Forthcoming in *The Proceedings of the 13th International Kant Congress*: *The Court of Reason*

Kant Against the Cult of Genius: Epistemic and Moral Considerations

Jessica J. Williams, The University of South Florida

Many of Kant's contemporaries considered scientific inventions and discoveries as products of genius as well as appropriate objects of aesthetic appreciation. Consider Alexander Gerard's definition of genius as the "faculty of invention; by means of which a man is qualified for making new discoveries, or for producing original works of art" (1966 [1774], 8). Or consider Francis Hutcheson's claim that mathematical theorems and scientific principles, such as Newton's law of gravitation, are beautiful (2004 [1726], 36-42). In the *Kritik der Urteilskraft*, by contrast, Kant restricts genius to artistic production and denies that science is beautiful. "Genius," he insists, "is a talent for art, not for science" (KU, AA 5:309) and "a science which, as such, is supposed to beautiful, is absurd" (KU, AA 5: 305).[1]

But this was not always Kant's view. In notes and lectures from the late 1770s and early 1780s, he claims that both scientific and artistic invention involve genius (Wenzel 2001). And despite his ultimate restriction of genius to the production of beautiful art in the KU, several recent interpreters have even tried to find a place for genius in Kant's account of cognition generally (Matherne 2015) and science specifically (Breitenbach 2018). I think we should be skeptical of these recent interpretations, but I will not challenge them directly. Instead, my goal in this paper is to examine *why* Kant excludes genius from science in the KU. I suggest that both epistemic and moral considerations underwrite this exclusion. While Kant's epistemic reasons rest on a conception of scientific practice that is more constrained than what we might now endorse, his broadly moral reasons, which rest on the role of scientific education in the development of the rational capacities of human beings, should be of continued interest.

[1] All English translations are from the Cambridge Edition of the Works of Immanuel Kant.

I. Epistemic Reasons

As John Zammito has argued, Kant's views on genius in the KU, in particular, his suggestion that science cannot be beautiful, should be understood in the context of Kant's criticism of his former student, Johan Gottfried Herder (Zammito 1992, 137-142). In 1784, Herder published the first volume of *Ideas towards a Philosophy of the History of Man*, which Kant reviewed (along with the second volume) in 1785. Kant was especially critical of Herder's hypothesis of a creative force in nature that is responsible for the origin of organic life out of an initial state of chaos and for the transformation of species over time. But Kant does not merely object to the content of Herder's *Ideas*, he is equally critical of Herder's style, accusing Herder of letting his "poetical spirit…invad[e]" his philosophical work and of relying on "bold metaphors, poetic images, and mythological allusions" in order "to conceal the body of the thoughts as under a *farthingale*" (RezHerder, AA 8:60). At the end of his review, Kant remarks that he wished that Herder had "put his lively genius under some constraint" (RezHerder, AA 8:55). Kant is clearly concerned that Herder's beautiful prose masks his fanciful and unfounded speculations. In the KU, Kant expresses a similar concern when he claims that if science were beautiful, "one would be sent packing with tasteful expressions (*bon mots*)" in place of "grounds and proofs" (KU, AA 5:305).

One might be tempted to conclude that Kant's exclusion of genius from science merely reflects his desire to separate the epistemic and aesthetic virtues of science. One way to put this proposal would be to suggest that Kant is concerned with the *justification* of scientific theories, but this is compatible with the aesthetic appreciation of theories—so long as aesthetic merits are not mistaken for epistemic ones—and with a role for genius in scientific *discovery*. After all, Kant claims that science as such (*als solche*)—that is, as a systematic body of demonstrable cognitions—cannot be beautiful, but this leaves open the possibility that certain scientific representations also have aesthetic properties and that the creativity associated with genius plays a role in scientific reflection (Breitenbach 2018).

I want to suggest, however, that's Kant exclusion of genius from science does not merely concern what we would now call the context of justification but extends to the context of discovery as well. This becomes clear if we consider Kant's analysis of genius in the KU, and specifically, with the way he contrasts artistic inspiration and scientific method. In §§46 and 47, Kant presents an account of genius in terms of a special talent that cannot be learned. The process through which the genius creates her works is, moreover, one that even the genius cannot fully understand, let alone communicate to others. This is at odds with Kant's account of the rational structure of science. He has an account of the constraints on hypothesis formation, which he develops in the KrV, which is incompatible with his account of genius.

Before turning to a discussion of these constraints, it's worth noting that Kant had earlier rejected an account of genius as essentially involving incommunicability. In a note dated from the late 1770s that is clearly directed at Johann Georg Hamann's account of genius in terms of quasi-divine inspiration coupled with a disdain for rules, Kant writes that "[g]enius is not some sort of demon that gives out inspirations and revelations" nor is it "a special kind of insight; it must be able to be communicated and made understandable to everyone" (Refl. 899, AA 15: 393). Yet, this is how Kant characterizes genius in the KU. He writes that genius "cannot itself describe or indicate scientifically how it brings its products into being;" "the author of a product that he owes to his genius does not know himself how the ideas for it come to him" and thus "does not have it in his power to think up such things at will, or according to plan, and to communicate to others precepts that would put them in a position to produce similar results" (KU, AA 5:308). He then explicitly notes the etymological root of the term "*Genie*" in the Latin "*genius,*" which refers to "the particular spirit given to a person at birth, which protects and guides him, and from whose inspiration those original ideas stem" (KU, AA 5:308). Unlike Hamann, Kant does not attribute the source of these ideas to divine inspiration, but instead to nature (KU, AA 5:307). Nevertheless, Kant has come to accept precisely what he earlier denied, namely, that genius essentially involves incommunicability, at least at the level of creative process (Gammon 1997).

This, in turn, is why Kant is keen to exclude genius from science. Scientific cognition must, as such, be communicable. Setting aside the anachronism of the term, there is probably no other "scientist" for whom he had greater respect than Isaac Newton, yet Kant insists that Newton is *not* a genius, because "everything that Newton expounded in his immortal work on the principles of natural philosophy, no matter how great a mind it took to discover it, can still be learned," but, as Kant notes, "one cannot learn how to write inspired poetry" (KU, AA 5: 308). One might worry that Kant is confusing two different abilities here: the ability to learn what Newton has expounded, on the one hand, and the ability to make a similar discovery or advancement oneself, on the other. But even though the latter ability is distinct from the former, as it requires that one go beyond "what others have thought" in a way that the former does not, he still does not want to identify Newton's work with that of genius, because it "lies on the natural path of inquiry and reflection in accordance with rules" (KU, AA 5:308). In other words, he denies a role for genius even at the level of scientific discovery, because he holds that the scientific process is no less rationally constrained than the cognition it produces.

We can better appreciate this point if we recall Kant's account of scientific methodology in the KrV, especially with respect to hypothesis formation. In the "The discipline of pure reason with regard to hypotheses," he presents two general constraints on hypothesis formation in empirical scientific inquiry, which are aimed at curbing the speculative impulses of reason.[2] First, hypotheses must accord not only with the conditions of possible experience, they must also accord with already known "laws of appearances," i.e., with our actual cognition of empirical objects and their properties (KrV, A772/ B 800). Second, adequate hypotheses must account for given consequences without in turn depending on auxiliary hypotheses (KrV, A 774/ B 802).

Of course, these constraints on hypothesis formation, taken on their own, would still allow plenty of room for the kind of creativity associated with genius. But in the Appendix to the Dialectic, Kant also presents an account of how ideas of reason—without themselves serving as explanatory hypotheses—nevertheless structure scientific

[2] For more discussion of these conditions, see Butts (1961).

inquiry (Butts 1961). Although we can neither cognize the soul as a simple substance nor posit it as an empirical hypothesis to explain the unity of various psychological phenomena, the rational idea of the soul as a simple substance can nevertheless guide the formation of hypotheses in empirical psychology. That is, the idea of the soul as a simple substance directs us to try to reduce the various psychological powers to more basic powers, when e.g., when we try to see "if imagination combined with consciousness may not be memory, wit, the power to distinguish, or perhaps even understanding and reason" (KrV, A 649/ B 677). Kant likewise thinks that (Stahlian) chemistry is guided by rational ideas of the elements (e.g., pure earth, pure water, pure air), which guide systematic experimentation into chemical phenomena.

In addition to forming the ideas around which the cognitions within particular sciences are organized, reason also supplies general methodological principles that rest on the transcendental assumption that nature itself is systematic. These are the principles of the homogeneity, specification, and continuity of forms. The principle of homogeneity leads the investigator of nature to try to find higher concepts (genera) under which to subsume given particulars, under the assumption that despite all of the variety of nature, there is nevertheless sameness of kind. The principle of specification, which rests on an assumption of variety in nature, leads the investigator to search for further species and subspecies. The principle of continuity rests on the assumption that there are no leaps in nature and hence that there is "a graduated transition from one species to others" (KrV, A 660/ B 688). This, in turn, leads us to suppose an affinity among objects, specifically with respect to their powers and properties.

Kant gives an example from astronomy to illustrate how these principles guide hypothesis formation. As Kant sees it, the principle of continuity underlies Kepler's hypothesis that the planets move in an elliptical, rather than circular orbit around the Sun. Kant writes, "we suppose that the movements of the planets that are not a circle will more or less approximate to its properties, and then we come upon the ellipse" (KrV, A 662/ B 691). Kant then examines how all three principles operate in Newton's generalization of Kepler's laws. In line with the principle of homogeneity, circular and elliptical orbital

paths are unified under a common genera (that of conic sections) and at the level of unity of causes, we subsume all of these motions under the inverse square law. But then further reasoning in accord with continuity and homogeneity suggests that parabolas, which are also conic sections, might be possible paths of bodies (comets). Finally, in line with the principle of specification, hyperbolas are considered as paths of objects that come by the sun but never return to the solar system.

As this example illustrates, Kant sees scientific discovery as fundamentally shaped by ideas and principles of reason. This is why he claims in the KU that everything that Newton discovered "lies on the natural path of inquiry and reflection in accordance with rules" (5: 309). Because rules must come first and "determine the procedure" in scientific practice, there is no room for the genius who cannot "indicate how his ideas … arise and come together in his head" (5:308).

II. Moral Reasons

Kant's reasons for excluding genius from science are not merely epistemic, but also stem from his views about the importance of scientific education in the development of the rational capacities of the human being, and thus ultimately in the development of the human being for her moral vocation. In the context of his teleological philosophy of history, where Kant is concerned with the development of reason at the level of the human species, he emphasizes that the pursuit of art and science stems from the unsocial sociability of human beings and hence from self-conceit, vanity, and the desire to seek ascendancy over others. Nevertheless, Kant thinks that in pursuing art and science, humans acquire the kind of discipline that is a necessary condition for moral action—since moral action requires that one be able to overcome one's sensible inclinations—and that they acquire the skills that allow them to pursue their ends, even if these are not yet moral ends (KU, AA 5:431-2). The unsocial sociability of human beings, which manifests in the pursuit of art and science in order to set oneself apart from others, ultimately serves to develop the rational capacities of the human species (Wood 1991).

In his lectures on pedagogy, Kant similarly emphasizes the importance of the science and arts in promoting discipline and skill, but here the development of the human being is seen not from the perspective of nature, which uses human antagonism and inequality as a means to an end, but from the perspective of the education of human beings as guided by the "idea of humanity and its entire vocation" (Päd AA, 9:447; Munzel 2003, 60). "Each generation," he writes, "is ever more able to bring about an education which develops all of the human being's natural predispositions proportionally and purposively, thus leading the whole human species towards its vocation" (Päd AA, 9: 446). The purpose of education is to cultivate the powers of the mind, both the lower powers, including attention, memory, imagination and the higher powers, including understanding, judgment, and reason. Education in mathematics and the sciences, for Kant, is part of the cultivation of the higher powers of the mind, not only for their theoretical employment, but also for their practical employment. This is not just the point that education provides one with the self-discipline and skills that make possible the pursuit of various ends, but also that developing one's rational capacities is a form of self-determination that paves the way for moral self-determination. He suggests a parallel between genuine theoretical knowledge, which the pupil possesses when she is able to "produce it" from herself and moral maxims, "which originate from the human being's own understanding" (Päd, AA 9:477-481). Here, we should note that while Kant identifies learning with imitation in the KU, he understands imitation not as the mindless following of rules—i.e., mere copying—but as involving a *consciousness* of the rules. Of course, Kant allows that one can be well educated in various respects and "still be poorly cultivated in moral terms, and thus be an evil creature" (Päd, AA 9:470). Nevertheless, education in the sciences forms an essential part of the cultivation of the human being, ultimately for her moral vocation.

It is in the context of his views on education that we should understand the following passage from the KU, where Kant is keen to emphasize that he does not mean to disparage great minds (such as Newton) when he denies that they are geniuses. He writes:

> In their very talent for ever-advancing greater perfection of cognition and all the utility that depends on it, *and likewise in the education of others for*

> *the acquisition of the same knowledge*, lies the great advantage of such people over those who have the honor of being called geniuses (KU, AA 5:309, italics added).

The figure of the genius, as a favorite of nature endowed with a special talent that can only be bestowed but never acquired through diligence, is at odds with a model of education that emphasizes the inherent rational capacities of all human beings and their development through the right kind of instruction. It is the model of education that Kant endorses when he claims that the "greatest discover" in the sciences "differs only in degree from the most hard working imitator and apprentice" (KU, AA 5: 309). By excluding genius from science, Kant not only endorses the rational structure of scientific discovery, he also thereby endorses a vision of science as, at least in principle, accessible to all. And indeed, this is precisely what we should hope if, as Kant suggests, the ultimate value of science lies not in its great utility for promoting contingent human interests, but the role it plays in cultivating practical wisdom.

III. Conclusion

We have seen that Kant has two reasons for rejecting that genius plays a role in science, one epistemic and one broadly moral. Since Kant's time, the popularity of accepting rational constraints on hypothesis formation has waxed and waned. Logical positivists and Popperians alike never tired of the story of August Kekulé, who discovered the hypothesis of the ring shape of benzene by dreaming of a snake biting its tail, or of Kepler, who, *pace* Kant's version of the story, constructed hypotheses about the solar system out of Neoplatonic mysticism. But even if one follows Popper and Reichenbach in rejecting the idea that hypothesis formation has a rational structure and accepts, as Breitenbach (2018) emphasizes, that scientific discovery sometimes requires great creative imagination, one is still left with Kant's moral argument. This argument still resonates strongly with pressing contemporary concerns about who belongs in science, what role scientific education plays in a democratic society, and the potentially pernicious consequences of signaling that participation in the most prestigious sciences is reserved for those with a special calling.

Bibliography

Breitenbach, Angela (2018): "The Beauty of Science without the Science of Beauty: Kant and the Rationalists on the Aesthetics of Cognition". In: *Journal of the History of Philosophy* 56. No. 2, 281-304.

Butts, Robert (1961): "Hypothesis and Explanation in Kant's Philosophy of Science". In: *Archiv für Geschichte der Philosophie* 43. No 2., 153-170.

Gammon, Martin (1997): "Exemplary Originality: Kant on Genius and Imitation". In: *Journal of the History of Philosophy* 35. No. 4, 563-592.

Gerard, Alexander (1966 [1774]) *An Essay on Genius*. Munich: Fink.

Hutcheson, Francis (2004 [1726]) *An Inquiry into the Original of our Ideas of Beauty and Virtue*. Ed. Wolfgang Leidhold. Indianapolis: Liberty Fund.

Matherne, Samantha (2015) "Kant and the Art of Schematism". In: *Kantian Review* 19. No. 2, 181-205.

Munzel, G. Felicitas (2003) "Kant on Moral Education, or 'Enlightenment' and the Liberal Arts". In: *The Review of Metaphysics* 57, 43-73.

Wenzel, Christian (2001) "Beauty, Genius, and Mathematics: Why did Kant change his mind?". In: *History of Philosophy Quarterly* 18. No. 4, 415-432.

Wood, Allen (1991). "Unsocial Sociability: The Anthropological Basis of Kantian Ethics". In: *Philosophical Topics* 19. No. 1, 325-351.

Zammito, John (1992) *The Genesis of Kant's Critique of Judgment*. Chicago: The University of Chicago Press.