

New Work on Kant (III): Kant's Neo-Aristotelian Natural Power Grid—On “Kant and the Laws of Nature”

 virtualcritique.wordpress.com/2018/10/21/new-work-on-kant-iii-kants-neo-aristotelian-natural-power-grid-on-kant-and-the-laws-of-nature/

Critique

October 21, 2018

MICHELA MASSIMI & ANGELA BREITENBACH (EDS) | Kant and the Laws of Nature | Cambridge University Press 2017

By Robert Hanna

Kant and the Laws of Nature, edited and with an introduction by Michela Massimi and Angela Breitenbach, is a collection of thirteen uniformly excellent essays on Kant's philosophical views on the nature and (metaphysical or epistemic) status of laws of nature, produced under the aegis of a three-year international research network running from 2012–15.

But as contemporary Kantian philosophers and not merely as Kant-scholars, why should we *care* about laws of nature? In my opinion, there are at least four good reasons.

First, from an alethic or truth-based contemporary Kantian point of view, natural laws reveal to us *the necessary theoretical rules and basic factual structures* of a causally efficacious, manifestly real physical world.

Second, from a *pro-scientific* yet also *anti-scientistic* contemporary Kantian point of view, natural laws fix the inherent metaphysical and epistemic *limits* of the natural sciences.

Third, from a contemporary Kantian point of view *beyond* the limits of the natural sciences, natural laws also reveal, by negation and categorical contrast, *the necessary teleological or practical rules and basic normative structures* of a causally efficacious, manifestly real physical world that is fundamentally enchanted and transformed by organismic life and goal-directed natural processes, consciousness, feeling and desire, cognition, rationality, agency, freedom, personhood, and dignity.

And fourth, from a contemporary Kantian point of view *within* the realm of that fundamental enchantment and transformation, it is further revealed to us that natural laws have their own special kind of *alethic normativity, as necessary,*

enabling constraints on animal life and agential activity that is inherently constrained by, although not entailed by, the normative laws of pure logic.

What however, according to Kant himself, are laws of nature? There are various classical, orthodox accounts all saying that for Kant, natural laws are fundamentally *epistemological* in nature. Generally characterised, according to these classical, orthodox, epistemologically-driven accounts, natural laws are synthetic *a priori* transcendental principles imposed on subjective appearances by our cognitive faculties, by means of the absolutely spontaneous power of *prescription* contained in the faculty of pure reason, together with the egocentric, synthesising, and unifying power of pure or transcendental apperception, inherently under the Categories and also inherently guided by the rational Idea(s) of the systematic unity of nature.

So, for these accounts, natural laws are nothing more and nothing less than subjectively-idealistic general laws of phenomena that are prescribed-a-priori-by-the-rational-transcendental-ego-precisely-in-order-to-be-known-in-phenomenal-nature-by-its-very-own-cognitive-faculties-operating-under-its-very-own-Categories-and-Ideas, as per Kant's famous remark in the B-Preface of the First *Critique*, that “reason has insight only into what it itself produces according to its own design” (Bxiii), and as per the only slightly-less-famous remark in the *Prolegomena*, that “*the understanding does not draw its (a priori) laws from nature, but prescribes them to it*” (*Prol*, AA 4:320).

In turn, however, there are at least five important problems for those classical, orthodox accounts. First, exegetically speaking, a subjective-idealist reading of Kant's theory of natural laws cannot be smoothly combined with Kant's own empirical (or ‘manifest’) realism, because in that case, the very idea of ‘empirical laws’, discovered a posteriori via empirical scientific investigation, then seems modally *self-contradictory*, since, other things being equal, ‘empirical’ entails *contingency*, whereas ‘laws’ entails *necessity*.

Second, in a closely-related way, assuming that empirical natural laws *are* in some sense genuinely universal and necessary, then how can Kant *explain* their universality and necessity? On the subjective-idealist reading, the way in which particular empirical laws *inherit* their restricted kind of universality-and-necessity from strictly universal and unconditionally necessary a priori laws seems metaphysically mysterious.

Third, extra-exegetically speaking, any form of subjective idealism applied to natural laws seems philosophically implausible, since it entails that, *necessarily, if all actual minds go out of existence, then the nomologically-governed natural world goes out of existence too*.

Fourth, epistemically-speaking, as Kant himself noted in the First Introduction to the Third *Critique*, a subjective-idealist approach to natural laws is *prima facie* consistent with a *global scepticism* not only about our ability to know particular, specific natural laws by means of judgement and concepts, but also, as a consequence, about the very existence of such particular, specific natural laws.

Fifth and finally, metaphysically speaking, even allowing for the radical philosophical *Gestalt*-shift implied by Kant's Copernican Revolution, the subjective-idealist approach to Kant's theory of natural laws overlooks various essentialist, organicist or processual, non-reductively naturalistic, *broadly Aristotelian* elements in Kant's and/or Kantian metaphysics.

Correspondingly, in view of these five important problems, it seems to me that with the publication of *Kant and the Laws of Nature*, a new, exciting, and philosophically important post-classical, post-orthodox Kantian *metaphysical* and *non-epistemic* conception of the laws of nature has begun to emerge.

Bounded in a nutshell, this conception is all about how, according to Kant, natural laws are nothing more and nothing less than essential immanent structures (as per classical Aristotelian essentialism andhylomorphism) of a totality of manifestly real causal-dynamic processes that, in turn, are individuated as objects of experience by virtue of a multitude of many-termed temporally asymmetric (cause-effect, as per the Second Analogy of Experience) or simultaneous (causal reciprocity, as per the Third Analogy of experience) efficacious natural relations in space and time, specified as sets of active causal powers (to bring about effects or trigger causal reciprocity networks) and receptive causal powers (to be brought about as effects or to be triggered as causal reciprocity networks).

Natural laws in this sense are ontologically defined and modally-constituted solely by their positions in the manifestly real, systematically unified, total natural power grid consisting of all these essential immanent structures, real causal-dynamic processes, objects of experience, and causal-power-relations, namely, “Nature in general” (KU, AA 5:183), so they are not independently given apart from the whole—and holistic—grid. And in turn, the whole and holistic natural power grid is non-reductively mind-dependent on the innately-specified non-empirical capacities of the human mind, and, in a necessarily complementary way, also non-reductively world-dependent on the specific essential constitution of physical matter—whether it be (i) inert, mechanical, purposeless matter, or (ii) living, organismic, purposive matter—as an independently-given fact.

Just to give this post-classical, post-orthodox Kantian conception of the laws of nature the sort of jazzy name you could put on a T-shirt or use as a bumper-sticker slogan, thereby simultaneously impressing your philosophical friends and confounding your philosophical enemies, let's call it *Kant's Neo-Aristotelian Natural Power Grid*.^[1]

But there is much, much more to Kant's Neo-Aristotelian Natural Power Grid than even that. Indeed, the fully-elaborated version of it can be formulated as a set of no less than fourteen theses, the first three of which I've already mentioned, but will include again for the sake of clarity, distinctness, and completeness, as follows.

Kant's Neo-Aristotelian Natural Power Grid

(Thesis 1) Natural laws are nothing more and nothing less than essential immanent structures of a totality of manifestly real causal-dynamic processes that, in turn, are individuated as objects of experience by virtue of a multitude of many-termed temporally asymmetric (cause-effect, as per the Second Analogy of Experience) or simultaneous (causal reciprocity, as per the Third Analogy of Experience) efficacious natural relations in space and time, specified as sets of active powers (to bring about effects or trigger causal reciprocity networks) and receptive powers (to be brought about as effects or be triggered as causal reciprocity networks).

(Thesis 2) Natural laws in this sense are ontologically defined and modally constituted solely by their positions in the manifestly real, systematically unified, total natural power grid consisting of all these immanent essential structures, real causal-dynamic processes, objects of experience, and causal-power-relations, namely Nature in general, so they are not independently given apart from the whole—and holistic—grid.

(Thesis 3) The whole and holistic natural power grid is non-reductively mind-dependent on the innately-specified non-empirical capacities of the human mind, and, in a necessarily complementary way, also non-reductively world-dependent on the specific essential constitution of physical matter—whether it be (i) inert, mechanical, purposeless matter, or (ii) living, organismic, purposive matter—as an independently-given fact.

(Thesis 4) Laws of nature have weak or counterfactual transcendental ideality, in that they necessarily conform to the innately-specified, non-empirical structures of our basic cognitive capacities or powers, and are thereby such that, necessarily, if the natural laws exist, then if rational human animals were to exist, they would be able to know those laws objectively via the world-enabled

operations of their cognitive capacities, at least to some significant extent; and not only are those laws not imposed by the operations of those cognitive capacities, but also those laws did exist, do exist, and will continue to exist in the manifestly real natural world of objects of experience, even if no rational human animals ever actually existed, do exist, or will exist, provided that, necessarily, at any time, it is really possible for that specific kind of animals to exist.

(Thesis 5) Moreover, laws of nature in this sense correspond, one-to-one, to sets of synthetic a priori truths, which, in turn, are progressively narrowed in their modal scope by increasingly strong (that is, richly specific) existential assumptions about the specific essential constitution of physical matter—whether it be (i) inert, mechanical matter or (ii) living, organismic matter—as an independently-given fact, and thereby, insofar as they apply to the manifestly real world of causal-dynamic processes and objects of experience, give rise to distinctively different grades and types of natural universality-and-necessity.

(Thesis 6) In direct proportion as laws of nature correspond to increasingly strong material existential assumptions about the specific essential constitution of physical matter—whether it be (i) inert, mechanical, purposeless, matter, or (ii) living, organismic, purposive matter—as an independently-given fact, and incorporate distinctively different grades of natural universality-and-necessity, then the more empirically-grounded they are, and the more correctly they are to be called specifically empirical laws of nature, even though they remain irreducibly universal, necessary, and a priori, although in a specially restricted way.

(Thesis 7) Manifestly real physical matter is essentially constituted by attractive and repulsive dynamic forces, hence manifestly real physical matter is essentially processual and active, hence phenomenally substantial and static only in an ontologically derivative, relative, and supervenient sense, under the First Analogy of Experience, and not noumenally substantial and static in the absolute Cartesian or Leibnizian senses.

(Thesis 8) Furthermore, there is a fundamental difference between

(i) laws of nature that are grounded on the strong material existential assumption that the attractive and repulsive forces constitute processual matter as passive and inert, mechanical, and inherently computable as regards its quantitative properties, and are, thereby, deterministic, mechanistic, non-teleological laws of physical nature, aka *laws of physics*,

and

(ii) laws of nature that are grounded on the strong material existential assumption that the attractive and repulsive forces constitute processual matter as spontaneous and vital, self-organising, uncomputable as regards their quantitative properties, and purposive, hence not passive and inert, not mechanical, and not inherently computable, and are, thereby, non-deterministic, organismic, teleological laws of nature, aka *laws of biology*.

(Thesis 9) Spontaneous and vital, self-organising, purposive, processual matter is every bit as manifestly real as passive and inert, mechanical, computable, non-purposive, processual matter, hence the manifestly real, systematically unified, total natural power grid, aka Nature in general, *globally* contains *both* kinds of causal processes, even despite their being *locally incompatible*—e.g. in non-animal organisms, in minded animals, and at the source of rational human agency.

(Thesis 10) Rational human animals, like all minded animals, are made out of manifestly real spontaneous and vital, organismic, self-organising, purposive, processual matter, and immanently governed by its biological laws of self-organisation, hence their agency is locally incompatible with the causal processes of passive and inert, mechanical, computable, non-purposive, processual matter.

(Thesis 11) Therefore, as transcendently free, practically free, autonomous, self-determining animals, rational human animals are immanently self-governed by moral laws that are themselves a special kind of biological law.

(Thesis 12) Natural laws are in-principle knowable (even if not actually known) by us, by means of transcendental counterfactual arguments that employ abductive reasoning, aka inference-to-the-best-explanation, aka reflective judgement.

(Thesis 13) Such reasoning is inherently guided by the rational Idea(s) of a systematic unity of nature.

(Thesis 14) And this reasoning, in turn, transcendently presupposes both the subjective and also objective purposiveness of manifestly real nature for our cognitive faculties, in order to ward off the global sceptical possibility that nature might have presented an anarchic, chaotic mass of particular appearances to our faculties, thereby making it in-principle impossible to apply empirical judgements to nature.

The thirteen essays in *Kant and the Laws of Nature* are helpfully organised by the editors into five groups of two or three (see here for a table of contents). Henceforth, I'll refer to any of the essays in the collection by using the relevant author's name and page numbers only.

Moreover, in order to provide a single, coherent, and constructive philosophical framework for the rest of this review—lest it become yet another one of those all-too-familiar, *SO* tedious,^[2] philosophical-Cook's-Tour-type plodding summaries of each of the essays, part-by-part, plus a few perfunctory critical remarks at the end—instead I'll discuss them, whether singly or in groups, in relation to Kant's Neo-Aristotelian Natural Power Grid, as defined by the fourteen theses I formulated above.

To be sure, the several essays in *Kant and the Laws of Nature* do philosophically differ from one another somewhat, sometimes even to the point of substantive disagreement or local incompatibility; and, correspondingly, they also each contribute to Kant's Neo-Aristotelian Natural Grid in somewhat differing or sometimes even locally incompatible ways. Still, the essential thing for my constructive philosophical purposes in this critical review, is my overarching thesis that the several essays in the volume, taken all-in-all, do indeed philosophically interact in complex, original, and productive ways so as to yield one and the same philosophically important global doctrine, namely, Kant's Neo-Aristotelian Natural Power Grid. So even if I'm wrong, then at least I'm *interestingly* wrong.

As we have seen above, **Thesis 1** says that natural laws are neither directly derived from, nor instantiations of, a priori principles about causality, and in particular from the Second Analogy of Experience. Instead, they have a weakly mind-independent grounding in the manifestly real world, and express causal powers that are globally determined and individuated, and also modally-constituted, as **Thesis 2** specifies, by an equally weakly mind-independent, but also formal and unified, global *structuralist* network or system of universal-and-necessary causal relations.

We can find significant support for both of these theses in James Messina's and Massimi's essays, each of which defends a slightly different version of what Messina calls “the Necessitation Account” (p. 132, following James Kreines's terminology), according to which, for Kant, particular natural laws, aka “empirical laws”, are grounded in relatively mind-independent *real essences or natures*:

[The Necessitation Account's] core metaphysical thesis is that Kant conceives of particular laws in terms of particular empirical natures, the positing of which necessitates certain regular behaviors [...].

[T]ranscendental laws of nature [...] are similarly associated with natures. In the case of transcendental laws, the nature in question is Nature in general, which might be thought of as a completely general nature common to and contained in all particular empirical natures. The positing of this nature brings with it the transcendental laws and indeterminate causal power associated with it. In this respect, Kant has a uniform metaphysics of nature [...]. Kant holds that natures cannot exist apart from their associated laws, and those laws cannot exist apart from (must be realized within) their associated natures. This is the sense in which laws are inherent in natures and Kant's model of laws is bottom-up [...]. Laws do not reduce to the causal powers that define a given nature [or essence] but are a separate aspect of that nature, albeit one no more detachable from the nature than the causal power is. The law of a given nature [...] acquires its content from the a priori grounds of the possibility of that nature. (pp. 147–8)

Given this grounding, the Necessitation Account is a 'bottom-up' account, as opposed to a priori entailment/instantiation accounts like Michael Friedman's, which are 'top-down'.

As Massimi points out (pp. 157–60), in his Metaphysics lectures from the early 1790s, Kant carefully distinguishes between 'essences' which are either (i) *logical* essences (of concepts) or (ii) metaphysical, *real* essences (of things), and (iii) 'natures', which presuppose metaphysical, real essences, yet are also spatiotemporally embedded and thus *causal*; but for my purposes here I won't heed that special refinement.

In any case, both Messina and Massimi construe Kant's account as versions of *dispositional* essentialism, which locates the determining and individuating features of nomological causal powers *internally to things*. But as Messina rightly points out (pp. 133 and 144–6), following Stephen Mumford, this yields a worry, especially for reductive versions of dispositional essentialism like Brian Ellis's, about the ontological status of natural laws over and above the dispositions of things. The worry is that, given a reductive dispositional grounding, arguably, it follows that laws are ontologically *superfluous*. Messina's promising solution to this nomological-ontological-superfluity problem is to appeal to Kant's notion of 'Nature in general' as a global system of causal natural laws grounded in a global system of manifestly real natures; and this is further strengthened by Paul

Guyer's important observation that the transcendental principle of the systematic unity of nature guarantees that “[a particular natural law's] position in a system is what makes any particular law of nature necessarily true” (p. 61).

So in view of the nomological-ontological-superfluity problem and Guyer's observation, I think that Messina's and Massimi's arguments for a Kantian *dispositional* essentialism about natural laws are in fact better accommodated by a Kantian *structural* essentialism about natural laws, according to which the manifestly real natures and causal laws are all metaphysically *constituted* by their positions or roles in the global system. This in turn makes possible an elegant explanation of the various distinct kinds of universality-and-necessity of all laws for Kant—nicely sorted and catalogued by Karl Ameriks (p. 37), obviously including natural laws, but also logical laws, synthetic a priori metaphysical principles, moral principles, and even political principles—in terms of *structure-based relationships of various kinds*. This in turn entails that the explanation of the universality-and-necessity of laws is *not* explained in terms of what Eric Watkins calls the “no law without a lawmaker” slogan, according to which “Kant requires that a law be established by a spontaneous act” (p. 16). On the contrary, although it is true that there are *no laws without the necessary and real possibility of minds like ours, endowed and pre-equipped with the unified system of innately-specified cognitive and practical capacities that jointly constitute our minds*—which in turn, when appropriately primed and triggered, are indeed capable of carrying out various kinds of absolutely or relatively spontaneous acts—nevertheless, *most laws and most kinds of laws do not require occurrent lawmakers, and therefore most laws and most kinds of laws do not require spontaneous acts*.

At the same time, as both Messina and Massimi rightly point out, an appropriately modified version of the a priori derivation/instantiation view, as represented by Friedman, is also available to the Neo-Aristotelian Natural Power-Grid conception if we assume that every particular natural law, even though it is weakly mind-independently grounded in a global structuralist network of laws, *also necessarily conforms to the Second Analogy*, even though it is neither directly derived from it or entailed by it, nor merely an instance of it.

This point, in turn, provides a smooth segue to **Thesis 3** and **Thesis 4**, which together spell out the way in which natural laws are only *weakly* transcendentially ideal, not *strongly* transcendentially ideal. In view of the structural essentialist version of the Necessitation Account that I have just sketched, with the help of Messina's, Massimi's, and Guyer's essays, then it follows that, just as, on the worldly side, natural laws are partially grounded in a universal network of manifestly real essences or natures with relational causal powers, so too they

are *also* partially grounded, by virtue of a priori principles flowing from the Categories, in the necessary real possibility of minds like ours, endowed and pre-equipped with the unified system of innately-specified cognitive and practical capacities that jointly constitute our minds.

Thesis 5 and **Thesis 6** address problems (1) and (2) for the classical, orthodox, accounts of Kant's theory of natural laws, about the very idea of an 'empirical law', and how its necessity can be explained. As Hannah Ginsborg, Rachel Zuckert, and Thomas Teufel all recognise, the solution to these problems is intimately bound up with the nature and status of Kant's a priori principles of the systematicity of nature and its *as-if* purposiveness for our cognitive faculties, which are also directly addressed in **Thesis 12**, **Thesis 13**, and **Thesis 14**.

In my opinion, everything here turns on how we think about natural laws in relation to Kant's *theory of judgement*, whether analytic or synthetic judgements, and whether synthetic a priori or synthetic a posteriori judgements.

Correspondingly, a sharp distinction is needed between (i) *the logico-semantic and metaphysical dimension* of judgements, on the one hand (i.e. their truth, consequence or validity, meaning, and modality), and (ii) *the cognitive-semantic and epistemic dimension* of judgements, on the other (their intentionality, cognitive phenomenology, and justification or warrant).

Natural laws correspond to synthetic a priori judgements, all of which are necessary and strictly underdetermined by contingent facts and sensory experiences, which is the same as their apriority or 'experience-independence'. In my opinion, the correct account of the modal semantics of synthetic a priori judgements specifies their truth-conditions in terms of increasingly restricted classes (or 'spaces') of possible worlds. And the corresponding restrictions on classes or spaces of worlds for the purposes of the semantics of the 'material necessity' of synthetic a priori judgements about natural laws, as spelled out in the Postulates of Empirical Thought, are various more-or-less richly specific (aka strong) existential assumptions about the specific character of matter and its causal powers: let's call these *material existential assumptions*. For example, Marius Stan correctly and ingeniously points out, if we formulate our material existential assumptions carefully enough, and "ascribe [...] to Kant mass-points as the best ontological explanation of all determinate phenomena of motion in a Galilean regime", then there is a promising case that Kant's "'special metaphysics of material nature' remains viable and relevant" for the "vast swath of determinate experience [that] still unfolds at speeds and scales for which classical [physical] theory remains indispensable" (p. 233), namely, "the 'classical belt' of the world, where masses and speeds are slow enough that relativistic theory is not needed" (p. 214).

Synthetic a priori judgements about natural laws are then necessary, precisely because they *hold for all and only the possible worlds in the relevant class or space of worlds corresponding to the relevant material existential assumptions of varying degrees of strength*. Hence no matter how *strong* the material existential assumptions are, and therefore no matter how *small* the corresponding class or space of worlds is, then the modal character of the judgements is exactly the same, i.e. they are all genuinely *necessary*. Moreover, all necessary truths, no matter how small their modal scope, are a priori precisely because their meaning and truth are strictly underdetermined by all actual and possible contingent facts and sensory experiences.

In this way, the problem about the prima facie contingency of so-called 'empirical laws' disappears. What makes them 'empirical' laws is just *their dependency on material existential assumptions*, and *not* their dependency on contingent facts or sensory experiences. Indeed, Kant should have called them *material* laws, not *empirical* laws, and then the confusion about the nature and status of these natural laws would have been avoided. This recognition, in turn, adequately captures Daniel Warren's otherwise very well-argued points about Kant's theory of attractive and repulsive forces in *Metaphysical Foundations of Natural Science*, simply by substituting 'material existential assumptions' for 'experience' and 'data of experience' in the following quotation:

The argument of the Dynamics chapter is that if matter is endowed with repulsive force, then it must also be endowed with an attractive force. And this attractive force must act immediately at a distance, and on all bodies, no matter how distant. The reality of the repulsive can be given only through [material existential assumptions]. But once that is given, the reality of this attractive force is guaranteed as well. What I am suggesting here is that in the case of attractive force, unlike repulsive force, there is a further role for [material existential assumptions] in establishing the specific mathematical form (the inverse-square character) of the relevant force law. (pp. 191–2)

Now what about the transcendental principles of the systematicity of nature and its as-if purposiveness for our cognitive faculties? Here the issue is how correctly to construe the *cognitive semantics and epistemology* of empirical conceptualisation and empirical or synthetic a posteriori 'judgements of experience' about nature, including empirical generalisations following from inductive inferences, and general hypotheses following from abductive inference-to-the-best-explanation. Ginsborg, Zuckert, and Teufel are undoubtedly correct that the transcendental principles of the systematicity of nature and of its as-if purposiveness for our cognitive faculties are *regulative*, not *constitutive*, and

thereby function as necessary epistemic presuppositions for the purposes of guiding empirical scientific investigation and theorising, and also warding off global epistemic scepticism both about knowing particular natural laws and also about the existence of particular natural laws.

But it also seems to me that there is something deeper going on here, not at the level of *concepts* and *determining judgements*, but instead at the level of essentially non-conceptual *intuitions* about systematic unity and essentially non-conceptual *feelings* about the beautiful in nature, especially as these have a bearing on reflective judgements. What I mean is that it is perfectly consistent to hold that a transcendental principle can at once have *a regulative use for concepts and judgements*, and *also a constitutive use for essentially non-conceptual intuitions and feelings*.

This point plays out in two especially important ways. The first way is that empirical conceptualisation and empirical or synthetic a posteriori 'judgements of experience' about nature, including empirical generalisations following from inductive inferences, and general hypotheses following from abductive inference-to-the-best-explanation, receive a relatively *weak* epistemic justification or warrant via the regulative use of the transcendental principles of the systematicity of nature and its as-if purposiveness for our cognitive faculties, because regulative principles do not entail truth or existence. But at the same time, these principles can also be *epistemically super-charged* via the constitutive use of these transcendental principles in an essentially non-conceptual *cognitive faith* in systematicity and *feelings of anti-sceptical confidence*, both of which flow directly from the disinterested pleasure we experience in the harmonious free play of our cognitive faculties of imagination and understanding in representing beautiful forms in nature (EEKU, AA 20:208–16). Here the principles are constitutive because the intuitions and feelings falling under them entail *the real or actual existence* of that which is intuited and felt.

And the second way is collectively captured by **Thesis 7**, **Thesis 8**, **Thesis 9**, **Thesis 10**, and **Thesis 11**, all of which bring out various aspects and implications of Kant's anti-mechanism or organicism. As Angela Breitenbach correctly points out, the standard reading of Kant's views on teleological natural laws in biology says that such laws are strictly regulative, for the purposes of forming teleological concepts and teleological judgements with relatively weak epistemic justification or warrant, in order to supplement the constitutive natural-scientific enterprise of discovering deterministic, mechanistic laws of empirical nature. But she also argues that

the teleological conception of the organism would guide the study of living beings even if we had a fully naturalistic organism concept. It carves out a part of nature as an object of study in its own right. It highlights a level of organization in the hierarchy of kinds on which to focus scientific investigations. (p. 254)

In other words, there is at least *theoretical space* in Kant's philosophy of nature for a constitutive reading of teleological natural laws in biology.

And here is how we can begin *to populate that theoretical space*, as per Kant's Neo-Aristotelian Natural Power Grid. If we sharply distinguish between teleological natural laws in biology as they are (i) used *regulatively* for empirical conceptualisation and empirical judgements, and also (ii) used *constitutively* for essentially non-conceptual intuitions and feelings, then it is easy to see how Kant's anti-mechanism or organicism is not *merely epistemic*, but also *robustly metaphysical*, as Catherine Wilson correctly points out:

It is commonly held that Kant maintained a strict and productive distinction between a “constitutive” mechanical science based on the Newtonian forces of nature and a “regulative” teleological account [...]. [T]his is not quite right. Kant maintained a “constitutive” belief in active, organizing forces resident in matter throughout his career. (p. 257)

Where I would disagree slightly although also substantively with Wilson's otherwise well-supported account is only with respect to her further claim that organisms and organismic processes can be real only *noumenally*, not *phenomenally* (p. 270). Yet this cannot be right, since Kant says explicitly (i) that we essentially non-conceptually intuit ourselves as living organisms, aka “natural purposes”, via “the feeling of life” (KU, AA 5:204) and (ii) that “mind for itself is entirely life”, hence we have a fully constitutive cognitive awareness of natural purposes or organisms *really or actually existing in the manifest or phenomenal physical world*, by subjectively experiencing our own living animal bodies from the inside:

[L]ife without the feeling of the corporeal organ is merely consciousness of one's existence, but not a feeling of well- or ill-being, i.e., the promotion or inhibition of the powers of life; because the mind for itself is entirely life (the principle of life), and hindrances or promotions must be sought outside it, though in the human being himself, hence in combination with his body. (KU, AA 5:278)

Kant famously and explicitly pointed out that there could never be “a Newton who could make comprehensible even the generation of a blade of grass according to natural laws that no intention has ordered” (KU, AA 5:400). But even more to the point, in view of Kant’s anti-mechanism, there could never be a Newton of *Newton*, the human animal. And it is only one short step from that insight, via the constitutive use of teleological natural laws in biology for essentially non-conceptual intuitions and feelings, to a fully realistic non-reductive, anti-mechanistic approach to organismic biology, such as Francisco Varela’s *Principles of Biological Autonomy* (Varela 1979). Add to this the weak transcendental idealist Kantian structural essentialism spelled out above in Theses **1, 2, 3**, and the philosophical result is recorded in **Theses 7, 8, 9, 10, and 11**.

I conclude, then, that Kant’s Neo-Aristotelian Natural Power Grid is not only a new, exciting, and philosophically important Kantian conception of natural laws, but also that it is well-supported as a post-classical, post-orthodox interpretation of Kant’s theory of natural laws by the thirteen excellent essays in *Kant and the Laws of Nature*, although each of them in somewhat different and sometimes locally incompatible ways.

Invited: 24 May 2018. **Received:** 20 October 2018.



Notes:

[1] For an earlier version of Kant’s Neo-Aristotelian Natural Power Grid, see Hanna (2006), esp. part 1 and ch. 8; and the same conception of natural laws is also presupposed by a new sequel to that earlier book, ‘Kant, Nature and Humanity’, in Hanna (2018), essay 2.2. ↩

[2] See McNaughton (2009). ↩



References:

Hanna, R. (2006), *Kant, Science, and Human Nature* (Oxford: Clarendon Press).
 — — — (2018), *The Rational Human Condition, Volume 1: Preface and General Introduction, Supplementary Essays, and General Bibliography* (New York: Nova Science).

McNaughton, D. (2009), 'Why Is So Much Philosophy So Tedious?', *Florida Philosophical Review* 9(2): 1–14, available online at <http://philosophy.cah.ucf.edu/fpr/files/9_2/mcnaughton.pdf>.

Varela, F. (1979), *The Principles of Biological Autonomy* (New York: Elsevier-North Holland, 1979).



© Robert Hanna, 2018.

*Robert Hanna is the Director of the Contemporary Kantian Philosophy project. He received his Ph.D. from Yale University in 1989, and has held research or teaching positions at the University of Cambridge, the University of Colorado at Boulder, USA, the University of Luxembourg, PUC-PR Brazil, Yale, and York University, Canada. His work has a broadly Kantian orientation, and he also has strong interests in the history of modern philosophy from Bacon/Hobbes/Descartes to contemporary philosophy, in the philosophy of nature and natural science, and in critical meta-philosophy. He has authored or co-authored six books, published with Oxford University Press, MIT Press, and Palgrave Macmillan. The first four volumes of a five-book series on the nature of human rationality, entitled **The Rational Human Condition**, are forthcoming from Nova Science. **The Mind-Body politic**, co-authored with Michelle Maiese, is forthcoming from Palgrave Macmillan.*

Website