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The Case for Speculative Naturalism

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The Crisis in Philosophy

Contemporary philosophy, whether analytical or so-called ‘Continental’, fails to provide a substantive basis for political and social thought, just as it struggles to keep up with, let alone interpret, the results of the sciences. In this essay I identify and promote a radically different tradition of philosophy, which I dub ‘speculative naturalism’. The idea that philosophy should be speculative has a long history. In English, it is associated with the idea that philosophy should provide an interpretation of reality as a whole, an outlook often identified with German Idealists and their epigone among English and American philosophers. However, interpreting reality as whole was also embraced as the goal of philosophy by opponents of Idealism, most notably the process metaphysician A.N. Whitehead. Whitehead also argued that in this quest, philosophy should question the assumptions of and contribute to specialist areas of enquiry, including the sciences. This view of philosophy was defended against analytic philosophy by the now neglected British philosopher C.D. Broad in two landmark papers, the first published in 1924, the second in 1947. In the 1924 paper, ‘Critical and Speculative Philosophy’, Broad characterized critical philosophy (which evolved into analytic philosophy) as analysis and clarification of the basic concepts and presuppositions of ordinary life and of science. It was assumed by its proponents that philosophical problems could be treated and dealt with in isolation from each other, and that philosophy, like science, could accumulate indubitable knowledge. On the other hand, speculative philosophers attempt to arrive at an overall conception of the nature of the universe and the position within it of human beings by taking into account the whole range of human experience—scientific, social, ethical, aesthetic, and religious: ‘Its business is to take over all aspects of human experience, to reflect upon them, and to try to think out a view of Reality as a whole which shall do justice to all of them.’¹ Returning to the problem of the eclipse of speculative philosophy in 1947, in ‘Some Methods of Speculative Philosophy’, Broad characterized three methods used by philosophers generally that define them as such. These are ‘analysis’ (which had come to completely dominate, and which he did not bother to describe any further), ‘synopsis’ (whereby the inconsistencies between various normally separate domains of experience are confronted – ‘synopsis’ means ‘view together’) and uniquely to speculative philosophers, ‘synthesis’, which aims to ‘supply a set of concepts and principles which shall cover satisfactorily all the various regions of fact which are being viewed synoptically.’² It is important to note that speculative philosophers must use all three methods, analytic philosophers only the first two, with a greatly reduced role accorded to synopsis. Giving less place to synopsis, analytic philosophers tend to ignore or downplay the significance of the contradictory assumptions of different domains of life and experience because they do not take seriously the overviews (often involving narratives that are themselves a form of synthetic thinking) that are required to reveal these contradictions, and they deny validity to the synthetic forms of reasoning required to develop new conceptual frameworks that could transcend these contradictions. Because they have no way of dealing with contradictions between diverse domains of experience or discourse they either accept these as

¹ C.D. Broad, ‘Critical and Speculative Philosophy’, *Contemporary British Philosophy: Personal Statements* (First Series), ed. J. H. Muirhead, London: G. Allen and Unwin, 1924: 77-100, p. 96.

² Professor C.D. Broad, ‘Some Methods of Speculative Philosophy’, *Aristotelian Society Supplement* 21, 1947: 1-32, p.22.

unavoidable (the neo-Kantian solution), or more commonly, privilege one domain at the expense of all others, focusing their efforts on explaining away phenomena associated with other domains (characteristic of the proponents of scientism).

The notion of synthesis is crucial here, but it is also important to appreciate Broad's insight that synopsis is a method and component of philosophy. In writing of synthesis and conceptual frameworks Broad was pointing to the influence on philosophy of Immanuel Kant who gave a central place to synthesis in his thinking and introduced the notion of conceptual frameworks. It is virtually impossible to understand modern philosophy except in relation to Kant. It is now becoming evident that even Husserl's phenomenology was deeply influenced by and can only be understood in relation to Kant. It is important to appreciate this, because it is only in relation to how different philosophers developed in reaction to Kant that what was involved in the emergence of analytic philosophy can be understood, and thereby, the alternative paths that could have been taken identified and evaluated. While more historically oriented philosophers do look back to the neo-Kantians, including Cassirer, or to Hegel and his followers, as offering alternative paths, here I will attempt to identify the different and largely neglected tradition of speculative naturalism. The point of providing a synopsis of these different traditions is to reveal not only that speculative naturalism is a path that could have been taken; it is to show that this is the path that should have been taken. It is the path that should be revived, and it is this which I will argue is required to revive not only philosophy, but the humanities and the sciences and address civilization's most pressing problems.

Analytic Philosophy

Analytic philosophy has its roots in Austria and Germany in the philosophies of Bolzano, Helmholtz and Frege, in each case severely modifying Kant's philosophy.³ This involved redefining and privileging the notion of analysis and focusing philosophy on objective meaning, while eliminating any positive role for synthesis.⁴ While Kant had argued that synthesis is involved in both empirical knowledge (synthetic *a posteriori* knowledge) and mathematical and metaphysical knowledge (synthetic *a priori* knowledge), Frege's developed a philosophy that eliminated any role for mental processes, whether ideas, images or imaginative projections, in characterizing the meaning relations between signs.⁵ Following Rudolf Hermann Lotze, Frege argued that concepts are objective and subject only to the laws of logic, and logic should be distinguished from epistemological issues. Criticising Kant, he proclaimed: 'The concept has a power of collecting together far superior to the unifying power of synthetic apperception.'⁶ Again following Lotze, he held that validity pertains to propositions, not concepts, and can be affirmed or denied regardless of the objects they refer to.⁷ Propositions were treated as Platonic entities, having a status independent of consciousness and not locatable in space and time. In fact Frege's philosophy, following Lotze, and all those neo-Kantian influenced by him, has been characterized as 'Transcendental Platonism'.⁸ Frege wanted a purely 'objectivist semantics' based on generalizing the mathematical function to analyse the logical structure of propositions. This involved translating statements into algebraic formulae, delimiting thereby what statements could make any meaningful claims and what they could make their claims about, making explicit the operations that could be performed on these formulae.

³ Robert Hanna in *Kant and the Foundations of Analytic Philosophy*, Oxford: Clarendon Press, 2001 argues that 'Bolzano and Helmholtz are the advance guard of analytic philosophy ... [and] Frege is the first of its two Founding Fathers.' (p.6) (the other was Bertrand Russell). This historical background is dealt with in J. Alberto Coffa, *The Semantic Tradition from Kant to Carnap: To the Vienna Station*, Cambridge: Cambridge University Press, 1991.

⁴ See Hanna, 'The Significance of Synthetcity', *Kant and the Foundations of Analytic Philosophy*, chap.4.

⁵ Michael Dummett, *Frege: Philosophy of Language*, 2nd ed. Cambridge, Mass.: Harvard University Press, 1981, p.684; cited by Hanna, *Kant and the Foundations of Analytic Philosophy*, p.182.

⁶ Gotlob Frege, *The Foundations of Arithmetic*, trans. J.L. Austin, Oxford: Blackwell, 1950, §47.

⁷ See Gottfried Gabriel, 'Frege, Lotze, and the Continental Roots of Early Analytic Philosophy', in Erich H. Reck ed. *From Frege to Wittgenstein*, Oxford: OUP, 2002, pp.39-51 .

⁸ Gabriel, 'Frege, Lotze, and the Continental Roots of Early Analytic Philosophy', p.41.

In this way the validity of inferences drawn from these statements could be tested and evaluated, and the algebraic formulae could then be translated back into non-algebraic statements.

However, there was more to Frege's project than this. It involved severely delimiting the realm of what could be studied through logic and thereby what could be taken as meaningful discourse, redefining philosophy accordingly. Philosophy was refocused on developing adequate means to encode statements algebraically and adequate means for interpreting the permutations of these algebraic representations, and then dealing with the paradoxes generated by this project. The only existence claims that can be made through Frege's logic are that for a class or kind x there exist objects of that kind; or as Quine famously put it, 'to be is to be the value of a variable'.⁹ This excludes the fundamental question traditionally asked by philosophers whether whatever is claimed to exist, 'is' in the most fundamental sense as *self-explanatory*, thereby not being further demonstrable or derivable, since, as James Bradley put it: 'it carries all the reasons for itself in its own nature.'¹⁰ Finding this self-explanatory being (or beings) is the ultimate goal of the synthetic thinking of speculative philosophy, with the aim of accounting for, understanding and explaining all else through it (or them) in a coherent way. Frege and those who followed him ruled out the possibility of even asking this question.

Frege's ideas were taken up in England by G.E. Moore and Bertrand Russell, by the young Wittgenstein, by Rudolf Carnap and the Vienna Circle in Austria, by Hans Reichenbach and Carl Hempel in Berlin in Germany. Frege had attempted to reduce arithmetic to logic, and this project was taken up by Bertrand Russell and then Russell and Whitehead, with the intention of explaining all mathematics through logic and set theory. From mathematics, analytic philosophers then attempted to explain science in the same way, although they had to give some place to experience along with logic. The proponents of this project, the logical positivists, succeeded in transforming the core of philosophy from metaphysics to the study of language, bringing about what later came to be known as the 'linguistic turn' in philosophy.

Analytic philosophers divided over the relationship between the role accorded to mathematical logic and its interpretation, the significance accorded to the language of science, and ordinary language. The later Wittgenstein, John Austin, Gilbert Ryle, P.F. Strawson, Stanley Cavell, John Searle and the later work of John McDowell exemplify a tradition that placed its faith in ordinary language. However, analytic philosophy had been closely associated with the development of mathematical logic, and ordinary language analytic philosophy was really a reaction to the logical atomism and logical positivism of enthusiastic proponents of mathematical logic and the quest to interpret, defend and extend mainstream science through it. While ordinary language analytic philosophers strove to show that human reasoning cannot be reduced to the manipulation of symbols as claimed by mainstream analytic philosophers,¹¹ they only slowed down efforts to identify human thought with artificial intelligence. The most influential analytic philosophers, particularly in USA, followed Carnap who privileged mathematical logic and stipulated that statements are meaningful only when they are syntactically well-formed, with non-logical terms being reducible to terms occurring in the basic observational evidence statements of science. There was a strong movement to uphold the cognitive claims of science and its ambitions to explain everything, including all aspects of human existence. Mainstream analytic philosophers, particularly in USA, are the foremost apologists and cheerleaders for science, and have even greater respect for mathematics. They have put science and mathematics on a pedestal as the ultimate arbiters in matters of belief.

With a few notable exceptions, these philosophers regarded ethics, politics and aesthetics as irrelevant to tough minded philosophers, many of whom concluded that these domains were beyond the realm of rational discourse. Analytic philosophy is characterized by an implicit respect for argument, clarity and

⁹ Willard van Orman Quine, 'On What There Is', *from a logical point of view*, 2nd ed. revised, New York: Harper & Row, 1961, p.15. P.F. Strawson clarifies what this means: 'our ontology comprises just the things which the variables of quantification must range over, or take as values, if our beliefs are to be true.' *Analysis and Metaphysics*, Oxford: OUP, 1992, p.42.

¹⁰ As James Bradley pointed out in 'Speculative and Analytical Philosophy, Theories of Existence, and the Generalization of the Mathematical Function', in *Approaches to Metaphysics*, ed. William Sweet, Dordrecht: Kluwer, 2004, pp.:209-226.

¹¹ On this, see Keith Devlin, discussing the work of Jon Barwise and John Perry, *Goodbye, Descartes: The end of logic and the search for a new cosmology of the mind*, Chichester: Wiley, 1997.

precision that its proponents believe can be achieved only by focusing on narrow topics, philosophizing ‘piecemeal and in fragments’, avoiding the big questions that traditionally characterized philosophy.¹² Questions about what is the good life, traditionally central to philosophy, have been largely excluded from such analytic philosophy as not being amendable to rigorous argument or to scientific treatment.¹³

These philosophers further narrowed philosophy by rejecting Frege’s transcendental Platonism and downplaying or even denying any significance to concepts and conceptual frameworks. While Quine is sometimes labeled a conceptual pragmatist, he accorded little significance to the development of concepts, focusing instead on the truth or otherwise of sentences.¹⁴ Donald Davidson went on to question the very idea of conceptual frameworks.¹⁵ Committed to allowing only the first order predicate calculus in logic as valid form of reasoning, Quine acknowledged theoretical networks, theories, theoretical terms and theoretical sentences, but privileged observational sentences over theoretical sentences as the cornerstone of semantics and knowledge. ‘Semantics’, however, was given a very restricted meaning by him and allied analytic philosophers, with meaning characterized not as a ‘psychic existence’ but as ‘a property of behavior’.¹⁶ Other US analytic philosophers embraced Alfred Tarski’s ‘semantic definition of truth’ according to which meaning could be reduced to specifications of truth conditions of sentences. Explicating what became the common view on the connection between the definition of truth and the concept of meaning among such analytic philosophers, Davidson wrote, ‘the definition works by giving the necessary and sufficient conditions for the truth of every sentence, and to give truth conditions is a way of giving the meaning of a sentence.’¹⁷ Effectively, this is an effort to eliminate ‘meaning’ by reducing it to something else: truth conditions.

Led by Quine, analytic philosophy redefined philosophy again, arguing that it is part of, or continuous with, science, differing from the rest of science only in degree of generality (although it should be emphasized that not all analytic philosophers in USA who have focused on mathematical logic have followed Quine in this; Davidson was a proponent of humanism rather than scientism,¹⁸ while Saul Kripke has dissociated himself from any form of naturalism). As Quine put it, ‘Logic, like any science, has as its business the pursuit of truth. What is true are certain statements; and the pursuit of truth is the endeavor to sort out the true statements from the others, which are false.’¹⁹ Central to Quine’s philosophical position was an attack on the place that had been accorded to ‘meaning’ in language, and even more fundamentally, to ‘subjects of consciousness’ however conceived. Reviewing his work on this, George Romanos concluded that ‘Quine has come to regard the various concepts of linguistic meaning as totally lacking in systematic theoretical significance and therefore of no use as explanatory concepts.’²⁰ Accordingly, he attacked neo-Kantian claim to have justified synthetic *a priori* knowledge. It was in

¹² For a history of analytic philosophy and description of its present state, see Hanna, *Kant and the Foundations of Analytic Philosophy* and H.-J. Glock, *What Is Analytic Philosophy?* Cambridge University Press, 2008. Hanna notes that analytic philosophy is now in a state of crisis because in their quest for precision they ‘now question the defensibility and ultimate intelligibility of the very idea of analysis.’ (p.11).

¹³ Political philosophers in the tradition of analytic philosophy such as John Rawls and Robert Nozick steered clear of the question What is the good life? Charles Taylor and Alasdair MacIntyre who have addressed this question are really opponents of analytic philosophy working in an environment dominated by analytic philosophers.

¹⁴ On the focus on sentences and what this means, see Willard Orman Quine, *World & Object*, Cambridge: Mass.: 1960, chap.1.

¹⁵ On the abandonment of concepts, see Donald Davidson, ‘On the Very Idea of a Conceptual Scheme’, in *Inquiries into Truth & Interpretation*, Oxford: Clarendon Press, 1984, Essay 13. For a history of the arguments surrounding concepts, which is also central to arguments around the status of analytic and *a priori* knowledge, see Jerry A. Fodor, *Concepts: Where Cognitive Science Went Wrong*, Oxford: Clarendon Press, 1998.

¹⁶ Willard Van Orman Quine, *Ontological Relativity and Other Essays*, New York: Columbia University Press, 1969, p.29.

¹⁷ Donald Davidson, ‘Truth and Meaning’, *Inquiries into Truth and Interpretation*, Oxford: Clarendon Press, 1984, p.24.

¹⁸ As James Pearson pointed out in ‘Distinguishing W.V. Quine and Donald Davidson’, *Journal of the History of Analytic Philosophy*, 1(1): 1-22.

¹⁹ W.V. Quine, *Methods of Logic*, 2nd ed. Cambridge, Mass.: Harvard University Press, 1959, xi.

²⁰ George D. Romanos, *Quine and Analytic Philosophy*, Cambridge: MIT Press, 1983, p.111. This exposition of Quine’s philosophy was endorsed by Quine.

mounting this attack that Quine initiated the ‘naturalistic turn’ in philosophy that now dominates analytic philosophy.

Usually, this naturalism is equated with ‘scientism’, the view that ‘it is within science itself, and not in some prior philosophy, that reality is to be identified and described.’²¹ Nature is the world as discovered and portrayed by scientists, who are themselves components of nature and can therefore be investigated and explained scientifically.²² With Quine and his followers, this implied a support for reductionism, allowing that only physical and chemical processes are real, although he was not always consistent on this.²³ Any aspect of humanity unintelligible from this perspective was deemed to be unreal, something that should be explained away. Extending his alliance with science, in a famous paper published in 1967, ‘Epistemology Naturalized’, Quine defended the ‘naturalization’ of epistemology, by which he meant that scientific knowledge itself is part of nature and could and should be treated as an object of scientific investigation. As he put it:

Epistemology, or something like it, simply falls into place as a chapter of psychology and hence of natural science. It studies natural phenomenon, viz., a physical human subject. This human subject is accorded a certain experimentally controlled input – certain patterns of irradiation in assorted frequencies, for instance – and in the fullness of time the subject delivers as output a description of the three dimensional external world and its history.²⁴

He also endorsed the effort by Donald T. Campbell, a psychologist, to develop an evolutionary epistemology based on the notion of blind variation and selective retention, which Campbell believed would account for the development of instincts and our cognitive abilities generally. Having excluded any role for *a priori* knowledge, let alone synthesis, Quine limited any criticisms of science to issues of clarity and logical rigor, reducing the role of philosophers to science’s under-laborers.

Recovering the Tradition of Speculative Naturalism

The alternative tradition inspired by Kant’s philosophy did not reject the subject but made it central and accorded a central place to the history of philosophy, involving synopses, and synthesis. It was speculative philosophy with synthesis regarded as central to every aspect of knowledge. Because of the central place according to the subject, these philosophers are almost always identified as Idealists, including Friedrich Schelling. Many were Idealists, but Schelling in his break with Fichte rejected Idealism to defend what was clearly a form of speculative naturalism. In his *System of Transcendental Idealism* devoted to deducing categories to grasp the whole of reality, Schelling clearly states that transcendental philosophy, which takes the subjective as primary, is only one part of philosophy, the other being nature-philosophy (*Naturphilosophie*) which takes the objective as primary.²⁵ For nature-philosophy, ‘The concept of *nature* does not entail that there should also be an intelligence that is aware of it. Nature, it seems, would exist, even if there were nothing that was aware of it. Hence the problem can also be formulated *thus*: how does intelligence come to be added to nature, or how does nature come to be presented?’²⁶ Soon after, in *Universal Deduction of the Dynamical Processes* where he attempted a ‘dynamic construction of matter’, Schelling argued that the Philosophy of Nature is more fundamental than Idealism,²⁷ 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 the basis of

²¹ W.V. Quine, *Theories and Things*, Cambridge, MA: Harvard University Press, 1981, p.21.

²² Jack Ritchie provides a brief overview of naturalism in philosophy and the arguments surrounding it in *Understanding Naturalism*, Stocksfield: Acumen, 2008.

²³ On this, and its somewhat confused nature, see David MacArther, ‘Quinean Naturalism in Question’, *Philo*, 11(1), Spring-Summer, 2008: 5-18.

²⁴ Quine, ‘Epistemology Naturalized’ in *Ontological Relativity and Other Essays*, pp.69-90, p.82f.

²⁵ Schelling, *System of Transcendental Idealism*, [1800], 1978, p.7.

²⁶ Schelling, *System of Transcendental Idealism*, [1800], 1978, p.5.

²⁷ F. Schelling, “Allgemeine Deduktion des dynamischen Processes oder der Kategorien der Physik”, (*SWI*/4:1-78).

their existence and become ‘nothing but images, just dreams of shadows’.²⁸ Many years later, circa 1835, lecturing on the history of modern philosophy, Schelling argued that his philosophy transcended the opposition between materialism and spiritualism, realism and Idealism.²⁹ In his 1842 lectures in which he set out to attack Hegel’s Idealism, Schelling clarified the difference between naturalism and Idealism that has defined the difference between Idealism and speculative naturalism ever since. While Hegel had argued that Being is the most empty concept, Schelling argued that philosophers must accept that there is an unprethinkable being (*unvordenkliche Sein*) that precedes all thought, including scientific and philosophical thought. It was through his nature-philosophy that Schelling defended speculation as ‘Speculative Physics’.³⁰ Rather than just accepting the concepts of Newtonian science, Schelling argued that these have to be questioned and transcended to make intelligible the emergence of life, humanity and the development of consciousness through history and in individuals.

The defense of speculation by post-Kantian philosophers was in response to the perceived limitations of Kant’s transcendental deductions while, unlike the anti-Kantians, accepting Kant’s arguments that experience is organized by imagination, forms of intuition and categories of the understanding, and that empirical research always involves posing questions to nature assuming these forms and categories.³¹ Kant had argued for a new dimension of philosophy, ‘transcendental philosophy’ to overcome the degenerate state of metaphysics, and to put it on solid foundation to provide apodictic knowledge as the Ancient Greeks had succeeded in doing for logical and mathematics and Bacon and Galileo had succeeded in doing for science.³² This, Kant claimed, has its own distinctive method by which the forms of intuition and the categories of the understanding, that is, the basic concepts which are the condition for any possible intelligible experience, can be discovered and justified as necessary. Like mathematical knowledge, this would be synthetic *a priori* knowledge, but of a different kind than mathematical synthetic *a priori* knowledge. To understand what Kant was doing, it is necessary to appreciate the central place he accorded the synthetic component of knowledge, that is, *synthesis*. Kant argued that we can only know what we have in some sense created, defending a constructivist theory of both empirical knowledge which always involves the deployment of concepts to organize the sensory manifold, and mathematics where cognition occurs through the construction of concepts, expressing a universal validity in an individual case, for instance, in the construction of a triangle whether in imagination or with a diagram.³³ In both cases, such construction involves synthesis which requires imagination. He characterized synthesis as ‘the act of putting various presentations with one another and comprising their manifoldness in one cognition,’ this being ‘the mere effect produced by the imagination, which is a blind but indispensable function of the soul without which we should have no cognition whatsoever, but of which we are conscious only rarely.’³⁴

Kant failed to demonstrate the necessity of his forms of intuition and categories of the understanding through transcendental deductions. While he specified what transcendental deductions are not, he failed to

²⁸ Schelling, *System of Transcendental Idealism* (1800), p.5 (*SW I*/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, p.106; (*SW I*/8:343/342). On the prioritizing of the Philosophy of Nature, see Beiser, *German Idealism*, p.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, p.26; (*SW I*/7:352).

²⁹ F.W.J. von Schelling, *On the History of Modern Philosophy*, trans. Andrew Bowie, Cambridge: Cambridge University Press, 1994, p.120.

³⁰ F.W.J. Schelling, *First Outline of a System of the Philosophy of Nature*, trans. Keith R. Peterson, New York: SUNY Press, 2004, p.193ff.

³¹ The notion of ‘concept’ had been taken up and developed a philosophical notion by Leibniz as an alternative to ‘idea’ and ‘notion’, and was embraced by Kant.

³² Immanuel Kant, *Critique of Pure Reason*, Preface [Second Edition], B viii – B xxiv

³³ Immanuel Kant, *Critique of Pure Reason*, A 713, B741.

³⁴ Immanuel Kant, *Critique of Pure Reason*, trans. Werner S. Pluhar, Indianapolis: Hackett, 1996, A 77-78, B 103, p.130.

specify what they are.³⁵ This was a major source of dissatisfaction among both his opponents and supporters. It would appear that transcendental philosophy aiming at synthetic knowledge of the forms of intuition and the categories of the understanding that is not *a posteriori* but *a priori* would require ‘intellectual intuition’ and speculative imagination.³⁶ Kant did consider the possibility of ‘intellectual intuition’ as a direct experience of the ‘I’ and the Absolute, but rejected it as a form of noumenal knowledge which he had deemed impossible. And he characterized speculation as a fruitless theoretical exercise in which cognition aims at an object, or concepts of an object, of which one cannot gain any experience.³⁷ First Fichte, and then following him, Schelling, Hegel and Schleiermacher regarded their work as speculative because they gave a place to a third kind of experience along with sensible objects and the concepts required to cognize them as such – experience of reflection on the nature and development of experience and on the generation of concepts, and on the adequacy of concepts used to interpret experience. As we have noted, this gave rise to a post-Kantian tradition of philosophy which embraced Kant’s notion of forms of intuition and categories of the understanding as conceptual frameworks and developed Kant’s concept of synthesis, but went beyond Kant to treat synthesis as central to such speculative knowledge. Speculation, by which old concepts could be brought into question and new concepts and conceptual frameworks elaborated, that is, ‘synthetic’ thinking as Broad characterized it, was made central to philosophy, and along with synthetic thinking, synoptic thinking.

The philosopher who made the crucial break that began this post-Kantian tradition of speculative philosophy was J.G. Fichte. Fichte was the first philosopher to embrace and defend intellectual intuition³⁸ and to accord extended powers of synthesis to it, and to claim that Kant’s notion of construction could be extended from mathematics to cognitive development. Kant had argued that some debates in philosophy are irresolvable. These are the antinomies of pure reason, for instance, the claim that all composite substances are made of simple parts (thesis) and no composite thing consists of mere simple parts (antithesis), and that to explain appearances there must be a causality through freedom (thesis) and all that happens is determined by the laws of nature (antithesis). Fichte set out to show that through synthetic thinking it is possible to reconcile these antinomies, and in doing so, achieve a higher synthesis.³⁹ Allowing this form of synthetic thinking provided him with a way to construct the concepts required to organize experience, achieving self-comprehension in the process. All of this is made possible, Fichte argued, by ‘the wonderful power of productive imagination in ourselves.’⁴⁰ Through such thinking Fichte attempted to establish and justify the forms of intuition and the categories of the understanding without postulating an unknowable thing-in-itself. For Fichte, 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.

There were two ‘methods’ involved in this speculative philosophizing, although these should not be seen as completely separate. The first consists of a ‘genetic description of experience itself’ whereby ‘the

³⁵ See Daniel Breazeale, ‘Doing Philosophy: Fichte vs. Kant on Transcendental Method’, in *Fichte, German Idealism, and Early Romanticism*, Rodopi: New York, 2010, pp.41-62, p.42ff.

³⁶ Interpreting what Kant believed in this regard, and the relation between categories, synthesis and imagination, is notoriously difficult. See for instance Rudolf A. Makreel on this in *Imagination and Interpretation in Kant*, Chicago: University of Chicago Press, 1994, p.28f.

³⁷ Kant, *Critique of Pure Reason*, A635f. and B663f., p.612.

³⁸ There has been much dispute over the meaning of ‘intellectual intuition’ in Kant, Fichte and Schelling and over whether there was any continuity in the development of this concept in these three thinkers. See Yolanda Estes, ‘Intellectual Intuition: Reconsidering Continuity in Kant, Fichte, and Schelling’, in *Fichte, German Idealism, and Early Romanticism*, ed. Daniel Breazeale and Tom Rockmore, Amsterdam: Rodopi, 2010, 164-177. Estes argues against claims that there was no continuity in the use of this concept.

³⁹ This departure by Fichte and the effect it had on Hegel is described by Violetta L. Waibel, ‘“With Respect to the Antinomies, Fichte had a Remarkable Idea”: There Answers to Kant and Fichte – Hardenberg, Hölderlin, Hegel’, in *Fichte, German Idealism, and Early Romanticism*, ed. Daniel Breazeale and Tom Rockmore, Amsterdam: Rodopi, 2010, pp.300-326.

⁴⁰ J.G. Fichte, *The Science of Knowledge*, ed. Peter Heath and John Lachs, Cambridge: Cambridge University Press, 1982, p.112, 185 & 187.

necessary acts of the I demonstrates that consciousness, in order to posit itself, must also posit a “world” with a certain necessary structure’.⁴¹ This begins with practical activity before becoming reflective, and requires recognition of other subjects who recognize oneself. The conscious acts associated with this have a synthetic function, differentiating and connecting at the same time. The second was the ‘dialectical synthetic method’, the essence of which involves revealing in what respect opposites (thesis and antithesis) are alike, thereby discovering the unity in opposites, generating new determinations.

In developing his own conception of philosophy as speculative thinking Schelling took Fichte’s work as his point of departure and focused on and developed the notions of synthesis and construction. He took over from Fichte the view that the subject is activity that can be appreciated as such through intellectual intuition, 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. In opposition to Kant’s strictures in ‘The Discipline of Pure Reason’ in *The Critique of Pure Reason* limiting construction to mathematics,⁴² Schelling argued that ‘the philosopher looks solely to the act of construction itself, which is an absolutely internal thing.’⁴³ 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. Building on Kant’s and Fichte’s ascription of a central place to imagination in such synthesis and developing Kant’s concept of construction and extending Fichte’s genetic approach from the development of cognition to the development of the whole of nature, Schelling’s characterized ‘intellectual intuition’ as a form of knowledge gained through a reflective and imaginative experimentation and construction by the productive imagination of the sequence of forms produced by the procreative causality of the ‘Absolute’ (i.e. the unconditioned).⁴⁴ This reproduces in imagination the process by which nature, through limiting its activity, has differentiated itself into a diversity of processes and products. Schelling embraced and further radicalized Kant’s more radical conjectures: his dynamism according to which matter is defined by forces of attraction and repulsion and his conception of living organisms put forward in the *Critique of Judgment* as unities in which the parts are both causes and effects of their forms. Schelling was concerned not only to show the social conditions for objective knowledge, but the nature of the world that enables it to be known objectively and which can be explained at least partially through Newtonian physics while at the same time producing subjects that can achieve knowledge of it and of themselves. This in essence is the whole project of speculative naturalism. Later, the process of developing such comprehensive knowledge of nature and humanity was characterized as dialectics.

Schelling did not believe that this dialectical reconstruction of nature by itself would guarantee the truth of his system of philosophy. Philosophers should develop their own systems, knowing that no system could be final. Dialectics extends from thoughts of individuals to the thoughts of others and to the

⁴¹ Breazeale, ‘Doing Philosophy’, p.48.

⁴² Kant, *Critique of Pure Reason*, p.677ff. (A 725 / B 753ff.).

⁴³ F.W.J. Schelling, ‘The Organ of Transcendental Philosophy’, *System of Transcendental Idealism* (1800), trans. Peter Heath (Charlottesville: University Press of Virginia, 1978), §4, p.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, chap.5 and in Mircea Radu, ‘Justus Grassmann’s Contributions to the Foundations of Mathematics: Mathematical and Philosophical Aspects’, *Historia Mathematica*, 27 (2000): 4-35, p.8ff.

⁴⁴ In his explication of Schelling’s constructivist form of philosophy Bruce Matthews wrote of the relation between intellectual intuition and the productive imagination: “[I]ntellectual intuition” and the “productive imagination” .. are used by [Schelling] to describe different aspects of the same productive power. Intellectual intuition is the *window through which we see into* the productive imagination. Conversely, intellectual intuition is the *screen* onto which the productive imagination projects its visions. But it is the power of *Ein-bildung* that allows us to mediate and *make one* the dualities of the universal and particular *in concreto*.’ *Schelling’s Organic Form of Philosophy: Life as the Schema of Freedom*, N.Y.: SUNY Press, 2011, p.195.

relationship between philosophies and philosophical systems and also the findings of empirical and experimental research guided by these systems. Philosophy advances as less perfect forms of philosophy are discarded and their valuable contents assimilated to more perfect forms. A philosophical system should be judged according to its coherence and comprehensiveness, 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 in contrast to the work of other philosophers that a system can be properly defended, and then only provisionally.⁴⁵

Quinean Naturalism versus Speculative Naturalism

Once the tradition of speculative naturalism is recognized, it is possible to judge it in relation to the naturalism of the Quine inspired tradition of analytic philosophy. As noted, for the most part, American analytic philosophers simply ignore speculative naturalists. Either they do not acknowledging their existence or, as with Peirce, misinterpret their work, seeing them as philosophers attempting the impossible and therefore not to be taken them seriously. Since they assume that careful analysis will produce indubitable arguments that can be added to the bucket of scientific knowledge, there has been very little engagement between these two traditions.

The weakness of naturalism as conceived by Quine and those he influenced relative to the naturalism of speculative naturalists is manifest in their assumption, which they offer no argument to defend, that mainstream science has found a method of acquiring and accumulating knowledge, and that speculative philosophy is irrelevant to this as well as to everything else. Essentially, by identifying naturalism with the view of reality and ambitions of mainstream science, these philosophers have simply embraced the basic assumptions about nature and how it is to be comprehended assumed by reductionist scientists against not only the humanities, and thereby greatly contributed to undermining the humanities – including philosophy, but against the most creative areas in the natural sciences. Quinean philosophers have not only have devalued or attempted to invalidate the cognitive claims of wide areas of experience that could not be interpreted through current science; they have denied any place to philosophy in questioning the deep assumptions of existing science, or any place for developing alternatives research programs. They have ignored Whitehead's claim that:

No science can be more secure than the unconscious metaphysics which tacitly it presupposes. The individual thing is necessarily a modification of its environment, and cannot be understood in disjunction. All reasoning, apart from some metaphysical reference, is vicious. Thus the Certainties of Science are a delusion. They are hedged around with unexplored limitations. Our handling of scientific doctrines is controlled by the diffused metaphysical concepts of our epoch. Even so, we are continually led into errors of expectation. Also, whenever some new mode of observational experience is obtained the old doctrines crumble into a fog of inaccuracies.⁴⁶

Consequently, they not only accepted, but defended the state of our culture where, as Whitehead complained: 'Philosophy has ceased to claim its proper generality, and natural science is content with the narrow round of its methods.'⁴⁷ We now have the peculiar situation described by Joseph Esposito where: 'Since [Peirce's] time modern science has become increasingly creative, philosophical, and speculative, while philosophy, on the other hand, has lost its sense of quest and participation in the activity of science.'⁴⁸

To fully appreciate the impact of speculative naturalists and what is wrong with Quinean naturalism it is necessary to examine the work of historians of ideas. To begin with, it is necessary to look at the

⁴⁵ This was provided by Schelling in F.W.J. von Schelling, *On the History of Modern Philosophy*, trans. Andrew Bowie, Cambridge: Cambridge University Press, 1994.

⁴⁶ Whitehead, *Adventures of Ideas*, p.154.

⁴⁷ Whitehead, *The Function of Reason*, p.50.

⁴⁸ Esposito, *Evolutionary Metaphysics*, p.5.

origins of naturalism and what was its relationship to science. ‘Naturalism’ derives from the Latin *natura* which was coined by the Romans to translate the Greek word *physis*. It was derived from *natus*, ‘born’, which was the past participle of *nasci* ‘to be born’ or ‘come into being’, which is how the Roman philosophers understood the Greek term *physis*. *Physis* could refer to those beings which had their own nature, or collectively to all such beings. It in turn derived from the Greek φύ, ‘to bring forth, produce, put forth; to beget, engender; to grow, wax, spring up or forth’.⁴⁹ Aristotle equated it to ‘the immanent part of a growing thing, from which its growth first proceeds’. The Ionians were naturalists because they believed that the cosmos was self-creating, growing out of itself, and were concerned to comprehend this self-creation. As Ivor Leclerc characterized their endeavour:

[T]he Presocratics were endeavouring to find the *archē*, the principle, source, of all things, that is to say, that which is immanent in all and whereby things are what they are, that immanent something which ultimately accounts for ‘the all’ having the character which it does have.⁵⁰

Originally, this search was virtually equated with philosophy. Anti-naturalist philosophies were those which offered explanations for the formation of the cosmos in terms of forces that transcended the cosmos and acted as an external force or external forces to create order.

Quine’s philosophy is neither naturalistic nor anti-naturalistic in the sense of the early Greek philosophers. As we have seen, the quest to characterize the *archē* of beings to make everything intelligible involves posing a question that is ruled out by those, such as Quine, who have followed Frege’s strictures on what questions can intelligibly be asked. Instead, Quine passively accepted that nature as characterized by physicists, along with behaviorist psychologists, is simply there to be described by sentences. Without being able to even ask the question What in the most fundamental sense is self-explanatory? (let alone proffer an answer to how the cosmos, including himself with his consciousness of the cosmos, could have been generated), Quine’s promotion of naturalism was parasitic upon others who had asked this question. These were the philosophers who made science possible.

It is impossible to understand the development of science either in the Ancient World or in modernity except in relation to the work of speculative philosophers. Research on the Seventeenth Century scientific revolution and the period leading up to this revealed the extent to which the birth of modern science was essentially the product of speculative work of natural philosophers who challenged the Aristotelian framework of concepts and developed radically new concepts in their efforts to make intelligible the physical phenomena they were investigating.⁵¹ The concept of space, for instance, was an invention of the late Renaissance (of Bernardino Telesio and Giordano Bruno) which was taken up and redefined by Newton as a foundational concept of his new celestial mechanics, in place of the Aristotelian notion of place. The concept of space provided a metaphor for developing a new concept of time that could be treated much like a dimension of space. This made possible the development of the new concept of inertia, to replace the concept of impetus. This in turn was associated with the development of a new concept of matter and thereby of bodies and the idea of laws of motion of these bodies. All this provided the framework for developing a new way of describing acceleration mathematically, associated again with a series of radically innovations in mathematical thinking culminating in the development of the calculus. All this was required to explain the observations of the planet Mars and predict its subsequent movements. Learning about this conceptual revolution is standard fare in early undergraduate courses in the history of science, and makes the dismissal of concepts by Quine and of conceptual frameworks and of the creative work involved in the development of new conceptual frameworks by Davidson appear bizarre.

⁴⁹ Ivor Leclerc’s *The Nature of Physical Existence*, London: George Allen & Unwin, 1972, p.102.

⁵⁰ Leclerc, *The Nature of Physical Existence*, p.102.

⁵¹ Burt and Whitehead were followed by E.J. Dijksterhuis, Alexandre Koyré, Thomas Kuhn, Arthur Koestler, I Bernard Cohen among many others. See also the work of Stephen Gaukroger, including *The Emergence of a Scientific Culture: Science and the Shaping of Modernity 1210-1685*, Oxford: Oxford University Press, 2009 and *The Collapse of Mechanism and the Rise of Sensibility: Science and the Shaping of Modernity, 1680-1760*, Oxford: Oxford University Press, 2012.

Furthermore, it has become evident that modern science is far less coherent than it appears. While Newtonian physics won the day against followers of Descartes or Leibniz, scientists influenced by the latter thinkers continued as minor traditions and influenced the subsequent development of science. Earlier natural philosophers such as Bruno and Galileo were never entirely eclipsed, and Aristotelian thought has had a continuing influence in modern science. Newton himself had a more subtle conception of nature than his later followers since he did not believe that there could be action at a distance and regarded space as the sensorium of the deity and that through space the deity was continually active. This led James Clerk Maxwell to enlist Newton's philosophical reflections to support his field theories against Newtonians.⁵² To understand Einstein's work it is necessary to appreciate the continuing influence on him of Newtonian science, but also of Galileo's arguments concerning relativity, the revival by him of a Leibnizian conception of relational space-time when he first formulated the special theory of relativity, which he abandoned for a more Cartesian conception of physical existence after Hermann Minkowski developed a geometrical representation of the theory. This assisted Einstein in developing his general theory on the basis of which he claimed that the experience of temporal becoming is an illusion. Einstein's views were neither consistent nor necessarily the final word on these theories, however, and there are many proponents of the earlier Leibnizian interpretation of his work, or Schellingian interpretations, each defending the reality of temporal becoming, which seems to be required with the reintroduction of cosmic time.⁵³ Other theorists have re-examined Aristotle's philosophy of nature to reveal how it had been misrepresented by medieval Aristotelians, who were really neo-Platonists, and to highlight deficiencies in post-Newtonian science, and then set about recovering some of these Aristotelian insights, most importantly, Aristotle's notion of causation and the place he accorded final causes. The works of the mathematician René Thom and the biomathematician Robert Rosen, influenced by Aristotle's arguments against Pythagorean thought, were directed at creating a mathematics of qualities that could give a place to final causes.⁵⁴ These debates are not simply a matter of interpretation and are central to theoretical disputes that will then influence directions in empirical research. Lee Smolin's challenge to mainstream physics in his book *Time Reborn: From the Crisis of Physics to the Future of the Universe* published in 2013 is an example of this.

It is against the background of this historical work on the scientific revolution that the significance of Schelling's work becomes fully apparent. He challenged Newtonian physics because of its incapacity to account for life, let alone consciousness, radicalizing Kant's dynamism as put forward in his *Metaphysical Foundations of Natural Science* and his conception of life as put forward in the *Critique of Judgment*. Defending and extending Kant's constructivist philosophy of mathematics, Schelling developed ideas on mathematics that influenced Justus and Hermann Grassmann.⁵⁵ Schelling conjectured that a new physics would be developed based on a conception of physical existence as activity or productivity, opposed forces and 'limiting', uniting the study of light, electricity and magnetism, and that based on this new physics, chemicals and life would be understood as either passive (in the case of chemistry) or actively achieved (in the case of life) balances of opposed forces. In actively maintaining a balance of forces, Schelling argued on this basis that organisms define their environments as their worlds and respond accordingly so that every organism has a world.

Those influenced by Schelling, including Oersted and a circle of scientists and mathematicians in Britain around Samuel Taylor Coleridge, among them the mathematician William Hamilton and the

⁵² See Ernan McMullin, *Newton on Matter and Activity*, Notre Dame: Notre Dame University Press, 1978, and P.M. Harman, *The Natural Philosophy of James Clerk Maxwell*, Cambridge: Cambridge University Press, 1998, p.172.

⁵³ The history of all these debates can be found in G.J. Whitrow, *The Natural Philosophy of Time*, 2nd ed. Oxford: Clarendon Press, 1980.

⁵⁴ On Thom, see David Aubin, 'Forms of explanation in the catastrophe theory of René Thom: topology, morphogenesis, and structuralism', *Growing Explanations: Historical Perspectives on Recent Science*, ed. M. Norton Wise, Durham: Duke University Press, 2004, chap.3. On Robert Rosen, see Arran Gare, 'Approaches to the Question 'What is Life?': Reconciling Theoretical Biology with Philosophical Biology', *Cosmos & History*, 4(1-2): 2008: 53-77.

⁵⁵ See Michael Otte, 'Justus and Hermann Grassmann: philosophy and mathematics', *From Past to Future: Grassmann's Work in Context* ed. Hans-Joachim Petsche et.al. Basel: Springer, 2011.

scientist Faraday, succeeded in this project. It is the physics based on field theory, the notion of valency in chemistry, and of homeostasis in biology which underpins most post-Newtonian science.⁵⁶ Schelling's notion of universal productivity also inspired the postulation of the first law of thermodynamics, and he anticipated systems theory, the development of cybernetics and hierarchy theory and post-Darwinian evolutionary theory.⁵⁷

Carrying on the tradition of speculative naturalism, Bergson and Whitehead were a major influence on Ilya Prigogine's work on non-equilibrium thermodynamics. Whitehead's ideas have also been a major influence on physics and post-reductionist biology, most importantly, C.H. Waddington's core concept of 'chreod' as 'self-stabilizing time-path' central to epigenesis, modeled mathematically by René Thom as the basis of catastrophe theory, was inspired by Whitehead's concept of concrescence.⁵⁸ Waddington's ideas have been further developed by Brian Goodwin and Mae-Wan Ho. Schelling's notion of organisms having worlds did not have any direct influence on subsequent thinkers, but the biosemioticians influenced by Jacob von Uexküll and C.S. Peirce rediscovered this insight and are making rapid progress in their research on this basis.⁵⁹ This work has been augmented by the rediscovery by Howard Pattee and Stanley Salthe of Schelling's insight that emergence involves new limits on activity, or as Pattee and Salthe refer to these, as constraints. Constraints can be facilitative, creating new beings with new possibilities. While Pattee, originally a theoretical physicist before moving into theoretical biology, was concerned to explain the emergence of hierarchical order and symbols, Salthe, in a major work of synthesis, integrated Pattee's hierarchy theory with thermodynamics, Otto Rössler's endophysics (again echoing Schelling, appreciating that scientists are participating in the world that they are observing and striving to comprehend), Peircian semiotics and ecology.⁶⁰ By explaining how all organism, including plants, define their environments as meaningful worlds and then the sequence of more complex worlds leading up to and including humans, biosemioticians have effectively overcome Cartesian dualism and shown what is involved in the development of human culture and reflective consciousness very much in accordance with the insights of Schelling.⁶¹ The work of Robert Rosen developing mathematics adequate to life is really a continuation of a tradition of mathematics inspired by Schelling.⁶² The quantum physicist Brian Josephson has invoked Peirce's work on semiotics to interpret quantum theory.⁶³ Another speculative naturalist, Rom Harré, has critiqued mainstream psychology and made major contribution to the development of a rigorous humanistic psychology. Speculative naturalism is now flourishing among

⁵⁶ See Esposito, *Schelling's Idealism and Philosophy of Nature* and L. Pearce Williams, *Michael Faraday: A Biography*: New York: Simon and Schuster, 1971, chap.2.

⁵⁷ See Arran Gare, 'From Kant to Schelling to Process Metaphysics: On the Way to Ecological Civilization', *Cosmos & History*, 7(2) 2011: 26-69.

⁵⁸ See Timothy E. Eastman and Hank Keeton, eds. *Physics and Whitehead: Quantum, Process, and Experience*, N.Y.: State University of N.Y. Press, 2004 and Brian G. Henning and Adam C. Scarfe, eds, *Beyond Mechanism: Putting Life Back into Biology*, Lanham: Lexington Books, 2013.

⁵⁹ See Don Favareau ed. *Essential Readings in Biosemiotics: Anthology and Commentary*, Dordrecht: Springer, 2010, Theresa Schilhab, Frederik Stjernfelt and Terrence Deacon eds. *The Symbolic Species Evolved*, Dordrecht: Springer, 2012, and Claus Emmeche and Kalevi Kull eds, *Towards a Semiotic Biology: Life is the Action of Signs*, London: Imperial College Press, 2011.

⁶⁰ See Howard Hunt Pattee and Johanna Raczaszek-Leonardi, *Laws, Language and Life: Howard Pattee's classic papers on the physics of symbols with contemporary commentary*, Dordrecht: Springer, 2012; Stanley N. Salthe, *Development and Evolution: Complexity and Change in Biology*, Cambridge, Mass.: MIT Press, 1993.

⁶¹ See Arran Gare, 'Philosophical Anthropology, Ethics and Political Philosophy in an Age of Impending Catastrophe', *Cosmos & History*, 5 (2), 2009: 264-286, <http://www.cosmosandhistory.org/index.php/journal/issue/view/8>. and Arran Gare, 'Process Philosophy and the Emergent Theory of Mind: Whitehead, Lloyd Morgan and Schelling', *Concrescence: The Australasian Journal for Process Thought: An Online Journal*, 3, 2002: 1-12, <http://www.concrescence.org/index.php/ajpt/article/view/118>.

⁶² See Arran Gare, 'Overcoming the Newtonian paradigm: The unfinished project of theoretical biology from a Schellingian perspective', *Progress in Biophysics and Molecular Biology*, 113, 2013: 5-24.

⁶³ Brian D. Josephson, 'Biological Observer-Participation and Wheeler's "Law without Law"', *Integral Biomathics: Tracing the Road to Reality*, ed. Plamen L. Simeonov, Leslie S. Smith and Andrée C. Ehresmann, Heidelberg: Springer, 2013, pp.253-258.

the most original scientists struggling to overcome the deficiencies of mainstream physics⁶⁴ and comprehend the complexity of life.⁶⁵ Alicia Juarrero has made highly original contributions to complexity theory and hierarchy theory in making intelligible intentional behavior on naturalistic foundations.⁶⁶

In short, by refusing to subordinate philosophy to science or to be overawed by past achievements of science, being prepared to question the foundations and assumptions of mainstream science and to elaborate radically new ways of thinking about nature, speculative naturalists, unlike analytic philosophers, have had and continue to have a profound and creative influence on science.

Speculative Naturalism and the Humanities

To evaluate speculative naturalism on the basis of its superior contributions to science and mathematics alone would be to miss the full significance of speculative naturalism. As Broad noted, the goal of speculative philosophy is to take into account the whole range of human experience—scientific, social, ethical, aesthetic and religious, and to develop a conception of reality that does justice to all of these. Speculative naturalism, in contrast to the naturalism of analytic philosophers, is not only an affirmation of the ambitions of philosophy in the grand manner against any tendency to dissolve philosophy into apologetics for mainstream science; it is an affirmation of the cognitive claims and significance of the humanities, including philosophy, for society. Utilizing synopses and synthetic thinking, speculative naturalism situates people as conscious, reflective social beings participating in the creative becoming of nature, which now can be seen to include humanity and philosophers striving for a comprehensive understanding of the world and themselves. By acknowledging and giving a place to real creativity in nature and for the emergence of subjects along with objects, these inter-related traditions have sought to justify the assumption of the humanities that humans are genuinely creative, and that the arts and humanities, particularly stories or narratives, are required along with the sciences to create the future.

One way to comprehend the significance of this view is to consider the work of a recent defender of the humanities, Mikhail Epstein. Epstein offers not only a defense and guidance for reviving the humanities, but more importantly, a crucial clarification of what the humanities are and what role they should play. Succinctly:

The crucial distinction between the humanities and the sciences is that in the humanities the subject and the object of study coincide; in the humanities, humans are studied by humans and for humans. Therefore, to study the human being also means to create humanness itself; every act of the description of the human is, by the same token, an event of one's self construction. In a wholly practical sense, the humanities create the human, as human beings are transformed by the study of literature, art, languages, history and philosophy: the humanities humanize.⁶⁷

Humans create themselves by creating 'new images, signs and concepts of themselves ... humans do not so much discover something in the world of objects as build their very subjectivity by way of self-description and self-projection.'⁶⁸ Alluding to the way meta-mathematics and the theory of computation founder on problems of self-reference, Epstein notes that 'the natural sciences are most interested in what makes the humanities "less scientific", their subject-object reversibility, for example, their semantic fuzziness, and even the metaphoric nature of their language. The natural sciences cannot strive for the

⁶⁴ See for instance Steven M. Rosen, *The Self-Evolving Cosmos: A Phenomenological Approach to Nature's Unity-in-Diversity*, Singapore: World Scientific, 2008.

⁶⁵ See the essays in *Integral Biomathics: Tracing the Road to Reality*.

⁶⁶ Alicia Juarrero, *Dynamics in Action: Intentional Behavior as a Complex System*, Cambridge: MIT Press, 2002.

⁶⁷ Mikhail Epstein, *Transformative Humanities: A Manifesto*, New York: Bloomsbury, 2012, p.7.

⁶⁸ *Ibid.*, p.8.

pinnacle of self-organized and self-reflective knowledge without the humanities' critical contribution.'⁶⁹ It is by virtue of this critical contribution that the humanities are not merely a supplement to science, but must lead it. As Epstein noted, 'the humanities used to determine, and give meaning to historic eras. The era of Enlightenment was inaugurated by philosophy and literature...., the era of Romanticism came into being thanks to the creative efforts of literary critics, linguists, poets and writers.... It has traditionally been the role of the humanities to lead humankind.'⁷⁰ It is on this basis that Epstein quoted with approval Alfred North Whitehead's proclamation that 'the task of a University is the creation of the future, so far as rational thought, and civilized modes of appreciation, affect the issue.'⁷¹ We do not have to accept the current trajectory of civilization in which people are being disempowered, democracy is being undermined and the global ecosystem is being threatened because mainstream analytic philosophers have locked in place the language of reductionist science that makes anything else unintelligible. By reviving philosophy, the humanities and genuine science through speculative naturalism, we can clear the way to create a different future, a new civilization; as Chinese environmentalists have called for an 'ecological civilization'.⁷²

⁶⁹ Ibid.p.8f.

⁷⁰ Ibid.p.12.

⁷¹ Ibid. P.15, from Alfred North Whitehead, *Modes of Thought*, New York: The Free Press, 1938, p.171.

⁷² On this, see Arran Gare, 'Towards an Ecological Civilization: The Science, Ethics and Politics of Ecopoiesis', *Process Studies*, 39(1), 2010: pp.5-38.