

Kant's Thing in itself, or the Tao of Königsberg

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Martin Schonfeld, University of South Florida and National Taiwan University

Introduction

It is time to take another look at Kant. His philosophy took quite a battering in the past century. First analytic critics bruised and pummeled it, and then postmodern critics tried to finish it off. Yet Kant keeps bouncing back. Why is this? Why does he not go away, despite such efforts? Is it because of his ethical ideas? That, perhaps, universal human rights, the categorical respect for humanity, are a rule worth remembering? That sustainable development, the replication of a practice through space and over time, is the only way to go, even though it tends to rub us the wrong way? Or is it because of Kant's political claims? That people should be critical citizens instead of loyal subjects, even if this upsets the patriots? That "the supreme end: the happiness of all mankind," as he calls it, requires a United Nations after all? Or, finally, is it because of Kant's metaphysical insights? That our two poles are the moral law within and the starry heavens above? That there is only us, and despite our rational autonomy, we are links in the Great Chain of Nature? And that, regardless of what fundamentalists want us to believe, proofs of God and human immortality are over and done with?

Then there is Kant's context—the Enlightenment. A flower of civilization, this was the century when the grip of the Churches on reason was broken, when natural philosophy matured into science, bracketed by Newton at the beginning and insights into electricity and molecular bonds at the end—and the century that culminated in the Declaration of Independence and the Bill of Rights. This was an excellent age, and for most generations in Kant's neighborhood, life was worse before and after. Before this time, there were witch-hunts and the Thirty Years War. Afterwards, the French revolution was guillotined, factories produced masses of the poor, slavery became big new world business, the colonialist land-grab went in overdrive, and the Wild West turned genocidal. And that was only the prelude to the twentieth century—trenches, flags, gas chambers, soldiers, and the Bomb. The time under Frederick the Great was better. Calling the Enlightenment "the Age of Reason" is not exaggerated. People, at least some of them, had their act together. And a few, like

Kant, had mind-blowing ideas—ranging from the structure of galaxies to the categorical imperative. Research in cosmology and ecology reveals an astounding convergence of our knowledge and Kant's ideas. What inspired this man? And what was his basic angle—what ties the vast range of his ideas together? What about the notorious thing in itself? Kant says it is unknowable, but surely he must have had opinions on it. What were they? Kant keeps bouncing back; his narrative looks fresher every day; and this makes the questions compelling.

We may never know for certain what Kant's ultimate inspiration and basic insight were. We are free to guess, although scholars should not do this. Academics ought to be critics, not artists. The philosophers, however, did not share our qualms. They wanted to know, and so do I. Thus I will follow my hunches in this essay; perhaps they will lead somewhere. I will paint a portrait of the thing in itself based on an unknown root of Kant's thought.

In the first section, I will speculate on the essence of reality. I argue that Kant's thing in itself is a bond of forces in space; that this structural-dynamic pattern governs nature; and that this perspective not only unifies Kant's insights but also supplies an ontological narrative that integrates our scientific knowledge. In the second section, I will interpret the historical record. I argue that the structural-dynamic perspective was a driving idea in the Enlightenment; that it arrived from China with the Rites Controversy, and that this idea, mediated by others, informed Kant. In the third section, I will examine Kant's first book, *Thoughts on the True Estimation of Living Forces* (1747). I argue that this idea is the core of his dynamics, and that (as has only recently become known) the key claims of his earliest theory have withstood the test of time. I will conclude my conjectures with questions, as is only fitting: queries about the influence of the structural dynamic perspective on Kant overall, and about the merit of this idea in general. If my questions are sufficiently reasonable to provoke further investigations, then I will have reached my aim.

The Consilience of Structural Dynamics

I suspect that Kant's thing in itself, or the natural essence alluded to from his pre-critical beginnings to his late *Opus Postumum*, is an interactive bond of forces in a continuum. As this bond is not static but dynamic, one could regard it as an energetic activity within its generated field. The particular form of this activity is interaction.

A consequence of this reading would be that the categorical imperative is the normative vector of this interactive bond. This would imply that Kant's imperative reflects the given in functional practice, as the algorithm of constructive and sustainable interactivity. This would further mean that the fact-value distinction would have to be qualified. Collapsing this distinction has been

called the naturalistic fallacy—but perhaps it is the stance of keeping facts and values apart that is misguided here: the fallacy of the bifurcation of nature.¹ Kant's case may be subtler than commonly held. Although his bifurcation of empirical facts and intelligible values leaves the impression that Kant maintained such a distinction, this ignores two points. First, Kant's bifurcation arose from an epistemic context, separating it from ontological dualisms, and second, his early and late ontology were emphatically monist. Trying to characterize the thing in itself is thus no idle game. It suggests not only a general description of reality-patterns, but also a reassessment of the quality of value, because these patterns are not pointless: they are dynamic and often self-organizing.

The verdict of the *Critique of Pure Reason* (1781/87) is that the thing in itself is not cognitively accessible, and no verifiable description of its nature can be given. Yet Kant repeatedly suggests characterizations of a universal matrix. He does so not only in the early works and the late reflections, but also in the critical texts—even in the *Critique* itself (A 212-15/B 258-62). What makes these characterizations intriguing is that they are quite unified and startlingly similar for the early, critical, and late Kant.²

Kant's universal matrix seems more than “invention” but less than “discovery”. By invention I mean something created freely, something that is arbitrary. By discovery I mean something proven by our standards of justification. Kant's characterization of essential reality is of the same type, it appears, as the insights that were his forte: it is an *aperçu*—it is unsubstantiated and yet fertile. Its details, primarily the descriptions in his first book, anticipated later discoveries and informed Kant's further ideas, those that have been confirmed as well as those that we now accept as trivially true. Kant characterizes the essence of nature as a sort of dynamic interactivity. This may well be the keystone of his thoughts, binding his other *aperçus* together.

Successful scientific *aperçus*, for example, are Kant's explanations of the coastal winds (1:223-4, 1:492-4), of the cycles of the monsoon (1:494-500), of the slow-down of the Earth's rotation (1:187-90), of the formation of the solar system (1:263-9), and of the structure of galaxies (1:248-56).³

Successful philosophical *aperçus* are Kant's conclusions that traditional metaphysics is over (Aviii-x, Axix-xx/Bxiv-xv), and that arguments for God's existence and the soul's immortality are done with (A631-42/B659-70; A395-6/B421-28). *Aperçus* successful in the interdisciplinary brain sciences, emerging in good measure from philosophy, are the conclusions in the first *Critique* that perception results from interaction, whereby invariant pathways organize affecting data (B1; A15/B29; A50-1/B74-5; B113; B148-9), and that the subject of organized sense-impressions—the synthetic unity of apperception—poses, to use Dave Chalmers's expression, the hard problem of consciousness (B154-9).

Successful historical aperçus, at last, are Kant's arguments for gender equality (8:35-6), for the cross-cultural universality of reason (4:428; 8:17-19), for the end of imperialism (8:344-6, 354-7), for the resilience of tolerant societies whose peoples interact as citizens (8:367), for the Universal Declaration of Human Rights (4:429), for the emergence of the United Nations (8:355-7), and for the categorical imperative of sustainable development (4:421). No doubt, Kant was good at guessing! The identity of the thing in itself, I suspect, binds his lucky guesses together. And if this royal aperçu is more than an invention, it will explain their extraordinary predictive and explanatory success.

Crucial for the appreciation of the noumenon is to avoid viewing it as a thing. It is not shaped like books or people. The *Ding an sich* is not in any sense thing-like—it is neither blocky nor solidly inert. Spatially and temporally, it is the opposite of an empirical object. Whereas such objects are definite and formed, the thing in itself is pure form, thus prior to formation and accordingly boundless.

More precisely, it is a force knitting its exterior into a field, individuating the original force into more localized dynamic centers. The “knitting” is essential: the thing in itself is neither force nor exterior, but instead their interplay. It is an interaction between entities. These are opposites: as force is “something” (a primal energy), its exterior is “nothing” (a void that is not yet space). The interplay of “something” and “nothing” is harmonious. It generates nature. Hence the noumenon can be likened to a dynamic interactivity, which is a harmony of opposites.

The dynamic interactivity or harmony of opposites generates the spatial field. Dynamic radiation expands into the void exterior to the force-source, thereby structuring the void into a plenum. This field is in dynamic stasis, but at any instant, it pulses, develops, and structures itself to ordered wholes. The wholes allocate energy. The more complex the generated systems are, the more flexible resource allocations become. At higher orders of complexity, the natural systems manage themselves, some of them evolving to autonomous organisms. The free wills of rational individuals are bound by a categorical duty to act in line with the natural vector toward sustainable self-organization.

Kant was not the first to entertain such views. Johannes Kepler (1571-1630), inspired by Proclus, described a “music of the spheres” in the *Harmonice Mundi* (1619), a work that has been called the *summa* of the Renaissance.⁴ Kepler's attempts at modeling nature's chorded harmonies and elegant beats resulted in the third planetary law. The Harmonic Law has been fertile, preparing universal gravitation, and its stated period-distance regularity is accurate. Kepler's Pythagorean music is a resonance of the structuring interactivity. Described in the terms of early modern philosophy, this interactivity is the entelechy's force in the plenum.

In the early Kant, interactivity emerges as the attractive-repulsive coexistence of bodies in space, explaining the immanent causal development of nature to reason. Ultimately it is a divinely warranted schema (1:413.1-2, 413-16). In the critical period, Kant warns that it is beyond the bounds of sense, but nonetheless argues that it is practically intelligible, morally an imperative, and dynamically a plenum. Later he would explicate it as an ether that sustains physical and cognitive patterns.

Historically, this perspective originated in the Tao; that is, Laozi's ontological principle of the harmony of opposites, and its implied naturalistic ethics. Christian Wolff (1679-1754) interpreted the principle as a harmony of normative action and factual evolution. Georg Bernhard Bilfinger (1693-1750) appropriated the harmony of opposites as a heuristic rule for philosophy of nature. Kant applied Bilfinger's rule to ontology and cosmology, thereby arriving once more at the original sense of the Tao.

The Taoist tradition, undergirding Confucianism and abstracted to Chan (Zen), emerged in tonal languages. When morphemes are sung instead of spoken, it is easier to communicate a structural-dynamic perspective. Like Kant, Laozi, the author(s) of the *Dao De Jing*, asserts a noumenon, the Tao or "way," which orders nature towards complexity, life, and freedom (e.g. cf. verses 1, 6, 25, 30, 81).

The *Tao Te Ching* (verse 4) suggests that Tao "fills" (*dao zhong*) and, in doing so, becomes "usable" (*yongzhi*) "without limit" (*bu yin*). Translators commonly propose "Tao is empty—its use never exhausted" or "the Tao is an empty vessel; it is used, but never filled."⁵ Although "empty" is implied in *zhong*'s connotations ("to make void" or "to neutralize"), *zhong* is a verb with a dynamic meaning. In English, it corresponds to "flush," "soar," "pour," "infuse" or "dash against."⁶ These words evoke water, a symbol of Tao because of its life-sustaining force and its properties of universality and expansion.⁷ Tao is a primal energy that creates space by structuring it as a presence. Tao individuates this presence into objects and guides the development of nature. Its initial action is expressed in the phrase *dao zhong*, the "flushing" of the Tao into its exterior, a filling of the void that results in a cosmic plenum.

The "filling" is "usable" to nature. The filling, which initiates self-organization, serves nature's goal of viable structures. When the Tao expands, its boundless activity covers or contains everything; there are no points or interstices not infused by it.⁸ As a dynamic *primum* structuring nature, Tao serves as the cosmic vector which points to unfolded nature. It remains beyond sensible access, but externalizes itself as the matrix of nature. It is the *dynamis*, whose realization is the self-organization of the universe.

Moreover, the *dynamis* is not only the physical thrust of the universe, but also the normative form of conduct. Good actions, in this view, harmonize with the overall momentum of nature. As

Tao orders the cosmic development toward increasing complexity, good actions mirror this process by benefitting life and freedom. Such conformity is the appropriate response to the given. Laozi summarizes (v. 25) that people (*ren*) are patterned (*fa*) after the Earth (*di*), the Earth after (*fa*) the cosmos (*tian*), the cosmos after (*fa*) Tao, and Tao after (*fa*) nature (*ziran*).⁹

Like Kant's noumenon, Tao is a pulse—filling space, weaving the cosmos, and branching into discrete rhythms or things (*wan wu*; v. 1). The interactive, autonomous, and self-organizing rise of complexity is its goal (*fu mo zhi ming, er chang ziran*; v. 51). Instantiations of maximum complexity are life, sentience, and reason. Their emergence is the descriptive-normative point of the cosmic vector. Moreover, like the *Ding an sich*, Tao is an unformed form that is neither blocky nor solid (*wu zhuang zhi zhuang, wu wu zhi xiang*, v. 14). Viewed as a dynamic, Tao is a harmony of opposites that promotes life (*tian di xiang he, yijiang gan lu*, v. 32). Viewed as an order, Tao is the entelechy of nature's self-organization (*wan wu jiang zhi bua . . . tian xia jiang zhi ding*, v. 37).

The similarities of *Ding an sich* and Tao raise the question of why they have not been discussed. There may be several reasons. Kant research is an ongoing effort. The global productivity of Kant scholars is reflected in the parallel publication of three leading journals, *Kant-Studien*, *Studi Kantiani*, and *Kantian Review*. The studies are not done, and our accounts are not graven in stone.

Language barriers pose a separate problem. The primary sources, of Kant in context, are in Latin, German, French, and English. Little is available in translation; even the English Kant is incomplete. Substantial research is published in German, Italian, French, and Spanish. The option of nonwestern influences throws Chinese into the fray too. The study of Kant is a multilingual scholarship on a multilingual topic, and accessing the polyglot data is not easy.

Yet doing so is necessary. Heidegger calls language “the house of being” when pondering the essence of action.¹⁰ His simile is poetic but to the point, because languages convey information while confining it. By “housing” being, languages impose models. Conceptual and formal frameworks make aspects of reality accessible to us, but any given framework is just one room of a larger house, as it were. I suspect we will see more if we open doors and survey other rooms as well.

Finally, these claims have not been discussed because ontological syntheses are discouraged. The humanities are in ironic reserve. Philosophers today are either pragmatic, analytic researchers who pride themselves on being skeptics in a rigorous way, or postmodern, continental researchers who pride themselves on being skeptics in a deconstructive way. Skepticism is basic to good science. But good science is not reducible to it. The colleagues in the sciences puzzle things out and put stuff together. Recently, with the revolutions in astrophysics, biology, and information technology, several workers have been trying to put it “all” together, it seems—Hawkins, Murray-Gellman, Penrose, Greene, the late S. J. Gould, and Wilson. Edward O. Wilson scolds us scholars

for our ironic reserve¹¹—asking us, why aren't you folks giving us a hand? We are making connections, we are not sure what they mean, and we are saddened by the loss of life's diversity; we need your help! But engaging with ontology and synthesizing tends to make members of our guild look foolish or naive, all the more so if such pursuits go beyond standard eurocentric discourse. Hence the trails I explore lead into uncharted territory. Kant scholars are not done; they need many dictionaries; and the arts are jaded.

I worry Wilson may have a point. Hence I argue for “consilience,” literally a “jumping together of knowledge”—or simply meaning, as Rodney King, after his beating, said so wisely (particularly in light of 9-11), “why can't we just all get along?” Because these ideas define the Enlightenment and Kant, consilient trails are perhaps not dead alleys after all.

The Transmission of Taoist “Seeing the Nature” (*guandao ziran*) to Kant

The subtitle of this investigation is “The Tao of Königsberg,” despite the incontrovertible facts that Kant never refers to Laozi's *Tao Te Ching* and had not read it. The questions of how matters East reached the West, what matters they were, and when they happened, require a closer look.

The trade routes to Taiwan and Macao had been opened when Copernicus was a young man and Galileo had not yet been born. The Christian mission began at the end of the sixteenth century. Matteo Ricci (1552-1610) arrived in 1583, won his green card in 1601, and lived in China until his death. But Ricci's efforts backfired. Instead of the Chinese becoming Christian, the Jesuits became Confucian, including Ricci, who began to dress up like a Mandarin official.¹² The sinofied Jesuits advocated a spiritual synthesis of East and West, organizing an ecumenical worship of Confucian ancestors and the Christian God. This upset the other missions, staffed by Latin-speaking Franciscans and Dominicans, Bible-thumpers who did not bother studying the languages of their hosts. The Rites Controversy began in 1610. Ricci, as well as his successors, wrote texts on China and mailed them home. The Manchu Emperor Kangxi (r. 1662-1722) protected their freedom with his famous Edict of Tolerance (1692).¹³

The Jesuit Philippe Couplet published a translation of three Confucian Classics, the *Analects*, *Doctrine of the Mean*, and *Great Learning* (1687). The Jesuit François Noël published an edition with the *Mencius* (1711). Leibniz supported the Jesuits in the continuing Rites Controversy. Christian Wolff reviewed Noël's books in the *Acta Eruditorum* (1711-12). Completing his term as Halle's vice-president (*Prorektor*), Wolff gave a speech on Chinese philosophy (1721, *Oratio de Sinarum philosophia*

practica). He began and ended his address by declaring that Confucius rocks, and that Confucius is right.¹⁴

The backlash happened immediately. In Germany, the Pietists went on the warpath, slandering Leibniz (who had died in 1716) and his followers as atheists and spinozists. Wolff was driven out of Halle in 1723. The presidential address was dynamite. Wolff had explicitly said (7, 13, 65) that oriental pagans ignorant of the Bible comprehensively figured out the difference between right and wrong. This message questioned authority and had to be suppressed.

In Italy, Pope Clemens XI had already issued an infamous Edict of Intolerance and closed the flourishing Jesuit China mission in 1715. In China, the Manchu Emperor Yongzheng (r. 1722-36) responded by banishing Christianity in 1724. The Rites Controversy continued in Europe. Pope Benedict XIV announced a gag-order, stopping the controversy to the satisfaction of the Bible-thumpers in 1742, but this was just a formality, because all missionaries had already been expelled. The encounter of Confucius and Christ had ended with the defeat of the latter. The Chinese considered the Holy Trinity contradictory and the Cross, a henchmen tool, barbarian. The Christians had been embarrassed to find out that Chinese historiography contained no record of the Biblical Deluge, although this history reached deeper into the past than their own.

In the 1730s the backlash was failing. Wolff's expulsion from Halle had been a media event. Wolff was as much leader of German philosophy in the eighteenth century as Hegel would become later. Wolff's *German Metaphysics* (1719) was a runaway bestseller racking up ten consecutive editions. Halle had aspired to be the Princeton of Europe, and Wolff had been its vice-president. All over the continent academics were talking about this scandal. More than four hundred treatises were written on Wolff's quarrel with the Pietists. The Confucian-Wolffian message—that *only reason and observation are needed to determine the good*—was heard loudly and clearly, and Wolff's students were propagating it.

Add to this the scientific paradigm change happening at the same time. The success of Newton's *Principia* (1687) was proving unstoppable. Its second edition (1713) had been reprinted twice (1714 and '23) in Amsterdam (the freest place on earth). The definitive edition of the *Principia* appeared a year after Kant's birth, in 1725, which is also when John Keill's physics textbook was published in the Netherlands (*Introductiones ad veram physicam et veram astronomiam*). Wolff and his German students embraced Newtonian physics, and (after Maupertuis' conversion in 1732) the French Cartesians followed suit. Once again, all over Europe intellectuals were talking about this. Newton's message—that *only reason and observation are needed to elucidate nature*—was heard loudly and clearly too.

The Pietists, who had driven out Wolff, rejected Eastern philosophy and Western science, and insisted that all you need to know is in the holy texts. Their skepticism deflated their own authority. Galvanized by the encounter with Confucius' philosophy of the good and the

appropriation of Newton's philosophy of nature, the Age of Reason had come into its own. The two sets of data now being disseminated—Eastern ethics and Western physics—resonated with each other, mutually reinforcing the message of the power of the human mind. Now the Enlightenment had arrived.

Taoism, in one sense, arrived later. A translation of the *Tao Te Ching* was presented to the British Royal Society in 1788; it had no effect on Kant. Taoism became better known after his death (in 1804), as Hegel's writings show, and a Latin *Tao* appeared in 1823.¹⁵

But in another sense, Taoism arrived already with Couplet (1687) and Noël (1711). It enjoyed a free ride on the Confucian Classics. Their characteristic feature is a holistic inclusiveness. Chinese philosophy began with Confucianism and Taoism (5th and 6th C. BCE), followed by polytheist Buddhism (2nd C. CE). Zen (*chán*) emerged in the seventh century in China (not Japan). The spectrum from Confucianism to Taoism to Zen forms a philosophically consilient continuum.

Confucian scholars would have told you then, as they would tell you now, if your concern is the “ought” for public life, read the *Analects* and the *Mencius*. If your concern is the “ought” for private life, read the *Doctrine of the Mean*. And if your concern is the “is,” then read *Mencius*, and *Doctrine of the Mean* once more, and study the *Great Learning*. The is-ought-distinction is a dogma of Western skeptics and foreign to the East. Like Russian dolls, the *Analects* and the *Mencius* nestle in the causal ontology of the *Great Learning*, which nestles in the cosmology of the *Doctrine of the Mean*. The *Doctrine of the Mean* explains humanity or benevolence (*ren*) in terms of integrity (*cheng*), and integrity in terms of following the Tao. This was the crucial link. Before Kant's birth, the *Doctrine of the Mean* had been translated twice. The Tao is explicit here; it is the first verse of the Third Classic:¹⁶

What heaven [cosmos] imparts to man is called human nature [vitality]

(*tian ming zhi wei xing*)

To follow our nature [follow vitality] is called the Way

(*shuai xing zhi wei dao*)

Cultivating the Way is called education

(*xiou dao zhi wei jiao*)

The Way cannot be separated from us for a moment

(*dao ye zhe, bu ke xuyi li ye*)

And what can be separated from us is not the Way

(*ke li fei dao ye*)

The Jesuit knowledge transfer from China to Germany was a success. Christian Wolff grasped, appropriated, and defended the essential unit of information. Wolff begins his vice-presidential address by relating the personal importance of the Taoist subtext of the Third Classic,

the dynamic resonance of natural structure with normative force. Wolff's training was in the exact sciences. Working with forms and functions had not only honed his cognitive abilities, but also supplied him with the only perspective that makes the Tao intelligible and precise.¹⁷

When I took on the arduous business [of applying the geometric method to philosophy], I had to learn that extraordinary progress is still needed in mathematics for the sake of its heuristic structure . . . I also understood that the entire philosophical canon had to be tied to mathematics. . . . Then I developed the ontological concept of perfection . . . and was blessed (*mibi datum fuerat*) to see in metaphysics the perfection of the entire universe . . . Afterwards I thought about the direction of free actions toward the perfection of the microcosm (*directionem actionum liberarum ad perfectionem microcosmi*). (l. 17-20, 24-6, 32-8)

When applying the heuristic structure of mathematics to philosophy, Wolff saw the limits of his tools. Still, philosophy must be tied to mathematics. Now Halle's mathematics professor was a bit stuck. But then he examined the definition of perfection and the dynamics of moral action—and had an insight:

I realized that this direction [of free actions] is not different from the one prescribed by the laws of nature (*eam non diversam esse ab illa, quae lege naturali praecepta . . . habetur*). (l. 38-40)

A perfect cosmos is unified. Moral action in such a cosmos is deeply compatible with the regularity of natural events. In the unified continuum, the overall thrust of beautiful and good deeds lines up with the overall push of natural events, for the dynamic vectors of the good and nature are identical:

That is, the same direction that strives for the perfection of the microcosm also strives for the perfection of the macrocosm (*eandemque directionem, quae ad microcosmi perfectionem tendit, ad ipsam macrocosmi tendere perfectionem*). (l. 40-42)

Thus Wolff concludes:

So I was finally convinced that the first principle . . . of decorum itself is the direction of human activity to the perfection of the microcosm, and consequently to the perfection of the macrocosm. (l. 42-45)

Wolff's *primum principium decori* is the idea that the moral vector in the human sphere is the same as a putative cosmic vector that governs nature's development towards "perfection." Wolff as well as his eventual follower Kant understood cosmic perfection as nature's well-ordered abundance. As Kant would later point out, cosmic perfection is an evolving harmony, a diversity (*Mannigfaltigkeit*) according to a rule, or the greatest variety in the greatest order (2:33; cf. also 2:93-100). The unfolding (*Auswicklung*) of organized fruitfulness—what we now call biodiversity—is the

hallmark of nature's growth towards perfection; indeed, the more of it, the better (1:306, 319-21, 347; 2:96). This is the decorum of nature. Well-ordered complexity is its point, and whether one considers the vector's astrophysical-ecological momentum or its local moral thrust does not make any difference.

Although ridiculed in old age, Christian Wolff was a trailblazer in his youth, and Kant was fortunate to learn from him. Wolff brazenly pushed the ontological envelope. His views were so innovative because he derived them from outlandish sources:

Attentively studying the Classics . . . I was certain (*nullus dubitavi*) that the . . . Chinese, particularly Confucius, had the same notion, albeit confused and vague, a notion that can therefore be seen only by people who are getting it (*ut non agnoscat nisi a possidente*). (l. 46-49)

Now Wolff had his audience's attention. His remark was politically incorrect in Pietist Halle, part of authoritarian Prussia, ruled until 1740 by the pious soldier-king Friedrich Wilhelm I. Wolff did not care whether his admission of "seeing the nature" (*guandao ziran*) provoked his listeners—including the fundamentalist Joachim Lange (1670-1744) who was to be inaugurated as Wolff's successor at the end of the speech. Wolff would not pull any punches. Now he would come to the point, the topic, and the beginning of the scholarly part of his speech:

After I rationally confirmed the doctrines and facts of the Classics, I understood that my ethics and Chinese ethics match (*praxin Sinarum a mea abluere intelligebam*).¹⁸ (l. 49-52)

Wolff's declaration was intolerable to the Pietist fundamentalists. They plotted revenge and drove him into exile two years later. In 1723, Wolff fled to Hesse to avoid execution. Halle University was purged. Wolff's assistants were fired; his students were dismissed; and his books were removed from the library shelves, as were the Confucian Classics. An indirect victim of the fall-out from Wolff's speech was his student Georg Bernhard Bilfinger (1693-1750); he would be fired from Tübingen University for standing up for Wolff. Bilfinger published a book on Chinese philosophy (*Specimen doctrinae veterum sinarum moralis et politica*, 1724) and a defense of Wolff's metaphysics (*Dilucidationes philosophicae de Deo, anima humana, mundo et generalibus rerum affectionibus*, 1725), both of which were deemed unacceptable by the evangelical administrators of Tübingen's university.

Bilfinger engaged with *guandao ziran*, nature's dynamic structure and its functional algorithm; and once again a memetic transfer—now from Wolff to Bilfinger—occurred. Coincidence helped. Three influences shaped Bilfinger's views: the entelechy, interpreted by Leibniz as the force of any substance; substances, defended by Wolff as force points organizing a cosmic grid; and the grid, the *nexus rerum* or universal web, which Bilfinger interpreted, in an earlier tract, as the harmony of the

entelechies. This tract (*De harmonia animae et corporis humani maxime praestabilitate*, 1723) wound up on the Index of Prohibited Books in 1734 as a warning to all Christians. Bilfinger was guided by entelechies, force points, the web of nature, and the harmony of all things, and he was an expert on Chinese thought. Such a reader of Confucius, cognizant of the dynamic harmony in the web, could decode the Taoist subtext—and be helped along by the Third Classic, the speech of his advisor, and the principle of decorum.

Bilfinger went to St Petersburg in 1725. The Russian Academy was dominated by Leibnizian dynamics, and when Bilfinger joined in, the ingenious Daniel Bernoulli (1700-82) did so too, the founder of fluid dynamics. Bilfinger was exposed to the *vis viva*-problem in natural philosophy. This was the question of whether there exist “living forces” that govern bodily motion and possibly everything else, and how to prove their quantity advanced by Leibniz. (This quantity, “mass” times speed squared, would join science as kinetic energy, the space integral of force.) He turned to the problem with a treatise called *On Forces* (w. 1725, p. 1728). It inspired Kant in not-too-distant Prussia eighteen years later. Now the transmission was complete. Kant states that Bilfinger’s approach informs his first book, *Thoughts on the True Estimation of Living Forces* (1747), and he says he always uses Bilfinger’s research-rule: Truth is to be found in the harmony of opposites. Thus began Kant’s career.¹⁹

Kant’s Force-Space-Bond and the Tao

In the first ten paragraphs of the *Thoughts on the True Estimation of Living Forces*, Kant lays out his ontology. Nature consists of force points, whose activities are goal-directed, causal, and harmonious. The ultimate elements are active forces (§ 1-3; 1:17-18). They govern everything that happens—not only motions of bodies (§ 2; 1:18.6-8), but also the activities of all objects (§ 3; 1:18.27-36). This includes materially produced ideas as well as mentally intended actions (§ 6; 1:20.35-21.1; 21.14-16). Forces govern mind-body interaction.

Interaction turns out to be fundamental. Interaction governs dynamic action, Kant claims. In interacting with the outside, a force acts external to itself (§ 4; 1:19.4-11). The capacity for *outside* effects associates the presence of force with *location* (§ 6; 1:20.36-21.1). The force acting external to itself affects its own vicinity. The vicinity affected by radiation locates the acting source within its region. That force, in virtue of external action, is put “somewhere,” suggests a bond between force and space. This bond is productive. Multiple localized forces constitute the world (§ 7) such that their interaction forms a network (§ 8), which is by definition order (§ 8) and in fact space (§ 9). Kant concludes that extension results from the external action of force (*außer sich wirken*, § 9; 1:23.5-8).

From the start (§ 1), Kant insists with Leibniz that “there is something over and above extension, indeed prior to extension.”²⁰ This “something” is force. Its effect (*Wirkung*) is radiation (*Ausbreitung*). Force spreads, affecting its vicinity. The affected vicinity structures the spread, shaping force. As the effected shaping occurs through the affecting spread, dynamic action is acted upon, changing the action. Dynamic action is governed by interaction. As Kant sees it, radiation and interaction govern each other. He analyzes this interaction in § 10. Force turns “nowhere” into “somewhere”. A void is structured into a field. This structuring is lawful, Kant insists: substantial forces, when united by interactions, propagate their strength in inverse proportion to the square of the distances traversed (1:24.19-23).

Kant may have learned the inverse square from the *Principia*, as the rule governing gravity, it is hard to miss. But he does not credit Newton. He uses it in a way that would have made the sober Brit (dead since 1727), who hated feigning hypotheses on the cause of gravity, dryly turn in his Westminster grave. For the cause of gravity is now identified: it is space-structuring force—Aristotle’s entelechy that Leibniz had grasped first (§ 1), and in whose analysis the sinologist Bilfinger shows Kant the way (§ 20).

Johannes Kepler—founder of celestial dynamics and for Leibniz an incomparable man—formulated the inverse-square law as the principle of photo measurement. Kepler showed that the intensity of light decreases with the square of the distance (1604).²¹ He viewed light as the primordial living force; he suspected the structural identity of the radiation of light and gravity, and he qualitatively applied the inverse-square to gravitation (1605).²² Newton tied the inverse-square to Kepler’s planetary laws (*De motu*, 1684) and proved it for gravity (*Principia*, 1687). Kant’s use of the law is as basic as Kepler’s. It governs the radiation of force, energy, or light. But Kant interprets the law in a way that put his vision even beyond the ingeniously far-sighted Kepler (who, actually, had eye problems).

In § 6-10, Kant identifies a force-space bond. Force is the *primum*, determining space. Once space is there, the bond is bidirectional. Force fills space, ordering it; space places force, governing it. Space dynamically expands; force structurally acts. Each needs the other. Without force, space lacks enframing dimensionality and thus fails to place a world (*Abmessungen* or *Dimensionen*; § 9-10, *passim*). Without space, force lacks acting location and thus fails to radiate a field (*ausbreiten*; § 10, 1:24.23). Radiation and continuum are what they are, because force is spaced, and space is forced. This is their ontological bond. This first *aperçu* has been confirmed. Today we know that gravitating mass curves spacetime, and that spacetime grips gravitating mass. Bypassing Newton, Kant anticipated Einstein.

Then, according to § 10, the inverse square represents force propagation. The law governs the radiation that structures space (1:24.15-16). Because this law rules the interactivity of substances

in general, it accordingly also (*auch*) determines their accretion and composition (1:24.12-18), which entails that universal gravitation is subject to the law as well. This second *aperçu* is correct, just as the first. The inverse square proportionality of dynamic strength and structural distance marks out multiple fields. Because Kant found this out, and because it is true (within appropriate limits; his third *aperçu*), it deserves to be capitalized as *Kant's Law*. We can state Kant's Law in modern terms:

The pressure of any point source radiation in a free field drops at a rate inversely proportional to the square of propagated distance.

Kant's Law governs various instantiations of free point source radiation. The law holds for light (Kepler), gravity (Newton), sound, electrostatic force (Coulomb), radioactivity (Röntgen), radio waves, and, with qualifications, for magnetism (Gauss and Ampere). As the history of physics illustrates, Kant's Law illuminates the bond of force and space in nature. Gauss' and Ampere's work helped Maxwell and Lorentz, whose work guided Einstein. Kant's Law also underlines the relevance of Hawking's work on black holes, the spikes of the force-space bond. A dramatic application of the law, in its Keplerian instantiation, was Hubble's measure of the luminosity of Cepheid variables in 1924, the first step toward Hubble's Law of cosmic expansion and the Big Bang.

According to the conclusion of § 10, the inverse-square governs the three-dimensionality of the continuum (1:24.24-6), but, as Kant insists, this regularity is contingent; other relations between strength and distance would result in different continua (1:24.26-30). The scientific place of this *aperçu* today is not in fertile Minkowski space and solid accounts of the strong nuclear force. Its place is now in quantum geometry and inchoate approximations to Calabi-Yau spaces, whose topologies involve fluid regularities of the force-space bond. The final idea of § 10 is not confirmed. We only know this: Kant's ontology culminates with the *aperçus* of the bond, and the claimed contingency is assumed by superstring theory.

Perhaps superstrings will lead to the master equation of the matrix. Kant implored Leonhard Euler to read the *Living Forces*. His effusive praise shows he saw the significance of Euler's work. He wished Euler would see that he and Kant were on the same track. Euler's work in mathematical dynamics was just as seminal as Kepler's, and his derivation of force would end the *vis viva*-controversy in a formally elegant way. Kant writes that he thinks Euler is the only one able to resolve the disharmony over force.²³ Since Euler coined the beta-function (the trigger of the superstring revolution), Kant's hope is prophetic.

The sciences support Kant's ideas of the bond—and remarkably, even on the deepest, ontological level. As mentioned, Kant suggests that force is the *primum*, determining space, and that force spreads, stretching space out. That is, space is not a void as Newton thought but instead a dynamic expansion. Space is not empty; the void is energetic, this energy expands, and the more expanded energy there is, the faster the void keeps expanding. In what has been hailed as “the

number one scientific discovery of 1998 in any field of research”, Kant’s odd metaphysical claim has now been confirmed.²⁴ So Kant is right—but to what extent does his insight correspond to its root? Bilfinger studied the Classics and formulated a rule, the harmony of opposites, which guides the *Living Forces*, as Kant says. To decide whether Kant’s ideas qualify as a Taoist “seeing the nature” requires comparing his force-space bond to the Tao.

According to the *Tao Te Ching*, something profound exists (*xuan*, v. 1 and v. 6), which is nature’s creative principle (*tiandi mu*, v. 1 and v. 25). Nature obeys a lawful patterning (*fa*, v. 25; see note 8). The cosmic law (*tian li*, see section 2) is the “law of nature” (*dao ji*, v. 14). Since it shapes nature, Tao is form and hence not formed itself (*wu zhuang zhi zhuang*, v. 14). As unbounded form, Tao patterns nature by acting *external* to itself—it “fills” (*dao zhong*, v. 4; see note 7); it “flows,” “goes out,” or “reaches” (*shi*, v. 25). Tao’s dynamic filling is “far reaching” or “flows distant” (*shi yuan*, v. 25). The distant flow always returns, always comes around (*shi yuan fan; zhou xing er bu dai*, *ibid.*). Elsewhere in the *Tao Te Ching*, the action or motion of the Tao is described as a reversal (*fan zhe dao zhi dong*, v. 40). That is, the unbounded form fills space by pushing outwards and by pulling inwards—it is a structural-dynamic pulse. Laozi thus likens the plenum (*tian di zhi jian*, v. 5) to a bellows (*tuo*, *ibid.*).

Because of the continuous character of nature’s unfolding it is a bit arbitrary how finely one parses the process. A four-step model works for our purposes (cf. v. 1, 40, 42). The first stage of nature’s self-organization, prior to the cosmic process, is Tao as a plain energy or a nonspatial void (*wu*). The second stage, the start of the process, is Tao patterning itself into a plenum, thereby generating the field between “heaven and earth” (*tian di*). The third stage, emerging in the field, is the existence of placed presences (*you*) in the fabric. The fourth stage is the progressive ordering of the places from local charges to discrete objects (*wan wu*). The totality of objects is empirical reality, structured by the energetic potential that Laozi calls Tao and Aristotle *dynamis*.

For Aristotle, *dynamis* is a potential that, when put in (*en*) action (*ergon*), is *en-ergon* or *energeia*; energy. (The standard translations, “actuality” for *energeia*, and “possibility” for *dynamis*, fail to retain the Greek flavor.) Aristotelian energy is *dynamis* put into operation, or, in the Latinized Aristotle, a *potentia* put into *agere*, a potential acting. This potential has a *telos* guiding the *energeia*. Thus it has (*echein*) a goal (*telos*) within (*en*). If one applies Aristotle’s claim to force points, with Leibniz, the resulting model involves *entelechies* that have their goals within, and that are describable in quantitative and dynamic terms. It is thus understandable why Kant begins his career (§ 1) with complimenting Leibniz on his useful model of Aristotelian entelechy.

Force creates *Ausdehnung* (§ 9; cf. Laozi’s *zhong*) or extension. The “ex” of “extension” means “out” or “outwards.” The Latin root *tensio* is reminiscent of “tension” because it derives from *tensum*, the participle of *tendere* meaning “to tighten,” to expand,” or “to stretch.” Thus

extension or *wu* is the result of *dynamis* or *dào*, *stretched out* as a charged void. The result is captured in the German *Ausdehnung*, the “out-stretching”. Out-stretching results from the outwards-directed “filling” of the force (cf. Laozi’s *zhang*, v. 4, and *shi*, v. 25). The *Ausdehnung* of space is due to the *Ausbreitung* of force. Kant’s term, *Ausbreitung* (§ 10), “out-broadening,” conveys Laozi’s dynamic idea. For Kant, force can stretch out, creating location and place-change (§ 4, 1:19:5, 32). This initial extension constitutes subsequent interaction. Force out-broadens itself (§ 9-10; cf. Laozi’s *shi*, v. 25) such that its grip is inversely proportional to its squared stretch. This lawful out-stretching creates space (*Raum*), which is order (*Ordnung*). Order locates the out-broadening (*ausbreiten*). Force then radiates from local presence (Laozi’s *you*, v.1). Now copresent points act locally.

Because spatial order patterns the pulse to a plurality of local charges, force unfolds to the set of points. The points act, emitting effects. The effects reach other local charges, affect them, and pattern them to responses. The process from original extension to eventual response leads to copresent charges whose radiations mutually pulse. Interaction ensues; like love, the closer, the hotter. Ongoing interactivity generates lingering webs of pulses and counterpulses. Viable webs of interactive substance-neighborhoods format themselves into engaged communities. Neighborly interaction turns into communal “intra-action.” If harmonious, intra-action sustains the communities as resonating structures, hence as things (*Dinge; wan wu*).²⁵

A look at the lexical roots of the words clarifies what is meant. *Ausdehnung, extensio*, or out-stretching, derives from *dehnen, tendere*, “stretch”. At the third stage of the process (when the already outstretched plenum acquires places), extension does more than stretch. Structuring itself, force is placed. Through places, extension contains substances; it has and holds them. Laozi uses *you* for this stage (v.1). “Have” or “hold” is the basic sense of the morpheme.²⁶

The Latin root of “extension” is *tendere*’s participle, *tentum* or *tensum*. *Tendere*, “stretch,” shares its supinum with *tenere*, which meant originally “to be stretched out” and later “hold” or “grip.” “Stretch” and “grip” have a familiar resonance in the word “entertain” (derived from the Middle English *entertene*, meaning “to hold mutually,” descended through the Middle French *entretenir* from *intertener*, a medieval compound of *tenere*). When we entertain an idea, it has hold on us—as we on it, since the idea and we interact. To get hold of something, we first need to stretch and reach it. This applies to the force-space bond, organisms, and minds. Extended stretch becomes place when force reaches, grips, and holds other forces, structuring the fabric.

Laozi and Kant share the same idea. What makes their insight compelling is that the established scientific description supports it. It is unclear how the cosmos expands (slowing down, speeding up, or moving at constant speed), but we know that it does. The Big Bang started with a singularity. In terms of its nature, the singularity was sheer *energeia*. In terms of its activity, it

exploded as a *dynamis* and then patterned itself to nature. It remains measurable as universal 3-K background radiation.

Historically, the *Living Forces* was an embarrassment for Kant. Because of ignorance (he was young) and irritation (he was passed over by his pious mentor Knutzen, who liked Newton), he failed to jump on the bandwagon of Newtonian mechanics. By describing force partly as Descartes' *vis mortua* ('mass' times speed) and partly as Leibniz's *vis viva* ('mass' times speed squared), he exposed himself to ridicule, for force is Newton's product of mass and acceleration. That he approached force in ontological terms made it worse, because his peers heeded d'Alembert's injunction to reduce dynamic discourse to mathematics and experiments. Worst of all, the factual and logical faults make the book turgid, and Kant was laughed at upon its publication.

But who laughs last, laughs best. Throughout the book Kant studies the harmony of opposites, dead pressure and living force, trying to marry Cartesian momentum (m) to Leibnizian energy (mv^2). And he was right. With the *Living Forces* Kant grasped the fundamental unity of momentum and energy. And with the interactive spatial beat of § 10, he intuited that *momenergy*, in harmony with mass or E/c^2 , is the conserved pulse of spacetime.²⁷

Conclusion

If my conjectures are plausible, then a curious picture of Kant will have emerged by now. Over several intermediate steps, Kant had been inspired by a Chinese idea—even though he may not even have been aware of it. Although he may never have looked into the Classics and certainly never read the *Tao Te Ching* (not published during his lifetime), his earliest and decisive inspiration was an idea he got from the China-expert Bilfinger, who had it from Wolff and Leibniz, and who, in turn, reacted to the Jesuit translations of the Confucian Classics.

The idea that inspired Kant had several aspects: Nature is energy; energy is a dynamic interactivity; and dynamic interactivity is a harmony of opposites. These are facets of the Tao. The Tao was not unique to Laozi's *Tao Te Ching*. It haunts the canon of ancient Chinese literature, from the *I Ching* to the *Book of Rites* (two of whose chapters are Confucian Classics, the *Doctrine of the Mean* and the *Great Learning*). It is an element of Chinese culture—as Confucian humanity is the stance governing ethics and anything social, the Tao is the idea governing the universe and anything natural.

The information traveled. It was passed on, just like any other commodity. When it arrived in Königsberg in 1745, it had already traveled a long way, on a journey that had begun in 1601, when Ricci was admitted to Beijing, trying to preach the Gospel, while absorbing Chinese culture. Through letters, tracts, and eventually translations, the Tao traveled from the Jesuit mission in

Beijing to the Portuguese and Dutch traders at the port of Macao. From there it sailed with the mail to Lisbon in Portugal and Rotterdam in the Netherlands. Portugal was barren ground; too conservative and Catholic. The Netherlands, however, was then the freest society on Earth (it remains so today), and here the information could be communicated. Perhaps it infected Spinoza in nearby Amsterdam; we do not know. It certainly intrigued Leibniz, who passed by Amsterdam on his way from Paris to Hanover. The Paris-Hanover road extended to Leipzig, a commercial center situated at the crossroads with Prussia (Berlin), Bohemia (Prague), and Russia (St. Petersburg). Thomasius may have been exposed to the idea in Leipzig, his decorum makes one wonder, but once again, we do not know. But Wolff's decorum is a different story—we know the Tao fascinated him in Halle, only ten miles from Leipzig. Wolff's scandalous speech led to a major infection, and now the vector spread with Bilfinger first to Tübingen and then to St Petersburg, at whose academy the Leibnizian researchers on dynamics were gathering. And St Petersburg at the western end of Russia is not far from Königsberg at the eastern end of Prussia, where Kant studied Bilfinger's research. Information spreads, and during the Enlightenment information traveled quickly.

During its travels, the information changed. Communication is inevitably interpretation, and interpretation is transformation. The Chinese "way" (*dao*) was rendered as "nature's reason or rational nature" (*natura rationalis*). The Jesuit translators had read it to mean that nature, created by a benevolent and omnipotent Christian God, is consistent and accessible to reason. At its Eastern departure, the Tao was paradoxical and elusive; at its Western arrival, it had become uniform and rational—so much the better for scientific investigation. That things change when the travel is not limited to ideas, it affects other commodities too. Marco Polo had brought rice noodles from China to Italy—where one subsequently cooked spaghetti. But as rice noodles and spaghetti are still noodles, the Tao was still energy. In Kant, in particular, dynamic interactivity had still retained some its dialectical flavor: the harmony of opposites.

In Kant's first book, the information—disguised as Bilfinger's rule of the middle way and as Leibniz's dynamic reading of entelechy—blossomed into the ontology of force. Reality is a dynamic between the bond of energy and continuum, momentum-energy and spacetime. Force pumps out nature. When concentrated to a focal point (Kant's "burning point" or *Brennpunkt*; cf. 2:334.7), the energy is as hot as it gets. It pulses outward toward complexity. Was this just an odd beginning, a first false step for Kant?

It seems fitting to end this speculative quest with questions. If his earliest vision, of an energetic bond flaring out structure, was just a first false step, why would Kant, of all people, earn his Master's degree in philosophy (1754), with *Meditation on Fire*, of all things? Why would he then turn to investigate anything that moves, shakes, pushes and pulls—from the fate of Earth's rotation governed by tidal beats (*Spin Cycle* essay, 1754) to earthquakes (three tracts, 1756) to winds, storms,

and weather pumps like the monsoon (*Theory of Winds*, 1756; *West Wind* essay, 1757)? Why would he, in his second book, *Universal Natural History* (1755), explain the self-organization of the cosmos from chaos to complexity with the interplay of pushes and pulls, repulsion and attraction, antigravity and gravity? And be so certain that he is right that he proclaims proudly, with Voltaire, to just give him matter, and he would build a world with it (1:229)? While warning Christian zealots against opposing science—if they did, he declares, they would be defeated (1:222, 225)?

Why would he earn his doctorate (1755) with a dissertation on metaphysical cognition—while stating, as the first principle of his *New Elucidation*, an identity-pair of opposites, “whatever is, is, and whatever is not, is not” (1:389)? Why would he state, as his final principle, an interactive harmony, the principle of coexistence (1:412)? While, in passing, solving the problem of freedom in nature dynamically? Why would he harmonize the opposites of freedom and necessity over force—defining a free will as something that is not being pushed around, but that is a “determining power” instead, a power that can withstand impulses and remain spontaneous (1:404)?

Furthermore, why would Kant earn his professorial degree (1756) with a *habilitation* over elementary particles—that are physical, but energetic monads? While explaining how indivisible force points can create spatial things by pulsing out active spheres, dynamic spacelets, the tiniest dimensional spheres of nature (1:481)—thus anticipating the Calabi-Yau spaces in the superstring and M-theories of today?

Or why would Kant, in his third book, *Only Possible Argument* (1763), turn to reflect on God, describing It as a necessary, unified, and constant being, deriving Its existence from possibility, visible in nature in the design resulting from the “inner possibility of things” (2:91-2)—“possibility,” which, as we have seen, is *Möglichkeit* in German, *possibilitas* in Latin, and *dynamis* in Greek?

Understandably having second thoughts, knowing he had gone too far (it is one thing to get from force to fire, tides, and winds, but quite another to get from force to God), he retracted, became a critic of metaphysics and a geographer of cognition next. So he bifurcated nature, in the *Inaugural Dissertation* (1770), into the sensible and the intelligible. But do not these opposites harmonize, and harmonize over interaction? Why would Kant then account for knowledge, in the *Critique of Pure Reason* (1781), by determining it as the result of the interaction of sensory information and intelligible tools?

And why, even there, would he insist that cognitive interactivity—knowledge—is grounded in dynamic interactivity, the spatial plenum or force field (A 212-215/B258-262)? And when he turned to ethics, in the *Foundations of Metaphysics of Morals* (1785)—why would this foundation with absolute worth be a good will (4:393)? Why would it be neither a deed nor its outcome, but instead its intention, its impulse, its dynamic thrust? In its thrust, a conscious force stretches out from the subjective center. It encounters the other; and pays attention (*Achtung*; 4:436); and responds, as a

good will, interactively and appropriately, granting the other her dignity.

And so the circle closes. Kant set out with the force-space bond when he was young and forty years later arrived at respect for humanity. A student once asked Confucius what humanity means. Confucius replied, “Don’t do to others what you don’t want to be done to you”. The student was not happy. “That’s quite a mouthful,” he said, “isn’t there, like, a shorter version?” Confucius said: *shu!* Translated: “reciprocity” or “light-hearted forgiveness.”

Notes

¹ The phrase is by Shi-Chuan Chen, "How to Form a Hexagram and Consult the I Ching," *Journal of the American Oriental Society* 92 (1972): 248. Explaining non-Western realism, he writes: "There is a deep conviction of the Chinese that no lines of demarcation exist between man and heaven and earth [the so-called Principle of the Three Participants] . . . Because of this principle the ancient Chinese avoided becoming victims of the fallacy of the bifurcation of nature. The derivatives from the bifurcation, namely, the separation of the subjective from the objective, the distinction of the primary and secondary qualities, and the confrontation of the ego and non-ego, have not tortured the Chinese mind."

² I am grateful to many colleagues for their ideas. I would like to thank Karl Ameriks for identifying Kant's early monism (Karl Ameriks, *Kant's Theory of the Mind*, [Oxford and New York: Oxford UP, 1982] 29-30, 85-86); Sidney Axinn and Ivan Marquez for discussions on the dynamics of ethics; Fred Beiser for fleshing out Kant's love for metaphysics (Frederick Beiser, "Kant's Intellectual Development: 1746-1781," *Cambridge Companion to Kant*, ed. P. Guyer [Cambridge and New York: Cambridge UP, 1992] 26-61); Andrew Carpenter for discussions on Kant's inverse-square law; Jeffrey Edwards for discovering the implications of Kant's Third Analogy (Jeffrey Edwards, *Substance, Force, and the Possibility of Knowledge* [Los Angeles and San Francisco: California UP, 2000] 1-8, 46-7, 165-6); Paul Guyer for pointing to Kant's reflections on animal souls (Paul Guyer, "Organisms and the Unity of Science," *Kant and the Sciences*, ed. E. Watkins [Oxford and New York: Oxford UP, 2001] 268; see also Immanuel Kant, *Werke*, ed. W. Dilthey et al. [Berlin: Reimer, later De Gruyter, 1902ff] 28:275); Kenneth Westphal for encouraging my Keplerian hunches; Kwasi Wiredu for stressing the relevance of nonwestern monism; and Manfred Kuehn for discovering Kant's disbelief in an afterlife and in a monotheistic God (Manfred Kuehn, *Kant: A Biography* [Cambridge and New York: Cambridge UP, 2001] 2-5, 382, 369-78, 385-92). I also thank Jau-Wei Dan (Taipei Teachers College, Taiwan) for his insights on Zhuangzi; Diane Nai-Yu Schönfeld and Yung-Ming Shu (Hsinchu Teachers College, Taiwan) for discussions of the Taoist basis of Confucianism; and Master Jian-Mieng Liu (Zen Center Meinong, Kaoshiung, Taiwan) for most helpful clarification.

³ I quote from Kant, *Werke* (1902ff.; Academy edition) by volume and page. If applicable, line numbers are given. I quote from Kant, *Critique of Pure Reason* [1781/1787], trans. N.K. Smith (New York: St. Martins, 1965) by (A) and (B) paginations.

⁴ Max Caspar, *Kepler*, trans. C. D. Hellman (London: Abelard-Schuman, 1959) 290.

⁵ Lao Tzu, *Tao Te Ching*, trans. S. Addiss and S. Lombardo (Indianapolis: Hackett, 1993) 4; Lao Tsu, *Tao Te Ching*, trans. G. Feng and J. English (New York: Vintage, 1997) 4. Compare also verse 25.

⁶Shi-Qiyou Liang and Fang-Jie Zhang, *Yuandong Han-Ying Da Chidian/Far East Chinese-English Dictionary* (Taipei: Yuandong Tushu Gongshi, 1999) # 2801, 843-4.

⁷Cf. *Tao Te Ching*, verse 8: “Water benefits all things and does not compete / It flows in lowly places men reject and is thus close to the Tao;” verse 32: “Tao in nature is like rivers running into the sea;” verse 34: “Great Tao flows everywhere / . . . / All beings derive life from it” (my trans.). Water is an apt symbol of Tao. Astrophysically, water is common in the universe, suggesting Tao’s universality. Environmentally, water forms the hydrologic cycle, mirroring Tao’s animating pulse. Chemically, water is the only compound that expands when it crystallizes, thus evoking the spatial swelling of Tao’s natural self-organization.

⁸“Dao . . . yuanshi ji kongxu de, wu suo bu bao, wu wei bu ru;” commentary by Ren-Gong Liang in Laozi, *Dao De Jing*, ed. Yu-Tang Lin (Taipei: Wenzhi, 1992) 9. Compare also Lao Tzu, *Tao Te Ching*, verse 32. I would like to thank Guan-Xiong Xu, Nangong Taoist Institute, Mucha, Taiwan, for his assistance.

⁹*Fa* is “institution, law” (as in *fajia*, Legalism), as well as “method” or “way of doing things.” As a verb, *fa* means “to pattern or model after, to emulate”; cf. Liang and Zhang, # 2832, 854-6. The semantic key of *fa*, just as the key of *zhong* (“fill”) is *shui*—*water*. For this symbol of Tao, see note 6. One should not read too much into Chinese characters (not every stroke is there for a reason), but examining *fa* is interesting. Given its semantic key, one could conceptualize *fa* as the water-like action pattern that mirrors Tao’s pulse. The dynamic aspect of *fa* is depicted in the character’s main part, which, sans water-radical, is pronounced in modern Mandarin *qu*—*go*. The top segment of the “go”-part of *fa* exists as a free graph as well and is pronounced *tu*—the *Earth*. *Fa*, the lawful patterning, evokes a “going” ruled by “earth”. The patterning, the vector denoted by *fa*, would thus be a lawful way, ruled by nature or earth, going “somewhere.” As the second meaning of the “go”-component *qu* is *leave*, nature’s vector is transcendent, pointing from the rule of the Earth to the Tao, the highest good (v. 8).

¹⁰Martin Heidegger, “Brief über den Humanismus”[1946], *Wegmarken* (Frankfurt: Klostermann, 1996) 313. Compare Heidegger, *Basic Writings*, ed. and trans. D.F. Krell (San Francisco: Harper, 1993) 217.

¹¹Edward O. Wilson, *Consilience: The Unity of Knowledge* (New York: Vintage, 1998): 294; see also 10-14, 43-8 and 227-8.

¹²S. J. Yves Raguin, *Ways of Contemplation East and West* (Taipei: Ricci Institute for Chinese Studies, 1993-2001) vol. 4, 323. I would like to thank the Ricci Institute, Taipei for its assistance with documents on the Jesuit China mission.

¹³Michael Albrecht, “Einleitung,” Christian Wolff, *Oratio de Sinarum philosophia practica*, ed. Michael Albrecht (Hamburg: Meiner, 1985) xvi; compare David E. Mungello, *Leibniz and Confucianism: The*

Search for Accord (Honolulu: Hawaii UP, 1977) 5, 19-20; John K. Fairbank and Merel Goldman, *China: A New History*, enlarged ed. (Cambridge, Mass.: Harvard UP, 1992) 147-61, 480.

¹⁴ The translations are S.J. Philippe Couplet, *Confucius sinarum philosophus, sive Scientia Sinensis Latine exposita* (Paris 1687) and S.J. François Noël, *Sinensis imperii libri classici sex, nimirum Adulorum Schola* [the *Da Xue* or “Great Learning”], *Immutabile Medium* [the *Zhong Yong* or “Doctrine of the Mean”], *Liber Sententiarum* [the *Lun Yu* or “Analects”], *Mencius* [the *Mengzi* or “Book of Mencius”], *Filialis Observantia* [the minor *Xiao Jing* or “Book of Filial Piety”], *Parvulorum Schola* [the medieval *Xiao Xue* or “Youth Learning”], *e Sinico idiomate in Latinum traducti* (Prague 1711). Wolff reviewed Noël’s China-handbook (1708) in the journal *Acta Eruditorum* in 1711, and Noël’s translation in a two-part essay in *Acta Eruditorum* in 1712. His reviews appeared anonymously. Compare Albrecht xxii-xxviii, liii-lxii. For details on the works mentioned, see Albrecht 305-312. For Wolff’s superlative praise of Confucius in the *Oratio*, see Christian Wolff, *Oratio de Sinarum Philosophia Practica* [1723], ed. M. Albrecht. (Hamburg: Meiner, 1985) 7-13, 19, 65.

¹⁵For the translation history, see James Legge, “Preface,” *The Texts of Taoism* [1891], ed. James Legge, 2 vols. (New York: Dover, 1962) xii-xiii.

¹⁶Translation by Wing-Tsit Chan, *A Source Book in Chinese Philosophy* (New Jersey: Princeton UP, 1969) 98. Additions in brackets are mine. The pinyin transliteration is based on *Zhongyong Jiyi* (Taipei: Sangyang, 1985) 2, 6.

¹⁷The subsequent citations are from Wolff 4-6. Line numbers are indicated with “l” followed by numeral. My translation.

¹⁸ The match between Wolff’s and Chinese ethics turns on what Wolff calls the decorum. It helps to remember that the term derives from Latin *decere*, “to befit.” Decorum is manners and the same as Confucian Ritual (*li*), which gave its name to the Rites Controversy. *The Analects* (1.12) defines ritual (*li*) as harmony (*he*) or “the fitness of things” (*shi zhi yi*). See Confucius, *The Analects*, trans. R. Dawson (Oxford and New York: Oxford UP, 1993); compare James Legge, ed., *The Confucian Analects, the Great learning, and the Doctrine of the Mean* [1893] (New York: Dover, 1971) 143 note, and Confucius 4. As a fitness of things, decorum is “the Tao of the ancient kings” (*lao wang zhi dao*; *Analects* 1.12); see Legge 143. Neo-Confucianists named it the “decorum of heaven” (*tian li*). Confucius defines it as a form of humaneness (*ren*) and explicates it as the negative Golden Rule, “do not impose on others what you would not like yourself” (*ji suo bu yu, wu shi yu ren*; *Analects* 12.2, 15.23). Christian Thomasius (1655-1728), the father of the German Enlightenment, Halle’s president (*Direktor*) in 1721, and probably in Wolff’s audience too, had repeatedly defended the decorum. Thomasius defines it as the positive Golden Rule (*quod vis ut alii tibi faciant, tu ipsis facies*) in *Fundamenta Juris Naturae et Gentium*. See Christian Thomasius, *Fundamenta Juris Naturae et Gentium* [1705] (Aalen: Scientia, 1963) 177. To my knowledge, the historical influence of Confucius on

Thomasius, if any, has not been investigated.

¹⁹Bilfinger's *De viribus corpori moto insitis et illarum mensura* appeared in the journal of the Russian Academy at St Petersburg, *Commentarii Academicae Petropolitanae* in 1728. For Bilfinger's rule in *De viribus*, # 16, see Juan Arana Canedo-Aguelle's commentary in Immanuel Kant, *Pensamientos Sobre la Verdadera Estimación de las Fuerzas Vivas*, ed. and trans. J.A. Canedo-Aguelle (Bern: Lang, 1988) 354. For Kant's adoption of Bilfinger's rule, see *Gedanken zur wahren Schätzung der lebendigen Kräfte*, # 20, in Kant, *Werke* (1902ff.) 1:32.5-7.

²⁰*Gedanken zur wahren Schätzung der lebendige Kräfte*, # 1, in Kant, *Werke* (1902ff) 1:17.22-23. All further references to this text indicate the pagination of this edition.

²¹Johannes Kepler, *Astronomia pars optica* [1604] prop. 9, *Gesammelte Werke*, ed. Max Caspar et al. (Munich: Beck, 1937ff.) 2:22. For the dictum of the "incomparable man" (*vir incomparabilis*), see Max Caspar, "Einleitung," Kepler 1:vii.

²²*Astronomia pars optica*, ch. 1 "De natura lucis," margin: "Lucis encomium," Kepler 2:19.31-9. Kepler characterizes light as the principle of all that beautifies the world, the instrument of the Creator, the matrix (*matrix*) of animal faculties, and the bond (*vinculum*) of body and mind. For Kepler's gravity-aperçu, see the letter to David Fabricius (11 Oct. 1605), Kepler 15:240-80 (# 358), esp. 241.67-73; and *Astronomia nova* (1609), "Introductio," margin: "Vera doctrina de gravitate," Kepler 3:25.19-24.

²³See Kant's letter to Euler, 23. August 1749: "I dare to submit my tract to the judgment of a person, whose extraordinarily sharp mind is far more adept than others at leading this initial striving (*den Anfang der Bestrebung*) in these bad essays to the final and complete resolution of the disharmony (*Uneinigkeit*) among such great scholars." My translation. Not in Kant (1902ff.). For the original, see Harald-Paul Fischer, "Kant and Euler," *Kant-Studien* 76 (1985): 217. Compare Immanuel Kant, *Correspondence*, ed. and trans. A. Zweig (Cambridge and New York: Cambridge UP, 1999): 45-6.

²⁴ See Martin Rees, *Just Six Numbers. The Deep Forces that Shape the Universe* (London and New York: Phoenix/Basic Books, 2001) 106. Rees refers to a 1999 ranking by the journal *Science*. The discovery was the effort of teams by Saul Perlmutter and Brian P. Schmidt, who measured supernovae, saw that they were dimmer than expected, and concluded that they were more distant than their redshifts suggest. After eliminating rival hypotheses, Perlmutter and Schmidt recognized that the cosmos had expanded more slowly in the past than previously assumed: cosmic expansion is now speeding up. See Saul Perlmutter et al., "Discovery of a Supernova Explosion at Half the Age of the Universe," *Nature* 391 (1998): 51-54 and Adam G. Riess et al., "Observational Evidence from Supernovae for an Accelerating Universe and a Cosmological Constant," *Astronomical Journal* 116 (1998): 1009-1038. Summarizing the discovery, Rees notes, "an unsuspected new force—a cosmic 'antigravity'—controls the expansion of the universe" (3). John D. Barrow, *The Book of Nothing* (London: Vintage, 2001) gives an account of this discovery and its background worth quoting in full:

“The quantum revolution [in physics] showed us why the old picture of the vacuum as an empty box was untenable. Henceforth the vacuum was simply the state that remained when everything that could be removed from the box was removed. That state was by no means empty. It was merely the lowest energy state available. . . . Gradually, this exotic new picture of quantum nothingness succumbed to experimental exploration. . . . Physicists discovered that their defensive definition of the vacuum as what was left when everything that could be removed had been removed was not as silly as it sounds. There *was* always something left: a vacuum energy that permeated every fiber of the Universe. . . . Last year [1998], two teams of astronomers used Earth’s most powerful telescopes together with the incomparable optical power of the Hubble Space Telescope to gather persuasive evidence for the reality of cosmic vacuum energy. Its effects are dramatic. It is accelerating the expansion of the Universe” (10-12).

²⁵Laozi’s *wamwu*, verse 1, is “ten thousand things.” It denotes everything, from noble gases to biospheres to minds. For Heidegger, *wamwu* is *alles Seiendes*, from *Zeug* to *Dasein*.

²⁶Laozi’s *you* means “to have, to be present, to exist, there is;” see Liang and Zhang # 2315: 727. A typical usage is in “*you meiyou*”—“*you,*” “you have it?”—“I have it.”

²⁷Momentum and energy are the quantities describing masses moving through space and time. In collisions, the values of momentum and energy differ before and after impact, but their sum remains the same. They form a union; momentum and energy (or “momenergy,” a term coined by J. A. Wheeler) hang together just like space and time do. Put differently, momentum-energy is the correlate to spacetime. Dynamically, momentum-energy is as fundamental as it gets: it is proportional to mass, it is conserved in the universe, and it is invariant in relativistic frames of reference. That matter “somehow” contains energy actually means that mass is momentum-energy. This is Kant’s force. A weak aspect of momentum-energy is gravity (noticeable only in very large masses), the organizing force of the cosmos. Kant’s force-space bond, in modern physics, is a bond of momentum-energy (gravitating mass) and spacetime. As John A. Wheeler puts it: mass grips spacetime, telling it how to curve; spacetime grips spacetime, transmitting curvature from near to far; and spacetime grips mass, telling it how to move. See J. A. Wheeler, *Gravity and Spacetime* (New York: Scientific American 1990) 3, 11-13, 114.

Works Cited

- Albrecht, Michael. "Einleitung." In Christian Wolff, *Oratio de Sinarum philosophia practica*. 1723. Ed. M. Albrecht. Hamburg: Meiner, 1985.
- Ameriks, Karl. *Kant's Theory of the Mind*. Oxford/New York: Oxford UP, 1982.
- Barrow, John D. *The Book of Nothing*. London: Vintage, 2001.
- Beiser, Frederick C. "Kant's Intellectual Development: 1746-1781." *Cambridge Companion to Kant*. Ed. P. Guyer. Cambridge, UK/New York: Cambridge UP, 1992.
- Caspar, Max. "Einleitung." In Johannes Kepler. *Gesammelte Werke*. 30 vols. Ed. Max Caspar et al. Munich: Beck, 1937ff.
- _____. *Kepler*. Trans. C. D. Hellmann. London: Abelard-Schuman, 1959.
- Chan, Wing-Tsit. *A Source Book in Chinese Philosophy*. New Jersey: Princeton UP, 1969.
- Chen, Shi-Chuan. "How to Form a Hexagram and Consult the I Ching." *Journal of the American Oriental Society* 92 (1972): 237-48.
- Confucius. *The Analects*. Trans. R. Dawson. Oxford and New York: Oxford UP, 1993.
- Edwards, Jeffrey. *Substance, Force, and the Possibility of Knowledge*. Los Angeles and San Francisco: California UP, 2000.
- Fairbank, John King and Goldman, Merel. *China: A New History*. Enlarged ed. Cambridge, Mass.: Harvard UP, 1992.
- Fischer, Harald-Paul. "Kant and Euler." *Kant-Studien* 76 (1985): 214-218.
- Guyer, Paul. "Organisms and the Unity of Science." *Kant and the Sciences*. Ed. E. Watkins. Oxford and New York: Oxford UP, 2001.

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- Heidegger, Martin. *Basic Writings*. Ed. and trans. D. F. Krell. San Francisco: Harper, 1993.
- _____. "Brief über den Humanismus" 1946. *Wegmarken*. Frankfurt: Klostermann, 1996.
- Kant, Immanuel. *Werke*. 29 vols. Ed. W. Dilthey et al. Berlin: Reimer, later De Gruyter, 1902ff.
- _____. *Critique of Pure Reason*. 1781/1787. Trans. N. K. Smith. New York: St Martins, 1965.
- _____. *Werke: Akademie-Textausgabe*. 10 vols. Ed. W. Dilthey et al. Berlin: De Gruyter, 1968.
- _____. *Pensamientos sobre la verdadera estimación de las fuerzas vivas*. Ed. and trans., with commentary, by J. A. Canedo-Aguelle. Bern: Lang, 1988.
- _____. *Correspondence*. Ed. and trans. A. Zweig. Cambridge, UK and New York: Cambridge UP, 1999.
- Kepler, Johannes. *Gesammelte Werke*. 30 vols. Ed. Max Caspar et al. Munich: Beck, 1937ff.
- Kuehn, Manfred. *Kant: A Biography*. Cambridge, UK and New York: Cambridge UP, 2001.
- Lao Tzu. *Tao Te Ching*. Trans. S. Addiss and S. Lombardo. Indianapolis: Hackett, 1993.
- _____. *Tao Te Ching*. Trans. G. Feng and J. English. New York: Vintage, 1997.
- Laozi. *Dao De Jing*. Ed. Y. T. Lin. Taipei: Wenzhi, 1992.
- Legge, James, ed. *The Texts of Taoism*. 1891. 2 vols. New York: Dover, 1962.
- _____, ed. *The Confucian Analects, the Great Learning, and the Doctrine of the Mean*. 1893. New York: Dover, 1971.
- Liang, Shi-Qiou, and Zhang, Fang-Jie. *Yuandong Han-Ying Da Chidian: Far East Chinese-English Dictionary*. Second ed. Taipei: Yuandong Tushu Gongshi, 1999.
- Mungello, David E. *Leibniz and Confucianism: The Search for Accord*. Honolulu: Hawaii UP, 1977.

Perlmutter, Saul, et al. "Discovery of a Supernova Explosion at Half the Age of the Universe." *Nature* 391 (1998): 51-54.

Raguin, Yves, S. J. *Ways of Contemplation East and West*. 4 vols. Taipei: Ricci Institute for Chinese Studies, 1993-2001.

Rees, Martin. *Just Six Numbers. The Deep Forces that Shape the Universe*. London and New York: Phoenix/Basic Books, 2001.

Riess, Adam G., et al. "Observational Evidence from Supernovae for an Accelerating Universe and a Cosmological Constant." *Astronomical Journal* 116 (1998): 1009-1038.

Thomasius, Christian. *Fundamenta Juris Naturae et Gentium*. 1705. Aalen: Scientia, 1963.

Wilson, Edward O. *Consilience: The Unity of Knowledge*. New York: Vintage, 1998.

Wheeler, John A. *A Journey into Gravity and Spacetime*. New York: Scientific American, 1990.

Wolff, Christian. *Oratio de Sinarum Philosophia Practica*. 1723. Ed. M. Albrecht. Hamburg: Meiner, 1985.

Zhongyong Jiyi. Taipei: Sangyang, 1985.