translations are taken from the standard editions listed in the references. Passages from the *Critique of Pure Reason* are cited by the standard A/B page numbers, and all other references to Kant are by volume and page number to the Akademie Ausgabe, (1902–present, *Kants gesammelte Schriften*, edited by the Akademie der Wissenschaften. Berlin: G. Reimer, later De Gruyter). Kant's works are abbreviated as follows: *Critique of the Power of Judgment* = *CPJ*, *Lectures on Metaphysics* = *LM,* and *Metaphysical Foundations of Natural Science* = *MFNS*.

[8] Note that this approach to getting at an object of an improper science (i.e., any science besides Newtonian physics) is similar to, but importantly different from, one that has been undertaken with respect to chemistry. Michael Bennett McNulty performs a similar maneuver with respect to chemistry in his "Chemical Dissolution and Kant's Theory of Nature" (McNulty, 2018). There, he concludes, "Although completed infinite division, upon which chemical dissolution depends, cannot be cognized, it can be thought as an idea of reason in order to make conceivable genuine, continuous dissolution in chemistry" (2018, 555). Of course, McNulty emphasizes our ability to *think* the infinite division present in chemical dissolution, but does not quite commit to the claim that we can posit the existence of chemical dissolution on the basis of our ability to think it. In this last regard, my strategy differs from McNulty's, as I argue that believing bears a stronger existential commitment than mere conceiving.

[9] Though Kant does not use the term "organism," I develop a definition of the term that is consistent with his philosophical lexicon and handy for characterizing the various interpretations of him.

[10] Of course, life science would not be a science "properly so-called" – only a mathematizable physics meets this benchmark (see *MFNS* 4:468). Still, life science can be considered a standalone *improper* science that is not reducible to a mathematizable physics, giving us systematically ordered information about and descriptions of nature. Such a reading may reinforce Robert Butts' suggestion that science is an open-ended research program rather than a finished system (see Butts, 1990).

1.1. Cognition, knowledge, belief

When I discuss cognition, I refer specifically to the representational state introduced at the outset of the *Critique of Pure Reason*'s Transcendental Logic.[11] In this sense of the term a cognition is a representational state that a subject forms when they combine a given intuition with a concept of the understanding. An intuition is any representation that we receive in space and time through our faculty of sensibility, and to Kant such a representation "contains only the way in which we are affected by objects" (A51/B75). For instance, the redness of a rose is something we are given as a sensible intuition. In contrast, a concept is a representation that we spontaneously think. Kant glosses the understanding, which is our faculty of concepts, as a "faculty for **thinking** of objects of sensible intuition" (A51/B75). For instance, upon sensing the redness of a rose, my faculty of understanding leads me to abstractly compare this rose to other roses, to consider the causal process that culminated in the existence of this rose, and so on. These two heterogenous faculties and the species of representation proper to each are *necessary* for forming a cognition; without one or the other, cognition is impossible. As Kant puts it, "Thoughts without content are empty, intuitions without concepts are blind" (A51/B75). Cognition is a state a subject achieves when they combine a given intuition and a concept of the understanding in a particular way.

Whereas cognition is a representational state that involves thinking about objects given to us in space and time, knowledge [*Wissen*] and belief [*Glaube*] are modes of assent [*Fürwahrhalten*], or epistemic attitudes that we adopt towards propositions. There are a wide variety of ways in which one can assent to a proposition,[12] and each is distinguished by considering whether we have sufficient objective grounds or subjective sufficient grounds for assent. Ideally, an individual has *sufficient* objective and subjective grounds for assent, the result of which is knowledge. The right kinds of objective grounds are "perceptual, memorial, or introspective states", and those states serve as sufficient objective grounds only if they render the proposition in question "probable to a degree that licenses assent with a moderate-to-high degree of probability."[13] We could think of principled observation, data compiled on the basis of those observations, reflection on the legitimacy of the data, and so forth as ingredients that contribute to the formation of sufficient objective grounds. Subjective grounds consist in the "subject's own determination that the assent is based on sufficient objective grounds," and those grounds are sufficient only if "the everyday process of using memory, a priori reasoning, introspection, and so forth" allows the subject to establish a high degree of confidence in the sufficient objective grounds motivating the proposition in question.[14] Subjective grounds generally correspond to one's level certainty with respect to their objective grounds.

Combining the elements of our discussion so far, we might think of a cognition as prime candidate for a sufficient objective ground of assent. Direct perceptual acquaintance with an object accompanied by a concept that I have legitimately applied to it in a judgment seems like just the kind of evidence that would license an assent with a moderate-to-high degree of probability. My cognizing that the petals of a flower are of a certain color and shape, that the flower has a certain scent, that the stem of the flower is thorny, and so forth may license my claim to *knowing* that this flower is a rose and not a lily.

In contrast to knowledge, Kant writes that "if assent is only subjectively sufficient and is at the same time held to be objectively insufficient, then it is called **Belief**" (A823/B851). Andrew Chignell glosses belief as a "firm, positive, and voluntary attitude that is subjectively sufficient$_2$ for a particular subject in a particular circumstance, given his or her interests and ends, and that has implications for the subject's rational action, assertion, and deliberation".[15] Subjective grounds that are sufficient$_2$ are grounds with some nonepistemic merits. For instance, assent to the proposition that there is a future life has the nonepistemic merit of allowing us to avoid rendering the moral law practically absurd.[16] Belief is a state characterized by a lack of sufficient objective grounds – we cannot appeal perceptual, memorial, etc. States to show that the propositions we believe in are probable with a moderate to high degree of certainty. Since the subjective grounds of belief are merely *nonepistemic* reasons for desiring or valuing the truth of these assents, we have no direct route to proving their truth.

Based on Kant's characterization of each term, it appears that there will *never* be an instance in which cognition serves as evidence for a belief. The moment we have cognition of something we have evidence that can ground a much stronger variety of assent than belief. Instead, belief is the right kind of assent to form towards a proposition like "God exists." We can never cognize God since God cannot be presented to us in space and time. Still, Kant explains that we have a special interest in presupposing that God exists as a precondition for investigating nature as a purposive unity (A826/B854). Thus, while we lack sufficient objective grounds for knowing that God exists, we have a special subjective interest in holding the existence of God to be true. This special subjective interest licenses our belief in a wise creator of nature.

1.2. Mechanism, purposiveness, organisms

When I use the term "mechanism," I refer to a certain picture of nature. According to the mechanistic picture, nature consists only of material bodies. Material bodies can only be moved in accordance with external principles of motion, and their external principles of motion will bring about changes in matter that are explained by some antecedent change in matter, *ad infinitum*. A material body's changes in state are changes of matter, and all changes of matter are subject to the Law of Inertia, as characterized in the *Metaphysical Foundations of Natural Science*: "Every change in matter has an external cause." Kant derives this law of mechanics from the initial premise that "Matter, as mere object of the outer senses, has no other determinations except those of external relations in space" (*MFNS* 4:543). All determinations of a material object are observable in space and time. For any change of state in matter, we must seek a cause ("by the principle of metaphysics"). But matter, "as a mere object of the outer senses," lacks any "essentially internal determinations or grounds of determination" (ibid). In other words, a material body is such that, by its very nature, it has to be set in motion or stopped by means of a causal influence exerted upon it by some outside material body. Since a material body cannot have any internal determination or ground of determination, its ground of determination must be external. Thus, every change in matter has an external (and not an internal) cause. Mechanistic causality appeals to *external* principles of causality and their material effects.

In contrast to mechanistic causality, "purposiveness" denotes a causality that has a *non*-external principle as its ground. When seeking a positive account of purposiveness, one would find it natural to turn to §10 of the *Critique of the Power of Judgment*, titled "On purposiveness in general." Kant begins that section by giving a definition of an "end" [*ein Zweck*] in accordance with its "transcendental determinations" (or, "without presupposing anything empirical"). From this perspective, "an end is the object of a concept insofar as the latter is regarded as the cause of the former (the real ground of its possibility)" (*CPJ* 5:220). Purposiveness is the "causality of a **concept** with regard to its **object**" (ibid).

[11] For a much more thorough and comprehensive discussion of cognition than I can offer here, see Watkins and Willaschek, 2017.

[12] I do not discuss all modes of assent here. See Chignell (2007) for an all-inclusive synopsis of the various forms of assent and the differences between each.

[13] Chignell, 2007, p. 327.

[14] Chignell, 2007, p. 328.

[15] Chignell, 2007, p. 359.

[16] Chignell, 2007, p. 334.

So, when I discuss purposiveness, I refer to a kind of causality according to which a particular kind of concept (i.e., a purpose) grounds or explains the realization of the object it represents.[17] A paradigmatic case of purposive causality might be desiring. When someone explains that a *desire for justice* caused them to pursue a criminal, the desire for justice is a concept that contributes to the realization of a real effect (i.e., the pursuit and apprehension of a criminal).

We can distinguish the various species of purposiveness by distinguishing between the various kinds of purpose that might serve as causal grounds for the realization of their objects. Here, I want to focus on just two species of purposiveness. On the one hand, what I will call as a shorthand *relative purposiveness* is a purposive causality according to which an end that some artificer has in mind conditions our understanding of some object's function (see *CPJ* 5:367). For instance, an oven serves the purpose of baking cakes. That purpose is not inscribed into the oven by nature, but by the manufacturer who designed the oven.[18]

On the other hand, what I will call as a shorthand *internal purposiveness* is another species of purposiveness. When we attribute an internal purposiveness to an object, we judge it to be what Kant calls a "natural end." To be considered a natural end, a thing must possess a purposiveness that takes (loosely) a representation of itself as a whole as its internal principle and uses this representation to organize its parts.

> Now for a thing to qualify as a natural end it is requisite, **first**, that its parts (as far as their existence and their form are concerned) are possible only through their relation to the whole. For the thing itself is an end and is thus comprehended under a concept or an idea that must determine a priori everything that is to be contained in it. (*CPJ* 5:373)

That is, the parts of a natural end do not happen to be organized by virtue of some accident. Nor is the thing's particular organization explained by appeal to mechanistic causality. Why the structure of a bird takes the shape it does and not some other is a fact that can only be explained by appealing to its ends (e.g., "A bird's bones are hollow for the sake of allowing it to fly"). The parts of a bird – the placement of its wings, its weight and wingspan, the color of its feathers, and so forth – are "possible only through their relation to the whole." That is, we might think, there is a concept or an idea of how a bird ought to be organized, and its parts organize themselves in accordance with this concept or idea.

However, Kant follows this point up by adding that if we stop here, a thing is merely "the product of a rational cause distinct from the matter." Thus, the second step of his explanation of a natural end adds that

> if a thing, as a natural product, is nevertheless to contain in itself and its internal possibility a relation to ends, i.e., is to be possible only as a natural end and without the causality of the concepts of a rational being outside of it, then it is required, **second**, that its parts be combined into a whole by being reciprocally the cause and effect of their form. (*CPJ* 5:373)

The parts of a natural end reciprocally produce each other. A heart pumps blood into other vital organs, such as the lungs. The lungs allow a creature to breathe, oxygenate its blood, and dispense with the carbon dioxide in its blood, contributing both to the heart's circulatory efforts and the function of other vital organs. Each part of the body works according to a plan. This plan can be understood as a "concept" of how the whole is supposed to function that is encoded into the entity by its very nature. A natural end organizes its parts in accordance with a concept of its whole, and its organized concatenation of parts is consequently an effect brought about through final causes – that is, an effect brought about not by some physical push or pull, but by means of the *representation* of the effect.

Kant's suggestion that an organized being has a special kind of power, one that allows it to organize itself in accordance with a plan, may help further illustrate this idea.

> An organized being is thus not a mere machine, for that only has a **motive** power, while the organized being in itself possesses a **formative** power, and indeed one that it communicates to the matter, which does not have it (indeed it organizes the latter): thus it has a self-propagating formative power, which cannot be explained through the capacity for movement alone (that is, mechanism). (*CPJ* 5:374)

This formative power is none other than the purposiveness internal to the organized being. On the basis of this purposiveness, a being takes a representation of its "**inner natural perfection**" (*CPJ* 5:375) as the principle for organizing its "matter." To be sure, we cannot know the details of the inner workings of this purposive power in every case; how natural things come to possess and deploy their standard of inner natural perfection is a process that is "not thinkable and explicable in accordance with any analogy to any physical, i.e., natural capacity that is known to us" (*CPJ* 5:375). As such, our judgment that a thing is a natural end cannot count as an instance of us deploying a constitutive concept of the understanding or reason, only providing us with a "regulative concept for the reflecting power of judgment, for guiding research into objects of this kind" (*CPJ* 5:375). Still, observing beings that possess this kind of purposive causality leads us to the conclusion that there are non-mechanistic forces governing the organization of nature. The very notion of a natural end thus "leads reason into an order of things entirely different from that of a mere mechanism of nature, which will here no longer satisfy us" (*CPJ* 5:377). Trees, ducks, and other human beings, from this perspective, are not mere machines, but things that unfold as they actively realize their ends.

When I refer to "organisms," I mean for the term to pick out natural entities that, from one perspective, are material things subject to mechanistic laws of causality but, from another, exhibit internally purposive activity. Kant explains,

> It might always be possible that in, e.g., an animal body, many parts could be conceived as consequences of merely mechanical laws (such as skin, hair and bones). Yet the cause that provides the appropriate material, modifies it, forms it, and deposits it in its appropriate place must always be judged teleologically, so that everything in it must be considered as organized. (*CPJ* 5:377)

The activities and the structure of what I call an organism can be explained in terms of "merely mechanical laws; " it is possible to explain the material constitution of an animal, for instance, by tracing its material state back to an antecedent, external material cause. However, there is another way of explaining a state and the activity of an organism. The heart of an elk pumps blood in order to circulate blood throughout its body. Presumably, this is because circulating blood through its body is good for its survival. In this sense, an end – survival – is the cause of the activity and the organization of the parts of the elk.

Notice that, while survival is the kind of thing that is taken to be the principle of an organism's activity, it is not an external principle. In other words, "survival" does not describe a state of matter that brings about a subsequent change in matter. Rather, survival describes a causal principle that is *internal* to the elk and not reducible to a material fact about the elk. If we did not invoke the ends of things as the internal principles of their structure and activity, Kant warns, the structure of these objects would be "in the highest degree contingent" (*CPJ* 5:360). If

[17] Of course, Kant admits that there are forms of purposiveness *without purpose* (e.g., the kind of purposiveness associated with judgments of beauty). I limit my analysis to those forms of purposiveness Kant labels *objective* and do involve purposes.

[18] Note that ovens do provide a case of objects in nature that count as *organized beings*, but they lack the kind of *internal* purposiveness that the things we call organisms possess. Thus, the term "organized being" picks out a wider set of natural objects than the term "organism." Thanks to an anonymous reviewer for encouraging me to distinguish these terms more clearly.

it were conditioned by mechanism alone, nature could have formed these objects "in a thousand different ways without hitting precisely upon the unity in accordance with" a teleological causality (*CPJ* 5:360). Thus, when describing the organization of the elk, we say that its parts are arranged, it performs the activities that it does, and it communes with its fellow elk in such and such a way *in order to* survive, and its survival is an internal ground that explains how the elk functions.

To sum up, mechanism denotes a picture of nature according to which everything is explained in terms of external principles of causality and their material effects. Purposiveness is a kind of causality according to which a "concept" grounds the realization of its "object." The things that we call organisms exhibit an *internal purposiveness* – "concepts" nested *within* them serve as the internal principles of their actions. As we will see, whether someone adopts a mechanistic or a non-mechanistic interpretation of Kant's doctrine of nature is a matter of whether they maintain that Kant urges us to explain instances of internally purposive activity in mechanistic terms or maintain that Kant urges us to assent to the possibility that internally purposive activity is possible in nature.

2. Surveying our interpretive options

Now that I have laid out my understanding of these key terms, I summarize the three interpretations I will weigh in this article.

> *Strong mechanism*: To Kant, the things we call organisms may *seem* to exhibit internally purposive activity, but we *know* that no such activity is possible in nature. Thus, we can be certain that we will eventually explain this apparent internal purposive activity in mechanistic terms.

To the strong mechanistic reader, we cannot empirically cognize the internally purposive causality characteristic of an organism, but we are still presented with organisms in outer sense, as objects of empirical cognition. However, the existence of objects of empirical cognition can only be explained by the Laws of Mechanics – more precisely, the Law of Inertia.[19] Whatever is subject to the Law of Inertia is mere matter in motion, which implies that if x is an object of empirical cognition, then x is determined merely by external causes. Thus, insofar as they are objects of empirical cognition, the things we call organisms are completely determined by external causes, not internal causes such as ends. As long as we assume that Newtonian mechanics applies to all of nature, we know that there is no internally purposive activity in nature. Since organisms are by definition things that exhibit internally purposive activity and no such activity exists in nature, we can know that organisms, strictly speaking, do not exist in nature.

> *Moderate mechanism*: To Kant, the things we call organisms may *seem* to exhibit internally purposive activity, but we cannot grasp the principle of such activity. In contrast, we can cognize the material external principles that contribute to a mechanistic explanation of a thing's activity. Thus, we have *reason to believe that* this apparent internally purposive activity will one day be explained in mechanistic terms.

Moderate mechanistic readers set out with the observation that we cannot cognize the causality by virtue of which we judge a thing to be an organism. McLaughlin also neatly summarizes how a moderate mechanist begins with this insight and arrives at the conclusions definitive of their position. The kind of causality exhibited by an organism cannot be thought through the understanding, for the understanding represents mechanistically and the purposiveness of an organism is inherently *non*-mechanistic.[20] Moreover, we may judge that a rose drinks water through its roots because it strives to survive, but the relevant causal ground in this explanation – the rose's striving to survive – is not something that we can behold in space and time. Unable to think or intuit the purposiveness of the organism through the understanding, we cannot attain empirical cognition of the purposiveness in question; and lacking empirical cognition of an organism's purposiveness, "Organisms … Seem to involve a causality *sui generis* that we cannot recognize as real."[21] We lack cognitive access to the full picture of organic causality, and this bars us from knowing whether there are organisms "out there" in nature one way or the other.

In contrast, we *can cognize* mechanistic causal relations. We perceive that a rose wilts because its soil has been oversaturated. The current material condition of the rose – its drooping colorlessness – is explained and precipitated by some antecedent material state – the wetness of the soil. Thus, to the moderate mechanistic reader, there are plentiful, cognitively accessible examples of nature's mechanism all around us. This situation motivates the belief that we will one day exhaustively explain apparent instances of internal purposiveness in nature in mechanistic terms.

Mechanistic readers of all varieties believe that Kant's views on reflecting judgment lend further support to their interpretation. Kant states that, when we attribute purposiveness to nature, we do so on the basis of a reflecting judgment. In contrast, on the occasions that we provide a mechanistic explanation of some natural object, we do so in the form of a determining judgment. While determining judgments can reliably capture the structure of nature, reflecting judgments are based on regulative principles, and only tell us about the cognitive economy of the subject. As long as the purposiveness of nature is a predicate of a merely reflecting judgment, it says nothing about objects in nature.[22]

> *Non-mechanism*: To Kant, the things we call organisms *seem* to exhibit an internally purposive activity. In addition, Kant expresses certainty that mechanical laws will "never adequately" (*CPJ* 5:400) explain the internally purposive activity of the things we call organisms. Thus, we can (and in certain cases should) *believe that* some things in nature are in fact produced as a result of internally purposive activity.[23]

While there could be more radical versions of non-mechanistic interpretations of Kant, which might claim that we do in fact empirically cognize organisms, the version of non-mechanistic interpretation I develop here begins by agreeing with mechanistic readers of all stripes – we neither cognize the causal structure definitive of organic activity nor determinately judge that there are organisms in nature. However, a non-mechanistic interpreter disagrees that we have the grounds to know that there are no organisms in nature. For reasons that will become clear below, a non-mechanistic interpretation also denies that we can know mechanism will one day give us an exhaustive picture of nature. For all we can know, there will always be phenomena in nature that occasion a non-mechanistic explanation of whatever is before us that appeals to internal purposiveness. Thus, the non-mechanistic interpreter maintains that we can (and in some cases *must*) form the belief that there are

[19] I take McLaughlin to be upholding this premise when he writes, "We are said to be so constituted that we cannot conceive a real causation other than in a mechanistic-reductionist fashion" (1990, 172). This is likely why it follows for him that "The method of classical modern physics is equated with scientific explanation in general and the latter is equated with knowledge as such" (1990, 176).

[20] See McLaughlin, 1990, 176.

[21] McLaughlin, 2014, 156 and 1990, 47.

[22] I return and respond to this idea directly below in Section 4.

[23] To be sure, someone may formulate a stronger non-mechanistic interpretation. This stronger non-mechanistic interpretation would hold that Kant gives us the resources to *empirically cognize* the principles of internally purposive activities, and such cognitive access licenses *knowledge* that mechanism will not be vindicated and that there are indeed organisms in nature. Though the resources for assembling such a reading, which would push Kant closer to the likes of Schelling and Hegel, may be present here, I do not pursue this interpretive option.

organisms in nature. This is considerably stronger than the moderate mechanistic reader's belief that there may or may not be organisms in nature and diametrically opposed to the strong mechanistic interpreter's knowledge that organisms do not exist. Finally, the non-mechanistic reader rejects the notion that reflecting judgment is incapable of telling us anything about nature and the objects in it. Below, we shall see that reflecting judgments require a firm presupposition about the existence of certain objects in nature. In what remains, I offer a defense of this non-mechanistic interpretation of Kant's doctrine of nature.

3. Complications with the strong mechanistic reading

The strong mechanistic interpreter claims, on Kant's behalf, that we can know there are no organisms. There are several reasons why this interpretation should strike us as unattractive. For one, this interpretation overlooks all those passages in which Kant plainly states that experience and nature furnish us with examples of the internally purposive causality characteristic of organisms. Two, the strong mechanistic reader assumes that we can know that all material things are in fact produced in accordance with the laws of mechanism. However, Kant firmly pronounces that such a thesis can never be proven true. Finally, the strong mechanistic reader commits Kant to a dogmatic form of "idealism" he himself would find unacceptable.

3.1. Experience's and nature's organic suggestions

The strong mechanistic reader wants us to arrive at the conclusion that Kant gives us the tools to definitively prove there are no organisms in nature. Nevertheless, one rather pronounced reason not to endorse this conclusion surfaces when we attend closely to Kant's verbiage when he discusses the internally purposive activity and structure of the organism. There are a handful of passages in which Kant tells us that the purposiveness of nature can be gleaned in experience. Reaching back into the Canon of the *First Critique*, we see Kant claim that, "purposive unity is still so important a condition of the application of reason to nature that I cannot pass it by, especially since experience liberally supplies examples of it" (A826/B854). In the *Third Critique*, Kant states that "Experience leads our power of judgment to the concept" of a natural end (*CPJ* 5:366) and that the principle stating that an organized product of nature is a natural end is "derived from experience, that is, experience of the kind that is methodically undertaken and is called observation" (*CPJ* 5:376). In the "General Remark on the Teleology", which follows the conclusion of the main text of the Methodology, Kant reiterates that the very concept of ends of nature is given to us "only through experience" (*CPJ* 5:476).[24]

We might be discouraged about the prospect of finding purposiveness in nature when Kant mentions that, to conceive of the origins of organisms, we must "conceive of a particular kind of causality for it that is not, unlike the mechanism of natural causes, found in nature" (*CPJ* 5:411). However, Kant is here reiterating that the cause of the possibility of a natural end, i.e., an intelligent author of nature, is merely an idea of reason, which itself can never be instantiated in nature. Regardless, "the consequence that answers to it (the product) is still given in nature" (*CPJ* 5:405). Furthermore, Kant maintains that "for things we once acknowledge [*anerkennen*] as natural ends" (*CPJ* 5:415), mechanically causal explanations will never suffice as a full account of their generation and activity. What these passages and passages like them suggest is that something about the way in which nature presents itself to us leads us to reflect upon objects such that they are generated and act in accordance with ends. Though we may lack direct cognitive access to the supreme cause of nature considered as a nexus of ends, certain natural products are constituted in such a way that a mechanistic form of causality can never sufficiently explain their structure and activity.

Similar remarks about the purposiveness of nature spill over into Kant's lectures, as well. For instance, when laying out what he considers the best proof for the immortality of the soul in Metaphysik L_2, he states the following the premise: "We find in nature a connection of efficient causes, also connection of ends, this connection is indicated in organized beings, and the connection of finality < *nexus finalis*> with living beings is the highest principle, from which we cannot depart at all" (*LM* 28:592). The principle that we derive from the connection of ends we "find" in nature is that every organ of a living thing serves a purpose. From this, Kant says, we can infer that no organ or faculty of the human being is purposeless. Since some faculties set tasks for the human being that cannot be completed in one lifetime, there must be a future life. The fact that we *find* this connection ends in nature and that it is "indicated in organized beings" is an indispensable first step of this proof.

In light of these passages, one ought to ask mechanistic readers, What exactly are we acknowledging when we acknowledge a thing as a natural end? What is the nature of that acknowledgement such that it licenses *certainty* about the fact that mechanical explanations "will still always be inadequate" for those things? The strong mechanistic reader is, to reiterate, correct in their assertion that we cannot empirically cognize organisms. But Kant seems to be suggesting that nature and experience still *lead us to*, *suggest*, and even *give us examples of* the internally purposive causality of the organism. Assuming that nature is not lying to us and that we are not merely deluded, organisms must be something other than mere machines. We cannot reduce the causality characteristic of the organism to the merely external causality of mechanism.

3.2. The unprovability of the constitutive thesis of the Antinomy of Teleological Judgment

Besides Kant's overt remarks about nature's and experience's suggestions that there are organisms, we may also point directly to a key step of the Antinomy of Teleological Judgment to disprove the strong mechanistic reading. Concerning the Antinomy's antithesis, Kant does definitively and forcefully reject that the concept of an organism "can be treated dogmatically for the determining power of judgment" (*CPJ* 5:396). We cannot deploy the concept of a natural end as a universal predicate under which we may subsume particulars, or the manner in which we would use schematized concepts of the understanding to produce determining judgments with the material supplied by intuition. But saying that (i) *we cannot determinately judge that there are organisms in nature* is not the same as saying that (ii) *we can prove that there are no organisms in nature*.

The strong mechanistic reader seems to arrive at (ii) by means of Kant's remarks about objects of nature and the scope of the Second Law of Mechanics. However, a proof that there cannot be any organisms in nature presupposes the truth of the constitutive thesis of the Antinomy - namely, that "All generation of material things is possible in accordance

[24] At this point, someone might object that experience is a mental state or a form of representation involving intuition and concept. To say, therefore, that the purposiveness of nature is supplied in experience is simply to say that we represent it in some way, not that this purposiveness is actually in nature. While there are passages that take things a step further (see the subsequent body paragraphs), it is worth mentioning that, for Kant, experience is a mental state or form of representation that is intimately tied to the objects we experience. In the A-edition Transcendental Deduction of the *First Critique*, Kant states that "The a priori conditions of a possible experience in general are at the same the conditions of the possibility of the objects of experience" (A111, also see A158/B197). The mental state we call experience has a necessary connection – if not a role in constituting – objects of experience themselves. To experience something is not simply to represent it in total isolation from the world and nature; rather, our experiences tell us something about the way objects of experience really are.

with merely mechanical laws" (*CPJ* 5:387). Yet, Kant insists that no constitutive principle can be proven true (ibid). So, the strong mechanistic interpreter must take themselves to be arriving at a claim other than (ii). (And they surely cannot be relying on (i), for that claim alone does not license an inference to the conclusion that we can know there are no organisms in nature.)

Kant's position appears not to be a strong mechanistic one according to a certain interpretation of strong mechanism. The strong mechanistic reader would fall into dialectical error themselves if they were committed to the thesis that we can determinately say all things are generated merely in accordance with mechanical laws of nature. Instead, the strong mechanistic reader must be committed to something more like the regulative maxim of mechanism – namely, that we must judge all objects in nature to arise in accordance with laws of mechanism. This seems more like the appropriate line to attribute to McLaughlin, as he himself states, "We must judge all natural things mechanistically because for us only mechanical objects can be explained."[25] Here, McLaughlin appears to be restating the maxim that, per Kant, "I **should** always" employ when reflecting upon natural products (*CPJ* 5:387). Nevertheless, while Kant maintains that we *should* extend this maxim as far as we possibly can, "this is not an obstacle to the second maxim" – i.e., that it is possible to judge natural products in accordance with an internally purposive causality. There are proper occasions to suspend this maxim and to judge that some objects are not merely mechanically determined. If the strong mechanistic line requires us to adopt the view that Kant really only means to endorse the regulative maxim and that we should reject the teleological maxim entirely, this seems to fly in the face of Kant's constant reminders that these two maxims can coexist in our reflections upon nature.

The strong mechanistic interpretation must hold that, *as far as we can judge*, we *ought to assume* that organisms are mere machines. This is the most expedient way to make advances in our natural scientific investigations of nature. However, as we have seen, these investigations run up against a limit – "we can never adequately come to know the organized beings and their internal possibility in accordance with merely mechanical principles of nature, let alone explain them" (*CPJ* 5:400). Merely mechanical explanations will never slake reason's (subjective) demand that we give an account of the generation and activity of an organism, where that account elicits an appeal to an intelligent author of nature. Interpreted this way, the strong mechanistic line does not justify the conclusion that we can know there are no organisms in nature, but innocuously affirms Kant's regulative maxim of mechanism.

3.3. Strong mechanism as a bad "idealism"

A final reason to reject strong mechanism is that it commits Kant to a form of "idealism" that he explicitly rejects in §§72–73 of the Critique of the Teleological Power of Judgment. According to the "idealists" discussed in these sections, "all purposiveness in nature is unintentional" (*CPJ* 5:391). In other words, all purposiveness of nature is reducible to or actually explained by the mechanism of nature. There are two species of "idealism" in this sense. One species, which is "ascribed to Epicurus or Democritus", asserts that "blind chance is assumed to be the explanation not only of the correspondence of generated products without our concepts of ends, hence of technique, but even of the determination of the causes of this generation in accordance with the laws of motion" (*CPJ* 5:393). The fact that we happen to represent certain forms of nature as end-directed is a mere accident, a product of "blind chance." Kant rejects this idealism because, by means of it, "nothing is explained" (ibid).

The second species of idealism explains that the teleology of nature is grounded in a "blind necessity": "the connection of ends in the world must be assumed to be unintentional" or explained by the necessity of nature (*CPJ* 5:391–2). This position strips the purposive organization of nature of any contingency, and this spells a problem for this view, since without contingency "no unity of purpose can be thought" (*CPJ* 5:393). Ultimately, this form of idealism does not give an explanation of the purposiveness of nature at all, for stating that all ends are unified by virtue of the fact that they are accidents inhering in a necessary substance does not make the purposive unity of nature any more comprehensible. Simply stating that the purposiveness of nature is necessitated by an unintentional original ground does not tell us why nature is organized in this particular way and not some other.

If strong mechanistic readers are right, Kant adopts an "idealist" position that he plainly rejects. The strong mechanistic reader argues that, while we label certain things organisms, we know (as a matter of fact) that there are no organisms in nature. This presupposes that the apparent purposiveness of a natural product is actually explained by and grounded in universal and necessary laws of motion. But Kant insists that reducing teleology, or rather what appears to have purposiveness, to some unintentional ground – whether it is a law of nature, an unintelligent God, or blind chance – makes no progress toward explaining why nature has the contingent structure that it does.[26] Any position that states teleology is a mere illusion and brutely asserts that nature is thoroughly and exhaustively necessitated by the laws of motion simply punts on the question of why nature and natural products exhibit an end-directed unity; a strong mechanistic reading attributes this type of uninformative reading to Kant. These particular "why" questions are inevitable because, as Kant repeatedly states, nature liberally furnishes us with examples of its purposiveness at every turn. Explaining why nature and natural products are apparently organized in accordance with ends requires something more than stubbornly affirming that absolutely everything is determined by the laws of motion. Additionally, the *Third Critique* licenses a more nuanced reading of Kant's doctrine of the organism. Let us now turn to the task of assembling an alternative non-mechanistic understanding of the organism.

4. Beyond moderate mechanism and towards a non-mechanistic interpretation of kant

What the above considerations show us is that Kant never quite states that we can know there are no organisms. Rather, the text appears to pull us away from this conclusion. Naturally, one might retreat to a moderate mechanistic reading – we may not be able to prove that there are no organisms, but we can know that mechanism applies to at least *some* of nature. While we cannot know that mechanism explains *all* of nature, we can still believe (and do science as if) all of nature is mechanistic.

In this section, I argue that Kant gives us the resources to make a more positive commitment towards the existence of the organism. Given the character of Kant's remarks about organisms, we should not brutely deny the existence of organisms. But I show that Kant means for us to positively affirm, in the sense of have belief in, the existence of organisms in nature. Section 4.1 opens by defending the claim that *belief* is the proper epistemic attitude to adopt vis-à-vis the existence of the organism in nature, and Section 4.2 defends the claim that this belief really does target the object corresponding to an organism, not merely our judgments about organisms.

[25] McLaughlin, 1990, p. 168.

[26] Indeed, as one anonymous reviewer points out, judging an organism in terms of its internal purposiveness requires identifying the organism's contingent relationship to other organisms and to the environment. For this reason alone, Kant would likely reject any attempt to reduce the internal purposiveness characteristic of organisms to a necessary world cause, as such an explanation ignores rather than explains such contingencies.

4.1. What's the right epistemic attitude to adopt towards the organism?

All mechanistic readers are justified when they state we lack the adequate grounds to know that there are organisms. We have witnessed how the strong mechanistic reader errs in claiming that we can maneuver from this claim to the conclusion that we know there are no organisms in nature. The moderate mechanistic reader also errs when they believe that mechanism can one day give us a complete picture of nature. As I have shown above, Kant states that mechanism will *never* be proven constitutive of nature and that certain natural products can *never* be explained in mechanistic terms. Yet, lacking knowledge that there are organisms, how can we explain these decidedly anti-mechanistic remarks in a way that does not violate our cognitive limitations?

While we cannot know that there are organisms, another form of assent may allow us to make a firm commitment to the existence of organisms – that is, *belief*. Chignell correctly observes that there are various species of belief in Kant. While multiple forms of belief may accurately apply to the existence of the organism,[27] one type of belief seems especially appropriate in this context – namely, theoretical belief.[28]

We might think that the anatomist, the medical physiologist, the archaeologist of nature, and so forth have a contingently appropriate end of explaining the structure of animal or human bodies, chronicling the species of animals present in nature, and so forth. To explain such phenomena, these researchers attaining their ends are firmly assenting to the statement that there are organisms, or beings organized in accordance with ends. Indeed, as early as the Appendix to the Dialectic of the *First Critique*, Kant maintains that in certain fields scientists must make a bold assumption [*man darin ganz dreist … Annimt*] that there are natural products organized in accordance with ends (A688/B716). Furthermore, Kant insists here, in symphony with many of the passages mentioned previously, that our accumulated observations can authorize [*uns bisherige Beobachtung berechtigen kann*] this bold assumption (ibid). Ultimately, it is certainly logically possible that there are organisms in nature, since we cannot prove the truth of the constitutive Thesis of the Antinomy. The available objective grounds – recall experience's suggestions and nature's offerings discussed above – render the existence of organisms at least as likely as any alternative to this proposition.

Certain mechanistic readings commit the biologist and the biologically inclined philosopher to a contradiction. We can judge that certain things are mechanically inexplicable organisms, but (on a strong mechanistic reading) we know for a fact that those things are not organisms. If the target of our biological investigations is an organism, we can be certain, beyond a shadow of a doubt, that target is null. By denying the objective reality of the organism to this degree, Kant makes the biologist out to be a modern-day Don Quixote, concerning themselves with an *explanandum* that is a figment of their imagination. Similarly, according to the moderate mechanistic reader, the biological philosopher ought to believe that their explanations will someday be made obsolete by mechanism. Knowing that biological explanations are doomed to succumb to mechanistic ones, the biologist might justifiably resort to defeatism, concluding that there is no reason to continue their research.

However, we must recall that Kant says we can never prove that all material things are generated in accordance with merely mechanical laws. On top of that, it is *necessary* that we judge objects in accordance with non-mechanical laws in some cases, according to Kant.[29] Differently stated, there are circumstances in which we need to apply teleological judgments to nature, and those circumstances demarcate the object and domain of theoretical biology. Since there is a contextually appropriate need for biology to have (and investigate) a proper object and domain, it seems advisable to form a theoretical belief in the existence of the organism.[30]

By theoretically believing that organisms exist in nature, we "give direction to our inquiry and motivate the search for unified, systematic, simple theories, without themselves amount to knowledge", or a mental state for which we do have sufficient objective and subjective grounds of assent.[31] Theoretically believing that there are organisms in nature can honor the limitations that Kant sets on our critical faculty of reflecting judgment while allowing us to avoid the performative absurdity of judging nature in a manner we know not to befit nature. Equipped with this belief, we gain more than adequate motivation for continuing research (both scientific and philosophical) into the structure and activity of those things we are compelled to recognize as purposive.

4.2. What is the target of our belief in the organism?

At this point, a mechanistic reader might agree that, though we can neither empirically cognize the organism nor know that there are organisms, belief seems warranted in this context. However, the mechanistic interpreter might press that the target of belief is our own judgment. That is, we believe that our teleological reflecting judgments are useful for our cognitive economy, but belief in this context does not correspond to any object or its existence. Why should we consider the target of our beliefs the objects in nature we take to be organisms, not merely the reflecting judgments we form about those objects? In order to formulate an answer to this question, we must first consider what reflecting judgment is and what reflecting judgments are about.

4.2.1. Reflecting judgment and its principles

In general, "To reflect (to consider), however, is to compare and to hold together given representations either with others or with one's faculty of cognition, in relation to a concept thereby made possible" (*CPJ* 20:211). Reflecting judgment, which we might consider a species of reflection in general, involves the comparison and holding together of *given* representations. A few lines down Kant clarifies that the concept one finds as a result of reflecting corresponds to "given empirical intuitions" (*CPJ* 20:213). The process of reflection begins with given intuitions and finds a concept that can explain the contingent structure of nature or some object in it.

All powers of judgment presuppose and are guided by a principle. While the constitutive principles of the understanding serve to ground determining judgments and make experience, or empirical cognition, possible, the structure of reflecting judgment requires us to find a different sort of principle, one that does not automatically lead to empirical cognition. The principle of reflecting judgment takes the following form in the First Introduction to the *Third Critique*: "The principle of reflection on given objects of nature is that for all things in nature empirically determinate concepts can be found, which is to say the same as that in all of its products one can always presuppose a form that is possible for general laws cognizable by us" (*CPJ* 20:211–12).

[27] Below, I sketch a provisional case for the role of moral belief in grounding existence claims about the organism (see Section 5).

[28] For an illuminating discussion of theoretical belief in Kant, see Chignell, 2007, p. 350.

[29] See *CPJ* 5:404.

[30] Someone might worry that biology does not differ at all from a pseudoscience like astrology. Astrology requires a belief that cosmological phenomena have an intimate impact on our quotidian affairs. As long as I believe that Venus's transits affect my mood, I can legitimately explain my current state by appealing to this planet's position. Because it is based on a belief, biology is no different from astrology.Perhaps one way of responding to the worry is to invoke this contextually appropriate need. Kant never mentions that there is such a need to employ astrological concepts when explaining natural phenomena. Nothing about my or my friend's mood *necessitates* the invocation of Venus's transits. In contrast, certain appearances beckon the invocation of teleological concepts. It is this contextually appropriate demand that could separate biology from pseudoscience.

[31] Chignell, 2007, p. 343.

Without such a presupposition, "reflection would become arbitrary and blind" and we would have no guarantee that our reflections agree with nature in any way (*CPJ* 20:212). To be sure, such a principle does not ground or culminate in empirical cognition. Only the constitutive principles of determining judgment can produce such a state. Still, the principle of reflection serves to guide or regulate our investigations of nature.

These passages teach us a few things. For one, reflecting judgment is not merely subjective if we characterize their mere subjectivity as having only to do with mental acts and their organization. Rather, reflecting judgment occurs in response to given empirical intuitions. Moreover, reflecting judgment is not radically subjective in the sense that there is some expectation that reflection should agree with nature, as its necessary to "presuppose" the principle that, for all "given objects of nature", we can find an empirical concept that explains their form. As Kant later adds, "Thus the power of judgment itself makes the technique of nature into the principle of its reflection a priori, without however being able to explain this or determine it more precisely or having for this end an objective determining ground for the general concepts of nature (from a cognition of things in themselves), 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." (*CPJ* 20:214). In order for our reflections on certain natural products to make sense and to agree with nature, the power of judgment requires us to presuppose the "technique of nature." Though we can never empirically prove that nature has such a technique, the power of judgment requires us to presuppose that nature is purposive. Lacking such a presupposition, reflecting judgment is blind, arbitrary, and rudderless.

The question therefore becomes, what exactly is the status of such a presupposition? It does not seem as though we can empirically cognize, know, or definitively prove the existence of the objects of such an assumption. Kant clarifies that the principle of purposiveness is "regulative" (*CPJ* 5:168; 5:197). We presuppose that nature has a "technique", or is organized in accordance with purposes, and thereby make possible teleological reflecting judgments, which attribute an objective, inner, and material purposiveness to certain natural products, possible. In the Critique of the Teleological Power of Judgment, Kant further specifies that

> [t]he concept of a thing as in itself a natural end is therefore not a constitutive concept of the understanding or of reason, but it can still be a regulative concept for the reflecting power of judgment, for guiding research into objects of this kind and thinking over their highest ground in accordance with a remote analogy with our own causality in accordance with ends; not, of course, for the sake of knowledge of nature or of its original ground, but rather for the sake of the very same practical faculty of reason in us in analogy with which we consider the cause of that purposiveness. (*CPJ* 5:375)

Here, it is significant that Kant refers to the very concept of "a thing as in itself a natural end" as a "regulative concept for the reflecting power of judgment." If the regulative principles of any power of judgment are just those principles which we presuppose for the sake of formulating a reflecting judgment upon a given representation that is not blind or arbitrary but potentially agrees with nature, the concept of a thing in itself as a natural end is just that kind of a presupposition with respect to teleological judgments. Such a concept guides our research though it never culminates in "knowledge of nature or of its original ground."

4.2.2. Is the target of our belief a judgment or an object?

In light of this quick analysis of reflecting judgments and their principles, I propose that the target of our belief in the organism is not merely a mental act or representation, but a natural object. In short, our belief in the organism is expressed as a presupposition about the organization of nature and natural objects, one that we must make in order to even form a reflecting teleological judgment.

This line represents a departure from the consensus. Commentators frequently argue that all regulative concepts and principles – including those that regulate teleological reflection – do not refer to anything that exists, serving a merely heuristic purpose. These concepts are mere convenient fictions.[32] In more optimistic moods, these commentators are totally non-comital about the existence of these objects' referents.[33] In both cases, the moves commentators rely upon are similar – such regulative concepts or principles can never be involved in empirical cognition, and since empirical cognition is the only means of establishing a well-grounded existence claim, the objects picked out by such principles or concepts either cannot or may not exist. Because of their deflationary views about regulative principles, these interpreters often reason that these principles cannot even refer to objects in nature, but always refer to mental states or acts.

One interpreter who notably departs from this trend is Paul Guyer. In his 2003 "Kant's Principles of Reflecting Judgment", Guyer characterizes regulative concepts and principles according to the following three criteria:

> From Kant's account of the regulative principles in the *Critique of Pure Reason*, we can therefore infer that such principles (a) set a goal of the systematization; (b) accompany this goal with a transcendental presupposition that the objects of our inquiry or action make the attainment of this goal possible and that there is a ground for this assumption, but one that permits at best a limited transcendental deduction; and (c) provide a heuristic method for the pursuit of this goal, but one that is irremediably liable to the contingencies of our empirical situation.[34]

The second criterion is of particular note for our purposes. Guyer asserts that the presuppositions we make about objects and the world when discharging a regulative principle rise to the level of belief concerning the existence of the objects in question: "it would be irrational for us to pursue any goal, cognitive or practical, in the absence of a belief in the *possibility* of its attainment. For that reason, a regulative principle posits, or is accompanied by the posit, that the *domain* of our inquiry or action—nature itself—is so constituted as to make the attainment of our goal *possible*."[35] The transcendental presupposition that "accompanies" a regulative principle or concept is something we posit as an article of belief. Furthermore, there is an actual ground backing this assumption, such that it is possible for us to realize this presupposed goal.

While all of this might lead us to suspect that we can attach a similar presupposition and belief to the regulative concept of an organism, Guyer inexplicably singles this concept out as an exception to the rule:

> although in a general sense we are given the concept of the organism, that concept is only an abstract concept of a kind of system that serves as a regulative ideal for our investigations, and in these investigations, we ultimately seek mechanical concepts of causation

[32] In addition to strong mechanistic readers mentioned throughout subscribing to such a reading, many interpreters of the *Critique of Pure Reason* think similarly when explaining how ideas of pure reason in their regulative use work. Confer Allison (2004), Bennett (1973), and Rauscher (2010).

[33] While moderate mechanistic readers subscribe to this reading in the *Third Critique*, there are also many commentators who subscribe to this view in their interpretation of the regulative use of the ideas of pure reason in the *First Critique*. See, e.g., Dyck (2014), Kraus (2018), and Zuckert (2017).

[34] Guyer, 2003, p. 18.

[35] Guyer, 2003, p. 4.

that can explain generation, growth, and self-preservation, even though we may be barred from completing these explanations.[36]

Here, Guyer suggests that we are not entitled to the same kind of presupposition when deploying the regulative concept of the organism. When we deploy this regulative concept, we ultimately know that we are seeking a non-teleological explanation of the natural object. In this sense, the regulative concept of the organism represents an exception to his general interpretation of regulative concepts and their objects: We do not believe in the existence of the object corresponding to the organism, for this concept merely facilitates the advancement of our mechanistic understanding of nature. This regulative concept is unique in that it *does not* elicit belief in the existence of any object pertaining to it.

Against the interpretive consensus, I maintain that we can presuppose that the object of the regulative concept of the organism is realized in nature as a precondition for reflectively judging nature as teleological. Our presupposition about the possibility of organisms in nature should take the form of a positive belief in the existence of the organism. Kant is clear that there is evidence for believing in organisms. Though we have a considerably firmer grasp on the mechanism of nature, Kant does not outright reject the possibility that nature and natural products are purposive. Nowhere does he state that organisms are a mere fiction. And while we might be tempted to infer, based on certain interpretations of certain passages, that we cannot say whether organisms can exist one way or the other, Kant is adamant that nature *suggests* its internal purposiveness to us; that nature furnishes us with examples of this purposiveness; that experience leads us to its internal purposiveness; and that we *find* this internal purposiveness in nature. Although we never empirically cognize the inner purposiveness of nature and natural products, Kant's philosophy does not confine us to a mechanistic reading of the internal purposiveness of natural products.

We must presuppose that there are organisms in nature in order to make teleological reflecting judgments about nature, and we ought to regard this presupposition as a belief about nature and natural products. Reflecting judgment generally is not a mental act that lacks any reference to entities beyond the subject or the subject's faculties. Such judgments track the relation between a given particular (or given particulars) and the interactions of our mental faculties, and Kant affirms that reflecting judgments cannot be blind and arbitrary, but ought to agree with nature. By believing that the object corresponding to our regulative concept of the organism exists, our teleological reflecting judgments are neither arbitrary nor blind. Moreover, the theoretical pursuits we form on the basis of these judgments are neither contradictory nor absurd. Belief in the existence of the organism forms the basis for a legitimate use of teleological reflecting judgments in our empirical investigations of nature.

5. Projecting the systematic implications of a non-mechanistic reading

In conclusion, I want to reflect on several implications of my non-mechanistic reading for other aspects of Kant's system. One, I want to emphasize that a non-mechanistic reading has interesting and unique ramifications for Kant's transcendental idealism. The mechanistic reader pushes the possibility that there are no organisms in nature just so long as we accept that the Laws of Mechanics exhaustively explain what an object is. However, a noteworthy implication of Kant's transcendental idealism is that the Laws of Mechanics do not give us an exhaustive picture of what an object is. To take just one example, Lucy Allais's interpretation of Kant's transcendental idealism stipulates that objects of outer sense have "intrinsic natures," and because physics cannot explain these natures, it leaves us with a depiction of the world that is "not ontologically complete or self-subsistent."[37] We need not subscribe to any one interpretation of Kant's transcendental idealism to support this claim, either.[38]

Though a mechanistic account of nature gives us the empirical scientific picture of what the organism is, it does not give us an exhaustive ontological account of the thing we label an organism. The understanding is a key ingredient in empirically cognizing the activity of the organism, which is present to us in outer sense and explainable in terms of mechanism. But this perspective does not capture any features of or perspectives on the object that we may not recognize, but have grounds for believing in.

The non-mechanistic reader affirms that we have grounds for believing that there is internally purposive activity *in* nature. The state or movement of some objects in nature (i.e., inanimate objects) can be exhaustively explained by physics, but for other objects (i.e., living things) such explanations run up against a limit. On this picture, there are aspects of nature we simply cannot, and may not ever be able to, cognize or have knowledge of. Still, these aspects of nature are possible targets of belief, in the Kantian sense.

Second, a non-mechanistic interpretation has consequences for Kant's philosophy of science. On my reading, Kant urges us to endorse a theoretical belief that there are entities driven by an internally purposive causality in nature. So, we ought to believe that the non-mechanistic causality is not reducible to the mechanistic causal explanations emblematic of Newtonian physics. A science that seeks to understand life – i.e., biology – is tasked with studying the effects of this internally purposive causality in nature, and it is therefore built atop a belief in the existence of this causality. This does not mean that such a science is built on a fiction or mere epistemic projections. Rather, Kant is indicating that some disciplines – specifically, those that depend upon regulative principles or ideas, such as psychology, chemistry, and in this case biology - require practitioners to adopt a firm commitment to the existence of that which they seek to explain.[39] A non-mechanistic reading of Kant's philosophy of nature should lead us to reexamine what counts as a natural science for Kant; even those disciplines that Kant does not count as "proper" sciences have a unique role in helping us understand nature. More work needs to be done to examine this expanded conception of Kantian natural science in detail. For the time being, I only emphasize the point that Kant gives us the tools to scientifically study the internally purposive activity and structure of those natural phenomena we identify as living things.[40]

A final way in which the non-mechanistic reading affects Kant's broader philosophical system is that it helps explain his proof of the existence of God in the Appendix to the Critique of Teleological Judgment. Earlier, I mentioned that there are various species of belief and several of them may accurately apply to the organism. In accordance with this, Kant sometimes seems to state that for *moral purposes*, we must believe in the existence of the organism. Concisely, the Appendix's

[36] Guyer, 2003, p. 45.

[37] Allais, 2015, p. 242.

[38] While Allais maintains that physics cannot give us a complete picture of objects in the world because it does not describe their intrinsic natures, other commentators articulate the same point without appeal to intrinsic natures. For instance, the flavor of transcendental idealism defended in Ameriks (2000) similarly maintains that explaining an object as it appears to us does not give us an ontologically complete picture of it (see p. 7).

[39] We might also think that, as long as practitioners collectively hold this rational belief, such a science like biology can have an intersubjective validity.

[40] In this respect, my account follows Jessica Williams in maintaining, against the consensus, that Kant is an *anti*-reductionist about the special sciences. My reading emphasizes that Kant does not rule out an anti-reductionist approach to life science along ontological, explanatory, and methodological grounds (see "Williams, forthcoming," Section 5). Again, more work needs to be done to explore how Kant's views on life science interact with his professed preference for research programs that reduce all of the special sciences to mathematical physics (see *MFNS* 4:469).

moral proof of God suggests that if we deny the existence of the organism, we deny the existence of God. Thus, for the sake of satisfying our highest moral interests, we ought to *morally believe* in the existence of the organism. A moral belief in the organism blocks any premature denial of the possibility of proving God's existence, paving the way for a critically qualified teleological proof of the existence of God on moral grounds. Furthermore, a moral belief is a commitment that must be more robust than a flaccid agnosticism, which states that it either may or may not be the case that there are organisms.[41] While we can never determinately judge that a thing is an organism or definitively know that organisms exist in nature,[42] it is still possible to (and necessary that we) maintain a moral belief in the existence of the organism. Adequately justifying this reading of the Appendix demands a future paper of its own.

Presently, we should reflect on what we have accomplished here. Above, I argued that, if mechanistic readers were right, we would have trouble explaining Kant's frequent and direct remarks about the mechanical inexplicability of organisms. If all organisms are of the same kind as inanimate objects, then it would turn out that those objects we take to be organic are not mechanically inexplicable at all. To make matters worse, if we could definitively prove organisms do not exist, it would make no sense to assume that organisms exist, and without such an assumption, we have no basis for a moral proof of the existence of God, as it is framed in the Appendix of the Critique of the Teleological Power of Judgment. Against the strong mechanistic reader, we have seen several reasons for denying the claim that we can know there are not organisms in nature. Against the moderate mechanistic reader, Kant can be read as promoting theoretical (and perhaps moral) belief in the organism. We must commit to the existence of the organism in certain scientific pursuits (and to avoid rendering nature a moral desert).

Ultimately, readers take the text a step too far when they align Kant with the mechanistic philosophers antedating him. What the text and arguments contained therein show us is that Kant offers us a comparatively nuanced philosophy of nature. Kant's optimism about the tools and methods of state-of-the-art natural science, such as explanation by decomposition of a whole to its parts, aligns him with the mechanistic thinkers of the era. However, he diverges from this group in maintaining that these tools and methods only reveal the structure of nature to us up to a certain limit. Concerning what is beyond the limit, we can and ought to believe that certain non-mechanistic principles, structures, and activities exist in nature. Though I am not claiming that we have direct cognitive access to the non-mechanistic principles, structures, and activities that organisms suggest to us (as many of the Idealists and Romantics succeeding Kant will), my reading leaves us with the provocative outcome that, for Kant, beliefs can constitute the bedrock of an intersubjectively valid life science.[43]

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[41] In attributing this position to Kant in the Methodology, my reading aligns with that of Fischer (2018), who convincingly argues that the Methodology does not represent a standalone piece of writing only tenuously connected to the main body of the *Third Critique*. For contrasting approaches to the function of the Methodology, see Goy (2014), Guyer (2014), and Tomasi (2016). It is worth noting that the reading developed here does have a feature in common with the orthodox reading of the Methodology – namely, it takes assembling a proof of God's existence to be the chief task of this section.

[42] See *CPJ* §74.

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