

FROM KANT TO SCHELLING TO PROCESS METAPHYSICS: ON THE WAY TO ECOLOGICAL CIVILIZATION

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ABSTRACT: The post-Kantians were inspired by Kant's *Critique of Judgment* to forge a new synthesis of natural philosophy, art and history that would overcome the dualisms and gulfs within Kant's philosophy. Focusing on biology and showing how Schelling reworked and transformed Kant's insights, it is argued that Schelling was largely successful in laying the foundations for this synthesis, although he was not always consistent in building on these foundations. To appreciate this achievement, it is argued that Schelling should not be interpreted as an idealist but as a process metaphysician; as he claimed, overcoming the oppositions between idealism and realism, spiritualism and materialism. It is also argued that as a process metaphysician, Schelling not merely defended an organic view of nature but developed a theory of emergence and a new conception of life relevant to current theoretical and philosophical biology. This interpretation provides a defense of process metaphysics as the logical successor to Kant's critical philosophy and thereby as the most defensible tradition of philosophy up to the present. It provides the foundations for post-reductionist science, reconciling the sciences, the arts and the humanities, and provides the basis for a more satisfactory ethics and political philosophy. Most importantly, it overcomes the nihilism of European civilization, providing the foundations for a global ecological civilization.

KEYWORDS: Kant, Schelling, Process Metaphysics, *Naturphilosophie*, Philosophical Biology, Theoretical Biology, Ecological Civilization

INTRODUCTION

Despite his enormous influence, for most of the Twentieth Century F.W.J. von Schelling was dismissed by most philosophers as someone who began a tradition of pseudoscience, someone who had been superseded by Hegel, and as someone who,

attacking Hegelianism after Hegel's death, had inspired a tradition of irrationalism that, as György Lukács argued, helped pave the way for Naziism.¹ There were a handful of philosophers who took Schelling seriously, notably Martin Heidegger, Karl Jaspers and Maurice Merleau-Ponty; however, this side of their work was largely ignored. All this changed towards the end of the Twentieth Century. The revival of interest in Schelling's philosophy has engendered a new appreciation of his originality, but also a diversity of interpretations and evaluations of his work. He has been interpreted as one of the philosophers who failed to understand Kant, as an Objective Idealist whose significance matched that of Hegel, as a materialist who extricated himself from the pernicious influence of Kant, and as someone who overcame Idealism. Some of the most important debates have been associated with the reexamination of Schelling's contribution to natural philosophy and science. Historians of science identified Schelling as the source of ideas central to the advance beyond Galilean and Newtonian science. This argument produced a reaction and a revival of the claim that Schelling made no contribution to science and misled scientists away from the fruitful ideas developed by Kant. These debates have broader ramifications, for if Schelling's work in natural philosophy and science can be successfully defended, this also justifies other aspects of his philosophy, including his reconception of both philosophy and science, his defense of art and history, his notion of dialectical rationality, his ideas on education, and most importantly, his quest for a philosophy that would overcome the nihilism that Friedrich Jacobi claimed was the inevitable outcome of rational thought.² Proposing a fusion of Western and Eastern forms of consciousness, Schelling laid the philosophical foundations for a global civilization. If Schelling can be defended, it will have to be concluded that the marginalization of Schelling's philosophy has adversely affected the subsequent development of philosophy, science and civilization, and that it will be necessary to recover the path he chartered for the future.

Focusing on the crucial question of teleology and the nature of life, in this paper I will argue that in his early career, under the tutelage of Goethe, Schelling not only advanced Kant's insights but successfully used these advances to overcome the

¹ György Lukács, *Die Zerstörung der Vernunft: Der Weg des Irrationalismus von Schelling zu Hitler*, (Berlin (East): Aufbau-Verlag, 1957), 8 and *passim*. Translated as *The Destruction of Reason* by Peter Palmer, (London: Merlin Press, 1980). On this work, see Max Rieser, "Lukacs' Critique of German Philosophy", *The Journal of Philosophy*, 55(5) (Feb.27, 1958): 177-196.

² Schelling had a major influence on the Humboldtian model of the university and the Humboldtian philosophy of education. See Frederick Gregory, "Kant, Schelling, and the Administration of Science in the Romantic Era", *Osiris*, 2nd Series, 5 (1989): 16-35. Jacobi had already identified the nihilism that Friedrich Nietzsche later recognized as the greatest problem of modernity.

incoherencies in Kant's whole system of philosophy while preserving Kant's most important insights. In doing so, he created a more coherent system of philosophy than Kant (or Hegel) which was neither idealist nor materialist, but as he himself claimed, a system that overcame the oppositions between idealism and realism, spiritualism and materialism.³ It was, I will argue, the first coherent system of process metaphysics, and should be seen as the origin of the tradition of process philosophy. Ultimately, I will suggest, by showing that process metaphysics is required to solve the most fundamental problems faced by modern philosophy and science, he demonstrated the superiority of process metaphysics to scientific materialism, Kant and Neo-Kantianism and Hegelian Absolute Idealism. Embracing, revising and extending Kant's notion of construction, Schelling developed a form of dialectical rationality that avoided both Hegelian hyperrationalism which had reduced nature to an "other" posited by Spirit and dissolved the individual into a cipher of Reason, and the Nietzschean irrationalism that, Lukács complained, had paved the way for Naziism.

To understand Schelling's achievement it is necessary to understand his philosophy as a solution to the problems raised by Kant's philosophy. Kant's philosophy evolved through a constant struggle to meet the criticisms of his contemporaries, and to the end of his life Kant was struggling to overcome deficiencies in his earlier work. Many of the criticisms were directed at what were seen to be the unbridgeable dualisms in his philosophy. The *Critique of Judgment* was written in part as a response to such criticisms. Accepting subjective and objective purposiveness justified ascribing purposiveness to some supersensible basis of experience, thereby explaining how the manifold of empirical laws could form a unity

³ F.W.J. von Schelling, *On the History of Modern Philosophy*, trans. Andrew Bowie, (Cambridge: Cambridge University Press, 1994), 120; (*SWI*/10: 105) I have referred to English translations of the works examined with references to the German collected editions. I will use a number of abbreviations for collected works of Kant, Fichte and Schelling.

<i>Ak</i>	<i>Kants gesammelte Schriften</i> (Berlin: Königlich Preussische Akademie der Wissenschaften, 1902-).
<i>FW</i>	<i>Fichte's Werke</i> , ed. I.A. Fichte (Berlin: Walter D. Gruyter & Co., 1971), reprint of <i>Johann Gottlieb Fichtes sämtliche Werke</i> , ed. I.A. Fichte (Berlin: Veit & Comp., 1845/46).
<i>Ge</i>	Johann Gottlieb Fichte, <i>Gesamtausgabe</i> , ed. Reinhard Lauth and Hans Jacob (Stuttgart: Friedrich Fromann, 1965-).
<i>PN</i>	F.W.J. Schelling, <i>Ideen zu einer Philosophie Der Natur</i> (Landschut: Philipp Krüll, 1803).
<i>SW</i>	F.W.J. Schelling, <i>Sämmtliche Werke</i> , ed. K.F.A. Schelling I Abtheilung vols 1-10, II Abtheilung vols 1-4, (Stuttgart: Cotta, 1856-61).
<i>We</i>	Friedrich Wilhelm Joseph Schelling, <i>Werke: Historisch-kritische Ausgabe</i> , ed. Hans Michael Baumgartner, Wilhelm G. Jacobs, and Hermann Krings (Stuttgart: Fromann-Holzboorg, 1976-).

through intelligent design and at the same time how moral action is possible. To this end, it was incumbent on Kant to justify and provide the foundations for biology as a distinct science, the execution of which was a major contribution to the development of biology. However, despite his quest, Kant left teleology as a regulative principle of reflective judgment (although at the end of the *Critique of Judgment* he expressed dissatisfaction with this), and left a gulf between organic nature and inorganic nature. This failed to satisfy his critics, or himself. In particular, critics questioned Kant's cognitive dualism, arguing that he had not demonstrated the applicability of a priori concepts to independently received sensations and so could not demonstrate that there could be objective knowledge of empirical reality. They also pointed to the inconsistency between the limits to knowledge claimed by Kant and his postulation of a noumenal realm of things-in-themselves behind appearances. While a number of Kant's disciples grappled with the problem of reconciling freedom and necessity, physics and biology and relating concepts to the sensory manifold, the most radical solution to the problems of critical philosophy was offered by Schelling. Accepting Fichte's argument that practical reason precedes theoretical reason and that the self-conscious "I" could not be assumed but had to be explained as emerging through mutual recognition, Schelling argued that it is also necessary to appreciate that we are part of nature, and that it is necessary to explain how ideation can have emerged within nature. For Schelling, knowledge is not transcendental insofar as it determines nature for consciousness. Nature is transcendental as the producer of intelligence able to cognize nature. Nature must be seen as capable of organizing itself, generating life and the human consciousness capable of knowing nature. From this perspective, the organic is not divided from the rest of nature but is seen as a particular kind of self-organization, which is the condition for the emergence of consciousness. Biology comes to take an even more central place in Schelling's philosophy than in Kant's.

I will examine and evaluate this proposal for what amounts to a "naturalization of the transcendental", as Iain Hamilton Grant put it, and a "hermeneutics of nature", as Andrew Bowie characterized Schelling's philosophy of nature.⁴ This will be seen to involve not only a further development of Kant's conception of life, but a new view of the relationship between physics, biology and history, and between philosophy, science and the humanities. As John Zammito put it, Schelling's philosophy realized "the metaphysical potential [the *Critique of Judgment*] seemed to suggest" in which "[n]ature, art, and history ... [could] be welded into a grander synthesis than Kant

⁴ Iain Hamilton Grant, *Philosophies of Nature After Schelling*, (London: Continuum, 2008), 119 and Andrew Bowie, "The Hermeneutics of Nature", *Schelling and Modern European Philosophy*, (London: Routledge, 1993), ch.2.

himself had dared.”⁵ It demonstrated, I will argue, that process metaphysics is the logical solution to the problems raised by Kant’s philosophy. In providing this solution Schelling’s work demonstrated that process metaphysics is not only the most promising path for the development of critical philosophy; it is the most promising path for philosophy as such, and the most promising foundation for the sciences and the humanities. The present work should be read as an effort to demonstrate the logical coherence of Schelling’s insights and their potential, insights that are at the core of the tradition of process metaphysics and which will take generations to fully clarify and elaborate. It will be suggested that philosophers did take the wrong path into the future, and that they need to retrace this path and embrace the tradition of process metaphysics as the basis for overcoming the problems that civilization is now facing, most importantly, the global ecological crisis, and thereby, to lay the foundations for an “ecological civilization”.

THE INCOMPLETENESS OF KANT’S PHILOSOPHY

It is widely believed that Schelling’s philosophy of nature was an obstacle to the advance of science while Kant’s philosophy was a major contribution to it.⁶ Kant is

⁵ John H. Zammito, *The Genesis of Kant’s Critique of Judgment*, (Chicago: University of Chicago Press, 1992), 14.

⁶ This is the view widely held in the past. Schelling’s contribution to science was strongly argued by Joseph L. Esposito, *Schelling’s Idealism and Philosophy of Nature*, (Lewisburg: Bucknell University Press, 1977). Timothy Lenoir defended the orthodox view in “The Göttingen School and the Development of Transcendental *Naturphilosophie* in the Romantic Era”, *Studies in History of Biology*, 5 (1981): 111-205 and in *The Strategy of Life: Teleology and Mechanics in Nineteenth Century German Biology*, (Chicago and London: University of Chicago Press, 1982), esp. 5. Lenoir argues that it was Kant who put nineteenth century biology on a solid foundation. For a critique of Lenoir, see Robert J. Richards, *The Romantic Conception of Life: Science and Philosophy in the Age of Goethe*, (Chicago: University of Chicago Press, 2002), esp. ch.5 & 6, Frederick C. Beiser, *German Idealism: The Struggle Against Subjectivism, 1781-1801*, (Cambridge, Mass.: Harvard University Press, 2002), ch.4 &5, especially the footnotes to these pages on 684-5 and Iain Hamilton Grant, *Philosophies of Nature After Schelling* (London: Continuum, 2008), 120-38. For a highly critical review of Lenoir’s book see K.L. Caneva, “Teleology with Regrets”, *Annals of Science*, 47(3) (1990): 291-300. For a recent study of this debate, see John H. Zammito, “The Lenoir thesis revisited: Blumenbach and Kant”, *Studies in History and Philosophy of Biological and Biomedical Sciences*, 42(x) (2011) forthcoming. Further support for those defending the importance of Schelling has come from Marie-Luise Heuser-Kessler, in particular from her, *Die Produktivität der Natur: Schellings Naturphilosophie und das neue Paradigma der Selbstorganisation in den Naturwissenschaften*, (Berlin: Duncker & Humblot, 1986) where she argues that it was Schelling who originated the view of nature as self-organizing that is now being developed in complexity theory. She has also shown the influence of Schelling on mathematics and post-Newtonian physics (see also her “Geometrical Product – Exponentiation – Evolution. Justus Günter Grassmann and Dynamist *Naturphilosophie*” in G. Schubring (ed.) *Hermann Günter Grassmann (1809-1877): Visionary Mathematician, Scientist and Neohumanist Scholar*, (Dordrecht: Kluwer, 1996), 47-58). Her argument

seen to have bequeathed a complete system of philosophy that gave a place to physics, ethics and political philosophy, art and the study of life. In the concluding paragraph to “Preface” to the *Critique of Judgment*, Kant proclaimed: “With this, then, I conclude my entire critical enterprise.”⁷ Kant had examined the nature of judgment of taste in art and of final causes in things, providing a place for purpose in art, in organisms, and in nature as a whole. A place was given to aesthetic experience and to life, and nature’s subjective and objective purposiveness was equated with a supersensible basis for that purposiveness. This provided a principle that makes possible our comprehension of order in natural diversity,⁸ bridging the gulf between nature as understood through science as defended through Kant’s theoretical philosophy, and as required by moral law as characterized in Kant’s practical philosophy. The concept of organism thereby mediated between the phenomenal and the noumenal. The system appeared to be complete, with only some loose arguments requiring refinement.

This did not complete the development of Kant’s philosophy, however. Kant continued to grapple with the problems raised by his critics and by contemporary advances in the sciences. Even Kant’s supporters were dissatisfied with his rejection in the second edition of the *Critique of Pure Reason* of the possibility of deriving the categories from some principle,⁹ while his critics focused upon the problematic

has been criticized by Bernd-Olaf Küppers in *Natur als Organismus: Schellings frühe Naturphilosophie und ihre Bedeutung für die modern Biologie* (Frankfurt: Klostermann, 1992). For an overview of Romantic science and its influence, see *Romanticism and the Sciences*, ed. Andrew Cunningham & Nicholas Jardine (Cambridge: C.U.P., 1990). See also *Romanticism in Science: Science in Europe, 1790-1840*, ed. Stefano Poggi and Maurizio Rossi (Dordrecht: Kluwer Academic Publishers, 1994).

⁷ Immanuel Kant, *Critique of Judgment*, trans. Werner S. Pluhar, (Indianapolis: Hackett, 1987), 7; (*Ak* 5:170).

⁸ Rachel Zuckert argues that providing this is the central concern of this Critique. See *Kant on Beauty and Biology: An Interpretation of the Critique of Judgment*, (Cambridge: Cambridge University Press, 2007), 5.

⁹ See Immanuel Kant, *Critique of Pure Reason*, trans. Werner S. Pluhar (Indianapolis: Hackett, 1996), §21 “Comment” 186-7; (B144-46). This was seen as a major weakness in Kant’s system by his followers, and a point of departure for the development of their own philosophical systems. See *Between Kant and Hegel: Texts in the Development of Post-Kantian Idealism*, trans. and intros by George Di Giovanni and H.S. Harris, rev. ed. (Indianaopolis: Hackett, 2000). See also Frederick C. Beiser, *The Fate of Reason: German Philosophy from Kant to Fichte* (Cambridge: Cambridge University Press, 1987), 240-4, Beiser, *German Idealism*, ch.9 and Daniel Breazeale, “Fichte and Schelling: The Jena Period”, *The Age of German Idealism*, ed. Robert C. Solomon and Kathleen M. Higgins (London: Routledge, 1993), ch.5. A. Zvie Bar-On has argued that Kant could not have derived his categories through his transcendental logic. See his *The Categories and the Principle of Coherence: Whitehead’s Theory of Categories in Historical Perspective* (Dordrecht: Martinus Nijhoff, 1987), 74-77.

dualism in his philosophy between the categories and sensible experience.¹⁰ F.H. Jacobi argued that the appeal to the “thing-in-itself” is incompatible with Kant’s critical principles.¹¹ Gottlob Schulze argued that Kant and the Kantians were caught in a circle, claiming to demonstrate the validity of the categories by referring them to experience, and then demonstrate the possibility of experience, as defined by the categories, by referring back to the categories.¹² The most telling criticisms, as far as Kant was concerned, came from Solomon Maimon who argued that it is impossible to apply synthetic *a priori* principles to experience. There is no way to distinguish cases where they do apply from those where they do not since neither experience nor understanding provides a criterion for this.¹³ These criticisms revealed the possibility that the order of sense events is not among these events but is merely superimposed on them by the subject.

In his last years Kant was working towards a new architectonic for his philosophical system to meet these criticisms and to take into account recent advances in the sciences.¹⁴ Centrally, Kant was struggling with the relationship between *a priori* knowledge of objects in general and objects of the external senses.¹⁵ In the first introduction to the *Critique of Judgment* Kant conceded that while the *Critique of Pure Reason* showed that nature constitutes a system in terms of transcendental laws, it does not follow that nature is, in terms of its empirical laws, a system that human cognitive power can grasp.¹⁶ This unity is a principle of reflective judgment whereby the particular is subsumed under the universal and the universal found in the particular.¹⁷

¹⁰ These criticisms are echoed in S. Körner, “The Impossibility of Transcendental Deductions”, *Monist*, 51 (1967): 317-331 and more recent works taking up Körner’s argument. See also Thomas M. Seebohm, “Fichte’s and Husserl’s critique of Kant’s transcendental deduction”, *Husserl Studies* 2(1) (1985): 53-74.

¹¹ On this, Beiser, *The Fate of Reason*, 124.

¹² See G.E. Schulz, “Aenesidemus”, in *Between Kant and Hegel*, ed. and trans. Di Giovanni and Harris, 1105-1135. See also George Di Giovanni, “Kant’s Metaphysics of Nature and Schelling’s *Ideas for a Philosophy of Nature*”, *Journal of the History of Philosophy* 17(2) (April 1979): 201.

¹³ This argument is summed up in Solomon Maimon, “Letters to Philaletes”, *Between Kant and Hegel*, trans. and ed. Di Giovanni and Harris, 159-203. For an analysis of this argument, see Beiser, “Solomon’s Critical Philosophy”, *The Fate of Reason*, ch. 10, esp. 289.

¹⁴ On this, see Di Giovanni, “Kant’s Metaphysics of Nature and Schelling’s *Ideas for a Philosophy of Nature*”: 197-215. Kant’s efforts to adjust his philosophy to accord with contemporary advances in science are detailed in Michael Friedman, *Kant and the Exact Sciences* (Cambridge: Harvard University Press, 1992), esp. Part II.

¹⁵ Immanuel Kant, “Metaphysical Foundations of Natural Science”, [1786], in *Philosophy of Material Nature*, trans. James W. Ellington, (Indianapolis: Hackett Publishing Co., 1985), 13; (*Ak* 4:476).

¹⁶ Immanuel Kant, “Introduction (first unpublished introduction)”, in *Critique of Judgment*, 397; (*Ak* 20: 209).

¹⁷ Immanuel Kant, “Introduction (first unpublished introduction)” in *Critique of Judgment*, 398; (*Ak* 20: 210)

But reflective judgment cannot classify all the empirical variety of nature unless it presupposes that nature itself makes its transcendental laws specific in terms of some principle,¹⁸ a principle which can only be that of nature's appropriateness for the power of judgment.¹⁹ This suggests purpose in nature, but Kant had argued in the *Critique of Judgment* that this can only be presupposed as a regulative principle of reflective judgment; it cannot be proved. Given Kant's quest for apodictic knowledge, this was a major weakness in Kant's philosophy. And even accepting purpose does not show us how to apply these ideas to the study of nature. It is still necessary, Kant concluded, to consider what he called in his incomplete work of his final years, published posthumously as the *Opus postumum*, "The Transition from the Metaphysical Foundations of Natural Science to Physics."²⁰

Although it is possible to find throughout Kant's work some ambivalence about the doctrines he was defending, in his critical attitude to his earlier work, the *Opus postumum* was a radical departure. Kant abandoned the identification of nature as the sum total of "things,"²¹ as assumed in *Metaphysical Foundations of Natural Science*. Matter itself had to be explained rather than presupposed as in the *Metaphysical Foundations* where Kant explained matter's occupancy of space through force,²² but treated force as a property of matter.²³ The *Opus postumum* also offered an outline of a system of all objects of the outer senses based on the notion self-limitation. As he put it: "In this transition from the metaphysical foundations of natural science to physics there is [also] that from matter to the formation of bodies. A body is a self-limiting whole, by the united attraction of the parts of a quantity of matter."²⁴ Physical bodies were divided into the inorganic and the organic, in which the "physically organic body" was defined in contrast to a mechanically organic body as "one, each of whose parts is by nature there in it for the sake of the other; in which, conversely, the concept of the *whole* also determines the form of the parts – externally as well as internally (in figure

¹⁸ As Kant had argued in the *Critique of Pure Reason*, "we must throughout presuppose the systematic unity of nature as objectively valid and necessary." 624 (A651/B679).

¹⁹ Immanuel Kant, "Introduction (first unpublished introduction)" in *Critique of Judgment*, 403; (Ak 20: 215).

²⁰ Eckart Förster, "Introduction" to Immanuel Kant, *Opus Postumum*, ed. Eckart Förster, trans. Eckart Förster and Michael Rosen (Cambridge: Cambridge University Press, 1993), xvi.

²¹ See "Preface" to "Metaphysical Foundations of Natural Science" [1786] in Kant, *Philosophy of Material Nature*, 3-4; (Ak 4:467).

²² Kant, "Metaphysical Foundations of Natural Science", *Philosophy of Material Nature*, 44 (Ak 4:499).

²³ As Schelling noted. See Joan Steigerwald, "The dynamics of reason and its elusive object in Kant, Fichte and Schelling", *Studies in the History and Philosophy of Science*, 34 (2003): 127.

²⁴ Kant, *Opus postumum*, 100; (Ak 22: 282).

and texture).”²⁵ The problem he now posed was how such self-organization is possible rather than merely postulating this as a regulative principle. Early in the work he had argued that the “totality of matter” is “a universally distributed world-material, is internally active and unceasing, and keeps all matter in continual – not progressive – agitation, by attraction and repulsion.”²⁶ In later drafts, after having denied that matter could organize itself and having argued that “only an immaterial substance can contain the ground of possibility of organic bodies”,²⁷ Kant postulated “an immaterial substance” able to organize matter as “the ground of the possibility of organic bodies.”²⁸ This immaterial substance and associated forces broke with the categories Kant had previously defended,²⁹ and led him to claim that we must presuppose *a priori* forces and their unity as an individual object, the condition of there being experience.³⁰ The transition to physics requires that the subject recognize itself as a force acting on the forces of nature, constituting itself as an empirical object for itself, thereby making space and time sensible. As Kant put it:

... physics is constituted, not out of and from experience, but, [by means of] the concept of the unity of moving forces, for the possibility of experience (by means of observation and experiment) according to the principles of investigation of nature. ... The appearance of appearances (that is, how the subject is mediately affected) is metaphysically [the same] as how the subject makes itself into an object (is conscious of itself as determinable in intuition). It contains the principle of the combination of the moving forces in space, in order to realize space through empirical representation, according to its form – not through experience, but for the sake of the possibility of experience as a system of the subject’s empirical representations.³¹

On the basis of these reflections Kant redefined transcendental philosophy as “the act of consciousness whereby the subject becomes the originator of itself and, thereby, also of the whole object of technical-practical and moral-practical reason in one system.”³²

²⁵ Kant, *Opus postumum*, 100; (*Ak* 22: 283). This reaffirmed and amplified a view of organisms put forward in §65 of the *Critique of Judgment*, but from which Kant then retreated. On this, see Richards in *The Romantic Conception of Life*, 229-37.

²⁶ Kant, *Opus postumum*, 64; (*Ak* 21: 210).

²⁷ Kant, *Opus postumum*, 149; (*Ak* 22: 507).

²⁸ Kant, *Opus postumum*, 149; (*Ak* 22: 507).

²⁹ As Eckart Förster noted in his introduction to the translation of *Opus postumum*, xxxvii.

³⁰ Kant, *Opus postumum*, 100; (*Ak* 22: 283).

³¹ Kant, *Opus postumum*, 109-110; (*Ak* 22: 325f).

³² Kant, *Opus postumum*, 245; (*Ak* 21: 78).

Seen in the light of these ideas, Schelling, even though he had no access to these ruminations (which might have been influenced by Schelling's work), can easily be seen to have been carrying through Kant's project.³³ His solution to the question "How do we know that our concepts conform to objects?" was to develop a metaphysics in which, by reconceiving being as productive activity, he was able to make the interaction between the mental and the physical, the subjective and the objective and the ideal and the real, intelligible in accordance with Kant's view that we only know what we construct. It should, then, be a simple matter to work out the coherence of Schelling's philosophy and then evaluate his proposed solution to overcoming Kant's problematic dualism. Given the direction that Kant himself was taking, success in this regard should justify Schelling's claim that his philosophy was an advance over Kant's philosophy. However, the relationship between Kant and Schelling is more complicated than this. While Schelling engaged with Kant and defined his ideas in opposition to Kant's, his philosophy was developed as part of post-Kantian philosophy. He began as a disciple of Fichte, before reacting against his work, but remained strongly influenced by it. He was associated with the early Romantics, most importantly Hölderlin and Schlegel, and was influenced by Spinoza, Leibniz, Herder and Goethe. He was also strongly influenced by Plato's *Timaeus*, and by Plotinus, Giordano Bruno and Jacob Böhme. And Schelling was engaged with work in science of his day, being strongly influenced by developmental views of Carl Friedrich Kiemeyer and developments in experimental science.³⁴ Furthermore, Schelling's own ideas were constantly evolving. And Schelling was not only offering different solutions to the problems raised by Kant about the relationship between metaphysics, knowledge and science, but was arguing for different notions of metaphysics, knowledge and science.

While taking all this into account, I will argue here that Schelling's rethinking of the whole project of philosophy was, as he himself claimed, made possible by Kant's work, and the conclusions he came to can be interpreted as solutions to the *aporias* of Kant's philosophy. However, in defending Schelling's work in this way, it is necessary to understand the core ideas Schelling embraced from other philosophers, and then in relation to Kant, it is necessary to appreciate that those influenced by him, including Schelling, interpreted and evaluated his work differently than Kant understood himself. Kant always took mathematical physics as the quintessence of scientific

³³ This essentially is the argument of Di Giovanni in "Kant's Metaphysics of Nature and Schelling's *Ideas for a Philosophy of Nature*".

³⁴ The significance of this, and the importance of Kiemeyer to Schelling, have been examined by Richards in *The Romantic Conception of Life*, 139-41, ch.6 and 298-306. See also Grant, *Philosophies of Nature After Schelling*, esp. 126-138.

achievement, and all his work revolved around his acceptance of its achievements. Fichte, however, was little interested in physics and regarded Kant's practical philosophy as more important, and all his work revolved around developing this. While influenced by Fichte, Schelling was more interested in the nature of life and art, and was more influenced by the *Critique of Judgment* which he characterized as "Kant's deepest work".³⁵ On this basis Schelling was prepared to challenge the significance accorded to Newtonian physics. While Schelling should be seen as carrying through Kant's project, it needs to be appreciated that this involved a more radical rethinking of critical philosophy than contemplated by Kant even in his *Opus Postumum*. Building on the work of Fichte, Hölderlin and other philosophers, Schelling redefined the whole idea of philosophy.

SCHELLING'S REWORKING OF THE IDEA OF PHILOSOPHY AND OF ITS RELATION TO SCIENCE

Since Schelling initially began as a disciple of Fichte, Fichte's philosophy provides the best starting point to comprehend Schelling's ideas. Fichte's work was a development of Kant's investigation into the "power of reason," and from there, of the subject and intersubjectivity. Kant was responding to the fallen state of metaphysics where, from being seen as the "queen of the sciences" it had gone from "obsolete, worm eaten dogmatism, and thence into disdain."³⁶ Through this investigation Kant's goal was to put metaphysics on "the secure path of a science" to achieve apodictic knowledge, as had already been accomplished for mathematics by the Greek mathematicians and for natural science by Bacon and Galileo, "by subjecting metaphysics to a complete revolution."³⁷ This involved refocusing metaphysics by examining the a priori cognitive principles deriving from the subject itself. Fichte was unsympathetic to the picture Kant's philosophy generated of a transcendental ego employing the forms of intuition and the categories to synthesize an atomistic manifold of sensations given to it by transcendental things-in-themselves. Along with other Kantians, notably K.L. Reinhold, he believed that Kant's philosophy needed to be formulated more rigorously. He claimed that deeper knowledge of the subject provides the foundation that could give the required systematic unity to Kant's philosophy, avoiding Kant's dualisms while answering Jacobi's and Schulze's attacks on Kantian philosophy. To this end he sought to circumvent Jacobi's charge of incoherence by Kant in postulating the thing-in-itself by dismissing any role for it, and set out to show not only

³⁵ Schelling, *On the History of Modern Philosophy*, 173; (SWI/10: 177)

³⁶ Kant, "Preface [First Edition]", *Critique of Pure Reason*, 6; (A viii), 7; (A x),

³⁷ Kant, "Preface (Second Edition)", *Critique of Pure Reason*, 17 (B xii), 26 (B xxii).

how knowledge is possible, but also how a critique of knowledge is possible.³⁸ Responding to Jacobi's critique of foundationalism as inevitably leading to an infinite regress of justifications in the quest to establish foundations for knowledge,³⁹ Fichte argued that the absolutely first principle of all human knowledge, that can be neither proved nor defended, is the intuition of the capacity of the self to be aware of its own activity.⁴⁰ This intuition is the intellectual intuition, an intuition considered as a possibility and then rejected by Kant as implying the possibility of knowledge of the noumenon,⁴¹ although he was not consistent on this. Intellectual intuition is not a faculty of the subject, but is the subject knowing itself and thereby constituting itself in a non-objective manner through mediation of what can be known objectively. Fichte argued that for this to be possible, the self must be unconditioned, freely positing itself, becoming aware of itself by opposing itself to the non-self, perceived first as a feeling (rather than as a sensation) of resistance to its freedom before being posited as the sensible world of objects limiting its free activity. Consequently, he argued for the priority of praxis, taking theoretical knowledge as derivative.⁴² It is through action that the sensible world is constituted as objects, and it is only on reflection that we develop concepts of these objects. However, Fichte also came to see that self-consciousness and free agency are further dependent upon being recognized by and recognizing other finite rational beings and ascribing efficacy to them. "No Thou, no I: no I, no Thou" he proclaimed.⁴³ These others, in defining oneself also limit one by demanding respect for their freedom.⁴⁴ Fichte rejected Kant's method of transcendental deduction of the categories, arguing for a constructivist or "speculative dialectical" approach by which the categories are deduced through a genetic account

³⁸ See J.G. Fichte, *The Science of Knowledge* [1794] ed. and trans. Peter Heath and John Lachs (Cambridge: Cambridge University Press, 1982), 55-62; (*Ge* I:483-91). Fichte is difficult to interpret. See for instance Robert Pippin, "Fichte's Alleged Subjective Idealism", in *The Reception of Kant's Critical Philosophy: Fichte, Schelling, & Hegel*, ed. Sally Sedgwick, (Cambridge: Cambridge University Press, 2000), 147-170. I have tried to present Fichte's core ideas while avoiding these problems.

³⁹ On this, see Manfred Frank, *The Philosophical Foundations of Early German Romanticism*, trans. Elizabeth Millán-Zaibert (New York: S.U.N.Y. Press, 2004), 204-5.

⁴⁰ Fichte, *The Science of Knowledge*, 93-97; (*Ge* I:91-96).

⁴¹ Immanuel Kant, "On the form and principles of the sensible and intelligible world [Inaugural dissertation]" [1770], *Theoretical Philosophy 1755-1770*, trans. and ed. David Walford and Ralf Meerbote (Cambridge: Cambridge University Press, 1992), §10, 389; (*Ak*. 2:396), and Kant, *Critique of Pure Reason*, 196; (B 159).

⁴² Fichte, *The Science of Knowledge*, 259; (*Ge* I:294-5) & 61; (*Ge* I:490) (Second Introduction).

⁴³ *The Science of Knowledge*, 172-3; (*Ge* I:189).

⁴⁴ J.G. Fichte, *Foundations of Natural Right According to the Principles of the Wissenschaftslehre*, ed. Frederick Neuhauser, trans. Michael Baur, (Cambridge: Cambridge University Press, 2000), 29; (*FW* 3:30, §3). It was on the basis of this insight that Fichte reworked Kant's practical philosophy.

of the structure of empirical consciousness from the postulate of the original self, the original, though derivative, nonself, and other selves.

Schelling, who shared Fichte's critical attitude to the original formulation of Kant's philosophy,⁴⁵ took over from Fichte the view that the subject is activity that can be appreciated as such through intellectual intuition, that primordial experience is feeling rather than sensation, that objects of the sensible world can only be understood in relation to the activity of the subject, that conceptual knowledge is derivative from practical engagement in the sensible world, that there can be and is also an appreciation of other subjects as activities rather than objects, and that the formation of the self-conscious self is the outcome of the limiting of its activity by the world and other subjects. Schelling also took over and further developed Fichte's defense of construction and his genetic, dialectical approach to construction. He defended an even stronger thesis against Kant's effort in "The Discipline of Pure Reason" in *The Critique of Pure Reason* to limit construction to mathematics,⁴⁶ arguing that "the philosopher looks solely to the act of construction itself, which is an absolutely internal thing."⁴⁷

Schelling's divergence from Fichte revolved around his acceptance of Hölderlin's argument that not even mutual recognition could account for self-consciousness. Consciousness and its object presupposes a whole of which subject and object are parts. Hölderlin characterized this as "Being".⁴⁸ To accommodate this argument Schelling attempted to complement Fichte's philosophy with a Philosophy of Nature that took nature as the source of both subjects and objects. However, there was something more to Hölderlin's argument, a questioning of the primacy accorded knowledge in philosophy, since knowledge presupposes a separation dividing that

⁴⁵ See F.W.J. Schelling, *Ideas for a Philosophy of Nature*, trans. Errol E. Harris and Peter Heath, (Cambridge: Cambridge University Press, 1988), 25-27; (PN 32-35).

⁴⁶ Kant, *Critique of Pure Reason*, 677-82; (A725-32 / B753-60).

⁴⁷ F.W.J. Schelling, "The Organ of Transcendental Philosophy", *System of Transcendental Idealism* (1800), trans. Peter Heath (Charlottesville: University Press of Virginia, 1978), §4, 13; (SW I/3:350). This point is examined in Alberto Toscano, "Philosophy and the Experience of Construction", in *The New Schelling*, ed. Judith Norman and Alisdair Welchman (London: Continuum, 2004), ch.5 and in Mircea Radu, "Justus Grassmann's Contributions to the Foundations of Mathematics: Mathematical and Philosophical Aspects", *Historia Mathematica*, 27 (2000): 4-35. It is also shown here how Justus and Hermann Grassmann developed mathematics on the basis of Schelling's arguments against Kant. On this, see also, Marie-Luise Heuser, "The Significance of *Naturphilosophie* for Justus and Hermann Grassmann" and Michael Otte, "Justus and Hermann Grassmann: philosophy and mathematics", in H.-J. Petsche, *From Past to Future: Grassmann's Work in Context*, ed. H.-J. Petsche et.al., (Basel: Springer, 2011), 49-59 & 61-70.

⁴⁸ See Friedrich Hölderlin, "Judgment and Being", *Essays and Letters on Theory*, trans. Thomas Pfau (New York: State University of New York Press, 1988), 37.

which is to be known from the knower.⁴⁹ It is this, outside of which there is nothing and which is prior to all oppositions, that Schelling took to be the Unconditioned or the “Absolute”, or “Being Itself”, the condition of everything that is. As such, it cannot be known either as a subject or as an object, since these assume division. The Absolute is the source of both subject and object, the I and the not-I, consciousness and the world. This extension of Fichte’s notion of constructive activity or productivity of the self-positing “I” beyond relations to others to the whole of nature was achieved by synthesizing Fichte’s account of the development of consciousness with Goethe’s work on the constructive activity in the metamorphosis of plants. Goethe had shown how not only individual plants but the whole of the plant kingdom is in a process of metamorphosis involving creative productivity that can be understood. Accepting this allowed Schelling to contextualize the constructive activity engendering consciousness as part of the constructive process of the whole of nature. Further influenced by Erasmus Darwin, Schelling then characterized this as part of the evolution of the whole of nature. This synthesis of Fichte and Goethe was first attempted in *On the World Soul* published in 1798 where an evolutionary view of nature is presented, but significantly revised under Goethe’s influence in *First Outline of a System of the Philosophy of Nature* where a more thoroughgoing naturalism was developed.⁵⁰

While this development in Schelling’s thought suggests the impossibility of objective knowledge of the Absolute, Schelling still upheld the value of systematic thought, but accepted that it might be impossible achieve a totally coherent system. As Schlegel argued, system is impossible, but necessary; we have to accept both.⁵¹ Schlegel also had suggested a solution to the problem of foundations for knowledge. Instead of foundations, philosophy should embrace a circular form of argumentation in which a number of principles are mutually conditions for each other.⁵² Schelling embraced this idea, concluding, “A system is completed when it is led back to its

⁴⁹ On this, see Andrew Bowie, *Aesthetics and Subjectivity from Kant to Nietzsche*, 2nd ed. (Manchester: Manchester University Press, 2003), 82-3.

⁵⁰ See Dalia Nassar, “From a Philosophy of Self to a Philosophy of Nature: Goethe and the Development of Schelling’s *Naturphilosophie*”, *Archive für Geschichte der Philosophie*, 92, 2010: 304-321. On Goethe’s notion of metamorphosis and its background, see Gabrielle Bersier, “Visualizing Carl Friedrich Kielmeyer’s Organic Forces: Goethe’s Morphology on the Threshold of Evolution”, *Monatshefte*, 97(1) 2005: 18-32.

⁵¹ As Friedrich Schlegel put it in the “Athenaeum Fragments” no. 53, “It’s equally fatal for the mind to have a system and to have none. It will simply have to decide to combine the two.” *Philosophical Fragments*, trans. Peter Firchow (Minneapolis: University of Minnesota Press, 1991), 24.

⁵² On this, see Frank, “On the Origin of Schlegel’s Talk of a *Wechselerweis* and His Move Away from a Philosophy of First Principles”, *The Philosophical Foundations of Early German Romanticism*, Lecture 11.

starting point.”⁵³ He developed a system of Natural Philosophy consistent with Transcendental Idealism (by making “the objective primary” and deriving “the subjective from that”), and a system of Transcendental Idealism consistent with a Philosophy of Nature (by “*proceeding from the subjective, as primary and absolute, and having the objective arise from this*”).⁵⁴ Belying the usual characterization of Schelling as an Idealist, Schelling noted in his *System of Transcendental Idealism* that “Nature ... would exist, even if there were nothing that is aware of it.” Soon after, in *Universal Deduction of the Dynamical Processes* where Schelling attempted a “dynamic construction of matter”, he argued that the Philosophy of Nature is more fundamental than Idealism,⁵⁵ and in the third version of *The Ages of the World* written circa 1815 he characterized Idealism as the philosophy of people who had dissociated themselves from the forces that are not only the basis of their existence, but “the foundation of all greatness and beauty.” They have become “people who are nothing but images, just dreams of shadows.”⁵⁶

In developing these arguments, Schelling developed a new notion of metaphysics and of its relation to science. To begin with, he identified a different form of metaphysics than either the “dogmatizing” metaphysics that Kant and Fichte had rejected, or the new “immanent” metaphysics Kant had defended, and glorified the speculative courage of earlier metaphysicians.⁵⁷ Later, Schelling charged Kant with unintentionally defending the metaphysics he purported to oppose, and by separating the “negative” (the study of concepts as the conditions for knowing) from the “positive” (investigation of the facts of existence and the contingencies of historical

⁵³ Schelling, *System of Transcendental Idealism* (1800), 232; (SWI/3:628-29). The development of this circular epistemology by Hegel has been examined by Tom Rockmore in *Hegel's Circular Epistemology* (Bloomington: Indiana University Press, 1986). Although it contains a discussion of Schelling, it really only evaluates Hegel's epistemology and the criticisms directed against this are less relevant to Schelling who rejected the possibility of achieving certainty. Schelling's “circle” is more an endless spiral.

⁵⁴ Schelling, *System of Transcendental Idealism* (1800), 7; (SWI/3:342-43).

⁵⁵ F. Schelling, “Allgemeine Deduktion des dynamischen Processes oder der Kategorien der Physik”, (SWI/4:1-78).

⁵⁶ Schelling, *System of Transcendental Idealism* (1800), 5 (SWI/3:338-40), and F.W.J. Schelling, *The Ages of the World, Third Version* (c.1815), trans. Jason W. Wirth (New York: State University of New York Press, 2000), 106; (SWI/8:343/342). On the prioritizing of the Philosophy of Nature, see Beiser, *German Idealism*, 489. In 1809 Schelling argued that idealism is inadequate for characterizing human freedom, being only capable of a formal conception, not “not the real and vital conception of freedom ... that ... is a possibility of good and evil.” *Schelling: Of Human Freedom*, trans. James Gutmann (Chicago: Open Court, 1936), 26; (SWI/7:352).

⁵⁷ F.W.J. Schelling, *Bruno or On the Natural and the Divine Principle of Things*, [1802] ed. and trans. Michael G. Vater (Albany: State University of New York Press, 1984). See especially the translator's introduction, “The Revival of Metaphysics”. Schelling criticized Kant's limited appreciation of the history of and different kinds of metaphysics in *On the History of Modern Philosophy*, 103; (SWI/10: 85).

emergence), allowed a form of positivism to emerge which gave no place to metaphysics.⁵⁸ Returning to Plato and Bruno, although from a perspective that took as its point of departure Kant's critical philosophy, he defended a form of speculative metaphysics through which we generalize features of experience to frame a comprehensive account of all domains of reality in terms of these generalized features.⁵⁹

This view of metaphysics was advanced by developing Fichte's notion of intellectual intuition and dialectical thinking as a development of and successor to Kant's transcendental logic to derive and defend categories, and as a complement to art and mathematics as means to comprehend being and what exists.⁶⁰ Schelling saw far greater potential in intellectual intuition than Fichte had contemplated. Like Fichte, Schelling saw intellectual intuition as providing knowledge of one's noumenal self, but criticized Fichte for having begun with the highest "potential" of nature, the self-conscious I, without investigating its unconscious preconditions. Schelling saw self-knowledge as knowledge the whole of nature acting through one-self, understood as part of nature. In *On the True Concept of Naturphilosophie and the Correct Way to Solve its Problems*, Schelling argued that philosophy must subtract from this highest potential to find the lowest potential of nature, the pure subject-object (=nature) and then

⁵⁸ Schelling, *On the History of Modern Philosophy*, 95; (SW I/10 74-5) Schelling expanded on this argument in *The Grounding of Positive Philosophy: The Berlin Lectures*, trans. Bruce Matthews (New York: State University of New York Press, 2007), 113-26; (SW II/3:34-54).

⁵⁹ Schelling kept coming back to the notion of metaphysics and never completely clarified his own conception of it. He was suspicious of the medieval interpretation of metaphysics as the science examining what lay beyond experience, noting in his Berlin lectures that the word "metaphysics" might not have come from Aristotle himself. He explained the transformations in the concept of metaphysics that led to Kant's notion of metaphysics, then characterized his own approach as "metaphysical empiricism" (Schelling, *The Grounding of Positive Philosophy*, 171; (SW II/3:115). This would be appropriate for Schelling's early philosophy in which he was centrally concerned with science, but by this stage of his career Schelling was focusing on theology.

⁶⁰ The evolution of Schelling's notion of intellectual intuition and its relation to knowledge and dialectics has been analysed by Arthur S. Dewing in "The Significance of Schelling's Theory of Knowledge", *The Philosophical Review*, 19(2) (March 1910): 154-167, an analysis only slightly marred by the author's assumption that Schelling was an idealist. For a brief characterization of Schelling's notion of dialectics, see "On the Study of Philosophy" in *On University Studies*, trans. E.S. Moran, Athens, Ohio: Ohio University Press, 1966, ch.6. On the relationship between transcendental deduction and dialectics as conceived by Hegel, see the chapters on Kant and Hegel in Z. Zvie Bar-On, *The Categories and the Principle of Coherence: Whitehead's Theory of Categories in Historical Perspective* (Dordrecht: Martinus Nijhoff, 1987). Schelling's notion of dialectics is not considered here. However, although Whitehead does not use the notion "dialectics", his speculative approach to developing categories has much in common with Schelling's approach.

reconstruct the path upward to the self-conscious I.⁶¹ Through the reconstruction of this upward path we can then gain knowledge of the individual subject as a member of a whole “seeing how its essential nature or inner identity depends on the totality of which it is only a part.”⁶² Such intellectual intuition is required to comprehend that “which is absolutely mobile ... which cannot be held onto for a moment”, which cannot be grasped “as a real object of thought; for by ‘object’ one understand something which keeps still.”⁶³ That is, it is required to comprehend process, and Schelling claimed that his system introduced into philosophy “the concept of process and of the moments of this process.”⁶⁴ Intellectual intuition provided a new kind of holistic comprehension (or “contemplation”), different from the comprehension of mechanistic causation that Kant had assumed to be the only valid form of explanation.

Analysis of these dynamic, holistic processes required a new kind of thinking.⁶⁵ For dialectical thinking as it was developed by Fichte, Schelling and Hegel, “subjectivity and objectivity, of both mind and the encompassing world of nature, are mutually implicating aspects of a single, comprehensive system.”⁶⁶ While Schelling concurred with Fichte and Hegel on this, in opposition to their dialectics in which logically implicit contents are progressively unfolded, Schelling developed a form of dialectics that requires thought to confront causal influences from what exists as well as to draw inferences (although Schelling appeared to depart from this view for a time with his *Philosophy of Identity*).⁶⁷ For Schelling, thought is inherently synthetic, and begins with genuine opposition either between thought and something opposing it, or other factors within thought. This necessitates a new synthetic moment that can be treated as a product or factor in the next level of development. Schelling described the task of his new “method” as: “to explain the idea of an objective world which was absolutely independent of our freedom, indeed which limits this freedom, by a *process*

⁶¹ Schelling, (*SWI*/4:84).

⁶² As Beiser put it in *German Idealism*, 580.

⁶³ Schelling, *On the History of Modern Philosophy*, 152; (*SWI*/10: 150)

⁶⁴ Schelling, *On the History of Modern Philosophy*, 130; (*SWI*/10: 120).

⁶⁵ As Kant acknowledged. See, *Critique of Judgment*, §78, 295; (*Ak* 5:410).

⁶⁶ Edward A. Beach, “The Later Schelling’s Conception of Dialectical Method, in Contradistinction to Hegel’s”, *The Owl of Minerva*, 22(1) (Fall 1990): 35-54, 36.

⁶⁷ On the difference between Hegel’s and Schelling’s dialectics, see Edward Allen Beach, *The Potencies of God(s): Schelling’s Philosophy of Mythology* (New York: State University of New York Press), 84-91. On this change in direction, see Beiser, *German Idealism*, 563. Schelling distanced himself from the philosophy of identity in *On the History of Modern Philosophy*, 120 (*SWI*/10: 105) and his later attack on purely “negative philosophy” and defence of “positive philosophy” signified his rejection of the kind of reasoning associated with identity philosophy.

in which the I sees itself as unintentionally but necessarily engaged, precisely through the act of self-positing.”⁶⁸ This form of dialectics does not reduce Nature to either law governed matter or “nothing more than the organ of self-consciousness” but affirms that “[t]he first maxim of all true natural science, to explain everything by the forces of nature, is therefore accepted in its widest extent in our science.”⁶⁹ Building on Kant’s ascription of a central place to imagination in synthesis and the place Kant had accorded to “feeling of life” in the *Critique of Judgment*,⁷⁰ Schelling’s dialectic involves a reflective and imaginative experimentation and reconstruction of the sequence of forms produced by a procreative causality of the Unconditioned or Absolute, a process that has produced opposing forces, matter, extension, inner sense and sensory objects, causation, space and time, organisms, humanity and our present consciousness. The constructions of mathematics are a special instance of such synthetic activity, and in “On Construction in Philosophy” Schelling offered far reaching revisions of Kant’s philosophy of mathematics based on this revised notion of construction, revisions which inspired the work of Justus and Hermann Grassmann.⁷¹ Since construction reveals the “necessary” as thought is compelled by the real, Schelling claimed that such philosophizing about nature “means as much as to create it.”⁷² What Schelling was providing was a “naturalization of the transcendental” and a “hermeneutics of nature.”⁷³ Intellectual intuition had been extended from understanding the development of consciousness to understanding the development of the cosmos and humanity as the conditions for the emergence of

⁶⁸ Schelling, *On the History of Modern Philosophy*, 111; (*SWI*/10: 96).

⁶⁹ F.W.J. Schelling, “Introduction to the Outline of a System of the Philosophy of Nature, Or, On the Concept of Speculative Physics and the Internal Organization of System of this Science”, *First Outline of a System of the Philosophy of Nature*, trans. Keith R. Petersen, (New York: SUNY Press, 2004), 194-5; (*We* 7:273).

⁷⁰ See Kant, *Critique of Pure Reason*, 169; (*A123*) where Kant argues the imagination provides the “necessary unity in the synthesis of appearance”, which he characterized as “the transcendental function of the imagination.” See also 191; (*B151-2*), *Critique of Judgment*, §1, 1; (*Ak* 5: 204).

⁷¹ F.W. Schelling, “Über die Konstruktion in der Philosophie”, *Kritisches Journal der Philosophie* (1802-1803), (*SWI* 5: 125-151). On the influence of this work on mathematics and the philosophy of mathematics, see Mircea Radu, “Justus Grassmann’s Contributions to the Foundations of Mathematics: Mathematical and Philosophical Aspects”, *Historia Mathematica*, 27 (2000): 4-35, Hans-Joachim Petsche, *Hermann Grassmann: Biography*, trans. Mark Minnes, (Basel: Birkhäuser, 2009), Albert C. Lewis, “H. Grassmann’s 1844 *Ausdehnungslehre* and Schleiermacher’s *Dialektik*”, *Annals of Science*, 34(2) (1977): 103-162, Albert C. Lewis “Unity of Logic, Pedagogy and Foundations in Grassmann’s Mathematical Work”, *History and Philosophy of Logic*, 25, (Feb. 2004): 15-36 and the papers by Marie-Luise Heuser.

⁷² Schelling, *First Outline*, 5; (*We* 7: 67).

⁷³ See Grant, *Philosophies of Nature After Schelling*, 119 (on “the naturalization of the transcendental”) and Andrew Bowie, “The Hermeneutics of Nature”, *Schelling and Modern European Philosophy* (London: Routledge, 1993), ch.2.

individual consciousness. As such, Schelling was concerned not only to show the cognitive conditions for objective knowledge, but the nature of the world that enables it to be known objectively, and to produce beings which could achieve objective knowledge of it and of themselves.

Through dialectical construction, intellectual intuition enables the universal and the particular, the ideal and the real, to be grasped, conforming to Kant's dictum that the mind can only know what it constructs while avoiding the problem raised by Maimon against Kant that he had no way of showing how to apply synthetic *a priori* principles to experience.⁷⁴ However, Schelling did not believe that the deployment of such thinking by itself would guarantee the truth of his system of philosophy. Dialectics extends from thoughts of individuals to the thoughts of others and to the relationship between philosophies and philosophical systems. Philosophy, he believed, advances as less perfect forms of philosophy are discarded and their valuable contents assimilated to more perfect forms.⁷⁵ Systems are required to hold insights together, but they are always provisional. Unlike Fichte, who believed that in systematizing Kant he had provided the final foundation for all philosophy and was appalled by Schelling's essay of 1801 presenting his views as "my system of philosophy",⁷⁶ Schelling thought philosophers should develop their own systems, knowing that no system could be final. In fact, a final, perfect system would be the death of philosophy and the death of spirit.⁷⁷ A system should be judged according to its coherent and comprehensive account of everything, and its capacity to surpass by including more limited philosophical stances. It is only through providing a history of philosophy that defines its claim to truth as proposed solutions to the problems raised by the work of other philosophers that a system can be properly defended. This involves reconstructing the history of philosophy, revealing its achievements and failings and showing the logic of its progress to the position being defended, which Schelling later attempted to do.⁷⁸ Consequently, Schelling claimed that the categories of thought are not eternal but progressively emerge in the course of real history.⁷⁹ This means the

⁷⁴ On this, see Beiser, *German Idealism*, 580-2.

⁷⁵ Schelling, *Bruno*, 203; (*SWI*/4:307-8)

⁷⁶ F.W.J. Schelling, "Presentation of my System of Philosophy (1801)", trans. Michael G. Vater, *The Philosophical Forum*, XXXII(4) (Winter, 2001): 339-371. For Fichte's response to this, see Beiser, *German Idealism*, 502.

⁷⁷ "Philosophische Briefe über Dogmatismus und Criticismus" *SWI*/1:306. On this, see Bruce Matthews, "Translator's Introduction", Schelling, *The Grounding of Positive Philosophy*, 3.

⁷⁸ Schelling described his dialectical method in *On the History of Modern Philosophy* in the Preface, 41 (*SWI*/10:3) and 111-2 (*SWI*/10:106).

⁷⁹ On this, see Thomas Seebohm, "Schelling's 'Kantian' Critique of Hegel's Deduction of Categories", *Clio* 8(2) (1979): 239-255.

categories presently dominating cannot be assumed to be beyond questioning, and Schelling believed that philosophers should be prepared to offer new categories to overcome the limitations of prevailing categories.

This notion of metaphysics implied an abandonment of the quest for apodictic knowledge that had dominated Kant's and Fichte's philosophies and a more intimate relation between metaphysics and natural science than Kant had contemplated.⁸⁰ To begin with, Schelling argued that science presupposes metaphysics not as a guarantor for natural science, but as a condition for science. Following Kant's observation on experimentation in the second preface to the *Critique of Pure Reason*, Schelling accepted that science is not based on passive observation, but proceeds through our freedom to act to invade Nature and compel it to act under certain conditions, that is, to perform experiments.⁸¹ "Every experiment is a question put to Nature, to which it is compelled to reply" Schelling proclaimed. "But every question contains an implicit *a priori* judgment; every experiment that is an experiment, is a prophecy; experimenting itself is a production of the phenomena."⁸² Such questions ultimately are dependent on the synthetic judgments of metaphysics. However, Schelling ridiculed the idea that natural science must be able to deduce all its principles *a priori*, arguing that "*we originally know nothing at all except through experience, and by means of experience, and in this sense the whole of our knowledge consists of judgments of experience.*"⁸³ He argued that the distinction between *a priori* and *a posteriori* "is a distinction made solely *with respect to our knowing*, and the *kind* of our knowledge of these judgments, so that every judgment which is merely historical for me – i.e., a judgment of experience – becomes, notwithstanding, an *a priori* principle as soon as I arrive, whether directly or indirectly, at insight into its internal necessity."⁸⁴ This observation is applicable not only to particular sciences, but to metaphysics as such. In opposition to Kant's proclamation that "*Metaphysics* is a speculative cognition by reason that is wholly isolated and rises entirely above being instructed by experience,"⁸⁵ Schelling argued that the synthetic *a priori* knowledge of metaphysics is arrived at through dialectical construction which must engage with experience, and is not apodictic, but is fallible and subject to falsification and revision or replacement. Arguing against the assumption that philosophical arguments should have the apodictic quality of

⁸⁰ As Kant wrote in his "Metaphysical Foundations for Natural Science", "Only that whose certainty is apodeictic can be called science proper" 4; (*Ak* 4:468).

⁸¹ Kant, *Critique of Pure Reason*, 19; (B xiii).

⁸² Schelling, "Introduction", *First Outline*, 197; (*We* 7 :276).

⁸³ Schelling, "Introduction", *First Outline*, 198; (*We* 7:278).

⁸⁴ Schelling, "Introduction", *First Outline*, 198; (*We* 7:278).

⁸⁵ Kant, *Critique of Pure Reason*, 20 (B xiv).

mathematics, he claimed that only when the possibility of doubt is present do we have “real knowledge”.⁸⁶ He argued that an “absolute hypothesis must bear its necessity within itself, but it must besides this, be brought to an empirical test; *for inasmuch as all the phenomena of Nature cannot be deduced from this hypothesis as long as there is in the whole system of Nature a single phenomenon which is not necessary according to that principle, or which contradicts it, the hypothesis is thereby at once shown to be false*, and from that moment ceases to have validity as a hypothesis.”⁸⁷ At the same time, Schelling allowed for a form of natural necessity in nature other than the necessity grasped through mathematics, the only necessity allowed by Kant who maintained that “in every special doctrine of nature only so much science proper can be found as there is mathematics in it.”⁸⁸

SCHELLING'S *NATURPHILOSOPHIE*

With this different conception of metaphysics Schelling attempted to develop a system that would overcome the problems of all previous systems while encompassing within it all their achievements. Pre-eminently, he was concerned to overcome the problems of Kant's system of philosophy without abandoning the new dimensions opened by Kant's focus on the conditions for knowledge. However, situating this historically, Schelling saw the dualism in Kant's philosophy as an echo of the deeper and more problematic dualism introduced into philosophy by Descartes.⁸⁹ Not only did he see the conception of the subject struggling to know the world as a further development of Descartes' cogito, but saw the source of this conception of the subject and the problematic status of knowledge in a physical world as due to the mechanistic view of physical existence. While nature was conceived in a way that made it amenable to mathematical analysis, this rendered life, consciousness and freedom unintelligible. To address this problem he concluded that it is necessary not merely to circumscribe the validity of the Newtonian conception of physical existence as Kant had done, but to challenge and replace it.

In accordance with his revised notion of metaphysics, Schelling took the conception of organism presented by Kant in the *Critique of Judgment* as the point of departure for reconceptualizing the totality of being to make the evolution of life and consciousness within the physical world intelligible. Rejecting Kant's distinction laid out in this critique between judgments of nonliving and living beings, Schelling argued that all natural products should be conceived as organized wholes. Mind is

⁸⁶ On this see Matthews, “Translators Introduction”, Schelling, *The Grounding of Positive Philosophy*, 77-8.

⁸⁷ Schelling, “Introduction”, *First Outline*, 197-8; (*We* 7:277).

⁸⁸ Kant, “Metaphysical Foundations of Natural Science”, 6; (*Ak* 4:470).

⁸⁹ This was only fully spelt out in Schelling's *History of Modern Philosophy*.

highly organized, while matter is relatively unorganized. This characterization of nature was not regulative but constitutive. However, Schelling did far more than defend an organic view of nature, as some of his interpreters have argued.⁹⁰ He developed a process metaphysics which could account for both the emergence of relatively inert matter, nonliving organization associated with chemistry, living organisms and consciousness. It was through construing mind as a function of organisms active in nature and developing their consciousness as active agents that it could be assumed by Schelling that cognition grasps nature as such rather than the appearance of nature. Parallel to Kant's work in the *Opus postumum*, Schelling offered a solution to his problematic dualism and an account of the diversity of "objects" or beings while avoiding Fichte's "subjective idealism". So radical were his proposals in this regard that other interpreters of Schelling argued that this led Schelling to break completely with critical philosophy. Iain Hamilton Grant, for instance, suggested that "an exposition of Schellingianism ... entails the systematic undoing of the critical revolution."⁹¹ This view is clearly mistaken. Schelling stated in the Berlin lectures 1842-43 that "I most definitely have to dispute the opinion that any position can be advanced that is completely removed from a connection to Kant" and argued that the study of philosophy must begin with Kant.⁹²

Schelling's main works on the Philosophy of Nature, his *Ideas for a Philosophy of Nature* first published in 1797 (and then in revised form in 1803), *On the World Soul* published in 1798, *First Outline of a System of the Philosophy of Nature* published in 1799, *Universal Deduction of the Dynamical Processes* published in 1800 and *On the True Concept of Naturphilosophie and the Correct Way to Solve its Problems* in 1801 were presented as supplements to Fichte's philosophy, although the last two, claiming that the Philosophy of Nature had primacy over transcendental philosophy, marked a break with Fichte. Meeting Hölderlin's criticisms of Fichte's philosophy did not involve rejecting Fichte's genetic constructivism, but, as we have seen, applying this approach to the whole of Nature. Nature is not posited as that which is to be known, Schelling argued, but as *Being Itself* which we cannot avoid presupposing. As he proclaimed: "It is not, therefore, that WE KNOW *Nature* as a *priori*, but Nature IS a *priori*."⁹³ Not only is the self activity positing itself and coming to be through limiting itself and being limited, the whole of Nature is unconditioned activity developing through limiting

⁹⁰ See for instance Frederick C. Beiser, "Kant and the *Naturphilosophen*", *The Romantic Imperative: The Concept of Early German Romanticism* (Cambridge: Harvard University Press, 2003), ch.9 and Richards, *The Romantic Conception of Life*, ch.8.

⁹¹ Iain Hamilton Grant, *Philosophies of Nature After Schelling* (London: Continuum, 2006), 6.

⁹² Schelling, *The Grounding of Positive Philosophy*, 110-1; (*SW* II/3: 32)

⁹³ Schelling, "Introduction", *First Outline*, 198; (*We* 7:279).

itself. This is the central thesis offered by Schelling in order to explain the creativity of nature and the diversity of its products. As he further proclaimed, “[B]eing itself is nothing other than *the constructing itself*, or since construction is thinkable at all only as activity, *being itself* is nothing other than the *highest constructing activity*, which, although never itself an object, is the principle of everything objective.”⁹⁴ This unconditioned activity cannot be analysed but has to be accepted as the condition of everything else. As Schelling put it: “[T]his *absolutely* productive character (which no longer has a substrate, but is rather the cause of every substrate) is that which absolutely blocks all analysis; precisely for that reason, is the point at which our analysis (experience) can never arrive.”⁹⁵ It is the apparent stable products which need to be explained, and these are explained through activity limiting itself. As Schelling noted, “The chief problem of the philosophy of nature is not to explain the active in Nature (for, because it is its first supposition, this is quite conceivable to it), but the resting, permanent. Philosophy of Nature arrives at this explanation simply by virtue of the presupposition that for Nature the permanent is a limitation of its own activity.”⁹⁶ The whole of Nature is “an ever-*becoming* product” in constant formation, in which “everything must engage in that universal process of formation.”⁹⁷ Products have a derivative status. As Schelling put it, “*If Nature is absolute activity ... Nature EXISTS nowhere as product; all individual productions in Nature are merely apparent products...*”⁹⁸ Any individual being is something having already become, and like a whirlpool that forms in a stream when it encounters resistance,⁹⁹ should be viewed “as a determinate form or limitation of the originary activity.”¹⁰⁰ As such it is never merely fixed but “is reproduced at each instant through the force of nature entire.”¹⁰¹

Schelling deployed his dialectical method to show how this constructive activity could generate different kinds of existents. That is, from the dualism of productivity and products generated through the limiting of activity, he set out to derive “a dynamic graded series of stages in Nature.”¹⁰² In *The First Outline of a System of the Philosophy of Nature* he defended “dynamic atomism” in which the simplest factors are

⁹⁴ Schelling, *First Outline*, 78; (*We* 7: 13-4).

⁹⁵ Schelling, *First Outline*, 5; (*We* 7: 67).

⁹⁶ Schelling, *First Outline*, 17; (*We* 7: 82).

⁹⁷ Schelling, *First Outline*, 28; (*We* 7: 93).

⁹⁸ Schelling, *First Outline*, 16; (*We* 7: 81).

⁹⁹ Schelling uses this example to illustrate his meaning in *First Outline*, 18n.; (*We* 7: 82n.).

¹⁰⁰ Schelling, *First Outline*, 13-4; (*We* 7: 78).

¹⁰¹ Schelling, *First Outline*, 18n.; (*We* 7: 82n.).

¹⁰² Schelling, *First Outline*, 53; (*We* 7: 117). Also, see Schelling, *On the History of Modern Philosophy*, 111-2 and 142-3; (SW I/10: 96f. and 136) where he contrasts his notion of dialectics with Hegel's.

“originary actants” or “originary productivities”.¹⁰³ A multiplicity of actants reciprocally restrict themselves (preventing each other) to effect the unity of a product without ceasing to be a multiplicity.¹⁰⁴ However, a product cannot be accounted for through these actants; rather, “the constituents are given through the product.”¹⁰⁵ (In the *General Deduction of the Dynamic Process* Schelling took “dynamic process” as the basal unit, stating that “the same phenomena that we conceive under the term ‘dynamic process’, and which are the only primitives of nature, are nothing other than consistent self-construction of matter, simply repeated at different stages.”¹⁰⁶) From opposed tendencies of activities coming into conflict and limiting each other, Schelling argued, we get the polarity of opposing forces, matter (resulting from a balance of forces), extensity (associated with magnetism, electricity and chemistry), nonliving organization and living organisms, different kinds of organisms, and mind.¹⁰⁷ Schelling proclaimed: “Philosophy ... is nothing other than a *natural history of our mind*.”¹⁰⁸ Construction of these stages was not meant to trace the actual, empirical or experiential awareness of the stages of development, but to determine the necessary “conditions of possibility” of the experience of the objective world. In the *System of Transcendental Idealism* Schelling argued that such construction is driven by the persistent efforts of the subject to become an object to itself in the process of making its way to higher levels of consciousness.¹⁰⁹ In this way nested spheres of activity are generated. Later, along with affirming the priority of the Philosophy of Nature over Transcendental Philosophy, he rejected this idea of evolution as too anthropocentric,¹¹⁰ but still retained the idea of evolution of emergent levels with each level being the potential (or potency) for development to the higher levels. Through sketching these stages of evolution, Schelling presented the categories of natural ontology and epistemology, deploying the least number of concepts required to provide a general account of the world and experience. These are the concepts that

¹⁰³ Schelling, *First Outline*, 21n.; (*We* 7: 86*).

¹⁰⁴ Schelling, *First Outline*, 24-5; (*We* 7: 88f.).

¹⁰⁵ Schelling, *First Outline*, 24n.; (*We* 7: 88*).

¹⁰⁶ Schelling, “Allgemeine Deduktion der dynamischen Processes” *SW* I/4:4, trans. and quoted by Grant, *Philosophies of Nature After Schelling*, 170.

¹⁰⁷ See Schelling, *First Outline*, 53-70; (*We* 7:117-34), and 141-158; (*We* 7:210-30) and “Allgemeine Deduktion der dynamischen Processes” *SW* I/4:31.

¹⁰⁸ Schelling, *Ideas for a Philosophy of Nature*, 30; (*PN* 41).

¹⁰⁹ Schelling, *System of Transcendental Idealism* (1800), 2; (*SW* I/3:330-32) and Schelling, *Ideas for a Philosophy of Nature*, 41-2 (Introduction) & 272-3 (Concluding Note); (*PN* 63-4 & 491-2).

¹¹⁰ Schelling, “Allgemeine Deduktion der dynamischen Processes” *SW* I/4:1-78, 3, and F.W.J. Schelling, *The Grounding of Positive Philosophy: The Berlin Lectures*, trans. Bruce Mathews, (New York: S.U.N.Y. Press, 2007), 92-4; (*SW* II/3:5-7).

enable us to think nature and experience and to provide a genetic account of both subjects and objects from a single source, and to characterize all the different kinds of beings within nature, including living organisms and humanity with the capacity to create institutions and reconstruct the evolutionary production of Nature.

ORGANIZATION, ORGANISMS AND LIFE

Having denied that there is a difference in kind between reflective judgments of purpose in organisms or nature as a whole and determinative judgments of supposedly simple bodies, Schelling accorded a more central place to the study of life in this dialectic than it occupied in Kant's philosophical system. An account of living organisms was required which could justify the notion of humanity as a physical product of Nature able to act freely and comprehend Nature, and the notion of physical existence had to be modified accordingly. Schelling was also concerned to acknowledge the value of life apart from its usefulness to humans, and to acknowledge that life preexisted humans, and that in the future it could continue without humans.¹¹¹ In characterizing life he was strongly influenced by §64 and §65 of the *Critique of Judgment* where Kant characterized and defined organic bodies as bodies in which the parts "combine into the unity of a whole because they are reciprocally cause and effect of their form" and "the idea of the whole should conversely (reciprocally) determine the form and combination of all the parts".¹¹² An organism then is "both an *organized* and a *self-organized* being" in which the parts produce each other both in their form and in their combination.¹¹³ However, Kant retreated from the implications of his insight. In §77 he suggested that "we can conceive of an understanding that, unlike ours, is not discursive but intuitive, and hence proceeds from the synthetically universal (the intuition of a whole as a whole) to the particular, i.e., from the whole to the parts," but then claimed: "Our understanding ... must start from the parts taken as bases – which are thought of as universal – for different possible forms that are to be subsumed under these bases as consequences. We ... can regard a real whole of nature only as the joint effect of the motive forces of the

¹¹¹ Schelling's concern to uphold the independent value of nature was expressed in a letter to Fichte written on October 3rd, 1801, attacking his form of idealism. See Beiser, *German Idealism*, 504. Schelling became even more critical of this facet of Fichte's philosophy in 1806 in "Darlegung des Wahren Berhältnisses der Naturphilosophie besserten Fichteschen Lehre", *SW I*/7:17. Schelling's views here also contrast with Kant's who characterized all non-human beings, including animals, as things, "which we can dispose of as we please." Immanuel Kant, *Anthropology from a Pragmatic Point of View*, trans. Mary J. Gregor (The Hague: Martinus Nijhoff, 1974), 9; (*Ak* 7:127).

¹¹² *Critique of Judgment*, §65, 252; (*Ak* 5:373).

¹¹³ *Critique of Judgment*, §65, 253; (*Ak* 5:374).

parts.”¹¹⁴ He suggested that “it is not impossible for such a body to be produced mechanically,”¹¹⁵ and averred that “without mechanism we cannot gain insight into the nature of things.”¹¹⁶ The apparent contradiction between the acknowledgement of living beings characterized by final causes and the principle that all material things should be explicable through mechanical laws, characterized by Kant as the “antinomy of teleological judgment”, was resolved by Kant by allowing both to be accepted; but this meant acknowledging a new, if smaller gulf between the different domains of philosophy.¹¹⁷ For the most part, Kant argued that purpose should only be accepted as a regulative principle of reflective judgment; unlike mechanical laws it cannot be taken as constitutive of our experience, and this is generally how he has been interpreted.¹¹⁸

However, Kant was inconsistent on this. There was an undercurrent in his work associated with the place accorded imagination and the “feel of life” that pushed Kant towards a cosmology that gave a more central place to life.¹¹⁹ In §78 of *The Critique of Judgment* he grappled with the problem and eventually privileged teleology over mechanism, while at the same time acknowledging the difficulty of defending this. Schelling rejected the subordinate place accorded to teleology, embracing Kant’s more radical reflections. We cannot avoid cognizing organisms as independent wholes in which there is unity in diversity, Schelling claimed. “Every organization is ... a whole; its unity lies in itself; it does not depend on our choice whether we think of it as one or many.”¹²⁰ “[Y]ou are ... compelled to concede that the purposiveness of natural products dwells in themselves. ... [It] is not merely logical ... but real.”¹²¹ To think otherwise is a pathology of reflective thinking that can only investigate by separating. By contrast, the “pure intuition, or rather, the creative imagination, long since discovered the symbolic language, which one has only to construe in order to discover that Nature speaks to us the more intelligibly the less we think of her in a

¹¹⁴ *Critique of Judgment*, §77, 291-2; (*Ak* 5:407).

¹¹⁵ *Critique of Judgment*, §77, 293; (*Ak* 5:408).

¹¹⁶ *Critique of Judgment*, §78, 295; (*Ak* 5:410).

¹¹⁷ *Critique of Judgment*, §70-§78, 266-300; (*Ak* 5:386 – 414).

¹¹⁸ For the reason why Kant took this position, and the difficulties it posed for the critical system, see John H. Zammito, “‘This inscrutable principle of an original organization’: epigenesis and ‘looseness of fit’ in Kant’s philosophy of science”, *Studies in the History and Philosophy of Science*, 34(2003):73-109.

¹¹⁹ Reading Kant from the perspective of Wilhelm Dilthey, Rudolf A. Makkreel in *Imagination and Interpretation in Kant: The Hermeneutical Import of the Critique of Judgment*, (Chicago: University of Chicago Press, 1990) has shown the increasing importance Kant accorded imagination and life, arguing that “the idea of life pervades the entire structure of the *Critique of Judgment*” (103).

¹²⁰ Schelling, *Ideas for a Philosophy of Nature*, 31; (*PN* 44).

¹²¹ Schelling, *Ideas for a Philosophy of Nature*, 32; (*PN* 46).

merely reflective way.”¹²² “The organic,” Schelling proclaimed, reaffirming Kant’s original notion of organism, “*arises out of itself*. ... Every organic product carries the reason for its existence in itself, for it is cause and effect of *itself*. No single part could *arise* except in this whole.”¹²³ Schelling gave a place to the concept of organization as an objective aspect of organization, relating the whole to the parts. A “concept lies at the base of every organization ... [but] ... this concept dwells in the organization itself, and can by no means be separated from it; it organizes itself, and is not simply, say, a work of art whose concept is to be found outside it in the understanding of the artist.”¹²⁴ Life is self-organizing and has to be appreciated as such. Schelling rejected both appeals to a creator of Nature and to a life-force to account for life. “[Y]ou *destroy* all idea of *Nature* from the very bottom, as soon as you allow the purposiveness to enter her from without, through a transfer from the intelligence of any being whatever.”¹²⁵ “Life-force” Schelling went on, “is a completely self contradictory concept.”¹²⁶

Schelling not only claimed a central place for holistic comprehension of self-organization through intellectual intuition and dialectics, but argued that mechanistic explanations are derivative and only provide a limited form of knowledge. Holistic thinking is required to comprehend dynamical phenomena while analytical thinking “never reaches a final source of motion in Nature [and] deals only with secondary motions, and even with the original ones only as mechanical (and therefore likewise capable of mathematical construction).”¹²⁷ The relations between bodies studied by Newton and privileged by Kant were portrayed as Schelling as abstractions from dynamical processes, presupposing the holistic causation that produces component bodies in motion as relatively permanent.¹²⁸ To defend holistic thinking Schelling argued that the “Community of Relation” in which there is a reciprocity between agent and patient, which Kant introduced into the second edition of the *Critique of Pure Reason* as a derivative form of causation, is basic, and cause and effect relations, which Kant took to be basic, are abstractions from this and derivative.¹²⁹

¹²² Schelling, *Ideas for a Philosophy of Nature*, 35; (PN 52).

¹²³ Schelling, *Ideas for a Philosophy of Nature*, 30-1; (PN 44).

¹²⁴ Schelling, *Ideas for a Philosophy of Nature*, 31; (PN 45).

¹²⁵ Schelling, *Ideas for a Philosophy of Nature*, 34; (PN 50).

¹²⁶ Schelling, *Ideas for a Philosophy of Nature*, 37; (PN 55).

¹²⁷ Schelling, *First Outline*, 196 (SW I/7:275). Schelling had argued this earlier in the preface to *Von der Weltseele* (1797); (SW I/2:517). On this, see Beiser, *German Idealism*, 516-7.

¹²⁸ Schelling, *First Outline*, 196; (SW I/7:275).

¹²⁹ Kant, *Critique of Pure Reason*, 132 (B 106). Schelling, *System of Transcendental Idealism*, 110; (SW I/3:475-6).

Along with defending the holistic features of self-organization in life, Schelling also offered an account of the emergence of life and the development of sentience. This required further revisions of Kant's philosophy involving a highly original characterization of self-organization that not only enabled Schelling to give a place to holistic causation, but to creativity in nature. Nature was conceived of as being able to generate new levels of holistic causation. These revisions were based on Schelling's notion of Being Itself as self-limiting activity, a notion that clearly anticipated hierarchy theory (where emergence is seen to be generated through new levels of facilitative constraints) and other features of complexity theory.¹³⁰ Essentially, in opposition to Kant's view of nature as "the sum total of all things insofar as they can be objects of our senses and hence also objects of experience,"¹³¹ this involved seeing nature as a world of processes rather than things, with "things" or "products" being derivative. This meant that substance and accidents, or "Inherence and Subsistence", basic categories in Kant's philosophy, also have to be treated as derivative relationships. As Schelling wrote "Substances are nothing distinct from coexistence. That they are fixated as substances means that coexistence is posited, and conversely, coexistence is nothing else but a mutual fixating of substances by one another."¹³² Substance is "no more than the fixation of time."¹³³ This immediately opened the question of how this fixation takes place and what kinds of fixation there can be. It is through these revisions that Schelling was able to offer an alternative and more coherent solution to the problem of explaining life than Kant was able to provide.

The simplest fixation is where there is an equilibrium of forces limiting each other to produce objects that appear to be inert things. However, such bodies are not inert; chemistry had shown how these can become active under an external stimulus.¹³⁴ Other forms of organization are more complex. With life, equilibrium must be continually disturbed, and continually reproduced.¹³⁵ Schelling saw life being entirely dependent on chemical conditions, noting that "long ago, Nature made the first

¹³⁰ On hierarchy theory and its significance, see H. H. Pattee, "The Physical Basis and Origin of Hierarchical Control", *Hierarchy Theory: The Challenge of Complex Systems* ed. Howard H. Pattee (New York: George Braziller, 1973), ch.4, T.F.H. Allen and Thomas B. Starr, *Hierarchy: Perspectives for Ecological Complexity* (Chicago: University of Chicago Press, 1982) and Stanley N. Salthe, *Development and Evolution: Complexity and Change in Biology* (Bradford: Cambridge, Mass., 1993), ch.2.

¹³¹ Kant, "Metaphysical Foundations of Natural Science", *Philosophy of Material Nature*, 3; (*Ak* 4: 467).

¹³² Schelling, *System of Transcendental Idealism*, 111; (*SWI*/3:476-77).

¹³³ Schelling, *System of Transcendental Idealism*, 109; (*SWI*/3:473-75).

¹³⁴ Schelling, *Ideas for a Philosophy of Nature*, 252-3; (*PN* 454-5) The central place accorded to chemistry contrasts with Kant's characterization of it as "systematic art rather than science" in "Metaphysical Foundations of Natural Science", 4; (*Ak* 4:468).

¹³⁵ Schelling, *First Outline*, 118; (*We* 7:183).

chemical sketches in the so-called inorganic world for the formations which it produces in the organic.”¹³⁶ Viewing Earth itself as a living organism and laying the foundations for ecology, Schelling argued that organic nature as a whole is dependent on the preservation of air circulation, maintaining that “[e]ven the atmosphere, daily organized anew, already contains the first impulse to universal organization.”¹³⁷ Individual organisms emerge in this context through the interaction of actants. “Each organism,” Schelling wrote, “is itself nothing other than the collective expression for a multiplicity of actants, which mutually limit themselves to a determinate sphere.” Here “[i]n all the lawlessness of the actants continuously jostling one another, there yet remains the lawful aspect of the product itself, which they, (and no others) are constrained among themselves to produce.” The actions generated by constraints necessary for such production must be seen as functions of the organism. These functions must balance each other, or as Schelling put it, they “must be *opposed* to one another and reciprocally maintain each other in equilibrium”¹³⁸ Such a balance between functions is evident in the relation between organisms. The external condition for plants is light, which enables them to return the power of combustion to the atmosphere, while the animal “destroys the atmosphere about itself like the mobile, growing flame.”¹³⁹ Within individual organisms such opposition between functions engenders their differentiation. As Schelling put it: “Where opposed functions are united in one organism, these functions must be split up into various organs.”¹⁴⁰ Such an organism “is what it is ... *through itself* – which is simultaneously cause and effect of itself, means and end.”¹⁴¹ While this accords with Kant’s characterization of organisms, in opposition to Kant who denied the possibility of explaining life through evolution, Schelling here explained life as part of a general theory of dynamic evolution through limiting of activity, dismissing claims against the possibility of such an explanation as a “vintage delusion”.¹⁴²

Schelling often wrote as though all individuals are merely the effects of self-limiting of nature as a whole, that “everything individual in [Nature] is predetermined

¹³⁶ Schelling, *First Outline*, 57; (*We* 7:121).

¹³⁷ Schelling, *First Outline*, 58; (*We* 7:121).

¹³⁸ Schelling, *First Outline*, 51-2; (*We* 7:114-5).

¹³⁹ Schelling, *First Outline*, 59; (*We* 7:124).

¹⁴⁰ Schelling, *First Outline*, 52; (*We* 7:115).

¹⁴¹ Schelling, *First Outline*, 51; (*We* 7:114).

¹⁴² For Kant’s rejection of the possibility of explaining emergence, see *Critique of Judgment*, 305 (*Ak* 5: 419). On the significance of this rejection, see Richards, *The Romantic Conception of Life*, 233, and Zammito, *The Genesis of Kant’s Critique of Judgment*, 216-8. On Schelling’s defense of evolution, see Richards, 298.

by the whole or by the idea of a Nature generally.”¹⁴³ However, he argued elsewhere that individuals could only exist by asserting themselves against the absolute. Accordingly, he concluded, “life must be thought of as engaged in a constant struggle against the course of nature, or in an endeavor to uphold its identity against the latter.”¹⁴⁴ “In order that it not be assimilated,” Schelling wrote, “[the individual organism] must *assimilate*, in order that it not *be* organized, it must *organize*. In this act (of opposition) *inner* and *outer* are divided for it. It is an activity *that works from the inner toward the outer*.”¹⁴⁵ Here, outer activity generates an internal activity which counters the tendencies of the outer activity, thereby maintaining internal stability. Organisms respond to changes in their environment to form and reform themselves. Clearly, Schelling recognized the central place of homeostasis in life (the discovery of which is usually attributed to Claude Bernard), including its central role in sensory experience.¹⁴⁶ With this homeostasis there is a duplicity in which a cause is active “only under the condition of a *positive and negative reciprocal relation*” in which the cause acts against outside influences.¹⁴⁷ This is the basis of the organism’s receptivity, which makes the outer activity into a product or products for the organism that then affect it as an inner factor so that its activities are not merely the effect of the outside activity. Consequently, we can say that “[t]he organism has an external world because there is an original duplicity within it” while “[d]ead matter has no external world, it is absolutely identical and homogeneous with the whole whose part it is.”¹⁴⁸ Schelling characterized this duplicitous receptivity “excitability.”

“*Excitability*”, Schelling argued, “must be posited as the essence of organism, by virtue of which alone the organic activity is really hindered from exhausting itself in its product that, therefore, never is, but always only becomes.”¹⁴⁹ This makes the organism an object to itself, and therefore makes it also a subject, and as such “the most original thing in Nature.”¹⁵⁰ With excitability we have sensibility, irritability and the formative drive associated with reproduction. To quote Schelling:

¹⁴³ Schelling, *First Outline*, 198; (*We* 7:279).

¹⁴⁴ Schelling, *System of Transcendental Idealism*, 127; (*SWI*/3:496-98)..

¹⁴⁵ Schelling, *First Outline*, 54; (*We* 7:118).

¹⁴⁶ On the importance of homeostasis for understanding life see Walter B. Cannon, *The Wisdom of the Body* (New York: Norton, 1963), J. Scott Turner: *The Extended Organism: The Physiology of Animal-Built Structures* (Cambridge: Harvard University Press, 2000), and *The Tinkerer’s Apprentice: How Design Emerges from Life Itself* (Cambridge: Harvard University Press, 2007).

¹⁴⁷ Schelling, *First Outline*, 109; (*We* 7:176).

¹⁴⁸ Schelling, *First Outline*, 112n.‡; (*We* 7:179). This notion of “world” clearly anticipates the biological theory of Jacob von Uexküll.

¹⁴⁹ Schelling, *First Outline*, 105; (*We* 7:170-1).

¹⁵⁰ Schelling, *First Outline*, 106; (*We* 7:172).

If the organism was not in equilibrium with itself, then this equilibrium could not be disturbed, and there would be no dynamical source of activity in the organism, there would be no sensibility. But precisely because sensibility is only the perturbation of the organic equilibrium, it is only recognizable in the continual restoration of the equilibrium. This restoration is displayed in the phenomena of irritability, which necessarily coexist. But because the product of every restoration is always again the organism itself, it appears at the lowest level as the constant self-production of the organism, and its cause appears as force of reproduction...¹⁵¹

From this general conception of living organisms Schelling distinguished organisms according to their chemical processes, what they are able to sense and respond to and their functional differentiation. Schelling also noted of that “If we move upwards in the scale of organization, we find that the senses gradually develop in that order in which, by means of them, the world of the organizations is enlarged.”¹⁵² Thus there are differentiated organs such as the brain and the eye associated with the differentiation of sensibility from irritability, while irritability is associated with the heart.¹⁵³ In this way Schelling could account for the emergence of human subjects.

LIFE AND TRANSCENDENTAL IDEALISM

The derivation of categories through the examination of subjective experience was undertaken in Schelling’s most Fichtean work, his *System of Transcendental Idealism*. The object of this work is “*the act of construction itself*” that can only be grasped through the imagination of the aesthetic sense.¹⁵⁴ It requires of philosophers that they be engaged in constant productive activity while reflecting on this production. Through this phenomenological investigation of experience as reflexive construction, or speculative dialectic, Schelling, like Fichte, set out to systematize Kant’s insights, “to bring system into my knowledge itself, and to seek within knowledge itself for that which all individual knowing is determined.”¹⁵⁵ Schelling also followed Fichte in characterizing this active development of consciousness as a sequence of self-limitings, that is, as “*a producing that becomes an object to itself*, that is, an intellectual intuition,”¹⁵⁶ and portrayed reason as a self-relation seeking to maintain identity in the face of otherness.¹⁵⁷ Space

¹⁵¹ Schelling, *First Outline*, 148; (*We* 7:218).

¹⁵² Schelling, *System of Transcendental Idealism*, 124; (*SW* I/3:492-94).

¹⁵³ Schelling, *First Outline*, 145; (*We* 7:214).

¹⁵⁴ Schelling, *System of Transcendental Idealism*, 13; (*SW* I/3:350-51).

¹⁵⁵ Schelling, *System of Transcendental Idealism*, 18; (*SW* I/3:357).

¹⁵⁶ Schelling, *System of Transcendental Idealism*, 28; (*SW* I/3:369-71).

¹⁵⁷ Schelling, *System of Transcendental Idealism*, 118-9; (*SW* I/3:486).

is defined as “nothing but objectified outer sense” and time as “nothing else but objectified inner sense.”¹⁵⁸ And “[a]ll categories are modes of action, whereby objects themselves first come about for us.”¹⁵⁹ Schelling also accepted Fichte’s argument that this development is only possible through being limited by the recognition of other intelligences and recognizing this recognition by the other.¹⁶⁰ “[A] rational being in isolation could not only not arrive at a consciousness of freedom,” Schelling noted, “but would be equally unable to attain to consciousness of the objective world as such.”¹⁶¹ While granting priority of praxis over theory and seeing reason as productive rather than passive, he deduced by this imaginative production not only the forms and categories of the physical world, but also of organisms, of the capacity to abstract and think conceptually, of moral reasoning, of the legal order, of history and of teleology and art, revising and integrating the insights of Kant’s three critiques into one system and proposing an ethical and political philosophy that would overcome the atomistic, contractarian and utilitarian thinking of the British and French.¹⁶² As in the Philosophy of Nature, organization, especially that associated with living organisms, is given a central place with Schelling claiming that the “scale of organization merely refers to different stages in the evolution of the universe”, and that “organic nature furnishes the most obvious proof of transcendental idealism, for every plant is a symbol of the intelligence.”¹⁶³

However, the *System of Transcendental Idealism* always presupposed the Philosophy of Nature in which the tendency to take Idealism as the whole of philosophy had already been criticized, and this criticism was reaffirmed in this work. As Schelling wrote in the introduction: “Only on completion of the system of transcendental philosophy will one come to recognize the necessity of a nature-philosophy, as a complementary science, and thereupon desist from making demands upon the former, which only a nature-philosophy can satisfy.”¹⁶⁴ Accordingly, Schelling emphasized that “the essence of man is active” in which he “exerts his powers upon a world which has influence upon him, lets him feel its forces, and upon which he can react.”¹⁶⁵ In response to the question “whether the self is a thing-in-itself or an appearance”

¹⁵⁸ Schelling, *System of Transcendental Idealism*, 104; (*SW* I/3:468).

¹⁵⁹ Schelling, *System of Transcendental Idealism*, 107; (*SW* I/3:471-72).

¹⁶⁰ Schelling, *System of Transcendental Idealism*, 106; (*SW* I/3:538).

¹⁶¹ Schelling, *System of Transcendental Idealism*, 174; (*SW* I/3:555-57).

¹⁶² Beiser has revealed the importance of the Early Romantic’s political philosophy in “Religion and Politics in *Frühromantik*” in *The Romantic Imperative*, ch.10.

¹⁶³ Schelling, *System of Transcendental Idealism*, 125; (*SW* I/3:494-95) and 122; (*SW* I/3:490-91).

¹⁶⁴ *System of Transcendental Idealism*, 7n.1; (*SW* I/3:343n.1)

¹⁶⁵ Schelling, *Ideas for a Philosophy of Nature*, 10; (*PN* 4)

Schelling dismissed the question as absurd, since “there is assuredly a higher concept than that of thing, namely the concept of *doing*, or *activity*.”¹⁶⁶ Limiting of this activity can only come about “through *real opposition*,” although this opposition only arises for the self through the action of self-positing.¹⁶⁷ It is in this process of being really limited and positing itself as limited that the totality of objects is produced as a world for humans. That is, objects are products of the community of causation involving both the outer activity of Nature and the inner activity of humans as organisms, agents and intellects.¹⁶⁸ In accordance with this assumption, it is also assumed that the human organism is a homeostatic system, clearly evident when Schelling considers sensations, anticipating recent research on nerve functions: “The *possibility* of sensation rests ... [o]n the upset equilibrium of ... two activities.”¹⁶⁹ The same assumptions underlie Schelling’s claim that the transcendental philosopher can “bring forth for you the intelligence, with the whole system of its presentations.”¹⁷⁰

In this scheme, philosophy begins when the unity within Nature is sundered, when “man sets himself in opposition to the external world.” It is then that reflection begins, separating “the object from the intuition, the concept from the image, finally (in that he becomes his own *object*) himself from himself.”¹⁷¹ It is only then, when the original practical engagement as an active force within the world is forgotten, that the illusions of dualism, that were so problematic for Descartes and for Kant, appear. As Schelling suggested in the introduction to the first edition of his *Ideas for a Philosophy of Nature*, such reflection, when it becomes an end instead of a means, “torments human reason with chimeras” making “that separation between man and the world *permanent*, because it treats the latter as a *thing-in-itself*, which neither intuition nor imagination, neither understanding nor reason, can reach.”¹⁷² Schelling’s philosophy was designed to put an end to this torment, overcoming the opposition between idealism and realism. As he put it:

... the ideal activity is nothing without the to-be-intuited, the limitable, and, on that very account, the real. ... Just as two activities reciprocally presuppose each other, so also do *idealism* and *realism*. If I reflect merely upon the ideal activity, there arises for me idealism, or the claim that the boundary is posited solely by

¹⁶⁶ Schelling, *System of Transcendental Idealism*, 32; (SW I/3:375-76).

¹⁶⁷ Schelling, *System of Transcendental Idealism*, 35; (SW I/3:380-81).

¹⁶⁸ Schelling, *First Outline*, 202; (We 7 :284).

¹⁶⁹ Schelling, *System of Transcendental Idealism*, 56; (SW I/3:405-6). On recent work confirming Schelling’s insight, see Turner, *The Tinkerer’s Accomplice*, 177-8.

¹⁷⁰ Schelling, *System of Transcendental Idealism*, 73; (SW I/3:425-27).

¹⁷¹ Schelling, *Ideas for a Philosophy of Nature*, 10; (PN 5).

¹⁷² Schelling, *Ideas for a Philosophy of Nature*, 11n.4.

the self. If I reflect merely upon the real activity, there arises for me realism, or the claim that the boundary is independent of the self. If I reflect upon *the two together*, a third view arises from both, which may be termed *ideal-realism*.¹⁷³

This transcendental ideal-realism led Schelling to value the individual and the concrete over the universal and the abstract, to respect the opacity of experience and to accord a central role to the unconscious in the activity of self-constitution of consciousness, although this role could only be postulated. The development of consciousness culminates not in the grasp of a timeless system but with an appreciation by individuals of their dependence on nature and on other intelligences and of the fragmentary texture of empirical reality. Schelling concluded this work by claiming that art should be valued for its ability to speak to us of that which cannot be depicted by philosophy (although shortly after this he affirmed the superiority by virtue of its greater comprehensiveness of philosophy) and which science can only aspire to depict.¹⁷⁴ As the Schellingian philosopher and interpreter of Schelling, Andrew Bowie wrote of Schelling's defense of art: "Philosophy's reliance on 'intellectual intuition', in the sense of thinking about thinking, is itself an active process, but it is directed inwards, not towards an object, whereas the product of art is directed outwards, in order to reflect the unconscious through products (I/3. p.351)."¹⁷⁵ The simple Kantian dualism between the synthetic, form-bearing subject and the unknown content-in-itself to be informed was replaced by an account of both the form and content of evolving Nature and Spirit.¹⁷⁶ In a later work, the second version of *Ages of the World*, Schelling argued that, contrary to Kant's characterization of science and his rejection of the claims of natural history to being a science (arguing for an "historical doctrine of nature, which contains nothing but ... the description of nature as a system of classes of natural things ordered according to similarities, and the history of nature ... as a systematic presentation of natural thing in different times and in different places" without any claim to being science),¹⁷⁷ science has to recover its original meaning as history. A rigorously developed history of the cosmos, Earth

¹⁷³ Schelling, *System of Transcendental Idealism*, 41; (SW I/3:386-87).

¹⁷⁴ Schelling, *System of Transcendental Idealism*, 221-33; (SW I/3:614-30). On this development, see Beiser, *German Idealism*, 584-5.

¹⁷⁵ Andrew Bowie, *Aesthetics and Subjectivity: From Kant to Nietzsche*, 2nd ed. Manchester: Manchester University Press, 2003, 111.

¹⁷⁶ Peterson, "Translator's Introduction", Schelling, *First Outline*, xxvii.

¹⁷⁷ Kant, "Metaphysical Foundations of Natural Science" 4; (*Ak* 4:468). On Kant's denigration of the history of nature, see Phillip R. Sloan, "Kant on the history of nature: The Ambiguous heritage of the critical philosophy for natural history", *Studies in History and Philosophy of Biological and Biomedical Sciences* 37 (2006): 627-648. See Kant, *Critique of Judgment*, §82, 312-17; (*Ak* 5:425-29).

and life on Earth within which human history can then be situated will provide the ultimate framework for understanding nature. “From now on,” Schelling proclaimed, “Science [*Wissenschaft*], according to the very meaning of the word, is history [*Historie*]. ... From now on, science will present the development of an actual, living essence.”¹⁷⁸

CONCLUSION

Schelling was criticized by Hegel for carrying out his education in public.¹⁷⁹ His works have an exploratory quality in which he is often struggling to reconcile irreconcilable ideas. For this reason it is possible to offer different interpretations of his philosophy. Here I have presented Schelling as a process metaphysician who developed and defended this by granting a place to dialectical construction to comprehend self-organizing process and emergence, life, the evolution of nature and the development of consciousness, including the development of philosophy, science and art, and the self-consciousness of individuals. For the most part, the interpretation of his philosophy offered here is based on works written between 1798 and 1803 (when the revised second edition of *Ideas for a Philosophy of Nature*, originally published in 1797, was published), privileging his *First Outline of a System of the Philosophy of Nature* published in 1799, the work most strongly influenced by Goethe. *On the History of Modern Philosophy*, the lectures given in 1833-4 or 1835-6 and *The Grounding of Modern Philosophy: The Berlin Lectures* of 1842-43 have been utilized to confirm my interpretation of these earlier works. I have virtually ignored the Parmenidian tendencies in his “philosophy of identity” which was later repudiated by Schelling,¹⁸⁰ Nor have I discussed Schelling’s

¹⁷⁸ W.J. von Schelling, “Ages of the World” [second draft, 1813], in Slavoj Žižek, *The Abyss of Freedom/Ages of the World*, trans. Judith Norman, (Ann Arbor: The University of Michigan Press, 1997), 113. Here, Schelling was aligning himself with Herder against Kant, while having overcome Herder’s theoretical weaknesses that had aroused Kant’s hostility to Herder.

¹⁷⁹ George Wilhelm Friedrich Hegel, *Lectures on the History of Philosophy* (3 vols), trans. E.S. Haldane and Frances H. Simson (Lincoln: University of Nebraska Press, 1995), vol. 3, 513.

¹⁸⁰ The philosophy of identity was briefly argued for in *Presentation of My System of Philosophy* (1801) and in *Further Presentations from the System of Philosophy* (1802). Selections from the *Presentation*; (*SW* I/4: 107 - 144) and *Further Presentations from the System of Philosophy*; (*SW* I/4: 361 - 411) have been translated by Michael G. Vater in *The Philosophical Forum*, XXXII (4) (Winter, 2001): 339-371 and 373-397. Versions of the identity theory were also presented in “On The Relationship of the Philosophy of Nature to Philosophy in General” published in *Kritisches Journal der Philosophie*, I, no.3 (1802): 1-25, translated in *Between Kant and Hegel*, 363-382, and in “System of Philosophy in General and of the Philosophy of Nature in Particular (1804, based on posthumous manuscripts)” in *Idealism and the Endgame of Theory: Three Essays by F.W.J. Schelling*, trans., ed. and intro. Thomas Pfau (New York: SUNY Press, 1994), 139-194). On Schelling’s repudiation of this philosophy, see *On the History of Modern Philosophy*, 152; (*SW* I/10: 150).

postulation of a primordial will, central to his celebrated work, *Of Human Freedom*,¹⁸¹ a work which had a major influence on Schopenhauer, Nietzsche and Heidegger, and I have not discussed Schelling's later differentiation between "positive" and "negative" philosophy and how this relates to Schelling's philosophy of nature.

Schelling was at his most radical when he wrote his *First Outline of a System of the Philosophy of Nature* and shortly thereafter, and later views often reflect his failure to uphold this radicalism. The Parmenidian digression is of interest to reveal how difficult it has been for philosophers to overcome Parmenides' influence on European thought and the source of Schelling's problematic determinism. It was also the point of departure for Hegel's philosophy that led Schelling to thoroughly rethink his own position, and silenced him for decades and led to a complete rejection of the impulse to "geometrize" the dialectic.¹⁸² The notion of will, while appearing radical, is a retreat from Schelling's radical abandonment of the category of substance entailed by his notion of "productivity" in his earlier work. Schelling's reaction to Fichte in turning to the philosophy of nature already foreshadowed aspects of his later positive philosophy expounded in *The Grounding of Positive Philosophy*, and Schelling's notion of the *unvordenkliche Seyn* (unprethinkable being – being already presupposed by any act of thinking), deployed to attack Hegel's philosophy, highlighted differences between Schelling and Hegel that were implicit from the beginning, but only later became clear to Schelling.¹⁸³ To go into this issue would lead too far afield, however. The main concern here, and what it is hoped has been shown, is that despite some wild ideas and frequent vagueness, Schelling in his early works was offering a coherent and convincing response to the difficulties raised by Kant's philosophy that Kant himself had acknowledged, a response that was to some extent foreshadowed in Kant's published work and found surprisingly close parallels in Kant's late unpublished writings. In terms of Schelling's understanding of dialectics, he had demonstrated the superiority of his philosophy to Kant's which in turn had advanced beyond all preceding philosophy. While partly through a failure to carry through his most radical insights to their logical conclusion and a disinclination to even aim at a final, closed system of thought, Schelling never developed his system with the rigor of Kant's philosophy. However, by overcoming Kant's dualisms and gulfs Schelling resolved the

¹⁸¹ *Schelling: Of Human Freedom* [1809] trans. James Gutmann, (Chicago: Open Court, 1936), 40-1; (*SW I*/7: 364-5)

¹⁸² The case for this has been made by Émile Meyerson in "Schelling's Objections", *Explanation in the Exact Science* [1927], trans. Mary-Alice and David A. Siple, (Dordrecht: Kluwer, 1991), ch.12.

¹⁸³ As Meyerson noted in *Explanation in the Exact Sciences*, 336-7. The notion of *unvordenkliche Seyn* is introduced by Schelling in *The Grounding of Positive Philosophy* (*Philosophie der Offenbarung 1841/42*); (*SW II*/3: 160).

problems that Kant was addressing and was able to sketch the basis for a more coherent tradition of philosophy as a consequence, the tradition of process metaphysics.

There is much more to Schelling than simply having overcome the problems in Kant's philosophy; he added new dimensions to philosophy. Schelling was centrally concerned with the individual as a creative agent and provided a defense of the role of philosophy in people's lives. He believed that philosophy must enter into life, not only the individual life, but into the condition of the time, into history and into humanity. It must penetrate everything. "Human affairs do not allow themselves to be governed by mathematics, physics, natural history ... or even poetry and art" Schelling proclaimed. We could extend this list to include economics, psychology or management theory. "The true understanding of the world is provided by precisely the right metaphysics."¹⁸⁴ It is this exalted view of philosophy, espoused in the Berlin lectures, that inspired the whole tradition of thought from Søren Kierkegaard, the young Karl Marx and Friedrich Nietzsche to Martin Heidegger. It contributed to *Lebensphilosophie*, to existentialism and the dialogic philosophy of Mikhail Bakhtin and his circle.¹⁸⁵ It was this concern that philosophy be relevant to life that drove Schelling to focus on the particular, the apparently irrational and that which is beyond normal language.

It is precisely this tendency, and its influence, that led Lukács to condemn Schelling as an irrationalist and the source of irrationalism. Clearly, many of those influenced by Schelling did push his ideas in an irrationalist direction. However, irrationalism itself is merely the obverse of forms of rationalism that exclude important aspects of reality. The quest for greater rationality has never escaped the dilemma that in excluding domains that cannot be dealt with from this perspective they have actually supported irrationalism. Extreme rationalism and irrationalism are inseparable. The rationalism of Parmenides led him to deny reality to diversity, change and life in the world, rendering any notion of rationality in human affairs unintelligible. It was Descartes' rationalism inspired by his work in mathematics and physics that eventually led to Hume's irrationalism. It was the rationalism of the French *philosophes* that evoked J.G. Hamann's attacks on rationality. It was Kant's excessive rationalism that evoked the defence of irrationalism by Friedrich Jacobi. It was Hegel's panrationalism that appeared to give no place to the individual that

¹⁸⁴ Schelling, *The Grounding of Positive Philosophy*, 107; (SW II/3:27).

¹⁸⁵ The influence of Schelling on Bakhtin is under-appreciated. See Miroslav Orel, 'F.W.J. Schelling's and M.M. Bakhtin's Process Thinking', *Concrescence*, 3, 2002: 1-12, <http://www.concrescence.org/index.php/ajpt/article/view/119>.

evoked Kierkegaard to focus on the category of the individual and Arthur Schopenhauer and Friedrich Nietzsche to focus on the will. It was the dry rationalism of the neo-Kantians that evoked the irrationalist tendencies in *Lebensphilosophie* and in Martin Heidegger's philosophy. It was the desiccated rationality of the logical empiricists under the spell of advances in symbolic logic that evoked interest in existentialism and mystical religions. And it was Hegelian and orthodox Marxist panrationalism together with the instrumental rationality of modernism that evoked the antirationalism of deconstructive postmodernism. The real challenge to irrationalism comes from those who are equally committed to rationality and to doing justice to variety, the particularities of existence and to creativity. Schelling was exemplary in this regard, and those sharing this commitment are his true heirs.¹⁸⁶

Maurice Merleau-Ponty illustrates this point. Strongly influenced by Hegel, Marx and Lukács himself, Merleau-Ponty was also concerned with the issues raised by the existentialists: the problems of consciousness, freedom, agency, sociality, emotion and human creativity. As a Marxist acutely aware of the failures and oppressive tendencies of communism, he argued that even if the past of humanity evidenced rational progress, there is no guarantee that this would be true of the future. Attacking Cartesian dualism, empiricism and Kantian intellectualism he used a phenomenological approach to elucidate the embodied, social nature of consciousness and strove throughout his career to make philosophy central to life, portraying humans as the products/producers of history who have the capacity to create a more rational social order. However, he rejected Edmund Husserl's view that phenomenology should be a rigorous, presuppositionless and apodictic science of experience that would provide the foundations for all other forms of enquiry, and developed a dialectical form of phenomenology through which science, art and history could all be given a place and could advance philosophy. Towards the end of his career he turned to natural philosophy to provide support for and defend his insights into consciousness and social life. He turned to Schelling himself, the source of the tradition of natural philosophy and process metaphysics concerned to do justice

¹⁸⁶ As the Schellingian philosopher A.N. Whitehead succinctly characterized his own view on this in *Modes of Thought*, (New York: The Free Press, 1938), 98: 'The procedure of rationalism is the discussion of analogy. The limitation of rationalism is the inescapable diversity.' It was their capacity to give a place to reason and creativity that was the basis of Murray Code's defense of C.S. Peirce and Whitehead against Bertrand Russell and Willard van Orman Quine in *Myths of Reason: Vagueness, Rationality and the Lure of Logic*, (New Jersey: Humanities Press, 1995).

to the reality of consciousness as an emergent process within nature.¹⁸⁷ The recovery of Schelling was necessary to integrate the diverse issues that Merleau-Ponty was grappling with, offering a philosophy through which the best aspects of Hegelian social and political philosophy could be revised and defended against various forms of reductionism, including Hegelian Marxist reductionism which reduced people to and legitimated their treatment as instruments of the world-historical process.¹⁸⁸

The contribution of Schelling's philosophy to genuine rationalism is most clearly evident in his influence on the subsequent development of metaphysics, mathematics and science. In developing a system of philosophy Schelling redefined both philosophy and science, defending a form of dialectical rationality and fallibilist metaphysics that, transcending the opposition between dogmatic philosophy and critical philosophy, liberated the revolutionary potential of Kant's and Fichte's critical philosophy to give a more central role to philosophy in science than either Kant or Fichte could acknowledge. This provided a place for natural philosophy (or "speculative physics"), natural history and evolutionary theory and a stronger defense of the importance of the arts than Kant, or Hegel, were able to provide. In doing so, Schelling inspired the modern tradition of process metaphysics.¹⁸⁹ C.S. Peirce made clear his indebtedness to Schelling when he wrote in a letter to William James:

My views were probably influenced by Schelling ... by all stages of Schelling, but especially by the *Philosophie der Natur*. I consider Schelling enormous ... If you were to call my philosophy Schellingianism transformed in the light of modern physics, I should not take it hard.¹⁹⁰

Peirce later referred to himself as a "Schellingian of some stripe."¹⁹¹ While the influence of Schelling on Henri Bergson, Aleksandr Bogdanov, Alfred North

¹⁸⁷ Maurice Merleau-Ponty, *Nature: Course Notes from the Collège de France*, trans. Robert Vallier (Evanston: Illinois, 2003), 36-51. See also William S. Hamrick and Jan Van der Veken, *Nature and Logos: A Whiteheadian Key to Merleau-Ponty's Fundamental Thought*, (New York: SUNY Press, 2011).

¹⁸⁸ This was the basis of Leszek Kolakowski's attack on Marxism in his *Main Currents of Marxism*, trans. P.S. Falla, 3 volumes (Oxford: Oxford University Press, 1981).

¹⁸⁹ For an account of process metaphysics, see Nicholas Rescher, *Process Metaphysics* (New York: State University of New York Press, 1996). This does not include Schelling, but does include Peirce, Bergson and Whitehead. Peirce characterized himself at various times as a conditional idealist, a scholastic realist and a pragmatist. It is clear that Peirce was struggling to find a name for his philosophy, and I am suggesting "process metaphysician" is the most accurate. On this problem, see Sandra B. Roshenthal, *Charles Peirce's Pragmatic Pluralism* (New York: SUNY Press 1994), 108.

¹⁹⁰ Letter dated January 28th, 1894, quoted by Joseph L. Esposito, *Schelling's Idealism and Philosophy of Nature* (Lewisburg: Bucknell University Press, 1977), 203;

¹⁹¹ C.S. Peirce, *Collected Paper* (8 vols), ed. Charles Hartshorne, Paul Weiss and A. W. Burks (Cambridge, MA.: Harvard University Press, 1931-1966), 6.605.

Whitehead, George Herbert Mead, Ludwig von Bertalanffy and other process metaphysicians was less direct, it has been shown that they can only be fully understood as belonging to a Schellingian tradition of philosophical thought.¹⁹² It is the tradition of process metaphysics that most fully realizes Schelling's contribution to philosophy, and it is through this Schellingian tradition that philosophy has contributed most creatively to science.

Developing an open, creative form of dialectics (developed further by, among others, F. Schleiermacher, the mathematicians Justus and Hermann Grassmann, the process metaphysicians C.S. Peirce and Alfred North Whitehead, and humanistic Marxists such as Lucien Goldmann and Maurice Merleau-Ponty),¹⁹³ Schelling not only anticipated (while avoiding the problems of) those philosophers of science characterized by Nick Jardine as "Kantians on wheels"¹⁹⁴ such as Ernst Cassirer,¹⁹⁵

¹⁹² See Arran Gare, "The Roots of Postmodernism: Schelling, Process Philosophy and Poststructuralism", *Process and Difference: Between Cosmological and Poststructuralist Postmodernisms*, ed. Catherine Keller and Anne Daniell (New York: State University of New York Press, 2002), 36. Whitehead was deeply influenced by Hermann Grassmann whose work was the point of departure for Whitehead's first major work, *A Treatise on Universal Algebra*. See Andrew Dawson, "Whitehead's Universal Algebra", *Handbook of Whiteheadian Process Thought*, [Vol.2], (Frankfurt: Ontos Verlag), 67-86. Friedrich Engels who, despite his understanding of himself was also a process metaphysician, was also strongly influenced by Schelling.

¹⁹³ On Schleiermacher's indebtedness to Schelling, see Manfred Frank, "Metaphysical Foundations: a look at Schleiermacher's *Dialectic*", *The Cambridge Companion to Friedrich Schleiermacher*, ed. Jacqueline Marina, Cambridge: Cambridge University Press, 2005, 15-34. On the dialectic in Justus and Hermann Grassmann, see Albert C. Lewis, "H. Grassmann's 1844 *Ausdehnungslehre* and Schleiermacher's *Dialektik*", *Annals of Science*, 34(2) (1977): 103-162. C.S. Peirce's triadic logic influenced by Schelling (involving inseparably abduction, deduction and induction) is really a form of dialectics, as is A.N. Whitehead's characterization of reason in his *The Function of Reason*, (Princeton: Princeton University Press, 1929). Through Lucien Goldmann's engagement with Kant, the neo-Kantian Emil Lask and Marxists, most importantly, Lukács, Goldmann developed a form of Schellingian dialectics without being directly influenced by Schelling. On the development of Goldmann's notion of dialectics, see Mitchell Cohen, *The Wager of Lucian Goldmann: Tragedy, Dialectics, and the Hidden God*, (Princeton: Princeton University Press, 1994), esp. 117-153. Goldmann regarded Jean Piaget as one of the greatest dialectical thinkers of his time. See Lucien Goldmann, *Cultural Creation*, trans. Bart Grahl (Saint Louis: Telos Press), 1976, 126-7. The Marxist ecologist, Richard Levins, has defended what is essentially a Schellingian notion of dialectics in 'Dialectics and Systems Theory', Richard Lewontin and Richard Levins, *Biology Under the Influence: Dialectical Essays on Ecology, Agriculture, and Health* (New York: Monthly Review Press, 2007), ch.17. One of the most illuminating studies and defences of dialectics as the highest stage of cognitive development, Klaus F. Reigel, *Foundations of Dialectical Psychology* (New York: Academic Press, 1979), largely concurs with Schelling's conception of dialectics. Roy Bhaskar's *Dialectic: The Pulse of Freedom*, (London: Verso, 1993) is a major advance in dialectical thought, in my view defective because he did not take into account Schelling's arguments against Hegel and did not acknowledge the unprethinkable being preceding all thought.

¹⁹⁴ See Nick Jardine in "Hermeneutic strategies in Gerd Buchdahl's Kantian philosophy of science", *Studies in History and Philosophy of Science*, 34, (2003):183-208, 205.

Thomas Kuhn, Gerd Buchdahl¹⁹⁶ and Imré Lakatos, but also work in science itself. Despite the radical nature of Kant's own thinking, his early contribution to astronomy, his contribution to biology and his contribution to dynamics, his system was really a defense of "normal" science, which at the time, was Newtonian science (although Kant was also influenced by Euler). Kant was only able to reconcile this with his defense of freedom and morality, even when he acknowledged the significance of art and the place of purpose in nature, through the postulation of a transcendent God whose existence had to remain a mere postulate. By facing up to this problem and using Kant's critical approach to challenge the standing of mechanistic mathematical physics, Schelling gave a place to "revolutionary" science. This involved acknowledging the role of speculative metaphysics in challenging and replacing old categories and conceptual schemes and opening up new avenues of scientific research, a view that was revived in the twentieth century.¹⁹⁷ The arguments of Joseph Esposito, Marie-Luise Heuser and others that Schelling had a major influence on the development of mathematics, physics, chemistry and biology generated a major debate on this issue.¹⁹⁸ Lenoir counter-claimed that German biologists were hostile to the influence of Schelling and were in fact guided by Kant's ideas in biology, with this claim in turn being contested by Robert Richards, Frederick Beiser and Iain Hamilton Grant, among others.¹⁹⁹ The contribution to science of Schellingians is now generally recognized among historians of science who have studied Schelling,²⁰⁰ although as I have argued, they have still not done full justice to Schelling's work.

¹⁹⁵ Ernst Cassirer's *Substance and Function and Einstein's Theory of Relativity*, trans. W.C. and M.C. Swabey (London: Dover, 2004), was strongly influenced by Schellingian thought through the influence on him of Hermann Grassmann.

¹⁹⁶ Buchdahl's indebtedness to hermeneutic phenomenology, influenced by Heidegger (who was influenced by Schelling), was pointed out by Jardine. As noted, Goldmann recognized Jean Piaget, who influenced Thomas Kuhn, as a dialectical thinker. For an exposition and defence of this form of dialectics for science and metaphysics, see Arran Gare, "Epistemology, Dialectics and Metaphysics", *Nihilism Inc.* (Sydney: Eco-Logical Press, 1996), ch.12.

¹⁹⁷ See for instance C.H. Waddington ed., *Sketching Theoretical Biology: Toward a Theoretical Biology* [1969] (New Brunswick: Aldine, 2010), 41 & 72 where the defence of the role of metaphysics in science by David Bohm and Waddington, influenced by Peirce and Whitehead, echoes Schelling's philosophy.

¹⁹⁸ See Esposito, *Schelling's Idealism and Philosophy of Nature*, Heuser-Kessler, *Die Produktivität der Natur: Schellings Naturphilosophie und das neue Paradigma der Selbstorganisation in den Naturwissenschaften* and Marie-Luise Heuser, "The Significance of *Naturphilosophie* for Justus and Hermann Grassmann", *From Past to Future: Grassmann's Work in Context*, ed. H.-J. Petsche et.al., (Basel: Springer, 2011), 49-59.

¹⁹⁹ See note 3 above.

²⁰⁰ For the seminal influence of Schelling on physics, see L. Pearce Williams, *The Origins of Field Theory* (Lanham: University Press of America, 1980), ch.2. The influence of Schelling on the development of

I have outlined here some of the ideas which did play a major role in the development of biology of the Nineteenth Century such as the notion of homeostasis. More importantly, Schelling put forward ideas that came into their own in the Twentieth Century with research in theories of emergence, including hierarchy theory, post-reductionist evolutionary theory, geography and ecology,²⁰¹ evolutionary and genetic epistemology, ethology, biosemiotics, biohermeneutics and philosophical biology, the study of complex adaptive systems and endophysics, most of which have been indirectly influenced by him.²⁰² Despite Lenoir's dismissive attitude towards biologists influenced by Schelling, Twentieth Century developments in the study of morphogenesis also vindicated the tradition of biology inspired by him (and Goethe). Lenoir characterized the views of this school of thought as "transcendental morphology", as opposed to the "teleo-mechanists" inspired by Kant.²⁰³ Characterizing them as transcendentalists, Lenoir failed to appreciate how this tradition understood mathematics and its role in comprehending nature. What this Schellingian tradition aspired to was a "dynamist, morphogenetic mathematics" which would "be able to decipher the internal, dynamic structure of nature" without presupposing matter and extension, but which would account for the emergence of patterns.²⁰⁴ It was this ambition that inspired Alfred North Whitehead and, following him, the theoretical biology movement formed in Britain in the 1930s, led by C.H. Waddington and Joseph Needham, to investigate "mathematico-physico-chemical morphology". Waddington's student, Brian Goodwin, who continued this work under

field theory had already been recognized by Hermann Weyl in *Philosophy of Mathematics and Natural Science* [1927], Princeton: Princeton University Press, 1949, p.176.

²⁰¹ On Schelling's influence on geography, and through this, ecology (mainly through Alexander von Humboldt), see Chengxi Tang, *The Geographic Imagination of Modernity: Geography, Literature and Philosophy* (Stanford: Stanford University Press, 2008), ch.3, esp.120f., and ch.5, esp. 166 – 180 (on von Humboldt).

²⁰² See for instance Marie-Luise Heuser-Kessler, "Schelling's Concept of Self-Organization", *Evolution of Dynamical Structures in Complex Systems*, ed. Rudolf Frierich and Arne Wunderlin (Berlin: Springer Verlag, 1992), 395-415 and Heuser-Kessler, *Die Produktivität der Natur: Schellings Naturphilosophie und das neue Paradigma der Selbstorganisation in den Naturwissenschaften*. Erich Jantsch's *The Self-Organizing Universe*, (Oxford: Pergamon Press, 1985), Salthe's *Development and Evolution* and Lynn Margulis' and Dorian Sagan's *What is Life?* (Berkeley: University of California Press, 1995) can be seen as Twentieth Century reformulations of Schelling's view of nature. The relevance of Schelling's work to the present is evident in the themes addressed (including the limitations of mathematics for understanding emergence and the need to give place to stories) by Kalevi Kull (see for instance, "Semiotic ecology; different natures in the semiosphere", *Sign System Studies* 26 (1998): 344-371), Stuart Kauffman in *Investigations* (Oxford: Oxford University Press, 2000), and Anton Markoš, "In quest of novelty: Kauffman's biosphere and Lotman's semiosphere", *Sign System Studies* 32(1/2), (2004): 310-327 and his *Readers of the Book of Life: Contextualizing Developmental Evolutionary Biology* (Oxford: Oxford University Press, 2002).

²⁰³ Lenoir, *The Strategy of Life*, 147.

²⁰⁴ Heuser, "The Significance of *Naturphilosophie* for Justus and Hermann Grassmann", 58.

the banner of “process structuralism”, acknowledged his indebtedness to Goethe.²⁰⁵ Schelling also supported the idea that the Earth itself is alive, a notion revived by James Lovelock in the 1970s and supported by Goodwin, and now recognized as crucial in the struggle to face up to and address the global ecological crisis.²⁰⁶

In relating all this to people’s lives, Schelling’s work is now more relevant than ever before. The situation we are in was very succinctly summed up by Richard Tarnas: “In the absence of any viable, embracing cultural vision, old assumptions remain blunderingly in force, providing an increasingly unworkable and dangerous blueprint for human thought and activity.”²⁰⁷ By overcoming the limitation of Kant’s philosophy, Schelling has provided the basis for definitively transcending scientific materialism, in doing so, overcoming the opposition between science and the humanities and enabling people to understand themselves as culturally formed, socially situated, creative participants within nature.²⁰⁸ Most importantly, Schelling confronted and charted a path to overcome the nihilism into which European civilization was and is descending, a nihilism that is reaching its apogee in the deification of the global market, postmodern fragmentation and the specter of global ecocide. In his later work on myth and revelation Schelling noted that “through the virtually unrestricted expansion of world relations... the Orient and the Occident are not merely coming into contact with one another, but are being compelled ... to fuse into one and the same consciousness, into one consciousness that should for this reason alone be expanded into a world-consciousness.”²⁰⁹ While overcoming the parochialism of the European *Weltanschauung*, this will also necessitate breaking free from past forms of religion; but what is true in mythology and revelation should be preserved, providing a religious dimension to this world-consciousness. To this end, Schelling argued, it will be necessary to develop a “philosophical religion”, addressing and integrating the freedom of existence, historical phenomena and nature into an expanded *Weltanschauung* inclusive enough to overcome philosophy’s compulsive tendency to splinter off into mutually exclusive schools of thought.²¹⁰ Schelling noted

²⁰⁵ See Brian Goodwin, *How the Leopard Changed its Spots*, (London: Weidenfeld & Nicolson, 1994), and Gerry Webster and Brian Goodwin, *Form and Transformation: Generative and Relational Principles in Biology*, (Cambridge: Cambridge University Press, 1996), 110.

²⁰⁶ See the papers in *Gaia in Action: Science of a Living Earth*, ed. Peter Bunyard, (Wilts: Floris Books, 1996).

²⁰⁷ Richard Tarnas, *The Passion of the Western Mind*, (New York: Ballantine Books, 1991), 409.

²⁰⁸ See Günther Witzany, *Life: the Communicative Structure*, trans. Michael Stachowitsch (Norderstedt: Libri GmbH, 2000), esp. 18-20. See also, Arran Gare, “Human Ecology, Process Philosophy and the Global Ecological Crisis”, *Conrescence*, 1 (2000): 4-5.

²⁰⁹ Schelling, *The Grounding of Positive Philosophy*, 94; (*SW II/3*: 8)

²¹⁰ F.W.J. Schelling, *Historical-critical Introduction to the Philosophy of Mythology*, trans. Mason Richey and Markus Zisselsberger, (New York: S.U.N.Y. Press, 2007), 173-4; (*SW II/4*: 364-6)

that at the time of his lecture this philosophical religion did not yet exist. Lovelock's notion of Gaia, transcending the parochialism of particular civilizations, concurring with Schelling's philosophy of nature and offering a religious dimension to scientific theory, can be seen as a significant contribution to the development of this philosophical religion.²¹¹

By recognizing Schelling's place in the history of philosophy and in science we can now appreciate the process metaphysicians and the scientists influenced by them not merely as isolated thinkers of brilliance, but as part of a powerful tradition of thought working towards the creation of a global civilization. This tradition is continuing Schelling's struggle against nihilism and his integral view of humans as creative historical agents within nature, in which philosophy, science, the arts and the humanities are playing a crucial role in the self-creation of humanity and of life on Earth. We can now see the lineaments of this new civilization emerging in response to the global ecological crisis as the ecological civilization being called for by Chinese environmentalists, a call now being taken up internationally.²¹²

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²¹¹ Philosophical work associated with process theology can also be seen as a contribution to this. See David Ray Griffin ed. *The Reenchantment of Science*, (New York: S.U.N.Y. Press, 1988.) See also Stuart A. Kauffman, *Reinventing the Sacred*, (New York: Perseus, 2008).

²¹² See Arran Gare, "Toward an Ecological Civilization: The Science, Ethics and Politics of Eco-Poiesis", *Process Studies*, 39(1) (2010): 5-38.