

WOLFF'S SCIENCE OF TELEOLOGY AND KANT'S CRITIQUE

NABEEL HAMID
Concordia University

This essay examines Wolff's science of teleology, which has historically been dismissed as a crude physico-theology resting on a simple confusion between uses and purposes. Focusing especially on his two German volumes (*German Teleology*, 1723, and *German Physiology*, 1725), I argue that, first, Wolff never intended teleology to be a self-standing theology; and second, that teleology, as a part of physics, is primarily an applied or practical discipline. In its theological function, teleology presupposes the ontological and cosmological arguments for the being and attributes of God rendered in rational theology. As a part of physics, meanwhile, teleology presupposes the inert-mechanical view of nature which had emerged in the seventeenth century, and builds upon mechanistic physics by providing a perspective on nature as consisting of relations of benefit and advantage. The physiological part of teleology, or the study of plant and animal bodies, occupies a special place, for which Wolff deploys notions of health and sickness consistent with the mechanistic physics he accepts. With this in view, I argue that Wolff's teleology could not be the proper target of Kant's critique of physico-theology. Yet, there remain deeper differences between Wolff and Kant on the topic, which have to do with the sources and limits of teleological reasoning in general.

Keywords: Christian Wolff; Kant; teleology; physico-theology; design argument; rational theology; organism; mechanism.

1. Introduction

Christian Wolff (1679–1754) coined the term '*teleologia*' to designate a distinct science of nature. In §85 of *Preliminary Discourse on Philosophy in General* (1728), he gave the following justification for introducing the label:

Contact: Nabeel Hamid <nabeel.hamid@concordia.ca>

A twofold reason can be given for natural things. One reason is to be found in the efficient cause, and the other reason in the end. Reasons which are sought in the efficient cause belong to the sciences which we have already defined. Besides these sciences there is still another part of natural philosophy which explains the end of things. There is no name for this discipline, even though it is very important and most useful. It could be called teleology. (Disc. prae. §85)¹

Wolff's founding of teleology as a separate discipline betrays his historical situation. On the one hand, he is rooted in an intellectual tradition—the scholastic—deeply wedded to the concept of final cause and to an idea of nature as ruled by purposes. On the other, he has embraced the new mechanical philosophy which eschews goal-directed powers in favor of mathematical laws. To his scholastic predecessors, Wolff's division of natural philosophy into a part treating nature under the aspect of efficient causes and another part treating it under the aspect of final causes would have been puzzling. Efficient and final causes are, for the scholastic Aristotelian natural philosopher, co-causes of change. The agent, or efficient cause, has the power to produce change in another being only insofar as it is guided by a determinate end, or final cause. The final cause, in one common formulation, is the cause of the causality of the efficient cause, or that which moves an agent to act.² Wolff's separation of the domains of efficient and final causes reflects his modernity as much as it does his institutional heritage. The object of this essay is to understand the significance of Wolff's new science.

1. Wolff's texts, cited by paragraph number, are abbreviated as follows:

Aus. Nach.: Ausführliche Nachricht von seinen eigenen Schriften die er in deutscher Sprache herausgegeben (1726)

Cosm.: *Cosmologia generalis* (1731)

Disc. prae.: *Preliminary Discourse on Philosophy in General*. [*Discursus praeliminaris de philosophia in genere* (1728)] Translated by Richard J. Blackwell (I have silently modified the translations as I have seen fit.)

DMet.: *Vernünfftige Gedancken von Gott, der Welt und der Seele des Menschen, auch allen Dingen überhaupt* (1719)

Ont.: *Philosophia prima sive ontologia* (1730)

DPhys.: *Vernünfftige Gedancken von den Wirkungen der Natur* (1723)

DPhysio.: *Vernünfftige Gedancken von dem Gebrauche der Theile in Menschen, Thieren und Pflantzen* (1725)

DTel.: *Vernünfftige Gedancken von den Absichten der natürlichen Dinge* (1723)

Kl. Schr.: *Gesammelte kleine philosophische Schriften* (1736–40) (cited by page number)

Psy. rat.: *Psychologia rationalis* (1734)

Rat. prae.: *Ratio prælectionum Wolfianarum* (1718)

Theo. nat.: *Theologia naturalis . . . pars posterior* (1736–37)

LW: Briefwechsel zwischen Leibniz und Christian Wolff

2. The medieval scholastic slogan, that the final cause is "the cause of the causality of the other causes," (e.g., Aquinas, *Prin. Nat.* c.4) is retained in seventeenth-century scholasticism; e.g., Scheibler, *Opus. Met.* l.xxii, tit.25, art.1; Eustachius, *Sum. Phys.* l.ii, disp.2, q.6).

The reception of Wolffian teleology, especially of the project described in *Vernünfftige Gedancken von den Absichten der natürlichen Dinge* (henceforth, *German Teleology*),³ has ranged from skepticism to outright derision. It has been criticized for suggesting, for example, that mountains are for the sake of supplying water to rivers (§194), or that the rooster crows at unusual times in order to signal a change in weather (§134). In his biography of a rather more famous eighteenth-century German philosopher, Ernst Cassirer dismisses Wolff's project as resting on a simple confusion of uses and purposes (1918: 361).⁴ Meanwhile, its theological aspect—that observation of advantageous relationships in nature indicates God's providence—has been seen as the deserving target of Hume's and Kant's critiques of eighteenth-century natural religion. With Darwin, the design argument allegedly “received its deathblow,” as Thomas Huxley declared (1893: 82). Wolff's teleology should have been rendered otiose.

This paper argues that the character of Wolff's teleology is more complicated than has heretofore been recognized. In the first place, it has generally escaped notice that Wolff explicitly denies that teleology could be a self-standing theology. Its relevance to rational theology is ancillary; specifically, it serves to strengthen faith by providing sensible illustrations of intellectually grasped arguments for the existence of a necessary being. For this reason, Wolff also calls teleology an “experimental theology,” which requires conclusions concerning God's being and attributes to have already been established by other philosophical means (Aus. Nach. §187; cf. Disc. prae. §102). The first claim of this paper is that Wolff's teleology is not a physico-theology, at least not as Kant understood it—namely, as providing a distinct proof of God's existence from observations of nature—and, consequently, is unaffected by Kant's critique of the design argument.⁵

From a systematic point of view, Wolff conceives teleology primarily from motives of practical philosophy, even though he classifies it officially under physics. Teleology is intended as propaedeutic to a variety of disciplines, including psychology, ethics, and theology. It is a descriptive practice concerned with cataloguing regularities in nature for the sake of benefitting human society both materially and morally. It is not meant to provide an alternate picture of physical reality than that offered in mechanistic physics. Indeed, Wolff's teleology presupposes a mechanistic view of bodies as governed by efficient causes and mathematizable laws of collision. It builds on a mechanistic cosmology to

3. *German Teleology* went through five editions: in 1723, 1726, 1737, 1743, and 1753.

4. Cf. Schönfeld (2000: 103–104).

5. Buchenau (2011) interprets Wolff's teleology as an intervention in the debate between natural philosophy and theology which radicalizes their opposition by maintaining that only the former is in a proper position to recognize God's nature. By contrast, I contend that Wolff's project is more conciliatory, though it failed to satisfy Halle's pietist theologians and led to his expulsion.

indicate material benefit to be gained through human art and industry, as well as moral benefit through the cultivation of virtue and piety. The charge of confusing uses and purposes only sticks if one assumes that Wolff treats the uses of physical objects as constitutive of their essences, which he does not.

A second claim of this paper is that, with respect to teleology generally, Kant's relationship to Wolff is more complicated than it appears. On the one hand, both authors accord similar philosophical value to teleological reasoning as useful and even indispensable for human knowledge and action. This commitment is reflected in the systematic roles they ascribe to teleology. Neither is willing to countenance ultimate breaks between natural and moral reality, or between theoretical and practical philosophy, and each invests his hopes in teleology to provide finite, human reasoners with a suitable bridge between the two realms. On the other hand, Wolff and Kant disagree on the ultimate grounds of teleological principles. For Wolff, the description of ends as part of the physical world presupposes rational demonstrations of God's providence, and the ideal teleological unity of natural and moral reality is constituted in his conception of God as *philosophus absolute summus* (Nat. Theo. §268).⁶ By contrast, Kant in his critical period introduces teleology as a third branch of philosophy between theoretical and practical, and locates it in a distinct part of the higher cognitive faculty, namely the reflecting power of judgment, which should make possible a transition between the domains of nature and freedom (Letter to Reinhold, December 1787, 10:515; CPJ 5:196).⁷ With respect to the kind of end-based reasoning prevalent in many areas of experience, Kant's novel—and enigmatic—claim consists in according the principle of purposiveness a subjectively necessary status for the sake of unified philosophy, even though it determines neither our concepts of nature nor those of morality.

The next section clarifies the systematic place of teleology in Wolff's philosophy. It emphasizes its distinctness from the contemporaneous enterprise known as natural religion or physico-theology. Section 3 then describes the science as laid out principally in the two volumes known as *German Teleology* and *German Physiology* (*Vernünfftige Gedancken von dem Gebrauche der Theile in Menschen, Thieren und Pflantzen*, 1725) and highlights its function with respect to the practical goals of theology, ethics, economics, or medicine. Section 4, finally, compares Wolff's project with Kant's critique and finds the two authors in

6. For an interpretation of Wolff guided by this thesis, see Schneiders (1983).

7. Kant's texts are cited by Academy edition volume and page numbers, except for *Critique of Pure Reason*, which is cited by standard A and B edition paginations. They are abbreviated as follows:

CPR: Critique of Pure Reason

CPJ: Critique of the Power of Judgment

FI: "First Introduction" to Critique of the Power of Judgment

TP: "On the Use of Teleological Principles in Philosophy"

surprising agreement on the value of teleology. Their crucial differences consist in the foundations each offers for teleology, and in its systematic implications: whereas Wolff finds support for teleological reasoning in speculative proofs for God's existence, Kant locates its ground in the nature of human cognition and, consequently, restricts its validity to the bounds of human discursivity.

2. Teleology between Physics and Theology

Officially, Wolff introduces teleology as that part of physics which treats natural things under the concept of end (*finis; Absicht*). Another part of physics is physiology, which also receives its own, book-length treatment. The octavo sheets for each of the three volumes (*German Physics, German Teleology, and German Physiology*) record the topics as *Physick I, Physick II, and Physick III*. These divisions, however, are purely nominal and indicate decisions of convenience, rather than any deductive sequence between the works. In *Ausführliche Nachricht*, a commentary on his German texts, Wolff explains the division between teleology and physiology as simply being due to the extensive nature of the latter, which warranted a separate treatment of living things under the concept of end (§11). Similarly, he notes that general physics could stand alone without teleology (§10).

Wolff makes the priority of general physics over teleology clear in *Preliminary Discourse*: "Physics must precede teleology . . . reasons of finality [*rationes finales*] are only then accessible when efficient causes have been observed" (§100). A perspective on the world as end-directed presupposes its recognition as a machine and, thus, as intelligible under the conditions of human understanding. For Wolff, the new, mechanistic physics of the seventeenth century is a decisive advance over the old science of qualities and virtues. As he declares in *German Metaphysics*, "there is reality in [bodies] for the very reason that they are machines; indeed for that reason alone can they be intelligibly explained" (§617; *Cosm.* §75). The emphasis on body, and even the world as a whole, as a machine is a central theme of Wolff's philosophy. To be a body is to be a composite being, the essence of which consists in the manner of composition of its parts in time and space. It is to have properties of figure, magnitude, and position, which are modifiable according to laws of motion. Wolff's conception of bodies as machines does not admit any internal, goal-directed principles of change. Even though it retains much of the vocabulary of medieval natural philosophy, Wolffian physics excludes faculties responsible for change in ensouled beings such as plants and animals. For the study of finite minds, he has the separate discipline of psychology, part of the subject matter of which had previously been included in Aristotelian natural philosophy under *De anima* studies. In effect, Wolff's physics tracks the Cartesian division of the mental and the corporeal as

distinct domains of explanation. At the same time, its scope includes what would later be called the biological and the ecological. His conception of the physical, like Descartes's and Aristotle's, still encompasses non-mental living creatures.⁸ The parts of physics which he labels 'teleology' and 'physiology' reflect these adjustments to the encyclopedia of the sciences.

A perspective on nature under *rationes finales*, then, does not deliver an alternative picture of the world from the one being developed in the best physics of Wolff's day, namely the Newtonian. Wolff's use of the term '*rationes finales*' rather than the traditional '*causae finales*' is deliberate and, with few exceptions, consistent across his writings. 'Cause' *simpliciter*, for Wolff, always means 'efficient cause.' In *German Metaphysics*, 'cause' is identified with efficient cause as "that through the activity of which the possible is brought to actuality" (§120). In his Latin *Ontology*, again, Wolff's generic definition of cause exactly fits his definition of efficient cause: "A *cause* is a principle on which the existence or actuality of another thing separate from itself depends, both insofar as it exists and insofar as it exists in such a way" (§881). Efficient cause, then, is "*such a being . . . whose action is the reason for the existence of another,*" in which "there is both power and force of acting" (§§886–887).⁹ Wolff restricts the end, meanwhile, to an ideal (*idealiter*) existence (§936). His modern interpretation of the classical formula of *finis* as "that for the sake of which an efficient cause acts" treats means-ends relations as nothing other than cause-effect relations regarded from a certain perspective:

Since the effect is the end, and the action of the efficient cause is the means for its following; in the series of contingent things, in which the immediately preceding is the cause of the following, things can be mutually subordinated in such a manner that the subsequent are referred to the preceding as ends to means. (§939)¹⁰

8. It is only with the second edition of Georg Erhard Hamberger's *Elementa Physices* (1735) that the Physics textbook explicitly excludes the entire doctrine of plants and animals. In *Principles of Philosophy* IV.203, Descartes makes clear his intention to retain the study of what we now call 'living things' (plants and animals) within the scope of physics.

9. Wolff's narrowing of the gap between cause *simpliciter* and efficient cause is consistent with the later scholastic tradition. Suárez defines cause as "a principle *per se* inflowing being to something else" (Disp. Met. XII.2.4), and recognizes that this definition best fits the category of efficient cause as that which most properly "inflows being" (or produces real change in another thing), and even as "*that cause alone which really influences or moves per se*" (Disp. Met. XVII.1.3). In Germany, Suárez's analysis of cause was influential and was retained by many Protestant scholastics of the seventeenth century; see, for example, Scheibler (Opus. Met. I.xxii, tit.2, art.2). See Schmid (2010: 109–121) for further discussion of Suárez's treatment of efficient cause as the paradigm of cause.

10. "Quoniam itaque effectus est finis, & actio causae efficientis medium eum consequendi; in serie rerum contingentium, quarum praecedens continuo est causa sequentis, res ita invicem subordinari possunt, ut sequentes referantur ad praecedentes sicuti finis ad medium."

The relevant perspective under which causes and effects can be identified as means and ends is that of rational agents. Insofar as the efficient causal relation may be regarded under the guise of an agent-relative interest, Wolff identifies the end with the effect. Consideration of causes and effects as ends and means signifies the involvement of an intentional use of power and the force of acting for the sake of bringing about a represented effect. But it does not signify a separate, parallel series of causes which could independently explain the production of effects.¹¹

Thus, for Wolff, the natural world is a single “series of changeable things” (*eine Reihe veränderliche Dinge*) connected through ground-consequence relations (DMet. §544). These are properly judged as relations of efficient causation when the world as such, or cosmologically, is treated as a machine. The same ground-consequence relations in nature only permit interpretation as means-ends relations when the world is regarded as the product of a divine creator. Accordingly, in his carefully constructed German philosophical lexicon, Wolff renders the familiar Latin term ‘*finis*’ with the cognitively significant ‘*Absicht*,’ while glossing ‘*causa efficiens*’ as ‘*würkende Ursache*,’ or sometimes simply ‘*Ursache*.’¹²

Consequently, teleology finds part of its meaning in connection to natural or rational theology, the project of establishing the being and attributes of God through the natural operation of reason informed by experience. Wolff undertakes the project with characteristic rigor in the two volumes of *Natural Theology* (1736–37). As an empirical science, however, teleology is not folded into natural theology. Rather, since it “confirms the knowledge of God which is established in natural theology,” teleology “presupposes not only that we have notions of the divine perfections, but also that we can demonstrate that these perfections belong to God” (Disc. Prae. §102). That is, teleology does not aim to prove the existence of God or to establish definite conclusions about God’s nature, but only to supplement *a priori* proofs for such conclusions by providing sensible analogies through observations of nature. Thus, Wolff emphasizes the practical value of teleology as having “the most excellent use” for strengthening knowledge of God, so that “we perform our duties toward God more readily” (Disc. Prae. §101n). In fact, already in *Ratio Praelectionum* (1718) Wolff had argued that a proof of God’s existence based on the uses of things in nature would be viciously circular, for it would have to assume without proof that natural things have real

11. Leibniz sometimes suggests such a conception of the relation between efficient and final causes: “All natural phenomena can be explained by final causes alone, just as if there were no efficient cause; and all natural phenomena can be explained by efficient causes alone, as if there were no final [cause]” (1999:

1403).

12. A German-Latin glossary was appended to *German Metaphysics* from its first (1720) edition.

ends (II.iii, §45).¹³ To treat something as existing for a certain use already presupposes an intention, which is what theological arguments *a finibus rerum* set out to establish. To convey its ancillary role with respect to natural theology, Wolff labels teleology as “experimental theology” (*theologia experimentalis*). By labeling it ‘experimental,’ Wolff signals that teleology bears a status with respect to theology that is analogous to the status experimental cosmology bears to general cosmology, or empirical psychology to rational psychology, namely the status of a descriptive enterprise meant to provide evidence for theories. Accordingly, Wolff explains that in teleology, “what we have brought forth in *Natural Theology* through syllogisms is attested through his [God’s] works” (Aus. Nach. §187).¹⁴

In sharp contrast to the English tradition in natural religion, associated with figures such as John Ray, William Derham, and Cotton Mather, Wolff does not aim to found natural theology on suggestions of God’s wisdom, immensity, or power in the natural world. Indeed, the label ‘physico-theology’ was made prominent by Derham’s influential 1713 book of that title, which bore the subtitle, *A Demonstration of the Being and Attributes of God from His Works of Creation*.¹⁵ That English physico-theology gained popularity in Germany in the 1720s and 1730s only highlights the distinctness of Wolff’s approach. Restricted in scope and application, Wolff’s teleology cannot, in other words, be lumped together with the prolific series of German books on rock-theology (Lithotheology), bee-theology (Melittotheology), grasshopper-theology (Akridotheology), or fish-theology (Ichthyotheology).¹⁶

Similarly, Wolff’s teleology defies d’Alembert’s characterization of “the principle of *final causes*” in the *Encyclopédie* as grounding the enterprise of “finding the laws of phenomena through metaphysical principles” (1752: 789). For Wolff, “the special reasons of phenomena” are those investigated in mechanical physics and “are to be sought in derivative qualities of corpuscles and the manner in which they are connected among themselves” (Cosm. §235). In other words, the new physics enjoys sufficient autonomy to formulate its own methods and conceptions. There are no privileged, teleological laws of phenomena; rather, the

13. “Similiter qui a finibus rerum magna cum pompa petunt argumentum, sumunt, quod non probant, dari rerum naturalium fines. Valde autem vereor, ne summionem probaturi committant *circulum vitiosum*.” Cf. Bissinger (1970: 230).

14. “Wer diese Abhandlung [i.e., Teleology] mit Bedacht durchgehen will, der wird finden, daß hierinnen eine *Theologia experimentalis* enthalten, darinnen durch seine Wercke bestätigt wird, was wir in der *Theologia naturali* durch Vernunft-Schlüsse heraus gebracht.”

15. The term ‘physico-theology’ has an earlier provenance, however, going back at least to Walter Charleton’s *The Darknes of Atheism Dispelled by the Light of Nature. A Physico-Theologicall Treatise* (1652), and Samuel Parker’s *Tentamina physico-theologica de Deo* (1665).

16. McLaughlin (2001: 22), for instance, equates Wolff with Newton in regarding teleology as having the goal of becoming “the confidants of God’s intentions.” See Schönfeld (2000: 102–103) for more such titles in mid-eighteenth-century Germany.

perspective on nature as a system of ends must first recognize the efficient causal structure of the world, and only then, guided by the distinct disciplinary goals of natural theology and practical philosophy, interpret this structure as a means for the fulfillment of divine ends. Accordingly, Wolff does not consider in the *German Teleology* the ends that planets, rivers, or animals may have for themselves. The apparent inner purposiveness of organisms and organic parts presents special problems, the treatment of which is the subject of Wolff's *German Physiology*. Yet insofar as physiology is a part of physics, it retains the view of plant, animal, and human bodies as machines, thus as lacking internal ends or vital principles. We can now take a closer look at the contents of Wolff's teleological sciences.

3. Nature under the Aspect of Ends

Wolff states his overarching ambitions for physics and teleology in complementary fashion even while keeping their proper methods and aims distinct. In the prefaces to both *German Physics* and *German Teleology*, he affirms the commitment that God has created nature such that one thing is always for the sake of another (*immer eines um des andern willen ist*). Thus, physical science not only enables human beings "to use nature to our advantage," but also allows us "to glimpse God's hidden majesty in the effects of nature as in a mirror." But these common aims are pursued by distinct procedures. The object of physics is to formulate rules of motion by which interacting bodies are able to change size, shape, velocity, or position. It is strictly concerned with the proximate causes (*nächste Ursache*) in the series of events. The object of teleology, by contrast, is to discover relations of use and function in nature. It further enjoys the license, in virtue of its status as experimental theology, to interpret efficient causal relations as expressive of divine wisdom insofar as causal relations can be interpreted as relations of advantage.

Both physics and teleology, for Wolff, are *a posteriori* sciences of phenomena (Cosm. §35n). Teleology builds on physics by considering how efficient causes could serve as means toward ends. It likewise requires natural theology to first establish that the world is an expression or reflection of the divine essence. Since God has perfect knowledge of his own essence and the will to reveal his goodness to creatures, and hence could be said to intend the effects which result from his decision to create something rather than nothing, the metaphysician is permitted to conceive an observable connection of efficient causes as conforming to the intentions of a transcendent creator. Thus, any certainty that accrues to the descriptions of uses and benefits of natural things depends on the prior certainty, on the one hand, of mechanical laws of bodies which underwrite observed regularities and, on the other, of the theological doctrine that the "highest end

[*Haupt-Absicht*] of the world is the revelation of the glory of God" (DTel. §2). It is under these presuppositions that Wolff conceives the project of teleology:

We must show for all things that the world is so constructed that one can find clear and distinct grounds from which one can infer God's perfections . . . [so] that our understanding may attain a concept of that which is in itself infinite. After that we must investigate how one thing in the world is always for the sake of another, so that we learn what use one thing in the world has for another, and why each thing occurs. (§3)

The aims of teleology divide into two. First, teleology should confirm and illustrate theological doctrines in order to increase certainty in knowledge of God's being and attributes. And second, it should describe useful regularities in the world in order to extend humanity's dominion (*Herrschaft*) over nature through industry and art (§7). The structure of *German Teleology* reflects this division of tasks. Whereas the first part of the book interprets facts about the structure of the universe at the grandest scale as expressive of divine attributes, the second part attends to ecological facts among particular kinds of natural things in order to catalogue their relations of use and benefit. The second volume of teleology, *German Physiology*, deals with the special problems of the internal structure and operation of plant, animal, and human bodies.

As *theologia experimentalis*, teleology exhibits the marks of divine attributes in the arrangement of the world. Modern astronomy is a rich source of examples (DTel. §35). For instance, the contingency of the series of successive and coexisting things, the distinct conceivability of different ways in which space and time could be filled, suggest the idea that the world reflects divine choice (§11). The possibility of more than one order in the world supports, without demonstrating, the theological proposition that God is a free creator. Similarly, the vastness of the universe, the great number of celestial bodies and the huge distances between them, conveys a sensible idea of the immensity (*Unermesslichkeit*) of God's intellect, a proposition separately assented to on the basis of the speculative use of reason in natural theology (§23). Furthermore, since the world receives its actuality from God, a thesis established by the cosmological argument from the absence of sufficient grounds in created beings for their harmonious coexistence, the immensity of the observable world intimates the greatness of God's power (§24). Thus, for Wolff, reflection on the world at the grandest scale brings with it limited, empirical conceptions of God's attributes of freedom, wisdom, power, intellect, and immensity. These support rational conceptions of the divine attributes. Practically, such reflection also provides an impetus to investigate nature further in its details for the sake of bringing one closer to God through a deeper understanding of his works (§37;

§31). What teleology does not seek, however, is an independent account of the divine being.

While one may rightly worry about the weight of the evidence Wolff takes to confirm theological doctrines concerning God's attributes in nature, it is the second part of his teleology that has been the subject of greater derision. Objecting to such seemingly ludicrous claims as that the cycles of evaporation and precipitation are for the sake of keeping plants healthy, or that the rooster crows at unusual times in order to signal a change in the weather, Cassirer charges that Wolff's teleology rests on a simple category mistake of conflating uses and purposes. Plants may indeed be said to use rainfall for their growth, and human beings to use the rooster's daytime crowing to suspect an impending change in weather. But it is plainly fallacious to reason that the health of plants or our need to predict weather patterns are the purposes for the sake of which rain falls and roosters crow. The entire *German Teleology*, the objection goes, is founded upon this elementary error of taking accidental uses for essential purposes, or as final causes grounded in the natures of things (Cassirer, 1918: 361; Schönfeld, 2001: 103–104).

What this criticism misses, however, is a fundamental distinction informing Wolff's teleology, namely between divine intentions on the one hand, and human conceptions of uses, purposes, and functions of created things on the other. Metaphysically, for Wolff, every natural event, thing, or state of affairs, insofar as it is part of the world-machine, is also an end represented in the divine mind. Given his commitment that the world is the contingent product of a wise creator, every occurrence could be treated as something the deity brings about by freely willing a state of affairs it represents to itself. In other words, each state of the world results from an intention (*Absicht*). Further distinctions between uses, purposes, and functions are merely epistemic, and reflect a limitation of human cognition to discern the complete truth in the world as it is available in perception. Particular uses, such as the use a farmer might make of an ox, are not, in metaphysical rigor, essential features of things themselves, as Cassirer understands 'purpose.' It is no part of the ox's purpose to be used as a beast of burden, even if God intended such a state of affairs. On Wolff's view, God knows distinctly every consequence of that which he brings into existence, including the use farmers make of oxen, the potential use in the textile industry of silk spun by spiders, or the benefit plants extract from rainfall (DTel. §§143–144; §237).¹⁷ Such facts about oxen, spiders, and precipitation, consequently, are just as much divine intentions as whatever purposes bovines, arachnids, and raindrops may have in

17. At §237 Wolff reports on a discovery in the French Academy (likely that of François Xavier Bon de Saint-Hilaire in 1709) concerning the use of spiders as a substitute for silkworms in the silk weaving industry. Needless to say, the vaunted economic windfall did not come to pass, as the prototype garments Bon de Saint-Hilaire presented to Louis XIV promptly tore.

virtue of being members of certain species. Unlike a carpenter, who might not intend for her table to be used by a cat as a daybed, God's perfect knowledge precludes such distinctions between accidental uses and essential purposes of things. Wolff's choice to gloss the Latin *finis* as *Absicht*, or intention, is designed to subsume natural functions, uses, purposes, and ends under a common label which ultimately expresses the relation of the world to the divine mind.

Accordingly, from the point of view of God's essence, contemporary distinctions between teleomatic, teleonomic, and cosmical meanings of teleology are irrelevant.¹⁸ Processes exhibiting determinate end points under varying conditions, such as coastal wind currents, or rivers flowing into the sea; programmed, functional behaviors of evolved, biological systems; or optimal, mathematical form in the overall structure of the universe; each of these are on equal footing as expressions of the divine essence, even if we find such distinctions useful from a methodological standpoint. Divisions between the ways in which divine intentions are expressed—whether as teleomatic, teleonomic, cosmical, or psychological (intentional) processes—are, in a strict sense, epistemic rather than metaphysical in character. At the same time, despite their delimited scope, human conceptions of the uses of natural things are not without significance and practical value. To the extent that we can cast descriptions of natural regularities in terms of means-ends relations, such conceptions could, in the first place, be seen as partial representations of the kind of structure that a benevolent creator would produce and, in the second, serve as models for human industry.

But this position immediately raises suspicions of anthropocentrism and anthropomorphism. For one thing, even granting that the world is the product of a divine creator, why should human beings have privileged standing over all other creatures? For another, why should divine creation be restricted to forms available to a merely human understanding? An infinite being may well have created things which are in principle beyond human comprehension, just as it may have created beings it values more highly than humans.

Wolff explicitly disavows an anthropomorphic conception of God and nature as founded on an "unpracticed sense in the knowledge of nature" (DTel. §181). While much in the world may be distinctly understood by the resources of human understanding, he recognizes that much remains unknown or very inadequately represented by us, and, as a result, can be of no use to us. Thus, he affirms that "God has not made everything merely to please us" (§28). At the same time, this limitation is not inconsistent with supposing that whatever we are able to distinctly understand may have some benefit for us. Human beings are entitled to use their knowledge of natural relations for the conveniences of life, just as other creatures derive benefit from their environments to sustain

18. These distinctions are from Mayr (1992).

themselves in existence and reproduce themselves in kind. Wolff's view remains anthropocentric, however, inasmuch as he upholds the special status human beings enjoy as moral creatures. Since the ultimate end of God's creation is the revelation of his glory, humans are accorded a distinct place in nature as those creatures "through which God can achieve his ultimate end for the world, namely that he should be recognized and worshipped; thus it is clear that God made man for his own sake" (§242).¹⁹ Human beings have a unique place in the world in virtue of their moral rationality which their knowledge of nature should ultimately serve. But this privileged moral status does not entail that we have the license to do with nature as we please. What humanity should make of nature depends on what moral reason permits and forbids in light of its ultimate end. Anthropocentrism is pernicious if it is interpreted as permitting the unreflective subjugation of nature to our non-moral desires, something which Wolff does not recommend.

Finally, one might suspect that Wolff's teleology is simply a crude attempt to vindicate a misleading psychological propensity to view any object whatsoever from a self-interested, intentional standpoint, a view modern cognitive science calls 'promiscuous teleology.'²⁰ Finding providential explanations for any and all phenomena could be a lamentable effort to rationalize what is really a cognitive defect in human nature. But this objection also misunderstands the character of Wolff's teleology. Substantiating an unrestricted intentional stance is not his aim. Instead, the outlook of *German Teleology* is better understood as offering a relational or perspectival view of the natural world for the practical benefits it could provide. While it is certainly an independent commitment of Wolff's that the world is the product of divine intention, the descriptions catalogued in his teleology convey a view of nature as a system of perspectival relations between living things and their environments. The recognition of functional regularities between things in one's environment, whether organic or inorganic, affords a distinct kind of knowledge from that attained through laws of change in bodies. Indeed, it is not only humans who are able to exploit functional relations between natural kinds for their own ends, but also plants and animals are able to draw utility from the environment. What distinguishes the science of teleology from mechanical physics, at least with respect to its concrete results, is not so much its prior commitment to regarding the world as intelligently designed but rather its interest in viewing some creatures as apt or suited to some use or function by other creatures. The conception of the world, not merely as a chain of efficient causes but as a complex web in which the discovery of causes and

19. "da der Mensch die einige Creatur ist, durch die Gott seine Haupt-Absicht erreichen kan, die er von der Welt gehabt, daß er nemlich als ein Gott erkandt und verehret wird; so ist daraus klar, daß ihn Gott um sein selbst willen gemacht."

20. The term 'promiscuous teleology' is due to Kelemen (1999); Kelemen and Rosset (2009).

effects is equally a discovery of means and ends, offers an additional, practically advantageous perspective on nature, and builds on the foundational account in general or theoretical physics.

Wolff's teleology, thus, is a complex enterprise occupying a systematic place between physics, theology, and practical philosophy. It remains throughout a descriptive project concerned with the external uses and purposes of natural things, and of the cosmological system as a whole as the realization of the intentions of a divine creator. It does not, in contrast to the prolific eighteenth-century enterprise of physico-theology, purport to demonstrate the existence and attributes of God from an examination of the functions and structures of particular kinds of creatures, even as it supplies empirical analogies in support of speculative conclusions.

Meanwhile, the special problems posed by the internal structure of apparently self-interested beings which extract benefit from the environment—that is, plant, animal, and human bodies—are the topic of the subdiscipline of physiology. In the science of the structure and operations of living things, more richly normative concepts, in particular those of health and sickness, assume importance. As a special branch of teleology, physiology presupposes the principles of mechanistic physics as well as the theological arguments for nature as an expression of divine attributes. Throughout *German Physiology*, Wolff appeals extensively to physics to provide general principles of bodies, and to natural theology to indicate how observations of organic bodies agree with theological conclusions. The distinctness of the subject matter of physiology rests in the special characteristics of its objects, specifically the ends of plants and animals with respect to their own structures rather than to other creatures in their environments (DPhysio. §219)²¹

The structure of plant and animal bodies is thinly teleological inasmuch as they are composite beings. Composite beings, for Wolff, are characterized by a manner of composition of parts which involves essential for-the-sake-of relations. But, in addition, plant and animal parts appear to be arranged in more richly teleological ways, so that a) they are reciprocal causes of each other's modifications; b) their structure grounds their appropriate (*aptum*) activity; so that c) the whole organism is able to maintain itself by extracting benefit from its environment; in order to d) reach its ultimate end of propagating its species by reproducing itself in kind. (Wolff, to be clear, retains an Aristotelian view of biological species as fixed kinds, rather than as evolving lineages.) Organic bodies are paradigm instances of phenomena which exhibit a reciprocal arrangement of causal parts suited for a systemic end, and thus are legitimate objects for the application of a design analogy (Cosm. §47).

21. "Ich rede hier bloß von der Haupt-Absicht, die Gott für die Pflanzen bey ihrer Structur, nicht aber bey den Pflanzen für andere Dinge hat."

Wolff's analysis of organic structure introduces a further notion of normativity in bodies which is underemphasized, if not entirely absent, in other parts of his natural philosophy. Organic bodies—parts such as roots and hearts as well as whole organisms—are distinguished by an appropriate activity, or a proper function, for the sake of which their parts are organized in a definite manner. Yet, Wolff keeps this richer sense of normativity apart from the substantial foundation of goal-directed force in bodies, a matter on which he maintains principled agnosticism. For his nominal account of health and sickness in organic bodies, Wolff draws on early modern medical practice to argue that a practically sufficient conception of normative bodily activity can be framed in terms of mechanical dispositions, thus from a consideration of effects, rather than from internal causes.

Wolff's method for studying organic structure proceeds via functional analysis, such that the appropriate activity of an organic body consists in its contribution to the exercise of a capacity of a higher, containing system in which it is a component. Such function-analytic explanations, amenable to an inert, mechanistic conception of body, are located in a non-mechanical account of the divinely-instituted ends of organisms to maintain their species through reproducing their kind. The origin of appropriate organic activities lies in divine intentions, for the parts of animals and plants ultimately exist due to a divine act, because of their function in maintaining the health of the individual for the sake of reproduction. Wolff, in effect, embeds a mechanical-functional mode of explicating organic systems within a creationist account of the origins of natural function. Viewed from the standpoint of systematics, this division of labor mirrors the dual character of teleology as, on the one hand, a branch of empirical physics and, on the other, ancillary to the special metaphysics of natural theology. Both modes, for Wolff, remain valuable: the one offers mechanical descriptions of the operations and effects of organized bodies, while the other points toward reasons for the existence of functional unities in the world.

The essence of an organic body, like that of any other body, consists in structural facts about the manner of composition of its parts. But, in contrast to inorganic bodies, Wolff specifies the concept of an organic body further as the manner in which its parts are organized for an appropriate activity (Cosm. §276).²² Knowledge of this organization involves knowing the reason why parts are composed in one manner rather than another, which in turn consists in the activity the body is supposed to perform (§279). At the same time, the structure of an organic body contains the reason why it is able to carry out that function

22. "*Corporis organici essentia consistit in structura ejusdem. Structura enim est compositio corporis organici, adeoque consistit in eo, quod partes, quae ipsi tanquam corpori organico conveniunt, hoc est, quatenus peculiari cuidam actioni aptum est, eo modo inter se conjunctae sint, ut corpus ipsum actioni cuidam peculiari aptum evadat.*"

(§277). That is, once the structural facts of an organic body are known, its proper function becomes intelligible. An eye, for example, is a structure whose parts are arranged in such a way as to make possible the activity of seeing. Knowledge of this structure, in turn, explains how it is possible for a being to have the capacity for vision. Consequently, the functional analysis of an organic structure requires appeal to a larger physical system in which it is one component. While the parts of an eye are trivially connected to all other extended beings in the universe in a relation of community, they enable vision only if they stand in certain proximate causal connections, not just among themselves but also to other parts of an animal. An eye makes possible the capacity for sight only in a being in which it is connected in a certain way to the brain, the circulatory system, and all other parts requisite for the activity of seeing (§276n). Only in the context of a larger system do individual organic parts acquire proper functions. The goal of physiology is to explicate the functional roles of the reciprocally connected parts constituting plant and animal bodies.²³ In this office, the physiologist's work may readily be compared to that of the mechanist, and Wolff sees a strong analogy between the objects of their respective sciences. As he suggests in *German Physiology*, the anatomist can usefully treat the structure of the heart as a collection of individually unremarkable parts arranged with respect to the function of pumping blood, just as an engineer constructs a machine press by ordering parts in a way that makes it serviceable for shaping or cutting metal (DPhysio. §121).

A function-analytic explanation presupposes a notion of the good of a body; minimally, as a healthy state of a body (as well as of a bad, or sick state) with reference to which an organic part may be judged to be functioning well or poorly. Wolff offers such a normative analysis of mechanical function in two essays entitled "On the Concept of Health," and "On the Concept of Sickness."²⁴ In these texts, Wolff borrows nominal definitions of health and sickness offered by early modern medical writers, including Daniel Sennert, Hermann Boerhaave, Friedrich Hoffmann, Michael Ettmüller, and Thomas Campanella. Wolff establishes, in the first place, that these authors agree that ascribing health to parts of the human body depends on attributing proper activities (*Verrichtungen*) to those parts; lack of health, or sickness, is nothing but the inability to execute those same activities (Kl. Schr. 335–338). The functions possible for a body depend on

23. Wolff's conception of function at the structural level of an organic body can be likened to Cummins's (1998) influential account of function ascription statements as ascribing a causal role to an entity in the background of some capacity of a system in which the entity is one causal component.

24. "Von dem Begriff der Gesundheit" and "Von dem Begriff der Krankheit." Both were originally private lectures given in Marburg, and collected in *Horae subsecivae Marburgensis*. The essays were translated into German and published in several volumes titled *Gesammlete kleine philosophischen Schrifften* between 1736 and 1740. The first volume contains essays on natural philosophy and medicine.

its structural properties, such its size, figure, and relative position of its parts. Importantly, Wolff distances the notion of health from that of a *principle* of activity, or a source of change internally directed toward the good from which the actuality of bodily dispositions results. While some such *principium activum* must indeed be supposed for purely conceptual reasons, Wolff declares that, “in the present case, however, it is all the same what kind this might be” (340–341). That is, considered strictly as a body, the organic machine can be treated just as an artificial machine such as a clock, and its state of good health or functioning can be sufficiently assessed on the basis of the condition of its appropriate dispositions. Whether such dispositions are exercised by means of an innate entelechy, the direct concurrence of God, an *anima mundi*, or a certain “force of composition” is irrelevant to the analysis of a body’s state of health or sickness.²⁵ Just as a clock is said to be functioning well when its wheels and levers are assembled in a way that enables it to tell time accurately, and functioning poorly when the state of its parts is otherwise, a human body is susceptible to just such conditions of good or bad mechanical function (344–346).²⁶ In line with a neo-Galenic current in early modern medical writings, associated with figures such as Fernel, Descartes, Sennert, and Boerhaave, Wolff endorses the position that health “is a certain internal state of the body,” in which each part is suited to perform a particular activity, determined by its physical structure, so that the whole is disposed to maintain a certain normal state of activity (343). Wolff does not, however, seek to ground this notion of health in a more fundamental account of force.

Just as Wolff’s physiological conception of health excludes appeal to a principle of life or activity, it remains silent on the reason for the existence of proper functions in the parts of plants and animals. Whence the heart acquires the function of pumping blood, or the stomach of digesting food, is irrelevant to an analysis of the functions they do perform in maintaining the body in a state of good health. The question of the origin of natural function takes inquiry beyond the physical sciences and into the metaphysics of divinity. The sufficient reason for why the heart exists in an animal of a certain kind, for instance, lies in the

25. In *Cosmology* §274, Wolff defines an organic body as one whose “force of composition” (*vi compositionis*) is appropriate for its peculiar activity. Wolff deliberately doesn’t expand further on the nature of this *vi compositionis*, consistent with his general agnosticism about the origin of elemental force in bodies, and with his specific objection to Leibniz’s view that phenomenal forces result from the perceptual and appetitive force of monads; cf. §197; *Psy. rat.* §644n; LW 139–140.

26. The difference between a natural and artificial machine, for Wolff, is instead a mereological one: a natural machine differs from an artificial one in that each part of the former is itself a functionally articulated structure, whereas in the latter one arrives ultimately at simple physical parts whose causal activities are fully describable in terms of their pushes and pulls. In an organic body, by contrast, every part is itself an organic body, so that analysis never reaches a level of non-functional mechanism (*Kl. Schr.* 347; *DPhysio.* §121). In this regard it resembles Leibniz’s conception of machines of nature (e.g., 1969: 456).

end which God had for creating individuals conforming to the conceptual conditions expressed by their species, not in facts about the structure of its parts. That is, while structural facts explain how certain activities are possible, they do not explain why any creatures possessing the capacities for such activities exist. The origin of functions and of species requires a separate account which, for Wolff, requires appeals to the divine essence.

Thus, in *German Physiology*, Wolff frames the function-analytic account of organic structure by first affirming the theological position that facts about the ability of organic bodies to nourish themselves through food and drink, their ability for locomotion, their possession of sensory organs or of a voice or language, are nothing other than God's ends. The particular manner of composition of the body is in turn the means with which God achieves his ends (§§1–5). The ultimate end (*Hauptabsicht*) for the animal, human, and plant body is that "it should persist in its life for a certain time and maintain its species, as long as the Earth lasts" (§6). The reason that plants and animals possess appropriate parts to extract nourishment, to locomote, or to produce flowers, lies in the fittingness of such parts to enable reproduction in order that the species may persist. The heart exists in animals of a certain kind because of its contribution to the maintenance of the species, thus for an external end in the divine mind.

In sum, Wolff's physiology keeps one eye on the theological motivations of teleology, namely of interpreting nature as an expression of divine perfections. Unlike vitalist conceptions of nature in the early modern period, however, Wolff's theory of organisms eschews immanent active powers. Instead, Wolff draws closer to a Cartesian view of bodies as inert machines sustained and modified from external forces alone. Wolff shares with early modern medical writers an analytic conception of the functions of organic parts. This status is due partly to the employment of a mechanical notion of function in the actual practice of physicians, and partly from its agreement with general principles of bodies. Such analyses have their properly delimited sphere within a larger scheme of nature that results from God's designing intention to produce a stable world system, and ultimately for the sake of revealing his glory to moral subjects. Like his physics, Wolff's physiology remains primarily a science of phenomena concerned with a precise description of the appearances of a special class of beings. In virtue of its status as a branch of teleology, however, it draws assumptions from, and lends support to, doctrines known from natural theology.²⁷

27. Physiology is not, however, as van den Berg (2013: 727) claims, a "transcendent" science, any more than physics or teleology. Van den Berg rests his claim for the transcendent status of physiology "in virtue of [its] being grounded in metaphysics and theology." But physics is equally grounded in metaphysics, and both sciences exploit theological assumptions and points toward theological conclusions. Yet, physics and physiology in equal measure proceed according to their

4. Wolff's Teleology and Kant's critique

Kant's critique of rational theology in the "Ideal of Pure Reason" chapter of *Critique of Pure Reason* targets three kinds of proof for the existence of God: the ontological, the cosmological, and the physico-theological. Kant reconstructs the physico-theological proof as follows: 1) there are "clear signs of an order according to determinate aim" in the world, or that the world exhibits a striking degree of order and regularity; 2) "this purposive order is quite foreign to the things of the world," so that it is hard to imagine how it could have arisen spontaneously or accidentally, or without the involvement of rational agency; 3) thus, "there exists a sublime and wise cause (or several), which must be the cause of the world," specifically a rational agent operating through intelligence and freedom (A625/B653).

Kant's key objection to the physico-theological argument for the existence of God is that it tacitly assumes the error of the cosmological argument and, consequently, of the ontological argument concerning the status of existence claims. Kant's influential critique of the ontological argument denies that existence is a distinct predicate—alongside the traditional divine attributes of goodness, truth, power, or unity—in the idea of a most real being, so that the existence of God cannot be inferred from the mere logical possibility of an *ens realissimum*. The cosmological and physico-theological arguments fail, according to Kant, because they inherit this false premise from the ontological argument.²⁸

Kant notes that the argument from design is merely analogical and cannot on its own satisfy the demand for apodictic certainty about the proposition that God exists. By itself, an inference from apparent purposiveness in nature to the idea of a wise designer can only support the idea of God as a "*highest architect of the world*," who would, like any architect, be constrained by the materials available to her. But it cannot support the idea of a "*creator of the world*, to whose idea everything is subject." The physico-theological argument fails to establish the truth of the proposition that God, who created the world *ex nihilo*, exists, for it attends only to the form of natural products while ignoring the material conditions of their existence (A627/B655). If one were to seek further premises to argue for the existence of God from the contingent actuality of particular things—say, from the contingency of the structure of the eye—Kant argues, one would simply replicate the cosmological argument from the contingency of creation *sim-*

own, restricted norms and principles of inquiry, and Wolff repeatedly emphasizes the irrelevance of metaphysical suppositions in physical and physiological explanations.

28. For recent expositions of Kant's famous thesis that existence is not a predicate, see Proops (2015) and Stang (2015). There has been a long-standing debate about the accuracy of Kant's charge that the cosmological and physico-theological arguments presuppose the ontological. For a survey of the debate and defense of Kant, see Smith (2003).

pliciter to its ground in a necessary being and, ultimately, to existence as among the predicates of a most real being. “Thus the physico-theological proof, stymied in its undertaking, suddenly jumps over to the cosmological proof, and since this is only a concealed ontological proof, it really carries through its aim merely through pure reason” (A629/B657). The argument from design, for Kant, stands or falls with the ontological argument.

As should be clear from what has been said in earlier sections, Kant’s objections to physico-theology, as “the attempt of reason to infer from the ends of nature . . . to the supreme cause of nature” (CPJ 5:436), do not undermine Wolff’s science of teleology. Wolff does not conceive teleology as supplying a distinct argument for the existence of God. Teleology is strictly an empirical doctrine concerned, on the one hand, with describing functional regularities and adaptive relations in nature and, on the other, with cultivating morals. Wolff explicitly rejects any attempt to move from the analogy between natural order and designed order to a demonstrative argument for God’s existence. Inferences from observed order to divine intentions throughout presuppose the cosmological and ontological arguments, but they never deliver an independent proof of God’s existence. For Wolff, the principal value of teleology lies in its character as a theoretically heuristical and morally didactic enterprise, one which conveys practical advantages by enabling greater control over nature and suggesting directions for research, and which increases virtue and piety by cultivating a deeper appreciation for the beauty and complexity of the natural world. Kant’s critique of physico-theology is indeed effective against the English tradition in natural religion and its German representatives, such as Hermann Reimarus.²⁹ In that tradition, physico-theology becomes a “misunderstood physical teleology,” according to Kant, for it aspires to be a demonstrative, rational science, even though it is viable only as a descriptive, empirical practice. Thus, Kant writes that physico-theology “is usable only as a preparation (propaedeutic) for theology, and is adequate for this purpose only with the assistance of another principle, on which it can support itself, but not in itself, as its name would suggest” (CPJ 5:442). Wolff’s teleology, however, is not susceptible to Kant’s objection, since it only serves as propaedeutic to rational theology but does not claim to be a theology itself.

Beyond the specific issue of physico-theology, a comparison between Wolffian and Kantian teleology reveals both affinities and contrasts. Kant shares with Wolff a deep appreciation for the value of teleological reasoning. Despite its general implication in the defects of rational theology, Kant’s criticisms of the perspective on nature as designed are far more measured than his scathing at-

29. Kant names Reimarus, author of the popular *Vornehmste Wahrheiten der natürlichen Religion* (1754), as representative of the argument “taken from physical teleology” (CPJ 5:476).

tacks on the ontological or the cosmological arguments, which he dismisses as mere plays of “scholastic wit” and empty sophistry (A603/B631; A606/B634).³⁰ In marked contrast to his hostility toward those arguments, Kant is sincerely moved by the force of the premise with which physico-theology begins, namely, that “the present world discloses to us such an immeasurable showplace of manifoldness, order, purposiveness, and beauty,” which irresistibly points to its origin in ideas or intentions (A622/B650). Kant underscores this point already in the general Introduction to the Transcendental Dialectic: “A plant, an animal, the regular arrangement of the world’s structure (presumably thus also the whole order of nature)—these show clearly that they are possible only according to ideas,” hence, under the supposition of rational agency (A317/B374). He affirms that “we have nothing to object against the rationality and utility of this procedure, but rather recommend and encourage it” (A624/B652). Specifically, Kant emphasizes the value of the teleological attitude for “enliven[ing] the study of nature,” and for “extend[ing] our information about nature,” thus for rendering the kind of conditional, yet indispensable, empirical function which we have seen Wolff accord to teleology and physiology as part of physics (A623/B651; CPJ 5:398; CPJ 5:370–375; TP 8:182).

To be sure, Kant is far more concerned than Wolff to keep theology and natural science apart. In “On the Use of the Teleological Principle in Philosophy” (1788), he warns against intermixing the two: “I do not find it advisable to use a *theological* language in matters that concern the mere cognitions of nature and their reach” (TP 8:178). Yet, Kant also cautions against unreflectively interpreting all teleological talk as theological and thus as suspect, adding that, in the domain of natural knowledge “it is quite appropriate to express oneself in *teleological* terms” (TP 8:178). The physical teleological perspective certainly excites the idea of intelligent design and gestures toward theology. But it does not logically compel a transition to theological explanations of natural phenomena. As long as we remain cognizant of the distinct scope of teleological and theological concepts, we may safely use the former under suitable restrictions. Thus, although teleological descriptions of nature are always empirically conditioned and based on an analogy with human agency (CPJ 5:383; TP 8:181),³¹ they are nevertheless legitimate within their proper domains. In fact, Kant expresses a still stronger view on the demand for a teleological perspective: “Much research into nature can and must take place in accordance with the teleological principle without there being cause to inquire into the ground of the possibility of purposive action that we find in various products of nature” (CPJ 5:437). The use of teleological

30. Cf. Pasternack (2011).

31. For recent discussions of the role of analogy in teleological judgment, see Breitenbach (2014) and Nassar (2016).

reasoning about nature is not only permitted but required, even if we were never to pursue the question of the ultimate ground of natural purposes. Similarly, we have seen Wolff defend the utility and rationality of a teleological perspective on nature, while acknowledging that its putative conceptual link to the divine essence as its ground is only analogical. Wolff grants teleology a place in his physics for much the same reasons that Kant grants it a place in the study of nature, namely for its indispensable value in advancing empirical research. I submit that Wolff would agree with Kant's opinion, that "physical teleology certainly drives us to seek a theology, but it cannot produce one, however widely we may scrutinize nature through experience" (CPJ 5:440). Where he differs from Kant, perhaps, is in his more sanguine pursuit of the drive elicited by physical teleology by other, speculative means.

There are, indeed, further differences between Wolff's and Kant's conceptions of teleology. Some of these are architectonic in character. As we have seen, Wolff classifies teleology as a branch of physics, thus placing it on the side of theoretical philosophy, but also emphasizes its practical character. He thus betrays a certain ambivalence concerning the systematic place of his new discipline. Kant, by contrast, explicitly conceives teleology as a third part of philosophy, which should serve as a bridge between natural and moral philosophy. Writing to Reinhold in December 1787, Kant introduces a tripartite division of philosophy, and remarks that each of the three parts "has its *a priori* principles, which can be enumerated and for which one can delimit precisely the knowledge that may be based on them: theoretical philosophy, teleology, and practical philosophy" (10:515).³² And in the Introduction to *Critique of the Power of Judgment*, Kant highlights the transition from philosophy of nature to philosophy of freedom as its central task (CPJ 5:196). Whether he succeeds in this project is a matter of considerable interest, but not directly relevant to present purposes.

But there are yet deeper disagreements between Wolff and Kant on teleological thought. These consist in their respective views on the source of the teleological principle, and in the scope which they accord to teleological reasoning. In brief, for Wolff, the license to regard nature as a system of ends is grounded ultimately in the speculative idea of God as its wise originator, even if our finite perspective does not permit us to identify any specific teleological relation in nature as sufficient for knowing God's existence and attributes. Thus, in the Preface (1723) to *German Teleology*, Wolff begins by recalling his cosmological arguments in *German Metaphysics* for the conclusion that God is an all-powerful originator of nature (*allmächtige Urheber der Natur*) who has created the world for

32. The threefold distinction is itself notable for its departure from the tradition of German philosophical taxonomies. The standard division was between theoretical and practical. If a tripartite division was made, it was typically between physics, ethics, and logic. Kant's classification of teleology as a third branch is unusual, to say the least.

a definite, unified end, namely the revelation of his glory to moral subjects. Wolff can ask, and answer, the question, what is the ultimate end of creation, because he grounds his teleological conception of reality as a whole in the idea of God as its rational source.

By contrast, Kant denies the validity of any theoretical proofs of the existence of God. Consequently, his positive appraisal of teleology is not anchored in special metaphysics and the theoretical warrants the latter supplies for the use of physical teleology as propaedeutic. Indeed, for Kant, a teleological perspective on the natural world does not even entitle us to raise the question about the end of creation as a whole, for the purposive relations observed among natural things are always empirically conditioned. The purpose of nature as the totality of appearances could never be conveyed in any particular, contingent relation of means and end. At best, the teleological standpoint justifies the use of the idea of the world as intelligently designed as “a merely subjectively appropriate concept” for finite reasoners like ourselves, so that we may form an intelligible conception of the possibility of certain appearances on an analogy with our own understanding of means-ends reasoning (CPJ 5:437). Kant shares with Wolff a recognition of the empirical value of, and, more fundamentally, an intuitive attraction toward a teleological perspective on nature. But, unlike Wolff, he locates the source of this perspective in the nature of human rather than divine cognition and, consequently, restricts its scope to the subjective conditions of human experience.

The concern to delimit the scope of concepts proper to human experience and to deny their applicability to the idea of God is a key feature of Kant's critical period. On the question of teleological thinking about nature, this concern finds its most detailed expression in Kant's principle of purposiveness in *Critique of the Power of Judgment*. Kant discovers in aesthetic and biological experience a new principle, that nature is purposively ordered for our cognitive faculty. The subjectively necessary principle of purposiveness, however, belongs neither to the understanding's constitutive principles for determining nature nor to reason's principle of freedom, but rather to the faculty of reflecting judgment, which “can only give itself such a transcendental principle as a law . . . [but cannot] prescribe it to nature” (CPJ 5:180). That is, the purposiveness of nature is a law for how we ought to judge nature, but not, like the laws of the understanding, for how nature itself must be structured. In other words, Kant identifies as a condition of thinking about purposive organization in nature—whether at the level of individual objects such as plants and animals, or at that of its system of empirical laws as a whole—that we have to regard nature as if an understanding, even if not ours, contained the ground of its order (CPJ 5:181). He thus introduces in his philosophy of nature a qualified notion of intrinsic normativity, that nature ought to be judged as purposefully designed, even if we are not, and never could

be, in a position to infer a designer.³³ For Kant, the teleological perspective on nature addresses what is ultimately a need of finite reasoners to make sense of well-ordered natural diversity as the appearances of a unified domain. Purposiveness is not an objective concept of nature, but only expresses the “subjective relation of nature to a faculty of the mind,” or how we must regard nature in order to make its organization intelligible to ourselves (FI 20:218). For Kant, unlike Wolff, the validity of teleological reasoning about the physical world stands under a peculiar qualification, owing to the origin of its principle in a human faculty for reflecting on nature, rather than in a divine faculty which should have determined its order.

By treating nature only *as if* it were the work of intelligence, Kant undercuts Wolff’s didactic use of physical teleology, which exploits the mere suggestions of beauty, order, or advantage in nature as occasions for cultivating virtue and piety. Kant thus rules out one way in which Wolff envisions the practical-ethical employment of teleology. Furthermore, by rejecting the speculative proofs upon which Wolff’s teleological metaphysics rests, Kant undercuts Wolff’s conception of the highest end of the world as the revelation of God’s glory to moral subjects. For Kant, nothing in nature could give us the slightest clue as to what the final end of the world might be; that question can only be answered by turning from considerations of natural advantage to the absolute value a good will would freely give to itself, hence from physico-theology to ethico-theology. In important respects, then, Kant departs from Wolffian teleology in both the theoretical and the practical domains. To be sure, the later Kant continues to share Wolff’s aspirations for unified philosophy, and ultimately appeals to the notion of faith to provide the transition between natural and moral purposes. But he also marks an important rupture. In the end, Kant’s idea of reforming philosophy as *teleologia rationis humanae* may well be said to supplant a Wolffian one of philosophy as *teleologia rationis divinae*.

Acknowledgements

I would like to thank Gary Hatfield, *Ergo*’s area editor, and two anonymous referees for helpful comments on earlier drafts.

33. For the sense in which Kant’s concept of purposiveness expresses a kind of primitive normativity, see Ginsborg (1997) and Zuckert (2007: 76–86).

References

- Aquinas, Thomas (1998). *On the Principles of Nature*. In *Selected Writings* (Ralph McInerney, Ed. and Trans.). Penguin.
- Bissinger, Anton (1970). *Struktur der Gotteserkenntnis*. H. Bouvier.
- Breitenbach, Angela (2014). Biological Purposiveness and Analogical Reflection. In Ina Goy and Eric Watkins (Eds.), *Kant's Theory of Biology* (131–147). De Gruyter. <https://doi.org/10.1515/9783110225792.131>.
- Buchenau, Stefanie (2011). Die Teleologie zwischen Physik und Theologie. *Aufklärung*, 23, 163–174.
- Cassirer, Ernst (1918). *Kants Leben und Lehre*. Bruno Cassirer.
- Cummins, Robert (1998). Functional Analysis. In Colin Allen, Marc Bekoff, and George Lauder (Eds.), *Nature's Purposes* (169–196). MIT Press.
- d'Alembert, Jean-Baptiste le Rond (2005). Final causes (Armando Manalo, Trans.). In *The Encyclopedia of Diderot & d'Alembert Collaborative Translation Project*. Michigan Publishing, University of Michigan Library. Retrieved from <http://hdl.handle.net/2027/spo.did2222.0000.542>
- Descartes, René (1982). *Principles of Philosophy* (Valentine Rodger Miller and Reese P. Miller, Trans.). Kluwer.
- Distelzweig, Peter. M. (2015). The Use of Usus and the Function of Functio: Teleology and Its Limits in Descartes's Physiology. *Journal of the History of Philosophy*, 53(3), 377–399. <https://doi.org/10.1353/hph.2015.0051>.
- Eustachius à Sancto Paulo (1614). *Tertia pars summae philosophiae: De rebus naturalibus*. Carolum Chastellain.
- Ginsborg, Hannah (1997). Kant on Aesthetic and Biological Purposiveness. In Andrews Reath, Barbara Herman, and Christine Korsgaard (Eds.), *Reclaiming the History of Ethics: Essays for John Rawls* (329–360). Cambridge University Press. <https://doi.org/10.1017/CBO9780511527258.013>.
- Hatfield, Gary (2012). Mechanizing the Sensitive Soul. In Gideon Manning (Ed.), *Matter and Form in Early Modern Science and Philosophy* (151–186). Brill. https://doi.org/10.1163/9789004221147_007.
- Huxley, Thomas. H. (1907). *Darwiniana*. Macmillan.
- Kant, Immanuel (1998). *Critique of Pure Reason*. Paul Guyer and Allen Wood (Eds. and Trans.). Cambridge University Press. <https://doi.org/10.1017/CBO9780511804649>.
- Kant, Immanuel (1999). *Correspondence*. Arnulf Zweig (Ed. and Trans.). Cambridge University Press. <https://doi.org/10.1017/CBO9780511527289>.
- Kant, Immanuel (2000). *Critique of the Power of Judgment*. Paul Guyer and Eric Matthews (Eds. and Trans.). Cambridge University Press. <https://doi.org/10.1017/CBO9780511804656>.
- Kant, Immanuel (2007). On the Use of Teleological Principles in Philosophy (Günter Zoller, Trans.). In *Anthropology, History, and Education* (195–218). Cambridge University Press.
- Keleman, Deborah (1999). Functions, Goals, and Intentions: Children's Teleological Reasoning about Objects. *Trends in Cognitive Science*, 3, 461–468. [https://doi.org/10.1016/S1364-6613\(99\)01402-3](https://doi.org/10.1016/S1364-6613(99)01402-3).

- Keleman, Deborah and Evelyn Rosset (2009). The Human Function Compunction: Teleological Explanation in Adults. *Cognition*, 111(1), 138–143. <https://doi.org/10.1016/j.cognition.2009.01.001>.
- Leibniz, Gottfried, W. (1969). *Philosophical Papers and Letters*. Leroy E. Loemker (Ed. and Trans.). Kluwer.
- Leibniz, Gottfried, W. (1999). *Sämtliche Schriften und Briefe, sechste Reihe, vierter Band*. Berlin-Brandenburgische Akademie der Wissenschaften (Ed.). Akademie.
- Leibniz, Gottfried, W. and Christian Wolff (1860). *Briefwechsel zwischen Leibniz und Christian Wolff*. Carl I. Gerhardt (Ed.). H.W. Schmidt.
- Mayr, Ernst (1992). The Idea of Teleology. *Journal of the History of Ideas*, 53(1), 117–135. <https://doi.org/10.2307/2709913>.
- McLaughlin, Peter (2001). *What Functions Explain*. Cambridge University Press. <https://doi.org/10.1017/CBO9780511498510>.
- Nassar, Dalia (2016). Analogical Reflection as a Source for the Science of Life: Kant and the Possibility of the Biological Sciences. *Studies in History and Philosophy of Science*, 58, 57–66. <https://doi.org/10.1016/j.shpsa.2016.03.008>.
- Pasternack, Lawrence (2011). Regulative Principles and “the Wise Author of Nature.” *Religious Studies*, 47(4), 411–429. <https://doi.org/10.1017/S0034412510000533>.
- Proops, Ian (2015). Kant on the Ontological Argument. *Noûs*, 49(1), 1–27. <https://doi.org/10.1111/nous.12041>.
- Scheibler, Christoph (1665). *Opus metaphysicum*. Henry Hall.
- Schmid, Stephan (2010). *Finalursachen in der frühen Neuzeit*. De Gruyter. <https://doi.org/10.1515/9783110246667>.
- Schneiders, Werner (1983). Deus est philosophus absolutus summus: Über Christian Wolffs Philosophie und Philosophiebegriff. In W. Schneiders (Ed.), *Christian Wolff 1679-1754* (9–30). F. Meiner.
- Schönfeld, Martin (2000). *The Philosophy of the Young Kant*. Oxford University Press. <https://doi.org/10.1093/0195132181.001.0001>.
- Smith, Donald. P. (2003). Kant on the Dependency of the Cosmological Argument on the Ontological Argument. *European Journal of Philosophy*, 11(2), 206–218. <https://doi.org/10.1111/1468-0378.00183>.
- Stang, Nicholas (2015). Kant’s Argument That Existence Is Not a Determination. *Philosophy and Phenomenological Research*, 91(1), 583–626. <https://doi.org/10.1111/phpr.12227>.
- Suárez, Francisco (1600). *Disputationes Metaphysicae*. Balthasar Lippius.
- Van den Berg, Hein (2013). The Wolffian Roots of Kant’s Teleology. *Studies in History and Philosophy of Biological and Biomedical Sciences*, 44(4 pt. B), 724–734. <https://doi.org/10.1016/j.shpsc.2013.07.003>.
- Wolff, Christian (1718). *Ratio praelectionum Wolfianarum*. Renger.
- Wolff, Christian (1722). *Vernünfftige Gedancken von Gott, der Welt und der Seele des Menschen, auch allen Dingen überhaupt* (3rd ed.). Renger.
- Wolff, Christian (1725). *Vernünfftige Gedancken von den Wirkungen der Natur* (2nd ed.). Renger.
- Wolff, Christian (1731). *Cosmologia generalis methodo scientifica pertractata, qua ad solidam imprimis Dei atque naturae cognitionem via sternitur*. Renger.
- Wolff, Christian (1736a). *Philosophia prima sive ontologia methodo scientifica pertractata qua omnis cognitionis humanae principia continentur* (3rd ed.). Dionigi Ramanzani.
- Wolff, Christian (1736b). *Gesammelte kleine philosophische Schriften*. Renger.

- Wolff, Christian (1737a). *Vernünfftige Gedancken von dem Gebrauche der Theile in Menschen, Thieren und Pflantzen* (3rd ed.). Renger. <https://doi.org/10.5962/bhl.title.119566>.
- Wolff, Christian (1737b). *Psychologia rationalis methodo scientifica pertractata, qua ea, quae de anima humana indubia experientiae fide innotescunt* (2nd ed.). Dionigi Ramanzani.
- Wolff, Christian (1738). *Theologia naturalis, methodo scientifica pertractata: pars posterior*. Dionigi Ramanzani.
- Wolff, Christian (1741). *Vernünfftige Gedancken von den Absichten der natürlichen Dinge* (4th ed.). Renger.
- Wolff, Christian (1757). *Ausführliche Nachricht von seinen eigenen Schriften die er in deutscher Sprache herausgegeben* (3rd ed.). Andrea.
- Wolff, Christian (1963). *Preliminary Discourse on Philosophy in General* (Richard J. Blackwell, Trans.). Bobbs-Merrill.
- Zuckert, Rachel (2007). *Kant on Beauty and Biology*. Cambridge University Press. <https://doi.org/10.1017/CBO9780511487323>.