Original scientific article
Izvorni znanstveni članak

Acta Med Hist Adriat 2024; 22(2);299-313
https://doi.org/10.31952/amha.22.2.8

THE KNOWABILITY OF BIOMEDICAL LAWS: A KANTIAN APPROACH

SPOZNATLJIVOST BIOMEDICINSKIH ZAKONA: KANTIJANSKI PRISTUP

Predrag Šustar*

SUMMARY

In this paper, I focus on the knowability of empirical laws in Kant. Specifically, I explore the interpretative thread according to which the knowability of an item is secured through an appropriate classification within a hierarchical ordering. The relationship between the knowability and classification is ultimately based on Kant's characterization of our understanding as being "discursive", i.e., relying on subsuming-procedures. More specifically, the focus is on empirical laws referring to biological phenomena broadly construed, which are interestingly intertwined with the teleology-mechanism specific relationship. "Critique of the Power of Judgment" and related Kant's works, thus, address the class of teleological judgments and/or functional statements that should also have the status of a law of nature. I argue that the knowability of generally biological laws equally relies on subsuming-procedures, which in the life sciences, that is, primarily, biology plus its application to medical practices, consist in an explanatory integration between normative teleological judgments and those causal-mechanical. Finally, I try to clarify how a Kantian take on these issues fits within the current function debate: namely, in what way it acknowledges the explanatory and normative dimensions of function statements as they contribute to the practice of the life sciences.

Keywords: *knowability issue, reflecting power of judgment, discursive intellect, function debate, explanatory integration, teleological normativity*

* Department of Philosophy, Faculty of Humanities and Social Sciences, University of Rijeka, Croatia. ORCID: https://orcid.org/0000-0002-6375-2424.
Correspondence Address: Predrag Šustar, Department of Philosophy, Faculty of Humanities and Social Sciences, University of Rijeka, Sveučilišna avenija 4, 51000 Rijeka, Croatia. E-mail: psustar@uniri.hr.

Introduction

In this paper, I address the problem of the knowability of empirical laws in Kant's general account of laws of nature, and the role that the presupposition of the unity of experience as a system (UES) has in coming to know an empirical law. Special emphasis is put on biological laws, broadly construed, as a distinct subset of empirical laws of nature that have the form of teleological judgments, which, then, are important in methodologically profiling the explanatory practice of the life sciences more generally.

In § 20n of the *Prolegomena*, Kant illustrates the distinction between the judgments of perception and those of experience, respectively, with the following examples, "When the sun shines on the stone, it becomes warm" and "The sun warms the stone" (4, p. 302 (53)).[1] The latter judgment instantiates an empirical or particular law in Kant's overall account of laws of nature. In that regard, the pivotal point is concerned here with the character of the connection between the concepts of sunshine and heat, which, according to the *Prolegomena,* is "necessarily universally valid, hence objective" (4, p. 302 (53); italics added). Now, as recently highlighted (see, in particular, Breitenbach, 2018), there are two main issues related to the general account of empirical laws of nature. Apart from the abovementioned necessity issue, which is standardly debated in the philosophy of science as an important criterion for laws of nature, there is also the *knowability issue*, namely, how we come to know an empirical law, such as "The sun warms the stone".

An additional question that arises is what is the role performed by Kant's presupposition of UES with respect to the necessity and knowability of biological and, additionally, as I argue and try to illustrate in Section 3 of the present paper, biomedical laws, as well. In other words, is this role substantial in solving the above two issues or only subsidiary or, even, non-existent?

Accordingly, there are four leading interpretations of the issues regarding the necessity and knowability and their obvious link to UES in Kant's philosophy of science: (1) the "Best System" interpretation, which, in brief, claims that UES solves both the issue of necessity and the knowability of empirical laws; (2) alternatively, the "Derivation Account", downplaying the role played by UES and claiming that the derivability from *a priori* laws of nature solves the corresponding issues; (3) The "Necessitation Account" further downplays the role of UES and grounds the

---

[1] Citations from Kant's works will be located by section number (§), where available, and volume and page number of the so-called *Akademie* edition, *Kants gesammelte Schriften*, edited by the Königlichen Preussischen [now Deutschen] Akademie der Wissenschaften (Berlin: Walter de Gruyter, 1902-). The pagination of translated editions will be bracketed.

necessity of empirical laws in their reference to so-called 'natural properties'. However, as to the knowability issue specifically, this interpretation is still not entirely positioned in the debate. Finally, interpretation (4) combines some components of interpretations (2) and (3), but also in an important sense, as I point out in the central sections of the paper, interpretation (1), too.

In the next section, thus, I primarily focus on the knowability of empirical laws. Then, only secondly, to some extent, on the issues of necessity and the role of UES in Kant's overall account of laws of nature and their corresponding role in the scientific practice of the life sciences–that is, in the case addressed here, the biological sciences and their application to medical practices. I further explore a common interpretative thread advocated by (1) and (2) above, according to which the knowability of, for example, the causal mechanism of the sun's warming of an object is secured by its being classified within a hierarchical ordering of more general judgments–namely, certain physical laws. On my account, the relationship between knowability and classification of this kind is ultimately based on Kant's characterization of the human understanding as being "discursive", i.e., specifically relying on subsuming-procedures, as argued in the *Critique of the Power of Judgment* (see, in particular, §§ 75–77). In the same context, the third *Critique* addresses the topic of teleological judgments referring basically to individual organisms, which instantiate the related type of biological purposiveness, for example, in cases when we say, 'leaves of a tree perform photosynthetic processes for the maintenance of the containing biological system'. Now, this and similar teleological judgments, according to Kant's general account of the lawfulness of nature, should also have the status of an empirical law. Biological laws, hereafter, I will understand them in a more encompassing sense, that is, including also their applications to the medical domain, having specific features as laws pertaining to the special sciences (see Breitenbach, 2017; Šustar, 2013). In addition, as representing teleological judgments, they deal with the knowability issue in their own manner, as argued in the section titled *"By Their Deeds You Will Know Them": The Knowability of Laws in the Life Sciences*. As well-known, the specificity of empirical laws of nature referring to biological phenomena is a consequence of the teleology-mechanism specific relationship in Kant's philosophy of biology. In that regard, I argue that (i) the knowability of biological laws equally relies on subsuming-procedures, which, in this specific case, consist in an *explanatory integration* between teleological and causal-mechanical judgments; (ii) the role of UES is, through that integration, departing from a simply classificatory one, as standardly claimed in the literature or merely gestured towards an alternative view (for the latter, see especially Breitenbach, 2017; 2018). But, before delineating my account of the

knowability of biological or, more specifically, biomedical laws, let us see first some relevant outcomes of the empirical laws debate in the recent Kant literature.

Focuses and features in debating empirical laws of nature

The following options in focusing on Kant's overall account of empirical laws of nature have been advanced, according to which the corresponding debate in the literature will be assessed in this section:

1. The *nomic* status of empirical laws; and
2. The role of the idea of unity of experience as a *system* (UES).

The *nomic* status of empirical laws

In this subsection, I will focus on Friedman's "derivation account" and on the more recent "necessitation account" (see, e.g., Kreines, 2009). Friedman's "derivation account" can be summarized through the following main features:[2] (i) a minimal, exclusively methodological or, even, heuristic role played by Kant's UES assumption. Thus, according to this account, the role in question is not a 'nomic related' one, i.e., UES does not influence our considerations of why certain regularities detected in the empirical data may be elevated to the nomic status or be viewed as empirical laws of nature. (ii) What, instead, is 'nomically-related' pertains to the transcendental, *a priori*, and strictly universal laws of nature. More precisely, Friedman's "derivation account" sees in the so-called "grounding" or "nesting" procedure of perceived empirical regularities (think of the *Prolegomena* example 'When the sun shines on a stone, it becomes warm') *under*, ultimately, the *a priori* law(s) of nature. At the root, this is the only plausible solution to both the necessity and knowability issues that trouble Kant's account of particular or empirical laws of nature.[3]

Recently, different versions of the so-called "necessitation account" have been proposed. For the purposes of the present paper, it is important to point out that the "necessitation account" is decisively ontologically oriented, that is, advocates a bottom-up approach to this debate. Namely, one starts with the assumption that there are dispositional properties in the world that manifest themselves regularly, and then laws describe such regularities. But, most importantly for our discus-

---

2 For the three-partite classification of interpretations concerned with Kant's account of empirical laws of nature, see Messina (2017), reconsidered by Breitenbach (2018), in which a fourth interpretation has been added.

3 I will not examine Friedman's elegant account in more detail, because of the absence of a specific analysis of biological laws in it; for the main objections to the "derivation account" more generally, see Breitenbach (2018); and Kreines (2009).

sion, the "necessitation account" deems that empirical laws of nature, specifically, belong to the group of laws of nature that are *unknowable* to a Kantian epistemic subject. This comes as a consequence of their robust ontological dependences in comparison to the transcendental and metaphysical laws of nature.

Now, what, on my account, remains unsatisfactory in the interpretations described above is concerned with, *first*, the exact role played by UES in this domain and, *second*, models worked out for solving the knowability issue. Namely, on the "derivation account", Kant's insistence on UES remains unclear, especially in the *Critique of the Power of Judgment.* On the "necessitation account", furthermore, empirical laws are not knowable, which is an implication that I find unconvincing. For those reasons, the paper now turns to the proposals that are focusing exactly on nomic specificities of the special empirical sciences, such as biology and biomedical sciences or the life sciences in a stricter sense, plus, on the previously highlighted role of UES.

The role of the idea of unity of experience as a system (UES)

In this subsection, I examine accounts that emphasize the role of Kant's UES *a priori* assumption in accounting for the nomic status of empirical regularities in nature, such as, primarily, the "best system interpretation" (see, most elaborately, Kitcher, 1994), and Breitenbach's "reflection model" (see Breitenbach, 2018; 2017).

Kitcher's "best system interpretation", which has the longest tradition in the debate under consideration, extensively evaluates the idea or presupposition of UES in solving the two main issues of empirical laws of nature in Kant's overall account. According to Kitcher's reading, UES solves both the necessity issue and, more importantly for the purposes of this paper, the knowability issue. In other words, we come to know a perceived empirical *regularity* as a particular or empirical *law* of nature if and only if its formulation is embedded within the most systematized of all the rival scientific theories at a given time. Ultimately, at a projected end of scientific investigations. Yet, apart from some differences between this notion of a "best system" and Kant's own use of UES throughout basically the first and third *Critiques*, the interpretation here at issue raises an important question: How is UES related to the way in which we explanatorily account for natural phenomena, especially, in the empirical sciences dealing with highly organized natural systems, such as so-called "organized beings"? Consider in particular in that regard Kant's third *Critique* and, additionally, its *First Introduction*. In my view, there is a connection between the notion of "best system" and Kitcher's *unificationist* account of scientific explanation. However, I claim that the latter does not fully match up with Kant's linking of UES, scientific explanation, and, specifically, the structure of explanations in the life sciences. I address that point in the next section, but

before that, I examine in more detail Breitenbach's account, which also endorses the extended interpretative focus onto the role played by UES, but quite differently than Kitcher's "best system interpretation" does above.

Breitenbach's interpretation (see, especially, her 2018 and 2017 papers) extends the focus even more toward UES in the debate in question, through which she includes not only its wider epistemological relations but also connections to philosophy of the empirical or so-called 'not proper' natural sciences. I will enumerate and briefly describe the main dependencies of Kant's UES with regard to his account of empirical laws more strictly and, then, compare this, fourth, reading to my views. In the upcoming section, then, the methodological outlook of the life sciences will be addressed as an instantiation of Kant's reflecting power of judgment.

Breitenbach's "reflection model" is the main interpretative notion not only for solving the knowability and necessity issues, but it is also related to several other notions in understanding Kant's epistemology and philosophy of science: the *unity* vs. *dis-unity* of nature or science, and the *forms* of this unity; notions concerned with the issue of *distinctively biological laws*, and the structure of *biological explanation* via these laws, as being some of the notions that are more closely related to this model. Thus, given the breadth of the "reflection model" and the fact that it, in certain significant respects, addresses the same issues in Kant's philosophy of biology as the account delineated in the next section, I will firstly examine the model's more important components and secondly its further ramifications.

We can distinguish the "reflection model" for the knowability of the *a priori* laws of nature, which appears to be less complex than the model for the knowability of empirical laws. The former model is based on the notion of an "*a priori* reflection" relating to the role of *a priori* or strictly universal laws of nature. In that regard, consider the way in which we come to know, for instance, the second analogy of experience or the analogy's *a priori* cognates. However, the (empirical) "reflection model" or the corresponding model in the strict sense, according to Breitenbach's interpretation, appears to have a far more challenging task. In that sense, the "reflection model" is contrasted to Friedman's "derivation account", namely, to the very idea of "derivation" or that the knowability issue should be solved through a "grounding" or "nesting" of empirical regularities (think again of the *Prolegomena* example of 'the sun shining on a stone') as more or less particular instances of the *a priori* or universal law(s), so to say, 'at the top' of law-hierarchy. Breitenbach (2018; 2017) extensively opposes this solution. The *apriori* laws do have a substantial role in solving the knowability issue of empirical laws, but not in the 'at the top' manner, but rather "from within" (see Breitenbach, 2018, Section 4). This brings us to the core components of the "reflection model", i.e., the central

part of the fourth interpretation in the debate, which, in a certain regard, upgrades the most valuable points deployed in the preceding interpretations.

The reflection on particular phenomena, as in the *Prolegomena* example, is guided by the two following conditions: (i) the *a priori* laws themselves, and (ii) UES, that is, this general assumption's more particular principles or maxims of homogeneity, specificity, and affinity, as they are fully explicated throughout the *Critique of the Power of Judgment*.[4] In other words, the reflection model's core-components acknowledge, on my account, both 'bottom-up' and 'top-down' approaches to the attainment of empirical laws of nature. Thus, Breitenbach's full interpretation excels in accounting for all the major components from the first and third *Critiques*, which enable our cognitive access to empirical laws.

In sum, I interpret her solution primarily to the knowability issue as an ultimate consequence of the extended interpretative focus, i.e., as an outcome of Kant's previous claims, defended initially in the Appendix to the Transcendental Dialectic of the *Critique of Pure Reason*. The "reflection model" with its two core-components represents a systematic interpretation of the relevant textual evidence and, contrary to other interpretative accounts, is not based on a single privileged relation, e.g., the derivational relation as in Friedman's account, but opts, instead, for a *pluralistic* approach.

In the next section, I will argue that when examined in more detail, Breitenbach's interpretative model ultimately suggests a *monistic* approach, based on a determined *explanatory relation*. Furthermore, if we put scientific explanation at the center of a solution to the knowability issue in Kant's account of empirical laws of nature, then, on my account, we may avoid an odd consequence in Breitenbach's reading, according to which the "reflection model" generates an "improper" knowledge or no scientific knowledge 'in the strict sense'.[5] I will instantiate my

---

4 For a similar view on the relationship between the first and third *Critiques* and the role played by UES, see Geiger, 2009. In short, I give primacy to the overall account of the reflecting power of judgment and its maxims in that regard. For a detailed and comprehensive analysis of the abovementioned relationship, together with its broader setting, see in particular Spagnesi (2021).

5 For this consequence, see in more detail Breitenbach (2018, Section 4). Breitenbach may defend her abovementioned view, though, by emphasizing Kant's assessment of the natural sciences, apart from physics in the strict sense, as enjoying scientific status merely 'improperly'. However, as I argue in the next section, the whole cognitive machinery of the reflecting, and to some extent determining, power of judgment has been built up by Kant in order to more fully acknowledge a specific epistemic status of the life sciences, among other disciplines, in the third *Critique*. One of the main purposes in the next section of the present paper is exactly to flesh out how that machinery may be put at work when providing explanatory strategies in the life sciences.

account of the knowability of empirical laws through the structure of explanation in medical physiology, as reconstructed from the *Critique of the Power of Judgment* and its *First Introduction*.[6]

In solving the knowability and necessity issues in Kant's account, the *a priori* laws can have, as previously shown, the 'at the top' position ("derivation account") or the one 'from within' ("reflection model"). Hence, depending on the position we assign, the following features of the unity under consideration ensue: in the case of the "derivation account", a *single hierarchical* or *reductionist* form of the unity of cognitions, and in the case in which Breitenbach's "reflection model" position is endorsed, a *pluralist,'organicist'* or *non-reductive* form is obtained. Thus, Kant's position in the debate on the unity-disunity of science/nature issue, according to Breitenbach, is most accurately interpreted by endorsing the 'from within' position of the *a priori* laws, which, consequently, points to a certain pluralistic form, characterizing the unity of cognitions in the sciences. In my view, this position is further strengthened as we take into consideration the reflecting power of judgment applied by Kant's philosophy of biology in the Methodology of the Teleological Power of Judgment of the third *Critique*.

In what follows, I argue for an interpretation foregrounding the way(s) in which, according to Kant's philosophy of science, the empirical sciences *explain* and/or *predict* their phenomena of interest. One of the main reasons for that interpretative approach is prompted by the fact that the connection between the role played by UES and the attribution of nomic status to empirical regularities appears to be conclusively characterized in the third *Critique*'s analyses of our explanatory efforts. As we will shortly see, these efforts are dealing with the interface of physical and life sciences. This way of focusing on Kant's account will be further examined in the case of how we, according to the Methodology of the Teleological Power of Judgment, configure or structure biological and biomedical explanations via certain relationships between different types of laws. To illustrate these

---

[6] There are additional difficulties in Breitenbach's corresponding reading, such as (i) how exactly reflection, as far as the first condition of the model in question is concerned, that is, the guidance of the *a priori* laws of nature, differentiates itself from Friedman's notion of derivation in the same context; (ii) the interplay between the two conditions of the "reflection model"; namely, in what way UES enables the initial regulative role of the *a priori* laws of nature, which, in a further step, leads to their standard constitutive role in the experience attainment. In addition to that, how UES as an *a priori* idea or presupposition relates to the actual unity of empirical cognitions that represent background beliefs for the model at a certain point of scientific research. From the questions left open in Breitenbach's reading, this paper concentrates on the relationship between the "reflection model" and the unity of science/nature issue and its exact form, as this form relates to the knowability of laws within the practices of the life sciences.

points concerned with laws in the specific domain of the life sciences, e.g., medical physiology, I will refer to examples from different levels of biological organization. Hopefully, this will also show how Kant's cognitive machinery of the reflecting power of judgment, in particular, may look like when we deliver epistemically good explanations of the natural phenomena in biology and medicine or the life sciences more generally.

"By their deeds you will know them": the knowability of laws in the life sciences

In my view, a determined convergence between Breitenbach's "reflection model" and Kitcher's "best system interpretation" can offer a plausible solution to the knowability issue. Now, the "best system interpretation" can be also viewed as an instantiation of Kitcher's more general account of scientific explanation, which, according to him, should be construed along the idea of a *unification* through argument-patterns (see Culp & Kitcher, 1989; Kitcher, 1994). Although I do not think that Kitcher's account in question is applicable to Kant's corresponding views, both generally and with respect to explanations in the life sciences, I do think that there is a close connection between UES, plus, its co-working with, especially, the reflecting power of judgment, and our explanatory practices in the empirical sciences. In order to explicate that connection, I refer, *first*, to the structure of the biomedical explanation of the phenomena related to the impairment of visual apparatus in humans, which works thanks to different types of laws of nature. And, *second*, I refer to the way in which UES, interpreted as in the preceding section, influences how we come to know judgments dealing with certain life systems *at the same time* as distinctively biological or biomedical laws.

Consider with regard to that Kant's example of the human vision, highlighted in the *First Introduction* (20, 236 (37); emphasis in original):

> E.g., by saying that the crystalline lens in the eye has the **end** of reuniting, by means of a second refraction of the light rays, the rays emanating from one point at one point on the retina, one says only that the representation of an end in the causality of nature is conceived in the production of the eye because such an idea serves as a principle for guiding the investigation of the eye as far as the part that has been mentioned is concerned, with regard to the means that one can think up to promote that effect.

Now, suppose we ask, "why John's eyes or their component-parts of the 'crystalline lenses' did not start to behave in the standard manner when strongly illuminated by a flashlight?", or so might go a follow-up situation stemming from

Kant's above well-known example for a teleological or function statement in medical physiology.[7]

The answer given by John's physician may go as follows: "John has diabetes." This answer, which also represents a compressed medical explanation of the particular natural phenomenon under consideration, when more fully explicated, has a multi-layered structure. Thus, according to Kant, a *first* layer is concerned with a *functional statement* or, in Kant's terminology, *teleological judgment* that states the so-called "inner possibility" of the biological object in question. In this case, the teleological judgment refers to an expected physiological behavior of the crystalline lens. More specifically, the judgment is basically the following one: 'The crystalline lens in the eye *has the end* of reuniting the light rays at one point on the retina' (see 20, 236 (37)). By using the notion of "inner possibility" in the above judgment, Kant seems to point out that biological objects have a range within which they show expected standard or *normal* physiological behavior. Accordingly, John's eyes, more specifically, their component-parts of the crystalline lenses, show a *specific dysfunctional* behavior because it is "out of the range of the standard physiological behavior", i.e., not producing the reuniting effect on the retina.[8]

That is why the above answer appears to us as an acceptable scientific explanation of the detected particular phenomenon. However, that is only one part of a more fully explicated scientific explanation. Moreover, according to Kant's philosophy of biology, the answer's explanatory power, by itself, is void if not related to a *second* layer in the structure of, here in particular, biomedical explanation, that is, the layer of a "*mechanism*" or "*merely mechanical laws*" or other terminology that Kant uses in this regard (see in more detail Teufel, 2013). Now, what enables a scientific explanation of a particular biological phenomenon, or even other types of explananda, is a specific interdependence of the two layers. In other words, taken

---

7 For Kant's acknowledgment of a normative dimension of teleological or function statements in the life sciences, namely, the special investigative importance of how a biological object *ought* or *should* behave, think of a component-part in the human eye as illustrated above, or fails to do so, as far as the corresponding explanatory and other practices are concerned, see Šustar (2013; 2008). With this, I just wanted to emphasize (almost) equal importance between functional and dys-functional or mal-functional states in accounting, explanatorily in the life sciences (for this debate, see Garson, 2013; 2023). As for the function-mechanism relationship, this is a specific issue debated in the current philosophy of biology; see, most recently, Garson (2023). It is worth noting here that Kant's "subordination" relation appears to be attuned to leading views in the current debate. A further analysis, however, would exceed the scope of the present paper.

8 For a *normative* solution to the issue of distinctively biological laws, see Ginsborg (2001); I will refer to this issue when contrasting Breitenbach's solution that adds an extra layer of distinctively biological laws between the teleological layer itself and the basic one, concerned with "merely mechanical laws".

separately, no one explains the biological or biomedical phenomenon. Moreover, Kant, in The Methodology of the Teleological Power of Judgment, further characterizes the relationship in question as a "subordination" of the mechanism-layer under the layer of teleological judgment. This kind of structure alone, according to the *Critique of the Power of Judgment*, can act as a good explanans in any explanatory effort in the biological and related sciences (see, in this regard, Kant's additional example with the skin, hair, and bones metabolism (see 5, 377 (249)). The same applies to the above explanatory statement, 'John has diabetes'. It is explanatory because, in fact, it presupposes a two-layered structure that I have just described. Suppose, in that respect, a mechanism that tells what is going on in the crystalline lens, e.g., at the molecular level of biological organization. Nevertheless, that layer is always related to the teleological judgment or functional statement referring to a range of 'inner possibilities' of the biological objects involved; in our case, the physiological behavior of the crystalline lens in the human eye.

Breitenbach (2017), on the contrary, works out a *three-layered* structure for explanations in the life sciences via, correspondingly, three distinct groups of laws: teleological laws, biological ones, and "merely mechanical laws". I will not examine here Kant's exact position in the scientific explanation debate but, rather, the extent to which, if at all, Breitenbach's *biological laws* can be considered as being independent of teleological judgments or laws in Kant's philosophy of biology and, through that, allegedly forming a separate layer according to Breitenbach's reading. Additionally, given the outcome of the above point, it might also influence the issue of what kind of model best accounts for the knowability issue in the area of the life sciences. On both points, I depart from Breitenbach's "reflection model" and its ramifications, as I argue in the remainder of the paper.

First, on Breitenbach's account, teleological laws are not empirical, whereas biological laws are differentiated from the former exactly by being empirical. However, strictly speaking, there is no such independent group of laws of nature in Kant's philosophy of biology. But, as Breitenbach further claims, they can be discovered on the basis of Kant's position in the third *Critique*, if at least some desiderata in naturalizing biological concepts are fulfilled.[9] Apart from potential difficulties of that interpretative thread, my main worries at this point are somewhat different: (1) from Breitenbach's interpretation would, in the final analysis, follow that there are no biological laws in Kant, which would be contrary not only to his general account of laws of nature but also to Breitenbach's own position on this matter; (2) even more interesting point that seems to follow from Breitenbach's reading

[9] For this line of argument, see in more detail Breitenbach (2017, pp. 247–248).

allegedly states that there should be a rather sharp divide between biological and teleological laws. However, biological laws are, on my account, closely intertwined with teleological ones in Kant's philosophy of the biological and life sciences. This can be seen throughout the *Critique of the Power of Judgment*, where the extent of independence of the two layers in the overall explanatory structure dealing with explananda such as a specific malfunctioning of John's eyes: neither is clear-cut, as on Breitenbach's account (see Breitenbach, 2017, Section 12.3), nor non-existent, as in Ginsborg's normative reading (see, in particular, Ginsborg, 2001).[10]

Thus, I agree with the readings according to which from Kant's general account of laws of nature follows that there should also be *particular* laws referring to biological phenomena. I have advocated the two-layered explanatory structure in the examined scientific area, in which I have secured a place for *distinctively* biological and, equally, biomedical laws. These laws are, on the one hand, seen as particular outcomes of the reflection on biological phenomena, guided by teleological considerations. Namely, guided by the notion of "objective purposiveness", as illustrated above in Kant's example with the human vision from the *First Introduction*; and, on the other hand, this nomic structure, think again of the example of function ascription to the standard activity of crystalline lens as a function bearer in the containing system, is linked to "merely mechanical laws" (consider here the physical and chemical laws used by the reflecting power of judgment in the human vision example).[11] This, it is a specific capacity of particular teleological judgments in the life sciences, such as the one instantiated in this section, that is, by establishing as many as possible explanatory connections with other groups of laws of nature, what justifies us in considering them as biological and, more specifically in the above context, biomedical laws.

Second, the same capacity in building up a most stratified *explanatory* type of hierarchy of laws of nature in a certain scientific area is what makes them recognizable as empirical laws, in the first place. In other words, it is primarily explanatory and predictive capacity, as previously specified and illustrated, the feature that is, in fact, at the core of the interpretative models for solving the knowability issue – at least, those epistemically oriented. Finally, as suggested throughout Kant's philosophy of natural science, the explanatory capacity, more explicitly, involves

---

10 For an illuminating introduction to this specific issue in Kant's account of biological concepts and judgments, see Steigerwald (2006).

11 The same also applies to other areas in the life sciences, e.g., plant physiology, frequently addressed by Kant's philosophy of biology; for a reconstruction and assessment of Kant's analysis of illustrative case studies from this scientific area, see Šustar (2014; 2013).

different types of explanatory relations, not exclusively a unificationist one, as, instead, appears to be the case with the "best system interpretation".

Concluding remarks

The above assessment of the recent debate on the issue of knowability in Kant's account of empirical laws of nature, in particular, as far as laws in the life sciences are concerned, has shown that (1) we come to know a teleological judgment referring to a biological phenomenon also as a law of nature in virtue of its ability to form a determined local hierarchy, and other similar forms related to the UES deployment, with "merely mechanical laws", as I instantiated by the case studies stemming from medical physiology; (2) this essentially *systemic* account of lawlikeness (see especially Lewis, 1973) keeps the main idea of a hierarchical subordination of species to genera, which, nevertheless, assumes a different form in biology and medicine. That is, the present paper highlighted the fact that Kant's subordination of "merely mechanical laws" to a corresponding teleological judgment with regard to the explanandum phenomenon departs from an exclusively hierarchical subordination, which is most usually attributed to Kant's account in question. I characterized that type of hierarchy, by which we come to know a biological judgement having the status of an empirical law, as an *explanatory integration*. Namely, teleological judgments are hierarchically integrated thanks to the epistemic roles they enable through a specific 'super-ordination' of the already embedded, thus warranted, mechanical laws; and (3) as a further implication of the proposed reading, I suppose that this approach to the knowability issue of laws of nature in the special empirical sciences sheds some light on the ways in which the reflecting power of judgment in particular, at least as this crucial Kant's invention is generally characterized in the Introductions to the third *Critique*, *concretely* plays out in the intricate area of the life sciences.[12]

Acknowledgements

This paper is an output of the research project *ThUMB* (*Theoretical Underpinnings of Molecular Biology*), funded by the *Croatian Science Foundation*, grant

[12] By that, I am not setting aside the determining power of judgment, together with its *a priori* concepts and corresponding principles. In the paper, I have emphasized the corresponding role performed by the reflecting use, given Kant's analyses, especially in the Methodology of the Teleological Power of Judgment. Differently put, it is a matter of a certain 'division of cognitive labor' between the two uses or types of the power of judgment what is at stake here. In short, it is not a question of their respective epistemic superiority.

number HRZZ-IP-2018-01-3378, and the University of Rijeka project *KUBIM* (*Klasifikacije u biologiji i medicini – Classifications in Biology and Medicine*), grant number uniri-human-18-265., and project *FUBIM* (*Funkcije u biologiji i medicini - Functions in Biology and Medicine*), grant number uniri-iskusni-human-23-227.

References

1. Breitenbach, A. (2018). Laws and Ideal Unity. In W. Ott & L. Patton (Eds.), *Laws of Nature* (pp. 108–121). Oxford-New York: OUP.
2. Breitenbach, A. (2017). Laws in Biology and the Unity of Nature. In M. Massimi & A. Breitenbach (Eds.), *Kant and the Laws of Nature* (pp. 237–255). Cambridge-New York: CUP.
3. Culp, S. & Kitcher, P. (1989). Theory Structure and Theory Change in Contemporary Molecular Biology. *British Journal for the Philosophy of Science*, *40*, 459–483.
4. Friedman, M. (1992). Causal Laws and the Foundations of Natural Science. In P. Guyer, (Ed.), *The Cambridge Companion to Kant* (pp. 161–199). Cambridge-New York: CUP.
5. Garson, J. (2023). Putting History Back into Mechanisms. *British Journal for the Philosophy of Science*, *74*, 921–940.
6. Garson, J. (2013). The Functional Sense of Mechanism. *Philosophy of Science*, *80*, 317–333.
7. Geiger, I. (2009). Is Teleological Judgement (Still) Necessary? Kant's Arguments in the Analytic and in the Dialectic of Teleological Judgement. *British Journal for the History of Philosophy*, *17*(3), 533–566. https://doi.org/10.1080/09608780902986649.
8. Ginsborg, H. (2001). Kant on Understanding Organisms as Natural Purposes. In E. Watkins (Ed.), *Kant and the Sciences* (pp. 231–258). Oxford-New York: OUP.
9. Kant, I. (2000 [1790]). *Critique of the Power of Judgment*. Cambridge-New York: CUP.
10. Kant, I. (2004 [1783]). *Prolegomena to Any Future Metaphysics*. Cambridge-New York: CUP.
11. Kitcher, Ph. (1994). The Unity of Science and the Unity of Nature. In P. Parrini (Ed.), *Kant and Contemporary Epistemology* (pp. 253–272). Dordrecht: Kluwer.
12. Kreines, J. (2009). Kant on the Laws of Nature and the Limitation of Our Knowledge. *European Journal of Philosophy*, *17*, 527-558.
13. Lewis, D. (2000 [1973]). *Counterfactuals*. MA, USA: Blackwell Publishers.
14. Messina, J. (2017). Kant's Necessitation Account of Laws and the Nature of Natures. In M. Massimi & A. Breitenbach (Eds.), *Kant and the Laws of Nature* (pp. 131–149). Cambridge-New York: CUP.
15. Spagnesi, L. (2021). Kant and the Systematicity of Nature. The Regulative Use of Reason in Kant's Critique of Pure Reason. PhD Dissertation, University of Edinburgh.
16. Steigerwald, J. (2006) (Ed.), Kantian Teleology and the Biological Sciences. *Studies in History and Philosophy of Biological and Biomedical Sciences*, *37*, 621–792.
17. Šustar, P. (2014). Kant's Account of Biological Causation, In I. Goy & E. Watkins (Eds.), *Kant's Theory of Biology* (pp. 99-115). Berlin-New York: De Gruyter.
18. Šustar, P. (2013). Normativity and Biological Lawlikeness – Three Variants. *Kant-Studien (Proceedings)*, 249–261.

19. Šustar, P. (2008). The Organism Concept: Kant's Methodological Turn. In Luca Illetterati (ed.), *Purposiveness: Teleology Between Nature and Mind*. Ontos Verlag, pp. 33–58.
20. Teufel, T. (2013). Merely Mechanistic Laws – Causal Mechanism and Kant's Antinomy of the Teleological Power of Judgment. Kant-Studien (Proceedings), pp. 261-270.

SAŽETAK

Članak se usredotočuje na problem spoznatljivosti empirijskih zakona kod Kanta. Pobliže se istražuje interpretativna potka prema kojoj se spoznatljivost nekog predmeta postiže pomoću odgovarajuće klasifikacije unutar hijerarhijskog sustava. Odnos između spoznatljivosti i klasifikacije zasniva se, u krajnjoj liniji, na Kantovu određenju ljudskog razuma kao „diskurzivne" spoznajne moći, to jest činjenici da se temelji na supsumirajućim procedurama. Posebna pozornost posvećena je empirijskim zakonima koji se tiču bioloških pojava u širem smislu, što je onda dalje na karakterističan način povezano s posebnim odnosom između teleologije i mehanizama. "Kritika moći suđenja" i srodna Kantova djela bave se tako skupinom teleoloških sudova i/ili funkcijskih iskaza koji bi također trebali posjedovati status zakona prirode. Članak brani gledište kako se spoznatljivost općenito bioloških zakona jednako tako zasniva na supsumirajućim procedurama u znanostima o živim sustavima (life sciences), to jest biologiji i njezinoj primjeni na medicinsku praksu, koje se nadalje sastoje u eksplanatornoj integraciji normativnih teleoloških i uzročno-mehaničkih sudova. Konačno, članak nastoji pojasniti kako se kantijanski pristup tim pitanjima pozicionira u recentnoj raspravi o biološkim funkcijama. Odnosno, na koji način može obrazložiti eksplanatornu i normativnu dimenziju funkcijskih iskaza u njihovu doprinosu znanstvenoj praksi.

Ključne riječi: *problem spoznatljivosti, refleksivna moć suđenja, diskurzivni intelekt, rasprava o biološkim funkcijama, eksplanatorna integracija, teleološka normativnost.*