

## 6 The Green Kant: Environmental Dynamics and Sustainable Policies\*

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Martin Schönfeld is a professor of philosophy at the University of South Florida and the author of numerous works on Kant. Here he argues that the idea of sustainability in environmental ethics is derivable from, and thus can be grounded in, Kant's Categorical Imperative (CI). Various formulations of the CI exist, but in part it equates moral actions with actions that one can rationally will to occur universally. Any activity that leads to environmental destruction—that is, any unsustainable way of living—thus violates the CI.

In environmental ethics, Immanuel Kant's ideas have not yet received much attention, but they turn out to be of fundamental importance for making sense of sustainable development. Today, sustainability is recognized as the core principle of international environmental policy, and the dangerous trends of population growth in under-developed countries, resource depletion, and climate change underscore the need for the sustainable management of biospherical resources, for the sake of everyone.

At the same time, we do not quite know yet what "sustainability" is supposed to mean. The United Nations uses a definition based on a report by the Brundtland Commission (1987): Development is sustainable when it meets the needs of the present without compromising the ability of future generations to meet theirs. This definition is simple enough and politically clear-cut. Sustainable development concerns the right treatment of the environment; its goal is to meet present and future needs, and it points to the obligation to work for intergenerational well-being. But it is not clear how this concept ties to philosophy. How is sustainability supposed to integrate in the range of ethical theories? What is the ground for its moral force? Which thinker accounts for sustainable behavior patterns best? I argue that sustainability is grounded in Kantian

ethics. To prove this, I must show how sustainable environmental policies relate to Kant's main moral idea, the Categorical Imperative. Several consequences will follow from such a proof. First, sustainability will gain a rational and naturalistic meaning, next to its pragmatic dimension. Second, environmental policy will anchor its core principle in a deeper philosophical framework. And finally, Kant's ideas will help to unify environmental ethics and mainstream moral philosophy.

The Categorical Imperative challenges the belief that natural facts and moral values are logically disconnected. Over the form of universalizable practices, Kant shows a way of closing this gap, of grounding sustainable morals in material patterns, and of bridging value and nature. This makes him appear rather green. But the case for a "Green Kant" faces several obstacles. Although his ideas are basic to ethics (consider the Universal Declaration of Human Rights), they have remained quite problematic and controversial in environmental ethics. This tension needs to be reduced first, and it can be done by a historical reminder—by showing how Kantian influences have actually been good for the rise of environmental ethics as a field of study (part 1). Kant's ideas have been an inspiration to the formulation of ecological and biocentric approaches.

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Kant's humanism as a dogmatically anthropocen-  
tric perspective, at unfair expense to animals.<sup>1</sup>  
Regan made a case for animal rights that was as  
categorical as Kant's humanistic case was. The  
similarity of styles prompted others, not without  
irony, to call Regan a "Kantian."<sup>2</sup> But such sim-  
ilarities aside, animal ethicists feel let down by  
Kant. He believed that duties were owed to  
humans only, that cruelty to animals was wrong  
because it was dehumanizing, and that animal  
rights, as such, did not really exist. Some of his  
contemporaries, such as Johanna Unzer and  
Jeremy Bentham, saw that animal misery points  
to sentience and rights. Kant's humanism is a let-  
down by comparison.

Kant is notorious for insisting on respect for  
humans while disrespecting animals. But is this  
his position? Did he disconnect humans and ani-  
mals? Answering these questions needs a system-  
atic parsing of his statements on animals, which is  
not the focus of this essay.<sup>3</sup> But what we can  
show here is that his anthropocentric preference  
has little to do with the usual dualism of humans  
and nature. Instead this anthropocentrism inte-  
grates a normative ranking of progressively  
emerging conscious beings in an evolutionary  
cosmic framework (parts 2 and 3).

Kant's hierarchy of values, with human inter-  
ests overriding nonhuman interests, is part of his  
natural philosophy, which takes environments,  
the world, and the cosmos as a coherent whole.  
This whole is in time. The universe moves to  
stages of ever higher complexity. This view of a  
self-organizing natural evolution, from the Big  
Bang to initial chaos to present structure, is  
now part of the Standard Model in the sciences.<sup>4</sup>  
Kant shared this view (then still metaphysics)  
with other philosophers, such as Aristotle, Spi-  
noza, and Leibniz. The influence of Kantian  
ideas on environmental ethics is more extensive  
than it appears at first sight. Paul Taylor, who  
pioneered biocentrism, relied on Kantian ideas  
for deducing the value of life.<sup>5</sup> Although it  
sounds paradoxical that a biocentric thinker  
such as Taylor took his cue from an anthropocen-  
tric thinker such as Kant, this is what happened,  
and Taylor was not alone in that. Another and  
earlier pioneer of biocentrism, Albert Schweitzer,  
had already set a precedent in taking his cue for

the articulation of the "reverence for life" from  
a Kantian (Arthur Schopenhauer).<sup>6</sup> Aldo Leo-  
pold, the founder of the land ethic, claimed an  
ethical sequence from human rights to nonhu-  
man rights to land rights. The expansion of rights  
from some to all is an old Kantian legacy: the  
vision of a collective and naturally possible evolu-  
tion toward an enlightened, practical reason.

Thus it turns out that Kant's ideas not only  
are important in ethics but also have been quite  
influential, in subtle ways, on the historical devel-  
opment of environmental ethics, as the leanings  
of the biocentric pioneers show. It also turns  
out that the objections by animal ethicists deserve  
a new look. Regardless of whether these objec-  
tions are valid, two facts are clear. First, Kant's  
ideas on animals are part of a bigger picture—a  
set of ideas on nature—and this picture of  
nature's coherence and evolution is perfectly real-  
istic. Second, even if we grant that animals  
deserve moral consideration, environmental pol-  
icy, for better or worse, will operate with a non-  
egalitarian, hierarchical approach. Egalitarian  
approaches, by which animals and humans are  
equal right-holders, generate problems in legisla-  
tion and do not work in policy. Hence Kant is  
arguably more useful for environmental ethics  
than egalitarian animal ethicists would have us  
believe.

## 2. INTRODUCING KANT

But who was Kant really? Where was he coming  
from—what was his real background? And what  
was he driving at—what were his goals? He was  
born in 1724 and died in 1804, and he lived  
for most of his life in a Baltic harbor town that  
was then at the eastern edge of Germany and is  
now at the western edge of Russia. Judged by  
the influence of his ideas, he belongs in the  
same league as Confucius or Aristotle. His philo-  
sophy completed the Age of Reason, a period in the  
seventeenth and eighteenth centuries (ca. 1680–  
1781). This period was also known as the Age of  
Enlightenment (*Aufklärung*), an age of progress  
in the sciences, with innovators such as Euler  
(math), Leibniz (calculus, information theory,  
dynamics), and Newton (calculus, mechanics,  
physics). The Age of Enlightenment contributed

to a huge cultural leap forward in the modern understanding of nature.

Kant reacted to the work of predecessors and peers. His background matters because his work is characterized by efforts to combine known data into a system, a natural philosophy, or a 'theory of everything' (1745–1770/1786–1802). In these combinations, he often struck gold. The elements of his world-system have turned out to be quite realistic in light of what is known today about biospherical and astrophysical environments (see part 3). In hindsight, we can say that when Kant was making claims on nature's structure, he apparently knew what he was talking about.

However, in the 1780s, his most famous period, Kant changed his focus. He suspended the metaphysical project of figuring out how natural environments are put together. Instead, he now proposed systematic theories about epistemology, ethics, and aesthetics. His first work in this decade was the *Critique of Pure Reason* (1781). Its publication led to the turn from Early Modern Thought to the Age of Modernity (1781–1945). An examination of the book shows what he was driving at. The *Critique* is a roadmap of cognition and a blueprint for progress. It contributed to the theories of knowledge and to cognitive psychology, and it amounted to a critical analysis of metaphysics. Old-style philosophers, by and large, did not like it. Older metaphysicians were upset by Kant's charge that metaphysics was weak on method. At that time, metaphysics (or what is the same, ontology) involved three fields. Rational theology was the study of ultimate meaning; rational cosmology was the study of natural order; and rational psychology was the study of the mind. This setup did not impress Kant. He argued that ontology is a "random groping" and "worst of all, a groping among mere concepts," a boring "battlefield of endless controversies" (1781 A viii/B xv). The evolution of ontology into science would first require that metaphysicians face up to the fact that their three fields possessed too few hard facts and involved too much arbitrary speculation.

Kant called ontology dogmatic and targeted the School Philosophy, which was inspired by Spinoza and Leibniz and explained by Wolff.

The School Philosophy was big on metaphysics. Kant's critique made such an impression that the conceptual systems advanced by its thinkers were quickly appearing to be old-fashioned, misguided, and essentially flawed. But this impression made philosophy swing too far to the other extreme. Thinking about natural order and the human mind was left to the scientists, and thinking about ultimate meaning was left to the theologians. Philosophers became skeptics who retreated to safer grounds, narrowing their focus on logic, language, and other second-order investigations. The impressions that School philosophers had been on the wrong track, and that conceptual investigations of meaning, nature, and rationality were doomed, conflict with the fact that the old-style metaphysicians had been rather successful. Their contributions were fertile and spawned the development of whole new academic disciplines. The School Philosophy created aesthetics as a discipline in the humanities (Baumgarten), and its insights had grassroots influences on social economics, strategic studies, and evolutionary theory.

A central concern of the metaphysicians targeted by Kant in his critical period was the idea of environmental design (not to be confused with what creationists call 'intelligent design'). Dazzled by the revolutionary scientific breakthroughs of their own age, the School philosophers were optimistic that a final theory was just around the corner and that everything that happens has a reason. Nature, so these metaphysicians said, is set up in perfectly lawful and orderly ways. Moreover, nature is not just a big machine or a giant clock, as French and English thinkers saw it. Spinoza, Leibniz, and the School philosophers looked at it as a self-organizing dynamic matrix. Nature is well designed, and whereas the ultimate root of this design may well have a divine cause, the design was harmoniously pre-established at nature's birth. The big machine runs on its own. What is more, it is evolving by its intrinsic, natural, and integral processes. Nature is not static, matter is not only inert but also energetic, and the whole cosmic setup is accessible to the mind. The German world "concept" (*Begriff*) comes from the School Philosophy, and so does our modern

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conception of the world, nature, and environ- ment as an interactive network (*nexus rerum*).

Kant's critique on the network-metaphysics of the School Philosophy was constructive. He tried integrating the dogma of Eastern Enlightenment with the doubt of Scottish Enlightenment. The *Critique* (2nd edition 1787 B i) starts with the need to do science. The prefaces (1781 A/1787 B) are long complaints that metaphysics is not yet on the new level. As soon as we think about ultimate structures, patterns, or the matrix, contradictory data entangle us in dialectic conflicts. The book ends with an encouragement to do ontology anyway. Per definition, we must grant that "metaphysics is the full and complete development of human reason" (A 850/B 878). And if this is true, we need to work on getting it right and make headway. The reason is pragmatic—developing ontology into science serves "the supreme end, the happiness of all humankind" (A 851/B 879). Kant's final advice is about the big questions, of what we can know, what we should do, and what we may hope. Everybody can try to answer them, but anybody working on them must deal with them coherently or systematically. Different approaches are good for scientific progress, and although some prefer to be dogmatic Wolffs, others prefer to be skeptical Humes. Either way, the point of Kant's critique (B i/B 884) is that in conflicts truth always emerges along a middle way. This path of reason is a critical line between the opposites of dogma and doubt (A 856/B 884)—along this path, metaphysical hopes or speculative ontology will generate the Standard Model. Apparently this productive conflict, evolutionary interplay, and dialectic is the hallmark of reality.

After his death in 1804, his friends chose one of his ideas for his grave marker. He had first suggested it at the end of his evolutionary cosmology, *General Natural History* (1755), and reformulated it later, in one sentence, at the end of the *Critique of Practical Reason* (1788):

Two things fill the mind with ever new and increasing admiration and respect, the more often and longer one reflects on them: starry sky, above me; and moral law, within me.<sup>7</sup>

His friends thought that this saying captures what Kant's philosophy is all about. When we look around and wonder what it all may mean, we are confronted with two facts. When looking outside and up, we see a well-ordered, self-regulating natural whole—the starry sky. And when looking inside ourselves, we find conscience, reason, and heart—the moral law. On the one hand, nothing could be more different from what is outside and what is inside: natural facts here, and moral values there; the environment here, and ethics there. Throughout his life, Kant thought about starry skies and moral laws and wondered about their relationship. In his critical works, this relationship appears to be one of opposites (and to some extent, this is just what facts and values are). In his naturalistic and metaphysical works, however, this relationship entails a nexus: Facts inform values, and values create facts. Kant was indebted to Spinoza and Leibniz, and he believed he may have found a naturalistic solution to the puzzle of Hume's fact-value distinction. In a Kantian way of looking at things, environments and ethics are deeply and rationally linked.

### 3. STARRY SKY, MORAL LAW— INTEGRATING THE SCIENTIFIC AND PHILOSOPHICAL KANT

Whereas the humanities deal with the critical works of Kant's famous philosophical period, the precritical works (1745–1766) are now more relevant to natural and environmental science. Kant worked initially as a metaphysician, and as an old man, he returned to these topics. These metaphysical efforts concern the attempt to construct a comprehensive philosophy of nature. Typically, Kant used data from others to construct larger and more sweeping arguments. In retrospect, many of these hypotheses and speculations have turned out to anticipate elements of the Standard Model. Christians had difficulties with his work. His first teacher, the Lutheran Pietist Martin Knutzen, flunked him out of college (1748) for a book on living forces or momenergy (p. 1749). There, Kant suggested that nature develops organically, organizes itself on the

basis of its own forces, and weaves spacetime grids. The radiation of force and the grid of spacetime interact. Although radiation weaves the grid, the grid orders radiation (1749 § 10). Kant's insight in *Living Forces* is now judged in physics as the first formulation of the law of free field radiation.<sup>8</sup>

When Kant returned to college to write his master's thesis, a "meditation on fire" (1754), he suggested that light shines depending on how you see it and can be both wave and particle at the same time (1755a § 7). Next he anonymously published a book on evolutionary cosmology (1755b). His claims there were later substantiated in solar dynamics and stellar evolution. Today scientists judge this book, *General Natural History*, as "the essence of modern models."<sup>9</sup> The praised 'essence' is his model of systems formation and environmental fate (Kant's so-called Nebular Hypothesis). Sixty years ago, the astrophysicist C. F. v. Weizsäcker, who learned from the quantum mechanic pioneer Max Born, built a new theory of nebular turbulences to explain the origin of the Sun and the Earth. He based his theory on Kant's model and credited Born for pointing him to the worth of Kant's scientific insights for quantum methods.<sup>10</sup> The point of a "direct path from Kant to quantum theory" is now made by J. D. Barrow at Cambridge.<sup>11</sup> Stephen Hawking, in Newton's chair at Cambridge, sharpened it into a broad dismissal of all post-Kantian philosophy as "a comedown"; to him, Kant wrote the last philosophy in top scientific form.<sup>12</sup>

In the eighteenth century, philosophical realism about natural structures was not necessarily an advantage for philosophers. Christian professors found out that Kant was the author of the anonymous book on evolutionary cosmology and turned down his application for a job (1756). Meanwhile he defended his PhD thesis on the power-grid of material environments. There he argued that ultimate elements are dynamic powerpoints, radiating outward, which create material structure as energetic 'activity bubbles' (1756 § 7). Today, physicists work with similar models. In string theory, for instance, such Kantian powerpoint-bubbles are called Calabi-Yau spaces.

Kant's conception of nature evokes an evolving, interactive, and coherent environment, whose structure is shaped by energetic interplays. This concept is relevant for climate studies. Because nature apparently has a general form, it may not be coincidental that the precritical metaphysics contains meteorological discoveries. In the 1750s, Kant identified the causal seesaw of coastal winds, explaining how they blow in opposite directions at sunrise and sundown; he traced the direction of trade winds back to Earth's axial rotation, and he discovered how the monsoons work. As we have said, such advances were liabilities in his day, and the fact that he came up with such ideas did not further his career (he worked as an adjunct until his late forties, and his first full-time job offer was for a professorship in poetry, which he turned down).

Christian professors did not like to hear philosophers talk about self-regulating natural orders and dynamic systems. The problem for Christians was that God's word is not God's world. God is an active creator; nature is a passive creation. And whereas God is good and rational, nature is evil and absurd. Kant's naturalistic approach contradicted this theological view and was not politically correct; basically, he was flirting with heresy. His approach was typical of the Eurasian Enlightenment and shared by a range of thinkers (e.g., Laozi, Confucius, Spinoza, Leibniz, Wolff, and Bilfinger). Before he qualified for a real job, he had to submit to self-critique. In 1770, he recanted his holistic claims of dialectical power grids and gained full-time employment.

Today we have an advantage because science has caught up with Kant's ideas, and what used to sound obscure is now concrete information. Still, the view that natural environments are self-generating and share dynamic structure, and that mind, culture, and value are evolutionary products, remains problematic in the humanities. Kant's epitaph, the reflection of starry sky and moral law, is a troubling idea. But according to the friends who selected this idea from Kant's writings for his tombstone, it is this nexus between outside and inside, this mirror of starry sky and moral law, which describes the essence of Kant's work. The idea

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of a fundamental resonance of inner and outer ways sounds Asian. Suggesting a joint vector of natural evolution and moral cultivation seems to be something a Taoist might say. This is not a coincidence. Historically, Kant was first influenced by Leibniz, Wolff, and Bilfinger, three philosophers who defended Chinese metaphysics. The environmental mirror of starry sky and moral law is an Eastern idea that informed Kant's teachers, and Kant expanded it into a magnificent vision. Philosophically, this requires us to rethink Kant's views and to reexamine the traditional separation of facts and values.

Enlightenment thinkers inspired by the East conceived of reality in evolutionary terms. The starry sky is the historical product of a very long chain of processes in the network of nature. Over time, nature unfolded or organized itself from uniform, simple, and chaotic stages toward systems of ever increasing diversity, complexity, and order. The moral law is also a historical product of a very long chain of processes in the network of life. Over time, life developed itself from primitive organisms toward ever more complexly evolved intelligences. At a certain level of animal evolution, social communities and thus the need for regulated cooperation emerged. Social interplay spawned more differentiations and eventually the need for lawful organization. Over time, values emerge as moral ideas, which can, do, and should become ever more rational. In the Enlightenment view of reality—shared by Confucius, Wolff, and Kant—nature is subject to evolution (Kant calls it *Auswicklung der Natur* or nature's "outwrapping"), and culture is subject to progress. The vision of a natural evolution and the hope for civil progression were quite typical of the Enlightenment philosophers. Kant's starry sky and moral law (Wolff's natural macrocosm and cultural microcosm) are outcomes of an environmental design that generates structure over time. Natural order and moral law both emerge and develop along a shared vector of rational evolution.

The Enlightenment thinkers who inspired Kant suspected that consciousness is not just a human feature. For Leibniz, nonhuman creatures

were not mindless machines (as Descartes had thought) but simple organic spirits instead. Mind, in this perspective, is integral to nature. Recent scientific discoveries of culture among animals, and fairness-rules in primate societies, indicate that animal minds are sufficiently complex to generate notions of value on their own. Apparently value, in the animal sense of the Golden Rule or fair play, is indeed an evolutionary product of nature and thus arises from facts after all. And it seems that this result makes sense only if we are willing to conceive of nature in the Kantian sense stated: as an evolving, interactive, and holistic environmental network, a dynamic progression of spatial systems over time, from the uniform to the differentiated, from the simple to the complex, organized in energetic interplays. Cosmic, organic, and cultural environments emerge in space over time. When viewed as moving through spacetime, these types of environments display additions in information and structure. For Kant, this increase is an upward evolution that is fully natural and points to a final good. Natural events, in this view, are material reflections of a steady development toward perfect value.

In the world philosophy of the twenty-first century, this enlightened perspective about natural evolution, organic growth, and a joint vector of factual and normative processes is controversial. For East Asian, Eurasian, and East European intellectuals, this view is traditional and congenial. For French, English, and other Atlantic intellectuals, this view seems counterintuitive and weird. As a result, English thinkers, such as G. E. Moore, have tended to judge holistic attempts at bridging the fact-value distinction as instances of the "naturalistic fallacy," whereas Chinese thinkers, such as S. C. Chen, have tended to judge dualistic attempts at keeping the fact-value distinction as the "fallacy of bifurcating nature." In their naturalistic orientation, Spinoza, Leibniz, Wolff, and Kant were more Eurasian than Western. If we are willing to look at environmental dynamics in their somewhat unfamiliar way, the Categorical Imperative will come into view as the rational form and natural pattern of sustainable development.

#### 4. THE KANTIAN BLUEPRINT OF SUSTAINABLE DEVELOPMENT

Garret Hardin envisioned the biosphere as an ocean and likened humankind to a crew in a boat. When one rocks the boat, there is the risk of toppling over, capsizing, and drowning in the ocean. The human boat is now rocking in self-made climate pulses. The question of maintaining balance in the biosphere points to two prior assumptions. First, let's assume freedom of action, and second, let's value future action. Neither of these stipulations is necessarily given in real life. Some persons may be too weak or too ill to stop the rocking; not everyone has freedom of action. Others may have the power to change things but do not care; not everyone values future action. But freedom of action and valuing future action are still realistic assumptions: Most people have some choice; most people want a tomorrow, and often we can do something about lowering risks.

Now imagine how this environmental dynamic can be functionally ruled or how the human boat can stay afloat on the planetary ocean. The strategy to stay afloat concerns the logic of role models. We can say that an action is rationally defensible if others can imitate it without such imitation producing a situation precluding future action. Suppose one sits in a boat, rocks it, and turns it over. Now imagine everybody following suit in all boats: All boats would turn over, and there would be no more boats to capsize. Then no one could follow the first model anymore; the collective rocking caused collective capsizing, which caused the end of rocking. Universalizing the action caused a structure that made the action impossible.

This is Kant's litmus test on whether a plan qualifies as morally sound or as a bad idea. In real life, the litmus test applies to cases such as truth-telling. Suppose someone decides to tell the truth from now on, and imagine everyone following suit. Now all people would tell the truth, and that's that. Collective honesty does not make honesty impossible. Open-ended, progressive universalizability is the hallmark of morally correct action.

The breakdown of universalizability is consequently Kant's hallmark of immoral actions. Consider lying. If someone decided to lie systematically all the time, and others replicated this decision as if it were a natural law or a principle of legislation, then data exchange would collapse and communication would break down—the natural precondition for the freedom to lie in the first place. As a rule, an action is wrong if its replication entails the end of replication.

We can find counterexamples to Kant's litmus test of moral essences. During World War II, Nazi soldiers and police searched for Jews to arrest and murder. Some people hid Jewish neighbors and misled the inquiring killers. Such lies saved lives, whereas truth-telling in that situation would have made the speakers accessories to murder. The exception qualifies Kant's rule, but (and this is why the Categorical Imperative does suggest a real pattern) the exception does not *negate* the rule. First, lying to inquiring murderers can be accounted for within the general assumptions of Kant's theory. The universalizability-rule determines plain actions on a level playing field, when all else is equal. The exception, lying to inquiring murderers, concerns compound actions on a slanted field, when things are not really that equal (after all, the questioner intends to commit a crime), and when choices are not only about right and wrong but also about lesser and greater evils (lying tied to life-saving; honesty tied to homicide). Second, what matters for moral blueprints is the predictable fate of trendlines. Kant's litmus test of moral essences concerns the likely, ultimate outcomes of implemented rules. The eventual results of universalized actions chart trajectories of dynamic effects cascading in space and over time. Such trajectories are statistically meaningful. Actions failing the test (such as lying) consequently map a trend, but the very nature of trendlines is fuzzy—lying is mostly wrong and rarely right.

For Kant, an action is good if it works as a model others can follow. The universalizability of respect for humanity is a determining feature of rational moral practices. Rational moral practices, seen in their replication in space and over time, mirror the natural form of evolutionary

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replication. Some processes in nature are fertile, spawning more of the same, until they rise to a steady state that may remain stable unless they are destroyed by outside events, but not by internal faults. Other processes, such as grass fires, are inherently unstable and eliminate themselves. Morally sound actions, so Kant said, mirror fertile processes; immoral actions mirror self-terminating processes. The giveaway feature of any flawed policy is its self-destructive nature.

Kant's Categorical Imperative involves several interconnected elements. Its content is respect for human beings. Its form is the universalizability of moral action. Respecting humanity and universalizable activities are necessary conditions of any cultural evolution. In *Groundwork for the Metaphysics of Morals* (1785), Kant describes these key elements. The first formulation of the Categorical Imperative turns on the universalizability test:

So act as if the idea of your action were to evolve by your will to a *general natural law*. (4:421.18–20)

That is to say, the categorical order of morally sound action is that the plan of action involved in your doing can be naturally copied by others and be used as if it were a legal principle. The potential of a rule to evolve into a general and naturally self-sustaining schema of action is what makes the action right. Crossing sustainable yield thresholds of natural resources cannot be rationally willed as a general natural law simply because it is illogical and self-terminating. To understand this schema it is important to look at practices as dynamic networks within larger environmental structures, and to see how both the dynamic networks of intentional activity and their social and material frameworks are pulsing through time. The Categorical Imperative does not make any sense as long as we think of environments as static, and as long as we disconnect individual choices from their collective impacts. But as soon as we are willing to entertain the idea that natural environments, just as human activity networks, vary over time, this first and formal aspect of the Categorical Imperative emerges as the blueprint of sustainability.

The second formulation of the Categorical Imperative turns on respect for humankind:

Act so that you use humankind, as much in your own person as in the person of every other, at all times simultaneously as purpose and never just as tool. (4:429.10–12)

The form of sustainable patterns is linked to the content of humanism. In a sense, respect for persons is the very heart of the Categorical Imperative. It is worth considering how naturalistic this heart actually is. By respecting a person as a person (and acting accordingly), the normative activity of the subject is intended as a mirror of the physical state of the object. That is to say, respecting persons simply means to be obligated by their natural constitution. The natural constitution of people is that they grow up to be independent and autonomous (and that when they become old, they can look back on a life lived in independence and autonomy). Autonomy matters in time—as the future of kids, the present of adults, and the past of the old. Given this core potential of human autonomy and its realization in time, slavery is not a natural goal-state of humans. Freedom is. Respecting persons means to treat them as they are, as potentials in time. Thus treating a person as a thing is to mistake a potentially autonomous subject for an inert object; it is not only morally wrong but also a cognitive mistake, a rational error. Values reflect the facts.

Morality, in Kant's humanistic model, concerns all people, at all times, and not just one's self. By default, the universalizability condition points from present states to future states. Morality does not discount against the future. On the contrary, sustainable behavior patterns concern offspring and are guided by the predictable resource needs of all those who can be expected to be born. Respect for humankind is consequently also the respect for future generations. Although the wait for an apocalypse and the hope for rapture define Christian fundamentalism, the moral imperative to care for future generations, and the duty of evolution, are the essence of Kant's secular humanism.

Both sustainable form and humanistic content consequently point to future generations, and the

third and last formulation of the Categorical Imperative turns on this futuristic orientation:

Act in harmony with maxims of any legislative member for a possible realm of ends. (4:439.1–3)

Now the form of sustainable behavior and the content of respectful humanity combine into a natural algorithm of moral order. The possible realm of ends, the ultimate goal of action, is a natural probability. It is not real in the current environmental situation, but it is in the cards. People presently acting in this sustainable humanistic order will naturally, inexorably bring it about. For Kant, this goal meant the continued civil progression toward a rationally interactive network. Everyone in this realm of ends or kingdom of purposes is an autonomous player, a powerpoint, as it were, who affects the network. Everyone counts. Sustainable development thus emerges in this reading as a three-sided figure with a sustainable face, a humane face, and a future face. The three faces, or formulations, of the Categorical Imperative jointly constitute sustainability. This is the blueprint. It is naturalistic in that moral behavior is a dialectic mirror of natural fields, but it is also naturalistic in another sense, by involving a certain inexorable harshness. Although we are free to do what we want, statistically, collectively, and structurally, we do not have a choice. Either we realize Kant's blueprint over sustainable management of our resources and climate—or we don't. In the first case, humankind will soar to greater heights of civilization and insight. In the second case, we will earn a Darwin Award: game over.

## NOTES

1. Christina Hoff, "Kant's Invidious Humanism," *Environmental Ethics* 5 (1983): 63–70; Tom Regan, *The Case for Animal Rights* (University of California Press/Berkeley/Los Angeles: 1983), 174–194.
2. E.g., Claire Rasmussen, "Tom Regan's *Defending Animal Rights* (2001)," *Law and Politics Book Review* 15 (2005): 1030–1033.
3. For such a careful scholarly analysis, which qualifies the typical objections by animal ethicists, see Holly Wilson, "Kant's Treatment of Animals," in this anthology.

4. The term Standard Model is taken from physics. After the qualification of classical mechanics by general relativity and quantum physics, scientists had a problem. General relativity works for making sense of very large things, quantum physics works for making sense of very small things, but the core assumptions of either theory differ. General relativity evokes a perfectly predictable nature, which is unaffected by observers. Quantum physics evokes an imperfectly predictable nature, which is affected by observers. Both very small and very large things are part of nature, and the fact that two mutually contradictory tools were required for studying one and the same nature was a theoretical headache for much of the last century. Today, scientists have found ways to bridge both approaches; the result of combining tools has been the emergence of quantum cosmology (a field made famous by R. Penrose, S. Hawking, and others). Scientists don't have all the answers and continue to disagree, but a coherent picture of ultimate cosmic environments has now come into view, partly by formal advances and partly by empirical findings (e.g., with the Hubble telescope). Now there exists an overall conception of how nature as such has come about, how it is set up, and how it will go on. This is the Standard Model. Efforts at combining the Standard Model of the universe with hypotheses about the structure of matter and the relations among forces are seen by many scientists as hopeful steps toward a systematic "theory of everything."
5. Paul Taylor, *Respect for Nature: A Theory of Environmental Ethics* (Princeton: Princeton University Press, 1986), 27–32. See also p. 198 note.
6. Albert Schweitzer, *Kulturphilosophie* (Bern: Paul Haupt, 1923); see the influential section "The Ethic of Reverence for Life," in Schweitzer, *Cultural Philosophy II: Civilization and Ethics* (vol. 2 of *Kulturphilosophie*), tr. John Nash (London: Black, 1929), 79–91. See also Arthur Schopenhauer, *The World as Will and Representation*, tr. E. F. J. Payne (New York: Dover, 1969), vol. 1, "Preface to the First Edition (1818)," p. xv; "Preface to the Second Edition (1844)," p. xxiii.
7. The epitaph is tough to translate. "Mind" is really *Gemüt*, which means also courage, character, or beautiful spirit. "Sky" is really *Himmel*, a term as ambivalent as Latin *caelum* and Chinese *tian*; English translators traditionally prefer their Christian word "heaven." "Law" is originally *Gesetz*, which literally means the setting-down of fixed information or the setup of how

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: *A Theory of Envi-* inceton University p. 198 note. *sophie* (Bern: Paul ntial section “The in Schweitzer, *Cul- on and Ethics* (vol. hn Nash (London: o Arthur Schopen- *Representation*, tr. over, 1969), vol. 1, n (1818),” p. xv; n (1844),” p. xxiii. anslate. “Mind” is lso courage, charac- ’ is really *Himmel*, a *caelum* and Chinese tionally prefer their “Law” is originally ns the setting-down the setup of how

anything works. All Kant translations are from the Academy Edition: Immanuel Kant, *Gesammelte Schriften* edited by the Akademie der Wissenschaften (Berlin: Reimer; later De Gruyter, 1910ff.), 29 volumes. For the original, see *ibid.* vol. 5, p. 161, lines 33–36, and compare with vol. 1, pp. 366–368.

8. John D. Barrow, *The Universe That Discovered Itself* (Oxford: Oxford University Press, 2000), 85–86. Barrow notes (p. 209): “The fact that we experience three dimensions of space is intimately connected to the laws of Nature that exist in those three dimensions. This connection was first recognized by Immanuel Kant . . . he claimed that the ubiquity of the inverse-square law in Nature was the reason for space possessing three spatial dimensions. Kepler also appreciated the connection between spatial geometry and the inverse-square law of light intensity falloff, pointing out the differences expected in two- and three-dimensional spaces. (Today we would turn this argument around and say that three dimensions lead to inverse-square laws for basic force fields.)” In *The Constants of Nature* (New York: Pantheon, 2002), p. 204–205, Barrow comments on Kant’s *Living Forces* § 10: “Kant’s insight showed for the first time that

there is a connection between the number of dimensions of space and the forms of the laws of Nature and the constants of Nature that live within them. Kant went on to speculate about some of the . . . aspects of extra dimensions, and saw that it might be possible to study the properties of these hypothetical spaces by mathematical means. . . . His speculation was correct. During the nineteenth century mathematicians ‘discovered’ other geometries which described lines and shapes on curved surfaces. It was lucky they did. It ensured that Einstein had this ‘pure’ mathematics available for use when he developed his new theory of gravitation, the general theory of relativity, between 1905 and 1915.”

9. Peter Coles, ed., *Routledge Companion to the New Cosmology* (London/New York: Routledge 2001), 240.
10. Carl Friedrich von Weizsäcker, “Immanuel Kant,” in Weizsäcker, *Grosse Physiker* (Munich: DTV, 2002), 181–203.
11. J. D. Barrow, *The Universe that Discovered Itself*, *loc. cit.*, 154.
12. Stephen Hawking, *The Theory of Everything* (Los Angeles: New Millennium, 2003), 166.

### STUDY QUESTIONS

1. Kant believes his Categorical Imperative can and should serve as the foundation for ethics and political theory. Discuss and criticize.
2. How important is the idea of sustainability to environmental ethics? Are there concepts more central than this one?
3. How can the idea of sustainability in environmental policy be grounded in Kant’s Categorical Imperative? What other arguments are there for sustainable environmental policies?

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