1

Kant's Writings of the 1750s and the Place in Them of the Free Will Issue

Although it was not Kant's first publication,[1] our story begins in 1755 with a brief look at a lengthy work with the unwieldy title *Universal Natural History and Theory of the Heavens or Essay on the Constitution and the Mechanical Origin of the Whole Universe According to Newtonian Principles* [*Allgemeine Naturgeschichte und Theorie des Himmels oder Versuch von der Verfassung und dem mechanischen Ursprunge des ganzen Weltgebäudes, nach Newtonischen Grundsätzen abgehandelt*] (henceforth referred to as *Theory of the Heavens*). Despite the fact that, as the title indicates, its subject matter is far removed from the question of free will, it requires inclusion in an investigation of the development of Kant's views on the topic, because it defines the scientific framework in which Kant formed his first thoughts on the matter. These thoughts are first expressed in a work that Kant published in the same year as the above: *A New Elucidation of the First Principles of Metaphysical Cognition* [*Principium primorum cognitionis metaphysicae nova dilucidatio*] (henceforth referred to as *New Elucidation*). Accordingly, it will be the central focus of this chapter. But also requiring consideration in this context are Kant's 1759 essay "An attempt at some reflections on optimism" [*Versuch einiger Betrachtungen über den Optimismus*], as well as three closely related *Reflexionen* dealing with the same topic. Thus, the chapter is divided into three parts, which together give us a first glance at Kant's incipient conception of freedom of the will and related topics, many of which will be further developed in his subsequent writings.

[1] Kant's initial publication "Thoughts on the true estimation of living forces" [*Gedanken von der wahren Schätzung der lebendigen Kräfte*], which consisted in a lengthy and inconclusive attempt to resolve the so-called *vis viva* debate, was completed in 1747, while he was still a student at the Herzog Albrecht University in Königsberg.

Theory of the Heavens

Theory of the Heavens is an attempt to provide a mechanistic account of the structure and origin of the universe on the basis of the principles of Newtonian mechanics. It is composed of a Preface, in which Kant attempts to justify this seemingly audacious project, and three parts. Of these, the first two are directly concerned with this project; while the third, which Kant presents as an appendix, offers some conjectures, supposedly based on the preceding analysis and supported by a liberal use of analogy and an appeal to the familiar eighteenth-century trope of the "Great Chain of Being," to depict the place of human beings in the cosmos described in the first two parts.[2] Thus, despite its modest place in the work, the third part is most germane to our concerns, though its comprehension requires at least an overview of the more scientific account in the first two.

Kant's Cosmology

The first part of *Theory of the Heavens* deals with the structure of the universe [*Weltbau*] as presently constituted. The fundamental idea underlying the discussion is that of a "systematic constitution" [*systematischen Verfassung*], of which Kant distinguishes two senses. The first is a broad conception, according to which the six planets known at the time and their ten satellites, together with the comets that compose our solar system, constitute a system because they orbit around a common central body (the Sun). Kant also insists, however, upon a second and narrower conception, which involves regularity and uniformity. In this sense of the term, these bodies constitute a "system" because their orbits (at least in the case of the planets and their satellites) are regular and uniform in that they relate "as closely as possible to a common plane, namely the extended equatorial plane of the Sun" (AN 1: 246; 214). Kant notes that this uniformity is not perfect, since the orbits of these rotating bodies are elliptical rather than circular, and there are deviations from it; but he insists that there is regularity in these deviations, since they are a function of their distance from the Sun.

[2] The classical discussion of this conception is by Arthur O. Lovejoy, *The Great Chain of Being: A Study of the History of an Idea* (New York, NY: Harper, 1960). For Lovejoy's discussion of Kant's views in this context see pp. 140–3, 193–5, 240–1, and 265–8.

Starting with the explication of the regular motions of the planets and their satellites in elliptical orbits around the Sun, which Kant takes to be established science, as well as the radically eccentric orbits of the comets, in terms of the attractive and repulsive forces inherent in matter, he extends this regularity beyond our solar system to the "fixed stars." This extension is based on an appeal to analogy, whereby he argues that "the same cause that imparts centrifugal force to the planets, which accounts for their orbital rotation," namely, universal gravitation, also accounts for that of the "fixed stars" and of whatever planetary systems they may involve (AN 1: 250; 217).[3]

The full breadth of Kant's account, however, only emerges with his next step, in which he extends this reasoning beyond the stars composing the Milky Way to the cosmos as a whole. By way of advertising the significance that he attaches to this extension, Kant notes that he "now come[s] to that part of the doctrine advanced that makes it most attractive because of the sublime view it presents of the plan of creation" (AN 1: 253; 220). A striking feature of this statement is its aesthetic aspect. Not only does Kant appeal to the sublimity of this vision in a way that calls to mind the famous reference in the *Critique of Practical Reason* to "the starry heavens above," which together with the moral law within "fill the mind with ever new admiration and reverence the more often and steadily one reflects upon them" (KpV 5: 161; 269), but he also notes its attractiveness. Moreover, again appealing to analogy Kant provides a scientific grounding for this aesthetically pleasing view of the cosmos. Citing the so-called nebulous stars observed by Maupertuis and others, Kant, on the basis of the reasons to which he appealed in his account of the Milky Way, argued that these are not individual stars, as Maupertuis had assumed, but galactic systems of stars or other "Milky Ways," the constitutions of which are analogous to that of our solar system and which appear as they do because of the dimness of the light emanating

[3] Apparently, the initial impetus for this extension was provided by the British astronomer Thomas Wright, with whose views Kant became acquainted through a review of the latter's *An Original Theory or New Hypothesis of the Universe* (1750). While not impressed with Wright's reasoning, Kant was taken with his observations regarding the band or disk-like appearance of the Milky Way, which he regarded as an indication that the "fixed stars" contained therein were ordered in a way that parallels, albeit on a vastly greater scale, the regularity observed in our solar system and that it constitutes with them a single galactic system sharing a common plane. On this point see Martin Schönfeld, *The Philosophy of the Young Kant: The Precritical Project* (Oxford: Oxford University Press, 2000), pp. 115–16.

from such vast distances. In fact, Kant goes so far as to claim that "if presumptions in which analogy and observation correspond to support each other completely have the same value as formal proofs, then we will have to regard the certainty of these systems as proved" (AN 1: 255; 221).

The final step in Kant's construction of his cosmology consists in the introduction of the metaphysical principles of plenitude and continuity, which are the key elements of the "Great Chain of Being," to extend this aesthetically pleasing vision of the cosmos, of which we are aware of only an infinitesimal portion, to the infinite.[4] Kant writes:

> We see the first members of a progressive relationship of worlds and systems, and the first part of this infinite progression already gives us to understand what we can suppose about the whole. There is no end here but rather an abyss of a true immeasurability into which all capacity of human concepts sinks even if it is raised with the help of mathematics. The wisdom, the goodness, the power that has revealed itself, is infinite and in the same measure fruitful and industrious; the plan of its revelation must for that reason be as infinite and without limits as it is.
>
> (AN 1: 25611–20; 222)

Kant's Cosmogony

Kant attempts to explain the origin of the universe on the basis of the same mechanical principles that govern its present constitution, which means without appealing to the work of a deity who either initiates or intervenes in its activities. As Lewis White Beck aptly put it, the young Kant endeavored to "out-Newton Newton" by providing a complete mechanistic account in which God plays no explanatory role.[5] And in so doing Kant has generally been credited with anticipating Laplace in adopting the so-called nebular hypothesis of an entirely mechanistic account of the origin of the solar system.[6] Indeed, just as Laplace famously claimed with respect to a role for the Deity "I have no need of that hypothesis," Kant begins his account with the seemingly

[4] See KrV A654–59/B682–87.

[5] Lewis White Beck, *Early German Philosophy: Kant and His Predecessors* (Cambridge, MA: Harvard University Press, 1969), p. 431. The point is reiterated by William R. Shea, "Filled with wonder: Kant's cosmological essay, the *Universal Natural History and Theory of the Heavens*," in Robert E. Butts (Ed.), *Kant's Philosophy of Physical Science* (Dordrecht: D. Reidel, 1986), pp. 95–124, at 115, and Schönfeld, *Philosophy of the Young Kant*, p. 97.

[6] For an account of the nebular hypothesis in Kant and Laplace see Schönfeld, *Philosophy of the Young Kant*, pp. 114–15.

audacious claim: "Give me matter and I will show you how a world is to come into being out of it" (AN 1: 230_{1-2}; 200). The matter with which Kant proposes to begin is that of Newtonian physics, which consists of "solid, massy, hard, impenetrable, moveable particles, and with such other properties, and in such proportion to space, as most conduced to the end for which he [God] form'd them." And by the latter are understood certain dynamic properties, specifically attractive and repulsive forces, through the actions of which this matter gradually, but necessarily, arranges itself in the form that Kant describes in the first part of the work. Moreover, since it is not regarded as the direct product of the "hand of God," creation, understood as the genesis of this ordered cosmos, is considered as a process rather than an event, which is presumably why Kant entitled this work a "natural history."

It is a strange kind of natural history, however, since, as Kant points out, it is an infinite process; and while he notes that "it is true that it began once," he insists that "it will never stop," because:

> It is always occupied with bringing forth more phenomena of nature, new things and new worlds. The work it brings about is proportionate to the time it spends on it. It requires nothing less than eternity to fill the whole limitless expanse of the infinite spaces with worlds without number and without end.
>
> (AN 1: 314_{29-34}; 267)

Moreover, the depiction of creation as a never-ending process, to which Kant appends a passage from the poet Albrecht von Haller's incomplete "Ode for eternity," cannot be claimed to rest on the principles of Newtonian mechanics. And though this expansion is correlated with a corresponding entropy, according to which the older portion of the universe gradually decays, while the newer and more distant portions organize and expand, bringing an ever greater overall perfection, this decay differs sharply from the entropy built into the Newtonian cosmos. First, for Kant, unlike Newton, God does not intervene to halt this entropic process and restore the universe to its former state. Rather, the entropy continues, though at a gradual pace, which is more than compensated for by the corresponding expansion. Second, on Kant's account, since the same factors that led to the initial formation of our solar system out of the primal chaos are again in place, it can be predicted that the same causes will produce the same effects and that the solar system and by extension other systems (both solar and galactic) will arise anew *ad infinitum*. Moreover, assuming as seems probable, according to Kant,

"that a world already grown to perfection could last for a longer time than it required to be formed, then, in spite of all the devastation that transience unceasingly causes, the extent of the universe as such will continually increase" (AN 1: 319_{34}–20_2; 271).[7] In short, the physical universe for Kant is both constantly expanding and from the perspective of cosmic time constantly being renewed, which enables him to combine the seemingly incompatible notions of entropy and infinite perfectibility.

As Kant was well aware, this thoroughly mechanistic account of the origin of the universe, which seemingly dispenses completely with God, would be seen by his contemporaries as both a threat to religion and a modern repackaging of the ancient atomism of Democritus, Epicurus, and Lucretius, who advocated a purely naturalistic account of the origin of the universe that did not involve any appeal to a deity.[8] While insisting upon his theistic *bona fides* Kant readily admits a partial overlap with the views of these ancient atomists.[9] Specifically, he acknowledges that "Like those philosophers I posit a first state of nature as a universal dispersion of the original material of all world-bodies, or atoms as they call them"; and he points out that they provide analogues of Newtonian forces to which he appeals (AN 1: 226–27; 198). But in sharp opposition to these views Kant denies that an ordered universe can be conceived as the product of blind chance and claims instead that "matter is tied to certain necessary laws" and that this indicates the existence of an "all-sufficient highest mind in which the natures of things were designed in accordance with unified purposes" (AN 1: 227_{34}–28_2; 198–99). Or, as he succinctly

[7] See AN 1: 315–17; 268–69. My brief description of the entropic process described by Kant is greatly indebted to the account of Schönfeld, *Philosophy of the Young Kant*, pp. 124–7.

[8] In the Preface Kant also considers a second line of objection to his ambitious project, namely, its evident audacity. He attempts to disarm potential critics on this score by pointing out that, though the universe is infinitely complex and the human intellect quite limited, this does not preclude the feasibility of a mechanical explanation of the universe as a whole such as he proposes. Indeed, paradoxically, what makes it feasible is the very scope of the project, namely, the world system. As Schönfeld notes, paraphrasing Kant at AN 1: 230; 201, what makes it feasible is that "the spherical form of the celestial bodies is geometrically simple, the motions of these bodies are 'unmixed,' and the space in which they travel is empty." See Schönfeld, *Philosophy of the Young Kant*, p. 97. For a similar account see Shea "Filled with wonder," p. 104. Kant also provides a parallel account at EMB 2: 138–39; 179.

[9] It appears that Lucretius was among Kant's favorite authors. See Shea, "Filled with wonder," p. 116; Susan Meld Shell, *The Embodiment of Reason: Kant on Spirit, Generation and Community* (Chicago, IL: University of Chicago Press, 1996), p. 328 n. 40; and Manfred Kuehn, *Kant: A Biography* (Cambridge: Cambridge University Press, 2001), p. 49.

puts it, "a God exists precisely because nature cannot behave in any way other than in a regular and orderly manner, even in chaos" (AN 1: 288_{9-11}; 199).

Kant reserves a systematic discussion of the issue, however, for the last chapter of the second part. After rejecting once again the view that the order and arrangement of the universe can be considered the result of pure chance, Kant claims that there are only two possible explanations:

> [Either] the design of the arrangement of the universe had already been placed in the essential determinations of the eternal natures and planted into the universal laws of motion by the highest understanding so that it developed out of them naturally in a manner proper to the most perfect order, or . . . the general properties of the constituent parts of the world have a complete incapacity for harmony and not the slightest reference to any combination and definitely required an external hand to acquire that limitation and coordination that shows perfection and beauty in it.
>
> (AN 1: 332_{4-13}; 280–81)

Not surprisingly, Kant opts for the second alternative, dismissing the first as a common and deeply engrained prejudice that must be eradicated. His argument proceeds in two steps. First, he affirms the explanatory superiority of a mechanistic account to one that finds it necessary to appeal to the direct action of God in either the creation or maintenance of an orderly universe. Second, he argues for the superiority of the specific mechanistic account that he has provided in the first two parts of the work.

In defense of the superiority of a purely mechanistic account to one that finds it necessary to appeal to a direct divine intervention, Kant claims that such intervention is not only unnecessary but also fails to explain phenomena that can be adequately accounted for on a purely mechanistic basis. This not only includes the overall orderliness or regularity of nature, but also the occasional deviations from this order, which would seem problematic on the standard theological picture that Kant is here challenging. Kant begins by appealing to essentially the same considerations that led him to reject the audacity objection to support the feasibility of a thoroughly mechanistic account, namely, the simplicity of the orbital motions of the heavenly bodies, the virtual emptiness of the space in which they move, and the well-established nature of the forces underlying these motions (AN 1: 334_{21}–35_{10}; 283).[10] If one accepts the

[10] See note 4.

argument of the first two parts, it can be seen that an appeal to any extra-mechanical factors, particularly the hand of God, is redundant.

In claiming superiority not merely for a mechanistic approach to nature in general but for his own account in particular, it is clear that Kant's primary target was Newton. This is evident not only from his systematic rejection of any appeal to the hand of God in accounting for the origin and lawfulness of nature, which accords with a similar critique launched by Leibniz, but also from what he considered Newton's error.[11] According to Kant, this error consisted in abandoning the attempt to provide a purely mechanical explanation of the orbits of the planets, because he mistakenly assumed the emptiness (or near emptiness) of the space at the time in which the planets began their orbital motions around the Sun. Kant's correction consists of two steps. First, he claims that Newton incorrectly inferred from the near emptiness of cosmic space in the present state of the universe its similar emptiness in its incipient stages, which, on mechanistic assumptions, would have made it impossible to account for the motion of the heavenly bodies, since there would be no medium through which attractive force could be exercised. Second, appealing to his own account, Kant claims that prior to the genesis of these bodies matter was dispersed throughout the entire space of the solar system, thereby making possible a consistently mechanistic account without the need to appeal to divine intervention to initially set the system in motion (AN 1: 338–40; 286–87).

Despite containing a heavy dose of conjecture, Kant expresses such confidence in the main lines of his account that he wonders why this view of nature is not generally accepted. His explanation assumes that elements of the harmonious order of nature are commonly perceived to be of benefit to rational beings and that this leads to the belief that this cannot be the product of "mere universal laws of nature" but must be considered the work of a "wise understanding" (AN 1: 346_{4-11}; 291). In response to this dual assumption, Kant denies the former but accepts the latter. In other words, his view is that the order of nature *both* evidences an intelligent author *and* can be seen as the result of the operation of the laws of nature.

[11] This critique not only runs throughout the Leibniz–Clarke correspondence but was one of main factors initiating the controversy. See H. G. Alexander, *The Leibniz–Clarke Correspondence, Together with Extracts from Newton's Principia and Opticks* (Manchester: Manchester University Press, 1956), pp. 11–12.

This line of thought remains largely implicit in *Theory of the Heavens*, however, and Kant reserves a fuller presentation of the theological dimension of his views for the writings that will be considered in the last two sections of this chapter. His present concern is with teleology rather than theology proper, and his central contention is that the mechanistic conception of nature supports a teleology in which the supreme perfection of the cosmos as a whole is recognized even in its seeming imperfections. Kant gives expression to this view in the final two sentences of this part, where he writes:

> Nature, despite having an essential determination to perfection and order, embraces all possible changes in the extent of its multiplicity, even to failings and deviations. It is precisely the same unlimited fertility of nature that has brought forth the inhabited heavenly spheres as well as the comets, the useful mountains and harmful cliffs, habitable landscapes and empty deserts, virtues and vices.
>
> (AN 1: $347_{25–32}$; 293)[12]

The Place of Human Beings in the Order of Nature

In the third part of *Theory of the Heavens* Kant turns to a topic that is more directly connected with the subject of this work; viz., the place of intelligent beings, including but not limited to human beings, in the solar system. The views that Kant here expresses are, however, radically distinct from those of the "critical" period. For whereas the later Kant maintained that rational nature exists as an end in itself and rational beings must, therefore, never be used as mere means to some end, the Kant of the 1750s, who speaks of intelligent rather than rational beings, held that such beings are merely links in the infinite chain of nature, which, as such, have no more cosmic significance than any other link. Moreover, even among the cosmic community of intelligent beings Kant assigned to humans a relatively humble status. And while in the third *Critique* Kant proclaimed that humankind is the ultimate purpose [*letzter Zweck*] of nature (KU 5: 431; 298), we have seen that in *Theory of the Heavens* he held that nature in its infinite perfectibility is its own end and, as such, is not intended to serve any end beyond itself.[13]

[12] See also AN 1: 338; 285.
[13] Kant's account of the ultimate purpose of nature and its relation to the final purpose [*Endzweck*] of creation will be discussed in Chapter 9.

Kant was far from unique among his contemporaries in thinking that there was life, including intelligent life, on planets other than Earth, and that the inhabitants of other planets might have far greater intelligence than those on Earth. What is distinctive in his treatment of the topic are its tight connection with the Newtonian account of nature provided in the first two parts and its appeal to a rather crude neuro-physiology on the basis of which he affirms a high degree of certitude for his central claims. And though Kant believed that planets existed outside the solar system and even outside the galaxy constituted by the Milky Way, apparently for methodological reasons he limited his discussion to the six known planets of our solar system and to other planets within this system that may be discovered in the future. Even though the Earth is the only planet on which intelligent life is known to exist, Kant believed that the relations between Earth and these planets make it reasonable not only to assume that at least some of them are inhabited by intelligent beings, but also that it is possible to make reasonable conjectures about the capacities of these beings and to compare them with those of human beings.[14]

Kant's reasoning is straightforward.[15] First, appealing to Newton's calculations, he asserts that the density of the matter of which a planet is composed is directly proportional to its closeness to the Sun and its heat. Accordingly, those planets furthest from the Sun (Jupiter and Saturn) are not only the coolest but also composed of the least dense matter. Second, he claims that the density of the matter of which a planet is composed is directly proportional to its coarseness [*Grobheit*]. Third, Kant applies this proportionality to the corporeal nature of its inhabitants, which in the case of its intelligent inhabitants means primarily their brains. Thus, he assumes that the brains of intelligent beings on Jupiter and Saturn are composed of less coarse, more flexible, and more variable materials than those on Earth. Finally, though Kant maintains a mind/brain distinction he affirms a causal dependence of intellectual capacities

[14] Kant states that though it is not necessary to claim that all the planets must be inhabited, "it would be nonsense to deny this in regard to all or even only most of them" (AN 1: 352_{7-10}; 295). Later, however, considering Jupiter, he suggests that its presently uninhabited condition may be a consequence of the fact that it is not yet fully formed and that when this process is complete (which Kant conjectures may take several thousand years) it will be able to support not only plants and animals but also rational beings (AN 1: 352–53; 296).

[15] The following account is influenced by Schönfeld, *Philosophy of the Young Kant*, pp. 119–21.