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The Incomplete Copernican Revolution in Popular Legend, the Natural Sciences, and in Practical Reason (Morality)

Abstract: There are three senses in which the Copernican Revolution of the 16th century is not yet complete today. The first sense is in terms of the popular account about what Copernicus actually accomplished and the reaction on the part of the church in Rome to Copernicus' writings. The second sense is in terms of the meaning of the revolution for the natural sciences and what it means to do science after Copernicus. The third sense is in terms of practical reason (morality) or the religious consequences of the CR.

The Incomplete Copernican Revolution in Popular Legend

The popular account of the CR maintains that Copernicus displaced the earth from the physical center of the universe and, thereby, challenged what one took to be a cherished cornerstone of Christian theology with respect to God's providential plan of salvation. Furthermore, the popular account claims that Copernicus's writings were placed on the index by the Roman Catholic Church after his death. A corollary to the legend is that Galileo was excommunicated and placed under house arrest for his defense of the Copernican model.

As with all legends, there is a kernel of truth to these elements, but the distortions far outweigh the kernel. What is unequivocally true, of course, is that Copernicus forced us to deny our senses and to view our solar system, though he thought it was the universe, with the sun, *not* the earth, as its physical center. The Harvard Astrophysicist, Owen Gingerich demonstrated that almost everything else in the story is massive distortion.[1]

Copernicus' writings were censored by Rome, which of course is bad enough, though they were not placed on the Index of forbidden texts –however, the censorship was not of his science! Rather, he was censored wherever he claimed to have *proof* rather than an *hypothesis*. At those points of enthusiasm and not in rejection of his mathematics, the church raised its objection. However, Gingerich's examination of the manuscripts by no means confirms even the semblance of universal censorship. To be sure, the closer the manuscript was to Rome (!), the more likely that it was censored. Outside of Italy, however, the manuscripts were not censored, and Copernicus' writings were required reading for theologians at least in Spain.

[1] See Owen Gingerich, "Hypothesis, Proof, and Censorship or How Galileo Changed the Rules of Science," *Colloquium: The Australian and New Zealand Theological Review* 25, no. 2 (1993): 54–66.

Gingerich reports that the case with Galileo is similar. His mathematics was not rejected, he was never excommunicated, and he was placed under house arrest not for defending the Copernican system but for insubordination and defamation of the Pope. He made the mistake in portraying the Pope, his childhood friend, as the bungling simpleton ("Simplicio") in his *Diologue Concerning the Two Chief World Systems*. Furthermore, Cardinal Baronius, Vatican librarian, not Galileo is the author of the famous aphorism: "The bible does not tell how the heavens go but how to go to heaven."

In terms of the popular legend, then, the CR is far from complete since this legend is riddled with misconceptions and distortions. Not the least, concentration on the displacement of humanity from the center of physical reality eclipses the crucial sense in which humanity is unequivocally the epistemological and creative "center" of reality.

The Incomplete Copernican Revolution in the Natural Sciences

The natural sciences have accepted the physical claim at the core of the CR. The complicated epicycles of the Ptolemaic system required for a mathematical model for understanding a "geocentric universe" rapidly gave way to the relative simplicity of the Copernican system, particularly after the publication of Johannes Kepler's laws of planetary motion based on the ellipse rather than the Aristotelian circle. It is crucial for the understanding of the incompleteness of the CR for the natural sciences that we keep in mind that the struggle was over *mathematical models* of physical reality between the Ptolemaic and the Copernican systems.

What is not so generally recognized is that Copernicus may have displaced the earth and humanity from the physical center of the universe, but Copernicus' system places humanity squarely *in the center of the epistemological universe*: "Modern philosophy and modern science [...] had to prove that the new [Copernican] cosmology, far from enfeebling or obstructing the power of human reason, establishes and confirms this power.[2]" Humanity is the species capable of developing symbol systems (in this case, mathematical models) that can require the very *denial of sense phenomena* in order for us to understand properly the phenomena. With respect to this epistemological implication, the CR is not only far from complete but also one might even say that it has not even begun for many scientists.

What is at stake here is not merely *that* humanity is at the center of an epistemological universe but, rather, *how* humanity is this center. There is a profound sense in which science "does not know what it is doing." No one has documented the enduring influence of the mystical and the mythological in the natural sciences more than Ernst Cassirer. "When it comes to the theoretical sciences, it is enough here to consider the still incomplete struggles that seek to liberate the notion of force from all mythical elements [of substances or metaphysics] by means of the attempt to substitute for them a pure functional concept.[3]" However, what is incomplete here is not merely a struggle with mysticism and the mythical but, more importantly, with the self-understanding of what the natural sciences are in fact doing.

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[2] Ernst Cassirer:, *An Essay on Man: An Introduction to a Philosophy of Human Culture* (New Haven: Yale University Press, 1977), 15.

[3] Cassirer, *Philosophie der symbolischen Formen, Zweiter Teil. Das mythische Denken* (Drmstadt: Wissenschaftliche Buchgesellschaft, 2002): xiv.

Edmund Husserl described the "naïve" "natural standpoint" of the physical sciences to be the continued belief that science is merely throwing a "cloak of mathematical ideas" over the factual world.[4] Cassirer learned from Hermann Cohen[5] and Paul Natorp[6] that what is at stake in epistemology is not the relationship between two kinds of substance (e.g., Cartesian mental and physical substances) that result in Lessing's "ugly ditch" or requires a divine "pre-stabilized harmony" for its explanation as proposed by Leibniz. Rather, the epistemological moment is the recognition that we are always concerned with relationships (functions) between and among appearances and that neither the "objective" nor the "subjective" appearances are experienced entirely independently of the other. "Consistency and change appear […] as thoroughly correlative moments: both are definable only through and with one another […] The state of affairs here is not that of describing any absolute characteristics of a given object but that of the selection of a framework, which invariably is relative to a specific operation of thought.[7]" For us to experience the appearances as we do, they must conform to a functional order of totality, according to the system of categories of the understanding.[8] Concretely, we are able to understand the *material* appearances (and act on the basis of that understanding) *with respect to physical laws of theoretical reason* by means of mathematics since these physical laws are not written on the phenomena but constitute mathematical *a priori* synthetic judgments that we bring to the phenomena in order to understand objectively. Yet furthermore, we are able to understand the *mental* appearances (and to act on the basis of that understanding) *with respect to practical reason's creative activity* by means of self-legislated moral principles. There are two systems of laws (hypothetical physical and categorical moral laws) governing experience. However, the inseparability of freedom (grounded in categorical laws) from the physical universe (grounded in hypothetical physical laws) is Kant's basis for insisting that, when seeking an explanation phenomena, we should exhaust "mechanical" causal explanations before turning to "speculative" teleological explanations.[9] This epistemological insight takes us to the core of human experience and understanding, and yet its claim is that *appearances do not give us a substance foundation for understanding* – in fact, we must deny the appearances in order to understand them properly.

We cannot say that no one prior to Copernicus grasped this insight. Since at least Pythagoras, we have mathematicians fascinated by the power of imperceptible mathematics to "explain" physical phenomena. However, with Copernicus we have not merely a mathematical "explanation" of physical phenomena. We have *the contradiction of the phenomena* that claims to be the "objective" case. If something is "objectively" true not because it is verifiable in the senses but because it is "necessary" and "generally valid" since

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[4] See Edmund Husserl, *Die Krisis der europäischen Wissenschaften und die transzendentale Phänomenologie. Eine Einleitung in die phänomenologische Philosophie*, ed. Elisabeth Ströker (Hamburg: Felix Meiner Verlag, 1977), § 9 (h), especially 55.

[5] See Ernst Cassirer, *Substanzbegriff und Funktionsbegriff* (Berlin: Bruno Cassirer, 1910), 131.

[6] See Paul Natorp, *Die logischen Grundlagen der exakten Wissenschaften* (Leipzig: B.G. Teubner, 1910),especially chapters two and three: 35-159, *Philosophie – ihr Problem und ihre Probleme. Einführung in den kritischen Idealismus*, and, especially, the "Metakritischer Anhang (1920), Logos—Psyche—Eros," 457-513, in *Platons Ideenlehre. Eine Einführung in den Idealismus* (Hamburg: Felix Meiner Verlag, 2004).

[7] Cassirer, *Substanzbegriff und Funktionsbegriff*, 119.

[8] See Kant, *Critique of Pure Reason*, B 106.

[9] See Critique of Judgment (AA V: 376, 387, 415, 418, 429), we are familiar with thought only in "connection with a body" (AA V: 332).

a judgment requires the subsumption of a set of phenomena under a universal,[10] we can never experience a system of universals independent of phenomena, and we can never derive universals by mere abstraction from phenomena. Rather, universals are a function of appearances (f (x) and not (A + x).[11] Cassirer points out that both Hume and Memory Theory err with respect to universals in their belief that we can derive the representation of succession from the succession of representation.[12] We can grasp "the objective case" best with respect to physical phenomena because of a mathematical capacity inaccessible to the senses. This insight was understood by Galileo.

> Empiricists and positivists have always maintained that the highest task of human knowledge is to give us the facts and nothing but the facts. A theory not based on facts would [...] be a castle in the air. But this is no answer to the problem of a true scientific method; it is, on the contrary, the problem itself. For what is the meaning of a "scientific fact"? Obviously no such fact is given in any haphazard observation or in a mere accumulation of sense data. The facts of science always imply a theoretical, which means a symbolic, element. Many, if not most, of those scientific facts which have changed the whole course of the history of science have been hypothetical facts before they become observable facts. When Galileo founded his new science of dynamics he had to begin with the conception of an entirely isolated body, a body which moves without the influence of any external force. Such a body had never been observed and could never be observed. It was not an actual but a possible body [...] [W]ithout the aid of these quite unreal conceptions Galileo could not have proposed his theory of motion; nor could he have developed "a new science dealing with a very ancient subject."[13]

No one understood the epistemological implications of this Copernican turn more radically, however, than Immanuel Kant. He was perhaps awakened from his "dogmatic slumbers" by Hume's observations on the inaccessibility of causality to us, but he goes far beyond Hume.

An important first step beyond Hume is Kant's critical appraisal of the human situation as shaped by appearances rather than by access to substances. Precisely our lack of direct access to substances (things in themselves) *combined with* our lack of direct access to causes jolts us out of our complacent belief that we have access to reality when we merely open our eyes. Of course, Descartes had already stressed the untrustworthiness of sense perception and at the end of the second Meditation pointed out that "perception is only a series of mental judgments," but he naïvely believed in divine causality as the guarantor of our perceptions since he was unable to think beyond substances. Kant's step is to illuminate just how much of experience and our understanding of phenomena are "synthetic" and *a priori* (involving our adding something to the phenomena) and not merely "analytic.[14]"

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[10] See *Critique of Judgment* (AA XX: 210, AA V: 179).
[11] See Ernst Cassirer, *Dritter Teil. Phänomenologie der Erkenntnis*, vol. 13 of *Philosophie der Symbolischen Formen* (Darmstadt: Wissenschaftliche Buchgesellschaft, 2002), 340, 346, 354, and 358.
[12] See *Ibid*., 200.
[13] Cassirer, *An Essay on Man*, 58–59.
[14] See *Critique of Pure Reason*, B 10.

In an "analytic" judgment the predicate is contained in the subject. For example, "all bodies have extension;" "all bachelors are unmarried men." Cassirer points out that one cannot argue with an analytic judgment[15] (i.e., they are *determining* judgments). However, an *a priori* synthetic judgment require that the judging subject bring something to the judgment. For example, "the sun is 91-94 million miles from the earth," "we are traveling 67,000 miles an hour around the sun." These latter judgments require that *we add a standard of measurement* (i.e., "miles" as *reflecting* judgment) not already present in the judgment in order for the judgment to make sense. In the case of someone who calculates on the basis of kilometers, s/he has to re-calculate 146 million kilometers independent of the original judgment in miles in order to understand in kilometers what the judgment (91 million miles) is claiming.

To be sure, in order to understand phenomena we cannot capriciously apply just any *a priori* synthetic elements. There is a *necessity* to the synthetic just as there is a necessity to analytic judgments even if not the same kind of necessity. For example, if I want to understand distance, I must bring a standard of measurement appropriate to distance to make sense of the phenomena of distance. I wouldn't use density to measure distance. Kant sketched out the necessary *a priori* synthetic elements required for "theoretical" (i.e., empirical) understanding in terms of the system of the twelve categories of the understanding. These are different from Aristotle's categories in the *Metaphysics* since Aristotle grounds his metaphysics and science in naïve sense perception. Kant's categories involve necessary constructions by the individual precisely because they are *not* (!) given in sense perception. The system of *a priori* synthetic judgments makes it possible for us to experience the appearances that are the world. Whereas we have to *fill in the blank for the appropriate categorical element* for our conclusions about a set of appearance, our *a priori* synthetic application of categories by no means *create*s the appearances.[16]

In addition to the categories of understanding, Kant insists that space and time are nothing absolute and objectively given in the senses. Space and time consist of *a priori* synthetic judgments that serve as the condition of possibility for all other *a priori* synthetic judgments.[17] We perceive objects next to one another "in" space, and we can experience different spaces as simultaneous with one another, but we do not perceive "space" itself in the senses. Similarly, we experience events "in" time although unlike space we cannot experience two times simultaneously.[18] Nonetheless, we do not perceive either "space" itself or "time" itself.

The *a priori* synthetic nature of theoretical reason (mathematics in particular[19]) is a clear indicator that the Copernican turn for Kant was no simplistic removal of humanity from the physical center of the universe but a placement of humanity in the "center" of an epistemological (and a moral) universe.[20]

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[15] See Cassirer, *The Myth of the State* (New Haven: Yale University Press, 1946), 298.
[16] See *Critique of Pure Reason*, B 165, and Ernst Cassirer, *Kants Leben und Lehre* (Darmstadt: Wissenschaftliche Buchgesellschaft, 1977), 175, 179.
[17] See *Critique of Pure Reason*, B 56.
[18] See *Critique of Pure Reason*, B 47, and *Metaphysik Mrongovius* X XIX: 981.
[19] See *Critique of Pure Reason*, B 746, 758, *Prolegomena to any Future Metaphysics* AA IV: 283, 301, *Metaphysik Mrongovius* XXIX: 973, and *What Real Progress Has Metaphysics Made in Germany since the Time of Leibniz and Wolff?* (AA XX: 323).
[20] See Höffe, *Kants Kritik der reinen Vernunft. Die Grundlegung der modernen Philosophie* (Munich: C.H. Beck, 2004): 49.

Nonetheless, this Copernican turn has not been adequately grasped by many in the natural sciences. Not only do we have Husserl's critique that science is merely throwing a cloak of mathematical ideas over a world of substances, but we also have Ernst Cassirer's reflections on the epistemological shift in mathematics since Richard Dedekind's *Was sind und was sollen die Zahlen?*[21] as well as in physics, chemistry,[22] and biology.[23] The central thesis of Cassirer's reflections over this history is that one can witness the shift from substance thinking to functional or relational thinking, and it is precisely this shift that marks the crucial (if not always recognized) epistemological step between the pre- and post-Copernican world. Nonetheless, the epistemological implications of the *a priori* synthetic aspect of this shift to functional relations among appearances (not substances or causes) have not been generally understood in the natural sciences.

There are two senses, then, in which the CR is incomplete in the natural sciences. The first is the epistemological sense: many scientists have yet to grasp thoroughly the non-substantial but, rather, the *a priori* synthetic, functional nature of their explanatory claims. Despite the erosion of any and all sense of substance in Quantum Mechanics, there persists in the natural sciences a belief that the sciences are merely *describing the facts*. On the contrary, it is precisely the synthetic *a priori* nature of the sciences that keeps them under the umbrella of the "faith of reason" in Kant's sense.[24]

The second sense in which the CR is incomplete in the natural sciences is that the natural sciences are engaged in *an open-ended process* of investigation of the conditions of experience. Already in the *Kritik der reinen Vernunft* (the *Critique of Pure Reason*), Kant insisted upon the open-endedness of the sciences precisely because of the *a priori* synthetic conditions under which we can know anything,[25] and he proposes the same in the *Prolegomena zu ener jeden künftigen Metaphysik, die als Wissenschaft wird Auftreten können*[26] (*Prolegomena to any Future Metaphysics*) and in his *Metaphysische Anfangsgründe der Naturwissenschaft*[27] (*Metaphysical Foundations of Natural Science*). In short, his reflections were not tied either to the Newtonian universe nor Euclidean geometry[28] as is too frequently maintained.[29] Knowledge in the sciences is always dependent upon the open-endedness of the variations in phenomena (we experience only appearances) and upon the theoretical framework of *a priori* synthetic judgments in use at any particular point in time for the understanding of those variations, and it is precisely for this reason that Kant's own reflections are tied neither to Euclidean Geometry nor to Newtonian Physics.

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[21] See *Substanzbegriff und Funktionsbegriff*, 46f.
[22] See *Substanzbegriff und Funktionsbegriff*, 161f.
[23] See the posthumus fourth volume, *Von Hegels Tode bis zur Gegenwart. 1832-1932*, of Cassirer's *Das Erkenntnisproblem in der Philosophie und Naturwissenschaften der neueren Zeit*, 4 vols. (Darmstadt: Wissen-schaftliche Buchgesellschaft, 1994).
[24] See *What does it mean to orient oneself in thinking?* AA VIII: 141-142, *Logic* AA IX: 66..
[25] See *Critique of Pure Reason*, B 508, 641, 684, 708, 720, 786, and 862.
[26] See *Prolegomena* AA IV: 284-285, 352-353.
[27] See Immanuel Kant, *Metaphysical Foundations of Natural Science* XX IV: 473.
[28] See Höffe, *Kants Kritik der reinen Vernunft. Die Grundlegung der modernen Philosophie*, 177, 205, 208, and 288.
[29] See the „Postscript" to Alasdair MacIntyre, *After Virtue: A Study in Moral Theory*, second edition (Notre Dame: University of Notre Dame Press, 1984): 266.

The justification for rejecting *a priori* synthetic judgments by the Vienna Circle was the confidence in scientific advances, expressed by Otto Neurath, Rudolf Carnap, and Hans Hahn, that

> … Helmholtz, Mach, Einstein, and others purged [physics of] the concepts space, time, substance, and causality. The doctrines of absolute space and time have been left behind; space and time are no longer absolute containers, but, rather, they are only organizational structures of elementary processes. Material substance has been replaced by atomic and field theories. Causality was stripped of its anthropomorphic character as a kind of "agency" or "necessary joining" to be ascribed to conditioned relations, functional associations. In addition, statistical laws have replaced many laws otherwise taken to be rigorous natural laws; in the case of quantum theory doubt is growing with respect to the applicability of the concept of a strict causal lawfulness to appearances in the smallest space-time spectrums.[30]

Although Neurath, Carnap, and Hahn are employing the functionalist language of Cassirer, they have not made the Copernican Turn. By rejecting the notion of *a priori* synthetic judgments, they are left with *throwing a cloak of statistical systems* over the phenomena they are meant to describe. In short, the Vienna Circle is naïvely employing the very capacity for synthetic *a priori* judgment that it is denying.[31] The confusion on the part of the Vienna Circle over the meaning of "synthetic" in Critical Idealism may be indicated in the quote above by the use of "notwendige Verküpfung" ("necessarily uniting") to the neglect of "adding to." As "necessarily uniting," synthesis means to combine already existing things (*a posteriori*). As "adding to," it means to *add something to* the perceived phenomena (*a priori*). It is *a priori* synthesis that is "supplementary" (*ergänzend*) in contrast to analytic judgments that are *a posteriori*, hence, "illustrative" (*erläuternd*).[32]

Nonetheless, these two senses in which the CR is incomplete for theoretical reason do not exhaust the limited impact of the CR. Humanity possesses capacities (i.e., for the aesthetic and moral) higher than mathematics,[33] which suggest that the epistemological center of the universe is not exhausted by mathematics and the *hypothetical* (situation driven) natural sciences of theoretical reason but is open to the horizon of the *categorical* (at least in part, independent of situations) of practical reason, as well.

The Incomplete Copernican Revolution in Practical Reason (Morality)

The CR in practical reason must be said to have begun long before Copernicus[34] just as the solar system was always "Copernican," even if unrecognized, prior to Copernicus. The revolution of practical reason occurs where consciousness experienced its power to transform its world rather than merely be satisfied with the world as it is and experiences a

[30] Otto Neurath, Rudolf Carnap, and Hans Hahn, „Wissenschaftliche Weltauffassung – der Wiener Kreis" in Otto Neurath, *Wissenschaftliche Weltauffassung Sozialismus und logischer Empirismus* (Frankfurt a.M.: Suhrkamp, 1979): 94-95.
[31] *Ibid*., 89
[32] See *Metaphysik Mrongovius X*XIX: 968.
[33] See Höffe, *Kants Kritik der reinen Vernunft. Die Grundlegung der modernen Philosophie*, 337.
[34] See Kant's *Conjectural Beginning of Human History* AA VIII: 109-123.

sense of responsibility for having changed the world.[35] This capacity of creative transformation involves a causality (freedom or the "good will" that is good because it is what allows humanity to be what it is, not because the will always does what is morally good) that is dependent upon, but not reducible to, physical causality, and it is the *ground* of our sense of *should*. What every child experiences unless trained out of her/him (or s/he is in a desperate physical circumstance), however, found its reflective (i.e., critical) articulation only with Immanuel Kant's description of a Copernican Turn in practical reason. To this extent, then, it is appropriate to say that the CR in practical reason commenced with Kant. Nonetheless, the very nature of this moral capacity is that it places a demand upon us to *become* human since we reach our highest potential only in the exercise of this capacity of creativity as an open-ended process analogous to the natural sciences.[36] In this sense then, the CR in practical reason, as in the case of the natural sciences, can never be completed since it is concerned with the development of the moral capacity not merely by the individual but the entire species.[37]

Kant calls freedom the only "fact of reason[38]" since, among the three ideas of reason (God, Cosmology/Freedom, and the Soul,[39] which are regulative ideas or heuristic assumptions and not constitutive ideas), freedom is the one that our experience in the world demands we recognize. However, he is sagacious enough to acknowledge that this cause, as in the case of all other causality and the ideas of reason in general, is incapable of proof or disproof.[40] It must remain *a necessary presupposition* if we are to negotiate between the appearances that are the physical world and the appearances that are the self, which are both required for us to be creatively free.[41] Just as the appearances of the physical world require the presupposition of (not the direct access to) physical laws governing events in the world, so, too, the appearances of the self require our presupposition and self-legislation of moral laws governing the exercise of our freedom. Either direct access to things-in-themselves and their physical laws (as materialistic reductionism claims) or to the self and its moral laws would make us automatons or marionettes.[42]

The exercise of this freedom in light of moral principles can occur only because we are free to initiate a sequence of events that nature cannot produce on its own. As a consequence, Kant insists that we must never compromise the capacity that we necessarily presuppose in order to be who we are in the order of things. He insists that "If I should, I can.[43]" This aphorism articulates humanity's lack of need for any assistance in the exercise of its capacity of creative freedom (otherwise, it would not be free) just as it, simultaneously, contains a call of the categorical imperative to do what is right merely because it is right.

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[35] See Kant, *ibid*., 110-111..
[36] See *Critique of Practical Reason* AA V: 83-84 and 122-124.
[37] See *Idea for a Universal History with a Cosmopolitan Aim* (AA VIII: 18-19); *Conjectural Beginning of Human History* AA VIII: 115-116 and 123; *Anthropology from a Pragmatic Point of View* AA VII: 329-330; *The Conflict of the Faculties* AA VII: 84; *On Pedagogy* AA IX: 445-446.
[38] See *Critique of Practical Reason* AA V, 31 and *Critique of Judgment* AA V: 468.
[39] See *Critique of Pure Reason*, B 391–92, B 672, and B 699.
[40] See *Critique of Pure Reason*, B 586; *Critique of Practical Reason* AA V: 142-143; and *Critique of Judgment* AA V; 470-474.
[41] See *Crique of Pure Reason*, B 564; *Groundwork of the Metaphysics of Morals* AA IV: 450-451; and Hans Feger, *Die Macht der Einbildungskraft in der Ästhetik Kants und Schillers* (Heidelberg: Universitätsverlag C. Winter, 1995), 74.
[42] See *Critique of Practical Reason* AA V: 101, 147.
[43] See *Religion* AA VI: 45, 49*, 50; *Anthropologie* AA VII: 148.

For many, the CR has not begun in practical reason. We could never seriously investigate nature for its physical laws were we to reject the presupposition that there are such laws to be found given the order of nature. However, Kant does not argue that miracles, which involve the violation of physical laws, can't happen. Miracles just as the case with freedom can be neither proved nor disproved. However, if we assume that miracles happen, then we entirely undermine our search for physical laws governing the events of nature.[44] Yet, we could never seriously exercise our freedom were we to reject the presupposition that we have the capacity of freedom (*we can*) and that there are moral laws governing what *we should* do. Nonetheless, the human species seems as ready to surrender its capacity of freedom by embracing, for example, "original sin," divine "providential, regenerating, concomitant, and sustaining grace," and their opposite, materialistic reductionism, as it is all too ready to reject the notion of absolute moral principles.

With the case of "original sin" and "assisting grace," the compromise of freedom is obvious. Both presuppose that I cannot act as a moral agent without external assistance. Together they provide a convenient excuse for the denial of freedom, and they eliminate our assumption of responsibility not only for our future obligations but also for the repair of our past destructiveness. The claim to know that God exists and is the source of *assisting grace* in any other sense than the metaphorical sense of having created the general conditions for the possibility of any and all experience has two massive shortcomings. First, it presupposes humanity's omniscience[45] since it places humanity in the position of God (i.e., denying reason's limits). Second, it turns the autonomous exercise of the highest human capacity, freedom, into a heteronomous system of existential anxiety and groveling before a divine judge.[46]

What is not so readily obvious is the sense in which moral principles are absolute. It is not the *origin* or metaphysical status of a moral principle that establishes its absolute authority. In other words, it is not that the moral principles of my religion, culture, immediate (e.g., labor) community of honor, or family are absolute because they come from God or presuppose the absolute correctness of my culture, honor system, or family values.[47] Such an approach to the authority of moral principles would presuppose that we must know in advance before we can act. It is precisely the moment of critical reflection, however, that insists on precisely the contrary: I do not know and then act but, rather, it is only because I cannot not act that I can know anything. In other words, critical knowledge is the consequence of our investigating what must necessarily be (objectively) in order for us to experience the world of appearances as we do and not that we possess knowledge in advance of our experience of a world of appearances in order to act in the world.

Applied to moral principles, the functional nature of consciousness insists that the authority of the moral principle does not consist of a correct list of principles discernable in advance of my action or abstracted out of my (*hypothetical*) circumstance. We can misuse any list of principles just as we can misuse any system of civic law,[48] and, in fact, we evaluate the moral status of any list or system of civic law on the basis of moral principles

[44] See *Metaphysik Mrongovius* XXIX: 871–72 and *Religion* AA VI: 88*.
[45] See *Critique of Judgment* AA V: 437-438, 441, and 480.
[46] See *Vorlesung zur Moralphilosophie*, (1774/1775), ed. Werner Stark and Manfred Kühn (Berlin: Walter de Gruyter, 2004), 64, 106 *Critique of Practical Reason* AA V:147; *Metaphysics of Morals* AA VI: 484; *Conflict of the Faculties* AA VII: 42, 65*; and *On Pedagogy* AA IX: 494-495.
[47] See *Critique of Judgment* AA V: 282-283.
[48] See *Groundwork* AA IV: 397ff.

"higher" than the list or system of civic law. A *hypothetical imperative* is something I should do because I want something else in a particular situation; a *categorical imperative* is one I should follow for its own sake without concern for anything else.[49] The crucial point of authority for a moral principle is that *I legislate* (this is precisely the *categorical* moment independent of the circumstance that can only confront me with *hypothetical imperative*) the moral principle for my present action myself in light of my perception of obligation in the future.

This "present-, future-ness" is no more firmly expressed than in the three "maxims of the understanding[50]:" 1) to think for oneself, which means in *this* circumstance to take responsibility for one's judgment; 2) to think from the perspective of all others, which is by no means reducible to mere empathy but is an expression of the universalization of judgment; and 3) to be consistent, which is not concerned with systematization and internal coherence but with consistency with my highest capacity of freedom.[51] Yet, in addition to such subjective imperatives (maxims), there are categorical imperatives to be invoked in determining the authority of a moral principle for my action: 1) to act on the basis of a moral principle that I would want (not that I can prove) to be a universal principle like a law of nature;[52] 2) to treat persons (including the self) never as a mere means but as ends;[53] and 3) to affirm the dignity of each individual as equally an autonomous self-legislating moral agent.[54]

Unlike the functional determination of universals in appearances, discernment of the authority of moral principles requires the most sophisticated use of consciousness since the authority comes from our freedom, not from any given appearances or empirical consequences (i.e., the authority of moral principles is categorical, not hypothetical) and one cannot derive moral principles from empirical experience.[55]

The only thing approaching this degree of sophisticated judgment is our capacity for the aesthetic judgment of "free" beauty in nature (distinguished from "appended" beauty in the arts[56]), which involves a universal claim independent of interest without the presence of a universal.[57] There is no one universal that unites all of the elements of a scene of a sunrise over Three Fingered Jack in the Oregon Cascade mountains; just as there is no one universal that unites this sunrise with my experience of beauty in Multnomah Falls (the highest water fall in the Columbia Gorge on the Columbia River between Oregon and Washington). Furthermore, neither the sunrise nor the water falls are beautiful because I am interested in them. Rather, I am interested in them precisely because they are staggeringly beautiful. Aesthetic judgment of free beauty indicates our capacity to formulate a universal judgment *without a universal*. Without being capable of, nor needing to, prove it to be the case, we

[49] See Kant, *Groundwork* AA IV: 441.
[50] See §40 "On taste as a kind of *sensus communis*" in *Critique of Judgment* AA V: 293-296. Maxims are normative principles (Grundsätze) that are "subjective" in contrast to imperatives that are "objective." See *Critique of Practical Reason* AA V: 19-20.
[51] See *Vorlesung zur Moralphilosophie* (180) from 1774/5, Kant articulates this maxim of consistency with the capacity of freedom.
[52] See *Groundwork* AA IV: 421.
[53] See *Groundwork* AA IV: 429.
[54] See *Groundwork* AA IV: 431.
[55] See *Critique of Pure Reason*, B 375.
[56] See *Critique of Judgment* AA V: §16, 229.
[57] See *Critique of Judgment* AA V: 189-190, 215-216; §11, 221; §31, 280-281; 296.

unequivocally maintain that everyone would find this scene beautiful[58] (unless trained out of them or in a desperate physical situation).

Kant proposes that beauty is a *symbol* of the moral.[59] This is underscored by the introduction and exclusive use in the *Kritik der Urteilskraft* the notion of *aesthetic idea,* which is the ability to think more than a mere concept itself[60] and, thereby, is an announcement of a moment of creative freedom in aesthetic judgments.[61] There is a "pleasure" in an *aesthetic* judgment not unlike the pleasure of *reflecting* judgments that are, in turn, distinguished from *determining* judgments in that *reflecting* judgments do not immediately have a universal ready to clarify the given appearances.[62] Reflection judgments require our creativity. It is precisely the original lack of the concept and seeking it out in *reflecting* judgment that is the source of the pleasure one has through reflecting judgments. The very absence of any universal for *beauty* and the impossibility of discovering such a universal means that *aesthetic* judgment involves a similar "pleasure[63]" to that of *reflecting* judgment in general. The very "power of judgment" (*Urteilskraft*) is called reflecting, *not* (!) determining judgment by Kant.[64]

The situation is comparable to, but by no means identical with, the case of the self-legislation of a moral principle. There is no "given authority" in the moral principle; I legislate the principle on the basis of my freedom independent of personal interest (to a degree at least, but never purely[65]), and there is a similar kind of pleasure experienced in one's self-legislation of a moral principle although this pleasure (or happiness) is never the goal of moral self-legislation. It is not happiness that is the goal of morality since happiness is transient, capricious, and subjective.[66] Rather, to the degree that happiness plays a constitutive role in morality it is that our moral self-legislation makes us *worthy*[67] of whatever happiness arises from our decision -- although there is no guarantee that, beyond the satisfaction of knowing that one has acted on the basis of a moral principle, one is going to find empirical happiness because one has acted morally. Should it be the case that one experiences empirical happiness, one has the satisfaction of an experience of worthiness to the degree one has acted on a self-legislated moral principle.

There are two senses, then, in which the CR is incomplete with respect to practical reason. First, practical reason's revolution involves the recognition of the revolution in the natural science: humanity is placed not only at the center of an epistemological universe as in the case of the sciences but also at the center of a moral universe of creative activity. The key to that epistemological universe is reflecting judgment which seeks out functions and not

[58] See *Critique of Judgment* AA V: §§ 18-22, 236-240.
[59] See *Critique of Judgment* AA V: §59, 351-354.
[60] See *Critique of Judgment* AA V: 315.
[61] See *Critique of Judgment* AA V: 316-317.
[62] See *Critique of Judgment* AA V: 179.
[63] See *Critique of Judgment* AA V: 186-188.
[64] See *Critique of Judgment* AA V: 183-184.
[65] See the opening of Section Two of the *Groundwork*; *Metaphysik Mrongovius* XXIX: 1015–16; and Otfried Höffe, "'Gern dien ich den Freunden, doch tue ich es leider mit Neigung..'-- Überwindet Schillers Gedanke der schönen Seele Kants Gegensatz von Pflicht und Neigung?" *Zeitschrift für philosophische Forschung* 60, no. 1 (Januar-März 2006): 1–20.
[66] See Kant, *Groundwork* AA IV: 396, 442, 415-416, 417-418, 453-454 and *Critique of Practical Reason* AA V: 22, 25, 28, 34-35, 92-93, 113-114-115, 129-130.
[67] See *Critique of Practical Reason* AA IV: 129-132.

substances in phenomena. Second, however, practical reason involves our capacities higher than the mathematization of phenomena and higher than aesthetic judgment since practical reason is concerned with freedom as well as personal accountability and responsibility for that freedom, which means that we live in an incomplete moral universe to which we as individuals and as a community must continually aspire.

As with the case in the natural sciences, then, the CR in practical reason will never be complete since in its case practical reason involves the ever necessary task of exercising freedom by each individual in the future. To the extent that one can speak of completion with respect to the natural sciences (*theoretical reason*) and morality (*practical reason*), one must speak in terms of the understanding not of *what* they accomplish but in terms of our understanding of *how* they can and will accomplish it. Both shift our attention from contents to imperceptible capacities that call us to engage in *the open-ended project* of understanding the physical world in terms of its physical laws and of an ever continuing need to assume moral responsibility for our actions. The shift from *what* to *how* is the basis for Kant speaking of the philosopher's ability to prophesy the future. Her/his prophecy cannot be with respect to empirical contents but only with respect to the ineradicable and irrepressible capacity of creative freedom and *a priori* synthetic judgments.[68] The Copernican Revolution can never be complete.

[68] See "Section II: The Conflict of the Philosophical Faculty with the Law Faculty" in *Conflict of the Faculties* AA VII: 79 ff.

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