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Transforming the Finite:

Toward a Jacobi-ian ecological critique of big bang cosmology's new German romantic philosophy of nature

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Abstract

Big bang cosmologists appear to utilize a neo-German romantic philosophy of nature, reinventing in the context of a modern science the critical monism through which Hölderlin, Schelling, Schlegel, and Novalis thought nature or Nature as one whole unity (only partly available to reason) around 1800. Also echoing these thinkers, big bang cosmologists regularly claim (often in their popularized works) to be able to furnish, or at least begin to furnish, a "new mythology" based on reason. Friedrich Jacobi's critiques of some broad trends in 18th century German thought influenced the first early German romantics in their approaches, but they remained opposed to what had been his main position, which was that any philosophical naturalism carried with it an inevitable nihilism. Extending Jacobi's critique into the non-theistic frame can provide new avenues for future ecological critiques to be more fully developed of big bang cosmology's monistic construction of nature and its reiterated proposal of a new mythology based on reason, now under the direction of science, with art playing a role, rather than the reverse.

Lay summary

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Many popular books as well as technical ones, in the field of big bang cosmology, seem to offer a new kind of myth of nature. Sometimes they compare this myth to Genesis or other creation stories. Sometimes they claim that the new scientific story of the universe can also assist human beings in addressing the ecological crisis of the 21st century. This thesis compares the way the scientists look at nature, to the way a group of German romantic philosophers, including people like Friedrich Schelling and Friedrich Schlegel, looked at nature two centuries earlier, around 1800; finds some important similarities; and considers what these mean for questions of environmental ethics.

CONTENTS

Introduction: Reading "The Universe Story" in an Age of Ecological Crisis

Scientific cosmological theory, and the articulation of a severe and worsening global environmental crisis, have arisen as two major discourses in the physical sciences around the turn of the twenty-first century which are noteworthy in that they are rooted in empirical science, but ideate something like nature *as a whole*, which must be a non-empirical notion; additionally they attach various normative and even spiritual values to how they see human beings' current and prospective orientation within this whole.

The first discourse ranges from technical discussions closed to outsiders, through semi-popular textbook versions of the history of the universe it provides, to popular works like "The Universe Story" (1992) by cosmologist Brian Swimme and his religious studies co-author Thomas Berry. The "nature" which emerges in this discourse is almost always presented in a positive, sometimes even semi-divine or divine, manner, and often as the topic of a new kind of myth.

The second discourse characterizes "nature" as ailing as a result of having been too extensively affected by human beings. Scientists in this discourse also turn at times to what sounds like myth-like language in the process of seeking to derive a whole [negative] worldview from the facts. Like the cosmologists, these scientists are also seeking to motivate human aesthetic, ethical, and moral responses. Spinning off these scientists' moral discourse, a larger "Anthropocene" discourse has cropped up across multiple disciplines, adding its own range of artistic, ethical, philosophical, and pragmatic follow-on discourses and debates to the scientists' own. Sometimes these discuss the "end of

nature", or sometimes simply avoid the term; but the biologists and ecologists themselves do not hesitate to continue its use. Indeed, "nature" is used as a key term throughout a prominent thousand-plus-page 2019 report by an international group of scientists detailing the deterioration of Earth's biodiversity due to human activity[1].

To give a sampling of each discourse, though they are familiar enough: Swimme writes that science's "story [of the universe] is the only way of providing, in our times, what the mythic stories of the universe provided for tribal peoples and for the earlier classical civilizations in their times[2]". Physicist Greene holds that "the big bang model describing a cosmos that began enormously compressed and has been expanding ever since" has become "widely heralded as the scientific story of creation[3]"; cosmologist Smoot, that the "big bang is a cultural icon, a scientific explanation of the creation" and that it is "not surprising that the big bang, even in this modern secular world, often takes on the dimensions of myth[4]". Physicist Weisskopf in a 1989 lecture called the big bang account "the new story of Genesis" and expressed hope that "poetic and spiritual language" could now be re-married to the big bang scientific account in a "complementary" way[5].

Turning to the ecological crisis discourse, we can use as one example a 2017 letter signed by over 15,000 scientists from around the world, titled "World scientists' warning to humanity: a second notice". Its message was blunt, and (by 2017) regularly heard: by every measure used except for that of the stratospheric ozone layer, the trends were decisively, profoundly moving in the wrong direction: freshwater per capita, fishing rates, dead zones, deforestation, vertebrate species survival, carbon monoxide emissions, global warming, and

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[1] Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), "Global assessment report of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services", Brondízio, E. S., Settele, J., Díaz, S., & Ngo, H. T., Eds. (Bonn, Germany: IPBES Secretariat, 2019).

[2] Brian Swimme & Thomas Berry, *The Universe Story: From the primordial flaring forth to the Ecozoic era – a celebration of the unfolding of the cosmos* (New York: Harper Collins, 1992), p. 3.

[3] Brian Greene, *The Hidden Reality: Parallel universes and the deep laws of the cosmos* (New York: Vintage, 2011), p. 23.

[4] George Smoot & Keay Davidson, *Wrinkles in Time* (New York: Avon Books, 1993), p. 289, p. 18.

[5] Victor Weisskopf, "The Origin of the Universe," Stated meeting report, published in the *Bulletin of the American Academy of Arts and Sciences*, Vol. 42 (4), 1 January 1989, p. 39.

population growth[6]. As in, e.g., the "warning" in this title, scientists increasingly offer implicit and explicit ethical positions and moral exhortation along with their factual depictions of anthropogenic changes to the planetary environment. One of the IPBES report's main findings is that "Much of nature has already been lost, and what remains is continuing to decline[7]" due to human activity, such that "transformative change" is now required from almost all human cultures worldwide, including in their behaviors and ethical values, in order to reverse this decline[8]. Former dean of the Yale School of Forestry, Gus Speth, in 2014, stated that the "top environmental problems are selfishness, greed, and apathy," and in order to "deal with those we need a spiritual and cultural transformation," though "we scientists don't know how to do that[9]." Biologists Ceballos, Ehrlich, and Raven wrote in 2020 that "the window of opportunity is almost closed … [and w]hat is at stake is the fate of humanity and most living species[10]". In the opening of *The Annihilation of Nature* (2015) Ceballos writes that his book is meant to "showcase the two most popular ambassadors of biodiversity, birds and mammals, in a way that clarifies the paths we have taken and the options before us, whether toward conservation or heedless annihilation," and that he intends to provoke "outrage" in the reader at what is being done so that "fate will change its course and the unfolding mass extinction event" can be avoided[11].

Both these major discourses, while they are rooted in science, thus move from a holistic view of "nature" into matters aesthetic, philosophical, ethical, and spiritual; yet each seems to characterize and define nature differently. The environmental crisis discourse features (overall) an ailing nature and cosmology a powerful and supreme one, yet the nature of the

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[6] William J. Ripple, et al., "World scientists' warning to humanity: a second notice", *BioScience,* Vol. 67 (12), December 2017, pp. 1026 – 1027.

[7] IPBES, *op. cit.,* p. 206.

[8] IPBES, *op. cit.,* p. 40, p. 772.

[9] Environmental advocate Speth speaking on BBC radio in 2014, cited in Rod Oram, *Three Cities: Seeking Hope in the Anthropocene* (Wellington: Bridget Williams Books, 2016), e-book, no page numbers available.

[10] Gerardo Ceballos, Paul R. Ehrlich, & Peter H. Raven, "Vertebrates on the brink as indicators of biological annihilation and the sixth mass extinction", *Proceedings of the National Academy of Sciences - PNAS*, Vol.117 (24), 16 June 2020, p. 13601.

[11] Gerardo Ceballos, Anne H. Ehrlich, & Paul R. Ehrlich, *The Annihilation of Nature: Human extinction of birds and mammals* (Baltimore: Johns Hopkins University Press, 2015), pp. 10 – 11.

environmental discourse must be part of the nature of the cosmologists, which is presented as the one real totality.

Certainly, the two versions of nature, with their respective claims of orienting (or urging a radical new re-orienting of) the human being inside some nature holistically conceived, seem to require more integration and reconciliation. The cosmological writers are already, as we will see, seeking to apply their own understanding of "nature", and sense of cosmos for the human being, to the problem of the physical destruction of the Earth and its other species by humankind. Some from fields outside cosmology have also sought to derive from it ecological meaning or normative paths toward a new sense of "cosmos" for the human in nature which could help re-balance our presence on the planet with the needs of other species. And while by and large, the conservation biologists and other environmental scientists contributing most directly to the ecological crisis discourse from the scientific side do not directly engage with big bang cosmology or its approach to nature, there are some notable exceptions, like biologist and conservationist E. O. Wilson. Moreover, in their general openness, such as Speth expressed above, to seeking a more spiritual solution to problems like biodiversity loss which seem to require large-scale changes in human social behavior, the biological sciences do at times effectively seek an ethical or moral "cosmological" input.

Science & Religion scholarship has not tended to actively explore the connections or interrelations between these two discourses on nature. Science & Religion is not always swift to engage with the ecological crisis literature emerging from the biological and earth sciences, including as any part of its far more frequent engagement with big bang cosmology. Lisa Sideris' 2017 *Consecrating Science*, which addresses both, is one notable exception.

In general, Science & Religion engagement with big bang cosmology, when it addresses the question at all of the valuing of the physical world in the big bang cosmology discourse, tends to at least tacitly, and sometimes overtly, accept that the cosmologists are indeed in possession of a new and quasi-mythical understanding of nature which should suffice for addressing the ecological crisis. Science & Religion scholars increasingly pursue a

panentheistic interpretation of the universe as defined by big bang cosmological models, a position which also crosses over to some of the cosmologists themselves (many of whom might also self-identify as pantheists). As Henry & McGuire noted in 2018, the early 21st century has seen the rise of a contingent of panentheist "scientist-theologians, who see it [panentheism] as the best way to combine rigorous and up-to-the-minute science with belief in God", giving cosmologist Paul Davies as an example[12]. This position, like the broader religious naturalism characterizing many other engagements with cosmology by Science & Religion, tends not to look inside the black box of cosmological theory, presuming it presences a potentially complete physical universe, to which these scholars then seek to attribute or add religious value and meaning, as in the approach typified by Goodenough's *The Sacred Depths of Nature* (1998).

Outside those making more traditional natural theological objections to the claimed completeness of the scientific universe (whom we will touch upon in Chapter 2), there are thus few scholars in Science & Religion who have either deeply critiqued *or* thoroughly demonstrated the claims being made in the cosmological discourse that it is able to meaningfully orient the human being vis-à-vis the "nature" of the ecological crisis. There are exceptions, including Loyal Rue, Mary Evelyn Tucker, and before her, Thomas Berry, all of whom argue that there is just such a direct and normatively positive relevance of big bang cosmology to the ecological crisis as the cosmologists themselves claim. Tucker and Berry have both co-authored this type of presentation of big bang cosmology's nature with cosmologist Brian Swimme[13]. Loyal Rue, also echoing Swimme's approach, likewise sees a version of big bang cosmology's natural history as a viable new myth of nature, a solution to *both* the Western world's "amythia," as he calls it, *and* its ongoing devastation of the

[12] John Henry & J. E. McGuire, "Voluntarism and panentheism: the sensorium of God and Isaac Newton's theology", *The Seventeenth Century*, Vol. 33, No. 5 (2018), p. 601. For Davies and panentheism, see e.g. Paul Davies, "Teleology without teleology: Purpose through emergent complexity," in Clayton, Philip, & Peacocke, Arthur, Eds., *In Whom We Live and Move and Have our Being: Panentheistic reflections on God's presence in a scientific world* (Grand Rapids, MI: William B. Eerdmans Publishing Company, 2004), pp. 95 – 108.

[13] Swimme & Berry, *op. cit.*; Brian Swimme & Mary Evelyn Tucker, *Journey of the Universe* (New Haven, CT: Yale University Press, 2011).

physical world on Earth[14]. The basic position of Science & Religion scholars like Tucker and Rue is that modern Western humanity lacks a centralized myth, and this lack causally affects (in a negative manner) Western humans' relationship with the physical world. The big bang cosmological view of nature is thus held to potentially fill this myth-vacuum and automatically thereby also re-establish a cosmos, or positive order, for the human being on the planet which benefits both ourselves and the planet's other species. Rue calls it the "most important intellectual endeavor of the new millennium … to stimulate the emergence of a new wisdom tradition based on the integration of evolutionary cosmology and ecocentric morality[15]".

This thesis seeks to contribute to filling the gap in the Science & Religion literature, however, from the other direction, taking as my method the history of philosophy and history of Science & Religion, and ending up in the opposing stance to scholars like Tucker. I will argue, from a non-theistic framework, that the first stage in understanding how these two views of "nature" interact is to better understand the first discourse from the perspective of the cosmologists' own apparent philosophy of nature, and that when we do, there are many reasons it becomes non-feasible to apply their understanding of nature in the context of the ecological crisis, or in the context, more specifically, of seeking to locate or articulate the intrinsic value of the non-human world, both living and non-living, of our direct experience.

While the cosmologists' philosophy of nature is not always clear, consistent, or well-defined, I will argue that the best way of understanding it is as a return or re-instantiation, in a new form, of the early German romantic philosophy of nature which first arose in the work of Friedrich Schelling, Friedrich Schlegel, Friedrich Hölderlin, and Georg Friedrich Hardenberg (pen name Novalis) around 1800. While they differed from one another in certain aspects of their thinking and their methods, their basic epistemological approach – combining aspects of Kantian thinking with its attention to the subject's role in knowing, with elements

[14] Loyal Rue, *Amythia: Crisis in the natural history of Western culture* (Tuscaloosa: University of Alabama Press, 1989).

[15] Rue, *Everybody's,* p. 129.

which moved away from Kant – and basic conception of a single unified infinite nature as Being, accessible to intuition in some forms, yet resistant to direct representation when considered as a unity, or as Nature in itself, was shared by all four with enough consistency that we can sketch theirs as one philosophy of nature – one which had, moreover, a lasting legacy in a diverse array of fields.

These thinkers are increasingly being read and re-evaluated as philosophers of nature, in the Anglophone discourse, as part of early German romanticism's late twentieth and early twenty-first century "revival" and raft of new translations of major works into English[16]. Romanticism scholars Nassar, Richards, and Beiser are among those who have highlighted various of these four thinkers as pursing philosophical in addition to artistic approaches to nature, contributing to a reversal of lingering received stereotypes of German romanticism as anti-science. Richards notes that "Many of the Romantics might … be classified as hyperbolically rational in that they believed the scientific mind could penetrate into all the dark corners of the universe[17]". For Schelling and Novalis, in particular, mathematics and science, like philosophy itself, formed an important part of the way in which human beings could learn to perceive the physical world as part of one unified "nature" which was also a quasi-divine Nature. What I will be arguing is that it is these romantics' "nature" that has, in big bang cosmology, made a return, albeit in a science-led new form.

Understanding the German romanticism at the core of contemporary scientific cosmology enables us to better understand not only the potential normative questions arising from trying to merge this kind of a "nature" with the concerns of the ecological crisis discourse, but also many other aspects of the big bang discourse itself, such as its recurrent talk of new myths of nature, its pursuit of solutions to perceived fine-tuning "problems" regarding initial conditions, its embrace of the infinite multiverse, and the cosmologists' particular approach to a progressive, jointly non-human and human universal natural history. Understanding the scientific cosmologists' nature as neo-German romantic also positions us to make sense

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[16] Elizabeth Millán-Zaibert, "The revival of *Frühromantik* in the Anglophone world", *Philosophy Today,* Vol. 49 (1), Spring 2005.

[17] Robert J. Richards, *The Romantic Conception of Life: Science and philosophy in the age of Goethe* (Chicago: University of Chicago Press, 2002), p. xvii.

of its intertwined appearance with the diagnosis of "amythia" as a modern Western ill by scholars like Rue and Tucker, with their proposed use of cosmology's own new "myth" as cure. As we will see, the early German romantics' discourse on the need for humankind to locate a "new mythology" based on reason also bore some of these features.

In linking German romanticism with contemporary scientific cosmology, this thesis does make a somewhat novel argument. Yet several scholars in philosophy of science, history of science, and related fields have commented on scientific cosmology's seeming idealism and/or rationalism. These kinds of characterizations can mesh with our own, as we will see in what follows. Another line of thinking which supports the characterization made in this thesis of big bang cosmology as re-instating a German romantic philosophy of nature can arguably be seen in the rise of the contemporary Francophone philosophical school of "speculative realism," in which thinkers like Quentin Meillassoux work off of, and enhance, the ontology and epistemology of big bang cosmology (and mathematical physics writ large), in a neo-Schelling-ian mode[18]. One scholar of the romantics and of the new speculative realists, Ellermann, claimed in 2015 that the speculative realists' work helps point toward "how nearly our present theoretical moment hews to a certain romanticism[19]".

As the growing interest in early German romantic philosophy of nature continues to lead more scholars to explore its philosophical kinship with modern science, more attributions like my own, of a German romantic philosophical core to the scientist's "nature", may follow. It seems likely that more scholars will explore connections between the early German romantics and contemporary cosmology, as well as their links with physics, chemistry, and biology, or fields like cybernetics, information theory, and theories of emergent causality and complexity. This thesis may help spur such future work by showing how, at least in the case of cosmology, many important features of the early German

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[18] Cf. Quentin Meillassoux, *After Finitude: an essay on the necessity of contingency*, Ray Brassier, Trans. (London: Continuum, 2011 [2008]). Ellermann notes that for Meillassoux, "if there is a master discourse, it is mathematical physics"; Greg Ellermann, "Speculative Romanticism," *SubStance,* Vol. 44 (1/136), 2015, p. 172 note 27.

[19] Ellermann, *op. cit.,* p. 154.

romantic philosophy of nature have returned – again, if they ever left. The German philosophers' work may even become further highlighted as having played a central part in establishing the very position – so widespread as of the early twenty-first century – that science and its "nature" can constitute an "ism" or a complete worldview, whether or not additional adjectives like "religious" or "panentheistic" are attached to the "scientific naturalism." A scientific *naturalist* who needs no other nature but science's, in other words, is potentially more romantic than is often noted, potentially carrying forward at least traces of the ideas of the four German romantics whose approach, we will argue, has found particular resonance, as well as onward influence, in big bang cosmology.

For many decades, big bang scientific cosmology has echoed in a new and scientific language the concerns and aims of the early German romantic philosophers, who were also engaged, if more philosophically and artistically, in locating a vision of human beings' relation to the infinite understood as the absolute, such that the human person was able to find, in this finite-yet-unbounded world, a *cosmos* in which to dwell, and to which to attribute meaning and value. These romantic claims and interests, as pursued by the big bang cosmologists, do interact with the ecological crisis discourse and questions of locating an intrinsic value in the physical world of our direct experience, as we will see, but not, I will argue, in the way in which Tucker and others would claim. By revisiting a critique leveled against philosophical world-building by another philosopher, Friedrich Jacobi, and applying it to our own neo-romantic cosmologists, we can begin to tie the two contemporary discourses on "nature" as a whole – the cosmological and the ecological – together in a more meaningful way.

I will set the stage in Chapters One and Two by laying out more of the historical and critical context in which I assess this study best fits. In Chapter One, I will lay out some of the rudiments of the early German romantic philosophy of nature and cosmological thinking most relevant for our later arguments, as represented in the philosophy of Schelling, Hölderlin, Schlegel, and Novalis. In Chapter Two, I will note a few historical legacies of and continuities with early German romantic philosophical thought in other, later iterations of romanticism, in modern scientific fields such as evolutionary biology, and in philosophical and theological fields such as process thought and process theology. In Chapter Two I will

also return to the somewhat sprawling critical discourse I have been discussing above, in order to locate this study more precisely vis-à-vis other approaches being taken in Science & Religion.

Chapters Three and Four offer my analysis of big bang discourse as a re-instantiation, in a new form, of early German romantic philosophy of nature. In Chapter Five, we address how the "nature" of big bang cosmology, once understood in this light, potentially interacts with normative calls from the ecological crisis discourse for new ways of orienting the human being in the physical world, and articulating the intrinsic value of the physical world of our direct experience. The neo-German romantic cosmos of modern scientific cosmology, I will argue, is not well-suited as a path to locating this type of intrinsic value. Since adopting the neo-German romantic approach is a philosophical and aesthetic stance, however – rather than part of anything discovered, or in principle discoverable, via the scientific method – it is a philosophical argument alone whether to be bound to it. This is true even while remaining committed to scientific realism with respect to big bang cosmology and physics, and while remaining, as I have noted, in an atheistic framework. I seek to build on the critiques of neo-Spinozism and all forms of speculative naturalism put forward by Jacobi, extending his theistic critique of the inherent nihilism of using reason to understand the really existing world into the naturalistic frame, and gesturing towards future possibilities of developing what Jacobi called his "philosophy of non-knowledge" in directions suited to the demands of the ecological crisis. In the Conclusion, I will recapitulate my findings and further sketch some of the possible motivations for follow-up work along these lines. The idea of redefining the "nature" of science as inherently limited by a heterogeneously, rather than monistically, conceived physical universe, is a speculative idea which will require future development, but the current study, including the consideration of a non-theistic extension of Jacobi's line of argument, does provide some reasons to anticipate that it could bear fruit.

Chapter One

Thinking toward the Infinite: The early German romantic cosmos

Introduction

In the preceding Introduction, I specified the goal of this thesis: to argue that big bang cosmology utilizes a re-invented form of early German romantic philosophy of nature, and show, in part via Jacobi, how this influences cosmology's prospective environmental ethics or valuing of the physical natural world. This chapter is devoted to elucidating some of the most important elements of early German romantic philosophy of nature in situ, as it was first developed, focusing on those most cosmological elements of it, which we will later see reappear. The big bang cosmologists will of course re-invent these ideas and present them in a new, scientifically-framed manner. But the continuity in the approaches is deep and far-reaching enough to satisfy the characterization of big bang cosmology's philosophy of nature as a neo-German romantic one.

In this first chapter, we will begin by showing how the early German romantic philosophy of nature, contained in the writings of Hölderlin, Novalis, Schlegel, and Schelling, arose in and responded to an atmosphere shaped by preceding (and ongoing) debates over the rules and ethical outcomes of philosophy, and even something of a crisis of reason itself, as Beiser

holds[20]. We will then proceed to review these romantics' basic philosophy of nature – delineating the main epistemological, ontological, "new mythology" and historical approaches they employed – and the prospective environmental ethics of the cosmology which results.

All four philosophers had wide interests, and besides Schelling are still better-known as poets, writers, and/or critics than as philosophers per se. I am only able to consider them here as the main contributors to a certain formulation of nature which will reappear in a new form in modern scientific cosmology over a century later; this of course does not equate to a full study of their overall philosophy, or of their artistic or critical works.

From among the wide-ranging secondary scholarship on these thinkers, I have drawn most support from Beiser, Nassar, Thielke, Gare, and at times Bowie (who does not classify Schelling as a romantic but at times seems to ascribe to him romantic positions). Nassar's work *The Romantic Absolute* (2014), in particular, helpfully draws attention to the way in which epistemology and ontology cannot be separated in the romantic approach (she does not include Hölderlin), as their efforts to think nature as the absolute required the creative intertwining of them. Beiser, in works like *German idealism: The struggle against subjectivism, 1781 – 1801* (2002), and *The Fate of Reason* (1993), offers a reading of the romantics as even more heavily engaged in metaphysics and ontology than they are in Nassar's view. Both readings are helpful for my own, "cosmological" reading of the early German romantics, as is, e.g., Gare's reading of Schelling's *Naturphilosophie* as an effort to try to move philosophy as a whole from thinking from the standpoint of Kant's too-isolated subject, the "standpoint of reflection," into thinking from the "standpoint of production". This seems to be a fair characterization of one of the philosophical goals held by all four thinkers, in different ways. What is being "produced", in the romantic conception, could be human thought itself, notably as it must always "begin" with the direct intellectual intuition (not theorizing) of its own ground in being or nature, whose always-present existence "before" thought means nature's existence as such lies permanently beyond conceptual

[20] Cf. Frederick Beiser, *The Fate of Reason: German philosophy from Kant to Fichte* (Cambridge, MA: Harvard University Press, 1993).

representation[21]. The production of art could also be directly experienced as a standpoint of philosophy, and ideas about – and the practice of, for all except Schelling – art-making and art-intuiting, occupied a central role in their philosophy. The always-elusive highest goal would be, of course, learning to think from Nature's own standpoint of production "making" nature, or, as long as this remained impossible for the finite human subject to grasp, at least learning to see nature in terms of its "production" by the ungraspable mind-like unity, Nature. This, of course, borrowed from neo-Spinozan conceptions, reworking in a more empirical, temporal mode Spinoza's *Natura naturans-natura naturata* relation[22].

Some of the differences which exist among the readings of these philosophers in the secondary scholarship doubtless comes from looking at the question of these four thinkers' epistemology, which is possible to interpret as either preserving more, or less, Kantian wariness of speech of the whole of nature. Nassar's reading, again, seeks to emphasize both their critical awareness, but also their willingness to depart from Kant and hold an idea, however imperfect, of nature as a whole as a goal. This seems necessary, if we are to read these thinkers as holding any metaphysical or ontological notions regarding really existent nature-as-unity at all, while also not seeing them as precritical or naïve realists. Frank, in works like *The Philosophical Foundations of Early German Romanticism* (2004), reads Hölderlin, Novalis and Schlegel as more skeptical in terms of their epistemology, and as more wary of forming philosophical notions of reality or nature as unity. Frank and Bowie, and to some extent Larmore, treat of Schelling apart from the other three[23], and the other three as prone to focus on the dilemma of the subject situated amidst a type of being which is wholly inaccessible, fully extant before and beyond the subject and possessed of such "radical transcendence … in relation to consciousness," Frank writes, or at least such total "information wealth in excess of our descriptive capacities," that it is "inexhaustible"

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[21] Arran Gare, "Natural Philosophy and the Sciences: Challenging Science's Tunnel Vision," *Philosophies*, Vol. 3 (33), 2018, p. 110. Cf. also Nassar, " 'Idealism is nothing but genuine empiricism': Novalis, Goethe, and the ideal of romantic science", *Goethe Yearbook,* XVIII, 2011, pp. 80f., re Novalis on this point.

[22] Gare, *op. cit.,* "Natural Philosophy", p. 104. Cf. also Andrew Bowie, *Schelling and Modern European Philosophy: An introduction* (London: Routledge, 1993), p. 13, p. 35.

[23] Cf. Andrew Bowie, "Friedrich Wilhelm Joseph von Schelling", *The Stanford Encyclopedia of Philosophy* (Fall 2016 Edition), Edward N. Zalta (ed.); or Bowie, *op. cit., Schelling and Modern*.

by "means of our interpretations[24]". Frank reads Schelling as far more willing to try to "take hold" of the absolute using reason, though he also attributes to him a "combination of ontological monism and epistemological realism" somewhat akin to that of Schlegel and Novalis[25].

It is clear, if we press into the issue of what their epistemological stance (particularly vis-à-vis nature understood as unity, and as being) precisely was, that there are multiple readings possible of these thinkers. Thielke observes that even Schelling sought to avoid dogmatic metaphysics (which the other three avoided completely); Schelling was "instead attempting the admittedly difficult task of defending monism" in light of Kantian critical philosophy[26]. In addition to conceiving of these thinkers as striving to occupy the standpoint of production rather than reflection (per above), we can also retain this tension-filled notion of a critical monism, also present in Bowie's reading of Schelling and to some extent Nassar's readings of Schlegel[27], as a useful one for the cosmological reading of the romantics being undertaken in this thesis.

The tensions sometimes visible within early German romantic philosophy of nature (with the varying secondary readings of their works these tensions so readily allow) are also reflected in, and perhaps furthered by, these German thinkers' interest in deliberately breaking down standard divisions in philosophy between, e.g., realism and idealism, or between empiricism and rationalism, even deliberately exploring a kind of meta-philosophical view at times, in order to gain additional insight (into, e.g., how knowledge

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[24] Manfred Frank, " 'The Difficult Step into Actuality': On the Makings of an Early Romantic Realism", *Comparative and Continental Philosophy*, Vol. 8 (2), 2016, p. 212, attributing this view to Novalis and Schlegel. Cf. also Manfred Frank, *The Philosophical Foundations of Early German Romanticism*, trans. Millan-Zaibert, Elizabeth (Albany, NY: State University of New York Press, 2004), p. 28. For Larmore on Hölderlin and Novalis, cf. Charles Larmore, "Hölderlin and Novalis", in Karl Ameriks, Ed., *The Cambridge Companion to German Idealism* (Cambridge: Cambridge University Press, 2017), pp. 205 – 226.

[25] Frank, *op. cit., Foundations,* p. 24, p. 55, p. 56 for quotation. Cf. also Frank, *op. cit.,* "Difficult Step", p. 199.

[26] Peter Graham Thielke, "Who's Who from Kant to Hegel II: Art and the Absolute", *Philosophy Compass,* 5 (5), 2010, p. 400. Bowie claims this as well, cf. *op. cit., Schelling,* p. 5.

[27] On Schlegel, cf. Dalia Nassar, *The Romantic Absolute: Being and knowing in early German Romantic philosophy, 1795–1804* (Chicago: University of Chicago Press, 2014), p. 157. On Schelling, cf. Bowie, *op. cit., Schelling and Modern,* p. 34, p. 31.

changed through time, a particular interest of Schlegel's). They derived new names for their approach like Novalis's "magical idealism" (sometimes "magical realism") wherein, as Wanning notes, we can see that Novalis is convinced that "poetry … transforms concrete nature into a wealth of self-encounters of the mind" and thus metaphysics itself can also become a kind of "poetry[28]". At the same time as they strove to make philosophy more aesthetic, there was also, in contrast, *one* kind of absolute knowledge which Schelling called a " 'knowledge which I call mine' " which is actually also " 'a real, a true knowledge[29]' ": *that* we are [all] directly *of* the infinite absolute, though we cannot represent this in reason's usual concepts. Hölderlin and Schlegel also had their versions of the one real, true knowledge: for Hölderlin, the single intellectual intuition of "unity with all that lives", the knowledge that the "objective as such, and also the subjective as such, are only a condition of the primally-one[30]", as he wrote; for Schlegel, the position that despite the "infinite separation between consciousness and the Absolute", as Bullock puts it[31], philosophy nonetheless takes place in the endless effort of the "I" to reach it or conceive of just this absolute itself.

It is thus not a coincidence that romantic philosophy in general remains one of irresolution, tension, and incompletion, partly by design for philosophers who saw philosophy as "striving", approximating, and ever-developing (per below), and we should not look to falsely resolve their position in one way or another. This very tension is why simply calling them early German romantic philosophers is arguably a more useful label than the "absolute idealist" term Beiser would apply. Beiser's attribution to our four thinkers of

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[28] Berbeli Wanning, "Poet and philosopher: Novalis and Schelling on nature and matter," *Ecological Thought in German Literature and Culture,* Dürbeck, Gabriele, et al., Eds. (Lanham, MD: Lexington Books: 2017), p. 47.

[29] Bowie, *op. cit., Schelling and Modern,* p. 61, citing Schelling (I/6 140) in his *System of the Whole of Philosophy and of Naturphilosophie in Particular* (1804), or the "Würzburg System" as Bowie refers to it.

[30] Hölderlin, Untitled fragment, in Jeremy Adler & Charlie Louth, Trans. & Eds., *Friedrich Hölderlin: Essays and Letters* (London: Penguin, 2009), pp. 303-304.

[31] Marcus Paul Bullock, "Eclipse of the Sun – Friedrich Schlegel, Walter Benjamin, from new mythology to the theory of new history", ProQuest, 1980, pp. 212 – 213.

absolute idealism[32], indeed, is perhaps best interpreted simply to remind us of this tension inherent in their thought: they would include an absolute (which was also Nature), but realized that philosophy remained trapped in the world of idea and concept tied to the finite, limited subject. Still, while ideas could never properly grasp the absolute, they also again could not be completely separated from it (contra Kant). This creative tension is what makes their philosophy unique, and, as Nassar argues, so prone to combine epistemological and ontological concerns into one, in reflection of their concern with always trying to elucidate the unity *and* distinction between being and knowing[33]; arguably, calling them "absolute idealists" can make their approach sound too settled.

In order to understand more of the context which shaped and informed this philosophy of nature, including how and why they embodied a special kind of turn toward nature and away from Kant and Fichte[34], while also, again, seeing themselves as remaining bound by some of Kant's critical insights[35], we will turn next to the Spinoza Controversy and the beginning of the early German romantic period.

The Spinoza and atheism controversies: Jacobi's gauntlet

The years from 1781 to 1794, which formed the decade-plus leading up to the emergence of early German romanticism in 1794 in the same year Fichte began teaching in Jena, was a decade of response by German thinkers to two dominant philosophers: Kant, whose first

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[32] Cf. Frederick Beiser, *German idealism: The struggle against subjectivism, 1781 – 1801* (Cambridge, MA: Harvard University Press, 2002), e.g. p. 355; and Frederick Beiser, "The Paradox of Romantic Metaphysics", in Nikolas Kompridis, Ed., *Philosophical Romanticism* (London: Routledge, 2006), pp. 217 – 237.

[33] Nassar, *op. cit., Absolute,* cf., e.g., pp. 259 – 260.

[34] Cf. e.g. Dalia Nassar, "Spinoza in Schelling's early conception of intellectual intuition", in *Spinoza and German Idealism,* Förster, Eckart, & Melamed, Yitzhak Y., Eds., (Cambridge: Cambridge University Press, 2012), p. 155, regarding Schelling's turn from Fichte.

[35] Again, for this point, cf., e.g., Nassar on Schlegel's maintaining a " 'critical', or post-Kantian, philosophical comportment without, however, accepting the Kantian or Fichtean limits of knowledge or their understanding of the relation between mind and reality," cf. Nassar, *op. cit., Absolute,* p. 157; or cf. Bowie, who notes that Schelling at times would speak about "nature in itself, albeit whilst acknowledging certain of Kant's strictures" insofar as he foregoes simple "*dogmatic* assertions about nature in itself", trying to thread the needle by hewing to theories about subjectivity in nature, cf. Bowie, *op. cit., Schelling and Modern,* p. 34, p. 31 (emphasis added).

Critique was published in 1781, and Spinoza, whose philosophical pantheism was reappearing (in perhaps a distorted form) in the open after many decades as a rising subterranean influence[36] [37]. Kant and Spinoza were seen as the two main choices on offer to those in German academic and theological circles concerned that, as Beiser describes the problem, the "authority of reason" to continue to supplant revelation as the wellspring of the West's efforts to "justify morality, religion, and the state" and "at least in theory, explain everything in nature" was no longer guaranteed if tied to more traditional (now-undermined, in part by Kant) Enlightenment versions of reason[38].

For Beiser, this broader question of the authority of reason was the real animus of the Spinoza controversy, which took place during this same tumultuous time in German letters, and even served as one of its most important concrete expressions. One of the main protagonists, or antagonists, in this controversy, was Jacobi. Jacobi was centrally concerned not with whether Kantianism versus neo-Spinozism offered more promise of shoring up reason, but with elucidating how and why neither offered a viable path.

Jacobi contributed to the stirring of three public debates or "controversies," during the period 1785 – 1812. We will focus here upon the first two, and particularly the first, which becomes the most famous and influential over a generation (or more) of German thinkers, including the early German romantics with whom we are concerned. The themes of all three controversies are in any case fairly consistent[39].

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[36] Beiser, *op. cit., Struggle,* p. 1, p. 48, pp. 50f..

[37] Giovanni in Jacobi & Giovanni, *op. cit.*, p. 8.

[38] Beiser, *op. cit., Struggle,* p. 1.

[39] At times, the term "pantheism controversy" is used interchangeably in the scholarship with "Spinoza controversy", and/or used to refer to the 1785 – 1789 episode; cf., e.g., Julia A. Lamm, "Romanticism and pantheism" in Fergusson, D., Ed., *The Blackwell companion to nineteenth-century theology* (Chichester, UK: John Wiley & Sons, 2010), pp. 172f; or Shane Weller, *Modernism and Nihilism* (Basingstoke: Palgrave Macmillan, 2011), pp. 20f., for these alternate terms. Burckhardt calls all 3 controversies the Spinoza Controversy or Spinoza Quarrel rather than the pantheism controversy (cf. Burckhardt 33).

The Spinoza Controversy (1785 – 1789)

The Spinoza Controversy erupted in 1785, when Jacobi and Mendelssohn published warring accounts of whether their mutual friend, the playwright G. E. Lessing, had been a Spinozist, and if so, what that exactly entailed. Mendelssohn's essay was called "Morning Hours of Lectures on the Existence of God", and Jacobi's "Concerning the Doctrine of Spinoza in Letters to Herr Moses Mendelssohn", usually referred to as the Spinoza Letters or *Spinozabriefe.* In 1786, Mendelssohn replied with "To Lessing's Friends", and Jacobi with "Reply to Mendelssohn's Accusations concerning the Letters on the Doctrine of Spinoza[40]".

A partly related publication came in 1787 with Herder's *God, Some Conversations,* in which Herder presents his view of Spinoza's philosophy with the stated, overt aim of rehabilitating Spinoza from [Jacobi's] charges of atheism, and re-situating Spinoza within the new post-Newtonian physics based less on "corporeal matter" and more on energy and "active or interactive forces[41]". The newer physics was to help "correct" Spinoza's use of what for Herder are Cartesian-influenced and now-obsolete categories of thought and extension[42], categories partly responsible for Spinoza's mis-construal as a materialist[43]. Herder's reading of Spinoza renders Spinoza's God the source of "an infinite number of forces" behind both thought and matter[44]. He tries to define Spinozan necessity as not blind, but as an expression of this higher type of intelligence, stating that a true picture of Spinoza's divine "cosmic system" must elicit an "admiration [which] is rational", replacing "devout but empty wonder[45]".

In 1789, Jacobi published a second edition of the *Spinozabriefe*, in which he added some more replies to Mendelssohn and some direct critiques of Herder in response to *God, Some*

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[40] Cf. e.g. David Bell, *Spinoza in Germany from 1670 to the Age of Goethe* (London: University of London Institute of Germany Studies, 1984), e.g., p. 71, or Giovanni, *op. cit.*.

[41] J. G. Herder, *God, Some Conversations,* trans. Burkhardt, Frederick H. (Indianapolis: Bobbs-Merrill, 1940 [1787]), pp. 102 – 103 (Conv. II, no. 450); pp. 91 – 92 (Conv II, nos. 432 – 433); p. 95 (Conv I); see also Conv. II, no. 438.

[42] Herder & Burckhardt, *op. cit.,* pp. 101f. (Conv. II, nos. 447f.).

[43] Herder & Burckhardt, *op. cit.,* p. 226 note (457) (1), Regarding Conversation II no. 457.

[44] Herder & Burckhardt, *op. cit.,* p. 103, Conv. II, nos. 449 – 451.

[45] Herder & Burckhardt, *op. cit.,* pp. 131 – 132, Conv. III, no. 490.

Conversations, which he called more of the increasingly popular "poetical philosophy which likes to waver midway between theism and Spinozism[46]". Jacobi faults Herder's understanding of Spinoza simpliciter, too, which he holds distorts Spinoza's positions[47]. (At the same time, Herder had exercised a great influence on Jacobi as well, and one scholar holds that these critiques have the air of Jacobi protesting too much[48].)

Jacobi also included, in the second edition, excerpts from *On the Cause, the Principle, and the One* by Giordano Bruno, intending him as another object lesson in the difficulties arising in any monistic system of thought. Another new supplement in the 1789 edition of the *Spinozabriefe* was a letter from the Dutch philosopher Hemsterhuis[49], who writes of how science leads to atheism, in that in interacting with nature in the framework of our own ideas, we tend to forget that they are superimposed by us, leading to "a greater intellectualization of matter, and hence for an even more compelling illusion that [our constructed] nature is alive and self-contained", in Giovanni's paraphrase[50].

At issue in this highly influential and long-rippling controversy was the status not just of Spinoza, but of philosophical naturalism in general, including as a replacement, as Jacobi feared it would become or was becoming, for religion and faith. Jacobi had studied Spinoza's work in some depth, and admired it greatly as an exhibition of rational thought, but he assessed that assuming even this philosophy to be a true representation of the really existent world must always entail pantheism, atheism, and nihilism.

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[46] Jacobi, *op. cit.,* ("Concerning"), p. 364: pp. 338-339.

[47] Cf. e.g. Jacobi, *op. cit.,* ("Concerning"), pp. 365 – 366. Bell points out that Jacobi presents Spinoza as consistent – too consistent to need, for example, Herder's interpretation or updating; cf. Bell, *op. cit.,* pp. 81 – 82.

[48] Giovanni in Giovanni & Jacobi, *op. cit.,* p. 100.

[49] A Dutch philosopher and writer on feeling and aesthetics who resisted formal philosophy, Hemsterhuis influenced Jacobi, Herder, Novalis, and Schlegel. Cf. e.g. H. Moenkemeyer, "François Hemsterhuis. Admirers, critics, scholars," *Deutsche Vierteljahrsschrift Für Literaturwissenschaft Und Geistesgeschichte,* 51 (3), Sept. 1977, p. 505.

[50] Giovanni in Giovanni & Jacobi, *op. cit.*, p. 361.

Jacobi's main preoccupation with critiquing Enlightenment reason, which in some ways put him in sympathy with thinkers like Herder, Hemsterhuis, and Goethe, was, as Giovanni states, his conviction of "the inability of philosophical reflection to reach out to existence[51]".

In the *Spinozabriefe* Jacobi discusses the fatalism and materialism which results from removing final causes, leaving the human being reduced, even in a state of emotion or appreciation of beauty, to feeling he is merely "witnessing" "blindly self-developing forces" at work, and suffering only the "illusion" that he is acting out of emotion or his will[52]. Jacobi is convinced this is a deception, not the way the world is, and attributes this self-deception to the "I" trying to, as it were, think the world. For Jacobi, the construction of the world using reason entails an unavoidable *nihilism* – Jacobi being among the first to use this term in something like its contemporary sense[53]. For Jacobi, in order to create a "world of reason" we "appropriate the universe by tearing it apart, and creating a world of *pictures*, ideas, and words, which is proportionate to our powers, but quite unlike the real one. We understand perfectly what we thus create, to the extent that it is our creation", but "whatever does not allow being created in this way, we do not understand[54]".

Another error comes even before the "tearing it apart": the "I" pulls himself away from the real world around him, characterized not by an "I" but by our intuition of the "Thou": our relations with both God and the external world (and other people), whose reality we can know "with the very same certainty with which we become aware of ourselves, for without the Thou, the *I* is impossible[55]". For Jacobi this pulling away is always an error, because it sets us up to convince ourselves we can be cognitive world-builders, when we are, as it were, only ever to perceive reality as world-receivers. Any insistence that we can include the full existence of the world as such in any conceptual schema this false "I" thinks that it builds, could only ever mean the world's annihilation as it really is experienced[56], including

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[51] Giovanni in Giovanni & Jacobi, *op. cit.,* p. 9.

[52] Jacobi, *op. cit.,* ("Concerning"), p. 189.

[53] Cf., e.g., Lamm, *op.cit.,* pp. 172f.; Weller, *op. cit.,* pp. 20f..

[54] Jacobi, *op. cit.,* ("Concerning"), p. 370.

[55] Jacobi, *op. cit.,* ("Concerning"), p. 231.

[56] Jacobi, *op. cit.,* ("Concerning"), pp. 372f., including Jacobi's footnote to no. 419, pp. 373 – 374.

the annihilation of the type of communion we had with all the "Thous" of our non-conceptual acquaintance. He wants the real, actually-existent world to be seen as "necessary" in this way, not for Spinozan, within-the-frame reasons deriving from the definition of "substance" or even "God".

Jacobi envisions the scientist's job being to "unveil *existence*, and to reveal it," but cautions in a Hume-ian manner that the scientist cannot take his "obsession with explanation" beyond where it can reach; he must not let himself be blinded by the false sense of absolute or complete explanation of all things which can come from his "*joining* and *hanging* together only what is explainable in things[57]". Drawing from Helvetius and Pascal as well, he notes the basic impossibility of fully proving anything, and the need to understand that even reason itself is based on a kind of faith[58].

Jacobi held we instead require a position he would only later, in 1799, christen his "non-philosophy" of "*non*-knowledge[59]", but which is already evidently also his position here: what we require is an awareness of how little philosophy can say about what really is. Philosophy's ability to reach the really existent always reduces to nothing more than the ability to say, as he writes in the *Spinozabriefe,* simply some formulation of "whatever is, is[60]". The actual existence of the world cannot be the topic of philosophizing, in other words; the "complex that we call *nature*" is only defined through various conditions we invent for it and then place upon it and while we may be able to erect these and take them away again, this has naught to do with being as such[61].

For Jacobi, this means that supernatural causes must come to explain the world's existence. Yet his arguments about the annihilation of the world for a concept we choose, irrationally

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[57] Jacobi, *op. cit.,* ("Concerning"), pp. 194-195.

[58] Cf., e.g., Jacobi, *op. cit.,* ("Concerning"), nos. 162 – 163, p. 230; nos. 180-181 p. 237; Giovanni's note in Jacobi & Giovanni, *op. cit.,* p. 601, note no. 77.

[59] Cf. Jacobi, "Letter to Fichte", in Friedrich Heinrich Jacobi, *The Main Philosophical Writings and the Novel* Allwill, trans. Di Giovanni, George (Montreal & Kingston: McGill-Queen's University Press, 2016 [1994]), e.g. p. 501.

[60] Jacobi, *op. cit.,* "Concerning", nos. 416 – 422, pp. 372f., especially Jacobi's footnote to no. 419, pp. 373 – 374.

[61] Jacobi, *op. cit.,* "Concerning", nos. 424 - 430, p. 376.

(for Jacobi), to believe in instead, have interesting potential non-theistic extensions (or versions) as well. For example, while he calls the supernatural something which "cannot be understood through concepts" and "cannot be apprehended by us in any way except as it is given to us, namely, *as fact* – It IS!", and refers to God[62], this same argument that philosophy must respond to any fact of existence with a simple "it is" could potentially quite straightforwardly be extended to refer to the physical world -as-fact, too. This is a point to which we will return in the last chapter.

In this most important sense of being limited to uttering "It IS!", *all* philosophical systems which attempt to cosmologize, or theorize reality using reason (no matter if they call themselves realist, idealist, critical, or any other name), are the same, for Jacobi. He wants to show, as Förster notes, that it is inherently impossible to attempt "a universal philosophical explanation or foundation" at all[63], and that if we try, we are inevitably taking up an even more fundamental position or act of nihilism. Jacobi rejects Spinoza finally not because of one or more problems he finds within Spinoza's system, but because his study of Spinoza convinced him that no form of philosophy could ever "reach out to existence".

The Atheism Controversy (1798-1799)

The atheism controversy refers to a swirl of negative attention which the idealist philosopher J. G. Fichte attracted around 1798, leading to his being accused of atheism and fired from his teaching position in Jena in 1799[64]. As Martin describes them, the "documents pertaining to … [the] so-called Atheism-Controversy are enormously diverse, comprising official documents … formal petitions from student organizations, denunciations from anonymous pamphleteers, poignant private reflections, and a series of ill-timed and ill-considered public statements from Fichte himself[65]." It was a prominent affair in the

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[62] Jacobi, *op. cit.,* "Concerning", nos. 426 – 427, p. 376.

[63] Eckart Förster, "Goethe's Spinozism", in *Spinoza and German Idealism,* Förster, Eckart, & Melamed, Yitzhak Y., Eds., (Cambridge: Cambridge University Press, 2012), p. 86.

[64] Wayne Martin, "Transcendental Philosophy and Atheism," *European Journal of Philosophy* 16:1 (2007), p. 109.

[65] Martin, *op. cit.,* p. 109.

German world of letters, and many well-known figures, including Kant, who publicly denounced Fichte, weighed in, as did Jacobi, in a 1799 "Letter to Fichte" (or "Open Letter of 1799[66]").

While the Letter does outline a great deal that he found objectionable in Fichte's form of idealism in particular, as he was particularly nonplussed by Fichte's idealism beginning with its famous "I=I" proposition as an indubitable truth from which to build and know an entire world[67], Jacobi was also, as Martin points out, using the attention being paid to the affair to "press his diagnosis of a trend toward nihilism in the purportedly enlightened philosophies of the day[68]", not limited to Fichte's alone.

The Letter again elucidates Jacobi's fundamental critique of mistaking *any* philosophy for a description of reality, the same position already laid out in its essentials in the *Spinozabriefe*. His arguments in this Letter return to faulting the very step of conceiving that the human mind can re-create the existing world using ideas – regardless of what *kind* of ideas these must be (rationally acquired, empirically acquired, critical-realist, etc.). World-building must proceed "by way of dissolution and analysis to *the state where nothing is outside the I*": but this act of "dissolving all *being into knowledge*[69]", is not only philosophically unjustifiable or incoherent, but also essentially nihilistic. Jacobi says this always proceeds through a "progressive annihilation through ever more universal concepts" which eventually allow us to specify a thing (or concept) exactly or scientifically; these kinds of concepts do not occupy the real world, and philosophy is only blind to this fact because it has forgotten all it had to destroy, to make this world-picture possible. This is a false or deceptive practice, because it simply is *not possible,* for Jacobi, to actually reduce reality to concepts of reason alone such as would be necessary to allow such a process to take place[70]. The things of our reason – of our *knowledge* – have no *existence,* nor can they address anything pertaining to the *existence* of anything outside the mind, at all. His criticisms went well beyond Fichte, again,

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[66] Giovanni in Jacobi & Giovanni, *op. cit.,* p. 10.

[67] This was meant to express the unity of the empirical self and a transcendental self.

[68] Martin, *op. cit.,* pp. 109 – 110.

[69] Jacobi, *op. cit.,* "Letter to Fichte", no. 18, p. 509.

[70] Jacobi, *op. cit.,* "Letter to Fichte", no. 18, p. 509.

just as they had gone well beyond Spinoza in the *Spinozabriefe.* He also called Fichte's idealism just another version or extension of Spinoza – an inverted Spinozism[71]. All systems of metaphysics reduced to the same kind of inherently nihilistic activity for Jacobi, if and when they were held to really apply to the existent world.

In one metaphor in the *Letter*, Jacobi compares Fichte's idealism – again, a stand-in for Spinozism and for, in Förster's phrase (cf. above), any way at all of attempting "a universal philosophical explanation or foundation" – to worrying exclusively about the origin of a stocking (something self-referentially explicable; something derivative) instead of the human leg which wears it[72]. Jacobi criticizes the notion that humanity could ever be fulfilled by such "love for the knowledge *of knowledge* as such, the insight into *seeing* as such, the doing of *doing* as such[73]" as would be required to find this "*mere weaving of weaving*" of the stocking worth knowing[74]. This is partly addressed to Schlegel, who had unfavorably reviewed Jacobi's philosophical novel *Woldemar* three years earlier, in 1796. In this review, Schlegel had expressed appreciation for some of Jacobi's positions expressed during the Spinoza Controversy, but had faulted Jacobi for not embracing what Schlegel asserted was the new value of philosophy: the " 'pure interest in knowledge and truth[75]' ".

This metaphor also echoes Jacobi's concern put forward in the *Spinozabriefe* with, per above, the tendency of all philosophical systems to reduce the world to "blindly self-developing forces" at work, and do so just because this is all that philosophical speculation on its own could grasp of the real world, not due to any real objective access to such a world as existing. Jacobi points out, once again, that to comprehend we must first destroy, and then try to re-create; but this leaves whatever we create a "*mere schema*" because it is idea,

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[71] Jacobi, *op. cit.,* "Letter to Fichte", nos. 3f., pp. 502f.

[72] Jacobi, *op. cit.,* "Letter to Fichte", nos. 18 – 23, pp. 509 - 511.

[73] Jacobi, *op. cit., "*Letter to Fichte", nos. 23 – 24, p. 511.

[74] Jacobi, *op. cit.,* "Letter to Fichte", no. 23, p. 511. Jacobi writes: "what would a mere weaving of weaving amount to, from the animals below up to the saints above?—I declare that my reason, my whole inner self, flies into a rage before a representation of this sort, it shudders in horror and fright; I recoil from it."

[75] Ernst Behler, "Friedrich Schlegel's Theory of an Alternating Principle prior to his Arrival in Jena (6 August 1796)", *Revue Internationale de Philosophie,* Vol. 50 (197/3), pp. 383 – 384, on 384 quoting Schlegel review of *Woldemar* as KFSA 2, 69.

or imagining, alone[76]. Jacobi calls the only meaning to be derived from such a schema a "naked logical enthusiasm" (another reference to Schlegel's *Woldemar* review) which both is the best description for this type of thought, and ends up being all the subject can find in his "world", which must be made up only of more of the same "*purely self-intending and self-contemplating activity … , without purpose, or point of arrival*[77]".

The Pantheism Controversy (1807 – 1812)

Slightly after our period of focus, after our four thinkers had already formulated the philosophy of nature under consideration, and after Novalis was already deceased (and Hölderlin no longer actively writing), Jacobi would turn his sights directly on Schelling himself, attacking him as one more example of the kind of Spinozist philosopher he found so objectionable. This controversy had begun brewing after a Munich lecture given by Schelling in 1807[78], which Jacobi perceived as, in Giovanni's gloss, Schelling attempting an "impossible synthesis of Platonism and Spinozism that passed off the pantheism of Spinoza under false Platonic pretences[79]". The controversy did not break into the public eye until around 1811 – 1812, and is referred to now as the "pantheism controversy"[80]. Aside from the lecture, Schelling's *Philosophical Investigations into the Essence of Human Freedom* of 1809 also spurred and influenced[81] Jacobi's initiation of the public side of the controversy, which came with his publication of *Divine Things and their Revelation* of 1811[82]. Besides this 1811 text, the other main text associated with this quite bitter-toned controversy was

[76] Jacobi, *op. cit.,* "Letter to Fichte", nos. 15 – 16, p. 508.

[77] Jacobi, *op. cit.* "Letter to Fichte", nos. 22 – 23, p. 511.

[78] Schelling's 1807 lecture, "Concerning the relation of the fine arts to nature", now translated as: "The Philosophy of Art, an Oration on the Relation between the Plastic Arts and Nature", was delivered after Schelling became president of the Munich-based Academy of Sciences; cf. Giovanni in Giovanni & Jacobi, *op. cit.,* pp. 10 -11.

[79] Giovanni in Giovanni & Jacobi, *op. cit.,* p. 631 note 27.

[80] Cf., e.g., Giovanni in Jacobi & Giovanni, *op. cit.,* pp. 8f., 630f.

[81] Cf. Giovanni in Jacobi & Giovanni, *op. cit.,* p. 633, note 31.

[82] Cf. P. Livieri, *F.H. Jacobi's "on divine things and their revelation": A study and translation* (ProQuest Dissertations & Theses Global, 2019), pp. 142ff.

Schelling's response, his *Memorial for Herr Friedrich Heinrich Jacobi's Writing 'of Divine Things etc.[83]'* of 1812.

Early German romanticism begins: The response to Jacobi and the influence of Herder

What would come to be known as the early German romantic movement (*Frühromantik*) is usually considered to have begun around 1794 and to have ended around 1808[84]. The first bookend coincides with the year Schelling and Hölderlin spent together in Jena, where Schlegel and Novalis would soon form their salon. The other bookend, 1808, marks the point – seven years on from his close friend Novalis's untimely death in 1801, and two years after Hölderlin, in worsening mental health, had stopped actively writing – that Schlegel converts to Catholicism, with Schelling also by this point beginning to gravitate away somewhat from his earlier romantic religious and philosophical positions.

In using all four thinkers as contributors to the early German romantic philosophy of nature we are seeking to here lay out, I am combining readings from those (e.g. Frank) who would treat Hölderlin, Schlegel, and Novalis as early German romantic philosophers but read Schelling as a German idealist, with those who would add Schelling to the list (e.g. Nassar, Rigby[85], and Thielke[86]) but sometimes remove Hölderlin. Beiser also views all four thinkers as early German romantic philosophers, pointing out that Hölderlin's important role in "formulating the romantic conception of nature" included influencing Schelling (his former seminary housemate) as well as Schlegel; while Schelling, Novalis, and Schlegel all mutually

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[83] Schelling's *Denkmal Der Schrift Von Den Göttlichen Dingen &c. Des Herrn Friedrich Heinrich Jacobi: Und Der Ihm In Derselben Gemachten Beschuldigung Eines Absichtlich Täuschenden, Lüge Redenden Atheismus* (Tübingen: In der J.G. Cotta'schen Buchhandlung, 1812.); no English translation locatable.

[84] Cf., e.g., Millán-Zaibert, *op. cit.,* "Revival", p. 102.

[85] Cf. Kate Rigby, *Topographies of the Sacred: The poetics of place in European romanticism* (Charlottesville: University of Virginia Press, 2004), p. 34.

[86] Cf. Thielke, *op. cit.,* p. 408n26.

interacted with and influenced one another [87] [88]. Aside from Hölderlin, who left Jena after a year, the other three were based in or retained strong connections with Jena, which became an important center of early German romantic thought, while also playing host to a number of competing ideas and schools, including the idealism being developed by Fichte on the basis of Kant.

As Rigby notes, defining "romanticism" in the literary sense largely occurred after the fact, in the middle of the 19th century[89]. Yet the term "romantic" was also deliberately explored by Novalis and Schlegel themselves, in a philosophical (and a new mythological) sense. Novalis spoke of the romanticizing power as the human mind's ability to "raise" or "lower" the world in order to understand its meaning, as when Novalis writes:

> The world must be made Romantic. … To make Romantic is nothing but a qualitative raising to a higher power. … By endowing the commonplace with a higher meaning, the ordinary with mysterious respect, the known with the dignity of the unknown, the finite with the appearance of the infinite, I am making it Romantic. The operation for the higher, unknown, mystical, infinite is the converse – this undergoes a logarithmic change through this connection – it takes on an ordinary form of expression. Romantic philosophy. Lingua romana. Raising and lowering by turns[90].

And part of this determination of finding a sense of the divine in nature, and preoccupation with the mind's ability to "raise" (romanticize) our understanding of it through a new kind of philosophy, can be seen as influenced by the romantics' interest in responding to the still-live and unsettled questions stirred up by the 1780s Spinoza Controversy.

Our four thinkers under consideration did not wish to side entirely with Jacobi's manner of critiquing Spinozism and all other reasoned naturalisms, but they sympathized with some of

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[87] Beiser, *op. cit., Struggle,* 397, 393, 467.

[88] Rüdiger Safranski, *Romanticism: A German affair,* trans. Goodwin, Robert E. (Evanston, IL: Northwestern University Press, 2014 [2007]), p. 105.

[89] Kate Rigby, "Romanticism", in *The Cambridge History of Romantic Literature*, ed. Vincent, Patrick (Cambridge: Cambridge University Press, forthcoming 2022), p. 1.

[90] Novalis, "Logological Fragments I" (1798), no. 66. In *Philosophical Writings,* ed. and trans. Margaret M. Stoljar (Albany, NY: State University of New York Press, 1997), p. 60.

his positions, such as opposing philosophy carried out from too strictly the standpoint of a purely thinking I, and his desire to preserve being as necessary and pre-discursive. By the time Jacobi publicly targeted Fichte's version of philosophy in his 1799 *Letter*, and even (per Frank and others) as early as 1795 – 1796[91], the romantics were already one step ahead of Jacobi on this count, having drawn many of the same conclusions about the non-viability of philosophizing using Fichte's methods[92]. Beiser notes that Hölderlin, for example, begins to break with Fichte by 1795 because he saw Fichte as overly elevating the principle of the self-conscious I over that of being[93]. Schelling by some accounts lingers longest in Fichte-ian themes; but even he had effectively broken with Fichte's approach by at least 1801[94] if not earlier[95].

For Beiser (as well as for Crowe referencing Novalis, and Frank in reference to the evolution of all four thinkers except for Schelling[96]), the Spinoza Controversy and Jacobi exerted a formative influence on the romantics. The romantics would strive, as we will see in the ensuing sections, to avoid sharing Jacobi's main conclusion – the need to forego reasoned naturalism as a real worldview (and, by implication, return to the tenets of received and revealed religion) – while agreeing with him on other points, e.g., the utter prior-ness of being to the processes of conceptual reason, per above, or, as Nassar points out, Jacobi's criticisms of Kant's thing in itself as incoherent[97]. Hölderlin perhaps agrees most fully with Jacobi[98], but even Hölderlin does not entirely forego speculation or conceiving of the one unity, nature, via reason, though he uses his art, letters, and fragments rather than formal philosophical work as his means to do so. The position held by all four, in varying ways, that

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[91] Cf. Manfred Frank, "What is Early German Romantic Philosophy?" in Nassar, Dalia, ed., *The Relevance of Romanticism: Essays on German Romantic philosophy* (Oxford: Oxford University Press, 2014), p. 17.

[92] On this point, to which we will return below, cf. Beiser, *op. cit.,* "Paradox".

[93] Beiser, *op. cit., Struggle,* p. 387.

[94] Bowie, *op. cit., Schelling and Modern,* p. 31.

[95] Nassar marks the break beginning around 1799, cf. e.g. Nassar, *op. cit.,* "Spinoza in Schelling's", p. 155.

[96] Cf. e.g. Beiser, *op. cit., Struggle;* Benjamin Crowe, "On 'the religion of the visible universe': Novalis and the pantheism controversy", *British Journal for the History of Philosophy* 16 (1), 2008, pp. 125 – 146; Frank, *op. cit., Foundations.*

[97] Nassar makes this and related points, cf. Nassar, *op. cit., Absolute*, p. 5, 92, 96, 120.

[98] Per Beiser, Hölderlin was influenced by both Spinoza and Jacobi, cf. Beiser, *op. cit., Struggle,* p. 379.

one must begin to think, as Schlegel writes (and as Nassar highlights as important particularly to his thought), "in medias res[99]", avoiding any effort at speculating as to being as such or other kinds of "beginnings" to nature other than metaphorically, can also be read as a significant concession to (or shared common ground with) Jacobi.

There were many other influences on the four thinkers, as well. One or more of Hölderlin, Novalis, Schlegel, and Schelling were deeply engaged, at various points, with responding to Kant, Fichte, Reinhold, Hemsterhuis, Hülsen, Schleiermacher, Goethe, and Herder, among others, from their own epoch; and Plato, Plotinus, and Spinoza, among others, from past epochs. Herder deserves additional (if necessarily brief) elaboration here due to his particular relevance to cosmological questions.

As noted above, Herder entered the Spinoza Controversy in 1787 with *God, Some Conversations,* and this led to part of his influence on the romantics' philosophy of nature. It was in that work that Herder presented a neo-Spinozan force-based monism, where all in nature was "*living*, or organic" and ultimately constituted of the same force, as Forster notes; this new paradigm helped unsettle mechanistic ideas as Herder's "metaphysical-religious monism" "swept through German philosophy" in the late 1700s and early 1800s, counting Schelling, Schlegel, and Novalis among its adopters[100]. Schelling, for Forster, clearly uses Herder-ian ideas of nature as "a self-developing hierarchical system of living forces grounded in the primal force, God[101]". Schlegel, for Nassar, takes on Herder's notions of the principles of "polarity and intensification (*Steigerung*)[102]" as central to nature. Hölderlin, for Beiser, possibly is influenced by Herder's notion of God[103]. Bell and Rigby also

[99] Schlegel wrote: "Viewed subjectively, philosophy, like epic poetry, always begins in medias res." Friedrich Schlegel, Friedrich Schlegel, *Philosophical Fragments* (1798 – 1800), trans. Peter Firchow (Minneapolis: University of Minnesota Press, 1991), no. 84, p. 28.

[100] Michael N. Forster, "Herder and Spinoza", in *Spinoza and German Idealism,* Förster, Eckart, & Melamed, Yitzhak Y., Eds., (Cambridge: Cambridge University Press, 2012), p. 79.

[101] Forster, *op. cit.,* pp. 81 – 82.

[102] Nassar, *op. cit., Absolute,* p. 146; cf. also p. 99n1.

[103] Cf. Beiser, *op. cit., Struggle,* p. 665 n21.; pp. 381f..

cite Herder's influence over German romantic philosophy[104], with Bell noting that Herder's mis-reading of Spinoza's system as somehow empirical or able to be joined directly with science, was also bequeathed to the romantics[105]. In addition to the content of his own ideas, Herder also influenced the romantics via influencing Goethe, who in turn exercised influence on these thinkers, especially Schelling and Novalis[106].

Herder's *Outlines of a Philosophy of the History of Man* (*Ideen zur Philosophie der Geschichte der Menschheit*) (1784 – 91) was also an important precursor to and influence on the romantic thinkers, as well as prefiguring elements of later works by Alexander von Humboldt[107] (cf. next chapter) and the big bang writers. In *Outlines,* Herder prefigures the type of inverted, reversed Neoplatonist model of nature (and history) which Schelling and to some extent the other three will adopt (as we will discuss in what follows). *Outlines* intertwines universal, solar-system, and planetary-wide natural history with human history, strongly evoking ideas of organic wholeness at work in nature and blending the material and immaterial (and mind-like) to evoke a natural cosmos which both evades our full understanding and provides tempting glimpses of its inner structure:

> From stones to crystals, from crystals to metals, from these to plants, from plants to brutes, and from brutes to man, we have seen the *form of organization* ascend … Here the series stops … he seems the highest point attainable by terrestrial organization.
>
> … The more elaborate the organization of a creature is, *the more its structure is compounded from the inferior kingdoms.* This complexedness begins underneath the earth, and grows up through plants and animals to the most complicated of all

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[104] Cf. Bell, *op. cit.,* p. x; Cf. Kate Rigby, "Nature, language, and religion: Herder and beyond," *Ecological Thought in German Literature and Culture,* Dürbeck, Gabriele, et al., Eds. (Lanham, MD: Lexington Books: 2017), p. 38.

[105] Cf. Bell, *op. cit.,* p. 111.

[106] Cf. Nassar, *op. cit., Absolute,* p. 22, 55f.; Rigby, *op. cit., "Nature, Language", pp.* 39 – 40; Forster, *op. cit.,* p. 59.

[107] Cf. Johannes Schmidt, "Johann Gottfried Herder: Misunderstood Romantic?", *The Palgrave Handbook of German Romantic Philosophy,* Brusslan, E. Millan, Ed. (Cham, Switzerland: Palgrave Macmillan, 2020), p. 180, as well, on this point.

creatures, man. … Thus there prevails in the invisible realm of creation, not only a *connected chain,* but an *ascending series of powers*[108] … .

For Herder, nature is progressive and innately temporal; "Nothing in nature stands still: every thing exerts itself, and pushes on"; nature contains a "series of powers urging onward … progressively unfolding themselves[109]". This, too, is a view we will see in Schelling and Schlegel, in particular.

To Build a [Better] Universe, I: Moving philosophy of nature beyond "the only true and thinkable *creation from nothing*"

In or around 1796, in a fragment now known as the "Oldest System-Program [*Systemprogramm*] of German Idealism", written as a group by Schelling, Hölderlin, and Hegel[110], the authors lay out a brief sketch of why and how philosophy, art, science, and ethics must and can become unified. The fragment implicitly references, in passing, Fichte's manner of idealistically creating a world beginning with the subject alone: once I posit "*my self* as an absolutely free being," the authors write, from this "free self-conscious being [*Wesen*] a whole *world* emerges at the same time – out of nothing – the only true and thinkable *creation from nothing*[111]".

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[108] J. G. Herder, *Outlines of a Philosophy of the History of Man* (*Ideen zur Philosophie der Geschichte der Menschheit*), Churchill, T., Trans. (New York: Bergman Publishers, London 1800/New York 1966 [1784-91]), pp. 107-108, emphasis original.

[109] Herder, *op. cit., Outlines,* p. 114.

[110] The "Oldest System Programme of German Idealism", 1796, trans. Andrew Bowie, contained in Andrew Bowie, *Aesthetics and Subjectivity* (Manchester: Manchester University Press, 2003), pp. 334 – 335 ("Appendix: The So-called 'Oldest System Programme of German Idealism' (1796)"). The authorship of this unsigned fragment is contested, with many tending to think it is Schelling's work and others attributing it to Hölderlin. To think of it as a group expression of romantic views then held by all three, as Safranski does, is a workable solution – cf. Safranski, *op. cit.,* p. 48. The same view of the authorship is espoused by Adler & Louth: cf. Jeremy Adler & Charlie Louth, Eds. and Trans., *Friedrich Hölderlin: Essays and Letters* (London: Penguin, 2009), p. xi.

[111] "Oldest *Systemprogramm"*, in Bowie, *op. cit.,* p. 334 (*recto*, first paragraph).

Their tension with Fichte, though, which per above already had them moving beyond his approach by this point, is also already in evidence[112]. While they are arguably implying, if only in passing, that Fichte's idealism is the only "thinkable *creation from nothing*", they are not committing to engage in such a project themselves. As noted above, they did not agree with his effort to seek a firm "first principles" type of foundation for knowledge; as Rigby notes, they were wary of his "subjectivism" and were not Fichte-ians proper, since the structure of the world always imposed upon the "I" a non-subjectivist approach to reality[113]. In *Systemprogramm*, the project they are hinting at embarking on is something closer to their new mythology of reason, focused on finding (or making) a renovated kind of physics, as well as broadening the role of [the sense of] beauty in defining the true. To the extent Fichte is evoked, it is to use him as a device to highlight their view that philosophy was entering a new[, post-Kantian] age, wherein it was impossible to pursue a traditional cosmology evoking deism, or any other account of the physical creation of the world from nothing. Fichte's idealism constituted one path of trying to continue to world-build from first principles, now using reason alone, but it was not a path they espoused. Their answer to the end of the availability of traditional accounts of the world is not Fichte-ian idealism, but a new way of re-thinking the physical world as one unified nature, intertwined, as we will see, with their "new mythology" of reason program. Science has an important role to play in this endeavor, again, as it is to reveal a nature which is already there and does not need to be conceptually "created". *Systemprogramm* states that as soon as we begin thinking, we immediately learn something fundamental about our moral unity with the physical world. "Here I will descend to the fields of physics," the authors state, and now "the question is this: how must a world be for a moral being?" They want to "give wings again to our physics which is progressing slowly and laboriously via experiments," proposing that "if philosophy gives the Ideas and experience the data we can finally achieve the grand physics which I expect from later epochs[114]". Again, because the romantics eschewed the

[112] Cf. Thielke, *op. cit.,* p. 401.

[113] Cf. e.g. Rigby, *op. cit., Topographies,* p. 106.

[114] "Oldest *Systemprogramm"*, in Bowie, *op. cit.,* p. 334 (*recto*, first paragraph).

Grundsatz or first principle[115] and its physical equivalent, they also lost it as a source or archetype of moral meaning, telos, and value in the world: by way of compensation, a higher kind of physics was to be found which could reveal a natural world intrinsically – always, already – suited to moral action (and valuation) by human beings.

As Thielke notes, *Systemprogramm* displays the "roots" of early German romanticism, with its mention of a new mythology of reason and its goal of joining the aesthetic sense with rationality (to which we will return below), and its, again, evidence of Hölderlin already "reacting against Fichte[116]".

Schelling would begin to try to work on the idea of a higher physics of nature, in his *Naturphilosophie* writings and elsewhere, and would also continue to explore where our inability to begin from real first principles left us vis-à-vis trying to reveal ever more of nature.

Like Hölderlin, and the other two thinkers, Schelling did not try to conceptualize the natural universe by first trying to posit for it any kind of "being" as an "originary substratum"[117]. Schelling specifies that since nature always already "is", for thought, there is not a need to try to philosophize its existence as such, which can (and must) simply be assumed a priori. We can still understand metaphorically how in their identity in the absolute, the "real or natural world" and the "ideal or divine world" are one, and consider this unity's idealized, primal splitting-apart as a type of "origin" required for the world, a "point" where the absolute "appears divided into two relative identities," for the first time, one of which is the "point of origin" for the real, the other for the ideal, world[118], but again, only metaphorically. Similarly to this position in *Bruno,* in an earlier work on *Naturphilosophie* Schelling writes that regarding nature "an original duality must simply be presupposed", a

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[115] Cf. Dalia Nassar, "An 'Ethics for the Transition': Schelling's critique of negative philosophy and its significance for environmental thought", in Anthony G. Bruno, Ed., *Schelling's Philosophy: Freedom, nature, and systematicity* (Oxford: Oxford University Press, 2020), pp. 238f.. Cf. also Nassar, *op. cit.* (*The Romantic Absolute*), pp. 90f..

[116] Thielke, *op. cit.,* p. 401.

[117] Friedrich Schelling, "First Division" in the *First Outline of a System of the Philosophy of Nature* (1799), 1 [78]. In Friedrich Schelling, *First Outline of a System of the Philosophy of Nature*, trans. Keith Peterson (Albany, NY: State University of New York Press, 2004), p. 14.

[118] Schelling, *Bruno,* no. 328, p. 222.

kind of idealized or logical posited first opposition or dynamism in which Nature becomes visible as nature; this is justifiable, in a rather circular way, for Schelling, because it is "the only condition under which an infinite is finitely presentable at all, i.e., the condition under which a Nature is at all possible[119]".

He draws (and adapts) additional notions from neo-Spinozism when needed, to flesh out what kind of infinite Nature we can begin by positing. He acknowledges that the Spinozan (or neo-Spinozan) type of monistic Nature relies on another, hidden "unconditional positing"[120] of Spinoza's own: the "conception of a connotation of all possibility[121]". While not stating what all possibilities are, Spinoza's totality qua idea effectively claims an objective truth does exist regarding all of what is possible, and this fact lets us make all the un-graspable-ness into a coherent whole set of possibles, even though we are too limited to know them all in fact. This way of combining intelligibility with opacity in the conception of the whole of nature is a conception of the world which will regularly reappear in all four romantic thinkers, though Schelling's philosophy remains by far the most formalized, developed, and voluminous. Beiser characterizes Schelling as trying to "rationalize and systematize" the absolute quality of nature, a theme which the other three thinkers deliberately approached only in fragments[122].

Still, Schelling shows, in his detailing and discussing how many rationalistic steps are unavoidable if we are to speculatively think of nature as a whole, that he is not interested in simply dogmatizing or systematizing as such, but in using his intuition to think through whether a system of the whole of nature, drawing from realism and idealism, physics and philosophy, is really potentially possible. He acknowledges that in addition to simply positing a Nature as always already existing, we also must posit in Nature an inherent "productive power", again sometimes resembling a primal force. We can discern this force (here echoing Herder) in the ability it seems as though Nature has to pour itself into

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[119] Schelling, *op. cit.* ("First Division" in *First Outline*), nos. 81-82, pp. 16 -17.

[120] Friedrich Schelling, "On the possibility of a form for all philosophy" (1794), trans. Fritz Marti, *Metaphilosophy,* Vol. 6 (1), January 1975, p. 15.

[121] Schelling, *op. cit.* ("On the possibility"), p. 15.

[122] Beiser, *op. cit., Struggle,* pp. 551- 553.

opposition with nature to make time and the world, but we cannot know it distinctly; we must make do with the best conceptual and metaphorical approximation we can. "The philosophy of nature does not have to explain the productive power of Nature," Schelling writes, "for if it does not posit this as originally in Nature it will never bring it into Nature[123]". The existence all around us of a persistent, permanent natural world is more possible evidence of this Nature's power, but its innate qualities are elusive to reason, except in metaphors such as that the physical world "would appear as mere points if Nature did not give them extension and depth by its own pressure"; they would "last only an instant if Nature did not at every moment shove into them[124]". We can see here that positing this power or force is also related to positing time as really active in and through nature, which we, as finite subjects, can do nothing but simply presume, not understand: elsewhere Schelling writes that time is " 'nothing but the totality appearing in opposition to the particular life of things[125]' ".

The *experience* of trying to philosophize nature does however give us at least one kind of starting-point or ground for a basic ontological and epistemological stance toward nature which departs from traditional philosophy's: Schelling writes that "The *I* think, *I* am, is, since Descartes, the basic mistake [*Grundirrtum*] of all knowledge; thinking is not my thinking, and being is not my being, for everything is only of God or the totality[126]". Nassar characterizes Schelling's approach as "grounding philosophy in Being, or *Dasein,* understood both as 'that which is' (nature) and as 'existence' (implying the human subject)[127]". This also recalls Schelling's one "real, … true knowledge" noted above.

The other three thinkers will also be prone to explore this new way of thinking in a nature with which the "I" knows it was once one. All four will in different ways seek to move

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[123] Schelling, *op. cit.* ("First Division" in *First Outline*), nos. 289-290, pp. 205-206.

[124] Schelling, *op. cit.* ("First Division" in *First Outline*), no. 290, p. 206.

[125] Bowie, *op. cit., Schelling and Modern,* p. 74 (citing Schelling as p. 200 of I/6, Würzburg).

[126] Friedrich Schelling, "*Aphorismen zur Einleitung in die Naturphilosophie*" (1806), *Aus den Jahrbüchern der Medicin als Wissenschaft,* Friedrich Wilhelm Joseph von Schelling's *Sämmtliche Werke*, Part I, Volume 7 (Stuttgart and Augsburg: F. G. Cotta, 1860), no. 44, p. 148. Translation by Bowie, *op. cit.,* "Schelling", NPN.

[127] Nassar, *op. cit.* ("An 'Ethics' " (2020)), p. 241.

philosophy more toward really thinking from the standpoint of production, whether trying to intuit the standpoint of the Nature which produces, or even just coming to a new understanding of human beings, works of art, and all of nature as a product of this absolute, Nature. Intellectual intuition was important for understanding this new kind of grounding and avoiding some, but not all, of Kant's limits on the subject's knowledge of nature; Schlegel held, in a view shared with Schelling, Hölderlin, and Novalis, that "Nature, the universe, can be felt and conceived of without mediation[128]". Schlegel saw infinitude[-as-such, or the absolute] and consciousness as being not just in direct contact, but as *solely* definable via their interplay[129]; for Schlegel "Only in relation to the infinite is there meaning and purpose; whatever lacks such a relation is absolutely meaningless and pointless[130]", and this characterized his view of what constituted worthwhile philosophizing of nature as well.

Similarly to Schelling, Hölderlin's main, unifying philosophical position was that "*Being* – expresses the connection of subject and object[131]". What was once unified must still be possessed of some version of unity: Hölderlin wants us to keep always in view "the necessary premiss of a whole of which object and subject are the parts[132]" that intuition reveals to us. There was no pure thinking thing, as Descartes would have it; there was only a mind which from the outset immediately knew itself as nature, as in Schelling's inverted *Cogito* noted above. From the "divided" feeling of subject and object, for Hölderlin, we can intuit there must once have only been a unity of both. For Hölderlin, the primal, inaccessible duality we can treat as our new everywhere and everywhen "first" layer of the world is this division between being and thought which happens prior to when philosophy can begin, and which requires art (particularly tragic poetry), intellectual intuition, and the sense of beauty to approach as close as we can, which can never be fully. This primal division is also reflected and symbolized by the inaccessible division (or transition) which

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[128] Friedrich Schlegel, *Philosophical Fragments* (1798 – 1800), trans. Peter Firchow (Minneapolis: University of Minnesota Press, 1991), no. 44, p. 98.

[129] Cf. e.g. Nassar, *op. cit., Absolute,* p. 156.

[130] Friedrich Schlegel, *op. cit., Fragments,* no. 3, p. 94.

[131] Friedrich Hölderlin, "Being Judgement Possibility" (1795), in Jeremy Adler & Charlie Louth, Eds. and Trans., *Friedrich Hölderlin: Essays and Letters* (London: Penguin, 2009), p. 231.

[132] Friedrich Hölderlin, *op. cit.,* "Being", p. 231.

must have occurred between non-conscious and conscious nature in history, carrying suggestions of the unknowability of the human future. Hölderlin's character Hyperion remarks of the human being, " 'To the plants he says, "I too was once like you!" and to the pure stars, "I will become like you, in another world[133]!"…' ".

With all these caveats to knowing nature directly as the absolute, and the admission of beginning their conception of nature as already embedded thinking products of nature (and ultimately Nature), the romantics' way of world-construction is still one of attempting to directly intuit and "reveal" the physical world already existing as the one Nature (or Nature-nature) to the extent it is able. Once the "I" intuits itself as one with this type of Nature-nature, whose existence, like that of the "I" itself, was already presumed in the very act of thinking anything at all, the romantic was free to, as it were, speak directly of nature as best as it was able, to "reveal" it, under guidance of the intuition. As Bowie describes Schelling's view, the most philosophy could ever offer was to explain "the logic of change, once there is a world to be explained", drawing on various new metaphors of organism, force and energy over old mechanistic ones; this philosophy of nature cannot ever "explain why there is a developing world at all[134]".

To Build a [Better] Universe, II: Knowing the cosmos in light of the absolute

As we have begun to lay out above, there was tension in the romantic manner of ideating the natural world as a whole. On the one hand, when speaking of it as a whole – which is not an empirical concept regardless of one's epistemology, and certainly was not one in the context of their efforts to think the whole as the absolute or Nature – the characteristics one attributed to it could not pass beyond metaphors or images, devices to think toward the infinite without making the mistake of claiming direct knowledge of it. On the other

[133] Friedrich Hölderlin, *Hyperion, or the Hermit in Greece* (1798), Howard Gaskill, Trans. (Cambridge: Open Book Publishers, 2019), p. 39.

[134] Bowie, *op. cit.,* "Schelling", NPN.

hand, these philosophers did tend to have insight into such traits of nature, sometimes in quasi-realist ways; or, in a safer, and more Kantian vein, would offer what it was like to *experience* nature as offering glimpses of its ultimate status as a Nature, as an absolute, or as being (i.e., as that beyond which nothing else "was"). These romantics claimed, in their different ways, direct experience of the physical world as just this type of unity, one possessed of an intrinsic order; as an organismic whole with a mind-like logic, implying that "mind" and "matter" were misleading divisions; ultimately, as a Nature ultimately identifiable with God, without God constituting a separate entity.

The contours, the scenery, of the universe, like its specific earthly places, were valued as symbols of this arrangement, for their relation to and participation in the whole, their revelation of the infinite in and through the finite. At the same time, the diversity was inviting to the mind because it suggested the creative plurality which sprang out of the unity.

The natural universe, as ultimately identifiable with the absolute, did not know or adhere to any limits except its own requirements; it could shape itself according to its own dictates, and space was seen as unending. At the same time, they also believed that because of the final unity of all things, and arguably because of the neo-Spinozan influence over their monism, there should be at least an in-principle ability of the human mind to "integrate" the "infinitesimals" of the world and human experience, into the higher unity behind them, even if we would never be able to achieve this in fact. Schlegel played with mathematical metaphors to express this goal[135]; it was also a goal of the new mythology (cf. below).

The romantics at times engaged in an updated form of the old practice, present in Western rational cosmology since the Presocratics, of ascribing to the whole of nature traits that resembled the human mind. In romantic philosophy, this took the form of a kind of celebratory and self-conscious seeking out of the subject-like elements of the physical world-as-nature, including the lawlike and the mathematical as well as the more qualitative, creative or artistic, forces. In Richards' view, Schelling's whole philosophy held nature "the

[135] Cf. John H. Smith, "Friedrich Schlegel's romantic calculus", in Nassar, Dalia, ed., *The Relevance of Romanticism: Essays on German Romantic philosophy* (Oxford: Oxford University Press, 2014), pp. 249f..

self's other kingdom, where the forces were familiar and the mind would meet its double, most beautifully displayed[136]". Beiser notes that what characterized the "ideal" for the romantics was *not* "the mental, subjective, or conscious" but the mind-like in the sense of being "rational, archetypal, or intelligible[137]". It is because both mental things and natural, physical things have this higher unifying quality that they can be seen as a unity. *Pace* Kant, it is *not* a distortion to see, e.g., the physical world as a harmonious "nature" or as though it has been ordered by something mind-like; it objectively is like this, and this explains our own minds and mental faculties, not the inverse. As speculative realist-tending philosopher Hamilton Grant puts it, "whereas analysis and synthesis were powers of the understanding for Kant, for Schelling, they are powers of nature[138]". Nassar points out that the romantic thinkers would ascribe to nature and humankind the same kind of abstractions, e.g. the same kind of reciprocally conditioning principles like infinite-finite or one-many[139]. Novalis in his novel *Henry von Ofterdingen* has a sage compare the human intellect to the human's allotment of "cosmic forces" under its control[140]. Thielke holds that Novalis saw mind and nature as continuous, with "matter … as an inchoate living force aligned with the developed force of mind", and that Schlegel, likewise, held that nature "incorporates " subject and object since the "Absolute is *both* real and ideal[141]".

One way the romantics themselves liked to acknowledge this tension between possible glimpses into the standpoint of nature-as-mind or even the standpoint of productivity of Nature, and our own limits as subjects, was in their recurring conception of knowledge of nature as always "transformative." Novalis writes: "if you are unable to transform thoughts into external things, then transform external things into thoughts," and that whomever can

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[136] Richards, *op. cit.,* p. 116.

[137] Beiser, *op. cit., Struggle,* p. 353.

[138] Iain Hamilton Grant, "Introduction to Schelling's *On the World Soul*", *Collapse* VI, R. Mackay, Ed. (Falmouth: Urbanomic, Jan 2010), p. 61.

[139] Nassar, *op. cit., Absolute*, p. 8.

[140] Novalis, *Henry von Ofterdingen,* trans. Hilty, Palmer (New York: Frederick Ungar Publishing Co., 1978 [1964] (1802)), p. 108.

[141] Thielke, *op. cit.,* p. 402.

carry out both kinds of "idealistic" "operations" "is a *Magical Idealist*[142]". Elsewhere, his idea of transformative realist-idealist insight into the world is conveyed through a metaphor of magic: "*Everything is* or *isn't magic.* The rationality of magic[143]", or "Transcendentalism is pure empiricism. The highest philosophy treats of the union of spirit and nature[144]". Even the combining of opposed ontologies or epistemological stances itself becomes a sort of meta-knowledge: "The complete concurrence of idealism and realism – with the most complete independence, furnishes the complete proof of the correct methodology for everything. Transformation of one into the other[145]". Of the seeming opposition between Fichte and Spinoza, he writes, "It is *immaterial* whether I posit the universe within myself, or myself in the universe. Spinoza posited everything outside – Fichte everything within"; and "Spinoza ascended as far as nature – Fichte to the I, or the person. I [ascend] to the thesis God[146]".

Similar views, if less poetically expressed, about the continuum between mind and matter, and between different paths to knowledge, are explored by Schelling, who was fond of stating the manner in which mankind could either proceed from nature to idea, or from idea to nature[147], and held, in this period, that idealism and *Naturphilosophie* formed complementary, mirror-image ways of knowing.

The attachment of joy and pleasure, even aesthetic delight, to knowing was important to the romantics, and was one of the prime ways of "seeing" nature as a unity. In a way quite similar to what we will see expressed by the big bang cosmologists, Schelling writes "Anyone who has not yet elevated himself to the level upon which the absolutely ideal is also immediately the absolutely real for him, possesses neither philosophical nor poetic

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[142] Novalis, *op. cit.* (*Notes*), no. 338, p. 51.

[143] Novalis, *op. cit.* (*Notes*), no. 37, p. 201.

[144] Novalis, *op. cit.* (*Thoughts on Philosophy and Physics*), p. 223.

[145] Novalis, *op. cit.* (*Notes*), no. 634, p. 114.

[146] Novalis, *op. cit.* (*Notes*), no. 633, p. 114; and Novalis, *op. cit.* (*Fichte Studies*), no. 151, p.55.

[147] Beiser writes, for the romantics, "We can … regard mind as highly organized and developed matter, matter as less organized and developed mind. As Schelling put the point: 'Nature should be visible spirit, and spirit invisible nature' (II 56)", in Beiser, *op. cit.,* "Paradox", p. 223.

sensibility[148]". For Schlegel the divine mind of Nature, the Absolute, is the "animating principle, the guide, the director of every scheme of civilisation" whether it is "recognised or disregarded[149]".

The romantics also speculated on the extent to which the whole, nature conceived as the product of Nature, might be reflected or revealed in science and mathematics, engaging not just with updating Newtonian paradigms into organic ones, but theorizing how science, mathematics, history and art might further reveal a unified grounding of everything in the one unity of Nature. For Schelling, experimental science was important because it seemed to potentially offer empirical proof of the existence of the unity among all things and between mind and nature. As Peterson writes, Schelling was interested in how "experimentation would not be possible without the employment of an idea of Nature," or unified whole, "nor the idea itself" working, or functioning, to successfully ground science, if it did not also really exist[150]. Schelling was keenly engaged with the sciences themselves, especially during this romantic period. Beyond his *Naturphilosophie* and its ruminations in speculative physics, he was also always experimenting with new ideas in chemistry and biology. In his *Naturphilosophie* he aimed to distinguish between a higher speculative physics, sitting above and closer to the absolute idea of Nature itself, than the lower, mechanical laws of nature. The monistic continuum between the ceaseless phenomena of nature, passed through these mechanical laws, into those of the universe's "higher" dynamics, "whose spirit," Schelling writes, "is expressed in the principle that views the dynamic as the single positive and original aspect of Nature, the mechanical only as the negative and derived aspect of the dynamical[151]".

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[148] Schelling, *Philosophy of Art*, Stott, Douglas W., trans. and ed. (Minneapolis: University of Minnesota Press, 1989 (1802 – 1805)), Chap. 2, Sec. 29, p. 35.

[149] Schlegel, "On the Limits of the Beautiful", trans. E. J. Millington, in *Aesthetic and Miscellaneous Works of Frederick von Schlegel* (Cambridge: Cambridge University Press, 2014 (1794)), p. 413, Schlegel's prefatory footnote.

[150] Keith Peterson, "Introduction," in Schelling, *op. cit.* (*First Outline of a System of the Philosophy of Nature*), p. xxiv.

[151] Schelling, *op. cit.* ("Third Division" in *First Outline*), no. 271, p. 192.

Any occasion of transforming something natural to reveal its connection with the universal and absolute, whether through uncovering various physical principles of natural law, or making of nature into art, were not subjective and distorting or artificial; these occasions were rather to be prioritized, as providing a kind of revelation of nature (and mankind), a showing of its (their joint) higher essence qua ultimately identifiable with God or the absolute[152].

Mathematics was a key to nature for Novalis (and Schlegel) because it could display self-grounded progression, suggestive of life-like, self-contained creative process that seemed to parallel human "cognition" seen as the same kind of "poiesis"[153] and thus might be able to be used to describe it in nature as well. Physics, for Novalis, could be seen as "*real* mathematics" because "Nature incessantly adds, subtracts, multiplies, raises to a higher power etc." and "The applied mathematical sciences show us Nature as a mathematician[154]". Schlegel wrote that "dynamics is the macrology of energy which, in astronomy, is applied to the organization of the universe. To that extent both could be called historical mathematics[155]". Novalis and Schlegel dreamed of holistic knowledge of nature; as Nassar notes, Novalis sought an "organic whole" corpus of knowledge expressing "relations among ideas", in his *Encyclopedia* project[156], which Rigby notes was designed by Novalis to "disclose the underlying unity of the cosmos[157]". Schlegel sought this knowledge via his "system of fragments", for Nassar; fragments which suggest both the whole unity and the difficulty (sometimes impossibility) of the subject of approaching it directly[158]. Millán (agreeing here with Beiser) agrees, characterizing Schlegel as ascribing to a "holism that

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[152] Cf. Nassar, *op. cit.,* "Idealism is nothing but", p. 73, regarding Schelling. As Nassar points out this was part of why he admired Goethe's approach to science so deeply.

[153] Bianca Theisen, "Romantic Myths of Myth: Myth as Autopoiesis", in Michael Bell & Peter Poellner, Eds., *Myth and the Making of Modernity: The Problem of Grounding in Early Twentieth-Century Literature* (Amsterdam and Atlanta: Rodopi, 1998), p. 20.

[154] Novalis, *Notes for a Romantic Encyclopedia* (1798 – 1799)*,* ed. and trans. Wood, David W. (Albany, NY: State University of New York Press, 2007), p. 195, from item 9 and item 11, 'Mathematics Notebook'.

[155] Friedrich Schlegel, *op. cit., Fragments,* no. 445, p. 92.

[156] Nassar, *op. cit., Absolute,* p. 5.

[157] Rigby, *op. cit., Topographies,* p. 141.

[158] Nassar, *op. cit., Absolute,* p. 5.

acknowledges not only a world of mechanical laws, that is, a realm of static, unchanging laws of nature, but also a world of processes of life, of genetic or organic laws[159]". This also implies that the human thinker can occupy the standpoint of production of nature via thinking in and through these laws.

Another of the various commutative archetypal properties mankind and nature shared included the enjoyment of freedom within a larger framework of necessity. These thinkers were opposed to Kant's view that nature was not free as man[160]. Nature was an "individual" in a sense, like man; a free and autonomous subject. As Schelling writes:

> Since Nature gives itself its sphere of activity, no foreign power can interfere with it; all of its laws are immanent, or Nature is its own legislator (autonomy of Nature). Whatever happens in Nature must also be explained from the active and motive principles which lie in it, or Nature suffices for itself (autarchy of Nature). They are both contained in the proposition: Nature has unconditioned reality, a proposition which is precisely the principle of a philosophy of nature[161].

This self-containedness and freedom of nature was important for all four thinkers, an attribute of its unity. Nassar points out that for Novalis, the physical ontological world had to be thought of as real for itself, not determined by or deriving from human consciousness, in part because it must be free, i.e., "*self*-determining", as well as being "an internally differentiated, active, and dynamic unity[162]".

Schelling also repeatedly describes the finite physical world as being the limit of the infinite "unconditioned reality" or absolute, as is also a recurring notion in Schlegel (cf. below); this, too, is a way of preserving a "free" connotation to its finitude. This conception is in many ways the direct forerunner of the big bang cosmologists' finite yet also unbounded and infinite universe. In situ, in romantic thought, it is clearly a panentheistic or pantheistic-

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[159] Elizabeth Millán, *Friedrich Schlegel and the Emergence of Romantic Philosophy* (Albany, NY: State University of New York Press, 2007), p. 143.

[160] Alexandre Guilherme, "Schelling's *Naturphilosophie* project: Towards a Spinozian Conception of Nature," in *South African Journal of Philosophy*, 29 (4), 2010, p. 373.

[161] Schelling, *op. cit.* ("First Division" in *First Outline*), nos. 81-82, pp. 16 -17.

[162] Nassar, *op. cit., Absolute,* pp. 23 – 24.

tending notion, linked with the notion of secularized continuous creation to which Jacobi had objected[163]. Related to their shared kind of freedom, both physical nature and the human mind were also presented (at least metaphorically) as *creative* in similar ways.

Interestingly, while the tension between, on the one hand, articulating using metaphor the properties said to inhere in the one nature qua unity, even approaching occupying the standpoint of production of nature itself, or Nature, and, on the other hand, respecting (their version of) Kantian criticality tied with the pre-embeddedness of the subject in being , was preserved in all four thinkers, in many ways Schelling observes or maintains this tension the most carefully, outflanked on the realist side by some of the utterances on nature offered by Hölderlin and Novalis (and to some extent Schlegel). Novalis seemed to hold intellectual intuition as a nearly mystical avenue of insight; as he expressed it, "Ecstasy – Inner phenomenon of light = intellectual intuition[164]". Novalis says in his novel *Henry of Ofterdingen,* "From his [the poet's] lips … comes the higher voice of the universe"; the poet is a "prophet" to whom "All things will become intelligible … the world and its history[165]". Similarly, Rigby notes that for Hölderlin, "in the absence of the gods, the poet is to keep open a pathway between the divine and human realms[166]". This again points to the unresolved and tension-filled, as well as philosophically anti-formal, elements of their ontological and epistemological approach to nature, all features we will also see return in the big bang cosmologists. So, too, will return – as the cosmologists' view of science, not philosophy – the romantics' notion of philosophy as, in Schlegel's terms, a "yearning for the infinite[167]", or in Hölderlin's terms, "endless striving[168]", always guided by the intuition of a

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[163] Cf. Friedrich Jacobi, in Jacobi & di Giovanni, *op. cit.* ("Concerning"), nos. 408 – 419, pp. 370 – 373.

[164] Novalis, *op. cit., Notes for a Romantic,* p. 160, item 896. Intuition was thus not only a faculty in a neo-Fichte-ian sense, but also, as Wood writes in note 391 (partly citing Mähl), also a kind of self-defining ethical good, a potential path to ecstasy, in the Spinozan and Schelling-ian sense of the *amor dei intellectualis*, cf. mention of thinking as vocation for the romantics, above.

[165] Novalis, *op. cit., Henry von Ofterdingen,* pp. 167 – 168.

[166] Rigby, *op. cit., Topographies,* p. 179.

[167] Frank, *op. cit.,* "Difficult Step", p. 203 (citing Schlegel 418/1168; 420/1200)).

[168] Beiser, *op. cit., Struggle,* p. 393 (citing Hölderlin's letter to Schiller, 1795, VI , 181).

unity they know with certainty to be real and even ultimately one with all beings, including the human being, but blocked from knowing anything more with this type of certainty.

The romantic notion of [creative] chaos

One particular aspect of the romantic world-as-nature worth highlighting here is their notion of chaos. Chaos becomes, in the romantic view, something like the absolute form of creativity in nature, nature's *unconscious*, in a sense. However, just as we have an unconscious which generates beautiful thoughts and works of art, so, too, is nature's chaos pre-formal or proto-formal. As we have noted, they did not cosmologize from first principles in a causal sense; and they did not theorize an empirical raw origin-point of nature, but only an ideal, always-and-everywhen kind of origin which basically only restated their a priori monism in different outward forms. Any type of chaos which did not follow ultimately the same principles of nature as the nature we knew, was impossible, in their universe; or, rather, it was as *unwelcome* as the notion of a raw creation point: both these inherited notions seemed to gesture toward a supernatural order or something *other* than their one Nature-nature. In keeping with their monism, their cosmological speculations thus laid out no actual way to encounter anything truly irrational, Other, or chaotic in the sense of utterly incomprehensible.

Relatedly, for these four thinkers, and considering the *philosophical* sense of the term, the sublime is one more conception of the infinite and the absolute which must be integrated with the finite and the intelligible[169].

[169] Later romantics, particularly some of the English romantics, would in a more Kantian way associate the sublime with where the intelligible *broke down*, as in Byron's remark upon looking through a Herschel telescope in 1811 that " 'our pretensions to eternity might be …*over-rated*" ", or Shelley's *Mont Blanc*, where he calls for the human subject to recognize the "ephemeral" quality of any "legislation" over nature like Linnaeus's, since in the end "The complexity, the infinite density, of the physical world is its 'mysterious tongue/ Which teaches awful doubt' – doubt, for instance, about our ability to perceive a totality, a complete order". For the Byron reference cf. Paul Duro, " 'Great and Noble Ideas of the Moral Kind': Wright of Derby and the Scientific Sublime", *Art History*, Vol. 33 (4), September 2010, pp. 665; for the *Mont Blanc* reference, cf. Oerlemans, Onno, *Romanticism and the Materiality of Nature* (Toronto: University of Toronto Press, 2002), p. 146. Rigby makes a similar point in "Romanticism", *op. cit.,* p. 13, noting that Coleridge and Wordsworth, among others, reveal "the abiding strangeness of even the most everyday and familiar of phenomena", and that this can in turn engender a "sense of wonderment before that which we cannot quite grasp".

Schelling explored a view of creative chaos which equates it with [an intuition or experience of] the sublime. "*Chaos*," Schelling writes, "is the fundamental intuition of the sublime;" we had to see natural things as "symbols of the infinite" partly through a "fundamental intuition of chaos" which was part of "the vision or intuition of the absolute[170]". This also worked into his fusion of philosophy of art with his philosophy of nature; in a sense, to see chaos in nature could be overcome by making it into the just-tolerable aesthetic experience of the sublime, in other words by learning to see in nature what the romantics held we could see in [particularly tragic] art, even if the sublime pressed art to its very limits. In his *Philosophy of Art,* he calls primal chaos the "inner essence of the absolute" which is both unity and "primal chaos itself"; again, this was not raw chaos, not fully other: it was a locus of the "identity of absolute form with formlessness"; not a "*mere* negation of form, but rather formlessness within the highest and absolute form, and, in a reverse fashion, absolute form within formlessness[171]". It was, again, nature's creative unconscious, to parallel man's. In Theisen's phrase, Schelling was able to give "chaos a positive value as a concept of form[172]". His conception both acknowledged the ultimately chaotic quality of imagining the actual integration of all the infinitesimals of experience and phenomena, while also asserting there was still a way in which it in principle made sense to judgement. Schelling writes:

> After unsuccessful attempts to exhaust the chaos of the phenomena in nature and in history by means of the understanding, ordinary perception or knowledge resolves to take "the incomprehensibility itself," as Schiller says, "as a principle of judgment." This appears to be the first step toward philosophy, or at least toward an aesthetic view of the world[173].

Even if we have to assign the chaos 'incomprehensibility' as its unifying principle it is still, in a sense, thus encompassed, held together, as (or in) idea. Reason holds the idea in mind

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[170] Friedrich Schelling, *op. cit.* (*Philosophy of Art*), no. 3.65, pp. 88 - 89.

[171] Friedrich Schelling, *op. cit.* (*Philosophy of Art*), no. 3.65, pp. 88 - 89.

[172] Bianca Theisen, "χα Absolute Chaos: The early Romantic poetics of complex form", Barry, Kelly, trans., *SiR*, 42, Fall 2003, p. 306.

[173] Friedrich Schelling, *op. cit.* (*Philosophy of Art*), no. 3.65, pp. 88 - 89.

that there really is a single set of all possibles, as is built in to Spinoza's philosophy (as discussed above), even if this is somehow also an [paradoxical] infinite or chaotic set. Schelling even tries to make a *virtue* of chaos's opacity-to-us: "Understanding," he writes, "can recognize the world as the true symbol of reason itself only within such an unbounded condition, one appearing to common understanding as lawlessness[174]". Lawlessness and total freedom, such as we can imagine constituting the chaos of this infinite set of all possibles, are revealed as the necessary framework to make sense of law and necessity. This non-chaotic creative chaos will return, arguably, in the form of the infinite multiverse in 21st century big bang cosmology.

A similar view of chaos is also present in Schlegel and Novalis. Form is present in chaos; its components only have to go through a process of creative transformation. Novalis writes: "Before abstraction everything is one – but it is one as chaos is – after abstraction everything is again unified – but this unification is a free alliance of independent, self-determined beings. A crowd has become a society – chaos is transformed into a manifold world[175]". Schlegel and Novalis also played with the concept of creative chaos as an aesthetic category[176], including using it as a new opposing type of beauty in art which distinguished it from classicism's: as Theisen characterizes it, "in early romantic poetics, chaos functions as a new concept of order[177]".

We can also see a view of the chaotic in nature as a new principle of form and meaning in Hölderlin. He coined a neologism for the chaotic, the "aorgic", which he meant as a negation of "organism-like". The aorgic stood in a pair-like or dialectic relation with the organism-like or the formed. (This is not dissimilar to Schlegel's view of the permanent tension and distance between the I and the Absolute, as noted above.) All of nature, before man's transforming presence, remains close to or absolutely identified with the aorgic. Man is the ultimate in form, or organism, because of his powers of creativity and conscious

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[174] Friedrich Schelling, *op. cit.* (*Philosophy of Art*), no. 3.65, pp. 88 - 89.

[175] Novalis, "Miscellaneous Observations" (1798), no. 94. In Novalis & Stoljar, *op. cit.* (*Philosophical Writings*), pp. 40-41.

[176] Stoljar in Novalis & Stoljar, *op. cit.* (*Philosophical Writings*), translator's end note no. 21, p. 170.

[177] Theisen, *op. cit.* ("χα"), p. 304.

thought. Part of man's highest calling is to confront this deepest aspect of nature, to absorb *even this* chaos into his own "self-activity and art and reflection"; this is best done through tragic art. Nature can thus become "more organic through man, who forms and cultivates, through the creative drive and creative powers in general". At the same time, by integrating even this chaotic aspect of nature into himself, man "has become more aorgic, more universal, more infinite[178]". Man can intuit and understand even the "extreme of the aorgic, the incomprehensible, the unfeelable, the unlimited" in nature; when he does so, through tragic poetry, "This feeling belongs, perhaps, to the highest that can be felt, when the two opposites, the more universalized spiritual lively artificial pure aorgic man and the handsome form of nature, meet[179]".

To Build a *Better* Universe, III: Nature in the 'new mythology' of reason

The influential early German romantic notion of a "new mythology of reason" was first broached, as noted above, in the *Systemprogramm* of 1796 of Hölderlin and Schelling (and Hegel). Hölderlin also retained numerous new mythology themes in his poetic works and in his novella *Hyperion*; Schelling discusses the "new mythology" in his *System of Transcendental Idealism*; Schlegel discourses on it in *Talk on Mythology;* and Novalis references it in his fragments, novels and poems.

In the *Systemprogramm* the authors state that the new mythology was to be pursued under an "Idea which unites all", which is the "Idea of beauty[180]". The "highest act of reason," that "which embraces all Ideas, is an aesthetic act, and … truth and goodness are brothers only in beauty – The philosopher must possess just as much aesthetic power as the poet[181]". Harnessed with the intuition, beauty helped them see how one human "I" could know

[178] Hölderlin, 'Ground of the Empedocles" (1799), in Jeremy Adler & Charlie Louth, Trans. & Eds., *Friedrich Hölderlin: Essays and Letters* (London: Penguin, 2009), pp. 261 – 262.

[179] Hölderlin, *op. cit.* ("Ground", in Adler & Louth), pp. 261 – 262 and 261ff.

[180] "Oldest *Systemprogramm*", recto- verso.

[181] "Oldest *Systemprogramm*", recto- verso.

nature and the world of culture as one, and know them both via artistic *and* rational philosophical speculation; via the beautiful *and* the true.

This same idea of reason set free (via the intuitive and the aesthetic) to see nature more accurately and fully also extended to the sciences. This was how they would help "give wings again to our physics which is progressing slowly and laboriously via experiments[182]". As Richards notes, for the romantics, "ineffable aesthetic experience had to open the way to articulate scientific understanding", and the "activities of the scientist" are "comparable to that of the artist, for both … [employ] creative imagination[183]", and forms a central theme of most of the new mythology discussions the romantics offered.

The beautiful was also the means by which the new mythology could be evangelized. "The people" had to be converted to the new way of seeing reality. *Systemprogramm* concludes:

> First of all I shall speak here of an Idea which, as far as I know, has never occurred to anyone – we must have a new mythology, but this mythology must be in the service of the Ideas, it must become a mythology of *reason*.
>
> Before we make the Ideas aesthetic i.e. mythological[184], they are of no interest to the *people* and on the other hand before mythology is reasonable the philosopher must be ashamed of it. Thus enlightened and unenlightened must finally shake hands, mythology must become philosophical and the people reasonable, and philosophy must become mythological in order to make the philosophers sensuous. Then eternal unity will reign among us. … A higher spirit sent from heaven must found this new religion among us, it will be the last, greatest work of mankind[185].

What was to be presented *as* the beautiful was not only the physical world, but necessarily the way in which the romantics understood it as a unity. This required intellectual intuition; as Ogden points out, Schlegel held that "without this '*Vermögen der Naturanschauung*'

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[182] "Oldest *Systemprogramm*", recto; also cf. the first section of this chapter.

[183] Richards, *op. cit.,* p. 12.

[184] Here the aesthetic-mythological equivalence seems, again, to be intended to evoke the ability of beauty to unify and create a holism out of disparate fields.

[185] "Oldest *Systemprogramm*", recto- verso.

[capacity for nature-intuition], the hope for a … [new mythological view of nature] has no foundation[186]".

There is not space to address here all the ways in which new mythology concepts, with their attendant projects of re-enchantment or re-mythologizing or romanticizing nature and human culture, were explored and played out in their work (and the work of those they influenced). In terms of how the new mythology was integrated into their cosmological speculation and philosophy of nature, I will highlight only three further points.

First, the new mythology program aimed at a continued praxis of science as a way of uncovering and transforming the physical world into its higher nature – science, as long as it was pursued in the properly "ideal– real" manner. This made it action-oriented and even crisis-responsive; talk of the goal of a new mythology was frequently combined with exhortation in the romantics' writing, both to continue to pursue and advance art and science, and to develop better ways of unifying them. Novalis writes that "Only after a passion for Nature has been bestowed on an entire nation, and a fresh bond fastened among its citizens – with natural scientific researchers and laboratories in every location – only then will we make any progress[187]". Schlegel urges the "study of physics, from whose dynamic paradoxes the most sacred revelations of nature are now bursting forth in all directions[188]".

As long as the sciences could partake in the proper approach to nature, which meant seeing it as ultimately one unified Nature-nature, they could share a central role in the new single fabric of knowledge and cultural output, though poetry was seen as the higher or more complete part of the unified approach of romantic knowing. The new mythology would also entail the unification of the sciences themselves[189], as well as all other fields able to

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[186] Mark R. Ogden, "Amor dei Intellectualis: Hölderlin, Spinoza and St. John", *Deutsche Vierteljahrsschrift für Literaturwissenschaft und Geistesgeschichte*, Vol. 63 (3), 1989, p. 443.

[187] Novalis, *op.cit.* (*Notes*), nos. 15, 97, p.219.

[188] Schlegel, *op. cit.* ("Talk"), p. 101.

[189] Wallace, "Introduction", in Blumenberg & Wallace, *op. cit.*, p. vii.

articulate nature in its proper aspect (which was, in their view, potentially all of them, and crossed all lines among art, science, and imaginative and religious discourse).

Novalis (and Schlegel) were interested in the role of mathematics to unify across not only the sciences but all domains of thought. Novalis wrote that "Mathematics are capable of endless perfection, as a convincing proof of the sympathy and ideality of nature and intelligence[190]", and he held not only that "All sciences should become *mathematics*" due to mathematics' expression of the "true scientific spirit", but also that all fields – poetics, grammar, physics, philosophy, history – must have their own form of mathematics[191]. At the time of his early death in 1801, Novalis was working on an approach to unifying all human knowledge via a new science of "encyclopedistics" which would collate all fields' findings to locate their unities, in the aim of one day 'integrating' these into a single, if continually expanding, book of knowledge. Beauty and the correctly attuned intellectual intuition were, again, both indispensable and to be highlighted (and celebrated) in such a wide-ranging project.

At the end of his "Talk on Mythology," Schlegel presents the concept of the new mythology thus:

> Be worthy of the greatness of the age and the fog will vanish from your eyes; and there will be light before you. All thinking is a divining, but man is only now beginning to realize his divining power. What immense expansion will this power experience, and especially now! It seems to me that he who could understand the age – that is, those great principles of general rejuvenation and of eternal revolution – would be able to succeed in grasping the poles of mankind, to recognize and to know the activity of the first men as well as the nature of the Golden Age that is to come. Then the empty chatter would stop and man would become conscious of what he is: He would understand the earth and the sun.

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[190] Novalis, *Thoughts on Philosophy and Physics,* in *Novalis: His life, thoughts, and works,* M. J. Hope, Trans. And Ed. (Chicago: A. C. McClurg, 1891), p. 230.

[191] Novalis, *op. cit.* (*Notes for a Romantic*), nos. 9 and 11, p. 195.

This is what I mean by the new mythology[192].

Nature, in this type of construct, is held open as a future knowledge-reward, *if* human beings can grasp their true destiny as knowers, replacing the "empty chatter" which passes for knowledge (or awareness) of nature and human potential in the present. The religious impulse is to be harnessed to help effect this future; both in that science can be re-interpreted as a divining and human beings can find their rightful role as one who "proclaims himself and his gospel of Nature", or as truly the "messiah of Nature[193]", as Novalis would have it, or, as Schlegel exhorts, even a renovation of religion itself, as part of a movement toward a future fusion of religion, art, and science: "let us reawaken all religions from their graves and through the omnipotence of art and science reanimate and reorganize those that are immortal[194]".

The new mythology program is also where we can also find the further context for claims by especially Hölderlin[195] and Novalis that the new mythology's transforming, active program will entail human beings taking up their future destiny as nature's moral agent or even bridegroom. Novalis writes "Nature will become moral. We are her *educators* – her moral *tangents* – her moral stimuli[196]". In *Henry,* similarly, humans are nature's poetic art just as non-reflective parts of nature are nature's other (lower) forms of (more sensuous) art (e.g. painting and sculpture)[197].

Hölderlin's character Hyperion, discussing how he is about to launch his new mythology evangelism into the world, wants to encompass the physical world in it too, addressing "nature" thus:

> 'Do you ask after men, nature? Do you lament like a lyre which … the wind alone plays, since the artist who kept it in tune is dead? They will come, your men, nature!

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[192] Schlegel, *op. cit.* ("Talk"), pp. 101 – 102.

[193] Novalis, *op. cit.* ("Notes"), no. 52, p. 8.

[194] Schlegel, *op. cit.* (*Philosophical Fragments*), no. 22, p. 96.

[195] Cf. e.g. Friedrich Hölderlin, *op. cit., Hyperion*, p. 77.

[196] Novalis, *op. cit., Notes for a Romantic*, no. 73, p. 11.

[197] Novalis, *op. cit., Henry von Ofterdingen,* pp. 31f..

> A rejuvenated people will rejuvenate you too, and you will become as its bride, and the ancient covenant of spirits will renew itself with you.
>
> 'There will be but one beauty; and humanity and nature will unite into one all-embracing godhead[198].'

This sense of the power and meaning of nature's and man's co-transformations [of one another] was part of the new mythology and what human beings could derive from it. We will see this return in big bang cosmology as well: the implication that if we are able to go and see the physical world properly, we will derive from this activity certain self- and nature-transforming and revealing, elevating, outcomes, with a further suggestion (at times more overt) that these must suffice, now, to satisfy our religious appetites and longings.

A second point to highlight is that the new mythology can also be read as an attempt to support, further assert, and explore the ramifications of, the romantics' joint ontological-epistemological positions regarding nature in the present. The new mythology could further explain, could *show,* how and why the old philosophical divisions – realist versus idealist, empiricist versus rationalist – were obsolete just like those between science and art. The new mythology program in this way sought to add depth to the romantics' claims that their vision of nature could really form an "ism", a worldview in all ways, including subsuming old, formalized forms of philosophy up into itself (an approach the big bang cosmologists will display as well).

Schlegel at times suggests the new mythology will replace philosophy altogether as a way of expressing knowledge; Novalis shares this aspiration as well. Schlegel writes that the "new mythology can emerge only from the innermost depths of the spirit and develop only from itself,[199]" suggesting a kinship of a sort with idealistic philosophy; the latter (philosophical idealism) thus serves as a kind of model or even first draft of the new mythology, such that, for Schlegel, "we find a very significant hint and a noteworthy confirmation of what we are

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[198] Hölderlin, *op. cit., Hyperion*, p. 77.

[199] Friedrich Schlegel, "Talk on Mythology" in *Dialogue on Poetry* (1800), in *German Romantic Criticism,* Ernst Behler & Roman Struc, Trans., & A. Leslie Willson, Ed. (New York: Continuum, 1982), p. 97.

searching for in that great phenomenon of our age, in idealism[200]". He acknowledges idealism's origins in the subject and its self-contained character, but also claims it has become a kind of psychological or spiritual practice and thus become, in effect, "real": "now … [idealism] has constituted itself in the spiritual sphere as a firm point from which the creative energy of man can safely expand, developing in all directions, without losing itself or the possibility of return[201]". He notes approvingly that physics has already begun to become more idealistic; yet even were we to realize the goal in which "All disciplines and all arts" become idealistic, this would not suffice:

> Idealism … as great as it manifests itself at this point, is yet only a part, a branch, a mode of expression of the phenomenon of all phenomena: that mankind struggles with all its power to find its own center. It must, as things are, either perish or be rejuvenated. What is more probable, and what does one not hope for from such an age of rejuvenation? Remote antiquity will become alive again, and the remotest future of culture will announce itself in auguries[202].

Modern mankind is in crisis: it "struggles with all its power to find its own center" and must "either perish or be rejuvenated", without traditional religion as its guide. The central concern is mankind trying to right his world, trying to orient himself, trying to rediscover a cosmos, an ordered whole with which he has a relation (cf. also the last section of this chapter, below). This is the "phenomenon of all phenomena," and requires us to think beyond a theoretical framework, to transform idealism and realism into one, religious-level, mode of insight into our true condition and how we can re-orient, re-center, ourselves [without God]. It requires a new mythology. Where this leaves nature is, again (as we will also return to considering in the last section of this chapter), in the position of needing to reveal itself as cosmos, as a place the knowing of which is amenable to this project; amenable to being re-enchanted in this way.

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[200] Schlegel, *op. cit.* ("Talk"), p. 97.

[201] Schlegel, *op. cit.* ("Talk"), p. 97.

[202] Schlegel, *op. cit.* ("Talk"), p. 97.

The romantics saw themselves more as the prophets of the new mythology than as its actual practitioners, and thus, again, only able to comment on the *form* the new mythology would assume in the future age of man[203]. In Hölderlin's philosophical novel *Hyperion*, Hyperion's lover Diotima effectively urges him to take up this role: to give to the currently myth-less people what Hyperion himself has "within" himself in order to bring about the changes the new mythology calls for[204]. In the present, aside from exhorting others to find and make the new mythology come to pass, the new mythologists can only specify the form the future knowledge of nature will take, one in which the beautiful and the true cannot but be unified, as it were, without developing further too much of its content. Schelling writes that just as all sciences stemmed from philosophy, and philosophy itself "was born and nourished by poetry in the infancy of knowledge", once the sciences (and philosophy) reach "completion", they will "flow back like so many individual streams into the universal ocean of poetry from which they took their source"; and

> Nor is it in general difficult to say what the medium for this return of science to poetry will be; for in mythology such a medium existed, before the occurrence of a breach now seemingly beyond repair. But how a new mythology is itself to arise, which shall be the creation, not of some individual author, but of a new race, personifying, as it were, one single poet – that is a problem whose solution can be looked for only in the future destinies of the world, and in the course of history to come[205].

If and when science is able to be aestheticized, be made poetic, this will be the sign that the future age has finally arrived. While at times there are glimpses of a new idiom for discussing the universe put forward in e.g. Novalis' novel *Henry of Ofterdingen*[206], mostly,

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[203] Cf. e.g. Theisen on this point, *op. cit.* ("Romantic Myths"), pp. 9 – 10.

[204] Hölderlin, *op. cit., Hyperion*, pp. 75 – 76.

[205] Schelling, *op. cit., System of Transcendental Idealism*, no. 629, pp. 232 - 233.

[206] For example, when Novalis has one sage remark to Henry that " 'The universe breaks down into an infinite number of worlds, each in turn contained by larger ones. In the end, all minds are *one* mind. *One* mind like *one* world gradually leads to all worlds, but everything has its own time and its own manner. Only the universe as person can understand the relation of our world' ", cf. Novalis, *op. cit., Henry von Ofterdingen,* p. 165.

the only glimpse we get of the content of the new type of knowledge is, again, the recurring theme of the unity it must both symbolize and contain.

Novalis in *Henry* and in *Sais* evokes a future age which would bring all realms of human thought together – history, science, art – again, under the aegis of poetry. In *Sais,* Novalis expresses dissatisfaction with all the philosophies of nature thus far on offer, and implies a new mythology is needed which both echoes the past and overcomes it, asserting that if the poet could unlock the "old time" once more and be dictated to by feeling, not self-divinization, "the stars would rise within him, he would learn to feel the whole world[207]".

The theme of self-divinization needing to be avoided in the future age of new mythology, is both a version of a (negative) possible content of the new knowledge, and potentially a proto-ecological aspect of the new mythology. This theme is also present in Hölderlin's *Death of Empedocles,* where Empedocles self-condemns his own effort to know divine things, and in which text, as Rigby notes, Hölderlin is engaging with problems concerning scientific-technological hubris as a source of an ethical valuation of nature[208].

Still, the promised content of the new mythology remains mostly implicit even in this area: unity with nature can even be read as another symbol of correctly learning the oneness of the monistic whole, a kind of sign that humankind has succeeded in knowing, rather than an ethical or valuing choice per se. There is also exploration at times of how difficult arriving at a new mythology would be given the current fallen state of mankind and the distance from which we have come from the older ages, when the "all-powerful sympathy of nature," the "primeval golden age and its sovereigns – love and poetry" were still intact, as Novalis writes in *Henry[209].* There are even suggestions at times that a new mythical age would be so difficult to attain that disaster and world-ending are needed before the "return of the everlasting golden age" and the "rejuvenation of nature" can come again[210].

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[207] Novalis, *The Novices of Sais,* trans. Manheim, Ralph, illus. Klee, Paul (Brooklyn, NY: Archipelago Books, 2005 (1799)), pp. 69 – 73.

[208] Cf. Rigby, *op. cit., Topographies,* p. 124.

[209] Novalis, *op. cit., Henry of Ofterdingen,* p. 48.

[210] Novalis, *op. cit., Henry,* p. 48.

Finally, while the new mythology was basically an interpretation and elevation of the romantic epistemological and ontological positions on nature, and not a revanchist program for recovering any particular myth-like story of nature for its own sake, its use of the category of myth did also inevitably entail a certain view of "old" myths of nature which is worth here briefly elaborating upon, particularly since we will arguably see a very similar (underneath differences in presentation) approach to old mythology emerge in big bang cosmology's own version of a neo-romantic new mythology of reason program.

The role and representation of 'old' mythology in early German romantic new mythology

Part of the basis for their notion of a new mythology was a certain way of presenting the "old" mythological cultures of ancient Greece, ancient India, and elsewhere: as enjoying, through myth, a unifying grounding of all human knowledge, art, and even political culture into one. Yet the "new" mythology also meant that the "old" was no longer needed, and was no longer possible. The ability of the poet-philosopher to combine mythical terms with rationality was a sign that its understanding of nature had permanently displaced traditional myth.

One of the primary roles for the concept of "old" mythology, in the rubric of the new, was for it to offer a foretaste of the type of holism, the ambitious omni-valent way of knowing, the romantics wanted to "re-"discover. Schlegel writes, "All the classical poems of the ancients are coherent, inseparable; they form an organic whole, they constitute, properly viewed, only a single poem;" once the future age of knowledge arrives, humanity will once again possess a *single* "eternally developing book", in which the "gospel of humanity and culture will be revealed[211]". The idea of the old mythology as a single book, of the ancients (in both Greek culture and non-Western cultures such as Egypt and India) as implicitly referencing a single unified truth beneath the diverse phenomena, was put forward as an example or template of a self-contained, naturalistic (non-revelatory, in their view, including Genesis), worldview, seamlessly presenced in all the cultural, artistic, and proto-scientific

[211] Schlegel, *op. cit.* (*Philosophical Fragments*), no. 95, pp. 102 – 103.

views the cultures produced. Theisen even holds that the romantics extended this conception to a notion that traditional mythical cultures had utilized systems of "tautegorical" or "circular and self-referential" *logic* in something of a formal sense, and were seeking, in their new mythology ideal, a way to some new version of such a system of logic for the modern era[212].

It is not necessary to go too far into the complex and voluminous landscape of the study of myth (in the romantics and in general) to note simply that this potentially sets up tension with other ways of reading "old" mythology. At a minimum, we can contrast their use of old mythology with the readings of myth by many 20th and 21st century scholars, such as K. Armstrong, historian of religion Thrower, or philosopher of science turned historian of science Feyerabend[213]. Theisen argues that the romantics' approach to old myths patently constituted a "structural reconceptualization of antiquity under the aegis of modernity[214]". Halmi, with Theisen, notes how, building on work on myth by earlier German scholars like Heyne, Schiller and Herder, including Heyne's idea of myths as "*philosophemes,*" or "proto-philosophical causal explanations of natural phenomena, formed before language and reason had developed sufficiently to permit abstract thinking" (which had deeply influenced Herder as well), the romantics developed a view of myth, including the Biblical cosmogony, as a form of symbolic poetry, *not* allegory, as had been the predominant Enlightenment interpretation[215].

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[212] Theisen, *op. cit.* ("Romantic Myths"), pp. 9 – 10.

[213] Cf. Karen Armstrong, *A Short History of Myth* (Edinburgh: Canongate, 2005), pp. 73 – 74. Armstrong writes that a creation myth, e.g., "never provided … factual information… [its] purpose was … primarily therapeutic," to "tap into the timeless energies that supported human existence." Thrower criticizes any failure to see mythical ways of regarding nature as simply possessing "an entirely different apprehension of reality from that which now characterizes the predominant Western approach to the world", and opposes the effort to see them as "proto-philosophy or proto-science." James Thrower, *The Alternative Tradition: Religion and the rejection of religion in the ancient world* (The Hague: Mouton, 1980), pp. 17 – 18. Feyerabend echoes this point, cf. Paul Feyerabend, *Philosophy of Nature,* ed. Helmut Heit & Eric Oberheim, trans. Dorothea Lotter & Andrew Cross (Cambridge: Polity Press, 2016), pp. 89 – 90.

[214] Theisen, *op. cit.* ("Romantic Myths"), p. 12.

[215] Cf. Halmi, *op. cit.*, pp. 138 – 139; Theisen, *op. cit.* ("Romantic Myths"), pp.9 – 10. Cf. also Hans Eichner's views in his "The Rise of Modern Science and the Genesis of Romanticism", *PMLA,* Vol. 97, No. 1 (Jan. 1982), pp. 8 – 30.

We will return to some of the potential environmental-ethics aspects of this displacement of any reading of archaic myth as anything other than proto-philosophy or symbolic poetry in the last chapter. For now it is necessary only to flag this dimension of their view of "old" mythology, which as noted above, we will see again in the big bang writers. There are three further points to highlight, briefly, as also particularly relevant for this comparison, before moving into the next section.

First, in line with this use of old myth as proto-poem or proto-philosophy, these myths could not be seen as containing any fully non-translatable meaning or truth about physical or spiritual realities. This would not mesh with the romantic view that the old myths were symbolic poetry, nor their claims to both establish continuity with the old mythology, and thus replicate it in some meaningful way, and to be able to *overcome* it completely, ending it as a genre by perfecting it[216]. There was also a more negative normative judgment attached to this assumption of traditional myths' "poetic" quality. The early German romantics were not revanchists regarding the content of their new myths, which were to be based in reason and feature (aesthetically-guided) science. They were sharply critical of the content of the old myths, characterizing them as superstitious insofar as the *beliefs* they contained were concerned. This was tied up with the old myths not focusing sufficiently on the intelligible, and being focused on instead, in Schlegel's words, only on "what was most immediate and vital in the sensuous world[217]". Hölderlin has Empedocles exhort his fellow citizens to turn to nature from the older faiths: "dare it! your inheritance … / The narratives of all your fathers' voices teaching you,/ All law and custom, names of all the ancient gods,/ Forget these things courageously; like newborn babes/ Your eyes will open to the godliness of nature,/ And then your spirit will take flame from/ The light of heaven, sweet breath of life/ Will then suffuse your breast anew[218]". To see Nature-nature is to begin anew from

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[216] This notion is also discussed by Zakariya in the context of big bang cosmologists, though he uses the broader notion of "story" rather than "myth", discussing the scientists' efforts to "finalize" both the content and the *form* of story itself (at least with respect to the natural universe). Cf. Nasser Zakariya, *A Final Story: Science, myth & beginnings* (Chicago: University of Chicago Press, 2017), *passim*.

[217] Schlegel, *op. cit.* ("Talk"), p. 96.

[218] Hölderlin, *The Death of Empedocles,* First Version, in *The Death of Empedocles, A mourning-play* (1798-1799), Krell, David Farrell, Trans. & Ed.. (Albany, NY: State University of New York Press, 2008), p. 90: Act II, Sc. 4, lines 1506 – 1513.

within divine nature, with whom, in the future religion of reason, the human being will have a direct communion, without the intermediaries of older forms of belief or ritual.

The second aspect of their engagement with old mythology to note here is a certain tendency toward Orientalism – if we define this loosely as a view or construction of a culture or place not one's own undertaken in order to further certain ends pertaining to one's own, rather than to understand it for its own sake (while realizing that such distinctions can never be made completely)[219]. Schlegel was an Orientalist both in the sense of being a learned Indologist for his day, and in the sense that the term "Orientalist" carries these normative connotations. These two kinds of Orientalism were combined, for example, in his [early] approach to Hindu myth and religion. He wrote in 1800 that "In the Orient, we must look for the most sublime form of the Romantic[220]" and in the same period that only those "already facing the Orient" could understand him, and that "Every doctrine of the eternal Orient belongs to all artists[221]". In this sense, as one romantics scholar Figueira notes, Schlegel "idealized India and its culture as the source of the aesthetic and spiritual absolute[222]". Another scholar who has looked at early German romantics' Orientalism, Cowan, relatedly argues that Schlegel used non-Western myths as a kind of raw aesthetic fodder, a necessary infusion of something he found externally beautiful, to offset, complement, and fuel his more austere Spinozism in envisioning the new mythology program[223]. Cowan has further argued that Schlegel, Novalis, and Schelling interpreted Indian mythology and religion incorrectly, in particular failing to understand the type of void present in Indian cosmology[224]. This is perhaps not surprising given their manner of constructing nature out to and including its imagined creative chaos as all of a unity, as we

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[219] Cf. e.g. the way Edward Said speaks about the concept of Orientalism in Edward Said, "Orientalism Once More", *Development and change*, 35 (5), 2004, pp. 872f..

[220] Schlegel, *op. cit.* ("Talk"), pp. 100 – 101.

[221] Schlegel, *op. cit.* (*Philosophical Fragments*), nos. 133 and 156; on pages 106 and 109 respectively.

[222] Dorothy M. Figueira, "The Politics of Exoticism and Friedrich Schlegel's 'Metaphorical Pilgrimage to India' ", *Monatshefte*, Vol. 81 (4), Winter 1989, p. 425.

[223] Robert Cowan, "The Indo-Germans: An 'Aryan' romance", ProQuest Dissertations Publishing (2006), p. 112.

[224] Robert Cowan, "The Indo-Germans: An 'Aryan' romance", ProQuest Dissertations Publishing (2006), pp. 96 - 97.

have been discussing. Hölderlin's Hyperion says that a people of the "oriental clime … knows nothing of the whole, nothing of beauty, and what he calls the highest is a veiled power, a ghastly enigma; the dumb dismal Isis is his alpha and omega, an empty infinity, and nought meaningful ever came out of that[225]".

The third aspect of their engagement with old mythology to briefly note here is that as Josephson-Storm and Garrard, e.g., note, the notion of a Europe spiritually and intellectually misled and adrift *because* it lacked the culture of, or a culture somehow like, those associated with the ancient myths, would itself become one of the most prominent legacies of the entire new mythology project, reshaped in Weber and others into the idea of a disenchanted modern era, a *lack* which called out for filling[226]. This is another way in which romanticism broadened and expanded (and sought to define) the association between modernity and irreligion, in order to declare itself in the position to heal and reverse it[227]. It was not necessary or possible to return to traditional theism, in the new mythology view, but to turn to a renewal of reason via the sense of beauty and the new mythological program as a whole. In the absence of an emphasis on revealed faith traditions, this program turned on a certain conception of nature and the potential for human beings to be elevated via their knowledge of it, which had to be knowledge of a particular kind.

The early German romantic universe in time: Toward a new view of universal natural history

[225] Hölderlin, *op. cit.* (*Hyperion*), p. 70.

[226] Graeme Garrard, *Counter-Enlightenments: From the eighteenth century to the present* (London: Routledge Taylor & Francis Group, 2005), p. 61. As we will touch on again in Chapter Two, Josephson-Storm holds that this "lack" was always imagined or constructed, holding that in many ways the early German romantics' version of the "clockwork" universe was a straw man they built only to tear down: "It was not [Enlightenment] physics that produced the nihilistic clockwork universe, but [early German romantic] philosophy," cf. Jason Josephson-Storm, *The myth of disenchantment: Magic, modernity, and the birth of the human sciences* (Chicago: University of Chicago Press, 2018), p. 75.

[227] As noted elsewhere, this idea of a "myth-vacuum" is regularly contested, cf. e.g. Josephson-Storm, *op. cit.*.

The four thinkers we are here considering did not attempt a direct empirical history of the universe as we would now define it. As we have seen, they did not want to be drawn into speculation on literal origins of nature or "being", raw chaos, first principles or anything which seemed mechanistic or deistic. They did not pursue a cosmography, beyond a general one of an eternal and spatially infinite universe[228]. Infinitude attached to the spatial and the temporal qualities of the universe and also to the inherent character of Nature.

Yet at the same time, their view of nature, in the sense of natura naturata, as a timebound, growing and ever-developing organism, necessarily implied a past for nature as well as a future, since nature could neither remain still nor refrain from change. Another appeal of a natural history was as a way of exploring the absolute as time, and thus as the direct enabler of history. This would mean that the history of nature might offer another way of modeling nature as grounded in the absolute. This is evoked in Hölderlin's line in the poem "On the Fable of the Ancients": "Nature; as it takes effect, history[229]."

As one scholar of the romantics, Ellermann, notes, Schelling's idea of time held it to be real and external, not a "transcendental condition" created by the subject as it was for Kant[230]; as noted above, Schelling that time is " 'nothing but the totality appearing in opposition to the particular life of things[231]' ". Just as in art, as he writes around the same time, the "history of art will show us most revealingly its immediate connections to the conditions of the universe" and "only in the history of art does the essential and inner unity of all works of art reveal itself, a unity showing that all poetry is of the same spirit[232]", so, too, in the case of nature, could the natural history potentially be used to reveal nature's underlying unity through successive epochs and gesture toward its grounding in Nature.

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[228] Such was the prevailing scientific and philosophical view of the day, whether in the Newtonian sense of absolute space and absolute time; the undefined Cartesian indefinite universe; and/or the eternal and infinite universe of Bruno and Spinoza. These four were not committed to whether the universe may have gone through cycles or had always been undergoing a linear development.

[229] Hölderlin, "On the Fable of the Ancients", in Jeremy Adler & Charlie Louth, Eds. and Trans., *Friedrich Hölderlin: Essays and Letters* (London: Penguin, 2009), p. 333.

[230] Ellermann, *op. cit.,* p. 164.

[231] Bowie, *op. cit., Schelling in Modern,* p. 74 (citing Schelling p. 200 of I/6, Würzburg System).

[232] Schelling, *op. cit.,* (*Philosophy of Art*), p. 19.

Schelling, indeed, saw as a "fundamental task of all nature philosophy: TO DERIVE THE DYNAMIC GRADUATED SEQUENCE OF STAGES IN NATURE" (his capitalization), so as to contribute to the representation of nature as a single "universal organism"[233]. The stages Schelling is interested in are even partly imagined as really, empirically historical. Schelling writes that while "Natural history has been, until now, really the description of Nature, as Kant has very correctly remarked", a new kind of natural history should be possible which possesses a "much higher meaning" as a "history of Nature itself; namely, as it gradually brings forth the whole multiplicity of its products through continuous deviations from a common ideal… and so realizes the Ideal, not indeed in the individual, but in the whole[234]".

Relatedly, then, the stages of nature could also be held to be non-empirical ways of representing the structure of nature, beginning in simple elements out of which complexity emerges (as in Herder, cf. above). In this sense, the universal natural history was seen to offer a way of elucidating the type of inverted Neoplatonism embraced by Schelling as part of his philosophy of nature. In this form of Neoplatonism, emanation was developmental, and types or entities of things in nature built up toward increasing complexity (and by implication finally toward the One) along a horizontal or temporal axis of becoming, rather than having originally descended from the One or God. This general view was not far from how Hölderlin and the others also saw the historical dynamic laws of nature applying to history and to the physical universe. This new[235] type of Neoplatonism dovetailed with the romantics' aversion to a creation or origin-point in nature in the traditional sense.

Eichner calls this novel type of romantic progressive Neoplatonism a "monumental" shift away from longstanding Western presumptions that "higher" had always created "lower," usually beginning with God; for Eichner, Schelling upended the order of things so that "the 'higher' developed *from* the 'lower,' " also necessitating that "the world was not created

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[233] Schelling, *op. cit.,* ("First Outline": "Outline of the whole"), p. 6.

[234] Schelling, *op. cit.* ("First Outline"), no. 116, pp. 51 – 52.

[235] Kenney notes however that some aspects of the romantics' Neoplatonism also partly reflects Plotinus' own teachings as well, cf. John P. Kenney, *The Mysticism of Saint Augustine: Rereading the* Confessions (New York: Routledge, 2005), p. 37. Goethe also seems to support this idea of a 'lower' strata of parts shared by human consciousness and the natural: cf. Richards, *op. cit.,* p. 439.

once and for all by a perfect, supreme being but has grown or developed[236]". As Beiser points out, in the context of universal natural history, this was presented as the emergence over time of various levels of complexification out of the same "living force[237]".

We should note here again, that these descriptions of humankind as emerging from simpler entities including inanimate nature, as influential as they would be in sciences like biology (and later cosmology), must still be understood at this time, for the romantics, as simply the reflection of this philosophical conception of Herder's and Schelling's; as a future-facing way of elucidating the new mythology program as historical (where progress would come in the future age, and the past was the simpler time in all ways); or as speculation on how the intuited primal unity between mind and nature, which cannot be discursively elaborated, and which is "simpler" in that it always comes "before" thought, can be given an historical metaphor showing the emergence of mind from matter in time. All these uses for natural history as philosophy aside, the creation of human beings at some point in the history was always already tied in to these speculations; they did not try to present nature as free *not to have ever* effected the transition to mind or consciousness. The very thinking of this history has already presupposed this outcome (i.e., the existence of both the physical natural world and the human thinking "I" as one of nature's other manifestations, within it), and their notions of Nature as mind-like, and as prospectively envisioning humans as fulfilling a "moralizing" role in history, likewise point strongly toward humans as inevitably intertwined with natural history. Novalis writes "We are related to all parts of the universe – as we are to the future and to times past[238]". Schlegel writes "Man is Nature creatively looking back at itself[239]", implying pleasure; historian of philosophy Copleston holds that the historical emergence of human consciousness is for the romantics nature serving nature's own *desire* "to turn back on herself and to realize her unity in reflection[240]".

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[236] Eichner, *op. cit.,* p. 15.

[237] Beiser, *op. cit.* ("The Paradox"), p. 223.

[238] Novalis, *op. cit.* (*Philosophical Writings*), p. 40.

[239] Schlegel, *op. cit.* (*Philosophical Fragments*), no. 28, p. 96.

[240] F. C. Copleston, "Pantheism in Spinoza and the German idealists", *Philosophy*, Vol. 21 (78), April 1946, pp. 49 – 50.

For Hölderlin, the romantic subject's direct integration with (and serving of a special function within) this unfolding history even bestowed, in some ways, nature's own *power* and agency *into* man (as we saw in his discussion of man's ability to become infinite, cf. above). Man in this sense cannot be unnatural, no matter what he does, even when he manifests the "human impulse to culture", since this is also from nature, as Cummins points out[241]. While he should, if his intuition is correctly oriented, be full of a gratitude for the physical world-as-nature born of his holistic awareness (or his one vital intuition) of his unity with it[242], he also sees modernity's predominant ignorance of and riven-ness from such awareness as just one more historical, evolutionary phase, in Cummins' view, of the "human-nature relationship" which was "part of an unfolding process of cosmological change" and always evolving; modernity thus becomes a necessary stage in this "cosmic evolution", a phase through which man's relationship with nature must pass before returning to harmony in the future[243]. (This type of position, that the present historical moment is but a temporary and still-"natural" bottleneck, preceding future enlightenment and overcoming, is quite common in the early 21st century big bang cosmological (and ecological) discourses.)

The question of an historical origin of all of nature

The romantics did not want (as we have noted in earlier sections) to resort to any kind of first principles *or* their empirical or historical equivalents, and nature was infinite, eternal, completely self-contained, and self-caused, and so required no creation by an outside force or power. At the same time, as noted above, they had philosophical interests in exploring history as a means to model or suggest humans' and nature's grounding in the absolute in new ways.

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[241] Neil Paul Cummins, "Human nature, cosmic evolution and modernity in Hölderlin", *Cosmos and History: The Journal of Natural and Social Philosophy*, Vol. 3 (1), 2007, p. 21.

[242] Cf. Larmore, *op. cit.,* pp. 223 – 224.

[243] Cummins, *op. cit.,* pp. 18 – 19.

The ultimate primal duality between nature and Nature itself, for example, was impossible to render as an actual historical origin, not only because nature is not able to be removed, or thought of as not present, in the romantic view; but also because inherent to our concept of Nature-nature is its existent status as already divided into nature and Nature, finite and infinite, and as already temporal and "flowing". (This tension will return in big bang cosmology, arguably, as part of cosmologists' desire to move beyond the t=0 singularity and into the infinite multiverse conception.) As Schelling writes in his "identity philosophy" phase, when he was trying to edge toward a notion of this primal duality or division, and beyond it, the Ur-identity, of nature and Nature, the subject is unable to conceive of "absolute identity" between Nature and nature (though we can perceive it through the idea of unity itself), "because this would bring about an absolute transition of Nature as productive into Nature as product, that is, it would produce absolute rest"; we will always be treated to nature as historically unfolding, a "wavering of Nature … between productivity and product … whereby Nature is maintained in continual activity, and prevented from exhausting itself in its product[244]". This is the way in which nature is both finite and infinite: it is finite so that it does not exhaust the absolute everywhere, all at once; it is timebound. Yet it is also infinite, because, in Schelling's words, "the force of the whole of Nature itself surges into it. It must therefore be at once infinite and finite; it must be only seemingly finite, but in infinite development[245]." This concept, or intuition, of nature as finite-yet-infinite is not removable or able to be suspended.

That said, as Schelling hints, we can use the ideas of unity and division themselves to help us glimpse its suspension, intuitively; thus he did not ban all talk of beginnings of physical nature in the historical speculative mode, as long as they were understood as only metaphors to aid our intuition or view of Nature-nature. Schelling reasons transcendentally and in general ways what the cosmos might have looked like vastly earlier in time. He writes that "one could imagine … one point … thrust whole masses away simultaneously

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[244] Schelling, *op. cit.* ("First Outline"), nos. 277 – 278, pp. 197 - 198.

[245] Schelling, *op. cit.* ("First Outline"), nos. 289 – 290, pp. 205 – 206; see also Schelling, *op. cit.* ("First Outline", "First Division"), no. 77, p. 13. In passages like these, "finite" seems to mean defined, limited, or conditioned, and does not, again, denote a finite universe in the physical sense.

with a violence that one can assume proportional with the first, still youthful and untried forces of Nature", such that we can "consider the first mass forming itself as the most original product, as a product that can splinter into new products to infinity", or else "allow all matter … to pass first through this mass (like fire, as it were), so that the parts might acquire the shared constitution which later will be the cause of the universal tendency of all materials toward one another[246]"; we can

> assume … the universe brought itself forth from one mass, conceived in formation, to a system of three original masses, and from these produced itself by an infinitely progressive organization … by means of an always advancing explosion … [such that] every system in the universe must be reducible to three original masses[247].

This is obviously a kind of progressive logical schematic, not a scientific account per se. Yet it also aligns with Bowie's observation of the fact that Schelling's metaphorical "cosmological speculations lead him to notions that sound like the 'big bang' ", and that this is not merely "fortuitous", since "one can trace historical patterns of influence" in this case[248]. We will touch upon some of the possible lines of influence in the next chapter.

Ethical natural cosmology in early German romantic mode: The values of transforming the natural finite

In constructing their new notions of nature the romantics were also constantly seeking ways of overcoming the Enlightenment's fact-value divide. This can be seen as one of the main goals of the new mythology, though they were in the main promising this would have to be developed by a future age. As we have touched on above, the new mythology contained the promise of a future return of unity and harmony with nature, while centering the program on knowledge both in the present and in the imagined future.

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[246] Schelling, *op. cit.* ("First Outline"), nos. 151- 154, pp. 86-89.

[247] Schelling, *op. cit.* ("First Outline"), nos. 151- 154, pp. 86-89.

[248] Bowie, *op. cit., Schelling in Modern,* p. 8.

One way of trying to trace where the romantics ascribed other intrinsic values to the physical world other than in a new mythology metaphor is to turn to the three generalized cosmological questions which run through much of their speculation on the natural world.

These three questions were "How is the infinite present in the finite?" "How must the world be for a moral being?" and, essentially, "Where is God?" These questions all responded in part to Kant's famous strictures on rational cosmologizing[249], as well as to some of Jacobi's twofold lines of attack on both the rationality (or philosophical justifiability) and the ethics of any type of philosophical naturalism taken as a sufficient worldview. The romantics were furthermore intent on tying their answers to these three questions together into one, against Kant's claims that we could not connect any sense of moral cosmology with an understanding of the physical world[250].

To begin with the last question first: where was God, including in terms of imbuing the physical world with value? Was these romantics' oft-cited pantheism a nature-worshiping kind, where the universe itself, in its real, physical presence, was holy or sacred? That is a question of debate, but in general terms, it seems inaccurate to portray them as nature-worshipers in any strict sense. Efforts to portray them as pan*en*theists seem feasible in many ways from the standpoint of theology[251]. This does not, however, immediately secure an answer to the question of whether or how they en-valued the physical natural world as a result of their positions on theism.

The four thinkers we are considering answered the question "Where is God (in this naturalistic view of the world)?" somewhat differently. Schlegel at times atheistically portrayed humans as divine, such that every truly "infinite individual is God", and their "purpose on earth will be to transform the finite into the infinite[252]". He tended toward

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[249] Immanuel Kant, *Critique of Pure Reason,* Second Edition, Kemp Smith, Norman, Trans. (London: Macmillan, 1973 [1929] (1787)), Book II, Chapter II.

[250] Cf. Borgmann, *op. cit.,* p. 238 (citing Kant, Conclusion to *Critique of Practical Reason* (1788), p. 243.

[251] Re Schelling's panentheism, cf., e.g., Michael Murphy, "The Emergence of Evolutionary Panentheism," in *Panentheism across the World's Traditions*, Biernacki, Lorilai, & Clayton, Philip, Eds. (Oxford, UK: Oxford University Press, 2014), pp. 179 – 180. Cf. Lamm, *op. cit.,* p. 167.

[252] Schlegel, *op. cit.* (*Philosophical Fragments*), no. 406, p. 82; and no. 16, p. 95.

conceptualizing a new-mythological view of a future new Christianity, "liberated" to take on a different form, one based on the philosophical and aesthetic intuition of human thinkers: "Plato's philosophy," Schlegel writes, "is a worthy preface to the religion of the future[253]".

Novalis seemed to vary between roughly sharing this view of a progressive, historicized Christianity[254] and a more mystical panentheistic conception of the world, where nature aspired to God as a moral ideal outside the world[255]. His panentheism also seems to link with a form of en-valuing nature as sacred, as where he writes that " 'If God could become a human being, he could also become a stone, a plant, an animal, and an element, and perhaps there is in this way an enduring redemption of nature[256]' ". Novalis also wrote, in one of his proto-statements of panentheism (which term was not in use until the 1820s):

> true religion seems … to be antinomically divided – into pantheism and entheism. … However incompatible the two seem to be, nonetheless, their union can be effected – if one makes the entheist mediator the mediator of the intermediate world of the pantheist – and as it were centers this by means of him – so that each makes the other necessary, but in different ways. … Every object can be a temple for the religious person, in the sense of the augurs. The spirit of this temple is the omnipresent high priest – the entheistic mediator – who alone stands in an immediate relation to the All-father[257].

While partly seeming to en-value the Earth as sacred, the notion of the temple also partly suggests seeing nature as a symbol, or means of passing over to, the divine, rather than sacred in itself.

Hölderlin at times placed God in the future, leaving the current world perhaps transient and perhaps destined to fall away. Yet his emphasis on beauty, and on gratitude, for our

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[253] Schlegel, *op. cit., Fragments,* p. 96, item 27.

[254] Crowe, *op. cit.*, p. 145.

[255] Cf. Novalis, *op. cit., Notes for a Romantic,* p. 9, No. 60: "God has nothing to do with Nature – He is the goal of Nature".

[256] Crowe, *op. cit.,* pp. 145 – 146 (citing Novalis, *Encyclopedia*, (III, 664), also x603, x604/III, 666).

[257] Cf. Novalis, *op. cit.* (*Philosophical Writings*), no. 73, pp. 35 – 36. Cf. also Larmore, *op. cit.,* p. 221, and Crowe, *op. cit.,* p. 134.

situated condition, also point toward not wishing to see the physical world as other than sacred or divine in the present. In *Hyperion*, as Ogden points out, Hölderlin elucidates mankind's task as helping to renew the covenant of the spirit "into a collective and cosmic enactment of the principle of Beauty[258]"; beauty partakes of the divine and perhaps is part of the divine, able to animate the new religion of reason[259].

Schelling, like Hölderlin, explores a more pantheistic path during this period, since at least during his romantic period he seems to go to some lengths to *not* make a 'Being' out of being, leaving the physical world as God's sole self-manifestation. This potentially values the physical world as divine, but at the same time, the most recurring qualities of Schelling's divine nature seem only to be the same set of properties – such as freedom, unity, self-groundedness, and ideality – which are formulated while simultaneously acknowledging he is not able to address the *existence* of Nature-nature, and must take this for granted. This leaves the divine quality of his universe somewhat undeveloped, reliant on philosophical discourse to convey a world-conception which, without the poetic and artistic expression of the other three, can seem overly idealized or metaphorical to simultaneously fill some of the role of a divinity, leaving him, again, having recourse increasingly to art in the latter part of this period, as a more successful expression of his monism and panentheism or pantheism, than nature itself.

In their second question, "How must the world be for a moral being?", which we recall from *Systemprogramm*, we can also already see from the outset that to the extent this concern influences their construction and/or perception of the physical universe, the answer to this question would be: "the world must allow *us* to be "moral" within it, i.e., *free* within the bounds of necessity within it". This arguably influenced their conception of nature as a free, i.e., autarchic, whole, the better to symbolize and reflect human freedom of the same type; at the same time, all four also answer this with: "it must be knowable," since knowledge of

[258] Ogden, *op. cit.,* p. 457 (citing *Hyperion* III, 90).

[259] Ogden also links this to the interest in Schlegel, Hölderlin, and Novalis (and Schleiermacher) in the writings of St. John, and in forming a kind of " 'Johannine Spinozism' ", Cf. Ogden, *op. cit.,* e.g. p. 459.

nature becomes a central vocation for human beings in their new vision of a new mythological future, and is central to their religious views as well, as discussed above.

This brings us to the first (and last) question of romantic philosophy of nature, here considered in the context of finding value in the physical world: "How is the infinite present in the finite?"

Schelling was broadly preoccupied with the very "possibility" in all its guises (actual and potential) of the infinite connecting with the finite, calling "the exhibition of the infinite in the finite" "the highest problem of all systematic science," a question which "subordinate sciences" can address in the particular, but which philosophy must solve "in its greatest universality[260]". The infinite or the absolute, and its connection with the finite, was a recurring preoccupation of Schlegel and Novalis[261] as well as Hölderlin (cf. above). Schlegel, who held the infinite and consciousness to be the two basic principles which one must always use in philosophizing[262], asked, " '*Why has the infinite come out of itself and made itself finite?* – that is in other words: *Why are there individuals?*—Or: *Why does the play of nature not run itself out in an instant, so that nothing would exist?*'[263] ".

One potential value of the physical world to be gleaned, if indirectly, from this preoccupation with the infinite, was the romantics' conviction that individual human lives and all their experiences, could rightfully be seen to have a sort of infinite significance in the metaphysical sense; that everything that happened must in principle be part of the same great monistic tapestry, that it must be possible to make even "the individual moment, … the individual situation etc." universal and absolutized, in Novalis's words[264]. Hölderlin writes: "even in a limited life man can live infinitely, and even the limited representation of

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[260] Schelling, *op. cit.* ("First Outline"), no. 79, p. 15.

[261] Cf. Nassar, *op. cit.* (*Absolute*), p. 260.

[262] Recall Schlegel's "Only in relation to the infinite is there meaning and purpose; whatever lacks such a relation is absolutely meaningless and pointless", quoted above.

[263] Schlegel, from around 1800, in a Jena lecture given by Schlegel on philosophy, quoted in Smith, *op. cit.,* "Friedrich Schlegel's", pp. 248, citing (KA Vol. 12, p. 39).

[264] Novalis, *op. cit.* ("Notes"), no. 87, p. 14.

a deity that emerges for him from his life can be an infinite one[265]". Still, there is always a risk that, with this "infinitizing" or "romanticizing" goal of finite human life, including finite experiences in or understanding of nature, even what might be valued as beautiful or worthwhile in the physical world we encounter in this effort, could be so only because of an attribution of beauty to unity qua *principle*[266], helping the limited subject grasp, through intuition, more of an infinite which lies well beyond experience of that world. Pursuit or construction of beauty of the infinite and transcendent kind can over-write or even remove the physical world in its specifics, just as we saw in the infinite creative chaos in which the romantics find the new principle of form. At times the interchange, the back-and-forth, between the finite subject and the infinite or final absolute status of nature, which has the subject always interrogating nature to find its mind-like-ness, and glimpse its primordial unity with the all, leads to making of the physical world a site of a new vocation. Novalis writes, "We *seek* the absolute everywhere and only ever *find* things[267]"; we are exiles in a world of [cognitive or perceptive] disunity and finitude, but know ourselves fundamentally to be a piece of a unity which is infinite; thus, we *seek* it without ceasing (even knowing we will never fully find it).

As Schlegel claimed in his *Woldemar* review, pure knowledge can give value to life[268]. As Millan notes, his views of the infinite also had a normative (as well as vocational) quality to them; as she writes, Schlegel's vision of monistic reality, and opposition to Kant's thing in itself, was indicative of his "desire to free us from the illusion of the finite" world of the thing-ly altogether, moving instead toward a notion of ceaseless change and life[269]. Freeing us from the thing-ly will become a recurring theme in the cosmologists' new mythology; whether it entails a valuing of the physical world of our experience, for example other species or specific places or landscapes, is an open question.

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[265] Hölderlin, *op. cit.* ("Fragment of Philosophical Letters"), pp. 234 – 235.

[266] Cf. e.g. Ogden on this point as well, regarding Hölderlin: Ogden, *op. cit.,* p. 429.

[267] Novalis, "Miscellaneous Observations" (1798), no. 1. In Novalis & Stoljar, *op. cit.* (*Philosophical Writings*), p. 23.

[268] Cf. Behler, op. cit..

[269] Millán, *op. cit., Emergence,* p. 143.

For Hölderlin, the striving to become more infinite, which is a constant creative activity, is the new way we have of defining our existence. In *Bruno*, Schelling sketches the divine heights that can be scaled by contemplating an infinite divine universe (like the historical philosopher Bruno's): This type of knowledge can lead to an even higher form of co-transformation, even to the manifestation of the divine in the human. As Schelling has Bruno declare, "when we have scaled this peak and behold the harmonious light of this wondrous cognition, we shall realize that this cognition is at the same time that which is real in the divine essence; then we shall be granted the favor of seeing beauty in its brightest splendor and not be blinded by the sight, and we shall live in the blessed company of all the gods[270]". This more Platonic idea of becoming infinite, too, is not necessarily suggestive of directly valuing the physical world except as a means to the end of this type of contemplation.

The question of the infinite's presence in the finite also touches on the tension between the romantic and the nihilistic. If mankind is trapped longing for an infinitude from which he feels himself tragically, as in Hölderlin, exiled[271], knowing this sense of exile to be the cost of conscious awareness and thus his own reflecting "I" always the destroyer of its own state of primordial unity with the absolute[272], then the infinite can also become a site of infinite *loss* and lack, and lead to a kind of inverted pantheism where there is actively established to be no value in the natural universe at all.

This state of despair and exile already begun, not of the "I"'s own accord, as it were, can lead to onward tendencies to destroy nature and re-make it in the image of the "I", either as consolation and a re-creating of the lost unity around itself in the world, or else so that the world yields up some new means of transcendence over it which would allow the "I" to become infinite once more. Pnevmonidou notes in reference to Novalis that the world-creation of the romantic "I" is intrinsically violent, as it ensures the poet (or the "I") must shield himself, as it were, from anything actually Other, incorporating all his encounters in

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[270] Schelling, *op. cit.* (*Bruno*), no. 329, p. 222.

[271] Cf. e.g. Hölderlin, Untitled, in *op. cit., Essays and Letters,* p. 302.

[272] Cf. on this point too Siarhei Biareishyk, "Review: Philipp Weber: *Kosmos und Subjektivität in der Frühromantik*", *Arcadia* 53 (1), 2018, p. 141, also citing Webber's work (not yet translated).

his one symbolic regime[273]. The path of return to an imagined unity, just like a political utopian project which must destroy its rival contemporary political classes or systems in order to reach a desired end state, "enjoins a process of ceaseless, and potentially violent, transformation of the given,"[274] rather than recovering any "earthly paradise within the givenness of the natural world[275]". In the broadest sense, this possibility is arguably always implicit in the definition of the physical world as a single Nature which is infinite or which is the absolute, since it hints at the need to overcome and transcend the finite world in some sense; the physical world *must* be revealed to be this one infinite "nature", and value must come from this transformation. As Wilson notes of romantic cosmology in Schelling, for example, but which we can also see in the other thinkers, even mathematically describable infinitude does not in itself adequately symbolize Nature: "the actual universe could be "physically infinite … [but] metaphysically finite" conceived of in itself, and only metaphysically infinite when viewed as the Absolute, or "infinite, metaphysical Nature[276]".

Before closing this chapter, it is necessary to distinguish the environmental ethical stances we have been considering in the foregoing, which derive from these four writers' philosophy of nature as seen in their basic ontology, epistemology, new mythology, and universal natural history (as well as, in this section, some of the moral cosmology questions they seemed to engage with[277]), from the at-times more robust environmental ethics which can be found in these romantics' broader oeuvre. Hölderlin's poem "The Rhine," for example, has been read as highlighting this river's role as a site of the holy and possessed of its own rights and destiny; and "The Poet's Vocation" along with *Death of Empedocles* (as noted above) as showing Hölderlin's attention to problems with the scientific and technological as a way of approaching nature[278]. In Novalis' novel *Henry of Ofterdingen,* Rigby locates an

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[273] Cf. Pnevmonidou, *op. cit..*

[274] Rigby, *op. cit.*, p. 39.

[275] Kate Rigby, "Recovering from the Fall: The greening of modernity", *Journal of the Australasian Universities Language and Literature Association,* Vol. 96 (1), p. 39.

[276] Andrew D. Wilson, "Romantic cosmology," in Norriss S. Hetherington, Ed., *Encyclopedia of Cosmology (*New York: Garland, 1993), p. 601.

[277] Cf. Borgmann, *op. cit..*

[278] Rigby, *op. cit., Topographies,* p. 187; p. 124.

"eco-civilizational orientation[279]". Bowie, too, casts Schelling's identity philosophy (post 1801) in its break from Fichte as "green" and as deliberately opposed to Fichte's view that human beings should harness and overpower nature[280]. As I am necessarily remaining focused on only the philosophy of nature, with its different way of carrying forward German romantic views, it is impossible to here do justice to these and numerous other related interpretations of these romantic thinkers as important fonts of environmental ethics.

Conclusion

This chapter has laid out five elements of the early German romantic philosophy of nature which I will argue make a return, in a new guise, in 20th century big bang cosmology: their basic ontology and epistemology; the traits or principles they were willing to ascribe to their monistic whole once situated within it; their concept of a new mythology of reason; their understanding of the philosophical potential of a universal natural history; and a certain environmental ethics or moral cosmology insofar as this seemed to inhere in the first four aspects of their thought. My effort has been to present a cosmological reading of these thinkers, which with their intriguing and creative critical monism, is readily possible, without distorting them into proto-big bang cosmologists.

Tensions remained in their thinking of nature. Claims to have uncovered a new "nature" which did not forbid, but welcomed, the human ready to approach it in a spirit of a new kind of knowledge-seeking, while remaining cognizant of the limits on positive knowledge of the whole as such, stood in overall tension with what one scholar calls their simultaneous acknowledgement of the "opacity of Being[281]". Their epistemological approaches, likewise, were self-acknowledged to rely on intuition more than any formalized way of understanding

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[279] Kate Rigby, " 'Mines aren't really like that': German romantic undergrounds revisited," in *German Ecocriticism in the Anthropocene,* Schaumann, Caroline, & Sullivan, Heather I., Eds. (New York: Palgrave Macmillan US, 2017), p. 121, p. 112.

[280] Bowie, *op. cit., Schelling in Modern,* p. 58.

[281] Millán-Zaibert, *op. cit.,* "Revival", p. 97: she notes that her reading of Pinkard is that the Early German romantics "accept the opacity of Being" (contra Hegel).

knowledge – another feature of the penetrating quality of their monism, which sought unity in all ways and in all modes of thought.

Halmi claims early German romanticism left a kind of dissatisfaction or even failure in its wake; that this philosophical effort burned out (by around 1808), in effect, after having been unable "to secure any actual meaning from a purportedly infinite store of potential meaning" in the world as they conceived it[282]. Whether an accurate depiction of the philosophy or not, this would not prevent it from returning in several new guises in the centuries to follow, particularly in the modern sciences, drawn in part to its new mythological notion that a valuable and *ethical* new view of reality could derive solely from looking upon the natural world.

[282] Halmi, *op. cit.,* pp. 18 – 20.

Chapter II

Locating a return of early German romanticism in big bang cosmology: Continuities and criticism

Introduction

Having introduced in the previous chapter some of the salient features of the early German romantic cosmological construct, this chapter will provide the rest of the framing groundwork for my claims that big bang cosmology returns to these same features, while giving them a different outer form and adapting them to their own context, in the construction of their universe.

In this chapter I will utilize additional historical secondary scholarship to sketch out a few of the important ways in which the idea of "nature" stemming from our four early romantics' thinking continued to influence perceptions of nature in diverse realms of art, science, and philosophy, well into the twentieth century. I will highlight some in the philosophical and literary studies realm who have drawn out aspects of the German romanticism at work in big bang cosmology, and I will seek to situate my work relative to a few others in and around the Science & Religion and philosophy fields who have either critiqued, or argued in favor of, the relevance and/or normatively positive results of connecting the cosmological discourse's "nature" with the ecological crisis discourse.

A sketch of some rough lines of historical continuity

The parallels between our four romantic thinkers' universe-conception and big bang cosmology's are striking on their own, without requiring us to handle the separate question of whether and how to prove there was any type of direct descent of the later form from

the former. It will serve the argument just as well, and simplify the presentation, to treat scientific cosmology post-1917 as a fresh iteration of an early German romantic approach to nature as a whole. At the same time, several historians of ideas and of science have begun to look at early German romanticism's lingering presence in European and North American thought including in the sciences, and it remains worth sketching, at least for the purposes of providing additional context, a few of the lines of continuity they have begun to trace out.

Sometimes, the question of lingering historical influence is reduced to whether the content of romantic scientific or natural-philosophical ideas, especially Schelling's, e.g., ideas about symmetry, or temporal emergence, or unification of all forces, can be found in the actual theories of modern physical science. Caneva holds it is difficult to prove, and Gower that it is evidently untrue, that Schelling and his romantic contemporaries directly influenced the development of modern physics as a whole[283]. Caneva does highlight Hans Oersted and the minerals scientist Christian Weiss as two scientists directly influenced by Schelling who also made important contributions to their fields[284]. As major a scientist as Faraday is also often cited in the historical literature as having embodied something of a romantic approach to physics and chemistry. Some of the papers of James Clerk Maxwell likewise suggest an early German romantic view of or approach to nature[285]. Abrams points to a sizeable influence of *Naturphilosophie* on 19th and 20th century physics (mostly referring to electromagnetism and field theory)[286]. Wilson claims that the Schellingian and broader romantic approach to nature had "epoch-making consequences for the subsequent development of scientific

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[283] Gower says Schelling's was an "abortive attempt to revolutionize scientific thought" which petered out in ideas about galvanism, and Oersted's theories of dynamical chemistry: cf. Barry Gower, "Speculation in physics: the history and practice of *Naturphilosophie*," *Studies in History and Philosophy of Science,* Vol. 3 (4), 1973, p. 327.

[284] Kenneth L. Caneva, "Physics and '*Naturphilosophie*': A Reconnaissance", *History of Science*, Vol. 35, Mar 1, 1997, p. 97, p. 54.

[285] E. g., in contemporary cosmologist and physicist Frank Wilczek's popularized science book *A Beautiful Question: Finding nature's deep design* (2015), he includes an extract from Maxwell's papers where Maxwell writes that man must partake of infinity and strive to be an "impersonation of the divine processes of nature, and to show forth the union of the infinite with the finite", and elsewhere cites Maxwell on how the individual wanting to cultivate an awareness of justice and truth in his own existence can draw on the laws of nature and their steadiness for support, cf. Frank Wilczek, *A Beautiful Question: Finding nature's deep design* (New York: Penguin, 2015), p. 164, p. 192.

[286] M. H. Abrams, *Natural Supernaturalism: Tradition and revolution in romantic literature* (New York: W. W. Norton, 1973 [1971]), p. 171.

cosmology and of physics in general[287]". Gale claims that modern biology as a whole "emerged from *Naturphilosophie's* inklings of cell theory[288]". Richards calls "the historical or developmental approach" of the early German romantics a "leitmotiv that will resonate through much of subsequent Romantic literature and science", and notes Schelling was admired by Humboldt (cf. next section) and many other natural scientists of the 19th century, also making a case for the influence of early German romantic and Goethe-ian approaches on Darwin[289].

Separately from any question of their German romantic roots, developments in the theories of evolution and geology during the 19th century themselves offered new prospects for developing a more empirical understanding or image of German romantic ideas of an historically unfolding Nature-nature, both for scientists and philosophers, and the general public. The theory of natural selection, in particular, seemed congenial to Schelling's time-bound, self-grounded, self-explanatory and developmental Nature-nature with its own inner principles and powers giving rise to a gradual complexification out of simpler forms. Darwin's theory also brought subject and object together in new ways, since the human was shown to be part of the same evolutionary web as all other forms of life, in a way somewhat akin to the early German romantics' central intuition of mind-nature unity.

Surveying such vast expanses of time and space as was required to conceptualize the geological formation of the Earth, the evolution of plants and animals as well as man, and the new vistas of the night sky being opened up by Herschel's and others' more powerful telescopes, all while removing or at least challenging the role of divine telos and other aspects of God's role in nature, also made the threat of nihilistic materialism remain the dogging shadow of the more optimistic and future-directed romantic spirit tied in with these

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[287] Cf. Andrew D. Wilson, "Romantic cosmology," in Norriss S. Hetherington, Ed., *Encyclopedia of Cosmology* (New York: Garland, 1993), p. 602. Wilson notes as romantic Oersted's belief in a unifying force in nature, which led to his 1820 work on formulating electromagnetism (pp. 602-603); and Faraday's perception that not only electricity and magnetism, but also gravity, could be joined as one, a view he also notes prefigured Einstein (pp. 603 – 604).

[288] George Gale, "Leibniz, Chew, and Wheeler on the Identity of Physical and Philosophical Inquiry", *Review of Metaphysics*, Vol. 29 (2), Dec 1, 1975, pp. 323 – 324.

[289] Richards, *op. cit.,* p. 109, p. 129.

new sciences. The rival interpretive lens, the nihilism which would find only the inverse of the ostensible meaning and beauty the romantic claimed to be able to derive from his point of view as a subject aware of the unity of the infinite and its immanence in the finite, was fed by, in the words of one historian of science, Burwick, the seeming "littleness of human endeavor" given the "vastness of space" and the "fatigue of mind and spirit" which arose when "attempting to grapple with the concept of infinite space[290]". The romantic subject, reliant on no first principles to begin to think, and seek to reveal, his own nature and the physical world's, including during the distant past and distant future, increasingly had to become acquainted with his mirror image in the "I" which could find no meaning for the finite individual at all in such a would-be cosmos.

Early German romantic thought continued to influence, too, both subsequent iterations of German romanticism, from later in the 19th century through to arguably the 20th century[291], and other romanticisms in Britain and the United States, where these romanticisms in turn remained engaged with, influencing and being influenced by in turn, the sciences and philosophy. Early German romantic thought, particularly via Schelling, had even at the time exerted an influence over their roughly contemporaneous English romantics Wordsworth and Coleridge[292]. As historians of environmentalism Hinchman & Hinchman note, for Coleridge, like Schelling, "no part of nature is fully intelligible until one has understood the whole[293]". Raiger notes that Coleridge held that "the true poet and true scientist know that they see the world through symbols", and this "yields a recognition of the unitary form of human subjectivity and laws of nature, subject and object[294]". Gare notes that Coleridge himself had a close relationship with many scientists and mathematicians, and contends

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[290] Frederick Burwick, "Romantic sciences: British and Continental thresholds", in Jon Klancher, Ed., *A Concise Companion to the Romantic Age* (Malden, MA: Wiley-Blackwell, 2009), p. 171, p. 176, p. 177, pp. 169ff..

[291] Safranski, *op. cit.,* offers a history of all the iterations of German romanticism from the beginnings of the movement in the 18th century through to forms appearing in the 20th century.

[292] Coleridge and Wordsworth had spent a year in Germany 1799 – 1800 and were exposed to German romantic works including Schelling's, cf. e.g. Garrard, *op. cit.,* p. 63.

[293] Lewis P. Hinchman & Sandra K. Hinchman, "What we owe the Romantics", *Environmental Values,* Vol. 16, 2007, p. 337.

[294] Michael Raiger, "Coleridge's theory of symbol and the distinction between reason and understanding: A genealogical recovery of the Baconian method of science", *History of European Ideas,* Vol. 36, 2010, p. 315.

that "to a considerable extent, the most creative developments in science since that time" of Coleridge's era "can be seen as progress of the Romantic conception of nature as consisting of activity producing and maintaining stable forms, fields of force and self-organizing processes in place of Newtonian cosmology[295]". Wordsworth expressed his sensitivity to mathematical beauty[296]; the journal *Nature*, launched in 1869, which would become the preeminent scientific journal in the world, originally carried a masthead containing a quotation from Wordsworth implying an eternal and monistic whole "nature" of the romantic type as the nature which the journal's scientific findings sought to reveal[297]. Both indirectly through Wordsworth and Coleridge, and via the continued spread of ideas directly from Germany, early German romanticism also influenced the views of nature held by later English romantics such as Keats, Shelley, and Byron. According to Stahmer, Shelley and Wordsworth both parlayed their interest in linguistic theories and unities between mind and nature (and unities in nature) to Ada Lovelace, who in turn developed them toward her pioneering work in computer programming[298].

In the United States, early German romantic philosophical conceptions of nature continued to grow and evolve into new forms with the burgeoning of American romanticism and transcendentalism. Ralph Waldo Emerson, who also read Schelling, sought to, in the words of one historian, " 'grasp the infinitely large' by piercing the natural form and reducing it to a set of principles," and perceived a single governing intelligence at work in nature which

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[295] Arran Gare, "Deep ecology, the radical enlightenment, and ecological civilization", *The Trumpeter,* Vol. 30 (2), 2014, p. 192.

[296] Writing, e.g., of how, through a study of geometry, he might "beguile his sorrow, and almost/ Forget his feeling", and not only "So was it with me then" but also "so will be/ With Poets ever", cf. Carl Stahmer, *Romanticism, hypertextuality, and metavisual information theory* (2005: ProQuest Dissertations & Theses Global), p. 68, citing Wordsworth *Prelude* 6.135-187.

[297] 'To the solid ground/ Of Nature trusts the Mind that builds for aye.' – Wordsworth. Cf. nature.com/articles/224424a0.pdf.

[298] Cf. Stahmer, *op. cit.*. These interests are also reminiscent of Novalis's desire to join mines science with grammar, including via a study of individual words, cf. e.g. Novalis, *op. cit.* ("Notes"), no. 333, p. 49; or Novalis where he writes, "The numerical system is the *model* for a genuine system of linguistic signs – The letters of our alphabet shall become numbers, our language, arithmetic", Novalis, *op. cit.* ("Notes"), nos. 9 and 11, p. 195.

meant "the mind could unlock the universe[299]". Emerson thought it necessary to utilize a direct intuition of nature "in isolation, in the wilderness[300]" in order to know it; as Lanza partly points out, in his isolation, the poet would come to discover that he and nature were co-grounded, in something close to the German romantic (and panentheistic) sense, in God[301]. Walt Whitman, like Coleridge, Wordsworth, and even Shelley to some extent, saw a unity between art and science[302]. American romanticism and transcendentalism also exercised influence in turn on the Anglophone (largely American) pragmatic school of philosophy, which in turn influenced developments in American science and scientific epistemology. (Pragmatism was also influenced by romanticism via logical empiricism, cf. below.)

Anglophone romanticism also preserved and augmented early German romantic approaches to universal natural history. As Zakariya notes, by the mid-1800s, scientists, mostly within biology and geology, were increasingly espousing the possibility of a "universal history" in ever more ambitious terms. Zakariya points to John Tyndall's 1874 address to the British Association for the Advancement of Science (BAAS) in Belfast as displaying a conception of universal natural history rooted in German and Anglophone romanticism; he also notes that Tyndall (and Helmholtz) embraced a kind of "transcendental materialism" in his philosophy of nature[303].

Romantics on both sides of the Atlantic read the German romantic scientific explorer and natural historian Alexander von Humboldt's broadly published work *Cosmos,* translated into English in 1849 (cf. next section). Edgar Allan Poe attempted his own idealistic and intuitive

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[299] Baker, *op. cit.*, p. 407, also referencing Laura Dassow Walls, *Seeing New Worlds: Henry David Thoreau and Nineteenth-Century Natural Science* (Madison, WI: University of Wisconsin Press, 1995), p. 113 and p. 1.

[300] Aidan Day, *Romanticism: The new critical idiom*, Second Edition (London: Routledge, 2012 [1996]), p. 192, also citing Deborah Madsen, *American Exceptionalism* (Edinburgh: Edinburgh University Press, 1998) (p. 74).

[301] Robert Lanza, "A new theory of the universe", *The American Scholar,* Essays, 1 March 2007, p. 33; he is referring to Emerson's *The Over-Soul* (1841).

[302] Cf. John Neubauer, "Science and Poetry", A. Preminger et al., Eds., *The New Princeton Encyclopedia of Poetry and Poetics* (Princeton: Princeton University Press, 1993), page not given; referencing Preface to Whitman's *Leaves of Grass*.

[303] Zakariya, *op. cit.,* p. 127. Per Zakariya, the "romantically minded Thomas Carlyle" and Faraday were influences upon Tyndall (cf. p. 98).

answering 'history' of the universe, *Eureka* (1848), which he dedicated to Humboldt. *Eureka* was ostensibly a cosmogony and cosmology in 'prose-poem' form, but it is somewhat unclear whether *Eureka* is celebrating or lampooning Humboldt, since *Eureka* reads something like a combination of a romantic universal natural history combining idealism with realism, a poem, and a diatribe about philosophy and science. It was widely panned by critics at the time, perhaps because they were unsure whether Poe meant to be taken seriously or ironically[304].

In the American pragmatic school of philosophy, C. S. Peirce developed a kind of complex cosmology influenced by Schelling (and Hegel), an "objective idealism" which included an idealist cosmogony from nothing. His cosmological thought did presage some aspects of big bang romanticism with its interest in explaining the laws of nature themselves as the result of pure chance. Peirce was very engaged with the question of how any primordial homogenous chaos (ruled only by chance) could possibly transform itself into a law-driven and diversified cosmos[305]. Twenty-first century big bang cosmologist Lee Smolin cites Peirce's understanding of natural laws (and 'habits' of natural things) approvingly[306].

Another school of philosophy (which would also later feed into and influence American pragmatism), variously referred to as the Vienna Circle, the logical empiricism school, or the logical positivist school, cultivated its own romantic elements. The Vienna Circle rose to prominence in the early 20th century by claiming the authority to translate, as it were, the twin behemoths of the new modern physics, relativity and quantum mechanics, to the rest of the academic (and broader) world[307].

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[304] Mihai A. Stroe, "Poe's hieroglyphic universe: The master keys", *Romanian Journal of Artistic Creativity,* Vol. 2 (4), pp. 19 – 81. Stroe notes that Poe was one of the favorite authors of Alexander Friedmann, the Russian cosmologist who was the first to solve Einstein's cosmological field equations (cf. pp. 23 – 24), but it is not known for certain if Friedmann read *Eureka*.

[305] Cf. Claudien Tiercelin, "Peirce's objective idealism: a defense", *Transactions of the Charles S. Peirce Society,* Vol. 34 (1), Winter 1998, pp. 1 – 28; and T. L. Short, "Did Peirce have a cosmology?", *The Transactions of the Charles S. Peirce Society*, Vol. 46 (4), 2011, pp. 521-543.

[306] Lee Smolin, "Temporal Naturalism," *Studies in History and Philosophy of Modern Physics,* Vol. 52, 2015, pp. 96- 97.

[307] Cf. Thomas Ryckman, *The Reign of Relativity: Philosophy in physics 1915 – 1925* (Oxford: Oxford University Press, 2005).

The logical empiricists were reactionary against Kant to a more ambitious extent than the German romantics. Philosophers like Moritz Schlick claimed that the substantial, meaningful novelty, and empirical success, of general relativity constituted incontrovertible evidence contra Kant's claims that we can only think categorically and never know nature in itself[308]. This of course arguably rested on something of a false dichotomy: it presented the two choices as *either* Kant's holding the thinking "I" at bay from reality as such, *or* the "I" having discovered that none of his strictures on human knowledge held any validity. While our four early German romantics would likely not have agreed with Vienna Circle practitioners' claims to have overcome Kant, they had arguably partly equipped this school for their claims with their positioning of a thinking I in contact with some awareness of nature as the absolute, however tangential, their elimination of Kant's idea of a nature "in itself" which we could not access, and their discarding of all talk of being or ontological (rather than ideal) first principles. While some within the group did try to instill caution about this dichotomy, and as a result about any claim to now suddenly know reality as such, others circumvented the issue by declaring there to be no such thing as a reality in itself, and/or to claim they were perfectly content if "all" they could speak about were precise observations and the logical and mathematical ways of clearly and precisely connecting them. This profession of epistemological modesty was always tenuous, since they eliminated the viability of any *other* way of speaking about nature. The romantic idea was always hovering that scientific study supported by mathematical logic really was able to access reality, and that its depictions really were of the *one* true world. The heavy focus on epistemology as such, even on the *experience* and *activity* of knowing, was also romantic. Bowie points out that early German romantic philosophy played a "subterranean role" in the group's positions[309]. When scientific realism and scientific naturalism edged out Vienna ideas after the 1950s and 1960s, they would overturn their epistemological caution (such as

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[308] Cf. Ryckman, *op cit.*, p. 6 (partly quoting Schlick speaking in 1922): Since the subject " 'finds itself obliged to use non-Euclidean geometry" to describe the "same world [as Newton's]", "Through Einstein … [it[has now become a reality, [that] the Kantian position is untenable, and empiricist philosophy has gained one of its most brilliant triumphs' ".

[309] Andrew Bowie, "The Romantic Connection: Neurath, the Frankfurt School, and Heidegger, Part I", *British Journal for the History of Philosophy*, Vol. 8 (2), 2000, p. 276.

it was) without overturning their basic methods or picture of "nature". That this was the "nature" once again able to be held up as the absolute, as we will see, suggests nature as physics was ostensibly able to presence it had never actually been too far from older romantic ideas of it all along.

There were also romantic tenets (ready to be augmented and refurbished once scientific naturalism and realism returned) implicit in the Vienna Circle habits of speech regarding science and its role in the world. The Vienna Circle put forward its own version of a new mythology-like approach to science and human culture, a kind of political heroizing or even deliberately making-religious (or making-ultimate) of the epistemological stance of the human scientific thinker. The Vienna Circle held that science could, as Ryckman notes, become "the primary instrument of human advance from the dreary annals of superstition, dogma, and fanaticism that permeate human history[310]". As Romizi has also documented, the scientific world conception consciously espoused and cultivated by the group gave rise to an active public and political ideology, particularly after 1929 when group members published a kind of manifesto[311] which distilled one thing that united the otherwise disparate group of thinkers: simply the stance that there *was* such a thing as the scientific world-conception and that it was necessary to actively promote it as such, and that it constituted some kind of ethical or normative good for society at large[312].

Among the romantic new mythology-like goals which flowed from this position was the goal of the unification of the sciences themselves, as well as other fields like philosophy under science's umbrella. There was an aspect of this which reflected Novalis's dream of unifying all the sciences by making them all more ideal. They worked on using mathematics and logic in science, and rendered philosophy into part of the "scientific enterprise[313]", which

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[310] Ryckman, *op cit.*, p. 12.

[311] Entitled *The Scientific Conception of the World: The Vienna Circle* (Carnap et al., 1929).

[312] Donata Romizi, "The Vienna Circle's 'Scientific World-Conception': Philosophy of science in the political arena", *HOPOS: The Journal of the International Society for the History of Philosophy of Science*, Vol. 2, Fall 2012, pp. 212f.. Also cf. Michael Stöltzner, "The Logical Empiricists," in Helen Beebee, et al., Eds., *The Oxford Handbook of Causation* (Oxford: Oxford University Press, 2015 [2009]), p. 108.

[313] Cf. Richard Creath, "Logical Empiricism", *The Stanford Encyclopedia of Philosophy* (Fall 2017 Edition), Edward N. Zalta, Ed., no page numbers.

now took on ever greater importance, including these new mythology-like social and even political or cultural goals as expressed in the manifesto. This world-view aimed specifically to reject any notion that there were questions which philosophy in the old sense, qua traditional metaphysics *not* tethered to or rooted in the physical sciences, could still address which science could not, any perhaps lingering religious notions that philosophy needed to retain its independence from science so that it could access "matters, perhaps cultural ones … more profound and important" than those the scientific world conception could legislate upon; the concept that "fidelity to evidence and punctilious argument is somehow small-minded" had to be removed[314].

There were, again, as in the early German romantic approach, no first principles, no chaos or origins, and no "being" to worry over when discussing nature[315]; in a way which went well beyond what the romantics would have attempted or sought, they removed all that existed (as Jacobi might say) except for what was knowable via scientific experiment and mathematical logic, in order to build a better world, again having recourse to epistemology as such to form the mainstay of their vision. Cosmography or the "scene" of the physical world per se was not their primary goal but exposing its innermost structure.

Their position that scientific approaches would allow human beings to reliably create not only a knowable world but one with values and inherent value, would remain deeply ingrained in physics ever after. Ryckman goes so far as to claim it was the stance by the Vienna Circle that relativity and quantum mechanics had re-asserted science's empirical access to the only type of truth or reality accessible to us, contra Kantian restrictions, which formed the main foundation of later twentieth-century scientific natural-*ism*, with all its connotations of offering something like a complete worldview[316]. Życiński holds that the "cognitive monism" of the Vienna Circle was formative for modern physics, linking it with thinkers like Stephen Hawking: he calls this monism the belief that there is "one rational

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[314] Cf. Creath, *op. cit.,* no page numbers.

[315] The Vienna Circle and logic used Frege's way of indicating existence via logic and logical symbolization: cf. Roger Scruton, *A Short History of Modern Philosophy: from Descartes to Wittgenstein,* Second Edition (London: Routledge, 1995; first edition 1981), p. 241.

[316] Ryckman, *op. cit.*.

interpretation of the world that eliminates any sense of mystery", that "science can answer all ultimate questions of humankind", and that physics is able to "provide explanations that would be at the same time consistent and complete[317]".

Einstein's friend, the mathematician Gödel, was in the Vienna Circle, which was also (per above) engaging with Einstein's own theories. Einstein, like the Circle's philosophers, regularly cited the philosopher and scientist Ernst Mach as a major influence. Mach worked on causation and its representation in mathematics, echoing and enhancing (without naming it as such) the idea explored by the early German romantics that mathematics and nature both "knit" relations in the same, auto-poietic, way, a way that was both logical and causally meaningful, making mathematical depictions of causes in nature somehow more than only descriptive metaphors. He also offered somewhat a priori or idealism-based theories of the need to conceive of nature as a single causally connected whole, ideas which Einstein would later seek to develop and test mathematically, notably in cosmology[318].

A final line of historical continuity to note here is the way in which early German romantic elements were important in the development of systems theory, including complexity or emergent causation theories, and later in the development of 'information' views of the universe. These theories came into their own around the same time, the 1960s, that big bang cosmology was becoming formalized, and would in turn exert their own influence upon it (e.g. via scientists like Ilya Prigogine and John Wheeler). These fields also drew from 'postclassical' turns in biology, and then of course after the rise of computing and supercomputing, continued to develop under their influences as well[319]. Key to such fields is the idea of "self-organization … [which refers] to the emergence of stable patterns through autonomous and self-reinforcing dynamics at the micro-level[320]". This is of obvious

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[317] Józef M. Życiński, "Metaphysical and epistemological presuppositions in Stephen Hawking's interpretation of the creation of the universe", *Roczniki Filozoficzne* (*Annals of Philosophy*), Vol. 50 (3), 2002, p. 126, p. 125.

[318] Cf. Christopher Smeenk, "Einstein's role in the creation of relativistic cosmology", in Janssen, Michel & Lehner, Christoph, eds., *The Cambridge Companion to Einstein* (Cambridge: Cambridge University Press, 2014), pp. 228 – 269; and Pierre Kerszberg, *The Invented Universe: The Einstein- de Sitter Controversy (1916-17) and the Rise of Relativistic Cosmology* (Oxford: Clarendon Press, 1989).

[319] Levinson, *op. cit.*.

[320] D. Anzola, P. Barbrook-Johnson, & J. I. Cano, "Self-organization and social science", *Computational and Mathematical Organization Theory,* 23, 2017, p. 222.

proximity to the ideas of nature explored by our four romantic thinkers, especially Schelling. Levinson notes that fields like "general systems theory, computational philosophy, artificial intelligence, non-linear and complexity theory, self-organization theory, and cognitive science" with their "paradigm of dynamic materialism" are not congruent with any paradigms of "nature" *except* Spinoza's, thus making at least neo-Spinozism, if not romanticism per se, the (sometimes tacit) requirement for those who embrace these theoretical approaches, all of which seek to award the system itself its own "principles", in an organism-like manner, not limited to the rules of the parts, seeking in this way to develop intuitions present in glimpses in Spinoza and Schelling – and, we might add, Herder – into a science[321].

Gare, too, cites various late 20th century "theories of emergence" such as "hierarchy theory, post-reductionist evolutionary theory, geography and ecology", and also "the study of complex adaptive systems" as all heavily indebted to Schelling and his successors, who aimed to develop a " 'morphogenetic mathematics' which would 'be able to decipher the internal, dynamic structure of nature' … and account for the emergence of patterns[322]".

Beyond its more technical aspirations, systems theory carries forward a romantic idea that every infinitesimal of experience, every fact and aspect of the world, must in principle be amenable to being 'integrated' up to form the complete and exhaustive whole of which it is a part. Systems theory also aims to let us try to theorize the whole first, and try to derive the infinitesimal phenomena, another romantic idea of nature and how our knowledge of it should work. As Anzola et al. note, the complexity and self-organization approach is being used in the social sciences as well[323], again pointing to early German romantic conceptions of integrating all of nature's manifestations under a single unity: all types of events, and all levels of organization, both human and non-human.

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[321] Levinson, *op. cit.,* p. 374, p. 400. She is citing in inner quotes Ludwig von Bertalanffy, *General System Theory: Foundations, Development, Applications* (New York: G. Braziller, 1968) (p. 37) by way of Mark C. Taylor, *The Moment of Complexity: Emerging Network Culture* (Chicago: University of Chicago Press, 2001) (p. 140).

[322] Gare, *op. cit.* ("From Kant to Schelling"), pp. 67 – 68.

[323] Anzola et al., *op. cit.*.

Related with these developments was also A. N. Whitehead's process philosophy, which he developed in the first half of the 20th century. Like complexity, emergent causation, and other subsets of systems theory, process philosophy was an arguably neo-German romantic way of seeking to develop a new paradigm of nature which was naturalistic and monistic, yet non-reductive; offered a kind of moral cosmological as well as physical view of the world; and was even in some ways non-materialist. Gare calls Schelling the founder of process thought[324]; Rigby notes that Schlegel prefigured process theology at times, and also calls Whitehead's process philosophy itself "romantically inspired", citing Schelling's Herder- and Goethe- influenced notion of the centrality of potentiation and complexification in nature as having "crucially informed" Whitehead's thought[325]. Reynolds points out that while "Whitehead never acknowledges any influence from" Schelling, it is fairly clear nonetheless that "key parallels do exist" between them, and that Whitehead's interest in the unconscious and the continuity between inanimate and animate nature carries strong echoes of Schelling, mysticism and romanticism[326].

Whitehead himself claims some goals for his philosophy which, again while not specifically citing Schelling or the other romantic figures we have been discussing, do strongly echo the way they viewed nature and the task of philosophy itself. Whitehead embraces a philosophy of organism, and uses a concept of "dipolarity " to convey the mind-body complementarity of the structure of the world, reminiscent of romantic efforts to move away from dualism and toward a new type of monism[327]. Creativity is what knits together God and World for Whitehead; God and World are two sides of Creativity's action and both are in continual development[328]. For Skrbina, this view is close to a quasi-panpsychism

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[324] Cf. Gare, *op. cit.,* ("From Kant to Schelling")*,* 28ff.

[325] Cf. Rigby, *op. cit., Topographies,* p. 49; Rigby, *op. cit.,* "Nature, Language", p. 40.

[326] R. Blair Reynolds, "Cosmic Ecstasy and Process Theology," *Cosmos and History: The Journal of Natural and Social Philosophy,* Vol. 1 (2), 2005, p. 327.

[327] Cf., e.g., Alfred N. Whitehead, *Process and Reality: An essay in cosmology; Gifford Lectures delivered in the University of Edinburgh during the session 1927 - 1928,* Griffin, David Ray, & Sherburne, Donald W., Eds., Corrected Edition (New York: The Free Press, 1978), p. 45.

[328] Cf., e.g., Whitehead, *op. cit.,* pp. 348f..

shared by both Schelling in his *Naturphilosophie* phase and Herder and Goethe[329]. (Whitehead did not use the term panpsychist, nor the term panentheist, though Hartshorne, whom he influenced, did apply the term panpsychist to himself[330].)

In another echo of early German romanticism, Whitehead claims his own philosophy is "closely allied to Spinoza's", while removing substance and transforming Spinoza's modes into "sheer actualities" or *occasions,* all of which partake of and constitute the same monistic world[331]. He proposes his own cosmology is in some senses a "transformation of some main doctrines of Absolute Idealism [as exemplified in the neo-Hegelian philosopher Bradley] onto a realistic basis[332]", another echo of some of the epistemological hybridism pursued by our four German thinkers of Chapter One. Whitehead also, like these thinkers, aimed to bridge the moral and physical dimensions of cosmology, calling for bringing "the aesthetic, moral, and religious interests into relation with those concepts of the world which have their origin in natural science[333]". He shares with them their critique of the mechanistic view of nature, preferring the historical emergence of God and world, and cites the need to abandon talk of cosmological first principles[334].

Whitehead's process philosophy gave rise to process theism, and related new versions of panentheism, in writers like Hartshorne, Cobb and Griffin, and Science & Religion writers like Barbour. Process theism is often the basis of the types of panentheism which have become widespread (particularly within Science & Religion) as of the end of the 20th century and in the beginning of the 21st. As noted in the Introduction, this type of panentheism has been influential in shaping theological and Science & Religion scholars' engagement with big bang cosmology, and sometimes crosses into the views openly espoused by the cosmologists themselves, such as Paul Davies. Davies was a contributor to the 2004 Clayton

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[329] David Skrbina, David, *Panpsychism in the West, Revised edition* (Cambridge: MIT Press, 2017), pp. 133ff., 213ff..

[330] Cf. Skrbina, *op. cit.,* p. 216; John W. Cooper, *Panentheism – The other God of the Philosophers: From Plato to the present* (Grand Rapids, MI: Baker Academic, 2013), p. 28, 176.

[331] Whitehead, *op. cit.,* pp. 6 – 7.

[332] Whitehead, *op. cit.,* p. xiii.

[333] Whitehead, *op. cit.,* p. xii.

[334] Whitehead, *op. cit.,* pp. 80f., 70f.; 20, 93.

& Peacocke volume[335] which discussed (and furthered) early 21st-century confluences among panentheism (and in the main process or process-inspired panentheism), big bang cosmology and other modern sciences, and contemporary Science & Religion scholarship[336].

The contrast between process panentheism, and Vienna Circle modernist views of science, shows how early German romanticism would resonate, and be adapted, in a range of ways, including being integrated into both theistic and atheistic thought. Due to the tensions never resolved within German romantic views of nature, some of its legacy moved in ways which bolstered at least some forms of theism, while in other instances its approach, or some aspects of it, was taken up by those pursuing a form of atheistic naturalism.

Philosophy meets praxis: Humboldt's *Cosmos*

One historical link which deserves special focus, if still necessarily briefly, is Alexander von Humboldt's multi-volume work of popular universal natural history, *Cosmos*, published in the middle of the 19th century at the end of Humboldt's long life and career as a scientific explorer, amateur geologist, ecologist, and botanist. According to Sachs, it was Humboldt's book that was at least partly responsible for bringing the term "cosmos" back from the Greek into regular German (*Kosmos* was its German title) and English usage[337].

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[335] Philip Clayton & Arthur Peacocke, Eds., *In Whom We Live and Move and Have our Being: Panentheistic reflections on God's presence in a scientific world* (Grand Rapids, MI: William B. Eerdmans Publishing Company, 2004).

[336] Cf., e.g., Paul Davies, *op. cit.,* "Teleology"; two other examples of [process] panentheistic engagement with the big bang universe in this volume (Clayton & Peacocke, Eds., *op. cit.*) are Russell Stannard, "God in and beyond Space and Time", pp. 109-120; and Arthur Peacocke, "Articulating God's presence in and to the world unveiled by the sciences," pp. 137 – 154.

[337] Sachs, Aaron Jacob, *The Humboldt Current: Avant-garde exploration and environmental thought in 19th-century America,* ProQuest Dissertations Publishing, 2004, p. 9, note 20; p. 133. On p. 133 he is partly citing Robert K. Barnhart, *The Barnhart Concise Dictionary of Etymology: The Origins of American English Words* (New York: HarperCollins, 1995) (p. 165). *Kosmos* was not only, or not necessarily, a physical space or place as much as it referred to the *fact of ordering,* a *having-made-orderly* which seemed to have somehow transpired. Originally, *kosmos* had a "double meaning 'order' and 'world-order' "; cf. Daniel W. Graham, Trans. & Ed., *The Texts of Early Greek Philosophy: The complete fragments and selected testimonies of the major Presocratics, Part I* (Cambridge: Cambridge University Press, 2010), p. 239. *Kosmos* in the Greek sense was delineated from what was called *apeiron,* or no-formed, indefinite, or without-boundaries, in the Presocratic cosmologies. *Kosmos,* then, in the Greek sense was located within the *apeiron,* in an undefined way. When Humboldt brings the term "cosmos" back into use, interestingly, the *apeiron* is gone, and the cosmos is a sense of order alone,

Cosmos is interesting for our study for a few reasons. First, Humboldt, who was something of a celebrity scientist by the time he published this work, was a particular admirer of Goethe, was also influenced by Schelling, and in his younger days had been directly acquainted (along with his brother Wilhelm) with some of the early German romantics in Jena. Humboldt himself in turn also influenced many other 19th century scientists, including Darwin. Thus he is one way in which the early German romantic scientific approach, in a general sense, was preserved and moved forward in both scientific and popular-scientific cultural spheres, in multiple countries. Millán-Zaibert notes that Humboldt in some ways "exemplified Schlegel's mandate to join art and science" and that he is an important, if sometimes neglected, figure in understanding the legacy of *Naturphilosophie* and its lasting influences[338].

Secondly, Humboldt's *Cosmos* (as did Herder's *Outlines,* per Chapter One) presaged a great deal of the general form and presentation of the popularized or interdisciplinary portions of the later big bang cosmological discourse. The affinity for a romantic, truly popularized (in part through appealing to emotion and to beauty), and truly universal (due to its complete scope), natural history which Humboldt displays will reappear in augmented, accentuated ways in big bang cosmology's new universal natural history in the 20th and 21st centuries. (Cosmologist Carl Sagan's popularized work of 1980 even uses the same title: *Cosmos*; we will come to this work in the next chapters.) Humboldt means by *cosmos* something quite close to the romantic conception of "nature", but also retains the Greek sense of the term, connoting an order-for-us which combines a subjective and an objective way of understanding that order, a moral and an ontological one. His book thus creates a first foray into using the empirically-grounded historical sciences to further an early German romantic, neo-Spinozan type of monism which also, through a new mythology lens, sought to present the "nature" thus known as a potential site of human orientation in and harmony with the infinite physical world. Using a new mythology mode which sought to combine epistemology, ontology, history, and a new cultural ethos in one, this work seeks to

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orphaned from any context. I raise these old Greek distinctions here to bear in mind; we will have cause to return to them in the last Chapter.

[338] Elizabeth Millán-Zaibert, *op. cit.,* "Revival", p. 106.

convince (or at times exhort) modern man to see, to gain, this sense of "cosmos". The big bang cosmologist would soon make a bid for the authorial role which Humboldt was in this work trying out.

Humboldt's approach shows us vividly the way in which the romantic can use the progress of history to enhance the empiricism of, and obscure the a priori-isms of, the romantic approach to nature. There is no gap permitted to arise between his idealized (omnipresent, intelligible) "nature" and the makeup of the entire physical universe or physical world of experience. The scientific explorer offers the historical sweep and the scientific view *as* new types of (indubitable) experience, to reinforce this point. *Cosmos* aims to provide his readers with the majesty of the view of the universe enjoyed by the romantic scientific subject, who sees "the chain of connection, by which all natural forces are linked together[339]". In addition to romantic approaches there are also Herder-ian themes present in *Cosmos.* Herder's view of nature, developing and changing through time, had influenced Humboldt[340], and Herder's *Outlines of a Philosophy of the History of Man,* published more than half a century before *Cosmos*, can be seen as quite a clear (if much shorter) precursor to Humboldt's work. Herder's work, as touched on in the first chapter, embeds the history of humankind as a whole in natural history, beginning with chapters on the Earth in astronomical context, and ending with a thorough consideration of human cultural and religious history, including as environment and evolution played roles in these[341].

Humboldt's *Cosmos* takes a similar basic approach, but greatly expands upon it. Humboldt moves from the imagined formation of the Milky Way and the nebulae, the solar system, comets and meteorites, on to treat of the beginning of the earth, the definition of its geology, its volcanoes and other formations, etc.. He constantly invokes a sense of steadily increasing beauty and diversity in nature and metaphors of organicism and growth moving from the simplest to the complex, very reminiscent of Schelling's form of inverted

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[339] Alexander von Humboldt, *Cosmos: A Sketch of a Physical Description of the Universe*, translated by E. C. Otté (London: Henry G. Bohn, 1849 - 1858), in five volumes; Volume I, page 1. Subsequent citations will be in text, (Vol/Page number).

[340] Cf. Rigby, *op. cit., Topographies,* p. 75.

[341] Cf. also Rigby, *op. cit., Topographies,* p. 72.

Neoplatonism and, again, Herder's own presentation. Humboldt remarks that in terms of the outer reaches of space and most of the solar system, we only have to consider 'simple dynamical laws – the laws of motion' (I/45). Calculations depend only on mass, and this 'imparts a high degree of simplicity to the mechanism of the heavens' (I/46), which can be studied using mathematical astronomy alone (I/46 – 47), as opposed to the earth which is more complex and therefore 'so little susceptible of the application of rigorous method' (I/46).

Humboldt was an empirically-grounded thinker, and made contributions to the biological sciences himself. Yet the tenor of the construction contains clear modes of a priori-ism and idealism-based conceptions of Nature-nature as well, in true romantically-inclining hybrid fashion. *Cosmos* uses the viewpoint and epistemological access of a kind of romantic "universal man," those aspects of the romantic subject which try to intuit the whole and express some of its principles or "traits" as really inhering in nature, always a mode which eventually must confront the difficulty with trying to occupy the standpoint of production of Nature in any sustained or direct way, and re-acknowledge that it remains remote, and our knowledge limited to the experience of trying to know it (with the consolations this also brings, and some further insights as well).

There is no mention of a creation of the universe according to first principles, creation out of a substratum of being, or creation out of or by anything else[342]: "of actual creation, of origin, the beginning of existence from non-existence, we have no experience, and can therefore form no conception" about it occurring in either living or non-living but moving nature (I/67 – 68), Humboldt acknowledges. This allows him to present a no first principles, no creation-event, only directly accessible and ceaselessly 'becoming', version of Nature-nature. Revealing the simplicity beneath complexity also serves what Millán calls his desire to "trace back the forms of nature to certain basic types," and ultimately to seek the "seeds of eternal

[342] This is especially noteworthy given that the Presocratics coined the neologism "cosmos" as a relative term, against the *apeiron* which was the real final character of the physical world, cf. footnote above.

growth" in nature[343]. This attention to organism and history obscures the way in which, a priori, the "nature" must already be conceived to consist *only* of the unifiable, and *only* of the laws of change.

Humboldt's history also demonstrates how the treatment of human cultural history, including past human cultures' conceptions of creation, will come to be used as a substitute for discussing or claiming a raw origin of nature itself, a substitution which will also become common in big bang cosmology. The progress out of a state of ignorance by human culture as a whole is presented as part of humankind's echoing of nature's own progression and development toward greater complexity and self-awareness. In previous eras, mankind only had a "glimmering perception" of the "same image of a Cosmos, or harmoniously ordered whole, which, dimly shadowed forth to the human mind in the primitive ages of the world, is now fully revealed to the mature intellect of mankind as the result of long and laborious observation" (I/2).

In "childhood" man did not fully understand where he was, but in "adulthood" he has come to see the picture clearly. The early cosmogonies are presented as "confused" versions of what would later become clear. The earlier ways of seeing the natural world were full of an "intuitive feeling of the order" of nature at best, and "vague and poetic garb" covering over "superstitions" and "prejudices of the ignorant" at worst (I/2). Here we can see echoes of new mythology approaches to "old" mythology. Humboldt, in a way reminiscent of Schlegel eschewing the "old" myths with their "sensuousness", is intent on showing the much *greater* pleasure which comes from "Nature considered *rationally,* that is to say, submitted to the process of thought" which reveals it to be "a unity in diversity of phenomena" and "one great whole," *to pan,* he adds here in Greek, "animated by the breath of life" (I/2 – 3). In circular fashion, asserting the higher view to belong to the present age of man again reconfirms the validity of his claim to understand earlier ages of both man and nature; it re-confirms the vantage point of the author.

[343] Elizabeth Millán, "The quest for the seeds of eternal growth: Goethe and Humboldt's presentation of nature", *Goethe Yearbook,* XVIII, 2011, p. 107, referencing Humboldt's *Cosmos* (p.16) and Walter Benjamin, text unknown.

Similarly, Humboldt's constant references to unity, and the search for unity in nature, present as potentially empirical discoveries something which was already premised in the point of view from which he is evidently writing: that nature *is* one, *is* unified, and that there is nothing else beyond this in all of infinite space. It is all cosmos, all nature or identifiable *phusis*, both on small scales and large, in human culture and in physical culture[344]. Humboldt is confident there is a single rule or order in nature, and cites Goethe's frustrations with German detail-rich science, approvingly (I/27 – 28). He notes that a "powerful intellect" being given access to "all the results of discovery up to a given period" can be positioned to grasp a "science of the *Cosmos*" and so "succeed in dispelling a portion of the contradictions which, at first sight, appear to arise from the complication of phenomena and the multitude of the perturbations simultaneously manifested" (I/22). Contra Kant, and continuing to stretch German romantic ideas of nature farther toward making empirically-facing, direct claims about the whole of the universe, perhaps, than ever before, he is effectively claiming that a scientific cosmology is possible, and that it is something well beyond a mechanical Laplace-ian version but one rooted in a higher awareness of the whole as one.

He is also intent on joining this new view with questions of ethics and values, both in the enthusiastic tone and aesthetic attention given to the work's language (which also included images to help illuminate his view of nature, and also includes a history of landscape art as part of his cultural history portion, which details art's interchange with the natural cosmos[345]) and in his repeated efforts to convince the reader that there is beauty in the scientific way of seeing the physical universe, which cannot be other than the highest goal of mankind, an inherent good in itself.

Knowing the infinite cosmos, gaining the "insight into the connection of the vital forces of the universe" he is here presenting to the people, "must certainly be regarded as the noblest fruit of human civilization, and as the tendency to arrive at the highest point to

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[344] E.g., He applies the idea of necessity and "periodical recurrence in the progressive development of forms, phenomena, and events" to both physical and human nature (Vol I 30).

[345] Cf. Vol. II. His remarks on, e.g., landscape art history were in turn influential upon subsequent landscape painters themselves and other artists and critics like Ruskin, cf. Sachs, *op. cit.,* pp. 8f., including note no 18.

which the most perfect development of the intellect can attain" (II/467). Though this type of claim dates back to Plato and Aristotle, Humboldt is here also strongly reminiscent of Schelling in *Bruno,* and of our four thinkers' new mythology program as a whole. In the same vein, and evoking a kind of romantic re-enchantment or romanticizing program, Humboldt presents grandeur and beauty as inherent in the vista awaiting human beings once they "approximate to a more animated recognition of the Universe as a Whole" (II/742), joining objective appearances with inner experiences and emotions (including love for the natural world) and discovering for themselves the new way of seeing the physical world which results. This orientation is not born of a certain spatial cosmography or the physical, visually accessible portions of the universe alone, but accessing, or joining, Humboldt's central search which he says motivates the entire work of *Cosmos:* the search for "the one universal idea to which all phenomena, in their causal connection, might be reduced, as to a sole principle" (III/6).

Ultimately, the human being is invited to find his or her sense of *cosmos* qua immediate thinker of nature as such, of the physical world seen ultimately as testament to and manifestation of this single kind of substance or reality, which has a single organizing principle or, in Millán's terms, "seed" of growth. He distinguishes his approach, which begins with a "generalization of particular facts" to reach the "order of nature" itself, from mere deduction or rationalism (III/7). This joining of the real (facts) with the ideal (of the physical world as a single intelligible substance with a unifying principle) is his mediating, transformative-revealing romanticism at work. Likewise in Volume I he claims we must do away with "illusive phantoms" of past dogmatic cosmologies and begin with the actual study of the heavens to begin (I/65-66).

Humboldt acknowledges there may be some who cannot automatically see the ethical meaning of his universe, or how it results in valuing the physical natural world. He seeks to assure the reader, for example, that they must not worry that "nature may by degrees lose a portion of the charm and magic of her power, as we learn more and more how to unveil her secrets, comprehend the mechanism of the movements of the heavenly bodies, and estimate numerically the intensity of the natural forces" (I/18). While the actual measuring act might need to be done calmly, with an attitude of remove, or through an instrument, we

must not "confound the disposition of mind in the observer at the time he is pursuing his labours, with the ulterior greatness of the views resulting from investigation and the exercise of thought" (I/19). The final greatness of the views must push us to expand, and perhaps redefine, our notion of beauty and of what constitutes the "charm and magic" of the physical world. The German romantic, new mythology construction of beauty's role in unifying science with the aesthetic sense and with art, is here being pushed a small step toward the science- and mathematics-led, rather than art-led, forms it would take in the 20th century, e.g. in the Vienna Circle position (cf. above) on the new aesthetic and ethical perceptions of science and mathematics, and in the big bang cosmology writers as well (cf. below).

For all Humboldt's aesthetic emphases and emotional attachments he displays to his new way of seeing the physical world as nature, and nature as a unity, throughout all time and space, there is also tension with a competing tenor of at-times unmistakable metaphor of human conquest and domination threading through the work, pointing again to the way in which cosmology, and cosmological history, can place pressure on romantic environmental ethics, perhaps more than other areas of their thought. Part of this is an outgrowth of a more applied version of the new mythology view: it is hard not to derive the impression that Humboldt is arguing for securing more and more of the world freedom from its past, moving it out of the zone of superstition and childlike fancies (e.g. II/741-742) and into the zone of progress. This stands in tension with Humboldt's views expressed in some of his other scientific and travel writings, including those presciently warning of the environmental dangers of European colonization of some of those same cultures whose myths his own project would de facto threaten to overtake with scientific seeing. As Schaumann notes, "Humboldt's … view of the earth as a system of interactive, connected forces" led him to understand the types of impact colonization would have, and argue for greater respect for maintaining the Earth's delicate balances[346], echoing Herder's own view that Europeans arriving in other lands should "naturalize themselves with the inhabitants" who lived there,

[346] Caroline Schaumann, " 'Calamities for future generations': Alexander von Humboldt as ecologist," *Ecological Thought in German Literature and Culture,* Dürbeck, Gabriele, et al., Eds. (Lanham, MD: Lexington Books: 2017), p. 71, pp. 65f., 71f..

rather than try to convert the world they found into an image of Europe[347]. At the same time, while it is possible to see his view which Schaumann highlights, per above, and which Sullivan also finds traces of in Goethe[348], as bearing witness to complexity, diversity, and fragility of habitats and biomes he visited as an explorer, his emphasis on networks of interconnections linking all that lived together into one, also bears a trace of that "weaving of weaving" worldview critiqued by Jacobi per Chapter One, and which is not necessarily inherently en-valuing (just as it may not be inherently devaluing) of the physical world.

Humboldt's *Cosmos* was exceedingly popular, flying off the shelves from St. Petersburg to Boston, with Humboldt's publisher writing to Humboldt that demand for the book was leading to theft and bribery by book agents clamoring for more copies[349]. The romantic new mythology of reason had found a powerful new vehicle for its expression.

Contemporary criticism

If Humboldt's work was mostly critically as well as publicly well-received, the same has generally been the case for the *Cosmos*-like works of our own big bang cosmologists.

This is perhaps partly because, just like the "cosmos" they present, these works (like Humboldt's) themselves are quite monolithic-seeming. Once the world-positing and its interpretation commence, legitimate and clear footholds for philosophical and/or ethical critique are difficult to find. The current study aims to characterize the cosmologists' *entire*

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[347] Herder, *op. cit., Outlines,* p. 187.

[348] Sullivan notes Goethe's view of the "complex and inextricable *interdependence*" of humans and nature, with its potential to be "proto-ecological", cf. Heather I. Sullivan, "Goethe's concept of nature: Proto-ecological model," *Ecological Thought in German Literature and Culture,* Dürbeck, Gabriele, et al., Eds. (Lanham, MD: Lexington Books: 2017), p. 17.

[349] Cf. Sachs, *op. cit.*, pp. 156 – 164. Sachs relays how *Cosmos* was something of a publishing and intellectual history phenomenon. It was translated to nearly a dozen languages within a decade of its publication. Sachs notes that while some in the scientific establishments of Paris and London grumbled at the generic-ness and commercial quality of the work, by this point there was no doubting Humboldt's scientific credentials, and overall its reception was positive among the public and the scientifically trained alike, particularly in the United States, including, as noted above, among American romantics like Emerson.

approach to world-building qua neo-German romantic philosophical project for this same reason.

This reason also serves perhaps to partly explain why many of the critiques of big bang cosmological writings in Science & Religion have remained content with only applying the "scientism" lens, or tool. The general thrust of these critiques is to highlight, and try to problematize, big bang cosmology's talk *of* domains, or *in* language, held to be non-scientific or extrinsic to the processes and outputs of science[350]: talk of myth and also of domains like intuition, beauty, wonder, awe, value, meaning, purpose, divinity, sacredness, and God. While noticing that these kinds of terms are being employed might also seem to suggest an opening to considering the forms of neo-romanticism present in the big bang discourse, most often, these features are usually simply pointed out in the scientists' writings, and then labelled as baseless scientism without further explanation.

Curtis White, for example, from Science & Religion, questions how it is possible that scientists like biologist Richard Dawkins or cosmologist Carl Sagan can invoke, in their popularized writings, an "unacknowledged system of extra-scientific *value* at work that science refuses to take responsibility for[351]". Rather than explain it as a romantic position, he defaults to a "scientism" characterization-as-critique. He calls it a "dogma" of science that we must find its products and utterances full of value; for scientists "beauty is just a tautology, or a *dogma*[352]", turning to romanticism (as is not uncommon, and as further muddies the discourse) as an *antidote* to scientism, overlooking the fact that it was arguably the neo-German romantic mode in which big bang cosmology works which led to those very claims regarding value and beauty he is calling "scientistic[353]."

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[350] Thought processes they usually present as only entailing things like proof, measure, and falsifiability.

[351] Curtis White, *The Science Delusion: Asking the big questions in a culture of easy answers* (Brooklyn, NY: Melville House publishing, 2014 [2013]), p. 18.

[352] White, *op. cit.*, p. 22.

[353] White himself seems to acknowledge this possible contradiction when later in the same work, he notes that for the romantics, "humans can *participate* in the dynamic power of nature through invention, creativity, imagination, art, whatever you'd like to call it. (You could even call it *science!*)", cf. White, *op. cit.,* p. 85.

Another Science & Religion writer, Harrison, suggests that only by "borrowing" authority from religion could science make its "more absolutist claims about scientific knowledge", since these for Harrison resemble "theological dogmatism", leaving modern science to exhibit the "*form* of the universal claims of Christianity without the supernaturalist foundation that would render them internally coherent[354]". This overlooks the intervening German romantic neo-Spinozan views from which the scientists, I will argue, quite clearly draw. It is not *only* traditional monotheistic religion, in other words, that speaks in terms of the absolute (or speaks in ways which from the outside may appear to be dogmatic).

"Scientism" or "scientific dogmatism" characterizations of big bang cosmology's broader style and content also of course lead down rabbit holes of both stated and tacit disputes over the very terms of debate – the meanings of terms like science, religion, nature, and truth – leading to definitional, descriptive positions on the part of both scientists and those offering their critiques. The "scientism" characterization as critique has, in short, seemed unable to keep pace with, or have much visible interchange with, the expanding myth-talk and engagement with the absolute in big bang discourse.

Other approaches in Science & Religion from the theistic side effectively (if sometimes indirectly) argue for halting any talk of myth, ethics, values, spirituality, meaning, etc. in the big bang discourse through more traditional natural theological arguments. These arguments hold that since science cannot offer us a really full explanation for the world, we need to limit our understanding and interpretation of these models to more modest kinds of things. Some Science & Religion writers like William, Stoeger or Jaki[355], or Hall, Toulmin, or

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[354] Peter Harrison, *The Territories of Science and Religion* (Chicago: University of Chicago Press, 2015), p. 193.

[355] Cf., e.g., William & Stoeger, who write that "scientific cosmology "promises to reveal a great deal, but cannot provide an alternative to the traditional philosophical notion of creation, creatio ex nihilo, in accounting for the universe's ultimate origin. Any understanding it might provide, no matter how physically fundamental, will require a deeper explanation or basis for its existence, order and properties. In other words, it will not be self-subsistent or self-explanatory." In R. William & S. Stoeger, "The Big Bang, quantum cosmology and creatio ex nihilo", in D. Burrell, C. Cogliati, J. Soskice, & W. Stoeger (Eds.), *Creation and the God of Abraham* (Cambridge: Cambridge University Press, 2010), p. 152. In Stanley L. Jaki, *God and the Cosmologists* (Edinburgh: Scottish Academic Press, 1989), p. 22, Jaki writes that the big bang universe is a full and realist depiction of the physical world which then cries out for a creator for explanation: "if the universe is so specifically real, nothing could have been more logical than to ask: why is the universe what it is and not something else?".

Teske[356], have pushed back (to varying degrees[357]) against big bang cosmology as speech of the absolute by arguing for a more traditional creator-creation relationship. Their arguments would deny cosmology its romantic declaration of a self-grounded natural world, either ontologically and/or in terms of its ultimate meaning. Since these accounts overlook the unique romantic epistemology at work in these models, and because these Science & Religion writers tend to also employ God as an external cause acting in the world, a position the scientists reject out of hand, the two sides usually end up talking past one another, in these cases as well.

Perhaps for this reason, or perhaps simply as a result of a shift in the *Zeitgeist* in contemporary theology toward panentheism and therefore romanticism in the 21st century, many in Science & Religion have more recently tended to leave off such arguments against the big bang model's claims of ultimacy and completeness altogether. Given, again, the direct and indirect (e.g. in the form of process thought) influences of German romantic ideas on the position of panentheism itself, we can read Science & Religion scholar Brierley's suggestion in 2004 that there is a contemporary "panentheistic turn" in theology, led by science, as a parallel in the theological realm with Ellerman's philosophical observation (noted in the Introduction) that the present "theoretical moment" is a romantic one[358]. In such a theological framework, the lack of critique of big bang cosmology's philosophy of nature by [panentheistic] Science & Religion scholars is to be expected. And by and large,

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[356] Hall specifically critiques cosmologists (mentioning Brian Swimme in particular) for wanting to use the big bang story as an act of ecological healing or for any other spiritual or religious purpose, though holds it does suffice for explaining 'only' the physical—even the question of '*how* everything came into being' at the cosmological scale. Cf. W. David Hall, "Does creation equal nature? Confronting the Christian confusion about ecology and cosmology," *Journal of the American Academy of Religion* Vol. 73 (3), Sep. 2005, pp. 801f.; p. 784. Toulmin and Teske express similar positions; cf. Stephen Toulmin, *The Return to Cosmology: Postmodern science and the theology of nature* (Berkeley, CA: University of California Press, 1982), e.g. p. 52; and John A. Teske, "Narrative and meaning in science and religion," *Zygon* Vol. 45 (1), March 2010, pp. 91 – 104. This attempt to divide the perceived spoils of big bang cosmology (moral versus physical components) of course overlooks the way the romantic epistemology functions to block any such separation. The division of the spoils approach seems over time to have exhausted itself against the monolith of the scientific romantic cosmos, as Science & Religion-leaning scholarship leans increasingly toward a more panentheistic form of compatibilism, per e.g. Henry & McGuire, *op. cit.*.

[357] Some of these scholars slide toward panentheism about the "universe as described by science", at least implicitly.

[358] Michael Brierley, "Naming a quiet revolution: The panentheistic turn in modern theology", in Clayton & Peacocke, *op. cit.,* pp. 1 – 15.

panentheist scholars do tend to embrace the big bang universe, as noted in the Introduction, whole-cloth as a kind of *de facto* complete[d] physical created world*,* and as itself part of God. Stannard, Peacocke, and the cosmologist Paul Davies (mentioned above) are all examples of this view, all interpreting (in varying ways) the cosmological universe *as defined by big bang cosmology* in this manner[359]. The underlying influences of early German romantic ideas of nature and the divine, which inform both panentheism and big bang cosmology itself, may be partly why the views of nature held by the panentheist scholars seem to be quite congruent, contiguous, and/or overlapping with big bang cosmologists' own, and why these scholars seem, overall, to elevate and embrace the scientifically-delineated big bang universe rather than critiquing the scientists' epistemological or philosophical positions.

Overall, between the claims of scientism or older, now generally disappearing or at least slackening arguments for natural theological constraints on one side, and the positive panentheistic embrace on the other, few contemporary Science & Religion scholars have been working in the middle ground which this thesis seeks to occupy. This middle ground would not argue against all "non-scientific" talk in big bang cosmology out of hand, as either scientism or language only befitting a theistic account of the universe, nor would it adopt or augment it within the majority reception among the panentheistic or religious naturalist approaches[360] which echo and even in part derive from German romanticism itself.

One example of an occupant of this middle ground, and therefore a potential close[r] interlocutor on the arguments I will be raising as to the cosmologists' romanticism and the ethical and normative questions it raises vis-à-vis the ecological crisis and the locating of intrinsic value in the physical world of our direct experience, is Science & Religion scholar Sideris. Though Sideris pursues a generally "scientism"-leaning critique, she goes further than others in trying to understand the new mythology being presented in big bang

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[359] Cf. Davies, *op. cit.,* "Teleology"; Stannard, *op. cit.,* "God in and Beyond"; and Peacocke, *op. cit.,* "Articulating".

[360] Religious naturalism as a response to big bang cosmology usually also adopts either a panentheistic flavor and/or an early German romantic, new-mythology one also akin to the cosmologists' own (as we will be arguing). Cf. e.g., Ursula Goodenough's *The Sacred Depths of Nature* (New York: Oxford University Press, 1998).

cosmology. In *Consecrating Science* (2017), she interrogates big bang cosmology's claims to offer a new myth of nature, including from a pragmatic view regarding whether this myth even *could* be efficacious or normatively desirable for our valuing (and treatment) of the natural world, should we want to apply it. She concludes that the "Universe Story" actually elevates "science and its alleged mythic potential" at the expense of keeping nature itself as the locus of our wonder; she does not identify it as romanticism per se, but rather calls this a "sacralization" or "consecration" of science, a conversion of it into "a wondrous new revelation, an updated sacred scripture[361]" as well as into a "new myth". She also faults its claims of relevance to the ecological crisis, concluding the "Universe Story" is in fact "powerless to critique planetary dominance" by the human and can only feed into the "good Anthropocene" narrative, a kind of thinking which is "environmentally disastrous and morally bankrupt", consisting of the embrace of "suspect new forms of environmentalism" such as "large-scale planetary management[362]".

Sideris questions why the "new scientific myth is often presented as something all-comprehending and omnicompetent", arguing against the dismissive stature it seemingly awards the humanities[363]. She criticizes the discourse's implied view of the humanities as "failed attempts at science-like 'explanations' of the world" to which the scientists are now trying to award a servile role of "poeticizing, prettifying, or otherwise publicizing the real world revealed by science[364]". She also notes how the process of science has come to take the place of religion for some and that this shows, again, that science *itself* is what, in the new myth, is being sacralized[365].

This study will agree with Sideris' view that science itself is the focus of the new myth; rather than "sacralizing" science, however, I will argue that cosmology is simply displaying a neo-German romantic new mythology approach, as an integral part of its overall romantic

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[361] Lisa Sideris, *Consecrating Science: Wonder, knowledge, and the natural world* (Oakland, CA: University of California Press, 2017), pp. 1 – 2.

[362] Sideris, *op. cit*., p. 9; p. 118; p. 118; p. 129.

[363] Sideris, *op. cit*., p. 11.

[364] Sideris, *op. cit*., p. 8; pp. 60ff..

[365] Sideris, *op. cit*., p. 7 and *passim.*

philosophy of nature. The preoccupation with unity among all disciplines, even a goal of omnicompetence, and science *as* religion, which she helpfully points out in the discourse, we can likewise point to as more romantic hallmarks (as we recall from the previous chapter). Her proposed normative counter-position of returning to the local and small, from the global[366], a turn which can be characterized as an *anti*-romantic (sometimes, "baroque") normative stance, as it has been by King, W. Berry, and Kwa[367], also points toward her own reading's support for my own assessment of the cosmologists as romantic, though Sideris does not specifically identify their stance as such. We will return to some of the points she raises in the last chapter.

Another interesting middle-ground excavation is rhetoric studies scholar Zakariya's lengthy *A Final Story* (2017), in which he sets out to disentangle various aspects of what is transpiring in some of the big bang discourses, analyzing them mostly as pieces of rhetoric, rather than as philosophical arguments or applications of certain epistemological positions as such.

While helpfully hinting toward the influence of romanticism on the genre of popularized science texts such as the cosmologists began to write by the late 20th century (including highlighting Humboldt's text as a forerunner of the genre), and also offering an interesting discussion of the concept of "finality" in these big bang accounts, which is also in its way suggestive of reading them as romantic new mythology writers, he remains at a remove from characterizing the cosmologists' philosophy of nature as such (in any way, whether romantic or not)[368].

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[366] Sideris, *op. cit*., e.g. p. 13.

[367] Cf. Amy M. King, "Quietism and Narrative Stillness," *Common Knowledge* 16 (3), 2010, pp. 532 - 551; Wendell Berry, Wendell, *It All Turns on Affection* (Berkeley, CA: Counterpoint, 2012); and Chunglin Kwa, "Romantic and Baroque Conceptions of Complex Wholes in the Sciences", in Law, John, & Mol, Annemarie, eds., *Complexities: Social studies of knowledge practices* (Chapel Hill, NC: Duke University Press, 2002), pp. 23 – 52.

[368] Zakariya also compares Sagan to Schlegel on p. 295: "Sagan concludes the fable on the vision of science as a quest for self-knowledge in terms reminiscent of Friedrich Schlegel's aphorism that 'Man is Nature creatively looking back at itself' ", cf. Zakariya, *op. cit.,* p. 295. Referencing Carl Sagan, *The Cosmic Connection: An extraterrestrial perspective* (New York: Anchor, 1973) (p. 255).

Zakariya writes that by the 1970s, "prominent scientists located in significantly different disciplinary positions were paying attention to and advancing the idea that a new totalizing myth was at hand[369]". He identifies four 'genres' of scientific narrative in the late modern and contemporary cosmological discourse, the "scalar, the historical, the foundational, and the fabulaic", as the means through which cosmologists construct their "myths", directly linking this with the "universal history" genre[370]. He writes that it had become a belief (by the early 21st century, in the West) that "the answers that science can provide to questions about the origins, ends, and dynamics of the universe are all-important" and that science now has the "ability to answer questions previously answered in essentially mythic terms, whether metaphysical, spiritual, or religious"[371]. He accepts that there were tensions, including the oxymoronic idea of a "new", and "human-authored", *myth*; but claims that nonetheless the "scientific epic" "began to define what a contemporary myth could and had to be[372]". These are all indirect clues toward the romanticism at work, as is his isolated mention of a resemblance between Sagan and Schlegel, but he does not develop this further.

In addition to a disciplinary choice to approach these writings as a rhetorician, part of the reason for his philosophical reticence may be that Zakariya seems to approach the big bang cosmological discourse largely from the common postmodern position which hints (or at times states) that there is no such thing as an *absence* of myth: that all cultures everywhere abhor, as it were, a myth-vacuum, and will always be operating under their influence in one way or another. From this looser, sometimes more deflationary understanding of "myth", which sees them as omnipresent in all cultures and epochs, and at times uses the term *myth* as synonymous with *narrative* or *story*, big bang cosmology's talk of myth cannot readily be understood as theorizing the absolute or the infinite in a romantic sense. Josephson-Storm, as we have noted above, is another example of a scholar who dismisses any "disenchantment thesis" like the romantics' and is dismayed it has found "fresh purchase"

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[369] Zakariya, *op. cit.,* p. 307.

[370] Zakariya, *op. cit.,* p. 2; p. 41.

[371] Zakariya, *op. cit.,* p. 9.

[372] Zakariya, *op. cit.,* p. 337.

with a "host of thinkers" charging "modern philosophy with despiritualizing nature and rendering matter dead and inanimate," and in response aiming to "recover alternate animating ontologies sometimes referred to as 'agential realism' or 'enchanted materialism[373]' ". There seems to be something of a split occurring in the contemporary discourse between this way of responding to the big bang cosmologists, and the one in other areas of philosophy and in Science & Religion, noted above, which are more in line with a romantic approach (and/or a reactionary, anti-romantic one, in the case of "scientism" critiques).

Finally, we can also place on the middle ground philosophers who have pointed to certain aspects of contemporary big bang cosmology as *idealist*, getting us part of the way toward drawing out its version of early German romanticism or at least beginning the process of highlighting how it functions, or frames its universe, philosophically speaking.

Meillassoux, of the speculative realist school, which as noted above is itself a kind of neo-romantic philosophical approach to the universe described by big bang cosmology [and quantum physics], himself identifies big bang cosmology's form of "transcendental idealism" as one which engages in "speculatively hypostatizing … as an ideal and absolute subject" which resembles the "transcendental subject apart from its bodily individuation[374]". We can query instead whether this disembodied subject is potentially linked with the cosmologists' new version of the early German romantic intuitive subject, one which rather retained Kant's critique of transcendental idealism, while seeking other paths to creatively and via intuition speculate on the physical world-as-*nature,* including positing an ultimate (even if not readily graspable) mind-nature unity and thinking from the standpoint of Nature-nature as product-productivity instead that of the pure "I".

Philosopher of science Balashov notes big bang cosmology's use of the transcendental form of argument in (at least) four areas, including in the use of anthropic reasoning and in Einstein's original cosmological model, especially the use of the cosmological principle

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[373] Josephson-Storm, *op. cit.,* pp. 5 – 6.

[374] Meillassoux, *op. cit*., p. 25.

therein[375]. He notes that an "aspect of its methodology" which "has so far been neglected" is its use of "*transcendental reasoning,* broadly construed, [which] has been a recurrent topic in the development of relativistic cosmology since its beginning[376]". He notes that "reasoning of this sort seeks to infer features of the entire Universe from conditions that make its physical description possible or coherent[377]". Such reasoning, he notes, implies that "the mere possibility of a coherent physical description of the Universe as a whole poses constraints on what kind of entity it could be," holding that Einstein "set a notable precedent for thinking along" the lines of the connections between "the material structure of the Universe and its nomic structure[378]". Again, since cosmology also takes the resulting "entity" as their version of an external, *realist's* world*,* and as a new variation on the romantics' "nature," the knowing of which entails their own updated form of a new mythology of reason, his depiction also (like Meillassoux's) hints toward the neo-romantic realist-idealist hybrid ontology, or critical monism, as we might call it, at work in scientific cosmology and thus aspects of its romanticism, without naming it as such.

M. Hoffmann, too, points out that transcendental reasoning is necessary in scientific cosmology[379]. Stevenson compares cosmology's belief that there could be a single explanatory theory of the universe to "theocratic transcendental realism" and questions how and why cosmology seems to ignore Kant's contrasting argument that any concept of the universe 'in itself' is always [merely] transcendental and ideal, again hinting toward cosmology's new form of early German romanticism without naming it thus[380]. Życiński holds that big bang cosmology's use of the anthropic principle is idealistic and

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[375] Yuri Balashov, "A cognizable universe: Transcendental arguments in physical cosmology", in M. Bitbol, et al., Eds., *Constituting Objectivity,* Volume 74 of the Western Ontario Series in Philosophy of Science (Dordrecht: Springer Netherlands, 2009), p. 270.

[376] Balashov, *op. cit.,* p. 270.

[377] Balashov, *op. cit.*, p. 270.

[378] Balashov, *op. cit.,* p. 270, p. 273.

[379] Michael H. G. Hoffmann, "Transcendental Arguments in Scientific Reasoning", *Erkenntnis*, Vol. 84 (6), Dec. 2019, p. 1389.

[380] Leslie Stevenson, "A Theory of Everything? Kant speaks to Stephen Hawking", in Leslie Stevenson, Ed., *Inspirations from Kant: Essays* (Oxford: Oxford University Press, 2015), p. 73, pp. 74ff..

teleological[381]. Philosopher of science Fidelman notes that neither the Linde-ian infinite bubble multiverse nor the Everett interpretation-based many worlds theories of the cosmos can avoid being only Kantian ideas, and that one sign that they are only Kantian ideas of pure reason is their entailment of paradoxes[382]. Philosopher of science Laino writes that loop quantum gravity, one candidate for a unified theory of everything, seems to offer a *"reduction ad unum*" where "physical events and beings are only the apparent result of the intrinsic modifications" of a monistic and infinite whole[383].

This middle ground has had some philosophical occupants in decades previous to the contemporary criticism, as well. The philosopher Jacques Merleau-Ponty[384] observed in 1969 that using transcendental reasoning in the simplest Kantian sense is one of the ways in which logic is useful in building scientific cosmological systems, and that the very assertion that cosmology is *possible* (as a 'science') is a transcendental position, one which already "considerably limits the domain of these structures [spacetime structures admissible as the 'universe'] without completely determining them[385]". This, again, I would argue, points to part of the neo-romantic philosophy of nature adopted by the cosmologists, without completing it. In 1994, Merleau-Ponty problematized making any straightforward comparison between scientific cosmology and mythology: mythology may be empirically doubtful, but not *nonsensical*, while scientific cosmology's very *foundation* is irrational because it is based in mathematical idealism, and it is this "irrationality of its foundation and not any [empirical] unlikeliness of its hypotheses that makes cosmology unique[386]".

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[381] Życiński, *op. cit*., pp. 322f. Transcendental reasoning does not have to be romantic, of course, but it is part of the necessary path to reasoning about an intelligible cosmos.

[382] Uri Fidelman, "On the ontological status of some cosmological and physical theories", *The Journal of Mind and Behavior,* Vol. 32 (4), Autumn 2011, pp. 353 – 354, 357.

[383] Luigi Laino, "Is knowledge of physical reality still Kantian? Some remarks about the transcendental character of loop quantum gravity", *Found Phys*, 48, 2018, pp. 792 – 794.

[384] A cousin of the more famous philosopher Maurice Merleau-Ponty.

[385] Jacques Merleau-Ponty, "Logique, Mathématiques Cosmologie", *Les Études philosophiques,* No. 4, "Logique et Mathématiques (Octobre-Dècembre 1969), pp. 501 – 502. Translation mine.

[386] Jacques Merleau-Ponty, "La cosmologie contemporaine doit-elle intéresser les philosophes?", *Revue Philosophique de la France et de l'Étranger,* T. 184, No. 3, "Cosmologie Logique Ontologue (Juillet-Septembre 1994), p. 290. Translation mine.

Intellectual historian Burckhardt noted something similar about the appearance of myth-talk in science in 1987[387]. (Zakariya notes that mythology expert Northrop Frye also dismissed the combination of science and myth[388].) Such observations support the interpretation that cosmology's talk of myth is a neo-romantic new mythology, and as such remains quite different from, and dissonant with, traditional mythology.

Philosopher of science Munitz also seemed to discern some of the neo-romantic tendencies in relativistic cosmology even earlier, writing in 1951 that in doing away with supernaturalist dualism (and adopting naturalism), cosmologists must remember not to embrace a "metaphysical monism which is equally suspect" and which renders "[r]eality .. among other things, the complete system of truth within which every item of fact finds its adequate and full explanation", fusing mind and the physical objective realm in a new kind of "animism", and falling for the illusion "that men must strive to approximate in some degree to the perfect insight which some Infinite Mind possesses from all eternity" instead of realizing that "[t]he goals of cosmology are goals of human beings[389]". This seems to gesture toward their romantic philosophy of nature, especially his use of "striving" and "approximation" in his depiction. He also argues that the new cosmology however is correct to see itself as immune from Kantian strictures on the "Idea of totality," since these apply only to sequential or serial totalities, which cannot be completed, and not to the big bang cosmologists' systems approach, in which "the structure which it articulates" can be seen as "*constituting* the intelligible pattern of the universe as a whole," thus avoiding Kant's

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In general, there has always been a coterie of specialists on myth and/or art history who are less than comfortable with big bang cosmology trying to claim that it offers a mythological view; those in anthropology and religious studies (including Mary Tucker and her husband John Grim) tend to be more aligned with holding that it can be read as a neo-traditional myth. There is no space to elaborate on these readings here.

[387] Burckhardt writes: that if "the ancient cosmogonies seem childish when one takes their symbolism literally – and this means not understanding them – modern theories about the origin of the world are frankly absurd", faulting the "total unawareness with which their authors," the scientists, "set themselves up as sovereign witnesses of cosmic becoming". Titus Burckhardt, *Mirror of the Intellect: Essays on traditional science and sacred art,* ed. and trans. by William Stoddart (Cambridge: Quinta Essentia, 1987). p. 30.

[388] Zakariya, *op. cit.,* pp. 328f.. On 329 Zakariya quotes Northrop Frye: " 'Mythological statements about nature are merely grotesque or silly if they are thought of as pre-scientific explanations of it' "; cf. Northrop Frye, *Creation and Recreation* (Toronto: University of Toronto Press, 1980) (p. 8).

[389] Milton K. Munitz, "Kantian dialectic and modern scientific cosmology", *The Journal of Philosophy,* Vol. 48 (10), May 10, 1951, pp. 337 – 338.

antinomies[390]. This, as we may anticipate already from considering our four romantic thinkers from Chapter 1, is very evocative of the manner in which a neo-romantic universe can be idealized as a single evolving organism with inner principle(s), through which we can reliably glimpse it without "completing" (or grounding) it.

Back in the contemporary criticism, one interesting subset of commentary on some of scientific cosmology's neo-romantic elements can be found in the writings of some scholars of romanticism, usually implicitly writing as scientific naturalists. Writing with deep insight into the early German romantic thinkers, they have at times explored whether and how one might intentionally romanticize nature via big bang cosmology. In some of their remarks we can see a certain ease of approach to the material which bespeaks having discovered deeply familiar themes.

One romantics scholar, Borgmann, holds that the "fundamental cosmological predicament is much the same today as it was at the turn from the eighteenth to the nineteenth century[391]" and calls for more work on trying to elicit a response in the mode of romanticism to this crisis, using big bang science. He specifically notes the work of poet Robert Pack, who authored "a cycle of thirty-one poems that ponder and respond to cosmologist and physicist Heinz R. Pagels' *The Cosmic Code*," uniting "scientific lawfulness with the poetic presence of nature and culture[392]". Borgmann expresses a hope for more "moral cosmologies" developed from the spirit of whatever final scientific cosmological theory may arrive in the future. He thinks a grand unified theory would offer unique "opportunities" for more morally-imbued cosmologies if it is ever found, since already (even before this theory is perfected) "astrophysics allows us to trace a remarkable path from lawfulness to contingency and to the threshold of a moral cosmology[393]".

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[390] Munitz, *op. cit.,* p. 336.

[391] Borgmann, *op. cit.*, p. 241.

[392] Borgmann, *op. cit.*, p. 258. Cf. e.g. also Matthews for a related, though more generic (less cosmological), form of the same argument. Matthews, Bruce, "The new mythology: Romanticism between religion and humanism", in Nassar, Dalia, ed., *The Relevance of Romanticism: Essays on German Romantic philosophy* (Oxford: Oxford University Press, 2014), pp. 216 -217.

[393] Borgmann, *op. cit.,* p. 258.

Similarly, philosopher and romantics scholar Gare makes a case for a romanticizing of scientific cosmology to provide humankind with a source of ethical orientation in the cosmos, including in light of the environmental crisis. He claims Schelling's philosophy offers a hopeful path toward "transcending scientific materialism," "overcoming the opposition between science and the humanities," and "enabling people to understand themselves as culturally formed, socially situated, creative participants within nature," and that it can be reinvented along modern scientific lines[394]. Gare cites cosmologist Smolin as one example of a scientist (along with sometimes-cosmologist and complexity theorist Prigogine) who has already embraced this view[395].

Overall, then, there are both suggestive hints in the discourse that additional middle-ground, non-theistic considerations of the "extra-scientific" portions of big bang cosmology are needed, and that these have some support from philosophers and other writers past and present, who have remarked on its seeming monism, various presumptions of intelligibility, positions akin to transcendental idealism, inexplicable self-comparison with ancient mythology, and other features of the discourse. These features have, seen in isolation, appeared to these other scholars puzzling, irrational, or even inexplicable and "grotesque". The goal of this thesis is to offer a reading that helps us better understand the big bang cosmological discourse as a philosophical one, and to contribute in a positive manner to helping to fill these types of gaps in this still largely open middle-ground approach.

This chapter has tried to lead the reader through several areas of consideration: historical continuities where elements of early German romantic philosophy of nature survived or were adapted across numerous subsequent forms of romanticism and beyond, with a special look at Humboldt and his new universal natural history; contemporary and modern critiques of (and, commonly, somewhat less critical panentheistic engagements with) big bang cosmology as a discourse moving beyond "just science"; and the trouble with

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[394] Arran Gare, "From Kant to Schelling to process metaphysics: on the way to ecological civilization", *Cosmos and History: The Journal of Natural and Social Philosophy*, Vol. 7 (2), July 1, 2011, pp. 68 – 69.

[395] Gare, *op. cit.* ("Deep ecology"), p. 204.

approaching what might be neo-romantic big bang cosmology texts from the Josephson-Storm position which would overlook the very possibility of scholars taking the idea of a "myth-vacuum" seriously and developing a neo-romantic response to it, replete with a new version of a new mythology of reason.

The reason for this somewhat multi-tiered and sprawling approach by way of framing my arguments, is that both romanticism, and cosmology, break open disciplinary borders nearly completely, to say nothing of the ecological discourse, to which we will turn in the final chapter. And yet, at the same time, early German romantic philosophy of nature still constitutes a certain way of seeing and understanding the universe, as big bang cosmology certainly does as well. The upshot is that to find a philosophical foothold on the monolithic view of the universe presented by the big bang scientist requires some patient, small steps, and gathering clues pointing to its new form of early German romanticism from multiple other discourses is, for better or worse, part of the process. I hope that the reader is now sufficiently situated with our early German romantic precedent, and historical and critical connections, for us to proceed next to try to peer within the monolith from our position just inside it.

Conclusion

This chapter concludes the framing portion of this thesis. We have sketched out the representative four early German romantic philosophers' manner of conceiving of the natural world via ontological, epistemological and new-mythological speculation. We have considered some of the ways this began to lead toward a new view of universal natural history, and which ethical or en-valuing positions vis-à-vis the physical world do, and do not, seem to arise in and from these German romantics' cosmology, also marking this as a topic to which we will return in the last chapter. We laid out some of the historical continuities which succeeded the work of these four thinkers, keeping their construction of nature alive in new variations. We then considered some of the contemporary (and a few historical) voices which have responded to the "Universe Story" presenting itself as more than simply science, and looked for clues supporting our own interpretation of this discourse as early

German romantic philosophy of nature returned in a new form. We saw that with some exceptions, the overall tendency in Science & Religion and related fields is to either accept the myth-talk in big bang cosmology whole-cloth or dismiss it in as total a manner, with few trying to make sense of the phenomenon itself which sees a major modern science, ostensibly hard-nosed and empiricist, discussing ethics, aesthetics, and myths of nature that eclipse those of past religions.

We will now turn to the big bang cosmologists themselves. In Chapters Three and Four we will consider, using roughly the same structure as the first chapter, how these scientists' basic way of constructing the universe, embracing a new mythology, and approaching universal natural history, constitutes a re-instantiation of a form of early German romantic philosophy of nature. In the last chapter, Chapter Five, we will return to the question of the embedded environmental ethics of this approach, and how they may indicate certain problematic interactions between the cosmologists' view of nature and the contemporary ecological crisis discourse.

Chapter III

The Familiar Infinite: The new German romantic cosmos

Introduction

In our consideration of the writings of Schelling, Novalis, Schlegel, and Hölderlin in Chapter One, we sought to understand their construction, however indirect, of nature considered as a whole. We traced their construction of this nature in terms of the unique hybrid [realist-idealist] ontology they utilized and its intertwining with their somewhat unresolved epistemological positions. We considered how these concepts of nature (and knowledge) appeared in their proposed new mythology of reason and their views of universal natural history, and examined some of the ways these approaches to nature did, or did not, locate intrinsic meaning and value in the physical non-human world.

While the big bang cosmologists will reinstate and reinvent many elements of the German romantics' overall philosophy of nature, there are also ways in which this new version of the early German romantic project will differ. The most vital point of difference begins in the more tacit quality of the philosophical approach. While cosmologists like Carroll, Smolin, and Swimme have begun to bring out and develop their philosophical positions in the last few decades more overtly, for the new field's first several decades, around the 1920s through the 1980s, cosmologists seemed to utilize something like a neo-German romantic approach, replete with a neo-Spinozan unity (to which they were claiming, now, a more

direct type of access) and a critical monist view of nature, without deliberately articulating or developing their science within a romantic framework. This led to the incorporation of types of knowledge-claims into their picture of the one whole unity which the German thinkers might have deemed inadmissible. For example, while the Vienna Circle approach to science did itself have many neo-German-romantic aspects to its overall praxis (per Chapter Two), the manner in which its positivistic type of knowledge-claims migrated into big bang theory may have been seen by the German romantic thinkers to be an over-elevation of this type of fact.

After roughly the 1970s and 1980s, the neo-German romanticism in the cosmologists' approach will come more to the fore, as the fine-tuning and infinite multiverse discourse draws out and tests the premises implicit in their use and interpretation of universe models, and their self-interpretation of their broader role as scientists potentially in possession of a new mythology of reason. Since the significant amount of detached fact-finding based on empirical science put into the model was never removed, positivistic approaches to nature and to knowledge will remain interlaced with their broader speculative stance. The positive knowledge claimed directly of the one totality on the basis of self-contained mathematical models, and the broad scope of some of the conclusions derived from them, will arguably continue to destabilize in the big bang thinkers the Kantian critical awareness and admission of the utter prior-ness and final opacity of being, and our inability to discuss being as such, which the German thinkers were more apt to retain.

In both the German romantic and scientific neo-romantic approaches there are unresolved inner tensions and sometimes-intentional creative contradictions; in effect this is part of what makes the approaches to nature distinctly romantic. In the German case, as we saw, the tensions arise in part from using a hybrid and nontraditional form of philosophizing; this will only broaden and deepen in the scientists' neo-German romantic view of nature. Like the German romantics, the cosmologists approach nature simultaneously as non-traditional cosmologists unable to speak of being as such and aware of its utter excess of thought, and as thinkers trying to occupy the standpoint of thought-production in a way which mirrors and sometimes crosses over into claiming to be Nature's own. Particularly in the cosmologists' case, these characterizations also entail Copernican claims to have arrived at

an ever-deeper, more natural and objective understanding of the limits on human knowledge, and to have worked human consciousness ever more objectively into a universal natural history.

To Build a [Better] Universe, I: "It turns out nothingness is not stable" as neo-romantic construction

A little over a century elapsed between the end of the early German romantic period and Einstein's 1917 paper that launched modern scientific cosmology as a discipline, "Cosmological Considerations in the General Theory of Relativity[396]". Einstein was famously a believer in Spinoza's God[397] (as Einstein interpreted this) as well as having a deep interest in Kant, calling himself an "unscrupulous opportunist" in matters of epistemology rather than a "systematic epistemologist", combining when necessary or possible various elements of realism, idealism, positivism, and Platonism; Damour points out that Einstein was also, again, always seeking to incorporate the insights of Kant into the practice of science[398].

The 1917 paper was dedicated to testing a general relativity-based universe model at limit conditions of infinity, in order to make progress in overcoming the mechanistic paradigm of the Newtonian universe, while also conceiving or constructing a better, more unified view of

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[396] Albert Einstein, "Cosmological Considerations in the General Theory of Relativity," trans. W. Perrett & G. B. Jeffery, reprinted from H. A. Lorentz, et al., *The Principle of Relativity* (Dover, 1952), pp. 175 - 188, accessed via Princeton University Einstein Papers project, http://einsteinpapers.press.princeton.edu (open access), Vol. 6: The Berlin Years: Writings, 1914 – 1917 (English translation), Doc. 43, pp. 421- 432, "Cosmological Considerations in the General Theory of Relativity". Written in 1917.

[397] Cf., e.g. Enrico Giannetto, "The Electromagnetic Conception of Nature at the Root of the Special and General Relativity Theories and its Revolutionary Meaning," Sci & Educ, 18, 2009, pp. 765–781, e.g., where Giannetto discusses how Einstein is known as a follower of Spinoza, one for whom doing science was "contemplation and knowledge of Nature-God", p. 777. There is also the story of the 1929 telegram to a rabbi in New York who asked him if he believed in God; to which Einstein replied "I believe in Spinoza's God, Who reveals Himself in the lawful harmony of the world", cf. Holton p. 31.

[398] Thibault Damour, "Einstein 1905 – 1955: His approach to physics", in Damour, T., et al., Eds., *Einstein, 1905-2005: Poincaré Seminar 2005*, Progress in Mathematical Physics, Vol. 47 (Basel: Birkhäuser, 2005), p. 152. Einstein is here quoted from another source, Paul Arthur Schilpp, *Albert Einstein: philosopher-scientist* (Lassalle, IL: Open Court, 1949) (no page number); on p. 151 Damour notes that these were remarks called " 'Reply to criticisms' which he [Einstein] wrote for the [Schilpp] book."

a cosmos. Einstein looked at what Newton (and Descartes) had said about the infinite universe and sought to improve his rather undefined cosmology with a relativistic one[399]. The conceptual shift which Einstein made in the universe conception which made this possible was the move from the undefined, infinite or a-finite universe of Newton to the conception of the universe as a finite yet smooth and unbounded continuum[400], later refined by others, including in light of Hubble's astronomical observations, to include expansion, a finite temporal "age" for our observable universe, and a presumed infinite fuller universe(s) (of various types, as we will see) lying permanently beyond observation.

Despite the later additions and modifications of the model, Einstein's proposed use of the theory of general relativity – already itself having been pursued in order to *unify* more concepts within physics, just as special relativity had been – to present a highest transformation (thus far) available to us of space and time on the largest or most generic scale remains, to this day, the core approach of the field. With variations and additions, the type of approach he laid out, subsequently developed and improved by others, on the most technical level, led to the basic scientific and mathematical procedure cosmologists still use to generate universe models. The scientist puts in values for variables and constants like mass, volume, pressure, etc., and, as astronomer Chaisson puts it, essentially, what follows is that " 'Numerical experiments' … crank out the universe models[401]". One ends up with something like a bare model of how these values which one inputs change over time. By toggling back and forth between the mathematical models and observational data based on what astronomers can see close to hand in the night sky, a form of "history" of this mathematically defined universe is also made possible.

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[399] E.g., historian of science Kerzsberg writes: Einstein's two main objections to Newtonian cosmology were that "there is no unique centre [to the universe] and the infinite is not a 'place' " (363 Kerzsberg); cf. also Smeenk 239ff. on this point, who notes that for Einstein, Mach's principle helped him believe that spatial conditions at infinity, or infinite boundary conditions, should not be able to "do" anything, i.e., influence matter, cause inertia, etc..

[400] Cf. Einstein, Cosmological Considerations, p. 427.

[401] Eric Chaisson, *Epic of Evolution: Seven ages of the cosmos* (New York: Columbia University Press, 2006), p.49.

Though there is no one single model which has been proven to be correct, strictly speaking, cosmologists have still been able to use essentially the overlap among all correct models to generate the lineaments of what is known as the standard or concordance model of cosmology.

Its general outline is well known: around fourteen billion years ago, everything that exists today was unimaginably denser and more compact; what constitutes the observable universe today was so ultra-condensed as to be unimaginably small. A series of violent, high-energy phase transitions followed; these transitions eventually produced the radiation which would become the Cosmic Microwave Background (CMB), the 2.7 degree Kelvin bath of relic light in which our galaxy (and everything, as far as we know) swims. The CMB is interpreted, in the standard model, as our "oldest" or earliest observational data anywhere in the observable universe. The same massive energy transformations which left the CMB as the oldest detectable layer in our sky's evolving palimpsest of observable radiation continued to cycle through different states, eventually settled, and broke apart into atoms, then formed the first two elements, hydrogen and helium; from these then came all the other things we can see: galaxies, stars, planets, and the Earth and its life itself. As cosmologists Liddle & Loveday note, it has become the "standard view amongst cosmologists" that "the Universe is described by the big bang cosmology, where the Universe has expanded from a hot dense initial state", and this model is "almost universally accepted by cosmologists as the best existing explanation of the observed Universe[402]".

The standard model remains embedded fairly clearly, however, in a larger neo-romantic frame. While it is the case that in order to generate the models, the scientist must effectively begin with the removal of anything which is not included in the theory (as Liddle & Loveday state, cf. below), thus using for the time a kind of "standpoint of reflection" in a mathematical, pure way; yet as we will see, this usually is quite quickly revealed to be only part of the view. There is no discussion of "being" or any other substratum; no first principles are defended in order to generate the universe; to the scientist it is simply

[402] Andrew Liddle & Jon Loveday, *The Oxford Companion to Cosmology* (Oxford: Oxford University Press, 2009, 1st ed. 2008), pp. 314 - 315.

thought in order to be revealed. The universe being described "refers to the totality of all that exists[403]"; yet "existence" is never separated or addressed, nor is there any definition of "nature" with which the modeling process begins. "Nature" is allowed to constantly recede from view, changing its shape. There is no universe discussed in an Aristotelian sense, with nesting spheres and a cosmography; outside our very immediate surroundings, all else is made completely generic, stochastic, and/or perfectly statistical (more on this below). All these ways of combining scientific definitions with an absence of cosmological first principles draws, arguably, on German romantic assumptions that nature can be "revealed" and "intuited" *such that these old kinds of cosmological concepts are not needed*. The mechanistic features of nature the romantics sought to avoid: the raw creation point, raw chaos, any substratum of being, or any other way of addressing where existence as such comes from, are certainly also absent in the big bang cosmologists' smooth positing of physical-universe-as-single-nature. This "nature" must be implicitly designated to exist from the outset. There is no possible point at which the scientist could "discover" any "nature" in the physical sense because he has to put everything into the model himself that he will get out of it. What motivates the models is discovery or uncovering of traits of nature which are higher, immaterial, and closer to revealing or even being facts about the unity itself, than empirical observations themselves can ever be. Intellectual intuition, another hallmark of the romantic approach, returns in a more pronounced (mathematical and scientific) way as well, as we will see.

Sometimes, a gloss is offered in contemporary cosmology that the universe model is a "creation from nothing" account, as in Krauss' popularized work *A Universe from Nothing* (or in some of the accounts noted in the Introduction to this thesis, to which we will return in the next chapter). Yet these uses of the metaphor or mythical idiom of creation from nothing turn out to resemble the way our German thinkers mentioned Fichte's thinking "I" creating a world from nothing in the *Systemprogramm.* When they called Fichte's idealistic approach "the only true and thinkable *creation from nothing*[404]", per Chapter One, it was a

[403] Liddle & Loveday, *op. cit.*, p. 314.

[404] "Oldest *Systemprogramm"*, in Bowie, *op. cit.,* p. 334 (*recto*, first paragraph).

device used to gesture toward the end of theistic cosmological approaches to nature *and* also their non-theistic, rationalized equivalents; their way of leading in to an argument for a new way of thinking of nature, intertwined with their goal of a new mythology of reason.

Similarly, accounts which claim to intertwine big bang science with "creation from nothing" metaphors or idioms, are often tacitly or actively pursuing the same type of new mythology-inclining rhetoric. When Krauss claims that the answer to "Why is there something rather than nothing?" is that nothingness is not stable[405], he is merely collapsing into one account, with two very different readings of it simultaneously being offered, what the German writers, in *Systemprogramm* and generally, tended to separate more clearly into two opposing approaches (Fichte's and/or theology's, versus their own). He is claiming, on the one hand, and on the polemical surface, that *were* we to world-construct from nothing, science gives us, effectively, the "only true and thinkable" way to do so, superior to the Bible's or any other myth's. At the same time, the goal is *not* to replace the theological version of "creation from nothing", but to end this genre of account as such by showing it can be rationalized (and so, as in the Chapter One case, has lost its intended meaning), and then proposing its "new mythology" as an altogether new way of thinking nature wherein the human mind is able to approach and sometimes seize Nature's own standpoint of production (or at least nature's own standpoint as product-of-Nature), everywhere and everywhen.

This offers an explanation as to why, when natural theologians and philosophers lodge an objection with the cosmologists that the kind of nothingness that has a property like instability is not really nothing, e.g. as this term is used in theological accounts, so little fruitful exchange follows[406].

Sometimes, the domain "beyond" the singularity is evoked as nothing not in this new-mythological way, but as a way of affirming the self-containedness and self-groundedness of

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[405] Lawrence Krauss, *A Universe from Nothing: Why there is something rather than nothing*, Afterword by Richard Dawkins (New York: Free Press, 2012), p. 143.

[406] In a sense, the "demonstration" of the rationalize-ability of a creation from nothing account is a demonstration only in name, since the loss of meaning of the old myths, with the consequent need for a new mythology of reason, was presumed by the scientists from the outset.

the one unity, nature, as when Sudarsky writes that at the moment of the first quantum fluctuation, there is "nothing else in the universe[407]". P. A. M. Dirac wrote that initial conditions at the singularity being set from 'outside' "goes against all ideas of the *unity of Nature*", and endorsed the way mathematical description blends seamlessly with the real in a quantum depiction of the t=0 state such that "*The quantum jumps now form the uncalculable part of natural phenomena, to replace the initial conditions of the old mechanistic view[408]*".

To Build a [Better] Universe, II: Knowing the universe, pursuing the one Nature-nature

As noted above, scientific cosmology proceeds by way of asserting, or trying to extend to the furthest degree possible, a monism which posits a certain kind of neo-German-romantic Nature-nature as the absolute, with nothing outside it or influencing it. Along the same lines, this noun, "nature", is often used differently from "universe" in the big bang cosmological discourse. If new mythology-tending uses of "creation from nothing" idiom to describe mathematical universe models are one signal (per above) of the new form of German romantic philosophy at work in big bang discourse, another can be located in the gaps that grow, particularly in the fine-tuning, inflation, and infinite multiverse discourses, between this broader "nature" and the universes made by mathematical models.

Most often, as noted by Chaisson above, a "universe" is a certain experimental or exploratory geometrical or dynamical combination, a universe model, which the cosmologists tend to treat as a closed, "toy-like" or "tune-able" system, with one easily

[407] Daniel Sudarsky, "Quantum origin of cosmological structure and dynamical reduction theories", in Khalil Chamcham, et al., eds., *The Philosophy of Cosmology* (Cambridge: Cambridge University Press, 2017), p. 337.

[408] P. A. M. Dirac, "The relation between mathematics and physics", Address to the Royal Society of Edinburgh, February 6, 1939, reprinted in *Resonance,* August 2003, p. 106, p.108, his emphasis.

interchangeable for another. This reflects the definition of a cosmological model as a "collection of physical laws assumed to be true, plus a set of assumptions as to the environment in which those laws are to be applied;" the environment is then made to hypothetically "evolve" or change, "so as to produce predictions which can be set against observations to test the validity of the model assumptions being made[409]". Most commonly, a model's rudimentary form is generated using only general relativity, and simplifying the universe into "a single material which satisfies the assumptions of homogeneity and isotropy", which "leads to the Friedmann equation governing the expansion of the Universe[410]"; this model is the basic foundation of big bang cosmology to the current day, though many additions and elaborations, including some related to presumed quantum aspects of the initial singularity, have been made. Whatever we "add in" to this basic procedure, we add by either laws as such (again, e.g., quantum field theory) or through data-gathering observations. In a sense cosmology has an [often mathematical] rationalism – empiricism pendulum (which as we recall is a tendency in romantic philosophy as well) built into its methodology which is more extreme in its swings than in any other science, due to the utter unfamiliarity and size of the universe, and the complete ideality of its topic of investigation: this unimaginable vastness considered *as a single whole*[411]. The universe model sits somewhere in between these two poles, now being pulled in one direction, now in another.

For the cosmologist, *nature*, by contrast, is (and must be, with the "universe" so unestablished and changeable) always there and always the real target of inquiry. The cosmologists present it as the same "nature" which is hunted in a thousand forms by all the sciences. This nature-itself cannot ever be fully modeled; but it is our knowledge of it which allows us to make universe models. The "universe" is phenomenal, and the change-able quality of its models shows this, as does the pressing forward of its modeling beyond the single universe and into the multiverse, as we will discuss below. It is *nature,* and

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[409] Liddle & Loveday, *op. cit.,* p. 77.

[410] Liddle & Loveday, *op. cit.,* p. 77.

[411] Cf. again Liddle & Loveday, *op. cit.,* p. 314, for a good and concise description of the way this *study* of a *whole* is conceived.

sometimes “reality” or “ultimate reality”, with which the cosmologist remains in constant communion, applying its laws and seeking always to unify them. It is this higher consideration of nature-itself, arguably, and not (as Meillassoux would have it, per Chapter Two) an actual transcendental idealism, which pulls the thinking “I” of the cosmologist beyond any one universe, beyond any one physical world.

This again leads to differences in the cosmologists speak about “nature”, which is the ultimate subject in which all the laws inhere, and can never be gotten “outside” of, and the way they speak about the “universe”. For example, cosmologist Carroll says we “would like to … present a fully formed picture of Nature[412]” (nature is often capitalized without any explanation by cosmologists). On the other hand, Davies’ remark is typical that “Linde’s—eternal inflation, for example -- … is a natural mechanism for making universes. One can dream up a universe-generating mechanism. That in itself is not a problem[413]”. Physicist D’Espagnat points out that while scientists usually do not bother themselves with the category of ‘independent reality’ *per se,* one cue to seeing when they do in fact mean the latter, independent reality, is when “they use the word ‘nature’ … it can only mean ‘independent reality[414]’ ”. Cosmologist Weinberg dismisses concerns over different ways of defining ‘reductionism’ because while these concern scientific or philosophical epistemologies as formalized, “I am talking about nature itself[415]”. And in true romantic form, to say that nature is reduce-able to law, is only to invoke the higher unity among all things, mind and the physical world. Scientific description, as the cosmologists claim particularly in their version of a new mythology project (see below), does not “reduce” the physical world to something less, it elevates (and even romanticizes) it into that which participates in and is one with the final unity itself.

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[412] Sean Carroll, *Something Deeply Hidden: Quantum worlds and the emergence of spacetime* (United States of America: Dutton, 2019), p. 3.

[413] Paul Davies, in Steve Paulson; Paul Davies; Ard Louis; & Lucianne Walkowicz; “A touch of awe: Crafting meaning from the wonder of the cosmos,” *Annals of the New York Academy of Sciences,* 1432, 2018, p. 50.

[414] B. D’Espagnat, “Empirical Reality, Empirical Causality, and the Measurement Problem,” *Foundations of Physics,* Vol. 17 (5), 1987, p. 527.

[415] Weinberg, Steven, *op. cit.* (*Dreams*), p. 54.

The interest in and pursuit of revealing ever-more of the one *nature*, and its distinction from the universe as modeled, is also shown in their soon growing discontented with universe theories ending (or beginning) at singularity at t=0. There appeared to be too many mechanistic or deistic remainders around this point. After all, the romantic does not *need* an origin point in the theological sense. What can be seen to motivate the search for a better early universe scenario is the desire to better *show* nature as the self-grounding absolute it has already been presumed, a priori, to be. Nature, again, is always the presumed-existent presence – something like a substance, but never defined (or limited) – and can be grasped only as where its laws inhere (the seat of these laws, which e.g. Davies overtly identifies with God as well[416]). Nature is at times imagined as the subject-like infinite mind that thinks and acts through laws, to "make" the universe, even if it is never quite limited to this role nor, again, positively defined.

Sometimes, a philosopher will question this type of neo-romantic construction which would take laws as principles demonstrating traits of this higher, invisible substance "nature". This is usually dismissed (or wholly ignored) by the cosmologists. Weinberg, dismissing Wittgenstein's view that it was an "illusion" that laws of nature are actually explanatory of nature, says that "To tell a physicist that the laws of nature are not explanations of natural phenomena is like telling a tiger stalking prey that all flesh is grass[417]". Likewise Pagels holds that "As scientists search for natural laws the ancient excitement of the hunt fills their minds; they are after big game – the very soul of the universe[418]". The romantic presumes there is such a single soul; he presumes there is such a final prey; he presumes there is a single *nature*, and that he is able to pursue it through terrain where universes come and go, all without him losing the trail.

This pursuit of, almost faith in, a nature above all also helps explain why the cosmologists have repeatedly asserted themselves to be in possession of a *cosmos,* a site of meaning for the human being in the infinite, despite all the whiplash and uncertainty over actual

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[416] Cf. Paul Davies, *op. cit.* ("Teleology"), pp. 95 – 96.

[417] Steven Weinberg, *op. cit.* (*Dreams*), pp. 28 – 29.

[418] Heinz Pagels, *The Cosmic Code: Quantum physics as the language of nature* (New York: Simon & Schuster, 1982), p. 326.

universe models, and despite the lack of anything but a perfectly generic, almost Brownian-chaotic, cosmography in the present (once infinitude is included beyond our observable universe, cf. below). The cosmologist is motivated by the relationship he sees between the immediate physical universe, which can be observed, and a higher, unifying mind-like nature, which is the force which has changed it, according to the model, so drastically from what it once was like (ultra energetic and ultra compacted, without even particles or elements, let alone planets and life) to what it is like now. This Nature-nature *is*, and has "done" all this; all *other* talk of is-ness or existence can in many ways be read as metaphorical, though the scientists do not often acknowledge this. It has even been extended into postulations of an infinite multiverse, where "everything that can happen, happens" (cf. below), such that there are, in some interpretations, *literally infinite numbers of the same* world and the same scientist, and the tether to the one Nature-nature remains, for the scientist, as orientation.

This new type of romantic nature-monism, where constructions of the one observable universe are backgrounded to debates over fine-tuning, inflation, and the multiverse, have recently been augmented debates on how the human mind can be better integrated into cosmology. After briefly recapitulating some of the basic ontology and epistemology of the new field in its earlier decades as its neo-romantic monism was taking shape, we will look at both these turns in the discourse where the cosmologists' efforts to characterize this one nature becomes most evident, before proceeding in the next section to the new mythology of reason as offered by the big bang cosmologist.

The new cosmological romantic nature-monism takes shape: idealism, realism, and novelty

In the early decades of the big bang cosmological theory, roughly from 1917 through to the discovery of the Cosmic Microwave Background (CMB) which cemented its status, uncertainty over how to interpret the theory was an early indication of its neo-German romantic philosophical foundations and trajectory.

Ryckman has noted one of Weyl's contemporaries directly critiqued Weyl for repeating the mistake of the 19th century *Naturphilosophien* – a mistake consisting of "maintaining that nature is completely intelligible", abolishing "the thing-in-itself" leading to the "identity of self and nonself[419]". Jeans, another cosmological pioneer, wrote that while the "secret of nature has yielded to the mathematical line of attack" it comes at the price of requiring we also hold that "nothing seems to possess any reality different from that of a mere mental concept", that we cannot even "attribute any reality to the space of the universe, except as a mental concept"; that even the continuum we must also treat "as a mere mental concept", that the distinction between realism and idealism may have been rendered obsolete, and that if there remained one at all, he sided with idealism[420]. Milne, the father of the cosmological principle (cf. below), was also a self-stated idealist (and theist). We have already noted above Einstein's own epistemology was mixed, and included at times idealism and critical realism alongside his belief in a reality independent of our perceptions[421].

Georges Lemaître was among the first to use Einstein's models reconfigured[422] as describing an expanding universe following the detection of apparent cosmological redshift by Hubble in the 1920s[423]. Lemaître did begin the universe from a single point, but [neo-]romantically still wished to avoid any appearance of deistic mechanism, embracing a Schellingian type of inverted Neoplatonism in his conception of beginnings in nature as open and simple, as well as lawlike, to be followed by the emergence of increasing complexity. He was arguably still working within the romantic framework of intuiting and revealing "nature" using reason, and not discussing its being as such (which for Lemaître, a theist, would bear on its status as the creation of God). Though he did postulate a kind of "primordial atom", "the atomic weight of which is the total mass of the universe", he was adamant that this was not a limit

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[419] Ryckman, *op. cit.*, p. 240.

[420] James Jeans, "The Mathematical Aspect of the Universe", *Philosophy,* Vol. 7 (25), Jan. 1932, pp. 12 – 14.

[421] Cf. first section in Chapter Three, above; also cf., e.g., Albert Einstein, "On the method of theoretical physics", *Philosophy of Science,* Vol. 1 (2), April 1934, pp. 163 – 169.

[422] (Along Russian mathematical cosmologist Alexander Friedmann's route.)

[423] Cf. e.g. Helge Kragh, *Dirac: A scientific biography* (Cambridge: Cambridge University Press, 1990), p. 224.

on nature's freedom or true developmental quality, and he also was adamant that his primordial atom was not the same as, or linked with, the Genesis creation moment: "The whole matter of the world must have been present at the beginning, but the story it has to tell may be written step by step[424]".

Another neo-romantic position which emerged in the first decades of the new cosmology was the very stance that applying the theories of relativity and quantum mechanics could be done at the universal scale, first done by Einstein, but never questioned by those who followed and developed the theory. What this required was not necessarily (or not only) what Balashov and others (cf. Chapter Two) point out is an a priori insistence that the physical universe be intelligible and that this intelligibility also be the means to ascertaining its one real structure or essence; or some way of combining this idealism with forms of realism; what it really required was, as Jeans hints above, a new philosophical approach which combined them, and which bears, if we were to compare it with any philosophy of nature, the most resemblance to the early German romantic one.

Likewise, even though from the outset, there was talk of the new expanding universe model replacing the "need" for Genesis, this was much closer to an announcement of a new version of a German romantic new mythology program, as discussed above, than it was a presentation of a new Genesis story bearing on creation as such. We will return to the issue of mythology in big bang theory in the next main section.

Nature will always trump the universe: Fine-tuning, the anthropic principle, and the inflationary multiverse

As the new cosmological theory was formalized in the 1930s, one particular principle built into the modeling process, the "cosmological principle" or "Copernican principle", was both an indication of the model's neo-romanticism, and a sign of problems to come with the model being used to, as Jacobi might say, try to describe what really *is.*

[424]Georges Lemaître, "The beginning of the world from the point of view of quantum theory", *Nature,* Vol. 127 (3210), May 9, 1931, p. 706.

The cosmological or Copernican principle (CP) is simply an assumption which then becomes a *premise*. Mathematically, it is an assumption needed to solve the Einstein field equations (and generate basic universe models): we must assume (for the purposes of calculation) that the observable universe as a whole is homogenous and isotropic. (The assumption is usually even extended to the universe *as a whole* full stop, not only the observable universe, as well, as we will discuss below.) The "perfect" cosmological principle would add temporal homogeneity and isotropy as well, but it has never been widely adopted in big bang cosmology, which is, as we have noted, based on tracking radical phase changes and development through time.

The CP can only be adopted a priori, and derived rationalistically, since we cannot survey the whole universe, or even anything approximating more than a teaspoon-ful of the greater ocean of space – even where the ocean is only our observable universe, which in turn is presumed to be a teaspoonful of infinity (again, more on this problem below).

The initial main justification for adopting the CP is, again, that it is pragmatically necessary. Einstein's field equations are insoluble without it: it remains necessary to this day to simplify the universe into something like a spherical volume of perfect fluid in order to attain the model.

The CP is also implicitly used simply in applying the physics tested here on Earth and in the observable universe as though they must apply throughout the observable universe (and again, potentially into the whole universe). As Kroupa, a cosmologist, points out, the "null hypothesis" of scientific cosmology is that general relativity "also be valid on galactic and cosmological scales", which is "a vast extrapolation by many orders of magnitude from the well-tested scale of planetary dynamics" even now, and was so even more when Einstein extended it, using only "essentially Solar system constraints[425]". This is another example of the transcendental reasoning cosmology requires: figuring out, in all ways, how the universe would have to be in order that our mathematical description of it would be possible, as Balashov raised (cf. above). What Balashov did not emphasize enough, however, is that the

[425] Pavel Kroupa, "The dark matter crisis: falsification of the current standard model of cosmology", *Publications of the Astronomical Society of Australia*, 29, 2012, p. 395.

cosmologists do not posit it as a mere computational aid, but also as really true of the physical universe.

The CP's use as the springboard to the new discipline of scientific cosmology caught the negative attention of a well-known astronomer, Herbert Dingle, in the late 1930s. In a broadside in [appropriately enough] the journal *Nature,* entitled "Modern Aristotelianism", Dingle wrote that the Einstein field equations could only ever represent a schematic set of rules for making measurements, not a holistic *real* or specific "universe". In Dingle's view, it was a kind of wish-fulfillment to use the CP to so meld the generic case with the specific as to enable the resulting models to be claimed as representations of the physical world around us[426]. He remarked that GR was precisely like Newtonian mechanics in principle, and just like that theory had no special claim to actually *exist as* [or in] *a world.* (Contemporary philosopher Ryckman notes, similarly: general relativity consists only of the construction of the "simplest conceivable relation of comparison in a continuum[427].)

Dingle's critique can be seen as holding echoes of Jacobi, a critique of human subjects nihilistically holding what *is* to be so easily or so closely approached by reason. Dingle faults the extension of the "scientific sanction which had been earned only by the underlying system of mechanics" to its utility as a system of cosmology[428]. He calls this a "mistake" and an overlooking of the fact that general relativity is generic. He is bewildered that scientists would claim it can tell us something about "the peculiar character of any particular system[429]". He notes the way this then feeds back into our own perception of natural laws as "universal, eternal, established on the rock of divine mathematics[430]".

If Dingle had identified the neo-romantic undergirding of the approach at work, his critiques might have found more traction, beginning with considering that perhaps it was not the *laws themselves* which are universal and eternal, but the final unity, the one real entity,

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[426] Herbert Dingle, "Modern Aristotelianism", *Nature*, 139, 1937, p. 785.

[427] Ryckman, *op. cit*., pp. 242 – 243.

[428] Herbert Dingle, "Modern Aristotelianism", *Nature*, 139, 1937, p. 785.

[429] Herbert Dingle, "Modern Aristotelianism", *Nature*, 139, 1937, p. 785.

[430] Herbert Dingle, "Modern Aristotelianism", *Nature*, 139, 1937, p. 785.

nature, which is now the divine rock. Without putting his finger on the connection between the cosmologist's mind and this single godlike quasi-substance, the cosmologists' version of the German romantic absolute totality, he does not make contact with that heart of the interpretation where he might have found more leverage against their approach.

The CP Dingle faults is only one more expression of the cosmologist's neo-romantic pursuit of *nature* itself and its principles; simplifying or even doing away with the universe and its texture altogether is permissible if it can advance this pursuit. Copernican principles are an extension of the human's ability to think as Nature-nature from Nature's standpoint of productivity, to see the universe being shaped organically, as Nature would "see" it. Copernicus did de-center the Earth, cosmographically, of course, but he is also perhaps the beginning of modern science's fusion with idealism and rationalism regarding a cosmological "nature", which it will in the 20th century take, as it were, as its new center[431]. While the cosmologists' CP-enabled "observing" removing limits of place, occasion, or point in history, goes against some of the romantics' arguments about partiality and historicity, the German romantics (and even Schlegel) nonetheless are the clear forerunners of this type of view in that they required a self-grounding, ultimate and absolute nature, performing the first and most important removal of the need to see nature as an externality or as entailing a radical externality from, for example, a creator God.

Once it has been posited, the CP will further enable the romantic aim of thinking *as* nature, to see and know something more transforming of the physical world into a cosmos. The CP, with its suggestions of a completed whole of nature, and its suggestions of Spinoza's

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[431] This seems to have been somewhat foreseen by Copernicus himself. One historian of science, Hallyn, notes that Copernicus believed in a kind of 'anagogy' wherein man could ascend to God's place and capture divine wisdom. Hallyn writes that Copernicus:

> postulated that this world was created *for us,* and *for our use:* "mundus *propter nos* ab optime et regularissimo opifice conditus," he declares … As the beneficiary for whom the world was made, man can attain *true* knowledge. In place of a universe whose beauty and rationality escape us, and which thereby calls us to humility, Copernicus substitutes a cosmos for which man is the final purpose and whose true plan he can reconstruct […] .

Cf. Fernand Hallyn, *The Poetic Structure of the World: Copernicus and Kepler* (New York: Zone Books, 1990), p. 55.

completed set of all possibles, even of a Parmenidean wholeness, allows us to combine intelligibility with the kind of unity which is symbolic of the absolute.

Invoking the CP also led to several more efforts to speculate ever more generically, arguably in an effort to continue to approach Nature-nature's own logic or standpoint of production, its way of making itself manifest as nature. After the discovery of the Cosmic Microwave Background (CMB) in the mid-1960s further secured big bang theory against potential detractors, and gave cosmologists another major observational data-set to work with, scientists began to focus on new problems with their conception of the singularity or earliest moments of the universe thereafter. In order to solve these problems, they turned to new versions of the CP.

The first application of the CP in the neo-romantic, idealist-realist manner had effectively already asserted that the human mind is able to satisfactorily ideate and then evaluate what real, actual typicality for nature on a universal scale "feels like", with intellectual intuition relied upon to gauge when it could be utilized and how the resulting view of the universe could [still] be taken in a realist fashion. After the CMB was discovered, "Copernican"-ness or typicality, a kind of grand generic infinitizing of the model, began to be sought in new ways. Human intuition, our laws of probability, the aesthetic sense of proportion, beauty, and the mathematically beautiful and possible, all continued to influence where and how it was invoked. The "universe" itself was increasingly presented as disposable or change-able, as the cosmologists sought to tap into their intuitive sense of how "nature" would manifest itself: how it would *make universes as such.* Nature was clearly the fully self-causing, self-grounding entity, acting in and through time. But the scientists thought it would only "make" certain kinds of universes – i.e., the universes it made must still be organically explicable as a part of it, arising with that combination of freedom and necessity which they saw as inherent to their neo-romantic nature. Cosmologist Barnes writes of his preference for a "dynamical theory of … initial conditions, rather than simply positing them[432]". Once the anthropic principle is applied, to speak about which universes could have life, and which

[432] Luke Barnes, "Testing the Multiverse: Bayes, fine-tuning and typicality", in Chamcham, Khalil, et al., eds., *The Philosophy of Cosmology* (Cambridge: Cambridge University Press, 2017), p. 448.

could not (cf. below), cosmologist Gleiser even notes things took a quite pantheistic turn: "In a sense, the Universe [in this view] is alive, a creative entity capable of engendering creatures able to reflect upon itself[433]".

This expansion of CP reasoning came, roughly, first in the form of discussions of the anthropic principle and the problem of fine-tuning, then in support for the adoption of a theory of inflation, and then with increasing belief in some type of infinite multiverse.

The anthropic principle and fine-tuning concerns trace back to early cosmologist P. A. M. Dirac and his (and Eddington's) type of quasi-rationalistic and idealist, quasi-realist ruminations in and around the 1940s on various numeric constants (or ratios) appearing in the universe models and how they might or might not evolve with time[434]. Another cosmologist, R. H. Dicke, revitalized these issues in 1961, asking whether one of the ratios with which Dirac had been concerned (one determined by the Hubble age) might be affected and shaped by the presence of human observers: in his words, whether perhaps "*T* is not a 'random choice' from a wide range of possible choices, but is limited by the criteria for the existence of physicists[435]".

The anthropic principle is defined as the claim either that initial conditions at (or just after) the t=0 singularity had to allow for laws to emerge such that these laws allow for the emergence of observers (this is the "weak" anthropic principle); that "the only types of Universe permitted to exist are those which do contain life during at least part of their existence[436]" (this is the "strong" anthropic principle); or that observers really do *make* the universe physically, through quantum effects (the "participatory" anthropic principle, advanced by John Wheeler, cf. below).

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[433] Marcelo Gleiser, *A Tear at the Edge of Creation: A radical new vision for life in an imperfect universe* (New York: Free Press, 2010), pp. 220 – 221.

[434] Cf. e. g. P. A. M. Dirac, "A new basis for cosmology", *Proceedings of the Royal Society of London, Series A, Mathematical and Physical Sciences*, Vol. 165 (921), Apr. 5, 1938, pp.199-208.

[435] A. H. Dicke, "Dirac's cosmology and Mach's principle", *Nature* (Letters to the Editor), Vol. 192 (4801), November 4 1961, p. 440.

[436] Liddle & Loveday, *op. cit*., p. 17.

The anthropic principle debates and the others which flowed from them on inflation and the multiverse were arguably Nature-nature oriented discourses of a neo-romantic critical monist stripe, more than they were empirical or historical. Cosmologist Carter, in another influential 1960s paper, described how "what we can expect to observe, must be restricted by the conditions necessary for our presence as observers[437]". Carter echoes Schelling when he writes that the " *'strong' anthropic principles* [sic]" holds that the "Universe (and hence the fundamental parameters on which it depends) must be such as to admit the creation of observers within it at some stage. To paraphrase Descartes, 'cogito ergo mundus talis est[438]' ". By linking the thinking "I" with the existence of the natural world, Carter is close to evoking Schelling's version of the situated *Cogito.* We recall for Schelling, "The *I* think, *I* am, is, since Descartes, the basic mistake [*Grundirrtum*] of all knowledge; thinking is not my thinking, and being is not my being, for everything is only of God or the totality[439]". This was part of how, as we recall, even Schelling (as well as the other three German thinkers from Chapter One) linked thinking with a pre-existing nature or being. Carter is also evoking in a newly scientific mode the early German romantic concern with and interest in the historical transition or transformation which we know *must* have occurred, by the very fact we are thinking, of the inanimate natural world *into* the thinking I.

Once the anthropic principle began to be integrated as a quasi-real principle of nature[440], even the "weak" anthropic principle which has found the most favor with cosmologists with its simple re-stating of the neo-romantic precursor to all thought, had certain follow-on effects in the discourse. It becomes, as certainly is also the case with the stronger versions of the anthropic principle, somehow a symbol of the relationship of intuitive oneness the cosmologist presumes with the one single *nature* which is higher, and which "chose" this

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[437] Brandon Carter, "Large number coincidences and the anthropic principle in cosmology", Republished in *Gen. Relativ. Gravit.,* 43, 2011 [1974], p. 3226.

[438] Translation: I think therefore the world is. Carter, *op. cit.*, p. 3229.

[439] Friedrich Schelling, "*Aphorismen zur Einleitung in die Naturphilosophie*" (1806), *Aus den Jahrbüchern der Medicin als Wissenschaft,* Friedrich Wilhelm Joseph von Schelling's *Sämmtliche Werke*, Part I, Volume 7 (Stuttgart and Augsburg: F. G. Cotta, 1860), no. 44, p. 148. Translation by Andrew Bowie, given in "Friedrich Wilhelm Joseph von Schelling", *The Stanford Encyclopedia of Philosophy* (Fall 2016 Edition), Edward N. Zalta (ed.), accessed online via https://plato(dot)stanford(dot)edu/entries/schelling.

[440] Cf. also Barrow & Tipler (1986).

universe with its observers; and it also becomes a symbol of a central role for the human mind in nature. The stronger versions especially, but even the weak version, also lead to a certain tendency to think the "I" as a special kind of culmination of the unfolding of the natural universe, its highest form of complexity which has reflexive insight back into all its lower forms and which is the moral agent of nature. It increased the perception that we had integrated the "I" even more firmly into the weave of natural history. Despite the discussion of times and spaces vaster than imagination can easily stretch, the universe is sometimes distilled to questions regarding the appearance of the human being: Rees implies this negative normativity attached to the non-human-containing universe where he writes, of the counter-factual universes where we are not there: "Many recipes would lead to stillborn universes with no atoms, no chemistry and no planets; or to universes too short-lived or too empty to allow anything to evolve beyond sterile uniformity[441]". Beiser said of the early German romantics that they held the self-consciousness of man as the fulfillment of nature; "If, for some reason," he writes, "there were no self-consciousness, nature would not fully realize itself. It would indeed continue to exist; but only in some potential, inchoate and indeterminate form. It would be like the sapling that never becomes the mighty oak[442]". This is a sentiment, and sometimes a declared principle, that lies just beneath the surface of this discourse, as well as in their approach to universal natural history, as we will see in the next chapter.

As Rees' passage hints, the concern with anthropic-friendly conditions around the singularity also spread into broader discussions of the more general problem of what was called the appearance of "fine-tuning" characterizing the earliest universe, leading on to the desire to find the generic laws explaining all kinds of universes, including but not limited to types like our own life-filled one.

Rees again offers a good example of how this broader logic regarding fine-tuning runs. First, a suite of key numbers, ratios, or variables must be identified as a kind of coding or

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[441] Martin Rees, "Cosmology and the multiverse," in *Universe or Multiverse?* ed. Bernard Carr (Cambridge, UK: Cambridge University Press, 2007), p. 58.

[442] Beiser, *op. cit.* ("Paradox"), p. 229.

programming of *the universe as a whole* (note, not of *nature*, which encompasses and exceeds the universe, and presumably grounds, in principle, the calculations and the vantage point as it extends beyond our one universe). Rees identifies six parameters which "constitute a 'recipe' for a universe[443]", writing that "if any one of them were to be 'untuned', there would be no stars and no life[444]". Nature, in this metaphor, it seems, is the *chef*. Our knowledge extends *beyond* the cake, *beyond* the recipe, and into the *mind* of the chef.

Another physicist and cosmologist, Wilczek, describes it thus: "The standard model(s) … [of physics and cosmology assume] the values of a handful of numerical parameters as inputs" which lets us "consider in quite an orderly way the effect of a broad class of plausible changes in the structure of the world: namely, change the numerical values of those parameters[445]!".

When the cosmologists extend the aesthetic of the CP to the universe itself in this way, it seemingly becomes even more object-like, even more like a kind of sub-entity within *nature.* Krauss writes, "Almost every logical possibility we can imagine regarding extending laws of physics as we know them, on small scales, into a more complete theory, suggests that, on large scales, our universe is not unique[446]". The neo-romantic cosmologist's discomfort with mechanism (and even with too solely an empirical approach to nature) does not like it that "the standard models of particle physics and cosmology are both rife with numerical parameters that must have values fixed by hand to explain the observed world" and that "the world would be a radically different place if some of these constants took a different value[447]", in part because this seems to bespeak a kind of deistic or mechanistic, rather than a neo-Spinozan, kind of necessity at work in nature, and an overly accidental place for man,

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[443] Martin Rees, *Just Six Numbers: The deep forces that shape the universe* (London: Phoenix, 1999), p. 4.

[444] Rees, *op. cit.* (*Just Six*), p. 4.

[445] Frank Wilczek, "Enlightenment, knowledge, ignorance, temptation," in *Universe or Multiverse?* ed. Bernard Carr (Cambridge, UK: Cambridge University Press, 2007), pp. 44 – 45.

[446] Krauss, *op. cit.* (*A Universe*), p. 126.

[447] Anthony Aguirre, "Making predictions in a multiverse: conundrums, dangers, coincidences," in *Universe or Multiverse?* ed. Bernard Carr (Cambridge, UK: Cambridge University Press, 2007), p. 367.

as we have seen; and also because it makes his view look more *like* a patchy, empiricist's view. The Copernican conceits at work are, perhaps, at times bordering on a kind of hyper-romantic extension of the German thinkers' forays toward a more conservative type of mind-nature unity. Intuition and the aesthetic sense are key, as is a conviction that his view is directed toward nature itself, and is no mere cosmography or limited history.

Outside the neo-romantic framework where nature is known and intuited, and where it is a much higher (because more reflective of the ultimate unity of all in one Nature-nature) and yet also more intelligible kind of entity than a universe, the scientists' perception of "tuning" and requirement that it be massaged away inside the models makes less sense. Surely anything at all which is defined solely by using parameters, will be 'highly sensitive' to changes in parameters? But the neo-romantic scientist does not perceive it this way. The universe is not the full story, the full story is *nature,* and nature cannot be correctly perceived if the image we are receiving of it makes it appear as though it were confined by anything else or not free enough. The search for a meta-law(s) is only a search to clarify the view of nature.

In some ways, the CP offers the aesthetic of de-centering, and the anthropic principle of re-centering; but the romantic subject has not really "gone" anywhere, he has remained at the center of his world, throughout. He only gains the impression of a journey which leads him closer to *nature*, perhaps even an impression that he has left and returned again in the Schlegel-ian sense of struggling to find his own center, his sense of cosmos relative to the one infinite unity or totality, nature seen as Nature.

Inflation and the infinite multiverse

Concerns over fine-tuning – or, as noted above, what might more accurately be called these new searches for higher types of laws (or even principles, in the manner of some kind of archetype or Goethe-ian "seed of eternal growth" level of concept, as Millán detects in Humboldt's nature writing[448]) of nature, seemingly most preoccupied with ensuring

[448] Cf. Millán, *op. cit.,* "Seeds", pp. 97 – 114.

Nature's productive "behaviors" remained congruent with cosmologists' intuitions of Nature-nature – soon led to changes in the technical model of the earliest universe.

Inserting inflation, the theory that hyper-fast vacuum pressure shaped our universe's birth, into the universe's history was the first step proposed to solve the ostensible fine-tuning concerns. Inflation was proposed by cosmologists like Linde and Guth in the 1970s and 1980s as part of a way to explain how our universe happened to hit the just-right mark at the time of the big bang that led it to have critical density, perfect isotropy, etc., again, mostly in the aftermath of observations of the CMB[449]. The theory of inflation holds, in cosmologist Greene's words, that "in the universe's earliest moments, space would have swelled so fast that regions would have been propelled apart at greater than light speed[450]". As Krauss describes it, "the universe could have expanded during this inflationary period by a factor of more than 10^{28}. While this is an incredible amount, it amazingly could have happened in a fraction of a second[451]".

Inflation was developed for its potential, as cosmologist Barnes states, to "provide a deeper explanation for some aspects of … [the standard model of cosmology] that seem *unnatural* or fine tuned[452]" (emphasis added). For the neo-romantic cosmologist, again, the early universe must acquire more of the purity of nature, and less of the clumsiness of mechanistic paradigms and too-limited mathematical models. As Barnes puts it, "we will not be satisfied until every physical measurement can be predicted from theory alone[453]". Barnes notes that Einstein articulated the goal in 1949: "Einstein (1949) dreamed of a set of equations such that 'within these laws only rationally completely determined constants occur[454]' ". Part of these concerns with occupying the cosmologists' version of the position of Nature's productivity (its production of natura naturata), then, is that the universe must

[449] With its apparent coordination of homogeneity across "causally disconnected" regions.

[450] Greene, *op. cit.* (*Hidden*), p. 51.

[451] Krauss, *op. cit.* (*A Universe*), p. 97.

[452] Barnes, *op. cit.* ("Testing"), p. 447.

[453] Barnes, *op. cit.* ("Testing"), p. 457.

[454] Barnes, *op. cit.* ("Testing"), p. 457.

be seen as an unfolding of one entity, and an entity which has no raw beginning but is self-contained and self-explanatory.

Inflation is a generic possibility, which the cosmologists merely assert is present in nature's capacities (since it has never been observed[455]) because it can be modeled using laws of physics. Because it was generic, however, when asserted at all, its very auto-poietic character that made it so helpful to the model (and so helpfully generic rather than tuned – at least this was the thought at first) also meant it was only intuitive to posit it as a totalizing, self-sustaining type of event: hence the model moved to encounter "runaway" or "stochastic" inflation.

In an early foretaste of multiverse theory, cosmologist Tryon, in a well-known 1973 letter to *Nature*, says he seeks via physics the [perfect] 'predictive' recipe for the entire universe, and puzzles over the fact that "there is no apparent reason for such an event to occur[456]" where 'such an event' is, in his terms, the creation of the universe. This, again, shows that the neo-romantic scientist is ultimately pursuing a description of *nature,* beyond the universe itself. He wants to know *why* the Universe has "its particular values for energy, electric charge, baryon and lepton number and so on[457]". He reasons that "If it is true that our Universe has a zero net value for all conserved quantities"—which is like saying, if our universe is a subsidiary kind of object vis-à-vis the nature to which we might hope to gain access – "then it may simply be a fluctuation of the vacuum, the vacuum of some larger space in which our Universe is imbedded," and if we are to "wonder how a vacuum fluctuation could occur on such a grand scale," his two reasons are that "the laws of physics place no limit on the scale of vacuum fluctuations", and his second criterion is that of the anthropic principle[458].

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[455] As one cosmologist puts it, "we do not know what the inflaton is", cf. Barnes, *op. cit.,* p. 448. Another writes that the possibility of a vacuum "is generally accepted [to exist] but there are no … assumptions that can help us understand it. It is completely neutral, as if it is not there at all," and its use in first-moments cosmology represents only "a materialized mathematical environment", cf. Alexey Belyaev, "A new model of the birth of the universe," *Universal Journal of Physics and Application* 11 (5), 2017, p. 186.

[456] Edward P. Tryon, "Is the Universe a Vacuum Fluctuation?," *Nature* (Letter), Vol. 246, Dec. 14 1973, p. 396.

[457] Tryon, *op. cit.,* p. 396.

[458] Tryon, *op. cit.,* p. 397.

The "some larger space in which our Universe is imbedded" positions our universe as emergent from something else more primordial, again suggesting a Nature-nature which is the higher goal of investigation. Smolin later calls this undefined larger space the "landscape[459]" in a generic, mathematical-probabilistic sense; Tegmark calls an "infinite 'ergodic' space[460]" or elsewhere tends to simply presume as an ever-present and infinite expanse of space and time[461].

The notion of the infinite multiverse, even once developed to cover this primordial space, also remained too generic to define what it was. Cosmologist Greene says the "vastly new picture of reality's expanse … can be grasped most easily with a simple visual aid" which is to "Think of the universe as a gigantic block of Swiss cheese"; he also includes a generic image of bubbles meant to illustrate this stratum, "an ever-expanding spatial environment permeated by a high-valued inflaton field;" on the next page it's "an eternally expanding spatial expanse[462]". Krauss writes that "we don't currently have a fundamental theory that explains the detailed character of the landscape of a multiverse[463]". It is reasonable to attach the cosmologists' comfort with theorizing the behavior of a universe-creation entity they cannot define with their neo-romantic epistemology and ontology.

Tryon, like the others mentioned after him usually do as well, turns to the anthropic principle as a way of correlating our *real* universe with having historically emerged *from* this fluctuating layer of undefined spacetime: thus whatever it is, it is at least minimally identifiable as *more Nature-nature*. In fact without presuming this to be more nature, able to be conceived really (as having produced our world) as well as ideally (defined only via satisfying certain intuition-guided, largely mathematical tests) just as our own world itself is,

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[459] Cf. Smolin, *op. cit.* (*Singular*), pp. 454f..

[460] Max Tegmark, "The multiverse hierarchy", in *Universe or Multiverse?* ed. Bernard Carr (Cambridge, UK: Cambridge University Press, 2007), p. 99.

[461] E.g. in Max Tegmark, *Our Mathematical Universe* (United Kingdom: Penguin Random House UK, 2015 [2014]), p. 134, Fig. 6.4.

[462] Greene, *op. cit.* (*Hidden*), pp. 65 – 67.

[463] Krauss, *op. cit.* (*A Universe*), p. 176.

and moreover to have flowed from the same unity as the world around us, it is unclear how one could present the multiverse in this ambitious manner.

For the reasons of the "runaway" quality of inflation in the model – again, as in the case of tuning, it is unclear how a process introduced solely via its definition, could ever be other than self-reinforcing and repeating, or "runaway," but guided by intuition, the cosmologists nonetheless attribute its unceasing self-production as part of our one real nature's own productivity– and because Guth's inflation turned out to itself require fine-tuning, and for a variety of other reasons combining technical concerns with aesthetic intuition into nature, including postulations by some that the Everett interpretation of quantum mechanics might really be true of nature, the cosmological community gradually came to view *some* kind of infinite multiverse as a necessary part of the theory of the observable universe.

This multiverse was eventually embraced in such a robust way in part, it appears, because of its ultra-"Copernican" aesthetic. Those who espouse an infinite multiverse of some kind often try to register its truth by pointing to how it "Copernican-izes" our view even further. Cosmologists like Rees laud the multiverse, for example, as heralding a "fourth and grandest Copernican revolution[464]" which makes not only of the Earth, or the human, or the galaxy, something 'typical', but also the entirety of his natural universe. As Greene puts it, "multiverse-based explanations" of the universe stand poised to lead us through "the natural step toward completing the Copernican revolution, five hundred years in the making[465]". To *categorize*, as Novalis would say, or make infinite or absolute, the universe itself – which again reveals itself to be a kind of subset of "nature" by its very proliferation into infinitely many of itself – is a new goal of neo-romantic speculation. Cosmologist Hartle presents the scientific thinker as actually potentially capable of relinquishing all scientific reliance on *any* "features of our current theoretical framework" that "reflect our special

[464] Martin Rees, *On the Future: Prospects for humanity* (Princeton: Princeton University Press, 2018), p. 184.

[465] Greene, *op. cit.* (*Hidden*), p. 357.

position in the universe"; these are only "excess baggage", rather than "fundamental", and should be discarded[466]:

> in the future this might be seen as the time when scientists began to take seriously the idea that it was important to consider the universe as a whole and science as a unity, the time when they began to take seriously the search for a law of how the universe started, began to work out its implications for science generally, and began to discard the remainder of our excess baggage[467].

Just as the universe is a subset or finite manifestation of nature, the I's viewpoint will finally transcend being tethered to it altogether and dissolve, here in a somewhat hyper-romantic manner, into inhering *only* in this nature, nature seen as a unity, nature via the prized viewpoint, always elusive, of Nature and its productivity, just as the scientist seems to be about to dissolve into it as well, without any weight of specificity to hold him any longer.

The infinite multiverse as neo-romantic creative chaos

The four German romantic thinkers we considered in Chapter One were prone, as we saw, to using chaos as an aesthetic or philosophical category within their view of nature. It was the sublime in nature, another facet of its infinitude. It was not anything truly Other, not some level of history or nature where we would find raw and unintelligible creation or divergence, but another expression of the original unity of all things, mind and matter, archetype and individual, we could not but posit; a reference to the sense in which Nature always contained all forms of being in their precedent state, waiting to emerge: nature's unconscious, like the artist's.

In addition to relying on an indirect ontologizing of an undefined "larger space" noted above, the infinite multiverse of scientific cosmology contains other intrinsic challenges to definition. As Guth et al. in a 2014 technical article describe some of these:

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[466] James B. Hartle, "Excess Baggage," in *Elementary Particles and the Universe: Essays in honor of Murray Gell-Mann,* ed. John Schwarz (Cambridge, UK: Cambridge University Press, 1991), p. 2.

[467] Hartle, *op. cit.,* pp. 8 – 9.

> In an infinite multiverse, we do not know how to define probabilities. Since anything that can happen will happen an infinite number of times, the distinction between common events and extremely rare events requires a comparison of infinities, and that requires some method of regularization. We do not yet know what is the correct method of regularization … acceptable measures … have been proposed … the mere fact that we have not solved this problem is no reason to believe that nature would avoid eternal inflation. Nature does not care whether we understand it or not[468].

We can see here the way in which the infinite multiverse has to do with crafting the overall theory of *nature*, and how this is able to override all other concerns. We can even see a hint of the Copernican aesthetic: if the multiverse seems incomprehensible, that is a sign we are reaching something objective, even something suggestive of the opacity of being; it is not an occasion to question this (wholly speculative) construction of a multiverse itself. The infinite multiverse becomes a kind of higher principle of nature, almost something like an archetypal property, albeit one in tight speculative dialectical tension with the speculating cosmologist trying to quite directly think from this principle's standpoint of production and thus from Nature's (and simultaneously from the standpoint of the physical world with its lower laws as product of such a Nature).

The depth of commitment to Nature-nature as ultimately one is also seen in how, despite its multiple levels of infinities, and the broadness of the "anything that can happen …" depiction, the multiverse remains intuitable – again, seemingly due to a commitment to critical naturalistic monism of a neo-romantic type. The "anything that can happen will happen an infinite number of times" is a recurring formulation of the multiverse, its most generic case, and it is extremely common in the cosmological discourse on multiverse theory, even when scientists also then differ about onward refinements of the concept (into, e.g., Everett many-worlds multiverse, stochastic inflationary multiverse, etc.). Tegmark writes, "in an infinite space created by inflation, everything that can happen according to the laws of physics does happen. And it happens an infinite number of

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[468] Alan Guth, David Kaiser, & Yasunori Nomura, "Inflationary paradigm after Planck 2013", *Physics Letters B*, 733, 2014, p. 115.

times[469]"; Ellis, that "multiverses allow anything to occur[470]"; Greene, that in the multiverse things have infinite numbers of copies of themselves and so does every aspect of nature[471].

Beyond this type of generic formulation, there is not too much agreement on what, or even "if", the multiverse really "is". Tegmark identifies four simultaneous layers of multiverse[472], Ellis four different possible kinds of multiverse which are not the same as Tegmark's[473], and Carroll details the Everett-ian type[474]; their *purpose* is however always to make our entire universe typical in some manner; their aesthetic always Copernican. Since despite talk of a multiverse as some kind of distinction-possessing landscape, they are still grounding it all in a single nature, much of the discourse on multiverses is also arguably outwardly or terminologically somewhat misleading, and is better defined as romantic speculation on nature itself using various logical constructions.

By understanding the cosmologists' philosophy of nature as neo-romantic, we can further hazard an interpretation of the multiverse as coming up against what would await any philosophy of nature based on occupying this standpoint of production of nature if taken to its logical limits in attempting to characterize the Nature-nature itself. Even without, as it were, trying to utilize first principles, any characteristic of nature used to define it as a whole – in this case, the notion that its history is determined by laws – must eventually confront one sort of infinite regress or another. Just as the German romantic philosophy of nature could not and did not avoid acknowledging the chaotic quality of the infinite, but tried to rely on the notion of unity in infinitude, tamed via the very act of recognizing it as infinite and as therefore unknowable in its details, and offering us a just-perceptible path to finding beauty in the sublime, unifying the natural world's symbolism of that chaotic quality with that of its order, so too does the neo-romantic cosmologist inevitably find himself

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[469] Tegmark, *op. cit.* (*Our Mathematical*), p. 123.

[470] George F. R. Ellis, "The domain of cosmology and the testing of cosmological theories", in Chamcham, Khalil, et al., eds., *The Philosophy of Cosmology* (Cambridge: Cambridge University Press, 2017), p. 29.

[471] Greene, *op. cit.* (*Hidden*), pp. 39f..

[472] Cf. Tegmark, *op. cit.* (*Our Mathematical*).

[473] Ellis, *op. cit.* ("The domain"), pp. 26ff.

[474] Cf. Carroll, *op. cit., Something*.

trying to speculatively approach infinitude qua principle of Nature-nature, and arguably arrive at the same type of conclusion: that we must leave off, as Schelling wrote, attempting to "exhaust the chaos of the phenomena in nature and in history by means of the understanding" and "take 'the incomprehensibility itself,' as Schiller says, 'as a principle of judgment' " (cf. above). It is unclear what else the thinking "I" could do with statements like "absolutely everything happens, and it happens an infinite number of times", or the prospect of the "I" proliferating into infinite copies of itself. The fact that the cosmologist *still* prefers to hold to an infinite multiverse, rather than take a hard look at his speculative world-building as a whole, suggests again the depth of the commitment the cosmologist has made to mind-nature unity and the "hunt" for nature wherever it may lead, the ability and willingness to derive value from the knowledge even of the most radically Copernican (in their view) and de-centering kind.

And just as early German romanticism sought to integrate this inevitable chaos with their notion of order (and beauty), we can also potentially understand the big bang cosmologists' tolerance and even embrace of the infinite multiverse conception as entailing their own version of creative chaos like the romantics', even at times displaying Hölderlin's view that "This feeling belongs, perhaps, to the highest that can be felt, when the two opposites, the more universalized spiritual lively artificial pure aorgic man and the handsome form of nature, meet[475]", now being accomplished via scientific rather than poetic transformation of the physical world and human life.

Discussions of the infinite multiverse are where some cosmologists[476] still exit the conversation, calling upon theism, panentheism, or skeptical silence. They tend to do so, however, in a way which never requires them to devalue their model as it presences the one real substance, nature. Rather than connecting it to the multiverse, which Krauss claims is "like" a creator but more "logically consistent[477]", some theists here attach God to their (single) big bang universe. Others have developed other principles to occupy the same

[475] Hölderlin, *op. cit.* ("Ground", in Adler & Louth), pp. 261 – 262 and 261ff.

[476] E.g., Ellis, Chaisson.

[477] Krauss, *op. cit.* (*A Universe*), p. 175.

privileged status of being a higher kind of law than a mechanical one. Smolin, for example, turns to a biological metaphor kind of multiverse (though recognizing the non-plurality of its logical grounding, Smolin calls it, less misleadingly, actually still a universe) which "reproduces" via black holes (as we will discuss below), starting a process of cosmological natural selection[478]. Swimme, as we will see, offers a "law of cosmogenesis" inhering in [an implied] single Nature-nature.

Those who do stay in the discourse to theorize the multiverse have to, as it were, now push their neo-romantic faith in their own ability to maintain some type of intuitive contact with nature to new limits. Reason holds on (if just barely) to Nature-nature in its absolute plenitude, or so it seems in the models. Arguably just as in the German romantic conception, this plenitude has only ever been posited a priori and indirectly, since we cannot ever directly see it qua unity. Here the neo-Spinozan is tethered, as it were, only by the thin thread of Spinoza's "conception of a connotation of all possibility," as he or she attempts to continue to assert that nature remains intelligible. Novalis pointed out, "Science does not begin with an antinomy—binomy—but with an infinitinomy[479]". In a sense, perhaps the romantic unity, its *nature,* is always going to reveal itself as this type of infinite chaos which is still cognizable. Novalis wrote, "The universe is the absolute subject, or the totality of all predicates. Both its immeasurable and measurable *structure* are based on this fact, for only in this manner does the totality of all predicates become a possibility[480]". (We can also recall Schelling extoling the value of the chaotic in nature as infinite, for our ability to think laws and finitude, cf. above.) The romantic can still believe in the totality of all predicates, even where it becomes impossible to think them fully. Novalis also wrote that "An infinitely characterized individual is a member of an infinitinomium—Thus our world—borders on infinite worlds—and yet perhaps only One[481]". Once we begin to conceive of either the individual person, or the individual real-ideal natural world, in the properly infinitized and romanticized manner, it will always proliferate infinitely; this is part

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[478] Cf. e.g. Smolin, *op. cit.* ("Temporal naturalism"), pp. 97f..

[479] Novalis, *op. cit.* (*Notes*), no. 837, p. 153.

[480] Novalis, *op. cit.* (*Notes*), no. 633, p. 113.

[481] Novalis, *op. cit.* (*Notes*), no. 113, p. 19.

of our ability to occupy, however imperfectly and partially, the standpoint of productivity, of nature's own productive power, its source in and as (and its ground in) Nature.

Given the pressures on logic and the "I" the multiverse entails, and the neo-romantic cosmologist's reasons for accepting them, it is perhaps not to be expected that the scientists would actually press for an agreed-upon, precise definition of the infinite multiverse. They are thus likewise not to be expected to be sensitive to the criticism that their infinite multiverse lacks definition, as some have tried to point out. In a sense, the generic notion that "anything that can happen will happen an infinite number of times" can also be tolerated as a kind of perfect statement of nature's freedom, thus in line with romantic views. *Everything* that happens becomes the direct result of, or somehow influenced by, the fact that nature is infinite, but this was arguably already there in the overall approach to our universe as a finite but unbounded one, in Einstein's formulation, as well as possessed of real infinity beyond our limit of observation[482]. Nature was always present, powerful and chaotic and unified as this everywhere and everywhen infinite plenitude. Pressing the notion of an infinite multiverse too far into the terms of ordinary physics also would detract from its status as a higher principle of the one Nature-nature. This reading of the multiverse as a higher immaterial principle inhering in nature (with exact ontological corollaries as yet not fully defined) may point to how and why the cosmologists rarely respond to or credit those who (like Meillassoux[483]) try to argue them out of the multiverse using arguments about the transfinite in Cantor, the incompleteness theorem of Gödel, or other arguments against the idea of a completed infinity. They also ignore arguments within their own field, about the multiverse being unobservable and/or metaphysical, or posing difficulties to those who would mathematically actually try to get into the details of constructing an

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[482] This is illustrated in Tegmark too, when he says that what assuming infinity beyond our observable universe means (in the sense of "flat" Euclidean type universe models, which is the current assessment of the one which actually holds): even this infinity means, for Tegmark, that there are "infinitely many other inhabited planets, including … infinitely many copies of you – with the same appearance, name and memories. Indeed, there are infinitely many other regions the size of our observable universe, where every possible cosmic history is played out". Cf. Max Tegmark, "The multiverse hierarchy", in *Universe or Multiverse?* ed. Bernard Carr (Cambridge, UK: Cambridge University Press, 2007), p. 102.

[483] Cf. Meillassoux, *op. cit.,* p. 103. He claims Cantor's "*detotalization of number* … also known as '*the transfinite*' " leads to the conclusion that "we have no grounds for maintaining that the conceivable is *necessarily* totalizable".

inflationary and "typical" multiverse qua "universe-production machine" and its outputs[484] [485]. Hernley & Albrecht point out that generic speech in the case of inflation is very difficult to join with actual models of the vaunted 'typicality' of the inflation supposed to have happened, and claim that "to realize the hoped-for picture of eternal inflation" more technically rather than as a schematic probability "one really needs to be much more rigorous than anyone has been so far", concluding that there is most likely a "deeper problem with the idea that some sort of universal cosmological dynamics could explain the 'typicality' of the Universe we observe[486]". The neo-romantic cosmologist is seemingly presuming there is just this type of higher universal cosmological dynamics.

Conceiving of the infinite multiverse qua principle of Nature-nature itself, while chaotic, allows ideas of complexity and emergence freer rein, another neo-romantic philosophical tendency and interest. Krauss holds that the multiverse also allows for laws to be "stochastic and random" and that *this* removes the " 'cause' for our universe", because then "anything that is not forbidden is allowed … we would be guaranteed … that some universe would arise with the laws that we have discovered[487]". It is arguably not out of an anti-religious or anti-telos approach that thinkers like Krauss turn away from the idea of a cause of the universe, but out of philosophical neo-romantic conviction that nature is one self-grounding whole where all phenomena and events are connected and explained from within. (We can also, again, detect some acknowledgment in this stance that the explanations will always be self-grounded themselves, and therefore limited, unable to

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[484] Cf., e.g., Graeme Rhook & Mark Zangari, "Should we believe in the Big Bang?: A critique of the integrity of modern cosmology", *PSA: Proceedings of the Biennial Meeting of the Philosophy of Science Association* Vol. 1, 1994, pp. 228 – 237; Anna Ijjas, Paul Steinhardt, & Abraham Loeb, "Inflationary schism", *Physics Letters B*, 736, 2014, pp. 142 – 146; Robert Brandenberger, "Do we have a theory of early universe cosmology?" *Studies in the History and Philosophy of Modern Physics*, 46, 2014, pp. 109 – 121.

[485] Cf. also Joshua S. Schiffrin, & Robert M. Wald, "Measure and Probability in Cosmology," *Physical Review D* 86.2 (2012): 023521, 20 pp (published online only, no page numbers). Schiffrin and Wald note in this article that there are serious problems with "using the measure of general relativity [the Liouville measure] to make probability arguments in cosmology" not the least of which is that "in a Universe where the second law of thermodynamics holds, one cannot make use of our knowledge of the present state of our Universe to retrodict the likelihood of past conditions" (p. 1).

[486] Aaron Hernley & Andreas Albrecht, "Toy model studies of tuning and typicality with an eye toward cosmology", *Physical Review D,* 87 (123515), 2013, p. 9.

[487] Krauss, *op. cit.* (*A Universe*), p. 176.

discuss Being as such, etc..) Krauss also begins to introduce the biological metaphor of selection among universes, similar to Smolin[488].

Cosmologists acknowledge that much of what guides them in multiverse conceptions and constructions is their intuition and their idea of the beauty of a theory or a model. Gleiser hints at the role of intuition and aesthetics in claiming to theorize multiverses and tuning: universe and multiverse "Models abound, drawing from a combination of physical reasoning and personal expectations of how things should have been[489]". Carroll's Everett multiverse recedes from us with fuzzy boundaries, like most other iterations or versions of the multiverse. Most "Everettians," he writes, "train themselves to think of the relative weights of different branches of the wave function, rather than actually counting anything[490]"; we cannot know how many worlds there are, or exactly what a 'world' is. Intuition, aesthetics, and the comprehensibility test for reality (interpreted as though it is asking the question whether Nature would "do" X) are all in evidence; he clarifies that the

> branches [of the multiverse] aren't 'located' anywhere" and that "there is no 'place' where those branches are hiding: they simply exist simultaneously, along with our own, effectively out of contact with it. I suppose they exist in Hilbert space, but that's not really a 'place'. There are more things in heaven and earth than are dreamt of in your philosophy[491].

He is evoking the romantic ease with blending ideal with real, as well as perhaps the above-noted problems or unease at any prospect of defining the multiverse too far or too completely. The infinite multiverse, like the German romantic sublime chaos, is another variation of the type of infinity that threatens to unseat the human subject, but is tackled confidently with the aesthetic, or higher, powers of reason, in the cosmological discourse. The reference to Copernicanism, the oft-stated difficulty of forcing one's self to "face" the infinite multiverse view of reality (for example that there are infinitely many copies of

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[488] Krauss, *op. cit.* (*A Universe*), p. 184.

[489] Marcelo Gleiser, *The Dancing Universe: From creation myths to the big bang* (Lebanon, NH: Dartmouth College Press, 2005), p. 278.

[490] Carroll, *op. cit.* (*Something*), p. 166.

[491] Carroll, *op. cit.* (*Something*), p. 172.

ourselves), are also ways of evoking this as an occasion of encountering the sublime; an occasion which must be intellectually and intuitively muscled through, but which also thus serves as a way of reinforcing its externalism balancing its obvious idealistic elements.

Greene writes that while some "people recoil at the notion of parallel worlds" as further marginalizing our "place and importance in the cosmos", we need not measure our significance by our "relative abundance" but rather the majesty of the view we gain in our knowing of it[492]. He even uses the romantic trope of the journey, as is common in big bang texts, to imply that we can "see" something like the multiverse, while at the same time revealing that this journey is really about the quality or depth of the knowing itself and not any scene per se which might present itself: we can "use analytical thought to bridge vast distances, journeying to outer and inner space" and attain value or meaning through the "depth of our understanding, acquired from our lonely vantage point in the inky black stillness of a cold and forbidding cosmos, that reverberates across the expanse of reality and marks our arrival[493]".

Talk of the universe we inhabit not existing (always entailed by tuning, counterfactual universes, and the multiverse) is the type of talk of the absolute Jacobi objected to; for Jacobi any talk of the "*possibility of the existence of nature*" would have to entail absolute speech or speech of the "unconditional[494]"; and that as such a type of speech, the concept of a mechanistic (he means here non-theistic) account of creation, i.e., of "the *possibility* of the universe" is no more rational than an anthropomorphic (theistic) one[495]. The cosmologists' response to this, presumably, is to always return to their one [eternal] nature.

The mind-nature monism of a newly expanded, quasi hyper-romantic sort which appears to sustain this view for the cosmologists only becomes more pronounced in the last phase of the cosmological discourse in which they elaborate their critical monism, to which we will now turn.

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[492] Greene, *op. cit.* (*Hidden*), p. 10.

[493] Greene, *op. cit.* (*Hidden*), p. 10.

[494] Jacobi, *op. cit.,* ("Concerning"), pp. 376f..

[495] Jacobi, *op. cit.* ("Edward Allwill"), p. 495.

Contemporary cosmological concerns: Nature, mind, and nature-mind in the infinite multiverse

After a shift toward accepting the tuning concerns, and at least the generic framework of a variably-[ill-]defined infinite multiverse, by around the turn of the 21st century[496], excursions into multiverse theory took on more of an expository than a questioning character, as we can see in some of the more recent examples above. With a possible final elaboration of nature as creative chaos established (or on the way to becoming so), the discourse expanded again, toward more focus on another German romantic concern: the place of mind in the universe including as this gets reflexively incorporated into the ways we think and the limits we face on how far we can think [as] nature.

We laid out in the preceding sections how discussions of the principles and dynamics of "universe-making" (while taking the results as historical as well as ideal) requires adherence to (and grounding in) a higher, unifying "nature" which is the single real kind of thing in the universe. We see at work as well in the increased attention by cosmologists to the role and situation of mind in the universe, a center of concern already emerging in the anthropic principle and tuning debates.

Mind becomes referred to as the fifth "Copernican" shift cosmologists sought (the infinite multiverse was the "fourth"). The goal of this fifth shift was to somehow render mind accessible and intelligible to us in our model of nature as a whole through time; the fact that this becomes defined as the final frontier for *cosmology* is itself already an indicator of the romantic proclivities at work in the field as of the early 21st century.

One way in which mind-as-radically-and-objectively-natural appeared, as touched on above, was via the question of mind's ability to cause quantum decoherence, as in the case of the Everett version of the infinite multiverse, where observers are among those factors in nature which can cause the world to "branch" (depending on the model, it can also happen spontaneously). This function of the observer at the quantum level had also been a

[496] This shift is remarked upon by Rees in Rees, *op. cit.* (*Future*), pp. 187-188.

lingering issue for early universe cosmology even before the multiverse, since quantum theory required an observer for a measure to take place, and the early universe lacked observers (and in a radical way, i.e., it utterly pre-dated the existence of observers as such).

Cosmologist John Wheeler had already pursued, in roughly the 1970s and 1980s, an especially radical solution to integrating mind more fully with the theory of the universe: he proposed that human beings qua observers *actually create* the universe. This sees us cycling back to Fichte-ian territory, but now it is Fichte equipped with a dual epistemological-ontological power to create. For Wheeler, with his "participatory anthropic principle", the creation of the universe is always ongoing. The human observer engenders "a process of creation that can and does operate anywhere, that is more basic than particles or fields or spacetime geometry themselves, a process that reveals and yet hides itself[497]". This is Wheeler's "it from bit" information view of nature, in which he embraces several arguably neo-German-romantic starting points – no substratum of being which makes the physical world: as he puts it, "no tower of turtles", i.e., no "infinite [causal] regress" – and no blueprint for the universe in advance: in his words, no "structure, no plan of organization[498]". Wheeler holds that only a "loop" exists wherein physics causes observer-participancy, observer-participancy causes information, and information causes physics[499]. In neo-romantic fashion he writes that at the big bang, there were "no gears and pinions, no Swiss watch-makers … not even a pre-existing plan"; he further holds that physics is as "foundation-free as a logic loop", and "what we call existence is an information-theoretic entity[500]". This takes romantic ideas of co-transformation of existence in and through occupying the standpoint of Nature's own productivity as well as that of seeing nature and

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[497] John A. Wheeler, "Bohr, Einstein, and the strange lesson of the quantum," in Elvee, Richard Q., ed., *Mind in Nature: Nobel Conference XVII* (San Francisco: Harper & Row, 1982), p. 17. Note the implication that Wheeler is referring to *nature* through the tacit reference to "nature loves to hide" (*phusis kruptesthai philei*), the famous epigram by Heraclitus, which can also be translated to evoke the sense of an inner essence of a thing now being made visible, now becoming invisible again; cf. on this epigram Pierre Hadot's *The Veil of Isis: An essay on the history of the idea of nature* (Cambridge, MA: Harvard University Press, 2006), pp. ixff., 1ff.

[498] John A. Wheeler, "Information, physics, quantum: The search for links", in A. J. G., Hey, Ed., *Feynman and computation: Exploring the limits of computers* (Reading, MA: Perseus, 1999 [1998]), p. 313.

[499] Wheeler, *op. cit.* ("Information"), pp. 313 – 314.

[500] Wheeler, *op. cit.* ("Information"), p. 314, p. 313.

the I as [Nature's] products, to an extreme. It also hints at the higher level of freedom and "tautegorical" self-groundedness the German thinkers sought to achieve for our speculative and aesthetic approach to nature, as reflected in their new mythology program (and in concepts like Novalis's magical realism-idealism). It displays the reluctance of the romantic to ever accept that some of the paradoxes he incurs could be of his own making, as this would imply he is not world-intuiting but still, as Jacobi might argue, world-creating. Also neo-romantic is Wheeler's hunt for a "super-Copernican principle" which (reminiscent of Hartle's notion, cf. above) would reject "now-centeredness in any account of existence" and rely in part on observer-participants of the future to help continue building the universe[501]. This seems to draw in hyper-romantic, more ontological and discursive directions (while also still clearly relying on Wheeler's own intellectual intuition), the fundamental mind-nature unity that was the ceaseless subject of interest and tension in the German writers from Chapter One, including as this unity could be revealed in natural history, as in Novalis's "We are related to all parts of the universe – as we are to the future and to times past[502]".

Wheeler helped lead cosmology into a speculative trend on how to better integrate or address mind, a trend which increased in the early 21st century. Davies writes of his interest in the "loop of existence that links the highest organizational level (mind) back to the lowest level (particles and fields of matter)[503]". Carr writes of how science will now need to include "more explicit reference to *consciousness*" and sides with those other cosmologists like Penrose and Linde who would be "skeptical of claims to be close to a TOE [Theory of Everything], when such a conspicuous aspect of the world is neglected" as *experience,* adding that "in the last few decades there have been several hints from physics itself (e.g. the Anthropic Principle) that mind may be *fundamental* rather than *incidental* features [sic] of the Universe[504]".

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[501] Wheeler, *op. cit.* ("Information"), pp. 318f..

[502] Novalis, *op. cit.* (*Philosophical Writings*), p. 40.

[503] Paul Davies, "Teleology without teleology: Purpose through emergent complexity," in Clayton, Philip, & Peacocke, Arthur, eds., *In Whom We Live and Move and Have our Being: Panentheistic reflections on God's presence in a scientific world* (Grand Rapids, MI: William B. Eerdmans Publishing Company, 2004), p. 106.

[504] Bernard Carr, "Black holes, cosmology and the passage of time", in Chamcham, Khalil, et al., eds., *The Philosophy of Cosmology* (Cambridge: Cambridge University Press, 2017), p. 61.

In this latest mind-centric phase, e.g. in the case of Wheeler, these speculations seem to be moving the discourse toward more potentially hyper-romantic positions. The coherence of the neo-romantic cosmos after the "fourth" Copernican turn was just-preserved by conceptualizing the one Nature-nature as a new form of creative chaos, which is the limit of the neo-romantic view of nature. In the "fifth" Copernican turn, the cosmologists confront the problem of thinking the mind's existence as such, from within a philosophical approach which has already been taking mind as extant and pre-discursively grounded in an also-extant and infinite Nature.

We can also see the romantic conception of the mind as the paramount achievement or fulfillment of the universe interacting with these speculations. Cosmologist Swimme claims that should we understand consciousness itself in the right way, this must *intrinsically* also tell us the one true story of nature, the story of the "ultimate mysteries of existence[505]". Swimme's presentation of cosmology in the popular mode, as we will see, places a great deal of emphasis on mind-nature unity in a hyper-concretized version of the Schlegelian "nature reflecting back on itself" mode, e.g., Swimme writes, "Walt Whitman is a space the Milky Way fashioned to feel its own grandeur"; or "The mind that searches for contact with the Milky Way is the very mind of the Milky Way galaxy in search of its inner depths[506]". Even the "mathematical formulations" themselves "of the scientists are the way in which the multiform universe deepens its self-understanding[507]". Since we are "the universe in the form of the human", when we "reflect on the awesome beauty of the universe, we are actually the universe reflecting on itself[508]".

Smolin is among those cosmologists who have begun to more openly interrogate their philosophy of nature, shifting from depictions of their philosophy away from old categories like idealism/realism for ontology and rationalism/empiricism for epistemology, none of which (as we have seen) ever fit the new science well, and toward new descriptions of their

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[505] Swimme & Berry, *op. cit.,* p. 223.

[506] Swimme & Berry, *op. cit.,* p. 40, p. 45.

[507] Swimme & Berry, *op. cit.,* p. 40.

[508] Swimme & Tucker, *op. cit.,* p. 2.

approach which come somewhat close to openly embracing a form of neo-German romantic philosophy of nature in various ways. In one work, Smolin collaborates with a Brazilian political philosopher, Roberto Mangabeira Unger: they co-wrote *The Singular Universe and the Reality of Time: A Proposal in Natural Philosophy* (2015). Gare calls this work patently in the Schelling-ian line of speculative natural philosophy[509]. Smolin proposes scientists approach the universe in a framework of "temporal naturalism", an approach quite neo-romantic in tenor (cf. below). Smolin includes a whole chapter in this work on the "Implications of temporal naturalism for the philosophy of mind", which lays out the role of mind in helping us prove the temporality, versus the timelessness, of the universe. He touches on panpsychism as a theory of matter, asking speculative questions like "If brains have states which are neural correlates of consciousness, but consciousness is a general intrinsic property of matter, then what physical properties correlate to qualia[510]?", hazarding that perhaps qualia are dynamical, not material, properties of events. He thus seeks to implement mind-nature unity, and monism over dualism, in conspicuous ways, aspiring to link qualia (which we only know of through conscious experience) with the physical world outside consciousness, particularly the quale of "Being ordered and 'drenched' in time", which he says must apply to both "conscious experience[511]" *and* the physical universe as a whole.

He is also displaying the neo-romantic non-foundationalism and even preference for defining the universe in terms of laws alone, and not hard and fast substances, preferring specifying and exploring such traits, principles, and other characteristics of Nature-nature as are revealed to intuition combined with empirical study, prioritizing "higher" or more generic. Smolin's portion of the *Singular Universe* work is mostly speculative or aspirational; he wants to replace what he calls outdated Newtonian ideas about nature as a clockwork possessing timeless laws[512], another neo-romantic aspect echoing the German thinkers.

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[509] Gare, Arran, "Natural Philosophy and the Sciences: Challenging Science's Tunnel Vision," *Philosophies*, 3 (33), 2018, pp. 108 – 109.

[510] Smolin & Unger, *op. cit.,* p. 483.

[511] Smolin & Unger, *op. cit.*, p. 480.

[512] Smolin & Unger, *op. cit.,* p. 357.

Smolin wants to introduce to the flow of time more freedom and more external reality, arguing against what philosophers of science call the "block" view of time (where all times exist at once, past, present, and future, at least in some manner) as a viable interpretation of big bang theory. He seeks a cosmological scale law which is dynamical, "something like a law of motion" which "must avoid the Newtonian paradigm[513]". He cites his debt to C. S. Peirce, who called for evolving natural laws[514] (Peirce being a bridge between Smolin and Schelling, as noted in Chapter Two), and introduces his proposal for a new paradigm for a kind of multiverse (again, per above, Smolin does not call it a multiverse because all domains are causally connected) wherein universes have "parents" and give birth to "progeny". Smolin clearly, again, sees laws such as this would-be law of cosmological natural selection as inhering in the higher Nature-nature, placing on revealing more of this Nature-nature far more importance than anything that seems like cosmography or mere mechanistic-causal relations-based explanations of the product that is our universe.

Swimme has also been more overt in identifying and developing his philosophy of nature, including in ways which point toward its neo-romanticism without naming it as such. Swimme hails the work of process philosophers like Bergson and Whitehead (who per Chapter Two has certain links with romanticism and with panentheism), uses Spinozan themes of theorizing wholes while also relying on theories of emergent complexity, and even holds there to be a *law of cosmogenesis*, a Schelling-ian kind of meta-dynamics, above mechanistic laws of motion, which holds sway as a principle of nature throughout time, made manifest in our own universe. Swimme's law of cosmogenesis holds that "the evolution of the universe will be characterized by *differentiation, autopoiesis,* and *communion* throughout time and space and at every level of reality", and these three terms are "governing themes" reflecting the "intentionality of all existence", and the "root creativity of the universe", and they lie "beyond any simple one-line univocal definition[515]". This is a hyper-realist evocation of occupying, in a Schelling-ian (and perhaps Hegel-ian,

[513] Smolin & Unger, *op. cit.,* p. 417.

[514] Smolin & Unger, *op. cit.,* p. 417.

[515] Swimme & Berry, *op. cit.,* p. 71, p. 132.

more rationalized) manner, the standpoint of productivity of Nature itself, across all worlds and scales. And as in Smolin, theories of mind and consciousness also make an interwoven appearance. Swimme & Tucker hold Prigogine's complexity theory to offer a way to escape the mechanistic view of nature, and also a way of joining the laws-based with the consciousness-based view of the universe. For Swimme, all we need is to understand "self-organizing dynamics" to see they are both "the very foundations of sentience itself" and "the processes that give rise to macro-scale physical structures such as galaxies"; they are "something like the innate ordering processes of the universe itself[516]".

Cosmologist Carroll also more actively elaborates his philosophy of nature, like his colleagues without any real concern for older kinds of philosophical labels. He calls his philosophy "poetic naturalism." Carroll defines naturalism as the "broader ontology typically associated with atheism" which holds "there is only one world, the natural world, exhibiting patterns we call the 'laws of nature,' and which is discoverable by the methods of science and empirical investigation", and that while "teleology or transcendent purpose" must be ruled out, there is room for values to be created by people in this world, including values of goodness and meaning[517].

In an essay on "Natural Law and Freedom", a quite Schelling-ian subject to address (though of course not exclusively so), similarly, Carroll puts forward a view of how the efficacy of physics to explain a self-contained world does not rule out human freedom on the macroscopic scale. He holds that "the fantastic success of our investigations into the physical world and the astonishing ability to predict events with exquisite precision speak to the fundamental intelligibility of the universe", and that while some may call this descriptive rather than explanatory, "that seems like a category error. … the world itself simply is. We are able to discover what it is, and, for more than that, it is illegitimate to ask[518]". This marks a clearer nod than is usually given toward the neo-German romantic framing of

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[516] Swimme & Tucker, *op. cit.,* p. 50.

[517] Sean Carroll, *The Big Picture: On the origins of life, meaning and the universe itself* (London: Oneworld Publications, 2016), p. 11, pp. 15ff., p. 21.

[518] Sean Carroll, "Purpose, Freedom, and the Laws of Nature", in Caruso, Gregg, & Flanagan, Owen, eds., *Neuroexistentialism: Meaning, morals and purpose in the age of neuroscience* (Oxford: Oxford University Press, 2018), pp. 307 – 308. Krauss himself, *op. cit., From Nothing,* pp. 143 – 144, also hints in this direction.

cosmology: he is effectively pointing out that he is not talking about Being as such, and that he is operating by intuiting the existence of both nature and the "discoverer" as prior givens, and proceeding in medias res to try to reveal what (already) is.

In *Something Deeply Hidden,* Carroll espouses a many-worlds, Everett interpretation of the multiverse, privileging mind-nature unity in another radical manner and also exhibiting an enhanced, neo-German romantic comfort with moving between, and seeking to combine, idealism and realism not on the grounds of older categories of ontology, but because Nature-nature is conceived of as containing both mind-like and matter-like, both infinite and finite, characteristics (or "production lines"). Carroll places human existence into a constantly splitting quantum foam type of structure, based on the conviction that "there is a wave function that evolves according to the Schrodinger equation. All else is commentary[519]"; he equates this with the goal of a fuller realism coming out of the mathematical idealism: "the time has come to take the fundamental reality seriously[520]", he writes, evoking Hartle's tone (cf. above). Nature's fundamental reality can be immaterial because it has "Nature" to inhere in (cf. above, on his lack of concern with counting or thoroughly defining the ontological status of his many worlds).

Chaisson, likewise, claims that the "modern paradigm of cosmic evolution" requires a "whole new scientific philosophy", and though he does not name it, it clearly bears a neo-romantic stamp. He writes that through this new philosophy we must be enabled to seek "to know the nature and behavior of radiation, matter and life on the grandest scale of all," to continue "deciphering the fabric of Nature[521]". "From galaxies to snowflakes, from stars and planets to life itself," he writes, evoking a sweeping natural unity, "we are beginning to identify an underlying pattern penetrating the fabric of all the natural sciences – a sweepingly encompassing view along the 'arrow of time[522]' ". It is a theory of cosmogenesis which inheres, again, in *nature-study,* not in any one field (even cosmology, though

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[519] Carroll, *op. cit.,* p. 179.

[520] Carroll, *op. cit.* (*Something*), p. 7.

[521] Chaisson, *op. cit.,* p. xv.

[522] Chaisson, *op. cit.,* pp. xi – xii.

cosmologists may have appointed themselves its custodians or main seekers). For Rovelli, likewise, when we grasp the "elementary weave of the world" we gain "the breathtaking beauty of the panorama of reality that can be seen from this perspective[523]", using the metaphor of a view to refer to an inner ecstasy of contact with the one Nature-nature as a unity through correct (and ever 'deeper' or 'higher') knowledge of it.

Physicist and cosmologist Wilczek makes the romantic way of conceiving of Nature as ultimately more akin to mind, than to matter, even clearer when he argues that the "familiar and comfortable style of thought" originating in animism and continuing through Helmholtz must be overcome, as we learn that "matter itself is capable of drastic transformations at all levels" and "what is conserved … is … abstract entities such as energy, momentum, and electric charge" such that "the permanent aspects of reality are not particular materials or structures but rather the possible forms of structures, and the rules for their transformation[524]". This echoes Pagels as well, who holds that the universe reduces not to matter or spirit but "the invisible organization of energy[525]", and many cosmologists of the early 21st century discourse[526]. This embrace of immaterial idea over traditional foundationalism gestures toward adopting neo-romantic a priori ideas of a Nature-nature. The relation of mind to the single Nature-nature is central also to the convictions of vocation which can still arise in this mind-centric portion of cosmology's efforts to elucidate their critical monism, as in Pagels' conviction that physics studies the "cosmic code" which is "the laws of material reality," the "eternal structure of reality … written into the very substance of the universe[527]", citing approvingly the way the romantics revised how mountains were seen, turning them from being seen as "monstrous" to being seen as "places of impossible beauty", so that now "a man climbing a mountain became the image of self-conscious intelligence pitted against the eternal indifference of the forces of

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[523] Carlo Rovelli, *Reality is Not what it Seems: The journey to quantum gravity,* Carnell, Simon, & Segre, Erica, trans. (New York: Riverhead Books, 2016 [2014]), p. 8.

[524] Wilczek, *op. cit.* (*Longing*), p. 70.

[525] Pagels, *op. cit.*, pp. 327f.; p. 348.

[526] And, of course, points toward the way in which structural realism is one of the preferred branches of scientific realism among philosophers.

[527] Pagels, *op. cit.*, p. 22.

nature" with only his will to compare to the forces that otherwise make us as "nothing[528]". There is at times the suggestion of the redemption or transcendence after death by the mind thus properly oriented. Just as Hölderlin has Hyperion declaim, "If a potter's hand has made me, then let him smash his vessel as he pleases. But that which lives within must be unbegotten, must be divine of nature in its germ, sublime beyond all might and all art, and therefore invulnerable, eternal[529]", Pagels writes, of a dream of falling off a mountain, that in the dream he reaches a state of peace rather than panic during his fall, because "what I embody, the principle of life, cannot be destroyed. It is written into the cosmic code, the order of the universe[530]".

The current concerns in the cosmological discourse to do with the human mind, and its role in the universe as a whole and its evolution, entail a transformative romantic urge to complete the Copernican revolution almost back into a fully enlightened circle; a Schlegel-ian declaration of freedom for the subject to also "return" to find his own center, if he wills it (cf. above). Again evoking the cybernetic worldview possibly influencing the cosmologists but not available to the four German thinkers of Chapter One[531], Pagels holds both that the cosmological and physical sciences are Copernican and objective, and that they offer the same code which is also "programming human social and economic development[532]", and that we thus need to transform our comprehension of the cosmos into something more human once again. In a similar position to Swimme's, Pagels writes that "The challenge is to bring these invisible realms [of the worlds of molecules, atoms, and the endless reaches of space and time] to consciousness and to make human the enormous powers we find there[533]". This normative view of the cosmologists needing to use their insights into the way laws cause history, in order to both re-enchant and materially improve human

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[528] Pagels, *op. cit.*, p. 305.

[529] Hölderlin, *op. cit.* (*Hyperion*), p. 121.

[530] Pagels, *op. cit.*, p. 349.

[531] Cf. Chapter Two, however, for potential bridges between German romanticism and computational concepts; e.g., the German thinkers' indirect influence on Lovelace, and German romantic influences on systems theories like those of complexity and emergent causation.

[532] Pagels, *op. cit.,* pp. 346 – 347.

[533] Pagels, *op. cit.,* p. 348.

existence, is also evocative of both sets of romantic new mythology projects, but especially the cosmologists' more scientific and technocratic, rather than artistically framed, version, to the elucidation of which we turn next.

To Build a *Better* Universe, III: The return of a 'new mythology' of reason

The romantics considered in Chapter One, partly due to their sensitivity to Jacobi's critiques, and partly stemming from their more youthful, in-the-world, outlook and situation, desired to have not just a new path to knowledge of and insight into eternal nature for the use of the few, but also a new mythology which could give it the earthly, social, purpose of re-enchanting the lives of (at least in principle) the many, "the people", via beginning the transition to a new age, that of the new mythology of reason, that would be only fully realized in the future.

In mirror image to the German writers, with science now leading instead of following art and philosophy, big bang cosmologists write of nature's unity as implying the unifiability of all forms of true knowledge across all modes (artistic, scientific) and disciplines, and after the 1970s and 1980s particularly, regularly seek to share their vision in new mythology mode with "the people", in the form of popularized accounts.

As I also suggested in the first section of this Chapter, it is arguably neo-romantic perception and interpretation of their own epistemological access to the one real kind of thing, nature and ultimately Nature, motivating and justifying the claims about the arrival of a new *myth* of nature to rival or replace Genesis' depiction of creation from nothing, or to rank with all great past myths of the world in pre-Christian societies, so prevalent in the big bang popular (and even in the semi-technical and sometimes even in the technical) accounts. Seeing this kind of rhetoric and framing as putting forward "new mythology" claims allows us to understand it as an integral part of their overall neo-German romantic philosophy of nature, arguably a better explanation than taking such narratives as isolated judgments on the

models' own lineaments, or as only freestanding and creative works by a few disconnected scientific authors.

We can see that, similarly to the romantic formulation considered in Chapter One, the cosmologists' new mythology must derive from the correctly situated approach to nature itself and not its specific details, which turn out to be utilized as a symbol of this approach and not its substance. Celebration of a certain type of orientation, of the I vis-à-vis the infinite (as the absolute, not as the mathematical or spatial type, again), is the *kind* of knowledge, for both sets of romantics, which can never be wrong. The practice of scientific knowing is presented as putting the naturalized "I" in contact with what could be construed as sacred or holy – the monistic unity itself – even while remaining forever incomplete (or even with various model details and discoveries potentially changing the landscape of the theory within the scientist-author's own lifetime). This is why Lisa Sideris' critique of the new mythology in big bang cosmology as "sacralizing" science (cf. Chapter Two) comes quite close to recognizing its romanticism.

By considering it as a neo-German romantic philosophical type of new mythology, however, we can further see that it is also a way of making Nature-nature itself sacred or quasi-divine, knowable by us indirectly because there is a continuum running from the entire physical world, up to the laws (symbolizing nature's inner principles or the standpoint of Nature's productivity), up to, ultimately, a single unified idea of Nature itself, the purest, simplest idea of the whole, which is beyond our direct access. Science is sacralized as the path which takes us farthest "in" to this nature.

At the same time, other forms of knowing which follow this same path are to be incorporated. The new mythology continues, in its new scientific guise, many of the same interests as those Halmi attributes to the German writers' version, per Chapter One, including the question of "counteracting intellectual disaggregation[534]". The notion of pursuing intellectual aggregation takes on an even more holistic aim, in the new mythology framing of the cosmologists. They discuss the need not only of unifying all fields of intellectual endeavor, but also try to address, in a quasi-technical spirit, what historians

[534] Halmi, *op. cit.,* p. 146.

Brisson & Meyerstein call the "hiatus irrationalis" problem: the challenge, facing all rationalistic cosmologies or naturalisms, of how to integrate experience (and really realized history) with the constructs of reason. Since, as Brisson & Meyerstein lay out, "no logical relationship can ever be established between the formal axiomatic system, the idealized construction that we call a "scientific explanation," and the experimental information supplied by our senses, by means of a measuring operation[535]", such that there remains, always a "*hiatus irrationalis* between the intelligible and the sensible[536]", this remains a potential problem for those seeking to have their mythology transform the lives of "the people".

For the cosmologists, determined monists like the first German romantics, re-enchantment of human existence can in principle be accomplished by incorporating human life into the structure of scientific knowing. With enough time, or at least de facto, while there appears to be such a hiatus irrationalis, all things will be proven to integrate into one after all, just as Novalis dreamed that even every individual life experience could become categorized and infinitized[537] . Einstein, deeply committed to the idea of a unified nature and worldview, stated in 1934 that while "any attempt logically to derive the basic concepts and laws of mechanics from the ultimate data of experience is doomed to failure[538]", the case for knowing the real world of experience in the same manner as we know scientific truths about nature itself must not be given up as a result. In 1918, Einstein remarked that while the physicist must for now "content himself with describing the most simple events which can be brought within the domain of our experience" since "all events of a more complex order are beyond the power of the human intellect to reconstruct with the subtle accuracy and logical perfection which the theoretical physicist demands", this is not a permanent state of

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[535] Luc Brisson & F. Walter Meyerstein, *Inventing the Universe: Plato's* Timaeus*, the Big Bang, and the problem of scientific knowledge* (Albany, NY: State University of New York Press, 1995), pp. 3 – 4.

[536] Brisson & Meyerstein, *op. cit.*, pp. 3 – 4.

[537] Cf. Novalis' view that, as noted in Chapter One, "it must be possible to make even "the individual moment, … the individual situation etc." universal and absolutized"; cf. Chapter One, above, and Novalis, *op. cit.* ("Notes"), no. 87, p. 14. This is also arguably an implicit goal of process philosophy, along with bridging over the hiatus irrationalis logically speaking.

[538] Albert Einstein, "On the method of theoretical physics", *Philosophy of Science,* Vol. 1, No. 2 (April 1934), p. 166.

affairs[539]. Though the physicist *seems* to only "know such a tiny section of nature thoroughly", he is in contact with the whole of it, such that one day, "it ought to be possible to arrive at the description, that is to say, the theory, of every natural process, including life, by means of pure deduction, if that process of deduction were not far beyond the capacity of the human intellect[540]".

This recalls how, for the neo-romantic cosmologist, a "Theory of Everything" might also contain the theory of the human being, its mind, and its culture; to know principles of nature is to help reveal connections between the seeming finite (including all phenomena of experience, both human and of the physical world) and the infinite, the whole unity.

Einstein's contemporary, mathematician and idealist cosmologist P. A. M. Dirac, also held to the idea that the hiatus irrationalis was only temporary, and that mathematical physics was the key to finding a description of the whole of nature such as could incorporate human existence into its knowledge. He remarked in 1939 that any "limitation in the extent to which mathematical theory applies to a description of the physical universe … is so unsatisfactory that I think it safe to predict it will disappear in the future[541]". He hoped for the future to find "a scheme in which the whole of the description of the universe has its mathematical counterpart" such that "a person with a complete knowledge of mathematics could deduce, not only astronomical data, but also all the historical events that take place in the world, even the most trivial ones[542]".

If all of human events and phenomena will one day be revealed as part of the one nature, this reveals as well as reinforces the new mythology interpretation of scientific naturalism itself as both the correct road to the absolute or to the highest reality, and an ethically *desirable* journey – this desirability being part of what new mythology sets out to establish. Knowledge of nature is the ultimate tool of romanticizing human existence as well as the physical world. And in the interim, at the very "least", human beings should be able to unify

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[539] Einstein, *op. cit.* ("Principles"), pp. 43 – 44.

[540] Einstein, *op. cit.* ("Principles"), p. 44.

[541] P. A. M. Dirac, "The relation between mathematics and physics", Address to the Royal Society of Edinburgh, February 6, 1939, reprinted in *Resonance,* August 2003, p. 109.

[542] Dirac, *op. cit.* ("The relation"), p. 109.

all the sciences and disciplines into one, as symbol and promise of this future higher unification.

One of the most prominent ways the cosmologists open the door to their new mythology is via presenting the big bang expanding universe model as, on the surface, a neo-traditional creation myth drawn directly from universal natural history, another version of the quantum "creation from nothing" rhetorical approach used by Krauss I raised in the first section of this chapter. Upon closer examination, however, talk of offering a new creation myth, a new version of Genesis, or other variations on this theme, soon reveal themselves as part of a neo-romantic new mythology program, where other aims predominate, and where any talk of myth is a means to these other ends – ends like, per above, a future integration of all entities and all human modes of thinking and experience into one, under the auspices of [cosmological] science.

As we recall from Chapter One, the German romantic new mythology position argues essentially that myth as it once was possible is permanently departed from human culture, and that "myth" therefore needs to be (and is *able* to be) re-invented on a rational basis. As we also recall, the new mythology rubric is inherently intertwined with claims that the culture to which it is being offered (now it is planetary culture) currently *lacks* an organizing myth and is deprived (including being deprived of "enchantment", a sense of cosmos and unity, and the romantic or infinite aspect of life) in various ways for this reason. In the early 21st century version put forward by the cosmologists, these same themes are echoes, and the dis-enchantment and deprivation are sometimes linked with the imagined causes of the ecological crisis, as we will turn to discussing in the last chapter.

For examples of an invocation – at least *in passing* – of big bang cosmology as the new Genesis, or the new creation myth, suitable for the entire planet, we have only to open any popular cosmology text, as well as many semi-popular or even technical works. As noted in the Introduction, we can use as examples Greene, writing that "the big bang model describing a cosmos that began enormously compressed and has been expanding ever since became widely heralded as the scientific story of creation[543]"; Smoot, writing that the "big

[543] Greene, *op. cit.* (*Hidden*), p. 23.

bang is a cultural icon, a scientific explanation of the creation[544]", or Weisskopf in a lecture at the American Academy of Arts and Sciences, interspersing depictions of the theory of inflation with biblical quotations: "Before the event, all space was in the state of a true vacuum. 'The world was without form and void, and darkness was upon the face of the deep,' as the Bible says[545]", and ending the talk by playing to the audience part of the Haydn piece *The Creation*[546].

Cosmologist Smoot, again, cites "Joseph Campbell, the world's foremost interpreter of mythology", on the hunger of the human being for myths which offer transcendence and formative influences, then states, "Society hungers for both science and mythology, and the big bang theory is where the two mingle most intimately[547]". Isham speculates which scientific models might "[accord] nicely with the old Greek idea of chaos as the yawning abyss of infinite empty space that contains only the potentiality of being" or which one best "mirrors the construction by early Christian theologians (such as Augustine) of the *creatio ex nihilo* doctrine in which a demiurgic creation from potential being is replaced by God's creation from total non-being[548]". As Isham and Smoot make clear (and as is typical among cosmologists when engaging in myth-talk), Genesis, in big bang cosmology, is presented as just another myth, i.e., they adopt the German romantic thinkers' tendency to interpret Christianity in "mythopoetic" ways and Genesis as symbolic poetry (cf. Chapter One above)[549].

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[544] Smoot, *op. cit.,* p. 289.

[545] Weisskopf, *op. cit.*, p. 36.

[546] Cf. Weisskopf, *op. cit.*, p. 39.

[547] Smoot, *op. cit.*, p. 18.

[548] C. J. Isham, "Quantum theories of the creation of the universe," in R. Russell, N. Murphy, & C. J. Isham, eds., *Quantum Cosmology and the Laws of Nature: Scientific Perspectives on Divine Action* (Vatican City State and Berkeley, CA: Vatican Observatory and the Center for Theology and the Natural Sciences, 1999), Second Ed., p. 9 (page numbers added).

[549] The deep-running romantic reading of Genesis as myth, symbolic poetry, "philosopheme", etc., and the reasons for it (i.e., that in the context of the new mythology rubric such a reading is quite locked in/required), are often lost in Science & Religion engagement with big bang cosmology, whether in natural theology or panentheist-leaning mode.

Cosmologist Krauss' *The Greatest Story Ever Told – So far: Why are we here?*, contains new mythology rhetoric including polemic against the Bible, which he calls "The Goat Herders Guide to the Universe[550]" while arguing that cosmology offers the greatest story ever told, not the Bible, and repeating his rhetorical moves with the theological notion of creation from nothing in *A Universe from Nothing* discussed earlier. In *Greatest Story,* he claims he wants to "take back another existential question that [like creation] had been usurped by religion … namely, *Why are we here?* This important question is of profound and general interest, and we cannot leave it to the theologians alone[551]". Krauss calls his book sections Genesis, Exodus, and Revelation, also placing epigram quotes from the Bible at the beginning of every chapter. He opens the book "In the beginning there was light[552]".

As in the *Universe from Nothing* case discussed earlier, it is quickly apparent that these myth comparisons function not in a straightforwardly neo-traditional mythical way, but in an early German romantic new-mythical one. Because the cosmologist can offer a rational replacement for the Bible's moral and teleological history, once again, this automatically positions the Bible as losing its meaning (and not really as being "replaced" by cosmology), and the scientist can transition to offering his new mythology, including (as in the German case) a new holism, and a new way of knowing and understanding nature as the absolute. There is no further catechism of values or ethics except to extol the one path to the one quasi-substance, Nature-nature, presenting the subject pursuing a dynamic tension of knowing this infinite as following an inherently valuable path, even a religious one. The cosmologists' new mythology draws out, and seeks to augment, the image of the scientist's [neo-romantic] vantage on nature as something which encompasses poetry, spirituality, *and* science. "Contrary to many popular perceptions," Krauss writes, "this scientific story also encompasses poetry and a deep spirituality[553];" it is the scientific story's *making* being emphasized here, a history of science which reveals, as Schelling might say of art, its real grounding in the absolute, and thus its way of linking its makers with the same unity as it is

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[550] Lawrence M Krauss, *The Greatest Story ever Told – So far: Why are we here?* (New York: Atria, 2017), p. xi.

[551] Krauss, *op. cit.* (*Greatest*), p. xi.

[552] Krauss, *op. cit.* (*Greatest*), p. 1.

[553] Krauss, *op. cit.* (*Greatest*), p. 2.

accurately keyed to revealing and uncovering. The physical world is only the scene which calls it forth, or, elsewhere (cf. Chapter Five, passage from Krauss), even the playground which tests and stimulates the story's further making. These factors are all visible in the opening of Krauss's Prologue:

> *In the beginning there was light.*
>
> But more than this, there was gravity.
>
> After that, all hell broke loose ….
>
> This is how the story of the greatest intellectual adventure in history might properly be introduced. It is a story of science's quest to uncover the hidden realities underlying the world of our experience, which required marshaling the very pinnacle of human creativity and intellectual bravery on an unparalleled global scale.
>
> … Five hundred years of science have liberated humanity from the shackles of enforced ignorance.
>
> … anthropocentrism has fallen by the wayside…. What replaces it? Have we lost something in the process or, as I shall argue, have we gained something even greater[554]?

We can also see here the themes of Copernicanism and anti-superstition reflected, and how quickly the content of the narrative shifts from the physical world to the scientific approach to nature itself. Krauss evokes the co-transformation which the cosmologists point to (as part of the experiential aspect of the new mythology program) as resulting from learning about nature in the mode of cosmology, physics, and science more broadly, and also evokes the hoped-for unity among all fields, when he compares physics with *other* means by which we can also "change our view of ourselves and our place in the universe" – "great music, great literature, great art[555]".

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[554] Krauss, *op. cit.* (*Greatest*), pp. 1 – 2.

[555] Krauss, *op. cit.* (*Greatest*), p. 274.

Krauss's work is typical as well of the popularized forms of dispersing the new mythology, in that it is essentially a layperson's textbook on the history of science and the rudiments of the scientific theories of light, gravity, and the quantum, as well as the big bang theory, interspersed with disconnected excerpts from older traditional myths and sweeping historical claims to have penetrated the logic or "nature" of most human epochs, as well as the physical world, from their position as a physicist. The scientific textbook information is a kind of initiation of the reader into the grammar they must learn, in order to join the new-mythological age, or even perhaps to themselves contribute to it.

All this is not to say that the scientists do not also seek to use mythical terms and metaphors to describe the big bang history itself. They do at times do so, with varying levels of consistency or thoroughness. It is only that these historical demonstrations of nature as such unfolding (cf. the next chapter) are, even with myth-like language added, arguably never the main thrust of the new mythology, but only used to symbolize it.

We also find once again an echo of the German romantics' admission that the scientists of today remain only the new mythology's prophets, and the real development of this way of knowing remains in the future, when a more integrated way of knowing (based on science, but more fully aestheticized) will be developed. Just as the German romantics discussed in Chapter One saw themselves as prophets of the new mythology and only wanted to lay out the *standards of meaning* they wished to be established[556], along with the correct methodology, so, too, do the big bang scientists rather call for artists and poets to recognize the big bang universe model as fertile poetic ground and create works based upon it, more than they try to offer such works themselves.

Sagan's *Cosmos* is another good example of how the cosmologists' version of a new mythology is often presented in popularized form. As is the pattern in this genre, something like a transformative, new, religion-worthy creation myth is at first gestured toward or promised, yet as the book progresses, this is revealed to be only a pointer toward or, more properly, a symbol or direct demonstration of, an overarching new mythology of reason program in a new version of the German romantic conception, one which, per above,

[556] Cf. e.g. Halmi on this point as it pertained to their use of symbols, pp. 18-19.

proceeds by first devaluing the traditional notion of myth by offering a rationalized form of it, and then proceeding to discard this understanding of myth altogether, in both its pre-rational and rationalized forms, and present nature in the new manner (we will return to Sagan in the next section). This project requires absorbing the scientific view of, and epistemological stance toward, nature itself – the only reality, one which includes but also transcends the world of appearances. The new myth is not that atoms evolved from some undefined infinite block of pure ultra-dense radiation-energy, but that human beings can know this, and what this is held to imply about what the human subject is now in infinite creative tension with – nothing less than nature itself (and by implication its immaterial, unified guiding Nature): the only reality, and the only power capable of such unthinkable transformations of matter and energy.

While Smoot perseveres with his prior-myth metaphors, for example that the principles and natural laws of the cosmos "display a symmetry that ancient mythologies reserved for their gods[557]", he also presents science as possessed of its own new ways of defining beauty, value, and even divinity; these open the path of science to all human knowledge, since all forms of truth must be co-grounded in the same Nature-nature. "Cosmologists and artists have much in common," he writes, "Both seek beauty, one in the sky and the other on canvas or in stone"; yet the beauty for the cosmologist lies actually beyond the physical sky, in the laws of nature which reveal "how the laws and principles of the cosmos begin to fit together, how they are intertwined … how they imply that the universe *must* be expanding, must be flat, *must* be all that it is;" all this for him is "pure, unadulterated beauty[558]". The locus of this beauty is also thus in the experience of knowing and sensing the power of this natural *must,* a way of occupying the standpoint of productivity of Nature.

To a greater extent than most other cosmologists, Swimme, in works like *The Universe Story* (1992) and *The Universe Journey* (2011)*,* (the first co-authored with Thomas Berry and the second with Mary Evelyn Tucker, both from the field of religious studies), does develop the actual fabula of the evolution of nature qua locale of the new mythology, tarrying longer

[557] Smoot, *op. cit.*, p. 297.

[558] Smoot, *op. cit.*, p. 297.

than most in the neo-traditional metaphor and idiom. "The Earth's solidity becomes smoke in the beginning," he writes, a "primeval fireball" or "cosmic hurricane" or "trillion-degree blast that begins everything" which is connected to everything around us: "All that exists in the universe traces back to this exotic, ungraspable seed event, a microcosmic grain, a reality layered with the power to fling a hundred billion galaxies through vast chasms in a flight that has lasted fifteen billion years", and the "universe is a single multiform development in which each event is woven together with all others in the fabric of the space-time continuum[559]".

Swimme experiments with naming ancestors who were not human: "Some five billion years after the beginning of time, the star Tiamat emerged in our spiral galaxy. Tiamat knit together wonders in its fiery belly, and then sacrificed itself, carving its body up in a supernova explosion," "so that the adventure might deepen[560]". The Sun, too, "showed its own self-organizing abilities" when it generated the solar system; the "first living cell" was "Aries"; the first eukaryote "Vikengla"; his descendants eventually take the "daring step of submerging themselves into a larger mind as trillions of them gathered together and evoked Argos, the first multicellular animal[561]". As we noted in Chapter One, Nassar characterizes one feature of philosophizing the absolute as nature, the assigning of reciprocally conditioning principles like infinite-finite or one-many, to both mind and nature. Swimme and his collaborators extend this, as we can see in these few examples, into the more subject-like dimension, attributing to nature human values like sacrifice, nobility, altruism, and other traits. By speaking in a would-be "mythological" (or epic) voice, Swimme opens a new arena where he can display these kinds of philosophical attributions of mind-like-ness to the natural world in a playful, aesthetic mode. Swimme and Tucker also present the early German romantic problematic, of the transition from non-life to life, as central: the "truth of the Milky Way galaxy" lies not only in its hydrogen and helium, but also in that fact that "the

[559] Swimme & Berry, *op. cit.*, p. 21.

[560] Swimme & Berry, *op. cit.*, p. 8.

[561] Swimme & Berry, *op. cit.*, pp. 8 – 9.

Milky Way in its later modes of being is capable of thinking and feeling and creating," for example in the person of the poet Emily Dickinson[562].

In the end, reiterating this unity and organism-level understanding of the universe, unfolding according to a law of cosmogenesis (as noted above) which is apparently inhering or seated in an organizing Nature which is both immanent and somehow also transcendent, is effectively the farthest they press substantively into determining the content of the new mythology. Swimme also makes clear that his underlying focus is the same neo-romantic one on the new way of seeing, rather than the physical world itself in a more straightforward neo-traditional sense, *even* where it concerns the fact that the universe carried out the transformation from non-life into conscious life which he tries to make a main focus of his neo-traditional idiom. After neo-romantically demonstrating his access to all the "ages" of the human species, from Paleolithic times to the rise of the multinational corporation, and his ability to prescribe in which direction human progress lies (we will return to this in Chapters Four and Five), Swimme makes clear his position that the way to reach this progress is via pursuit of the unity of all disciplines of knowledge and endeavor. He seeks to actively define what kind of myth-making power we might then ascribe to the aestheticized, multi-disciplinary human reason (still always anchored by mathematical physics) which results. In addition to its unification of all the disciplines, the new mythology must reflect the [Neoplatonic, Schelling-ian, triune progression-evoking] awareness of the unfolding of the physical world according to his law of "cosmogenesis," making time into "an evolutionary sequence of irreversible transformations[563]" and, again, reflecting the unity of all aspects and times of the universe as one nature. For Swimme, as for the four early German romantic thinkers, what is most important is simply to understand that his scientific history *can* or *could* in some future age be aestheticized and expanded using the insights and outer beauty of art. He (like many others, e.g. Silk, Sagan) calls upon poets and artists to carry out this work.

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[562] Swimme & Berry p. 38.

[563] Swimme & Berry p. 3.

In a somewhat broader sense, the discussions by cosmologists of the roles played in their field by emotion, religious longing, the sense of beauty, and the sense of excitement or devotion, such as we have been touching upon here and elsewhere, can all be seen as part of the new mythological position. Discussions of beauty and intuition are common, as we have already noted; in the context of the new mythology, these two experiential ways of knowing (which transcend the discursive, for the romantic) offer prospective connection points with other disciplines and fields of human endeavor. Sometimes, again, this includes cosmologists showing (or at least asserting) there is *already* significant unity between science and art, or science and the aesthetically attuned intuition. Pagels (like most others) emphasizes the role of beauty and intuition in knowing nature[564]. The beauty is attributed not to the physical world, or to any special cosmography or arrangement, but to nature as the only (underlying, concealed) reality (and unity). This seems to be the locus of the beauty which then reflects back upon, or is ideally absorbed into, the scientific approach itself. Evoking Einstein, Wilczek holds that science is motivated by the same "mysterious longing" that "inspires creativity in music, art, or any other enterprise of the restless human spirit[565]". Yet just as with the promise of a new creation myth, the assertion of the presence of beauty in the theories, and in the view of nature the theories enable, collapses directly into being identifiable with the theories themselves, and the epistemological faculties and special access of the scientist. There is even a similar device used with art in some of the popularized works which resembles the way excerpts (often epigrams) from "old" mythology are used: sprinkled through the text, in disconnected ways, as though juxtaposition can suggest an argument as to how they are connected to the physics at hand. It even suggests a return of the German romantic love of the fragment's ability to suggest a whole which lay beyond its reach[566] (which could even be said to capture the way in which the neo-romantic cosmologist reads his patchwork of physical theories themselves). Wilczek, expressing an aim of developing a "spiritual cosmology" broadly defined, which might hold the creator of the universe to be (or be "like") an artist, disavowing the

[564] Cf. Pagels, *op. cit.*, pp. 340f..

[565] Wilczek, *op. cit., Longing*, p. xi.

[566] As in Novalis's *Encyclopedia* or in Schlegel (for the latter point cf. e.g. Nassar, *op. cit., Absolute,* p. 5).

"unnatural"-ness of "separat[ing] … our understanding of the world into parts that we do not seek to reconcile[567]", places images of computer-generated "art" interspersed with images of traditional works from the classical, Renaissance, and other eras. One computer-generated image of fractals he calls a "strikingly beautiful work of abstract art[568]" and thinks it shows how we can learn to use science to see the same thing (in this case, the same image) in both a physical sense and also with our "mind's eye" such that it is an "embodiment of concepts"; this symbol-reliant view of beauty for Wilczek is a higher way of knowing/seeing, where this image (for example) "is both Real, and Ideal[569]". The implication is that soon, human beings will all learn to see this form of beauty (if they cannot already). The fact that the German romantics were rooted in art and reaching for science, rather than the reverse, as is the case with the big bang cosmologists, may mean the scientists' ability to adequately describe and elaborate on the beauty they see is less possible than it was for the German thinkers we considered in the first chapter. The scientists normally repeatedly assert that the beauty is there, and, again, call for future artists to develop the vision further.

Big bang cosmologists on 'old' mythology

As just noted, the big bang cosmologists' grounding is in mathematical physics, and we cannot necessarily equate them with the German romantics in terms of their level of interest in, or degree of dedicated study of, the "old" myths and associated religious traditions. We might note the implications of the tone of cosmologists like Majid, who in offering philosophical comparisons between his science and Buddhism says "This reminds me a little *but only a little* of Buddhism. I am not an expert on Buddhism…[570]". We could look at the tone, too, of Krauss, where he declares outright that nothing is sacred[571], leading

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[567] Frank Wilczek, *A Beautiful Question: Finding nature's deep design* (New York: Penguin, 2015), p. 86.

[568] Wilczek, *op. cit., A Beautiful*, p. 113.

[569] Wilczek, *op. cit., A Beautiful*, pp. 113 – 114.

[570] Shahn Majid, "Quantum spacetime and physical reality," in Majid, Shahn, ed., *On Space and Time* (Cambridge: Cambridge University Press, 2008), p. 135.

[571] Krauss, *op. cit., Greatest*, p. xii.

to at least a question as to his willingness to engage with the sacred as it may have been entailed in ancient mythology and religion. Bertolami directly compares non-scientific cosmologies of ancient historical origin, in particular that of Australian indigenous peoples, with scientific cosmology, claiming that big bang cosmology is the ultimate, crowning myth because it is supported by scientific proof[572]. Weinberg's *The First Three Minutes* begins by comparing the big bang theory with the Norse myths compiled in the *Younger Edda* with these myths presented in an ironic or detached way:

> The origin of the universe is explained in the *Younger Edda* … In the beginning, says the *Edda,* there was nothing at all … The heat … [made] liquid drops [and] there grew a giant, Ymer. What did Ymer eat? It seems there was also a cow, Audhumla. And what did *she* eat? Well, there was some salt. And so on.[573]

He also intentionally evokes Genesis in the same mode: "In the beginning there was an explosion[574]".

In Krauss, the old mythology itself is both held up for polemical ridicule ("The Goat Herders Guide to the Universe") *and* used as a kind of evidence to further justify the scientists' neo-romantic vantage-point on nature qua Copernican. Because those *old* myths were within our "comfort zone", and our moving beyond them implies a willingness to face hard truths, the hard, scientific truths gain in status and indisputability[575]. Sagan also echoes this view of the old myths as falsely anthropocentric, as part of describing (or asserting) that we have now Copernican-ized cosmology at all levels: "In the earliest myths and legends of our species … the cosmos … is anthropocentric[576];" now, for Sagan, it is not.

Chaisson similarly writes that before the Copernican and scientific revolutions, "Thousands of years ago … It was natural to conclude … that home and selves were special. This

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[572] Orfeu Bertolami, "Cosmological thinking: cultural heritage and challenge", talk delivered at the *Third International Symposium 'Frontieras da Ciênca: A humanidade e o cosmos',* 13- 14 November 2009, p. 6.

[573] Weinberg, *op. cit., First*, pp. 3f.

[574] Weinberg, *op. cit., First*, p. 5.

[575] Krauss, *op. cit., Greatest*, p. 3, p. 304.

[576] Carl Sagan, *Broca's Brain: Reflections on the romance of science* (New York: Random House, 1979 [1974]), p. 292.

centrality led to a feeling of security or at least contentment—a belief that the origin, maintenance, and fate of the Universe were governed by something more than natural, something supernatural[577]". It is unclear how he could construct this "centrality" and "contentment" except in opposition to his own feeling in and experience of his own "Copernicanized" cosmos. The bravery of facing the sublime dis-orientation of science apparently needs, for Chaisson, its imagined alternative, to help cast it as not only more enlightened but also more beautiful and morally worthy of the individual, as in Hölderlin's line from Empedocles to "the people" to "Forget these things courageously", speaking of their traditional religions[578].

So, too, in the cosmologists' writings, the old myths' mention of divine revelation, gods, or even claims about natural places or the physical world are presented as incorrect science, laced with superstition. Just as in the case of the early German romantic new mythology, the old myths retain at times a hybrid status, both proto-modern and bearing a proto-scientific awareness of harmony and unity in particular, and superstitious, incorrect, and obsolete. They must be completed, finalized, or overcome in full, by changing their very *form* into a new kind of form – *ending* mythology by making myth into something like an interpreting and a deepening of the value and importance of scientific epistemological access to the one real nature. Krauss claims, regarding big bang cosmology, that "Already in the first world, parts of this story are helping to slowly replace the myths and superstitions that more ignorant societies found solace in centuries or millennia ago[579]".

Sagan and Gleiser both offer examples of the cosmologists' tendency to present old myths as forerunners of scientific explanation. Like Krauss' anti-"old" mythology stance, Sagan begins *Cosmos* with dismissing past cultures' "small, quaint tidy universe[580]" and claiming the humans of that time to be naïve. Even the claim of naivete itself implies an assumption that a realist, instrumentalist, proto-scientific approach characterized these myths. And

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[577] Chaisson, *op. cit.,* p. ix.

[578] Hölderlin, *op. cit., Death of Empedocles*, p. 90: Act II, Sc. 4, lines 1506 – 1513.

[579] Krauss, *op. cit., Greatest*, p. 1.

[580] Sagan, *op. cit., Cosmos*, p. 12f.

while Sagan places floating quotations drawn from older cosmological myths as epigrams at the beginning of almost every chapter[581], the purpose is apparently to appropriate these myths' aesthetic power or religious associations for science, or to find their unity with science, or both at once, rather than to indicate any understanding of what they may have been intended to mean in their own contexts.

Toward the end of *Cosmos,* Sagan moves from science as the revealer of the universe as it really is, sweeping away old superstitions and pre-Copernican human cowardice, to science as revealing things of beauty and letting us see "Nature" whose "every aspect" "reveals a deep mystery and touches our sense of wonder and awe[582]". Thus we are to move back into the sacred in a new form, after having first been sufficiently cleansed of past versions of it. Here he turns at greater length, too, to exploring the old myths themselves at greater length[583], imagining the experience of the "I" during the ages of those myths in a way which displays both neo-romantic ways of seeing old myths: as proto-scientific and thus able to be replicated and overcome or ended as such by science, and also as providing a "whole world" and a whole unified and unifying logic and aesthetic, just as science, properly understood, now can offer. While the old myths presaged scientific cosmology, offering "a kind of premonition of modern astronomical ideas" such that, e.g., the ancient Indian myth of an infinitely repeating universe anticipated the oscillating universe model of modern scientific cosmology, and these aspects can be replaced, he also patently wants to salvage some of their aesthetic power and holistic functionality in offering a frame for life[584].

Cosmologist Gleiser's *The Dancing Universe* (1997) compares old creation myths and the big bang model, trying like Sagan to present old myths as a universal human effort to address "the Question", which is "the problem of Creation", the "ultimate origin of all things[585]". He

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[581] Including from the Popol Vuh myth of the Mayans; the Book of Job; the Koran; Icelandic epic; the Baghavad Gita; the Enuma Elish; and Aztec, Inca, Assyrian, ancient Egyptian, and Eskimo creation myths; writing by Chuang Tzu; the Tao de Ching; and the Mahapurana.

[582] Sagan, *op. cit., Cosmos*, p. 362.

[583] Sagan, *op. cit., Cosmos*, pp. 283f..

[584] Sagan, *op. cit., Cosmos*, pp. 286f..

[585] Gleiser, *op. cit., Dancing*, p. 7, p. 3.

notes that scientific cosmology is unique among the sciences because it asks questions which can also "legitimately be asked outside the walls of science[586]", again making it clear he sees science and the old myths as continuous, the same type of inquiry. It is notable that the new mythology aestheticizes the cosmologist as a realist, just as much as it does the old mythologist: the comparisons make it appear that in simply "reasoning through 'the Question' ", scientists have come up with a like, and superior, answer. This, again, neglects to acknowledge their neo-romantic speculative approach and its array of inbuilt a priori assumptions, or, put another way, it obscures the extent to which theirs is a new mythology, not a mythology. Notably, it avoids the fact that because of their epistemological position, the neo-romantic cosmologist cannot actually encounter the kind of raw natural chaos described or [arguably] actually evoked by the creation myth.

Gleiser also, echoing Sagan, pursues a direct comparison between old myths and scientific cosmology based on the emotions they evoke. He claims that both the creation myths and the modern scientific theories are motivated by awe at nature, and that it is possible to think of modern physics as a new "language of the gods" which can help us see that a kind of "rational mysticism" exists now in science, just as it did in earlier ages in the form of the creation myths[587]. This is a common approach to the old myths taken in the cosmological version of the new mythology of reason: that science, the scientific method and what it allows us to learn, how it allows us to see nature as a unity, can and should instill in us the same (or often "more", "deeper", "greater", etc.) awe, sense of wonder, sense of beauty, etc. as the old myths are presenting as giving their believers. The concept of "criticized mysticism" is a recurring one in the cosmologists, and can also be found in early German romanticism, recalling Schlegel's semi-ironic statement that "Schelling's philosophy … might be termed criticized mysticism[588]". In Novalis, too, the idea of philosophy or thinking as "magical realism" points to a similar conception of the activity of the "I" when thinking of (or trying to think as) nature. At times, a kind of hyper-romantic magical realist perception

[586] Gleiser, *op. cit., Dancing*, p. 245.

[587] Gleiser, *op. cit., Dancing*, p. 4.

[588] Schlegel, *op. cit., Philosophical Fragments*, no. 105, p. 30.

of the world-as-one[589] seems to be guiding the cosmological version of a new mythology, and coloring their presentation and use of old mythology.

Swimme seems more attuned, perhaps because of his co-authors' backgrounds in religious studies, to trying to understand the old myths on their own merits, but still falls predominantly into treating them as proto-scientific. He holds that we should strive to "find our way back to the mythic world of classical times and further back into the Neolithic and even back into Paleolithic times when there was an immediate experience of the great liturgy of the universe itself[590]". Yet this liturgy has only one modern counterpart: the beholding, in effect, of the one Nature-nature via science. While he claims he wants to recover this Paleolithic spirit, he immediately qualifies it: "Only now we have a new understanding of the sequence of transformations that have been taking place over these past eras to shape the galaxies, to fashion the elements, to gather the solar system together[591]". And he is patent that our scientific awareness is the highest form of awareness, repeating in a hyper-German romantic manner the trope of the human subject as *all* of nature looking back at itself. We are aware of the "great liturgy of the universe itself" now through science, and have even joined in it directly: "our most recent modes of scientific understanding are themselves the latest phase of this story. It is the story become conscious of itself in human intelligence[592]". (This evokes cosmologist Gleiser, as well, who writes, "*we* are how the universe reflects upon itself: our mind is the cosmic mind[593]".)

He evokes, in new mythology fashion, his belief that in earlier, myth-dominated times, human beings experienced the kind of oneness he wants human beings to rediscover through a new cosmological awareness (rooted in science). Of the Paleolithic, he writes that there were "all-pervasive spirit forces experienced by the entire society;" of the Neolithic, he writes that people experienced oneness with the cosmological order through their

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[589] This also links with their idea of genius, which I have not had the space to include, but which also shows many overlaps with the attitude of science toward genius.

[590] Swimme & Berry, *op. cit.,* pp. 237 – 238.

[591] Swimme & Berry, *op. cit.,* pp. 237 – 238.

[592] Swimme & Berry, *op. cit.,* pp. 237 – 238.

[593] Gleiser, *op. cit., Tear at the Edge,* p. xvi.

mirroring social order; of the rise of the first classical or pre-classical civilizations like Egypt, he notes that "the human order was integrated with the cosmological order"; in later epochs of, e.g., the West, the oneness began to be disrupted, leading to "extensive devastation" even where there was a "theoretic intimacy with the Earth" expressed in formal teachings[594]. This in turn leads into the positioning of modern Western human beings as myth-less.

The old myths were, for Swimme, "narratives dealing with an abiding pattern in the structure and functioning of the universe", whereas science now shows us how to integrate "the human into the irreversible historical sequence of universe transformations"; science offers not "a mechanistic, essentially meaningless universe" but one which is characterized "from the beginning" by a "mysterious self-organizing power", a power which if we experience it "in any serious manner" "must evoke an even greater sense of awe than that evoked in earlier times at the experience of the dawn breaking over the horizon, the lightning storms crashing over the hills, or the night sounds of the tropical rainforests, for it is out of this story that all of these phenomena have emerged[595]". This echoes Sagan and others who also insist that we can access what it was like to feel awe then, and re-create it for scientific forms of knowing now. The locus of the awe must be scientific insight, and inhere ultimately in Nature-nature, not anything (Schlegel might here add "sensuous") pertaining to the experiences of lightning, the sounds of a rainforest, or a sunrise. Swimme & Berry even emphasize that we can now feel an *even greater* sense of awe through science than those other cultures. This clearly, again, precludes any possibility that the way the "liturgy of the universe" was experienced before these scientific theories were known would hold anything either incompatible with being replaced with the scientifically informed view and/or normatively preferable to its explanations. The aesthetic, just like the rational, mode of re-telling the old myth in the present, becomes another reiteration that we do not need the old myth itself as a form of knowing. Swimme's approach even entails a projection of the same myth-vacuum onto the past as we ascribe to ourselves: where we lack a poetic

[594] Swimme & Berry, *op. cit.*, p. 156, p. 176, p. 184, p. 198.

[595] Swimme & Berry, *op. cit.*, pp. 237 – 238.

myth, myth-based cultures lacked a scientific one; they lacked the *new* mythology of the future.

The old mythology, again, is used in part as a standard for comparison because it is foundational of a whole culture – the same role Swimme argues the big bang cosmological or "cosmogenesis"-based understandings of nature must play in our own now single, unified, planetary culture: "Such a story was never known before in the course of human affairs," he writes; it "compares only with those revelatory narratives on which the various cultures of the world were founded in past ages[596]".

In Rovelli's sweeping depictions we can see another way in which "old" myths are portrayed which is quite in keeping with German romantic readings: the idea that old mythical cultures "personified" nature, "enchanted" it, or somehow were involved in *making* it [as poets of the myths], just as the romantic had to transform or make nature to learn and know it, and was positioning himself to re-enchant, romanticize, and reveal it anew. This is a necessary point of continuity, the new mythology approach in both romantic projects seeks to preserve, or recreate. If the ancient mythological cultures were active creators of their "nature", then the romantic in modernity can likewise seek to author a myth, or intentionally shape a new culture, even a new mythical *age,* of their own.

Rovelli, one of the world's prominent searchers for a theory of quantum gravity – like many of these scientists, potentially a somewhat puzzling interlocutor for classical myths *unless* we understand them as approaching nature as neo-romantics – writes, "From time immemorial," those who asked "how the world had come into being," everywhere in the world, had only "elaborate stories of spirits, deities, imaginary and mythological creatures" to go on, a "colorful but basically quite monotonous flow – of Plumed Serpents and Great Cows, of irascible, litigious, or kindly deities who create the world by breathing over abysses, uttering 'Fiat lux', or emerging out of a stone egg", until the beginning of philosophical

[596] Swimme & Berry, *op. cit.*, pp. 237 – 238.

speculation with Thales of Miletus[597]. The purpose of all these myths must therefore have been the same as Thales' purpose; they just had lacked the enlightenment to find it.

We again see the old myths used to further enhance a neo-romantic "universal man" viewpoint, now of a less qualified type than in the German writers. The scientist understands what all the ages have been seeking, and can now offer the answers. Rovelli also offers the recurring (cf. e.g. Swimme, Sagan) relative evaluation of aesthetic pleasure, wonder, and awe to be gained by the different myth-programs, old and new: "The world is more extraordinary and profound than any of the fables told by our forefathers", he says, again evoking Hölderlin (cf. above), and while there is still "mystery", it is within the scientifically defined natural: "The world revealed by quantum gravity is a new and strange one – still full of mystery, but coherent with its simple and clear beauty[598]". Again, the old myths have to serve as both aesthetic and "awe" or reverence benchmarks, and be able to be surpassed as such.

Conclusion

We have laid out in this chapter how the big bang cosmologists took up their own version of a neo-German romantic philosophy of nature, both as a way of framing and interpreting the science and the universe models themselves, and in their articulation of a new mythology of reason program.

While the scientists accentuate the less conservative strands of German romantic thinking, tending to press farther beyond Kantian self-awareness in new declarations of third, fourth, and even fifth Copernican revolutions to follow Kant's second Copernican move, most of their positions can be seen as extensions of the German romantics' own positions on the human knower in nature and his ability to intuit and reveal Nature-nature from a standpoint approaching both the subject understood as a product of this Nature, and even that of Nature itself as producer of worlds. This is particularly true of their version of a new

[597] Rovelli, *op. cit.* (*Reality*), p. 16.

[598] Rovelli, *op. cit.* (*Reality*), p. 263.

mythology, which echoes and extends the German writers' normative program for a future age of knowledge, albeit now from a science-led standpoint, and of recent work by Smolin, Carroll, and possibly Chaisson and Swimme, in which they put forward efforts to begin to think of the universe in a more consciously defined way, as a self-grounded, self-organizing whole whose principles can be theorized in more speculative, less strictly-mathematical ways, as reflected in their proposed laws of cosmological natural selection or cosmogenesis. Arguably, too, the cosmologists' infinite multiverse theories are most coherent as efforts to think another trait of Nature, this one its ultimate identity with infinite creative chaos.

The early German romantic approach is also present in the cosmologists' avoidance of talk of "being" as such, their aversion to mechanism or anything which seems to come from "without" to act on nature at any point in its imagined history, and in their reliance on intellectual intuition to progress in revealing Nature-nature. They tacitly also rely on a neo-Spinozan Nature-nature, extant already and possessed of productive power and able to be linked with the real set of all possibles. By identifying the laws of nature as inner principles or logic belonging to this one nature, and also as the reason for the mathematical theories they have developed, they expand and enhance the degree to which the romantic subject can now claim access to this nature as such, particularly in the infinite multiverse discourse.

In the next chapter, we will continue to evaluate the big bang cosmologists as neo-German romantic thinkers by looking at their approach to universal natural history. We will then move into the ethical and values portion of the thesis, which will commence at the end of the next chapter by considering how scientific romantic cosmology addresses our three values-facing cosmological questions from Chapter One: "How is the infinite present in the finite?", "How must the world be for a moral being?", and "Where is God in this new naturalistically-conceived cosmos?". We will conclude the ethics portion in the last chapter, Chapter Five, where we finish addressing the implicit values and ethics of the physical world as elaborated in big bang cosmology's neo-romantic philosophy of nature, and consider whether there are prospective alternative non-romantic interpretations of big bang cosmology and the physical world itself which do more to obviate Jacobi's critique of the inherent nihilism of any, even romantic, world-building based on reason alone, acknowledging these will have to be mostly left for development in future studies.

Chapter IV

The neo-romantic cosmos in time: Big bang cosmology as universal natural history

Introduction

While the early German romantics, aside from perhaps Humboldt's later work which was partly influenced by their approach, did not attempt anything approaching a straight empirical universal natural history, this is the area for which big bang cosmology has become most known. Outside the technical discourse, where the model is referred to in much more narrow, and specific, ways (e.g. Hubble expansion rate, measurements relative to the CMB universal rest frame, etc.), big bang cosmology has become the source of a definitive universal natural history used across all disciplines, one which encompasses a factual historical explanation of certain features of our observable universe.

There are two important characteristics of the neo-romantic big bang universal natural history. As we have been discussing, in this scientific iteration of early German romantic philosophy of nature, just as in the first, there is unease with talk of first principles, origin-points, deistic or mechanistic-seeming causes, or even with the prospect of positing anything as fixed *except nature*, the one quasi-substance, with its laws, which are laws of change and development. The scientific method is the only way we have of accessing this nature, and thus it is a special faculty, one which matches these laws and blends with them, in an exaggerated or increasingly literal version of the German romantic effort to occupy the standpoint of nature's own productivity. This aspect of neo-romantic cosmology sets up the universal natural history as actually only ever able to approximate nature itself, and history primarily as revealing more of this Nature-nature as ground and cause of all that happens.

In tension with this lies the new mythology program discussed in the previous chapter, with its significant ability to impact the way the universal natural history is presented. As we have discussed, the new mythology is not in fact about rendering the history itself into a neo-traditional creation myth. The history though still has to serve as a symbol of and pointer toward the new mythology project, and as such gets variously presented in neo-mythical form en route, as it were, to arriving at the actual crux of the new mythology proper.

This leads to two rival interpretive pressures on the same facts and models: the first which would emphasize Nature-nature acting through its laws; and the second which would try to remain focused on a more specific, realized, tangible physical history of the one universe we inhabit. One way in which the history navigates these competing demands is through an emphasis on re-stating the history of human culture as a history of science, and substituting a consideration of the ostensible linear progress of human enlightenment to augment new mythology claims. Old mythologies themselves can function as a surrogate origin-point, recalling what Millán calls "Schlegel's position … [that] we never begin with … certain knowledge… we must begin with what we have – a history of what has been thought by other philosophers before[599]". The history presents the narrative of old mythological cultures yielding gradually and *naturally* to new-mythological scientific ones.

One recurring theme in the early German romantic approach to nature was the concept of man as, in Schlegel's words, "Nature creatively looking back at itself[600]". The natural history ultimately cannot describe the transformation beyond specifying that biological forms of life arose from chemical arrangements; ages of the past, an account of our "emergence" from which we do possess a more accessible (and "first person" type) record, stand in for the broader nature which generated us in ways we cannot adequately enumerate. The big bang history shows modern man as twice "emerging" from "simpler" forms while remaining somehow still continuous with them; one is used to imply and indicate the other.

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[599] Millan, *op. cit.,* "Seeds", p. 105.

[600] Schlegel, *op. cit.* (*Philosophical Fragments*), no. 28, p. 96.

The scientific history is also intended to serve as a direct demonstration and reinforcement of the neo-romantic pre-posited conception of Nature-nature, as we saw foreshadowed in Humboldt's *Cosmos* with its claims that "Nature considered *rationally,* that is to say, submitted to the process of thought" reveals it to be "a unity in diversity of phenomena" and "one great whole" (I/2 – 3). If we can argue that natural laws somehow are responsible for natural history unfolding, and that laws govern natural history, then we have gone some distance (as Schelling intuited would be desirable, along with his colleagues) toward establishing the reality of our "nature" as the only real thing in existence, and succeeded moreover by way of understanding it as an historic, unfolding, autarchic organic whole – the stuff of history on its own – rather than a mechanical, inert, derivative or dependent system.

The universal natural history also serves as a demonstration of the combination of all disciplines, from the different sciences needed to describe the different phases of history, to the appreciation for the different areas of human culture which appear in the chronology as remarkable (again, *natural*) occurrences.

Finally, it should be born in mind that the conception of the expanding universe of our direct observation has already framed the universe as always historical, never at rest. To some extent the new universal natural history is a further elaboration of this manner of describing the universe as finite yet unbounded and, again, constantly expanding. In neo-romantic fashion, the scientists do not choose to emphasize one over the other, but hold the infinite and the finite in tension and uneasy combination, the aspects of history acknowledged to be merely a search to uncover the ideal aspects of nature as they are grounded in the absolute, versus the aspects of universal natural history which appear definitive, local, and specific enough to play the role discussed above of even appearing to overthrow old myths of creation.

Universal natural history I: The big bang universe evolves

Big bang cosmology's expanding universe history in its empirical, story-like sense took shape based largely on two observations: cosmological redshift, first detected in the 1920s and 1930s and still a staple of universe measurements and histories to this day, and the

discovery in the 1960s of the cosmic microwave background (CMB), the roughly (but not quite perfectly) homogenous and isotropic background of microwave radiation of temperature 2.7 Kelvin bathing the observable universe in every direction. Redshift and the CMB remain the two main foci of observations in the field.

During the first period of cosmology's presentation of an authoritative history of the observable universe, lasting roughly from the 1930s through the arrival of inflation theory (1981) and the subsequent broadening of discussions of fine-tuning and the infinite multiverse, the main fact about its past history was its radical difference – the drastic, almost unimaginable changes in phase state, distance scale, appearance, consistency, etc., it was held to have undergone. Much of the early phase of big bang history was devoted to developing this conceptually – to humanizing the expanding universe model and showing why it *was* able to provide a meaningful history. This was the period in which the temptation to use the trope of a single centralized myth-like story was stronger: the re-assertion of the pursuit of an idea of nature-itself, would come in the second main phase of the history-writing, when theorists begin to take seriously the problems, as they saw them, of the notion of a raw beginning of their laws, and re-assert their interest in a more eternal and creative-chaotic nature.

At the high-water mark, as it were, of the single new history of our universe being presented in the service of new mythology aims, we see writers like Sagan (*Cosmos,* 1980) and Weinberg (*The First Three Minutes,* 1977) offering to "the people" a radically realist universal history. In the spirit of Humboldt's *Cosmos,* but greatly exceeding it in level of technical detail, the history of the universe was offered as an entry-point to the new mythology of reason, and also its best demonstration thus far. The history presented the natural world as a whole as a gradually complexifying and self-grounded single organism. The writers guided the reader from surveying the earliest universe where nature was present in simplicity and could be expressed in purely (if speculative) mathematical form; through a phase when real particles and energy could be estimated to have first appeared and become in some way quantifiable; through the evolution of stars and galaxies, planets, life, and human beings (whose development from ostensibly less to more advanced understandings of nature, again, tended to very quickly take over the narrative and serve as

a substitute for a definitive and specific origin-point of both the observable universe and conscious life).

Even in this first phase of the new history-writing, this modeling of the expanding universe as a meaningful history was always also a fairly transparent veneer over more neo-romantic philosophical Nature-nature theorizing. This was arguably discernible in, for example, the cosmologists' tendency to ignore or leave out large swathes of the picture in order to pursue a narrative of a "simplicity" of origins progressing to the complexity of the present and culminating in [modern scientific] human minds' complexity. For example, there was an obvious complication in the presumed infinity of the actual, "full" universe (as distinguished from the observable universe, as noted above, along the lines of the distinction between a teaspoon of water and the ocean) which tended to be ignored.

Cosmologist Aguirre notes that it is still ignored in the discourse that "there is no sense in which the universe [in terms of all that exists] is at any time 'small' or 'at a point' "; at "our" t=0, there is also a "whole infinite system" which "springs into being all at once[601]". Wright likewise notes that "t=0 is a singularity extending throughout all space. At t=0 the infinite Universe sprang into being. This is a singularity, so the laws of physics do not apply[602]". Cosmologist Silk writes, somewhat understating the point, perhaps, "If we trace the evolution of the universe back through time, the universe becomes progressively denser and hotter. The … *observable universe* … becomes smaller and smaller … restricted to the distance that light can travel during the time elapsed since the big bang; the actual universe is much larger[603]".

The antecedent state of our entire observable universe, in other words, may have been one of unthinkable compression, but it is not the full universe, and not isolatable except for us and by us, now, due to the finite speed of light and our inability to see beyond the cosmological horizon. According to the theory's best estimates, an undifferentiated solid

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[601] Anthony Aguirre, "Cosmological Intimations of Infinity", in Heller, Michael, and Woodin, W. Hugh (eds.), *Infinity: New Research Frontiers* (Cambridge: Cambridge University Press, 2011), p. 177.

[602] Ned Wright, private correspondence, dated 27 July 2017.

[603] Joe Silk, *The Big Bang*, Third edition (New York: W. H. Freeman, 2001), p. 105.

infinite “block” of homogeneous “stuff” would have *all* been going through the same transition from unthinkable compression to something like the physical night sky we see around us today. Our science has all been made within, and utilizing the limits of, our visible universe, the result of the finite speed of light, and is not a physics “of” this infinite primal block, nor could it be. In this sense we could offer that the effort to present the single universal natural history can be at times hyper-romantic, unwilling to risk a destabilizing of a meaningful history picture by acknowledging the partiality of the model. The era of the singularity is determinedly described as an era of “historical” simplicity, within mathematical expression’s reach. It is not difficult to discern the positing of the already existing Nature-nature in operation; it is only that this naturalistic history mode tends to obscure or suspend philosophical awareness of it.

Still, while these histories seek to avoid this problem, the problem of including the infinite in history returns in the second phase of the history-writing, in a new form, when they come up against the infinity problem again but present it as creative chaos, or the infinite multiverse, a type of infinity more amenable to the neo-romantic view of Nature-nature as always being cohesive with philosophical or scientific intuition, as discussed in the previous chapters.

In both the early German and the modern cosmological romantic projects, as we recall, the physical world-as-nature is presented in part by way of the mechanism of in medias res philosophizing. This entails working from the experience of thought itself – immediately recognized as anchored in nature’s pre-existence, which confronts thought with limits on its grasp, but also as enabled by an ultimate unity with nature and nature’s possession of mind-like traits, which expands its grasp in different ways once again – outwards, and a reliance on intellectual intuition to guide the knower in revealing philosophy’s connection with real nature and with experience, contra Jacobi’s objection that this was impossible. This way of beginning *in medias res* also helps avoid questions of ultimate foundations or first principles, letting the “I” pursue ceaseless approximation to a complete picture of infinite Nature. The cosmologists’ neo-romantic approach to universal history develops a new type of presentation of history itself from the middle of things, again recalling Schlegel, e.g. his

fragment about philosophy having always to begin in medias res[604]. Even where the same accounts later also reverse the order, and re-tell the development of the universe from past to present (including for the purposes of making it sound more myth-like), the universal natural history tends to be first presented in reverse. Consider one textbook account:

> As we work our way back through time, we reach the limit of our current scientific ability to understand the physical conditions when the universe was an incomprehensibly young 10^{-43} second old and the temperature was above 10^{32} K. This instant in time is called the *Planck time* …. We refer to all times prior to the Planck time (the first 10^{-43} second) as the Planck era. Current theories … cannot adequately describe [it] ….
>
> … Nevertheless, while we can't say much about the Planck era itself, we have some idea of how it ended and what followed[605].

"Travel back in time," Smoot writes, in again, a quite typical presentation of working-backwards before working-forwards, "and we see an ever-greater simplicity and symmetry, with the fusion of the fundamental forces of nature and the transformation of particles to ever-more fundamental components[606]". All the complexity around us today "flowed from a deep simplicity as matter metamorphosed through a series of phase transitions[607]". This is arguably a neo-Schelling-ian display or declamation, a claimed temporal cross-section of nature itself, nature as Nature, revealed by considering it as emergent via an inverted Neoplatonic progression, but it is also ostensibly empirical and based in the certainty of the present.

Weinberg, in his *First Three Minutes*, says of the earliest universe that it is "simpler and easier to describe than it ever will be again. It is filled with an undifferentiated soup of

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[604] "Viewed subjectively, philosophy, like epic poetry, always begins in medias res," Schlegel, *op. cit., Fragments,* no. 84, p. 28.

[605] Jeffrey Bennett, *et al.*, *The Cosmic Perspective,* Fourth Edition (San Francisco, CA: Addison Wesley, 2007), pp. 474 – 475.

[606] Smoot, *op. cit.,* pp. 290ff.

[607] Smoot, *op. cit.,* pp. 290ff.

matter and radiation[608]". The narrative device of claiming to have a "camera" emplaced at (or just after) the big bang is indicative of how realist and empiricist this history can sound despite the romantic tensions it contains which we have been discussing. Weinberg also evokes Dirac's wish (cf. previous chapter) that the origin-point remain free or autarchic: "during the whole of the first second the universe was presumably in a state of thermal equilibrium, in which the numbers and distributions of all particles … were determined by the laws of statistical mechanics, not by the details of their prior history[609]". This is something like the "purest" glimpse of nature itself afforded to the physicist, before it becomes cloaked with more specific historicity and worldliness. We can recall here that Balashov has pointed out we have already assured ourselves of [only] this pure kind of beginning by pre-committing to achieving a "coherent physical description of the Universe as a whole" which automatically and a priori "poses constraints on what kind of entity it could be[610]": i.e., it must be intelligible, and for the romantic, it must be intelligible as the "nature" within which his thinking mind has already been situated and with which it has already been declared unified. These natural histories face the difficult task of presenting many ideal components of the theory and its interpretation as empirically causative and real.

Part of what gives these histories their neo-romantic shape is, again, their tying the emergence of life from non-life with the emergence of science from myth as part of their efforts to combine universal natural history and a new mythology of reason. "Kepler and Newton represent," Sagan writes, "a critical transition in human history, the discovery that fairly simple mathematical laws pervade all of Nature … their predictions of the motion of the planets to high precision provided compelling evidence that, at an unexpectedly deep level, humans can understand the Cosmos[611]". The history of science becomes the microcosmic story of emergence, with the scientific progress each era made being retold in a highly schematic way (necessarily, given the amount of time and space these histories

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[608] Weinberg, *op. cit.* (*First Three*), p. 102.

[609] Weinberg, *op. cit.* (*First Three*), p. 146.

[610] Balashov, *op. cit.,* p. 270.

[611] Sagan, *op. cit.* (*Cosmos*), p. 90.

cover). This history of science is portrayed as inextricably linked with both natural histories (i.e., both kinds of emergence, biological and cultural, as noted above). Weinberg writes, "Let us turn away for a moment from the history of the early universe, and take up the history of the last three decades of cosmological research[612]". History of science in its extremely generic form gets presented, moreover, through the lens of a focus on unifications and "Copernican" types of transitions, whether at the scale of the very large or very small. Carroll hints at how the history of science is used in these texts when he says "our goal here isn't to get the history right. We want to understand the physics. So we'll sketch out a logical path by which we will be led to a full-blown scientific theory of quantum mechanics[613]". The history of these connections being made, these unities being "found[614]" in nature, referred to as the greatest discoveries of science, reflect the a priori underlying idea of a single unified Nature-nature, while also presenting it as something discovered externally over time. The knowable historical record of their discovery by individual scientists is used to extend the degree of objectivity and certainty in the cosmic natural history, which otherwise at times seems to resist such certainties. Just as knowledge of nature is perpetually advancing and unfolding, so too is nature projected to be coming to know itself, just as human beings have come to know it. This furthers the view that the scientists can have access to nature as it has always been unfolding, including long before human observers, and that this is a self-reflexive history where nature, as it were, speaks both through and then directly back to us, almost like a partner in a co-written history. Swimme & Tucker carry this beyond the experience of knowing, and try to express it also as the knowledge that we are literally one with all that is: "This story has the power to awaken us more deeply to who we are. For just as the Milky Way is the universe in the form of a galaxy, and an orchid is the universe in the form of a flower, we are the universe in the form of a human. … we are actually the universe reflecting on itself. And this changes everything[615]".

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[612] Weinberg, *op. cit.* (*First Three*), p. 122.

[613] Carroll, *op. cit.* (*Something Deeply*), p. 28.

[614] Cf. also Rovelli, *op. cit.,* e.g., p. 193, Figure 7.8.

[615] Swimme & Tucker, *op. cit.,* p. 2.

To construct the earliest universe, the a priori question and answer, before the history, is something akin to "what does *nature* do at extreme temperatures, densities, etc.?" The one quasi-substance, nature, is always there, and always "implementing" these laws in a transcendent-immanent manner. The cosmic history for the neo-romantic scientists is only a new view of the same one quasi-substance, and they use the idea of history, and exploratory writings of histories which blend the scientific with the cultural, to further their philosophical depictions and understandings of it. Pagels asks, "Could it be that the cosmic code, revealed in the architecture of the universe, is actually the program for historical change[616]?", reminiscent of Novalis's "It is possible that a marvellous structure of mystic figures underlies all nature and even history. Has not everything which exists a significant symmetry and strange cohesion[617]?"

Universal natural history II: Historical time and the multiverse

The expansion of the big bang model by the 1970s and 1980s, after the discovery of the CMB, into discussions of fine-tuning, the anthropic principle, inflation and the infinite multiverse (as discussed in the previous chapter), lent new dimensions to cosmologists' efforts use the genre of natural history to represent and further develop their neo-romantic realist-idealist notions of the whole of nature.

Swimme & Tucker construct, for example, the big bang as an enormous fine-tuned event, dangling wholly idealized counterfactuals as discoverable empirical historical possibilities: "we can imagine that things could have been different. We can theorize about a different kind of universe, a universe that would have taken the form of disconnected particles, a universe that would never have formed bonded relationships[618]"; "if the rate of expansion had been slower, even slightly slower … the universe would have recollapsed … imploded upon itself, and that would have been the end of the story" and the same if it had been

[616] Pagels, *op. cit.,* p. 344.

[617] Novalis, *op. cit.,* (*Thoughts on Philosophy and Physics*), p. 230.

[618] Swimme/Tucker, *op. cit.,* p. 8.

faster; fortunately, however, "we are living in a universe that is expanding at just that rate necessary for life to emerge[619]". Placing these ideas into the setting of an empirical history makes them seem less like merely ideas; and the authors also try to use these to create some type of additional meaning in the histories as such. The hyper-romantic claim of being able to literally rather than metaphorically occupy the "standpoint of productivity" of Nature is suggested, competing with the derivation of the counterfactual from an intuitive effort to grasp Nature-nature as adequately free (as discussed in the last section on the tuning and multiverse discourse).

As we discussed in the last chapter, in the infinite multiverse, there is always "nature" even when the universe or universes as such are all destroyed, changed, expanded, collapsed, infinitely multiplied, or made devoid of matter. The multiverse could seem to destabilize the neo-romantic big bang historian's authorial position, unless one understands that the romantic historian can never be made non-existent due to their a priori assumptions about existence and thought being indivisible, beginning in the middle, and bracketing raw being. Still, the historian of the infinite multiverse moves into a new way of speaking for and as nature, capable of new degrees of revealing the distant past and distant future which the German romantics were already hinting toward with their notion of history as revealing the ground of things in the absolute, more than a non-historical view ever could.

The suggestion of the counterfactual universes in the context of the history genre also reinforces the ontological and causal force they ascribe to their inner principles of "nature" (and thus their direct access to Nature-nature). It is this access, and not a claimed direct ability to speak of creation in terms of real being, which drives these histories. That changing one aspect of the laws means changing the entire history of the physical universe, even removing it from existence altogether, can be read as a historical claim, but this remains in tension with the Nature-nature revelation which becomes ever more influential in the histories after the infinite multiverse becomes accepted.

If read as history, moreover, it almost represents a new, absolute form of history, where we do not have to speculate over Cleopatra's nose but *know* precisely what it must require to

[619] Swimme/Tucker, *op. cit.,* pp. 10 – 11.

change the entirety of the world. This again reiterates the romantic construction of nature itself, i.e., that laws are able to act as the matho-poietic code of a higher "nature", even if the final view of all the laws remains elusive. It also reiterates the transformative quality of romantic knowing, which always identifies and knows through change and potential change, and not through "stillness[620]".

Joining the infinite multiverse with the natural history frame at the same time seems to open the door to a deconstruction of [natural] history as a genre. Just as their claim to have found a neo-traditional myth – a story "like" an old myth – is only a symbol and way of transitioning into a romantic new mythology of reason, so too does their history evoke a "new history" program – one already emerging in Humboldt's *Cosmos* – which would see their natural history of the infinite multiverse (or of our universe as a branch of the infinite multiverse) remove and erase the need for old forms of history altogether. While the cosmologists' neo-romantic point of view is constantly presenting this new history as part of a project of human liberation, in pronounced new mythology mode, *without* this new mythology framing, the new history cannot present as other than determinist and materialist, or even nihilist, as we will return to discussing in the next chapter. This is particularly the case if we were to further develop the implications of the infinite multiverse (where everything that can happen, happens an infinite number of times) for the genre and form of universal natural history itself.

While there has not yet been much written on the meaning of the infinite multiverse for history as a genre, the infinite multiverse concept, no matter which of its various forms it takes, is potentially laden with (again, as-yet largely unarticulated) powers of removing the meaning of old history and replacing it with a mathematically-based or stochastic "new" history. It is difficult to see how incorporating the infinite multiverse into the presentation of natural history would not at least significantly challenge particularly the very concept of

[620] This is not limited to romantic science – all of science relies on change to capture regularities and thus laws – but the romantic will interpret change and development as the highest principle (or one of the highest principles) of nature itself, and the laws' meaning and importance through this lens. Again, the inverted, Schelling-ian *Neo*platonist wants to see things emerge and reveal their inner natures over time; the Platonist seeks the stiller view behind the changes. For a suggestion of an even "stiller" "stillness" of nature than Plato's, cf. the hermeneutics of nature discussed in King, *op cit.*.

the neo-traditional meaningful, singular, quasi-sacred natural history these accounts claim (for new mythology purposes) at first to offer.

The creative chaos of the infinite multiverse could seem to pose a challenge to every value in or of nature to be located via its history except that we *learn* this is true of nature, that it was, is, and always will be such a multiverse. This places it in tension, again, with projects of re-enchantment pursued through other aspects of the neo-romantic construction of myth and history in cosmology. It might represent the potential completion of the new mythology of the romantics, showing that when we do attempt to really complete the relationship between the finite and the infinite – even suggesting this may be inevitable, versus an indefinite creative tension and between the I and the infinite, between idealism and realism, etc. – it leads to a kind of annihilation of all finitude and finite meaning. This is difficult enough to imagine and pursue as a philosophy of art, or a philosophy of nature in the abstract[621]; it would be even more difficult to take it as our philosophy of combined natural and human *history*.

It is thus perhaps not surprising that those who focus on making the universal natural history more "like" old history, including via trying to spend more time giving depth to the story of the expanding universe itself, like Swimme & Tucker and Chaisson, for example, tend not to embrace the infinite multiverse. Per above, Swimme appears to pursue the notion that our universe's rival historical possibilities did *not* happen. In *Epic of Evolution: Seven ages of the cosmos* (2006), Chaisson presents his "seven ages" of the universe as an evolution – this evolution is *of nature,* always presumably and at times statedly – through seven epochs: the particle epoch, the galactic, the stellar, the planetary, the chemical, the biological, and the cultural, with a gesture in an epilogue to the future age, the "whole new era[622]". The shifts from one epoch to the next are marked by a progressive "rising

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[621] There are, again not coincidentally, I would offer, overtones of this kind of infinitarian nihilism in the speculative realists like Meillassoux – again in his Hyper-Chaos conception of nature – and much more so in nihilist and speculative realist philosopher Ray Brassier, who is specifically anti-Jacobi and re-affirming of the realism of the Copernican view of nature. Cf. Ray Brassier, *Nihil Unbound: Enlightenment and extinction* (London: Palgrave Macmillan, 2007), p. xi and *passim.*

[622] Cf. Eric Chaisson, *Epic of Evolution: Seven ages of the cosmos* (New York: Columbia University Press, 2006). Epilogue is on pp. 433ff..

complexity" which is an "integral feature of cosmic evolution[623]". The one physical universe, part of which we can observe directly, is the extent of nature. Chaisson is at home with positing the origin event; he accepts that we cannot say "why" it occurred or why any of the laws are as they are; his nature is revealed to him via what and how questions, not why questions[624]. This reflects some acknowledgment, reminiscent of Carroll's, of the neo-romantic position's starting point: merely positing Nature-nature and its power, avoiding questions of raw chaos, creation, or being as such, etc.. Time is real; in Schelling-ian style, Chaisson writes, "There's no stopping the arrow of time … time … is a Prime Mover – an underlying, neo-Platonic driver that permits order, shapes structures, and fosters complexity" locally, though the whole universe is "irreversibly and relentlessly decaying toward immense disorder[625]". Of the multiverse, Chaisson is dismissive: "I see no evidence for cosmic strings, eleven dimensions, or multiple universes[626]".

It is possible that in time, the pressure the infinite multiverse places on meaning in history will lead to a clearer split between more traditional, Humboldt-ian romantics like Chaisson and the more radical, quasi-nihilistic romantics like Carroll and Tegmark with their "ultra-Copernicanized" infinite multiverse-facing histories. To the extent that the new mythology project derives its cultural power in part from the universal natural history it presents on the surface as a neo-traditional myth of nature, this divergence in the approach to universal natural history may pressure cosmologists to either abandon the genre of history-writing and/or present an even more deliberate "new history" approach and justify why it either does or does not potentially serve as part of the new mythology of reason.

Toward an historical-cosmological ethics of the physical world? The three romantic cosmological questions in big bang cosmology

[623] Chaisson, *op. cit.,* p. 369.

[624] Chaisson, *op. cit.,* pp. 57 – 58.

[625] Chaisson, *op. cit.,* p. 434.

[626] Chaisson, *op. cit.,* xvi.

We have now completed our overview of the modern scientific cosmologists' construction of the universe seen as a manifestation of "nature," and their construction of a neo-romantic new mythology program and tension-filled approach to universal natural history. I have presented the big bang cosmologists as reiterating German romantic positions in their adoption of a single Nature-nature, and in their new mythology program, and as extending or exaggerating German romantic philosophy of nature in some of their tendencies to go beyond the romantics' own willingness to claim to occupy, for example, Nature's own standpoint of productivity beyond the possibility of the presence of any observers, and beyond the "fourth" Copernican turn to creative chaos, into a "fifth" Copernican turn into Nature as producer of minds. This can lead to another hyper-romantic trajectory toward ending the creative tension maintained in German romanticism between realism and idealism about nature, and insisting on a newly harmonized or closed synthesis of mind and universe (e.g. in Wheeler's "it from bit" participatory anthropic principle view of natural history).

We will here transition to the last area of the discussion of this study, which is how and why this neo-romantic cosmology does or does not uncover or locate inherent value in the physical world of our experience. To begin with, we can return briefly, for the remainder of this chapter, to the three Kantian-legacy questions which occupied the early German thinkers' efforts to cosmologize: "How is the infinite present in the finite?", "Where is God in the natural world (or in the new naturalism)?", and "How must the (or a) world be for a moral being?". These questions can help us begin to see which ethics and values may inhere vis-à-vis and in the physical world in the cosmologists' version of the German romantic approach to nature as a whole. In the last chapter, we will look for additional elements of the valuing or non-valuing of the physical world in this philosophy of nature, and turn back to some of Jacobi's critiques, considering how they are potentially relevant to the interactions or intersections between the big bang new mythology of nature and the ecological crisis discourse.

All three of the German romantic-era questions are, as we have seen, once again of clear interest to the big bang cosmologists. To take the question of the infinite-finite relation,

first: the overall position of big bang cosmology on this question has two parts: a mathematical-technical one, and a more philosophical-metaphysical one.

In the first sense, one thing which characterizes the talk of infinity in big bang cosmology is, simply put, its very possibility, technically speaking. The scientific cosmologist is never far from conceptualizing and utilizing infinities. He uses both computational infinities – an empiricist's version of an infinity, where it is a place-holder or serves some other simplifying function in an equation or calculation – and at various points chooses to also interpret these naturalistically or as though they are not merely computational, but real. Ever since Einstein (and Olbers before him) there have been various "real" or "realized" infinities in big bang cosmology interspersed with the computational, place-holding kind.

For example, most cosmologists hold that the measurable flatness of the spatial geometry of the universe of our observation, means that the actual size of the full universe is infinite. This fact alone at times knits together infinite and finite in newly direct ways. Tegmark, for example, characterizes this infinity as entailing a first, "simplest" kind of infinite multiverse: from this Euclidean flat infinity (stretching beyond our cosmological horizon) we can infer there are "infinitely many other inhabited planets, including … infinitely many copies of you – with the same appearance, name and memories. Indeed, there are infinitely many other regions the size of our observable universe, where every possible cosmic history is played out[627]". Another example is the fine-tuning discourse itself: the desire to ideate an infinite probability space not just as a device for calculation but as somehow historical, has led to multiverse models and to new pressures on the idea of a meaningful history, as discussed above. Other philosophers may argue that an infinite multiverse, peopled with infinite numbers of copies of the same events and subjects, is an impossible *logical* "set"; as can mathematicians; but the romantic sees infinite "integration" of that which appears disaggregate as potentially possible, as discussed above: they intuit a creative chaos which is the self-grounding of all the forms of nature, by Nature. They do not seek or require, nor could they ever acquire, proof of such a philosophical conception of the unity. Even setting

[627] Tegmark, *op. cit.,* ("The multiverse hierarchy"), p. 102. Tegmark has four tiers of infinite multiverses, all of which are real in some manner. Cf. footnote 308 above.

Spinoza's form of the notion aside, it is difficult to see how a human mind could claim to naturalistically know anything about the unity or the whole at all *without* ascribing to some form of the romantic notion of the infinite ground, the infinite creative chaos, which underpins nature, human cognition, human creativity, and humans-as-nature. The cosmologists are simply taking it to new lengths, and in the context of science.

In the second, more metaphysical sense of their explorations of the infinite-finite relation, cosmologists overtly philosophize the infinitude of the full universe (beyond our horizon), and even full infinite multiverse, as the metaphysical or absolute infinite in a neo-romantic sense when they offer conclusions that human beings should somehow re-orient their existence to this infinite reality or nature as revealed by science. This is seen in some of their implicit positions on history and on the proper cultural and meta-disciplinary role for science in the new mythology rubric. The inherent environmental ethical value of their infinite-finite relations for the physical world of our direct experience is seemingly potentially a negative one in the case of the infinite multiverse (cf. also below), and seems to have no either intrinsic positive or negative valuing of the physical world of our direct experience. Arguably, the presence of the infinite everywhere in the finite can be read as en-valuing if that infinitude is seen as divine, but equally easily as withholding value or even erasing finite meanings if that infinitude is an empty or immaterial principle inhering in an equally undefined absolute.

Relatedly, the second question, 'Where is God?', is answered by the scientific cosmologists, in effect, with: "God is in nature", or even, "God is nature". Cosmologists' assertions of their science as knowledge of nature-as-the-only-substance is in some ways already either a pantheistic view, or something akin to it in new language, with themselves as the new priests also in that they must mediate and interpret between this substance-as-God and "the people". Swimme writes that "Our new sense of the universe is itself a type of revelatory experience. Presently we are moving beyond any religious expression so far known to the human into a meta-religious age[628]". There are a number of cosmologists who claim, like Einstein, to believe in "the God of Spinoza", or who seem to imply such a belief

[628] Swimme & Berry, *op. cit.*, p. 255.

even when claiming positions of atheism or agnosticism or seeming to avoid the question of God altogether. The belief in Nature-nature leads to a pantheistic and panentheistic tenor in much of the writing, as we have seen, and it can be hazarded that this is one reason the Science & Religion field finds itself adopting the same type of romantic position on the ideal-real nature of the big bang universe. Similarly to Swimme, Davies holds that there is a kind of meta-law governing the laws we know which is something like a benevolent God who selected the laws of nature to facilitate maximal chances for the "emergence of genuinely novel complexity," "genuine openness in nature," and "intrinsic creativity" in nature, all of which result from the specific laws our observable universe seems to possess[629]. He is content to call this a new kind of teleology, but notes that it is laws-based, or laws-mediated: the creativity of nature "results from the inherently self-organizing potentialities of the laws of nature[630]".

This follows the same lines as the German romantics' pantheistic and panentheistic tendencies within their cosmological speculation; and just as in the Germans' case, it is difficult to foresee the implications for the valuing of the physical world as inherently positive or inherently negative. There is also, as in the German thinkers, the question of how the human being's status of embodying nature looking back at itself in a particular manner, with the special, mediating, moralizing role of Novalis's messiah or prophet of nature, influences the human's position relative to the rest of the living world.

As to the third question, "How must the world be for a moral being?", like the early German romantics, cosmologists essentially answer this: "merely *knowable*". Cosmologist Carroll thinks morality can be constructed with a view toward being "good people, get[ting] along with others, and find[ing] meaning in our lives[631]", aims he seems to take for granted as being compatible with his form of scientific naturalism which he wants to call "poetic" naturalism[632] in part because it allows for the construction of such forms of "goodness".

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[629] Davies, *op. cit.* ("Teleology"), pp. 95 – 96.

[630] Davies, *op. cit.* ("Teleology"), p. 96.

[631] Carroll, *op. cit.* (*Big Picture*), p. 21.

[632] Cf. above, in Chapter Three, and Carroll, *op. cit.* (*Big Picture*), pp. 15ff.

There is no further requirement made of the universe in order that these forms of goodness can be found beyond the naturalism which has placed us in our position of knowing it (as nature), and no immediate implication for a valuing of the physical world. Ethics is a side activity to be carried out in the margins of the main activity of knowing of what the world is. At the beginning of one chapter entitled "Constructing goodness," he asks, "So then, fellow humans. What kind of morality shall we construct[633]?". This approach is also echoed in the nature-first framing of ethics (nature as knowable, intelligible nature, that is) by Wilczek, where he writes that no one can "ponder the great questions … about the ultimate nature of reality, or its transcendent meaning, without first finding out what physical reality is[634]".

Carroll's position on knowing the physical world as nature, which can survive the infinite multiverse, is evocative of Pagels and Hölderlin in their perception they had located a transcendent life-principle both in themselves and in nature. This is a transcendence-seeking position, suggestive of a desire for immortality. Knowing even of the inevitable self-destruction of all entities, due to entropy over time, or faced with the non-existence of the universe, or the infinite replication of the self in the multiverse, something of a romantic belief in the ability for the human mind to join with nature and still survive remains. "We are the miracle, we human beings," for Carroll, because it is "wondrous and amazing how such complex, aware, creative, caring creatures could have arisen in perfect accordance with" the laws of nature; "Our emergence has brought meaning and mattering into the world[635]". This further Copernican-izing of our valuing of the world, this making the only requirement for value that we *know* nature, of course again only aesthetically conceals that there is still the "must" in operation – in the question "How must the world be for a moral being?" Though they paint it as "simply the way the world is," their "must" has been active in creating the world of their knowledge. With their morality linked with knowing, then the world must be intelligible, in order for human life to be moral. What the knowledge actually

[633] Carroll, *op. cit.* (*Big Picture*), p. 412.

[634] Wilczek, *op. cit.* (*Longing*), p. xiii, original emphasis.

[635] Carroll, *op cit.* (*Big Picture*), p. 431.

consists of, in terms of the ethical or values in and of the physical world and human existence, is fluid, as we will continue to consider in the final chapter.

Like the German thinkers we considered in the first chapter, the cosmologists are also interested in *re-joining* these three cosmological questions into one, seemingly in agreement with the early German romantic notion that Kant had finished the Enlightenment's work on damagingly tearing them apart *unnecessarily*. This, after all, is one important reason for and aim of the new mythology of reason. For the early German romantics, it relied on finding the reason in art; while for the cosmologists it relies on finding the art in reason; but in many ways, the overall ethical aim, and the underlying assumptions about nature intertwined with this aim, are in both sets of romantics the same. The scientists now widen still further, with their work, the German romantics' connections between religion and reason, intuition and analysis, beauty and truth, while working in the opposite direction (from science toward art, instead of from art and intuition toward science).

In the first iteration, steered by poets and philosophers, the goal was to make art and beauty as true as, and somehow intertwined with, causal and analytical reason about nature. In the hands of science, it aims to make science's form of truth as beautiful and value-laden (and emotional) as art's. Both forms of romanticism converged from opposite directions toward an image of nature as a self-sustaining auto-poetic set of lawlike unfolding-avenues[636].

Just as Humboldt assures the public that science only *enhances* the beauty of nature; and the logical empiricists of the Vienna Circle pursued the concept that science could greatly assist in matters of steering the development of culture and politics; now the cosmologists declare their one "nature" is all that is real. All forms of truth and beauty can be joined into one harmonious whole, the care and custody of which falls to the scientists who were the first to realize this to be possible, because they were the first to uncover the higher unified

[636] Arguably, again, very close to the image of reality Jacobi claims made him "recoil": Jacobi, *op. cit.* ("Letter to Fichte"), no. 23, p. 511. Jacobi writes: "what would a mere weaving of weaving amount to, from the animals below up to the saints above?—I declare that my reason, my whole inner self, flies into a rage before a representation of this sort, it shudders in horror and fright; I recoil from it."

reality of the one Nature-nature (which older thinkers, especially those from Spinoza onward, had presaged but never found the science to support).

Swimme directly mentions the split around 1700 between physical and traditional forms of cosmology, which had people begin to separate consideration of a universe "considered … 'out there,' " from "the concerns and feelings of humans on an obscure planet", celebrating that it can now begin to be reversed, because science has now begun to show "connections between the existence of life forms seeking a way to live a worthwhile life, and the dynamics at the beginning of time[637]". Swimme wants to arrive at a synthetic cosmology, one which combines "at least the scope of the questions common in traditional cosmology … with the factual investigations of scientific cosmology[638]", and combining history, with its human focus, and science, with its natural one. He claims the 20th century is "somehow failing in the fundamental role that we should be fulfilling – the role of enabling the Earth and the universe entire to reflect on and to celebrate themselves, and the deep mysteries they bear within them, in a special mode of conscious self-awareness[639]". Halmi wrote of the early German romantics that they sought a combining of the subjective and the objective in the new organicist paradigm, backed by a "universal and inherently meaningful symbolism[640]". We can see something similar in the cosmologists' new mythology program, where a unified kind of discourse (including but exceeding mathematical symbolism) is sought which can unify all three questions and their answers.

Conclusion

Already navigating a tension between their prioritization of seeking ever-closer contact with Nature-nature whose laws were thus treated as pseudo-history-generating (and nature's development as such only idealized), and the presentation of a single meaningful centralized universe story (including as a symbol of and a gateway to the new mythology project), the

[637] Swimme/Berry, *op. cit.,* p. 23.

[638] Swimme/Berry, *op. cit.,* p. 23.

[639] Swimme/Berry, *op. cit.,* p. 1.

[640] Halmi, *op. cit.,* p. 63.

enhancement of the talk of infinities after the 1970s placed additional pressure on the big bang cosmological history. Arguably these tensions have yet to be resolved by either a fuller articulation of a "new history" project or else a re-calibrating along more traditional Humboldt-ian romantic lines.

Considering big bang cosmologists as re-instantiating the early German romantic interest in the three questions outlined in the first chapter – "How is the infinite present in the finite?", "How must the world be for a moral being?", and "Where is God?" – begins to point toward the possibility that a somewhat limited environmental ethic vis-à-vis the physical world of our direct experience is all that can arise from the cosmologists' neo-romantic responses to these questions and their conviction, shared by the German romantics, that they could be joined into one. We will next turn to elaborating further upon these questions, including via returning to Jacobi's critiques of speculative philosophy of nature itself.

Chapter V

Big Bang Neo-romanticism: Challenges for locating the intrinsic value of the physical world

Introduction

We began this thesis with a consideration of two very different holistic depictions of "nature" and the human being's orientation within it. After showing important ways in which the big bang cosmology's "nature" arises as part of the scientists' new form of an early German romantic approach to ontology, epistemology, new mythology, and universal natural history, we are now in a stronger and more developed position from which to consider how and why this cosmological nature is relevant for the ecological crisis discourse.

In this chapter, I will first consider some prospective basic values of, or inhering in, the physical world as it is constructed and understood in romantic big bang cosmology. We have argued in Chapter Three that the talk of a new mythology in big bang cosmology should be understood as part of their neo-German romantic philosophy, and as having little to no capacity to generate a neo-traditional creation myth. The new mythology line of claims made by cosmologists thus cannot perform any of the same functions vis-à-vis locating ethics and values in the physical world of our experience which the creation myth may have been imagined to perform. We will expand below on this issue as well as considering additional aspects of how cosmology and its form of monism leads to a *de facto* completion of the physical universe as a subsidiary part or manifestation of nature, and leads to only a non-scientific physical world "of the gaps" (to adapt a term from Science & Religion).

We will consider whether Jacobi's critiques of philosophical naturalism may serve as an interesting way of interrogating the ethics and values of the big bang universe a little further, while also showing a potential link with the ecological crisis. Jacobi's discussion of nihilism gains prospective new relevance in light of the physical removal or conversion of considerable amounts of the world, and even whole worlds of other species (pushed toward or over the brink of permanent extinction), by the modern human being. So, too, does the "old" creation myth seem to be worth exploring as another counter-point to romantic science which would, in new mythology mode, over-write its approach to cosmology entirely. I will conclude with some gestures toward possible directions for future study and comparison.

The new mythology of big bang cosmology as a source of ecological values: A recapitulation of some problems

In our earlier discussions of big bang cosmology's new mythology project and its outcomes, we have already gestured toward some of its problems when turned to as a way of articulating intrinsic value in the physical world, and I will only seek to recapitulate them here briefly.

Cosmologists have been effectively claiming, for decades, that, as Swimme puts it, science's "story [of the universe] is the only way of providing, in our times, what the mythic stories of the universe provided for tribal peoples and for the earlier classical civilizations in their times[641]". As I have attempted to argue in earlier chapters, interpreting big bang cosmology as a romantic approach to and construction of the world allows us to argue against this position. The new mythology of big bang cosmology is effectively an updated, science-led version of the early German romantic concept of a *new* mythology of reason, and this bars any automatic transfer onto it of a creation myth's environmental ethical approach or way of centering a human in a cosmos (regardless of which type of normative value we are attaching to the traditional myth). In addition, the way in which old myths themselves are

[641] Swimme & Berry, *op. cit.,* p. 3.

addressed in the big bang discourse should be read with some caution, as the approach is shaped by a host of neo-romantic positions which overall arguably tend to Orientalize, minimize, or mis-read the "old" creation myth itself.

Turning to a consideration of values for the physical world which could potentially be detected in or derived from the big bang philosophy of nature, we can begin by recalling the ethical question from among our three cosmological questions addressed in the previous chapter: "How must the world be for a moral being?" As previously noted, the romantic answer is in both romantic projects, effectively: "knowable as a unified 'nature' and ultimately 'Nature' ".

To value the physical world primarily in this manner seems to place value out of reach of the physical world seen for itself, and can lead to exaggerated forms, in the cosmologists' case, of the tendency some critics see even in the German thinkers (cf. Chapter One discussion of critiques from Pnevmonidou[642] and Rigby[643]) to project the need of the subject to know onto the physical world itself in a form of world-building that is also destructive of the world in order to shield the self from what is radically Other. We can see this to some extent in Krauss's image of the physical world as a playground for the human mind. Krauss holds that while "there is no obvious plan or purpose to the world we find ourselves living in[644]", we can still find it a kind of scientific playground or site of intellectual fantasy and gratification. While cosmology may seem to "decrease our cosmic significance," in fact we can derive "our brief moment in the Sun" by learning and exploring "an exotic menagerie" of nature, with "laws and phenomena that previously seemed beyond our wildest dreams", seeking to "attempt to untangle the knotted confusion of experience and to search for some sense of order beneath"; once we discover it, it is "fascinating", and from it, we can "piece together a coherent picture of the universe on scales far beyond those that we may ever directly experience[645]". The imagery of clearing away what is tangled and knotted to find its higher

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[642] Cf. Pnevmonidou, *op. cit.*.

[643] Rigby, *op. cit.*, p. 39.

[644] Krauss, *op. cit.* (*Greatest*), p. 4.

[645] Krauss, *op. cit.* (*Greatest*), p. 6.

order, suggestive of the transcendent directionality of the cosmologist, also potentially has a physical correlate. Valuing the kind of knowledge that means piecing together a coherent picture of the whole, may also entail placing value in sheer "connectivity" and unity because they serve the ends of the subject who desires to know, rather than inhering in the natural world itself.

Another path to valuing the physical world is also referred to as the responsibility of the future new mythologists. In the new big bang romantic new mythology, there will come a next age full of those who can better integrate the scientific picture with art and with a newly enlightened form of religious practice, one which entails at a minimum not destroying the planet, and which in Swimme & Berry, for example, is called the age of the "Ecozoic", wherein "the human community … [has] become present to the larger Earth community in a mutually enhancing manner," in part through what he envisages as a celebratory taking-up of big bang cosmology in art, and even "ritual", such that the big bang is discussed in "poetry, music, and ritual throughout the entire range of modern culture, on a universal scale[646]". Echoing the new mythology and the new history discussed in the last chapters, this seems as though it is a kind of "new ritual," one not tied to any particular place or religion, and thus erasing "old" ritual and religion entirely and as such. But it is unclear how this would or could differ from learning the cosmic story according to science, while set to music, as it were. Since the future is determined there can be no definitive argument against this stance. But again, it is unclear whether and how this vision can locate value in the physical world itself, other than as the enabling ground for this new world to come which will effectively be devoted not to it, but to knowledge of it.

Because the new mythology is epistemological in quality and its entities are ideas, and not experiences (except experiences of ideas), it may also falsely render as *manipulable* the physical world which, on the whole and in the large, vastly dwarfs us. The new mythology, by making "nature" finally and most completely an idea, restores the leverage to the "I", which is then used by him in a project of *us* enchanting or infinitizing the physical world, including by elevating it to a certain kind of *nature.*

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[646] Swimme & Berry, *op. cit.,* pp. 3 – 4.

This entails more affirmation of a new, science-led version of the early German romantic directionality of transformative knowing of the physical world, as an elevating and revealing, a moralizing and a "good" we could bestow on it. "The world must be made Romantic," Novalis wrote[647]. Hölderlin thought nature must be *married,* and moralized: recall, "'Do you ask after men, nature? … They will come, your men, nature! A rejuvenated people will rejuvenate you too, and you will become as its bride[648]". The big bang cosmologist, similarly, presents himself as a revealer of hidden realities, one who elevates, infinitizes, and romanticizes, the visible, phenomenal world through science, including via elevating it into the "nature" which without him would remain hidden.

The whole project's *direction* may thus itself pose a problem for trying to locate value in the physical world itself, since it seems to still presume the human : physical world || higher : lower relative relationship to which it officially declares itself opposed. The physical world must be romanticized *by us;* we must intentionally author a new mythology of reason, with these elevating goals in mind; the inanimate world waits for us. The romanticizing dynamic itself, like the new mythology, cements us as both within and outside the physical world, in it sufficiently to know we can intuit its truths directly, even if to a limited extent; outside it sufficiently to be able to have the leverage upon it with our understanding that amounts to a transformation of it to match this higher kind of truth about it[s higher immaterial order and unity], and transform – even infinitize – ourselves as well through this knowing. In the "old" mythology this directionality is perhaps reversed, with nature not needing to "wait" for us, in order to be revealed as a subject. We will return to the question of the "old" mythology of nature below.

The new mythology of the cosmologists is so epistemologically-focused, so process-of-knowing driven, that when it turns to actually defending the reason for ecological awareness, either general perspectives must suffice from the almost hyper-romantic, hyper-Copernican "universal man" that "The Earth is a tiny and fragile world. It needs to be

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[647] Novalis, *op. cit.,* "Logological Fragments I" (1798), in *Philosophical Writings,* no. 66, p. 60. Also quoted in Chapter One.

[648] Hölderlin, *op. cit.* (*Hyperion*), p. 77.

cherished[649]"; or Gleiser's "We are precious because we are rare[650]", or else there is simply a re-statement of the findings of the scientific knowledge combined with some implication, never explained or justified, that *because* we have this knowledge our minds are of great value. At times it seems it is even this knowledge and knowing which must not face extinction, posing obvious problems for any extension of an ethic toward other species. After repeating his view that mankind must transition away from nationalism and tribalism to having species-wide loyalty (another regular trope in these texts, which seem to regard ties to a specific place or culture as another type of pre-Copernican fallacy), Sagan closes *Cosmos* thus:

> For we are the local embodiment of a Cosmos grown to self-awareness. We have begun to contemplate our origins: starstuff pondering the stars; organized assemblages of ten billion billion billion atoms considering the evolution of atoms; tracing the long journey by which, here at least, consciousness arose. Our loyalties are to the species and the planet. *We* speak for Earth. Our obligation to survive is owed not just to ourselves but also to that Cosmos, ancient and vast, from which we spring[651].

Novalis's "messiah of nature" role is here being declared to be in the hands of the scientist[652]. This nature can never vanish; it will be here even when we are not – this is part of the romantic belief – yet the mediating, prophesying human mind is still presented as being needed, in some way, by nature. It is not clear, however, how this ties to valuing the physical world in itself, except as a platform or setting on which the scientist can survive to contemplate this nature.

Similarly to Sagan and Swimme, Chaisson calls for a fusion of science, religion, and philosophy to develop a "worldly ethic" which calls for humankind to "embrace global

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[649] Sagan, *op. cit.* (*Cosmos*), p. 123.

[650] Gleiser, *op. cit.* (*A Tear at the Edge*), p. xvi.

[651] Sagan, *op. cit.* (*Cosmos*), p. 374.

[652] Novalis, *op. cit.* ("Notes"), no. 52, p. 8, also cf. Chapter One.

morality and planetary citizenship as a means to survival[653]". He calls for a transition to an eighth epoch, an "Ethical Epoch" which entails not only this merger but also a concomitant need for scientists themselves to think holistically and ethically. Yet, again, it is not clear beyond the knowledge itself why anything else is uniquely of value in the real physical world.

The new mythology at times also tends to focus on mind to such an extent that it furthers the already-transformative quality of its neo-romantic knowing to suggest the embrace of more technologies of change, as in the "Good Anthropocene" vision of a garden- and zoo-filled planet. Questioning what the elusive trigger must be for the "Good Anthropocene" to begin, Swimme & Tucker offer that "Perhaps the destruction" of the current "Technozoic" era (or Bad Anthropocene) "comes, at least in part, from an inadequate understanding of matter itself[654]". They would thus ask us to exert more, not less, transformative and knowing power over nature; "Perhaps human consciousness," they speculate, even has a "much larger significance within evolution than earlier philosophers could imagine," including a "deeper destiny" which is to "bring forth a new coherence within the planet as a whole, as the human community learns to align itself with the underlying dynamics of Earth's life[655]". These narratives blend easily into the rest of the "Good Anthropocene" vision of the ecological future – wherein human beings remain planetary-scale landscape managers – critiques by Sideris and others[656].

The same transformative, exchanging, emphasis is also displayed in Chaisson's view that "We have … with our star-stuff brains, become smart enough to ponder the material contents and myriad changes that gave us life. … we are more than products of the Universe, more than life *in* the cosmos. We are agents *of* the Universe – animated, cultural instruments commissioned by the Universe to study itself" and "we may eventually gain control of the resources of much of the Universe, redesign it to suit our purposes, and, in

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[653] Chaisson, *op. cit.*, p. 440.

[654] Swimme & Tucker, *op. cit.*, p. 103.

[655] Swimme & Tucker, *op. cit.*, pp. 65 – 66.

[656] Cf. Sideris, *op. cit.*, pp. 118ff., and cf. Chapter Two above.

effect, ensure for our being a sense of immortality[657]". This evokes Hölderlin's idea of modernity itself as a phase to be overcome (cf. Chapter 1), with added neo-romantic confidence that human beings are actually capable of doing so.

Another way in which big bang cosmologists' neo-romantic "nature" could conceivably be expected to entail an en-valuing of the physical world is via the aesthetic, beauty-seeking tenets they associate with their scientific praxis. As we noted in Chapter Three, this is part of their bid to inaugurate an era of new mythology: to demonstrate that their approach to and appreciation of nature already parallels or overlaps with the artist's. The idea of beauty could potentially be linked with ethics or values directed toward the physical world itself. Yet it is difficult to see how the cosmologists' beauty inheres in anything other than *nature,* and as we have been detailing, this is a separate, higher, unity, not identifiable with the physical world as we directly experience it. It is a kind of supreme inner principle of all things, an absolute which would be here even if the universe were destroyed. Since this "nature" can only be known and inferred via science, or in those moments in the physical world where intuition of the unity dominates, this kind of beauty seems to lie to some extent on a transcendent plane or in another, ideal "place".

When the cosmologist tries to evoke the beauty or art-like-ness of their "nature" they are often only trying to reinforce the scientists' *access* to something real, true, and *therefore* beautiful, and also espousing the new mythology view of their own praxis wherein a sign of "higher" or fuller knowledge is its ability to draw on the aesthetic and intuitive as well as the rational. Weinberg writes that "progress in physics is often guided by judgments that can only be called aesthetic," and that "the beauty in our present theories may be 'but a dream' of the kind of beauty that awaits us in the final theory[658]". Gleiser writes that "There is no greater misconception of science than the widespread belief that scientists are cold and insensitive" thinkers who "strip away all the beauty of nature by approaching it mathematically"; on the contrary, he writes, "the most important motivation for doing science … is … our fascination with nature and its mysteries", and "science is not so different

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[657] Chaisson, *op. cit.,* p. 442.

[658] Weinberg, *op. cit.* (*Dreams*)*,* p. 17.

from art, a process of self-discovery, as we try to capture the essence of ourselves and understand our place in the Universe. … there is poetry in physics … physics is a deeply human expression of our reverence for the beauty of nature[659]". These are quite common positions in the cosmological discourse, evoking Schlegel's form of "logical enthusiasm" and love of knowledge which he defends while ridiculing Jacobi's own form of it[660]. It locates beauty in the physical world only where it reveals itself after effort of knowing, a beauty derived from it having served, as it were, as a gateway to higher onward knowledge which, in the big bang writers more actively than in the German thinkers' more latent or conflicted manner, often carries the tinge of mastery.

In one of Sagan's tellings of the big bang in *Cosmos,* he shows how from "hydrogen atoms in the void" came stars, the Earth, life, and language; then "The ash of stellar alchemy was now emerging into consciousness. At an ever-accelerating pace, it invented writing, cities, art and science, and sent spaceships to the planets and the stars. These are some of the things that hydrogen atoms do, given fifteen billion years of cosmic evolution"; and while "all the creatures of the Earth" are designated as "the latest manufactures of the galactic hydrogen industry" he calls them simultaneously "beings to cherished[661]". But *why* we should value manufactures of this "industry", these blind processes, is not clear; the only *content* to the directive to cherish seems to lie in the knowledge itself, the aesthetic delight in accessing such knowledge. In recognizable new mythology mode, moreover, the authority of the scientist to express such a directive to "cherish" (particularly as connected with the semi-ironic presentation of the "galactic hydrogen industry") both implies a claim of the end of traditional sources of these types of directives (e.g. faith traditions) and the scientist's unwillingness to tarry long in any neo-traditional idiom or approach, returning soon to the new mythology presentation of nature and the scientist's transformative access to it.

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[659] Gleiser, *op. cit.* (*Dancing*), pp. xii – xiii.

[660] Cf. Behler, *op. cit.,* p. 384f..

[661] Sagan, *op. cit.* (*Cosmos*), pp. 368 – 370.

The ecological meaning of neo-romantic cosmological monism

Not coincidentally, in seeking a source of intrinsic value in the physical world derived from the universe-construction undertaken in big bang cosmology, we find ourselves re-tracing the steps of the manner in which we examined both romantic projects' understanding of the world as nature, and their situating of the knowing I within it. Beyond the issues with new mythology as a source of ecological ethics or sourcing intrinsic value in and to the physical world, we can here consider whether any values are to be found in the second stage of romantic world-building, the observance of a neo-Spinozan monism regarding all that is, and a tendency to attribute various qualities to this whole – often one which lies in tension with various limits to human knowledge set up or acknowledged in the "beginning" or "first" stage of their construction of nature.

What is potentially problematic about the monism of the cosmologists, in terms of their capacity to locate value in the physical world, is the way in which the physical world cannot be seen, or experienced, except as, for the cosmologist, it is understood to really be and only be their "nature". Biochemist and panentheist Arthur Peacocke reflects this when he affirms that the new cosmological "epic of evolution" has delivered us from any need to worry about a "god of the gaps[662]". The "god of the gaps" is considered a fallacy in Science & Religion, a false way of understanding how God would work in the natural world, were God real. God, the logic runs, could never be reduced to acting like an unknown law of nature, ready to be replaced when the law is finally discovered by science. This neo-romantic monism that potentially leaves only a "natural world of the gaps" helps explain why the "epic of evolution" has been critiqued by those who, like Sideris, seek to preserve what she calls wonder, or what others might call a degree of undetermined givenness, in the physical world of our direct experience. If the laws of *nature* come to be seen as the closest we can come to the ultimate reality, Nature-nature, which is the only, quasi-divine, substance which *is,* this prospectively brings with it a *way of seeing* which would make any

[662] Peacocke, *op. cit.*, pp. 140 – 141.

conception of the physical world that was not expressed in *terms* of this absolute into something like, again, a physical world of the gaps.

Sideris evokes this in part when she seeks to draw out what her concept of wonder, or virtuous sense of ignorance, requires us to adjust in our understanding of science, drawing on others like Vitek, Jackson, Rachel Carson, and the neurobiologist Firestein to emphasize that science should be "inverted" back to a truly open-ended seeking[663]. As we will discuss below, Jacobi's philosophy of non-knowledge may also cohere with (or go beyond) this group of thinkers on this question.

Overall, while there is a sense of devotion toward the one quasi-substance [Nature-nature], it has an unclear relevance to the question of locating meaning intrinsically in the physical world of our direct experience. Gleiser cites approvingly how "Einstein wrote that the devotion to science is the only truly religious activity in modern times[664]". Einstein himself, in a speech honoring Planck, said of Planck's "state of mind" which allowed him to do "work of this kind" that it was "akin to that of the religious worshiper or the lover" as its "daily effort comes from no deliberate intention or program, but straight from the heart[665]". Weinberg compares science to art, and love[666]. But the "nature" to which they are devoted, again is not only inextricably bound up with the practice of science itself, but science itself seems to receive most of the proof of devotedness, extending in a one-sided way the German romantic tendency to at times value their own art and thought above the physical world of our direct experience. Still, there is arguably more continuity than disjuncture with the German romantics in the cosmologists' pursuit of the Spinozan *amor dei intellectualis,* where the real object of devotion is the view of the unity itself. We can see this in statements like Sagan's that science allows us to experience "reverence and awe" because it

[663] Cf. Sideris, *op. cit.*, pp. 189ff..

[664] Gleiser, *op. cit.* (*Dancing*), p. xii.

[665] Einstein, *op. cit.* ("Principles"), p. 45.

[666] Weinberg, *op. cit.* (*Dreams*), p. 26.

offers us in the "very act of understanding … a celebration of joining, merging, even if on a very modest scale, with the magnificence of the Cosmos[667]".

The infinite multiversal, chaotic layer of nature which, as we have discussed, arises in the big bang cosmologists' speculative theories, places further potential pressure on valuing the physical world. It is hard to claim that being able to imagine the world as non-existent if a single chance variable were different leads us to value it. The cosmologists themselves moved away from tolerating this within the model by moving toward some kind of multiverse where, as Krauss writes, "we would be guaranteed … that some universe would arise[668]" that was our own. But while this satisfies the demands of the scientist, it is unclear what the ethics of the multiverse are vis-à-vis local physical worlds of our direct experience. The infinite multiverse concept has arguably not yet been developed to its full logical extension, but it is difficult to see how imagining that "everything that can happen, happens an infinite number of times" or that all subjects and things have infinite numbers of copies of themselves can lead to valuing local physical places or their inhabitants, seeing them as unique, or even seeing them as partaking of the same degree of reality as we might outside of an infinite multiverse conception.

The cosmologist as devotee to the one-substance with his desire to merge with it, to infinitize the human, sometimes also evokes a kind of desire to merge with the life principle of the universe, evocative of Herder's one force and Schelling's productive power of Nature. This can lead to an ethos of prioritizing a kind of sheer survival (or even auto-poietic replication). This can also combine with the anthropic principle becoming moralized as a kind of calculation that humans have a duty to remain alive; as where Rees holds that since the "odds could be so heavily stacked against the emergence (and survival) of complex life that Earth is the unique abode of conscious intelligence in our entire Galaxy", then "Our fate

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[667] Carl Sagan, *The Demon-Haunted World: Science as a candle in the dark* (New York: Ballantine, 1996), p. 29.

[668] Krauss, *op. cit.* (*A Universe*), p. 176.

would then have truly cosmic resonance,[669]" and therefore we must try to survive for the sake of the universe.

Sometimes this approach takes on the end of life on Earth as a future challenge to seed life on other planets. This is a life ethic, of a kind, but it is limited to human survival. Gleiser writes that "we need a new morality aimed at preserving life here and, one day perhaps, at spreading it across the cosmos[670]". He calls for humans to save life and "spread it across the Universe. This is our supreme mission as the minds of the cosmos[671]". Rees notes that the future man's knowledge must include how to achieve an extra-Earth option; "The wider cosmos has a potential future that could even be infinite. But will these vast expanses of time be filled with life, or as empty as the Earth's first sterile seas? The choice may depend on us, this century[672]". Chaisson writes that the billion years remaining before the Earth becomes "unbearably hot" and the Sun's five billion remaining, "leaves plenty of opportunity for intelligent life on Earth, should it endure … to undertake galactic engineering projects and other grand ventures literally out of this world[673]". But again, the motivating force for any such survival beyond Earth, must only be rooted to our ability to know; so this calls into question both whether other species are worth valuing (and spreading to other planets), and whether "any planet will do" for our purposes of survival, negating any need to value this one as such.

Even when the object of devotion leads scientists toward such negative ethical implications along the way, devotion to nature is still, dissonantly, clung to as its own reward, and thus becomes linked with these negative or non-values of the physical world of our direct experience. Weinberg famously wrote that "The more the universe seems comprehensible, the more it also seems pointless", and finds the only "solace", if not "in the fruits of our research" than "in the research itself"; he sees scientists "not content to comfort

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[669] Martin Rees, *Our Final Hour: A scientist's warning: How terror, error, and environmental disaster threaten humankind's future in this century – on earth and beyond* (New York: Basic Books, 2004), p. 157.

[670] Gleiser, *op. cit., A Tear at the Edge*, pp. 250 – 251.

[671] Gleiser, *op. cit.* (*A Tear*), p. 249.

[672] Rees, *op. cit., Our Final,* pp. 169f.; pp. 187 – 188.

[673] Chaisson, *op.cit.*, p. 437.

themselves with tales of gods and giants, or to confine their thoughts to the daily affairs of life", those who "build telescopes and satellites and accelerators, and sit at their desks for endless hours working out the meaning of the data they gather", as making, in their sheer effort to "understand the universe", "one of the very few things that lifts human life a little above the level of farce, and gives it some of the grace of tragedy[674]". Facing the Copernican view, even when daunting (and sublime), is "a point of honor", "a thin substitute for the consolations of religion, but … not entirely without satisfactions of its own", even if (and while) "Life … has been demystified[675]".

This is another Copernican aesthetic claim, regarding the ostensible non-anthropocentrism of the model. It further obscures, like all such Copernicanism claims, that it is a philosophical stance, and not a scientific one, to claim that we have achieved anything like a view totalizing enough to make it existentially daunting or sublime, just as in other times or in other writers it is presented as thrilling and sublime, or pantheistically joy-inducing. Claiming this view goes against wish-fulfillment uses, again, the Copernican aesthetic and the emotion of a kind of absurdism or existentialism to imply that we have really encountered the only possible view of the full physical universe. There is even at times an implication that humankind has a type of Copernican destiny we all must shoulder. Carroll, too, holds that "The universe, vast and impersonal, does not provide us with meaning, out there to be discovered; but by striving for authenticity in our actions we can create meaning for ourselves," moving from learning of the "fundamental intelligibility of the universe" to creating such meaning in human existence on our own[676]. What the value of the physical world is – including other species – remains unclear in these approaches where the Copernican perspective is associated with existentialism and at times with an unavoidable

[674] Weinberg, *op. cit.* (*First*), pp. 154 – 155.

[675] Weinberg, *op. cit.* (*Dreams*), pp. 260 – 261; pp. 245 – 246.

[676] Carroll, *op. cit.* ("Purpose"), pp. 307 – 308.

experience of despair by the thinking "I". It creates some uncertainty, at the very least, regarding the presence of a value for the physical world as such within these frameworks[677].

Krauss, too, locates the solace to be had from knowledge (cf. also Einstein above in Chapter Three) not in the physical world itself, but in the practice of science: he echoes Weinberg's view that science has played a role in "liberating the human spirit" from superstition and "ideologies of the most vicious sort", which is an ethical good[678], and makes it clear that his practice of this good is scientific knowing, or hunting "nature". And again, in true new mythology fashion, it remains future-directed: science is a form of "liberation" and "solace" especially *because* of this; that "the best parts of the story can yet be written": "Surely," Krauss writes, "this possibility makes the cosmic drama of our existence worthwhile[679]". Similarly for Davies the significance of the universe and of human beings themselves is humans' knowledge: "As far as we know," Davies says, "we're the only beings in the universe who can make sense of it all. That's really what gives human beings significance[680]". What this means for the value of other species or the physical world itself, then, is unclear.

Jacobi's gauntlet redux

In trying to fully consider all aspects of the ethics and values content of the neo-romantic scientific construction of nature, we have now ended up back where we began: at the first step of world-building, the basic ontological and epistemological framing which allows the neo-romantic speculation on the physical universe as nature to begin or to take place. Here is where, even if the cosmologist retreats from the more hyper-romantic, hyper-Copernican claims of the infinite multiverse- and mind-centered discourse characterizing cosmology of late, to a more conservative and more critical romantic position on his own theory, he still is

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[677] Romanticism and existentialism have similar viewpoints on existence and the absolute [view], in some ways; cf. e.g. Sebastian Gardner, "Sartre, Schelling, and onto-theology," *Religious Studies,* Vol. 42 (3), September 2006, pp. 247-271.

[678] Weinberg, *op. cit.* (*Dreams*), p. 190, p. 240.

[679] Krauss, *op. cit.* (*Greatest*), p. 301, p. 305.

[680] Davies, *op. cit.* ("A Touch"), p. 47.

left claiming a reality for at least some parts of his ideation of nature as a unity, and thus still can be critiqued by way of Jacobi. Jacobi, as we recall, lodged objections to speculative thought on nature which claimed even merely this much. By extending his critique and his argument for a philosophy of non-knowledge toward the scientific cosmologists, it may be possible to gain additional insight into the kinds of ethics and values with respect to the physical world which arise from the cosmologists' neo-romantic approach.

The main thrust of Jacobi's critique, we can recall from Chapter One, is that while we are gifted with a kind of intuitive awareness of the world, the moment we believe we can speculate on it we sever this intuition, and exile ourselves to a state in which we destroy the actual world in order to try to believe our ideas of reality hold true of what is. Per Chapter One, Jacobi was primarily concerned with being as the province of God – the first "Thou" via whom we grope our way toward articulable subjecthood, which is thus never an autonomous one. The speculative reasoning faculty of man—powered by aesthetic or intellectual intuition or not; powered by a careful study of nature or not – simply could not discuss being or real existence. The most important loss, for Jacobi, which speculation incurred was that it could never make contact again with the God we could know as a primordial "Thou". But the subject also lost the world as it really is, because it could never describe the world, either, in real terms, or as it really *was*, or what it required in order *that* it be.

In a philosophical novel written in 1792, Jacobi described the first step of this malpractice of thinking as the person who would speculate acting to "cut himself off violently from nature and his own being, through the most wanton misuse *of the faculty of arbitrary designation*, this two-edged sword of truth and falsehood", hazarding that there was no way to do so without violence to the self – he "must have seized his life by the root so to speak, in order to throw it from him[681]". One of the problems, for Jacobi, presumably in much speculative thinking, is that this step is never even adequately acknowledged. The German romantics, at the very least (partly due to Jacobi's influence, perhaps), often reflected their awareness of the potential problems this step entailed, even if they did not refrain from ideating, or

[681] Jacobi, *op. cit.* ("Edward Allwill"), numbered paragraph no. 316, p. 495.

intuitively glimpsing, nature as it really *is* and is *as a whole unity*, as a consequence. Big bang cosmologists, though they have revitalized the German thinkers' new mythology approach to knowledge, which elevates it, and which claims to find what Jacobi calls the "weaving of weaving" view of the world beautiful and ethical, do not seem to have absorbed or rediscovered the German thinkers' awareness and acknowledgment of this being-knowing tension.

What Jacobi argues, here as in the controversies discussed earlier, is that it is not only the ontological picture which is unable to be re-created, or re-completed, by the human understanding and description. There is also something uprooted and permanently disrupted ethically or in terms of values which can never be put back together through concepts. So in terms of the ethics and values of the natural world derived from the big bang cosmological universe model, we can use Jacobi to inquire whether we can ever restore or replace through reason, those invisible and intuited meanings and values we uprooted to begin describing and positing our physical universe as part of a single nature, a monistic whole ultimately identifiable with the absolute.

Environmental philosophers Campagna & Guevara hint at this question when they write that "the deepest issue – and real crisis—is that we do not have the concepts or language for expressing, or explicitly understanding, the intrinsic value of Nature; nor, therefore, for articulating its violation[682]". They write that while "Nature has a supreme value that (we believe) everyone recognizes in some way," it is a value "for which, when it comes to expressing it explicitly, the common terms and concepts available are inadequate, or at best proxies – or worse, the language of the 'enemy,', in inasmuch as what is commonly available to us is a language and philosophy of value that has been honed for centuries in an effort to clarify the value of *humanity*[683]".

Neyrat, too, holds that what we require is an "*ante*-humanist" awareness to be resuscitated. Lubarsky holds we must reconsider whether our entire sense of what beauty, as one

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[682] Claudio Campagna & Daniel Guevara, "Conservation in no-man's-land," in Wuerthner, George, Crist, Eileen, & Butler, Tom, eds., *Keeping the Wild: Against the domestication of Earth* (Washington, DC: Island Press, 2014), p. 59.

[683] Campagna & Guevara, *op. cit.,* p. 60.

example, *means*, might come from without, from the natural, physical, world, and likely in ways we do not even know how to articulate. "Nature, life, and beauty cannot be untangled", she writes, and the "philosophical attempt to do so has done great harm to the world[684]".

Jacobi's critique helps point these types of insights in the direction of cosmological speculation itself, and raises the question whether the West's use of speculative reason and science to philosophically conceive of nature in fields like cosmology, "even" if done in a neo-romantic mode originally, as it were, designed in part to overcome Jacobi's qualms over knowing the world, may have a unique kind of connection with the fact that human beings have become physical nihilists of a new, environmental type.

These questions are too extensive to fully develop here. It is worth framing as a question for onward development, also, what it may imply for scientific understandings of the natural world, and of the ecological crisis, if Jacobi's critiques have merit. Ultimately Jacobi's objection was not (just) an aesthetic and religious one which found the "weaving of weaving" rendering of a nature made of blind forces dissatisfying, but an objection to reason claiming to find something, anything, comprehensible or idea-like about, or "in", the real world as it exists. This has relevance for scientific views of nature in general, which can, even in registers like the new mythology of reason, or like that of the ethical exhortation of the biologists, only discuss what is occurring in the language of concept and reason.

The new mythology rendering of cosmological knowledge, even aside from any question over the ethics of its substance, is inadequate to address these questions, because the new mythology takes place, as it were, after Nature-nature becomes locked in as a monolithic name for that which really is, when what is needed to understand this key problem of nihilism, as these other scholars hint as well, takes place before this step. Jacobi's critique points to the importance of not neglecting to query this first stage, the various "null hypotheses", to borrow Kroupa's term (cf. Chapter Three), of world-construction, for their inherent potentially quite negative and even actively nihilistic ethics and values vis-à-vis the

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[684] Neyrat, *op. cit.,* pp. 55-56; Sandra Lubarsky, "Living Beauty", in *Keeping the Wild: Against the domestication of Earth*, Wuerthner, George, Crist, Eileen, & Butler, Tom, Eds. (Washington, DC: Island Press, 2014), p. 195.

physical world (with all its other species). If his critique is correct, then any speculative cosmology, no matter how much it is aestheticized as cultivating a positive value(s) for the physical world *within* its frame, can never lead to anything *other* than the nihilism, the removal of the real world in order to build it back with ideas of "nature", with which it began.

Jacobi's critiques are not incompatible with other approaches which would limit science. But his critique is valuable because of the way that he integrates fact and value in his own response, as well as pointing out how they are interwoven in speculative naturalisms. I.e., he arguably does not fall into the same errors he accuses philosophers of making, as some other critiques (including many linked with postmodernism) tend to do – claiming just as absolute a vantage point on reason and its products by claiming to replace their theory or rational explanation of the world with another equally totalizing idea. Jacobi's responding position, his philosophy of non-knowledge, holds simply that being cannot ever "appear as itself" in philosophical naturalism, and, moreover, that what does come to animate or characterize it is something much worse, a form of nihilism he was one of the first to delineate. Jacobi also highlights the extent, in this way, of the dissonance that can exist between the aesthetics of a "nature" construction created inside a model, and the nihilism of world-construction per se.

While Jacobi's arguments were theistically-inclined, there is arguably a good deal of value to be derived from extending his philosophy of non-knowledge into the domain of non-theistic environmental questions. Jacobi took Spinozism or any philosophy which sought to make of itself a full naturalism (or any other kind of "ism") on the basis of reason alone as genuinely holding itself able to replace God. We can extend his critique to the practice of representing to itself that it has replaced the real, physical world as well. The physical world is readily understandable as a part of what Jacobi was concerned about in his polemic on the radical externality and prior-ness of God. We are not sure what we destroy when we tear our lives out by the root; when we take our minds out of context and try to world-create from reason alone, nor can we ever discover it again from concepts made for and within this crafted monism. Jacobi opposes Spinoza with a kind of radical dualism of God and person; the early German romantics tried to combine them with a triadic way of thinking, triangulating mind,

nature/finite, and God/infinite, with the human mind always at the center of trying to mediate between them. But it seems not only is Jacobi's position (arguably) the stablest theistic position, but it is also the stablest non-theistically; and his dualism does not have to be a dualism in the God-person sense, but really only in the un-reason – reason sense, where the un-reasoned is preserved because it is the only part of the person that can address (as a plethora of Thous) the world which really is. This appears to be quite possibly a vital kind of heterogeneity to put back into our understanding of the physical world if we are to allocate it intrinsic value.

In addition to the problem of the real [pre-]removal of being, Jacobi's critique also sensitizes us to an even more "positive" form of nihilism potentially resulting from speculative romantic cosmology: the creations of "nothings". Jacobi held that the nihilism of the speculative world-builder did not cease at the level of arriving at a neutral result after having removed reality from view; the nihilism led to properties and weight being given to various place-holders where the infinite world we could not grasp, once was.

We have already touched upon the nihilistic aspects of the infinite multiverse insofar as it is potentially poised to challenge many standards of meaning in the individual life (including freedom) and in history of all types. In the context of Jacobi's critiques, the infinite multiverse, just like the German romantic creative chaos it resembles or re-instantiates in a far more literal way, can even potentially be seen as a positive, active *nihil* made by the mind such as Jacobi said would result from the human mind attempting to recreate the entirety of what is, using reason.

Jacobi wrote in his "Letter to Fichte" that the void or infinite outside the reasoned world could become an "infinite nothing, a *pure-and-total-in-and-for-itself* [685]" that is both a nothing, *and* something about which the "I" seems to know a great deal, and to which it appears to attribute a number of properties. He then reasons that he must be allowed to *counter* a philosophy entailing such "knowledge of the nothing" with his "philosophy of non-knowledge[686]". Since he has "nothing confronting me … except nothingness, and even

[685] Jacobi, *op. cit.* ("Letter to Fichte"), nos. 38 - 39, p. 519.

[686] Jacobi, *op. cit.* ("Letter to Fichte"), no. 39, p. 519.

chimeras are a good match for that," then he would not be "vexed" if Fichte, "or anyone else, were to call *Chimerism* the view I oppose to the *Idealism* that I chide for *Nihilism*[687]". What we posit, through reason, must be based on and return to nothing; this is his basic argument; ideas are not the *kinds* of things that are real. Extending this to the physical world, we see that the human being automatically risks nihilism, for Jacobi, if he insists on trying to directly *know* the world from the I-out, instead of *being in it* or *sensing* it as a plurality of Thous continually come in toward the I. The first is, again, is the kind of knowing of what really *is* which Jacobi finds impossible, in any case, over and above its character as a kind of mal-adapted thinking or malpractice of reason.

Jacobi writes in a well-known portion of the same Letter to Fichte, "God is, and is outside me, a living, self-subsisting being, or I am God. There is no third. Were I not to find God outside me, before me, and above me, so that I have to posit Him … then I am myself this so called being[688]." For Jacobi, God is/ I am God are the only two choices, and speculative naturalism only happens if, and after, someone has chosen the second. The subject inevitably next deduces or construes rationally some reason for theistic worship, and in rationalizing it, destroys it (this resembles the new mythology approach to religion, per above); and after banning devotion or adoration must aim for a "religion which is too pure" for Jacobi, and has "every appearance of a self-divinization[689]". (There is also some resonance between the idea of a "religion too pure", perhaps, and a new mythology of reason based on scientific cosmology and mathematical physics.) If we apply this approach to our relationship with the physical world, we can interrogate whether, if and when we refuse to posit a physical world, as really existing, and as potentially but not knowably really infinite, truly "*outside* me, *before* me, and *above* me", we are not thereby making ourselves into this really existing physical nature in its essence.

The nihilism question is important to engage with in this manner, in future work, if we are to join a consideration of the ethics of the neo-romantic cosmological philosophy of nature

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[687] Jacobi, *op. cit.* ("Letter to Fichte"), no. 39, p. 519.

[688] Jacobi, *op. cit.* ("Letter to Fichte"), no. 49, p. 524.

[689] Jacobi, *op. cit.* ("Letter to Fichte"), nos. 49 - 50, p. 524.

with the ecological crisis discourse. As noted above, it is not too difficult to define the ecological crisis as in part a situation in which a newly physical kind of nihilism (perhaps definitionally encompassing other kinds of nihilism as well) has come to pass. As Ceballos et al. state, "[H]umanity has come to pose an unprecedented threat to the vast majority of its living companions:" we are the agents of an "ongoing biological annihilation[690]". It is potentially possible, and would be a topic for future work, to carry Jacobi's critiques into a fuller study of the link between the current willingness of the human being to adopt and carry out this position of ecological nihilism with respect to the physical world – this literal refusal of its intrinsic being as well as its value – and speculative neo-romantic cosmology, despite its intertwined claims of a new mythology full of re-enchantment or romanticizing potential for human existence.

The issue of the potentially non-conceptual quality of the physical world continues to lead us, in considering the effects of seeking value and meaning in the physical world constructed by big bang cosmology, now, beyond neo-romantic world-building and its prospective links with various forms of physical nihilism, to other possible future areas for developing Jacobi's anti-romantic stance in conjunction with cosmological questions.

Old mythology versus new

Just as we have suggested above there may be a non-theistic, physical world-focused, counterpart to Jacobi's dilemma, so too does the creation myth emerge as one area of prospective focus of a post-romantic cosmology, should such be pursued or sought in light of the problems raised above with deriving the intrinsic value of the physical world from the big bang universe construction. While the old mythology is a refusal of the new mythology project of big bang cosmology, it does not require abandoning scientific realism or empiricism about its observations and calculations. It only seeks a different awareness of the physical world and our orientation within it, seeking to orient the human in full and not just as the wielder of the thinking I. There is an interesting overlap between Jacobi's line of

[690] Ceballos et al., *op. cit.*, p. 13596.

critique and the creation myth, even where we remain in a non-theistic frame: in a way, the creation myth stakes out the boundaries of reason itself in a way related to what Jacobi sought to do with his philosophy of non-knowledge.

A heterogenous nature, with heterogenous ideas of it and values for it, cannot survive in a new mythology framework. As we have been discussing, the monism of its Nature-nature quasi-substance is absolute, it is all of one weave, all one and ultimately One. Any permitted "nature of the gaps" is de facto already scientifically definable, even where "undiscovered". The creation myth delineates the types of things about which we can reason from the incomprehensible, by capturing the partial quality of the "cosmos" or order-for-us. The chaos of the creation myth is, arguably, not any version of the German romantic creative chaos, but closer to what was called the *apeiron* by the Presocratic philosophers: the beyond-reason or beyond-form, even the un-formable. The creation myth sets up the awareness in the human being of this chaos of actual exteriority, one which places its limits on the "I" to know, or to shape or order existence in the manner of world-building, via pointing out that cosmos-deciphering itself was granted to us in a way we cannot describe – not because reason cannot see itself or its own derivation from this whole, as the romantics would have it, but because it claims no whole in this sense at all. What the creation myth approach to nature does is anchor feeling and intuition at least in part to something which is never con-joinable with the rational, thinking "I" and has naught to do with this subject or *his or her* reason for positing chaos: it is rather occupied with chaos which is not experienced by the reason in any direct sense.

The creation myth can be seen as a way of being in nature, a way of experiencing it, and not a form of theoretical or conceptual thought, not a proto-philosophical argument. It allows for philosophical or causal reasoning while preserving an in-principle non-causal domain, the actually chaotic. It reverses the problematic *transformative* character of romanticism which exists, in both iterations we have considered, on so many levels: the desire to transform the self, the desire to reveal the physical world by transforming it into a single unified "nature" in which we fundamentally share, the desire to transform all of the human history and culture into a single planetary evolution, the desire to change all ways of knowing into a higher unified view – in an umbrella way, the desire to transform existence

by romanticizing the physical and finally by transcending it altogether by knowing it only as pure unity. The creation myth reverses the directionality of the romantic. The creation myth orients a more passive, receptive "I", conveying something of what the "I" receives *from* the physical world, including its only-partial and limited faculty of reason. The partiality of reason is, as Jacobi noted, absent from philosophical speculation, except as a challenge to be overcome. The creation myth allows the flow to resume in the other direction, from the world as it is, into ourselves. From the bounds of place, back into affection for and ties to that place in particular. From intuition of the world which is not tied to reason, into a *feeling of reason* not in the sense of an intuitive expansion of reason, but in the feeling of recognizing reason as a type of second, rather than first, form of awareness of reality.

The creation myth, which the new mythology project represents as quaint and naïve, potentially offers a broader definition of the physical universe through its inclusion of not-cosmos as well as cosmos. This permits the existence of the physical world to be taken as prior and as ultimate in arguably a complete way than the early German romantics allowed it to remain. The creation myth represents (or presences, or gestures toward) this pre-existence as the chaotic kind of being we cannot understand, penetrate, or ideate. It prevents a speculative cosmology from ever used as an ontological account rather than a descriptive one addressing a certain kind of cosmic or ordered aspect of this completely pre-existing world. The creation myth, again contrary to its portrayal in new mythology mode, involves not enchanting, but rigorously opposing, romantic or neo-romantic monism.

The creation myth, since it is not a conceptual system and not a text, but a story, can be ritualized, and the ritualization of the physical world is one prospective avenue to explore as a non-conceptual response to the ecological crisis. An understanding of the creation myth as ritual also points to the non-theoretical quality of the myth's manner of accounting for the natural world's existence. Armstrong compares "reading a myth without the transforming ritual that goes with it" to "reading the lyrics of an opera without the music,"

noting that "unless it is encountered as part of a process of regeneration, of death and rebirth, mythology makes no sense[691]".

Relatedly, the creation myth, or any myth of nature as a whole, is author-less not because we cannot force such stories into a romantic reading where they are nothing but symbolic poetry, but because they are indicative of a stance, a physical position, a place within nature, which quite possibly can only be developed when in direct sensory contact with the world as given, and not as converted or altered into conceptual and/or technological versions of itself. It is not a coincidence but a possible requirement that indigenous peoples have to preserve their presence in a certain physical place in order to preserve their myths; without the place, myth can become impossible.

Creation myths, with their specific ties to place, peoples, and cultures which resist the homogenization of the planet into one "planetary culture", are also valuable in that they challenge the construction of this planetary view, helping to reveal it as one more Copernican aesthetic move, one potentially just as destructive and world-replacing as every other Copernican claim about our own reasoning powers and refusal of all truly exterior and completely un-knowable reference points using an insistence that the subject can see from without, "as" Nature-nature. Swimme & Tucker claim that while they foresee a global role for *Journey of the Universe* it is "intended not to override or ignore these other stories, but rather to bring into focus the challenge of creating a shared future" and orient humans "with respect to our pressing questions: Where did we come from? Why are we here? How should we live together? How can the Earth community flourish[692]?" But if theirs is a neo-romantic new mythology, this claim of compatibilism is misleading. Sideris notes the conflict faced by the indigenous peoples who do not "experience themselves as existing in a chasm between an old story and a new story, as Thomas Berry's diagnosis uniformly assumes" nor do they "suffer from 'amythia' and meaninglessness. What they suffer from,

[691] Karen Armstrong, *A Short History of Myth* (Edinburgh: Canongate, 2005), p. 36.

[692] Swimme & Tucker, *op. cit.,* p. 5.

principally, is climate change and colonialism", which are not going to be addressed but may even be exacerbated by "a science-inspired story of the human-as-species[693]".

De-romanticized cosmology and the role of a scientific "nature" in ecological ethics

Sideris called the big bang cosmology's "Universe Story" format "powerless to critique planetary dominance[694]". By understanding it as a new form of German romantic philosophy of nature, and bringing some of Jacobi's critiques to bear (if in nascent ways), we have now gone further, and offered one way in which it is not only powerless to critique such dominance but may also contain or convey an enabling nihilism with respect to the natural physical world of our direct experience. In addition to this consideration of the philosophy of non-knowledge applied to physical cosmology and ideas of the physical world, and how the creation myth may offer one way to illustrate Jacobi's idea of reality and knowledge in non-theistic, more ecological terms, a third area for future research to be explored in light of the current study is how to then address or frame the big bang model and its findings.

A de-romanticized big bang cosmology requires only not utilizing the a priori philosophical commitments with which the scientists currently begin – or, at a minimum, returning to the common ground of Jacobi and the German romantics, that the job of the human knower vis-à-vis the world is to reveal it while remaining committed to a non-*reconstructive* view. I have raised the possibility of the creation myth as one way of joining Jacobi's insights into the inherent nihilism of any, even romantic, speculative "world-building" with the importance of the ante-ethical and ante-humanistic in understanding and valuing the natural world; as a potential way of tying Jacobi's philosophy of non-knowledge to a living practice. These steps all grope toward what will have to be developed in future work

[693] Sideris, *op. cit.,* p. 201.

[694] Sideris, *op. cit.*, p. 9.

regarding the way to move away from neo-romantic renderings of big bang cosmology without abandoning its scientific insights.

A more heterogenous world of the physical universe could emerge if the single Nature-nature with which all our awareness of the physical world must be congruent and coincident were able to be suspended. This could consist of creating a non-theistic stance of bracketing the universe of science within the physical infinite seen otherwise than as creative chaos or the set of all possibles, a stance we might call pan-en-chaos-ism or pan-en-apeiron-ism. This would establish the possibility that Jacobi's philosophy of non-knowledge would have a philosophical place-holder as well as an experiential one. It could seek to counteract the ways in which by equating it with something divine or even with God, panentheism divinizes human scientific knowledge while locking in any nihilism which may be inbuilt into its speculative universe, and establish that the physical world cannot be rendered a physical world of the gaps by human beings, just as it cannot be romanticized, elevated, or in any other way moralized by us. This concept would require much future work to flesh out and figure out ways of applying. Yet it seems that without something this radical, we will be left only with the romantic quest to derive infinite meaning from our own categories of "nature."

On the experiential side, a Jacobi-influenced philosophy of non-knowledge could also lead to new ways of approaching wilderness preservation. Rather than constructing wilderness in romantic or neo-romantic ways, a more Jacobi-ian influenced conception of wilderness could potentially be developed. Intact natural areas could be valued not as a romantically constructed locus of the sublime ruined by any touch of the human per se, over-writing past ways of inhabiting natural zones [695], but as a physical embodiment of the limits of human reason to describe, explain, or touch existence, including the existence of all other species. A more Jacobi-ian rendering of wilderness or intact wild places could potentially increase the ways available to us to discuss both why human beings need places like wild areas to

[695] Rigby, *op. cit.,* "Romanticism", p. 17, notes these and related concepts have interfered with understanding indigenous peoples' historical relationship with nature and landscape.

survive, and why they possess intrinsic value of their own, apart from human beings and our needs.

If the Jacobi-ian philosophy of non-knowledge is also congruent with a reconsideration of the creation myth, as suggested above, this could also feed back into a Jacobi-ian philosophy of wilderness as one involving a richer understanding of how and why indigenous lands require special protections from annihilation by other human beings as well as, at times, more recognition than is currently given to the issue of the dissonance between cultures and peoples who may still live within an "old" mythology framework, and scientific romantic practices carried out in a new mythological tenor.

Wilderness, or wild intact places, in the Jacobi-ian sense, could be conceived not as places free of human beings, either as visitors or those who stay; but as places which any humans should approach with openness to the potential real heterogeneity of being itself, as well as of other beings, approaching moreover not in the spirit of extractivism and resource use but in the spirit of recognizing them as part of our real experience of what really is, even potentially as a collection of Jacobi-ian "Thous".

In the significant quantity of areas on the planet where wilderness approximation is not possible or feasible, other approaches may be needed. The IPBES report calls, for example, for the rehabilitation of certain built-form and other urban and farmland practices, including how to make our cropland more biodiverse and "wildlife-friendly", and thus potentially more ethical, among various other "landscape-scale spatial planning" aims (including for taking care of designated protected area preserves) designed in part to counteract climate change in all areas of Earth and improve the living condition of humans and other species alike[696]. These approaches are important as well for both health of all species, and because they can serve to press back against the technological and industrial erasure of the human being's and the physical natural world's ability to co-experience one another, on however small a scale, as Thous.

[696] IPBES, *op. cit.,* cf., e.g., p. 467; 774; pp. 940ff; 704f.; p. 773.

It seems that panenchaosism about the natural world could support these Jacobi-ian reasons to preserve wild places in a manner which makes room for a perspective on reason as such. The philosophy of non-knowledge of nature could engage with wild places as those where we find the spatial equivalent of a gap, a buffer, between the selective and needed deployment of the systems of conceptual and quantitative reason and the rest of the fuller person, restoring the sense or the feeling of reason, and the ability to lay down, or delay picking up, its "two-edged sword".

The big bang model, for its part, simply needs to be, simultaneously to these efforts, understood and applied through any other lens than a neo-romantic one. Reading it more empirically, and not as insight into the standpoint of production of the one Nature, or as the basis for a new mythology of reason, is compatible with scientific realism. Speculation which tries to use our light-bound physics of our observable universe, as these become clear to us, as something definitive of a new quasi-religious monism may need to yield to a philosophy of non-knowledge which is more committed to the uniqueness and prior-ness to reason of the real existence of our physical world itself, and to elucidating, in a time of historical ecological crisis, the ways in which history and change can only ever come out of the world of existence, and our experiences within it, and not out of any new mythology of reason.

Conclusion

In the end, the neo-romantic cosmological project is one which places pressure on the human mind to unify itself and the physical world as one nature which can be thought; it refuses the problem of the separation of being and knowing, calling once again for a "Monotheism of reason and the heart" (cf. above, the "Oldest *Systemprogramm*" fragment). Jacobi's critiques, extended to apply to a non-theistic concern with the physical world, are useful ways to consider the counter position and what it might provide, what kind of gap of separation and protection it might place between the modern (Western) instrumental reason and the heart, as well as between the human as extractive, controlling force and the physical world.

In the panenchaosist view which might be developed based on Jacobi's positions, the neo-romantic "nature" of cosmology and associated scientific naturalisms would and could no longer be asked to provide the primary means for locating value in and of the physical world. This position could be strengthened by considering calls by Campagna & Guevara, Neyrat, and others to consider that what the physical world means to us, what its value is in itself and for us, is not the kind of thing we can ever form an adequate *idea* of, or re-build from concepts once we have, to use Jacobi's terms, "seized our lives (and others) by the root so to speak, in order to throw it from ourselves". Speculative neo-romantic cosmology, despite its efforts to "re-enchant" reason or the world, and despite its sometimes-acknowledgment of its own partial, in medias res character and respect for the final opacity-to-reason of questions of raw existence – acknowledgements which are less present in the neo-romantic cosmology than in the German romantic one – can arguably never escape or redress Jacobi's critique that they are founded on, and will always return to, a type of nihilism. One does not have to share Jacobi's exact conception of *what* (i.e., an awareness of God or an awareness of the physical real world itself) was seized and torn out by the root, to share his basic insight. This nihilism of unity points to the need to somehow re-conceive of the uni-verse as a heterogeneous one. There can be no bridging of what is chaos-to-us and what is cosmos-to-us; the romantic attitude only ceaselessly converts the former to the latter, removing its existence as it was before our arrival in front of it.

A panenchaosist view could assist in preserving distinctions like the fact-value or knowing-being one: more work would have to be done in future studies to develop this idea, using a more in-depth consideration of Jacobi's response to rationalism as a starting-point. Such a study could also seek to understand how creative heterogeneity persists in the physical world in the traditional creation myth formulation.

The philosophy of non-knowledge of the physical world could also potentially help furnish new philosophical support for the preservation of wilderness on the surface of Earth: wilderness seen not in the romantic but in the Jacobi-ian sense, seen as a place which rejects the vision of trying to place conceptual reason before experience. In such a mode we might intentionally approach wilderness as the physical reminder of our deep and radical

non-knowledge of being, a response which will arguably be required if and when we come to understand the ecological crisis as a problem of nihilism.

Conclusion: Toward a new Spinoza controversy

We began this thesis by noting the possible dissonance between two major discourses where "nature" as a whole is discussed in terms combining science with ethical and spiritual exhortations: the "Universe Story" cosmic evolutionary view of nature with its declaration of a re-enchantment imperative via its new mythology, and the biologists' and ecologists' depiction of the planetary view of nature in crisis as a direct result of human action.

After laying out the rudiments of how the natural universe is conceived philosophically in the early German romantic writers Schelling, Novalis, Schlegel, and Hölderlin, and how this philosophy remained influential in many domains of thought long after their philosophical movement had dispersed, we considered the ways in which the big bang cosmological discourse reiterated their same basic positions on Nature-nature and the situatedness of the human knower vis-à-vis this one quasi-substance. Using a variety of popular, semi-popular, and semi-technical texts from the big bang writers, we identified the cosmologists' neo-romantic critical monist ontology, disregard for formal philosophical categories or formal philosophizing as such, embrace of a new mythology of reason program, focus on the use of intellectual intuition, and a direct, "in medias res" style of philosophizing which avoided first principles or talk of being as such. While the German writers were clear at some points that while they were philosophizing nature in light of its ultimate grounding in and identity with the absolute, they could say very little about the absolute itself, or Nature considered as a unity, using conceptual reason, as well as not addressing being as such, the big bang writers preserve less of this nuance and reserve. While their approach remains arguably most coherent when understood as a neo-romantic one (such that ideally, the inability of the cosmologist to speak about being would be more openly acknowledged), the cosmologists at times slide toward a type of hyper-romantic position that their occupation of the "standpoint of production" of Nature itself (and/or nature understood as a product of Nature) can become somehow direct or literal, and even disembodied, or as though the

human mind could enter into Nature-nature and directly witness the production of nature by Nature.

In the last chapter, I re-interrogated the results of this neo-romantic construction of nature in cosmology for environmental ethics, extending into the non-theistic framework some of the critiques of Jacobi, one of the influences on the early German romantics. I found that Jacobi's philosophy of non-knowledge, with its critique of the inherent nihilism of world-building using speculative reason, points to a family of potential non-romantic responses to the ecological crisis, including gaining a different perspective on wilderness preservation.

Moving these conclusions back into the frame with which we began the thesis, what we can see is that in fact, there may be not only the obvious continuity between both the cosmological and the ecological "nature" that results from their both arising from interrelated sciences, but a more problematic continuity between them which flows from this. Despite cosmologists' efforts to join their scientific views of nature with an elevating, new mythological sense of cosmos with an associated "Ecozoic" environmental ethic, and the biologists' inclusion of explanations of and solutions for the ecological crisis, delivered in an ethical voice, qua scientific accounts both contain the underlying vulnerability of using reason to reconstruct imagined futures for the human being in which reason has finally accomplished the type of rebuilding of our connection with the world as it really is, which Jacobi holds to be the more impossible the more we rely on the constructions of our reason over our experience of the world as a Thou.

Sometimes, this convergence between the new mythological approach of the cosmologists and the imagined future in the planetary (biologists') view is made quite patent from the biologists' side, as in the writings of influential conservationist and biologist E. O. Wilson, with his open continuation of the cosmologists' new mythology approach. In his work *Consilience,* Wilson claims "There has never been a better time for collaboration between scientists and philosophers", although it is *science* which "offers the boldest metaphysics of the age" which "gives ultimate purpose to intellect", and "promises that order, not chaos, lies beyond the horizon[697]". While "People need a sacred narrative", Wilson claims, it now

[697] Edward O. Wilson, *Consilience: The unity of knowledge* (New York: Vintage, 1999 [1998]), pp. 12 – 14.

must “be taken from the material history of the universe and the human species”; if only the cosmological “evolutionary epic” can be “retold as poetry” it is “as intrinsically ennobling as any religious epic,” because “Material reality discovered by science already possesses more content and grandeur than all religious cosmologies combined[698]”.

At other times, this problem of proximity to the cosmologists’ philosophy of nature is more implicit. Nowhere, however, even in those approaches to the planetary future which may seem less speculatively and neo-romantically conceived, can we see either awareness of the knowing-being tension, or awareness of the potential connection between world-building and nihilism, appear.

All this suggests, again, that the preservation of natural places and all species (including humankind) may be better served by embracing or at least exploring a philosophy of non-knowledge of nature concurrent with a de-romanticized reading of cosmology (and ecology). A philosophy of non-knowledge need not be linked with theism, nor with nature mysticism, nor with anti-realism or strict instrumentalism regarding science. It only requires more securely foregrounding the physical world as a real source of exteriority (in terms of its being) which cannot be undone using “Copernican” re-positionings of the subject. It requires foregoing choosing to begin cosmology with *a priori* monism regarding what really *is*. It requires not building the neo-romantic cosmos as part of a single Nature-nature, and instead exploring ways in which we might seek a sense of cosmos with the physical world immediately around us, within an acknowledgment of the potentially heterogeneous (as opposed to monistic) quality of being – being which must be experienced rather than speculated upon, in order to be seen as it really *is,* and not be destroyed. What this may require is not any continuation or expansion of a romantic poetic-scientific-symbolic view focused on unity, but a more circuitous and immersive –even divided and baroque – approach to the world of our direct experience. Allowing the local world to remain baroque and impenetrable, of course, has an obvious spatial and ethical corollary of minimizing human removal of the ability of other “Thous” to survive.

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[698] Wilson, *op. cit.,* p. 289.

For Beiser, the underlying crux of the Spinoza controversy turned on a Jacobi-ian question: "Why should we be loyal to reason if it pushes us into the abyss[699]?" Again, the stakes then were humanistic ones: reason was beginning to "fail" religion, the state, and morality. If there is perhaps a sense in which the West has still never settled this question, and if we are again in a time of (now eco-nihilistic) crisis, while neo-Spinozan and neo-romantic influenced ideas are likewise on the rise, it could be that we are moving toward a new iteration of the Spinoza controversy. This time, an even wider crisis of the authority of reason presents itself: to the humanistic stakes, which still exist, has now been added the ultimate definition of the abyss: extinction of the entire human project and species, wrought not through an external event like a natural disaster, but through our own rational exploitation of the Earth.

These conclusions, and delineation of such directions for future debates, have led us some distance from the predominant way of reading scientific cosmology in Science & Religion. But perspectives may be shifting toward a preparation for a serious questioning of the proper use of reason. The ecological crisis seems bound in many ways to eventually thrust onto human beings once again, perhaps in the form of environmental stress and even collapse, awareness of the radical exteriority to speculative reason of the physical world that really exists, a world most or many have forgotten how to address as Thou. In this unfortunate sense Jacobi's may even end up being more of a philosophy of the future age than either the German romantic or the neo-German romantic new mythology of reason.

[699] Beiser, *op. cit., Fate,* p. 80.

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