



University of Pennsylvania
ScholarlyCommons

Publicly Accessible Penn Dissertations

2022

Fragments Of The Concrete: Ecology And Technical Media In German Romanticism

Bryan Norton
University of Pennsylvania

Follow this and additional works at: <https://repository.upenn.edu/edissertations>



Part of the [Comparative Literature Commons](#), [German Literature Commons](#), and the [Philosophy Commons](#)

Recommended Citation

Norton, Bryan, "Fragments Of The Concrete: Ecology And Technical Media In German Romanticism" (2022). *Publicly Accessible Penn Dissertations*. 5628.
<https://repository.upenn.edu/edissertations/5628>

This paper is posted at ScholarlyCommons. <https://repository.upenn.edu/edissertations/5628>
For more information, please contact repository@pobox.upenn.edu.

Fragments Of The Concrete: Ecology And Technical Media In German Romanticism

Abstract

This dissertation investigates how German romantic speculation concerning the possibility of constructing a perpetuum mobile sheds light on the central role played by technical media in the relationship between politics, poetics, and the life sciences around 1800. Focusing on the figures of Novalis, Schelling, Goethe, and Hölderlin, the project traces the contours of a discursive shift in the romantic reception of what Immanuel Kant calls the “technic of nature,” a concept Kant employs as a heuristic device for explaining the appearance of self-motivated activity in nature. While for Kant, this term refers to the ways internal forms of human cognition lead the observer to perceive a distinction between the autotelic activity of organic life and events determined by mechanical causality, for Kant’s romantic readers, the ‘technic of nature’ comes to signify a reciprocal mode of material relationality between humans and nature that combines organic and mechanical processes. This relational, exteriorizing comportment towards the making of technical objects and natural knowledge, what the philosopher of technology Gilbert Simondon calls mechanology in his overlooked engagement with romanticism, becomes the basis for a series of thought experiments concerning perpetual motion which seek to develop a negentropic ecology of spatial relations for romantic poetics and nature philosophy.

Degree Type

Dissertation

Degree Name

Doctor of Philosophy (PhD)

Graduate Group

Comparative Literature and Literary Theory

First Advisor

Catriona MacLeod

Keywords

German Romanticism, Kant, mechanology, negentropy, perpetuum mobile, Simondon

Subject Categories

Comparative Literature | German Literature | Philosophy

FRAGMENTS OF THE CONCRETE: ECOLOGY AND TECHNICAL
MEDIA IN GERMAN ROMANTICISM

Bryan Nelson Norton

A DISSERTATION

in

Comparative Literature and Literary Theory

Presented to the Faculties of the University of Pennsylvania

in

Partial Fulfillment of the Requirements for the

Degree of Doctor of Philosophy

2022

Supervisor of Dissertation

Catriona MacLeod

Professor in the College and the Department of Germanic Studies, University of Chicago
and Adjunct Professor of Germanic Languages and Literature

Graduate Group Chairperson

Emily Wilson, Professor of Classical Studies

Dissertation Committee

Warren Breckman, Professor of History

Adelheid Voskuhl, Associate Professor of History and Sociology of Science

Leif Weatherby, Associate Professor of German, New York University

Gabriel Trop, Associate Professor of German, University of North Carolina at Chapel
Hill

To my father, who parted too soon

ACKNOWLEDGMENTS

A vast network of advisers, scholars, and friends have helped bring this dissertation to an unexpectedly swift completion. First and foremost, I would love to thank my inimitable *Doktormutter* Catriona MacLeod for her unwavering support, in addition to my “Penn Chair” Warren Breckman, who has been there from day one. I also want to thank my committee members, Adelheid Voskuhl, who took the time to introduce to me an entire new field of research in a short time period, Leif Weatherby, whose eyes lit up when I muttered the words *perpetuum mobile*, and Gabriel Trop, who is always unerringly honest. Another major source of support has been Roland Borgards at Goethe Universität, Frankfurt, whose hospitality and generosity made for a wonderful research year in 2019-2020. Others who have contributed through feedback, commentary or other forms of support include Joseph Vogl, Margaret Strair, John Smith, Peter Gilgen, Eva Geulen, Anne Bohnenkamp-Renken, Stefan Boernchen, Claudia Liebrand, Yuk Hui, Clark Muenzer, Bryan Klausmeyer, Ian Fleishman, Antje Pfannkuchen, Ilinca Iurașcu, Uwe Wirth, Sean Franzel, Andree Hahmann, and Lars Friedrich. This project would have never been possible without generous institutional support from a variety of sources, including the Fulbright Foundation, the Steuben-Schurz Gesellschaft, the German Academia Exchange Service (DAAD), the Hans Dämmrich Stiftung, the Jusserand Stiftung, and the “Aktuelle Perspektiven der Romantikforschung” Research Network in Frankfurt. Last but far from least, I want to thank Holly, who has provided me with unspeakable amounts of joy.

ABSTRACT

FRAGMENTS OF THE CONCRETE: ECOLOGY AND TECHNICAL MEDIA IN GERMAN ROMANTICISM

Bryan Nelson Norton

Catriona Macleod

This dissertation investigates how German romantic speculation concerning the possibility of constructing a *perpetuum mobile* sheds light on the central role played by technical media in the relationship between politics, poetics, and the life sciences around 1800. Focusing on the figures of Novalis, Schelling, Goethe, and Hölderlin, the project traces the contours of a discursive shift in the romantic reception of what Immanuel Kant calls the “technic of nature,” a concept Kant employs as a heuristic device for explaining the appearance of self-motivated activity in nature. While for Kant, this term refers to the ways internal forms of human cognition lead the observer to perceive a distinction between the autotelic activity of organic life and events determined by mechanical causality, for Kant’s romantic readers, the ‘technic of nature’ comes to signify a reciprocal mode of material relationality between humans and nature that combines organic and mechanical processes. This relational, exteriorizing comportment towards the making of technical objects and natural knowledge, what the philosopher of technology Gilbert Simondon calls *mechanology* in his overlooked engagement with romanticism, becomes the basis for a series of thought experiments concerning perpetual motion which seek to develop a negentropic ecology of spatial relations for romantic poetics and nature philosophy.

Table of Contents

ACKNOWLEDGMENTS..... iii

ABSTRACT iv

1. Introduction (Notes for a Romantic Mechanology)1

2. Mechanology as political ecology: Novalis’s living encyclopedics19

3. Between function and figuration: machine and organization in
Schelling’s *World Soul*.....54

4. Being as *Poesis*: Hölderlin’s Paratactic Ecology92

5. Goethe’s Technics of *Antizipation*: Negentropy and Futurity.....126

6. Coda149

Bibliography151

1. Introduction (Notes for a Romantic Mechanology)

Novalis and the ‘mechanical turn’ in German romanticism

In a striking entry to his *Notes for a Romantic Encyclopedia*, the German romantic writer Novalis suggests that the novice “may not yet reason. [S]he must first must become mechanically adept, then [s]he can begin to reflect.”¹ Before beginning to engage in reason or serious reflection, the sort of conceptual activity most readily associated with Romantic writings, Novalis urges his readers to engage in the material, technical specificities of mechanical knowledge. The Romantic subject “must become a complete and total self-tool,” he writes elsewhere.² Scholars working in media theory and cultural studies may detect hints of the late Friedrich Kittler’s plea for humanities students to turn their back on the traditional lecture hall and pick up computer programming in these utterances.³ On this view, theoretical speculation is dead on arrival if it is not the product of specialized technical expertise. Indeed, Novalis’s use of terms such as the self-tool, the *Selbstwerkzeug*, contain concrete references to specific technical artefacts, showcasing the expertise he would have acquired while studying with the celebrated geologist

¹ NS III, 245. Nr 47: “der Lehrling darf noch nicht raisonirren,“ he writes. “Erst muß er mechanisch fertig werden, dann kann er anfangen nachzudenken.” References to Novalis’ work are from *Novalis Schriften: die Werke Friedrich von Hardenbergs*, ed. Paul Kluckhohn and Richard Samuel (Stuttgart: Kohlhammer Verlag, 1960-1988) and will be composed according to the above reference: *NS (Novalis Schriften)* followed by volume in Roman numerals, then by page number and, when available, passage number in Arabic numerals. Translations are my own.

² NS III 297. Nr. 321: “Mensch[en]L[ehre]. Der Mensch soll ein *vollkommenes* und *Totales Selbstwerckzeug* seyn.“

³ Friedrich Kittler, “There Is No Software,” in *The Truth of the Technological World: Essays on the Genealogy of Presence*, trans. Erik Butler (Stanford: Stanford University Press, 2014), 219 – 229. For more on this, see Kittler’s “Towards an Ontology of Media,” in *Theory, Culture & Society* 26, no. 2–3 (March 2009): 23–31, <https://doi.org/10.1177/0263276409103106> and Nicholas Gane’s essay, “Radical Post-Humanism: Friedrich Kittler and the Primacy of Technology,” *Theory, Culture & Society* 22, no. 3 (June 2005): 25–41.

Abraham Gottlob Werner and working as a salt assessor in the Freiberg mines.⁴ This understanding of the term mechanics and the priority given to the concept by Novalis, however, is also indicative of a larger seismic shift on the order of the romantic concept of the mechanical. Novalis is arguing for an understanding of mechanics that provides the material grounds for stabilizing post-Kantian ontology. Likewise, Friedrich Hölderlin suggests that poets embrace what the Greeks called *mechané* (μηχανή), one of a plurality of processes “through which the beautiful is brought forth.”⁵ It is through this modified and non-determinative understanding of mechanical activity, we will see, that Romantic writers like Novalis and Hölderlin seek to provide a material, technical *a priori* that serves to ensure and maintain the subject of Kant’s *sensus communis*. Such stability is not provided by the transcendental self-positing of Fichtean idealism, but by a material, technical externality capable of mediating relations between the subject and its environment. Statements from Novalis, Hölderlin, and others can be seen to fulfill what the philosopher of technology Bernard Stiegler has referred to as the need for a technical *a priori* in the wake of Kant’s project that would ensure the smooth functioning of judgment, while establishing grounds for a functional and intersubjective *polis* of conjoined interests.⁶ Without any sense of technical externality for Kantian critique, there is no way for the subject to connect practical reason’s need for a “thing in itself,” which

⁴ Jocelyn Holland’s work is extremely useful in this regard. See “The Poet as Artisan: Novalis’ Werkzeug and the Making of Romanticism,” *MLN* 121 (2006): 617–30 and “From Romantic Tools to Technics: Heideggerian Questions in Novalis’s Anthropology,” *Configurations* 18, no. 3 (August 13, 2011): 291–307, <https://doi.org/10.1353/con.2010.0021>.

⁵ HSA V: 195.

⁶ This is indeed the central claim of *Technics and Time 3*. See Bernard Stiegler. *La technique et le temps 3. Le Temps du cinema et la question du mal-être* in *La technique et le temps*. (Paris: Fayard, 2018), 583-842. Also see his more recent essay on “Kant, Art, and Time,” *Boundary 2* 44, no. 1 (February 1, 2017): 19–34, <https://doi.org/10.1215/01903659-3725845>.

grounds ethics and morality, with the metaphysical impossibility such dogmatism would present for theoretical reason as it deals with epistemology and its relation to natural knowledge. Politics thus becomes unmoored from epistemology, with natural, empirical knowledge possessing nothing but a tentative link to aesthetics and morality.⁷

What we will be calling Romantic mechanology, after Gilbert Simondon, aims at addressing just this set of issues that seem so unavoidable for poetry and philosophy in the wake of Kant. Scholars of Romanticism have long noted the crisis inaugurated by the recognition that the faculty of judgment appears at an impasse in the third *Critique*, as Kant's romantic readers proved ultimately dissatisfied with the *deus ex machina* of Kant's regulative, reflective judgments.⁸ These unique types of judgment were inserted into the "Critique of Teleological Judgment" in order to tidy up the mess of dealing with the contingencies that arise when philosophy deals with art and organic life. Post-Kantian Romanticism, however, has been in many ways largely understood as an attempt to create

⁷ Kant, of course, believed to have found a solution through the introduction of judgments that were both "reflective" and "regulative" in the critique of teleological judgment, but many of his Romantic readers were less than convinced. For more on this type of judgment in Kant, see Paul Guyer's essay on "Kant's Principle of Reflecting Judgment in Guyer (ed.) *Kant's Critique of the Power of Judgment: Critical Essays*. (London: Rowman & Littlefield, 2003), 1-49 and Chapter 9, "Life" in Michel Chaouli's recent *Thinking with Kant's Critique of Judgment* (Cambridge, Mass: Harvard University Press, 2017), 243 – 67. Also see paragraphs 67 – 70 in the Critique of Judgment, A:292/B296 – A:312-B308. For analysis of the impact on romantic aesthetics, see Manfred Frank, *Einführung in die frühromantische Ästhetik: Vorlesungen*. (Frankfurt am Main, Suhrkamp: 1989).

⁸ Perhaps the most influential diagnosis of this 'Kantian crisis' for Romanticism can be found in Philippe Lacoue-Labarthe and Jean-Luc Nancy's *L'absolu littéraire: Théorie de la littérature du romantisme allemand* (Paris: Seuil, 1978). More recent attempts at coming to terms with this crisis can be found in works by Frederick Beiser, Dalia Nassar, Manfred Frank, and Leif Weatherby. See Frederick C. Beiser, *The Romantic Imperative* (Cambridge: Harvard University Press, 2006); Manfred Frank, "*Unendliche Annäherung*": *die Anfänge der philosophischen Frühromantik* (Berlin: Suhrkamp, 1997); Dalia Nassar, *The Romantic Absolute: Being and Knowing in Early German Romantic Philosophy, 1795-1804* (Chicago: University of Chicago Press, 2013), and Leif Weatherby, *Transplanting the Metaphysical Organ: German Romanticism Between Leibniz and Marx* (Oxford: Oxford University Press, 2016).

alternatives to the dissatisfying, tentative status of the Kantian solution.⁹ Of course, the suggestion that mechanics offers a material solution to this crisis also requires thinking beyond prevailing assumptions about mechanics around the turn of the nineteenth century, where mechanics was still largely confined to the Newtonian paradigm of *mechanica rationalis*.¹⁰ This bilateral view separates mechanics into two spheres: theoretical knowledge gained from observation and the practical application of laws derived from such knowledge. Novalis and Hölderlin, for their part, offer a much more experimental project that extends into poetry, philosophy, and reflections on biological life. In Novalis's view, mechanics reveals first and foremost a range of technical, epistemic, even aesthetic possibilities that open out through the sensory apparatus onto the realms of nature, politics, and aesthetics. The subject "understands how to bring about a world," he writes, "the only thing that is missing is the proper apparatus, the proper fitting of his sensory tools."¹¹ Such "tools arm the human."¹² This requires what might be called an *ordo inversus* on the prevailing understanding of mechanics.¹³ Rather than a

⁹ For more on the role theorizations of contingency plays in critical discourse after Kant, see Markus Gabriel's *Transcendental Ontology: Essays in German Idealism* (New York: Continuum, 2011) and Yuk Hui's recent *Recursivity and Contingency* (London: Rowman & Littlefield International, 2019).

¹⁰ This view can be seen most clearly in the entry for "Mechanick" in Christian Wolff's *Vollständiges mathematisches Lexicon*. Wolff divides mechanics into two spheres, the first theoretical, the other applied. He describes mechanics first as a "Mathesis impure siva mixta, welche die Größe besonderer in der Natur vorkommender Dinge erweget und ausmisset," and then as „Mathesis practica," which applies the findings of this observational "mathesis impure" to the construction of tools and machines. Cf. Wolff, 871 - 872. This bilateral view of mechanics can also be found in other prominent eighteenth-century lexicons, such as the *Zedler Lexikon* and Adelungs *Grammatisch-kritisches Wörterbuch der hochdeutschen Mundart*.

¹¹ NS II, 453: 88: "Man kann wohl sagen, der Mensch versteht eine Welt hervorzubringen, es mangelt ihm nur am gehörigen Apparat, an der verhältnißmäßigen Armatur seiner Sinneswerkzeuge."

¹² NS II, 453: 88: "Werkzeuge armiren den Menschen," he writes. "Man kann wohl sagen, der Mensch versteht eine Welt hervorzubringen, es mangelht ihm nur am gehörigen Apparat, an der verhältnißmäßigen Armatur seiner Sinneswerkzeuge."

¹³ The *ordo inversus*, an ontologized form of irony, represents a figure of thought conducting an ontological inversion, whereby the idea presents itself in inverse fashion effectuating a shift in meaning. Manfred Frank and Gerhard Kurz often use this term in reference to romantic writings from Novalis and Hölderlin, among others. See their co-authored essay "Ordo inversus. Zu einer Reflexionsfigur bei Novalis, Hölderlin, Kleist

top-down operation in which theoretical knowledge gained from passive observation determines machinic operations, the technicity of these operations arise coevally with natural observation. Mechanics thus becomes embedded in natural-scientific and philosophical practices that are simultaneously experimental and concrete. Formulas are now the “result of a completed scientific universal-machine,” Novalis writes, a machine which would constitute now “Nature or Chaos.”¹⁴

Nature itself, when properly understood, is a technical constellation of hidden material operations. It is up to Romanticism to tap into these hidden resources and to experiment with the unforeseen possibilities opened up by this sort of thinking. Mechanics “lives from perpetual motion,” Novalis writes elsewhere in the *Notes for a Romantic Encyclopedia*, “and at the same time seeks, as its highest problem, to construct a *perpetuum mobile*.”¹⁵ This statement, while citing the Kantian concept of *Konstruktion*, which forms the basis of the relationship between form and matter in the transcendental aesthetic, also framing the ways in which the subject perceives the motion and rest of natural objects in Kant’s natural philosophy, presents a wildly utopian vision for Romanticism: all activity now, whether it is aesthetic, political, or technical, aims at the synergistic relationality of a concrete *perpetuum mobile*.¹⁶ “Future doctrine of mankind,”

und Kafka” in *Geist und Zeichen: Festschr. für Arthur Henkel zu seinem 60. Geburtstag*, ed. Anton Herbert (Heidelberg: Winter, 1977), 75 – 97.

¹⁴ NS III: 91: „Instrumente und Apparate sind *reale* indirecte *Formeln*. *Maschinen sind Formeln*—das Resultat einer vollständigen wissenschaftlichen Universalmaschine würde eine Natur, oder ein Chaos sein.“ NS II, 453: 88.

¹⁵ NS III, 296: Nr. 314: “So lebt eigentlich die Mechanik vom Perpetuo mobili—und sucht zu gleicher Zeit, als ihr höchstes Problem, ein *Perpetuum mobile* zu construiren.“

¹⁶ In Kant’s terminology, the construction of a concept [*Begriff*] means the *a priori* presentation [*Darstellung*] of its corresponding intuition [“die ihm korrespondierende Anschauung”]. See paragraphs 1-7 in the *Kritik der reinen Vernunft* (A:17/B:31 – A:41-B:58) and Kant’s “Vorrede” to the *Metaphysische Anfangsgründe der Naturwissenschaft*. Konstantin Pollock’s commentary is also very illuminating. See the introduction to Immanuel Kant. *Metaphysische Anfangsgründe der Naturwissenschaft* (Hamburg: Felix

Novalis writes, “everything that is predicated from God contains the future human doctrine. Every machine, that now lives from the great *perpetuo mobile*, should itself become a *perpetuum mobile*.”¹⁷ Mechanics aims at the establishment and maintenance of this material ideal of fully synergistic *Wechselwirkung*. For this reason, Novalis turns to experimental nature philosophy such as Schelling’s *World Soul* essay in his attempt to outline the contours of this energetic ideal. Of course, this means parting ways with past figures such as Leibniz, for whom the impossibility of perpetual motion (which Leibniz rejects, even in the form of a dynamic theory of the universe as a whole) remained part and parcel of his adherence to the theodicy doctrine.¹⁸ Indeed, the step Leibniz took from his theodicy in 1710 to the general monadology in 1714 was very much informed by the framework of the earlier *vis viva* debates, which for Leibniz played an important role in the attempt at showing how his vital materialism was not premised on any form of perpetual mechanical motive power.¹⁹

Leibniz theorized alongside simple machines such as lever and pulleys. Romantic writers at the end of the eighteenth century, on the other hand, found themselves in the midst of growing excitement regarding what was often seen as the emancipatory potential

Meiner Verlag, 1997), XI – LIX. and Konstantin Pollok, *Kants Metaphysische Anfangsgründe der Naturwissenschaft: Ein kritischer Kommentar* (Hamburg: Felix Meiner Verlag, 2001).

¹⁷ *NS* III 297, No. 320: “Zuk[unkfts]Lehre der Menschh[eit]. (Theologie.) Alles was von Gott paediciert wird enthält die *Menschliche Zukunftslehre*. Jede Maschine, die jetzt vom Großen Perpetuo mobili lebt, soll selbst Perpetuum mobile—jeder Mensch, der jetzt von Gott und d[urch] Gott lebt, soll selbst werden.“

¹⁸ See Gideon Freudenthal, “Perpetuum Mobile: The Leibniz-Papin Controversy,” *Studies in History and Philosophy of Science Part A* 33, no. 3 (2002): 573–637 and Carolyn Iltis, “Leibniz and the Vis Viva Controversy,” *Isis* 62, no. 1 (1971): 21–35.

¹⁹ See for example the 1686 letter titled *Brevis demonstratio erroris memorabilis Cartesii et alienorum circa legem naturae, secundum quam volunt a Deo eandem semper quantitatem motus conservari, qua et in re mechanica abentur* which accuses Descartes of confusing the terms “motive force” and “quantity of motion” in his natural philosophy, thus creating a vision of the universe as a mechanical *perpetuum mobile*. Leibniz. *Hauptschriften zur Grundlegung der Philosophie I*. Ed. Ernst Cassirer (Hamburg: Meiner), 186 – 193.

embedded in new energetic resources such as the steam engine, electricity and new discoveries in chemistry.²⁰ This project is an attempt to uncover in thinkers such as Novalis, Schelling, Hölderlin, and Goethe what might be called, after Frederick Beiser, a *technical imperative* for German romanticism, with the aim of discovering, maintaining, and inhabiting the synergistic ideal of a perfectly concretized, fully automated organic machine.²¹ This ambitious program is aimed at combining aesthetics, moral activity, and natural knowledge in the wake of the Kantian crisis, with the project of romanticizing the world taking on new universal machinic proportions. Earlier traces of this type of techno-utopian, proto-Saint-Simonian thinking in German romanticism can be found, perhaps surprisingly, in writings from Kant from the early 1790s.²² In his “Theory and Practice” essay, Kant cites the seemingly endless possibilities for technical innovation as a reason for belief in moral improvement.²³ Yet the understanding of mechanics put forward by

²⁰ There has indeed been a lot of very fruitful research over the years in the field of “Literature and Science” as it pertains to German romantic writings. See, for example, Jeremy D. Adler, *Eine fast magische Anziehungskraft: Goethes “Wahlverwandschaften” und die Chemie seiner Zeit*. (Munich: C.H. Beck, 1987); Michel Chaouli, *The Laboratory of Poetry: Chemistry and Poetics in the Work of Friedrich Schlegel* (Baltimore: Johns Hopkins University Press, 2002); Jocelyn Holland, *German Romanticism and Science: The Procreative Poetics of Goethe, Novalis, and Ritter* (London: Routledge, 2009) and Benjamin Specht, *Physik als Kunst: Die Poetisierung der Elektrizität um 1800* (Berlin: Walter de Gruyter, 2010). Specht’s introduction provides a particularly useful overview of this field of research.

²¹ See Frederick C. Beiser, *The Romantic Imperative* (Cambridge: Harvard University Press), 2006. The title refers to an unpublished fragment from Friedrich Schlegel: “Der romantische Imperativ fordert die Mischung aller Dichtarten. All Natur und Wissenschaft soll Kunstwerden—Kunst soll Natur werden und Wissenschaft.“

²² This more “technical“ side of Kant has been recently brilliantly exposed by Chaouli’s chapter on “Making” in *Thinking With Kant’s Critique of Judgment*, 113-148.

²³ Cf. “Über den Gemeinspruch: Das mag in der Theorie richtig sein, taugt aber nicht für die Praxis“ in *Kant: Werke* 11, Frankfurt am Main: Suhrkamp, 1977, 128: “Nun würde man den empirischen Maschinisten, welcher über die allgemeine Mechanik, oder den Artilleristen, welcher über die mathematische Lehre vom Bombenwurf so absprechen wollte, daß die Theorie davon zwar fein ausgedacht, in der Praxis aber gar nicht gültig sei, weil bei der Ausübung die Erfahrung ganz andere Resultate gebe als die Theorie, nur belachen.“ Furthermore „dasjenige, was bisher noch nicht gelungen ist, darum auch nie gelingen werde, berechtigt nicht einmal, eine pragmatische oder technische Absicht (wie z.B. die der Luftfahrten mit aerostatischen Bällen) aufzugeben; noch weniger aber eine moralische, welche, wenn ihre Bewirkung nur nicht demonstrativ unmöglich ist, Pflicht wird.“

Novalis, as we have seen, is symptomatic of a deeper dissatisfaction with the crisis inaugurated by what Hölderlin refers to as the “Kantian boundary.”²⁴ Rather than accepting the ontological divide between real and ideal, discursive and non-discursive concepts, Romantic mechanology establishes itself as a way of experimenting with the technical contingencies of aesthetic production and reproduction alongside the workings of organic life. It provides a way out from the Kantian “antinomies of pure reason” by combining “Idealism” with “genuine empiricism.”²⁵

The technical imagination: from organology to mechanology

In *On the Mode of Existence of Technical Objects*, Simondon defines the technical imagination as a “particular sensibility towards the technicity of elements” that opens up onto new combinatory possibilities for their interrelation, thus “permitting the discovery of possible assemblages.”²⁶ The technical imagination effectuates a shift in sensibility from *general organology* towards what Simondon calls *mechanology*. While general organology studies individual technical elements, which present themselves as components of a larger technical object, like the organs of a living body, mechanology,

²⁴ This romantic project of overcoming the “Kantian boundary” [*kantische Grenzlinie*] was presented already in 1794 by Hölderlin in his dissatisfied reception of *Anmut und Würde*. Schiller, in Hölderlin’s view “wagered one step fewer over the Kantian boundary, than he should have, in [my] opinion” [“einen Schritt weniger über die Kantische Grenzlinie gewagt hat, als er nach meiner Meinung hätte wagen sollen.”] For more on this letter and its potential connection to Hölderlin’s “Being and Judgment” fragment, see Frank, *Einführung*, 138-139.

²⁵ NS III, 316. No 402: “Der Idealismus ist nichts, als ächter *Empirismus*.”

²⁶ Cf. Gilbert Simondon, *Du mode d’existence des objets techniques* (Paris: Aubier, 1958/1989), 92. Here it should also be noted that Simondon is quite careful to distinguish the terms technical and technological, a term which did not take on its current form until well into the nineteenth century. The flexibility of the term technical, which equally suggests aesthetic activity, the bringing forth of *τέχνη*, the “know how” of an engineer and musician, as well as a material configuration that is not yet that of the industrial *dispositif* of technology, I believe, captures well its polyvalent importance for romantic thinking. More on this will be discussed below. Also see Leo Marx’s seminal essay for more on this terminological shift from technics to technology: Leo Marx, “*Technology: The Emergence of a Hazardous Concept*,” *Technology and Culture* 51, no. 3 (2010): 561–77, <https://doi.org/10.1353/tech.2010.0009>.

on the other hand, concerns itself with fully individuated, fully concretized technical objects.²⁷ While the organological stakes of Romanticism have already been explored by Leif Weatherby, with similar interventions in recent years from Jocelyn Holland, this project seeks to examine the technical imagination of romanticism as a means of shifting the focus from organology towards what might be called a properly Romantic mechanology.²⁸ This comportment, found in thinkers ranging from Novalis to Goethe, Schelling to Hölderlin, seeks to rethink relations between self, nature, and technics with the goal of developing a fully synergistic *Wechselwirkung*. This goal of constructing a *perpetuum mobile* would entail a fully concretized presentation of Romantic form. The Romantic fragment, as Friedrich Schlegel famously writes, aims to become fully individuated and self-sufficient, “like a hedgehog.”²⁹

In urging the novice to “become mechanically adept,” Novalis provides a point of entry into a Romantic technical imagination that lends focus to unforeseen ensembles of aesthetic, political, and natural-philosophical practices. This project is less determined by any one particular element, however, than by a certain shared utopian sensibility which seeks to retool and reconceptualize relations between humans and nature through aesthetic and technical experimentation. The *perpetuum mobile* of Schelling’s *World Soul* presents a model for this sort of technical, synergistic relationality. It presents a living, breathing prototype for the construction of what John Tresch has called Romantic

²⁷ Cf. Simondon, *Modes d’existence*, 80-81: “Il serait en ce sens possible de définir une organologie générale, étudiant les objets techniques au niveau d’élément, et qui ferait partie de la technologie, avec la mécanologie, qui étudierait les individus techniques complets.”

²⁸ See Weatherby, *Transplanting the Metaphysical Organ*, and Jocelyn Holland, *The Lever as Instrument of Reason: Technological Constructions of Knowledge around 1800* (New York: Bloomsbury Academic, 2019).

²⁹ KFSa I, 2: 205 Nr. 206.

machines, machines “capable of awakening obscure forces of nature and fixing the coordinates of technical systems” so that they might grow “into living, dynamic wholes.”³⁰ Novalis’s insistence that the “novice” become “mechanically adept,” in turn, can be seen as providing a material basis for the development of a politics of Kantian judgment as proposed by Hannah Arendt,³¹ a call that has been revived in recent years in scholarship on Romanticism and Idealism by the philosopher Yuk Hui.³² While Hui has turned to figures such as Goethe, Schelling, Hegel, and Hölderlin in his analysis of the way in which the interconnectedness of parts and whole forms a political and aesthetic project capable of taking seriously both technical relationality and organic life for Romanticism, he overlooks the pivotal role played in this project by Novalis.³³ Novalis, for whom “all sciences are sciences of relational sciences,” seeks to establish what Dalia Nassar has identified as a “relational” absolute.³⁴

In actualizing this understanding of the absolute, Romanticism must become properly mechanological. In calling for mechanics to both “live from” and “construct” a *perpetuum mobile*, this proposition of a mechanological sensibility for German romanticism requires taking seriously one’s comportment towards the natural world.

³⁰ See Tresch’s description of “Mechanical romanticism” in the introduction to *The Romantic Machine: Utopian Science and Technology After Napoleon* (Chicago: University of Chicago Press, 2012), 13–14: “Although usually studied as opposites, these exactly contemporary cultural formations—a return to a mythical past and faith in a rational future—intersected in the figure of the romantic machine: a concrete, rational, often utilitarian object that was nevertheless endowed with supernatural, charismatic powers. Just as the romantic-era concept of the self-championed the imagination as a power that could transform the world, these charismatic technologies were seen as capable of awakening obscure forces of nature and fixing the coordinates of technical systems that grew into, living, dynamic wholes.”

³¹ Hannah Arendt, *Das Urteilen*. (Munich: Piper, 2012).

³² See Hui’s *Recursivity and Contingency*, in addition to his essay “Cosmotechnics as Cosmopolitics.” *E-Flux* #86, no. 86 (2017).

³³ Hui has also turned his attention, rather loosely, to Hölderlin in recent years: Yuk Hui, “Machine and Ecology,” *Angelaki* 25, no. 4 (July 3, 2020): 54–66, <https://doi.org/10.1080/0969725X.2020.1790835>.

³⁴ *NS* 3:56: “alle unsre Wissenschaften [...] sind VerhältnißWissenschaften.” Cf. Nassar, *The Romantic Absolute: Being and Knowing in Early German Romantic Philosophy, 1795-1804*, chapter 1.

Mechanology must take itself seriously as a political ecology. As with the “two ideals of human existence” described by Hölderlin in the “Thalia Fragment,” Romantic mechanology must work to combine the temporality and technicity of *Bildung* with knowledge of and respect for the autoreproductive activity of the natural world.³⁵ The machinic ideal of the *perpetuum mobile* might be understood in this light as the generation of a worldsoul that functions like the Guimbal turbine Simondon describes in *Modes of Existence*. While generating power from a running river, the machine uses the natural flow of the water as coolant to prevent from overheating. The machine exists in perfect reciprocity and interrelationality with its natural milieu. It presents a harmonious *Wechselwirkung* between a machine that is *zart* in the Goethean sense while embodying an understanding of the ecological system that is “without nature” as understood by ecocritics like Timothy Morton.³⁶ The Romantic mechanological ideal of perpetual motion, like the Guimbal machine, seeks to combine unironic emancipatory desire with a concrete knowledge of the way in which the natural universe, humans, and technical objects might exist in forms conceived along these sorts of exchange.³⁷

Not just Novalis’s understanding of mechanics, but Schelling’s nature philosophy and Goethe’s botanical studies also bear witness to this mechanological sensibility in

³⁵ Cf. HSA III:1 163:“Es gibt zwei Ideale unseres Daseins: einen Zustand der höchsten Einfachheit, wo unsre Bedürfnisse mit sich selbst, und mit unsern Kräften, und mit allem, womit wir in Verbindung stehen, *durch die bloße Organisation der Natur*, ohne unser Zutun, gegenseitig zusammenstimmen, und einen Zustand der höchsten Bildung, wo dasselbe stattfinden würde bei unendlich vielfältigten und verstärkten Bedürfnissen und Kräften, *durch die Organisation, wie wir uns selbst zu geben imstande sind.*”

³⁶ Simondon offers this turbine up as an example of concretization. See *Modes d’existence*, 66-69. Cf. Timothy Morton. *Ecology without Nature: Rethinking Environmental Aesthetics* (Cambridge, Mass.: Harvard University Press, 2009).

³⁷ The ecological stakes of this ideal of *Wechselwirkung* have also been explored recently by Heinrich Detering, See his *Menschen im Weltgarten: Die Entdeckung der Ökologie in der Literatur von Haller bis Humboldt* (Göttingen: Wallstein Verlag, 2020).

romanticism. Schelling's *World Soul* fragment attempts to unify post-Kantian metaphysical speculation with knowledge of natural forces into a single synergistic concretized object. Goethe's morphological writings effectuate a convergence of natural form with technical process via the Kantian logic of intuitive understanding, as recent writings by Eckart Förster and Eva Geulen have highlighted.³⁸ Novalis's encyclopedia project, the *Allgemeine Brouillon*, is particularly striking in light of Simondonian mechanology. Simondon claims that the organizational capacity of the French encyclopedic project inaugurates an epistemic shift in thinking about technical objects in terms of form and function, giving way to more integrated, concretized technical artefacts through the production and dissemination of technical knowledge.³⁹ While the French encyclopedists, writing decades before the sort of mass industrialization critics like Marx would write about in the mid-nineteenth century, dealt in technical objects lacking such a high degree of complexity and individuation, Simondon sees by the middle of the twentieth century a renewal of this encyclopedia tendency in information theorists and cyberneticians such as Norbert Wiener, whose 1948 *Cybernetics* presents what he calls a new *Discourse on Method*.⁴⁰ While praising the synergistic possibilities of this new thinking, focusing on the recursivity of feedback loops as a mode of efficient information gathering, however, Simondon is quick to note the ways in which Wiener's emphasis on

³⁸ See chapter 11, "Die Methodologie des intuitiven Verstandes" in Eckart Förster, *Die 25 Jahre Der Philosophie: Eine Systematische Rekonstruktion* (Frankfurt am Main: Vittorio Klostermann, 2011), 253 – 76 and Eva Geulen, *Aus dem Leben der Form: Goethes Morphologie und die Nager* (Berlin: August Verlag, 2016).

³⁹ Cf. Simondon, *Modes d'existence*, 135: "Tout ce qui est figure dans le livre encyclopédique est au pouvoir de l'individu qui possède un symbole figure de toutes les activités humaines dans leurs détails les plus secrets. L'*Encyclopédie* réalise une universalité de l'initiation [...]"

⁴⁰ Ibid, 147. Also see Norbert Wiener. *Cybernetics: Or the Control and Communication in the Animal and the Machine* (Cambridge: MIT Press, 2013).

‘control’ is at risk of promoting very harmful relations between humans, machines, and the natural world. Romantic mechanology seeks to establish an alternative encyclopedics, aiming at the concretization of a synergistic *Wechselwirkung* while acknowledging the ways in which the relations between humans, machines, and the natural world are shot through with a measure of irrepressible contingency.

An alternative mode of relation must be established that is able to combine technical knowledge with a non-colonial sensibility towards nature. As far as studies of German Romanticism are concerned, Simondon’s own literary examples of this sort of attitude are particularly revealing. In Part II of *Modes of Existence*, he turns directly to Goethe’s *Faust* in illustrating what a colonizing attitude towards the lifeworld might look like. Indeed, scholars have often noted how Faust’s sacrifice of that very “special sap of life” is indicative of such a comportment.⁴¹ Helmut Müller-Sievers has recently pointed out how the text bears symptoms of what Bruno Latour sees as an ontological split occurring in the eighteenth century between mechanical and organic worldviews.⁴² Here, Romantic readers of Kant might recognize the ontological impasse presented in the “Critique of Teleological Judgment.” Whereas Faust’s sacrifice effectuates what Martin Heidegger would call the “mechanistic-*technological* ‘triumph’ of modernity over the domain of growth” a century and a half later, Romantic mechanology seeks to establish more equitable relations with the natural world. This means equally avoiding the other

⁴¹ See for example Gernot Böhme, *Goethes Faust als philosophischer Text*, (Zug, Switzerland: Graue Edition, 2005) and Manfred Osten, “*Alles veloziferisch*” oder *Goethes Entdeckung der Langsamkeit* (Göttingen: Wallstein Verlag, 2013).

⁴² Cf. Helmut Müller-Sievers, “The Curse of Technics: A Gloss on the World-Curse in Goethe’s *Faust*,” *MLN* 131, no. 3 (2016): 656–61, <https://doi.org/10.1353/mln.2016.0043> and Bruno Latour, *We Have Never Been Modern* (Cambridge: Harvard University Press, 2012).

extreme identified by Simondon, which entails a naïve attitude towards nature by insisting on “intuition” rather than knowledge and expertise in our technical negotiations of our natural environment. In illustrating this new mode of relationality, Simondon turns again to Romanticism—this time to the sailor-turned-miner protagonist of E.T.A. Hoffmann’s “Bergwerke zu Falun.” Elias Fröbom, after returning from a long and hard voyage working on an East India Company ship, is confronted by the ghostly apparition of an old miner, who tries to entice him into working in a mine. Although initially resistant to the idea of changing professions, Fröbom falls in love with the beautiful daughter of the owner of the Falun mines and decides to give it a try. While lacking any technical training, his intuitive knack for the trade quickly wins the respect of his employer and the eye of the employer’s daughter. On their wedding day, however, this lack of technical training proves to be Fröbom’s Achilles heel. Despite repeated warnings from his co-workers and from the old miner’s ghost, he digs deeper and deeper into the mines in search of more beautiful minerals to present to Ulla, his betrothed. In the end, the roof above Fröbom collapses and the protagonist is buried alive beneath the rubble.⁴³

Concretization and romantic form: reconsidering the fragment (again)

Romantic mechanology seeks to prevent the catastrophic scenarios presented to Simondon by Goethe’s *Faust* and Hoffmann’s Fröbom, which requires analysis of the ways in which the process of concretization coincides with romantic form. While Simondon suggests that objects undergoing the process of technical concretization begin more and more to approximate the individuated forms of organic life, he also provides

⁴³ Cf. Simondon, *Modes d’existence*, 128-129.

further means for understanding the type of concrete exchanges Romantic mechanology aims to effectuate. Indeed, a radical rethinking of romantic form is already well underway in writings by scholars such as David Wellbery, who sees in the time around 1800 a move away from the platonic conception of form as removed from any sense of materiality and towards a more “endogenous” understanding of form.⁴⁴ Rüdiger Campe has also argued for a split from Aristotelean hylomorphism in Friedrich Schlegel’s more functional form concept, which arises coevally with matter.⁴⁵ Such reevaluation, however, must come to grips with the ways in which a broader retooling of Romantic aesthesis exhibits clear emancipatory, mechanological goals: the fragment aims at full concretization. Romantic form strives to become a full work on its own, “complete in itself like a hedgehog.”⁴⁶ Midway between individuated whole and aesthetic abstraction, the Romantic fragment is situated at sites of exchange between concrete *Darstellung* and a more open, speculative comportment developed in the wake of Kantian (and ecological) crisis.⁴⁷ Mechanology seeks to combine scientific knowledge with political and aesthetic experimentation.

⁴⁴ See Wellbery’s essay “Form Und Idee. Skizze Eines Begriffsfeldes Um 1800,” in *Morphologie Und Moderne: Goethes anschauliches Denken in den Geistes- Und Kulturwissenschaften Seit 1800*, ed. Jonas Maatsch (Berlin: De Gruyter, 2014), 17–42 as well as his new essay on “Form” in the *Goethe-Lexicon of Philosophical Concepts* 1, no. 1 (January 29, 2021), <https://doi.org/10.5195/glpc.2021.38>.

⁴⁵ Rüdiger Campe, “Das Argument der Form in Schlegels »Gespräch Über Die Poesie« *MERKUR* 68, no. 777 (2014): 110–21 and “Das Problem der Prosa und die Form des Romans: Überlegungen zu Friedrich Schlegels Theorie und Praxis um 1800,” in *Die Farben der Prosa*, ed. Eva Eßlinger, Heide Volkening, and Cornelia Zumbusch, 45 – 64 (Freiburg: Rombach, 2016).

⁴⁶ “Ein Fragment muß gleich einem kleinen Kunstwerke von der umgebenden Welt ganz abgesondert und in sich selbst vollendet sein wie ein Igel.”

⁴⁷ For more on this, see chapter 2, “The Fragment” in Lacoue-Labarthe and Nancy’s *L’absolu, littéraire*, 57-80 and Leif Weatherby’s more recent “A Reconsideration of the Romantic Fragment,” *The Germanic Review: Literature, Culture, Theory* 92, no. 4 (October 2, 2017): 407–25, <https://doi.org/10.1080/00168890.2017.1370953>.

This project is divided into four chapters. The first provides a detailed analysis of Novalis's surprising embrace of the term *mechanics*, which must first and foremost be understood within the context of his Kant studies during the years 1795-1796.⁴⁸ Following his more widely known notebooks on Fichte, Novalis's Kant studies effectuated what many scholars have referred to as a "Kantian turn" in his thinking during the time, which occurred coevally with a growing interest in natural philosophy and his studies with Abraham Gottlob Werner.⁴⁹ This shift from Fichtean idealism back to Kant presents not only a drastic change in tone in his thinking regarding the technoutopian aim of constructing a *perpetuum mobile*.⁵⁰ This turn also serves as context for gaining a more thorough understanding of the new role played by mechanics in constituting new mechanological forms of aesthesis.⁵¹ In calling for mechanics to both live from and construct a *perpetuum mobile*, Schelling's *Worldsoul* presents to the technical imagination a functional, energetic absolute which Romanticism seeks to approximate.⁵² A radical vision of a world is put forth, and the goal of creating these synergistic ensembles of relations is explored in the context of numerous philosophical studies, Novalis's notes on the natural sciences, and in his poetics.

⁴⁸ Cf. David Wood, "Novalis: Kant Studies (1797)," *The Philosophical Forum* 32 (2001), <https://doi.org/10.1111/0031-806X.00072>.

⁴⁹ For more on Novalis's Kantian turn, see lecture 15 in Frank's *Einführung*, 248-261, The first part of Nassar's *The Romantic Absolute* and Ch. 6 in Weatherby, *Transplanting the Metaphysical Organ*, 206-260.

⁵⁰ In the Fichte Studies Novalis refers to the *perpetuum mobile* as an instance of "negative knowledge" [*negative Erkenntnis*], safely marking the boundaries of what is possible and impossible for a machinic thinking bound by definition to the material constraints of the "not-I."

⁵¹ In one fragment from the *Encyclopedia*, Novalis even tries to reengineer the form-matter relation Kant outlines in the transcendental aesthetic from the ground up, starting with mechanics: "Raum and Zeit – Sinnliche Ansch[auung] a priori – w[as] / h[eißt] d[as] / Geometrie / Mechanik / Figuren / Bewegung[schema]." NS III, 392 Nr 660.

⁵² Gabriel Trop has argued for a similarly energetic reading of the Absolute in "Novalis and the Absolute of Attraction," *Seminar: A Journal of Germanic Studies* 50, no. 3 (September 26, 2014): 276–94. Also see Frank, *Unendliche Annäherung*.

The second chapter explores Schelling's *Weltseele* and other writings from the time between 1795 and 1800 in the context of a rather puzzling note found in Novalis's studies of the World Soul. In this note, Novalis writes that "Nature is eternal, (but not vice versa)," referring again to the ways in which Schelling's machinic organism presents us with a *perpetuum mobile*. This temporal irreversibility, I argue, is central to the Romantics' mechanological aims, and has a great impact on how we understand Schelling's reception of Kant in addition to his understanding of Goethe and his later aesthetics.

The third chapter discusses the concept of the "Kantian Boundary" in Hölderlin, who employs the term *Energie* as a means of providing an alternative sort of *Wechselwirkung* between humans and the natural environment, a mode of recursivity which does not force an unnecessary decision between a realist and idealist technics of nature. While rejecting quick and easy distinctions between organism and mechanism, Hölderlin's onto-poetic ambitions lay the groundwork for a vast rethinking of life along the lines of technical media, media which carefully undo the boundary between the extensive space of the *polis* and the environmental *khôra*. Seen in this light, Hölderlin's writings can be seen as sketches for an alternative political ecology that has as its material basis the poetic worldmaking activities of technical media.

The fourth chapter discusses what I am calling the "Goethean technics of *Antizipation*," which refers to a surprisingly Kantian term used by Goethe in his critique of the Linnaean doctrine of prolepsis in his *Metamorphology of Plants*. In arguing that the growth cycles of plants are not subject to a fixed timescale, as Linnaeus suggests, but may be technically manipulated by a skilled hand, Goethe refers to the theory of

Antizipation as his object of critique. This unique term, seemingly a Germanized version of Linnaeus's *prolepsis*, was entirely absent from German lexicography and critical discourse during the time, with one notable exception: *Antizipation* is what Kant calls the *a priori* mediating force linking forms of intuition in the transcendental aesthetic to the concrete data of sense perception, what he calls intuition, in the first Critique.⁵³ In this chapter we will see how the technical encounter with organic form that Goethe describes in the morphology folds back onto a view of aesthesis as always already technically mediated and open to manipulation. The poetic and technical stakes of this sort of aesthesis are explored in the context of Goethe's poetic reactions to Schelling's project, such as the poems "Weltseele" and "Eins und Alles."

⁵³ Cf. *Kritik der reinen Vernunft* A:17/B:31 – A:41-B:58.

2. Mechanology as political ecology: Novalis's living encyclopedics

At the outset of *Heinrich von Ofterdingen*, one of two *Bildungsromane* left behind by the poet-engineer Novalis after his early death, the eponymous hero is faced with a choice between accepting the colonization of the lifeworld on a fragmented planet or undertaking the behemoth task of constructing a more coherent globe: "Träume sind Schäume," Heinrich's father exclaims after hearing the dream of the blue flower. "Dreams are suds."⁵⁴ Heinrich's subsequent journey to Augsburg serves as a pretext for attempts to discover poetic and theoretical alternatives to this cynical law of the father, according to which the hope of living in a better world appears pointless, as so many suds. In this chapter, I excavate the origins of Romantic mechanology in the writings of Novalis, whose claim that the novice must first become "mechanically adept" in his *Notes for a Romantic Encyclopedia* sets the stage for an ambitious exploration of the role played by technical media in nature philosophy, politics, and aesthetics.⁵⁵ Beginning with Novalis's externalized vision of the Kantian mode of reciprocity, this chapter shows how Novalis's call for the mechanic both to "live from" and "construct" a *perpetuum mobile* in his work must be understood not just metaphorically, but as part of the project of developing a living encyclopedics, an organizational system in which anthropogenic

⁵⁴ NS I, 195. References to Novalis's work are from *Novalis Schriften: die Werke Friedrich von Hardenbergs*, ed. Paul Kluckhohn and Richard Samuel (Stuttgart: Kohlhammer Verlag, 1960-1988) and will be composed according to the above reference: *NS (Novalis Schriften)* followed by volume in Roman numerals, then by page number and, when available, passage number in Arabic numerals. Translations are author's own.

⁵⁵ NS III, 245. Nr 47: "der Lehrling darf noch nicht raisonirren," he writes. "Erst muß er mechanisch fertig werden, dann kann er anfangen nachzudenken."

forms of knowledge production partake in the natural operations they seek to describe.⁵⁶ This reciprocity uncovered between technical system, natural knowledge, and the human subject in the encyclopedia project leads Novalis to propose a new form of spatial relations which presents an alternative to the cynical law of the father, a resonant *nomos* of externalized mediation inspired by the ‘stirring song’ of Arion in his adaptation of Herodotus’s *Histories* in *Heinrich von Ofterdingen*.⁵⁷ At the center of this vision of a technically mediated understanding of the natural world, we will see, lies an attempt to show how the extensive space of the *polis*, where sovereign decision making takes place, becomes irredeemably embroiled in the environmental container-space of *khôra*.⁵⁸ A new form of entanglement between these two realms is outlined by Novalis through the metaphor of the ship, a medium implicating Romantic cosmologies of nature in the complex operations of technical processes.⁵⁹ In a fragment from the *Pollen* collection, Novalis writes that, while tools serve to “arm the human,” such reciprocal interaction contains the seed of a more dramatic co-evolutionary process undertaken by the Romantic subject and the technical object:

One can very well say that the human knows how to bring about a world, he just lacks the appropriate apparatus, the commensurate armature of the

⁵⁶ NS III, 296: Nr. 314.

⁵⁷ See the reference to the ‘stirring song’ of the *órthios nomos* in the *Histories* I, book 25. Herodotus, *The Histories*, ed. John M. Marincola, trans. Aubrey de Sélincourt. London/New York: Penguin Classics, 2003.

⁵⁸ For more on this, see Jacques Derrida, *Khôra, Un Des Trois Essais Avec Passions et Sauf Le Nom* (Galilée, Paris, 1993).

⁵⁹ Not only does the *khôra* present a non-extensive “third space” occupied by the globe in Plato’s *Timaeus*, it also signifies the space of seafaring, as Bernhard Siegert reminds us. See “The Cultural Techniques of Seafaring” in *Cultural Techniques: Grids, Filters, Doors, and Other Articulations of the Real*. trans. Geoffrey Winthrop Young (New York: Fordham University Press, 2015), 68-69. For more on literary and medial explorations of seafaring in current critical discourse, see Hans Blumenberg’s classic study, *Schiffbruch mit Zuschauer: Paradigma einer Daseinsmetapher* (Frankfurt am Main: Suhrkamp, 1997), Burkhardt Wolf’s *Fortuna di mare*, in particular the concluding discussion of Hölderlin in *Fortuna di mare: Literatur und Seefahrt* (Zürich: Diaphanes, 2013), 393-402, and the ship chapter in John Durham Peters, *The Marvelous Clouds: Toward a Philosophy of Elemental Media* (Chicago: University of Chicago Press, 2015), 53 – 114.

tools of the senses. The beginning is there. Thus lies the principle of a ship in the idea of the master shipbuilder, who is able to embody this idea through heaps of men and appropriate tools and materials by making himself, as it were, an immense machine. The idea of a moment thus often requires immense organs, immense masses of material, and the human is therefore, if not actu, nevertheless potentia creator.⁶⁰

The ship provides Novalis with the metonymic means of understanding the turn from organology to mechanology, a historical development Gilbert Simondon refers to as the process of concretization, as we have seen in the Introduction.⁶¹ Such reflection on the complexity of technical assemblages also reveals a change in our vision of the human, who appears now as both creator and symptom of technical media.⁶² As we will discover at the end of this chapter, the shift in focus from basic tools to more complex assemblages also sets the stage for an examination of the reciprocal interaction between the environmental space of the ocean and the steering mechanism of the ship's rudder, providing Novalis with a material point of contact for a new mode of resonance between humans and the natural world. The key to understanding this vision of political ecology, we will see, lies in the way Novalis sees late eighteenth-century discussions concerning

⁶⁰ NS II, 453: 88: "Werkzeuge armiren den Menschen. Man kann wohl sagen, der Mensch versteht eine Welt hervorzubringen, es mangelt ihm nur am gehörigen Apparat, an der verhältnismäßigen Armatur seiner Sinneswerkzeuge. Der Anfang ist da. So liegt das Prinzip eines Kriegsschiffes in der Idee des Schiffbaumeisters, der durch Menschenhaufen und gehörige Werkzeuge und Materialien diesen Gedanken zu verkörpern vermag, indem er durch alles dieses sich gleichsam zu einer ungeheuren Maschine macht. So erforderte die Idee eines Augenblicks oft ungeheure Organe, ungeheure Massen von Materien, und der Mensch ist also, wo nicht actu, doch potentia Schöpfer."

⁶¹ Simondon, *Mode d'existence des objets techniques*, 80-81.

⁶² The reciprocity Novalis ascribes to this relationship between humans and ships also highlights the way in which Simondonian mechanology, as Mark Hansen has pointed out, offers a productive revision of the unidirectional view of technics embodied by current "Cultural Techniques" discourse in Germany, particularly in Bernard Siegert's analysis of seafaring as a cultural technique. For Siegert, "[w]hat humans do with ships matters less than what seafaring does with and to them." For mechanology on the other hand, what we do with ships and other technical assemblages—how we design, build, and use them—matters just as much as their ability to affect us. Cf. Siegert, "Medusas of the Western Pacific: The Cultural Techniques of Seafaring," 69, and Mark B. N. Hansen, "The Ontology of Media Operations, or, Where Is the Technics in Cultural Techniques?," *Zeitschrift für Medien- und Kulturforschung* 8, no. 2 (2017): 169–86, <https://doi.org/10.28937/1000107980>.

the complexity of organic life as necessarily mediated by reflections on the complexity of technical objects. While tools present “*real indirect Formulas*,” Novalis writes in one of his *Pollen* fragments, “the result of a complete scientific universal-machine would be nature, or chaos.”⁶³

Novalis’s “Kant Studies”: the technic of nature and the architecture of reason

Before turning to Novalis’s encyclopedia project, it will prove useful to look at the specific way in which Novalis employs the Kantian mode of reciprocity, a feature of his writings that can be readily understood within the context of early Romantic reactions to Kant during the 1790s. Like many of his Romantic compatriots, Novalis was struck with a sense of profound ambivalence when confronted with Kantian philosophy. On the one hand, Kant’s critical methodology presented a radical emancipatory force which promised to free philosophical, poetic, and empirical activity from the inertial dogma of inherited tradition. Viewed in this light, Kantian philosophy seemed capable of “relativizing the universe,” as Novalis remarks in his “Kant Studies” of 1797, where he likens Kantian criticism to a “Copernican system” that “nullifies fixed points” while “making floating what was formerly at rest.”⁶⁴ This sense of euphoric liberation, however, was quickly counterbalanced by the sobering realization that Kant’s *Critique of Pure Reason* presents little more than a “treatise on method,” clearing the ground for positive knowledge without itself providing a functional “system of science.”⁶⁵ Novalis,

⁶³ NS III, 91. “Instrumente und Apparate sind *reale* indirecte *Formeln*. *Maschinen sind Formeln*—das Resultat einer vollständigen wissenschaftlichen Universalmaschine würde eine Natur, oder ein Chaos sein.“

⁶⁴ NS III, 346. Nr. 487: “Philosophie relativirt das Universum. Sie hebt wie das Copernikanische System die festen Punkte auf—und macht aus dem Ruhenden ein Schwebendes.“ Translation by David Wood. Cf. Wood. “Novalis: Kant Studies (1797),” *The Philosophical Forum* 32 (2001), 328. <https://doi.org/10.1111/0031-806X.00072>.

⁶⁵ NS II, 387. Trans. Wood, 331.

like the Schlegel brothers, Schiller, and others, seeks to unite the critical impulse found in Kant with a more constructive attitude towards philosophical, natural, and poetic forms of knowledge. The most persistent source of frustration for early Romantics concerns the status of what Hölderlin famously calls the “Kantian boundary,” an integral feature of the Kantian architecture of the understanding whereby Kant insists on the erection and maintenance of a rigid partition between empirical and transcendental modes of thought.⁶⁶ While Kant, for his part, sought to provide points of contact between these two realms by showing how it is possible to make what he called *a priori* synthetic judgments, judgments in which the regularity and consistency of the mental imprint left by sense data could be used to trace the contours of *a priori* forms of cognition, Romantics like Novalis prove dissatisfied with the tentative validity ascribed by Kant to such judgments.⁶⁷ Novalis, like Kant’s other Romantic readers, seeks a more substantial point of contact between aesthetics, philosophy, and natural knowledge.⁶⁸

Novalis’s own engagement with Kant began during his early studies in Jena with Kant’s student and popularizer Carl Leonhard Reinhold in 1791.⁶⁹ His ideas regarding Kantian philosophy started coming to fruition six years later during the composition of a series of notebooks that are known as the “Kant Studies.” These notebooks, it is worth mentioning, were compiled following a period of prolonged engagement with Fichtean philosophy, an encounter which resulted in Novalis’s earlier “Fichte Studies.”⁷⁰ This

⁶⁶ This notion of a Kantian boundary, which Hölderlin outlines with reference to Schiller’s aesthetic treatise *Anmut und Würde*, is investigated thoroughly by Manfred Frank in his *Einführung*, 138-139.

⁶⁷ *CPR* 158:197.

⁶⁸ For an impressive overview of these attempts, see Frederick C. Beiser, *The Romantic Imperative*.

⁶⁹ Cf. Wood, “Kant Studies,” 326.

⁷⁰ For more on Novalis’ “Fichte Studies,” see Frederick C. Beiser, *German Idealism: The Struggle against Subjectivism, 1781-1801* (Cambridge, Mass: Harvard University Press, 2002), 407-34.

pivot to Kant during the latter part of the 1790s represents a turn away from the logical formalism of Fichtean idealism, also corresponding to the start of Novalis's tutelage under the geologist Abraham Gottlob Werner at the Freiberg mining academy. Seen in this light, Novalis's "Kant Studies" present an early attempt to articulate what Novalis would come to call "empirical idealism," a vision of scientific and poetic activity grounded in a radically material, exteriorized vision of the Kantian mode of reciprocity, aiming to take seriously both empirical observation and philosophical speculation in its approach to the formation of natural knowledge.⁷¹

Kantian reciprocity, one of three modes of the category of relation, plays a central role in affirming the functionality of the foremost ambition of Kantian philosophy: illustrating the possibility of a priori synthetic judgments, which enable us to perceive the transcendental contours of formal cognitive processes.⁷² As outlined in the table of categories, reciprocity presents a mode of relation between two or more entities which eludes both the determinative logic of linear causal chains and the substance-accident dualism of traditional metaphysics.⁷³ This recursive logic of reciprocity, for Kant, is used to explain a form of relationality defined by interactivity among parts of a whole, parts which codetermine the whole according to a common aim.⁷⁴ While playing a more subdued role in the first *Critique*, reciprocity comes to occupy center stage in the *Critique*

⁷¹ For this reason, many scholars have identified a "Kantian turn" in Novalis's thinking during this period. See Frank, *Einführung*, 248-261, part one of Nassar's *The Romantic Absolute*, 15 - 80 and Ch. 6 of Weatherby's *Transplanting the Metaphysical Organ*. 206-260. Also see NS III, 316. Nr. 402: "Der Idealismus ist nichts, als ächter *Empirismus*."

⁷² CPR 158:197.

⁷³ CPR 145:184;

⁷⁴ Ibid: "Das Schema der Gemeinschaft (Wechselwirkung), oder der wechselseitigen Kausalität der Substanzen in Ansehung ihrer Akzidenzen, ist das Zugleichsein der Bestimmungen der einen, mit denen der anderen, nach einer allgemeinen Regel."

of Judgment, where it is used by Kant as a heuristic device for explaining the way complex entities such as organisms operate, also undergirding what Kant sees as a necessary search for commonalities hidden behind the appearance of difference in individual aesthetic tastes.⁷⁵ Not only does reciprocity provide an important analogy between aesthetic experience and organic life, this mode of relation also presents Kant with a way of adapting his otherwise stubbornly Newtonian and Euclidian views of phenomenal experience to important scientific developments unfolding at the end of the eighteenth century.⁷⁶ Foremost among these developments were debates in the life sciences concerning the way organic individuals appear to self-organize over the course of their morphological development, suggesting an autotelic process of variable growth which presented challenges to earlier views seeking to understand life solely in accordance with strictly rational laws.⁷⁷ The possibility that organic life forms might exhibit some type of agency in their evolutionary development, while not yet extended to the species scale later afforded by Darwinian biology, seemed to point to a sort of life

⁷⁵ In Kantian aesthetics, the mode of *Wechselwirkung*, or reciprocity, provides a tentative explanation for the way seemingly subjective experiences of taste seem to require assent from others, hinting at “the possibility of an aesthetic judgment that could [...] be considered valid for everyone.” See CJ §8, 216. This requirement of assent leads, for Kant, to the establishment of a community of knowers sharing in a common set of aims, a *sensus communis*. See CJ §40 and §9, 217. For a more thorough examination of this intersubjective function of aesthetic judgment, see the “Community” chapter in Michel Chaouli’s recent *Thinking with Kant’s Critique of Judgment* (Cambridge, Mass: Harvard University Press, 2017), 42 – 75. For an examination of the ways in which commentators have sought to extrapolate a political project from Kant’s idea of a *sensus communis*, see lectures 12 and 13 of Hannah Arendt’s *Das Urteilen*, 106-120.

⁷⁶ As many scholars have noted, Kant was particularly tied to the seeming apodictic certainty of the claims made by Newtonian physics. See Christopher Insole, “Kant’s Transcendental Idealism and Newton’s Divine Sensorium,” *Journal of the History of Ideas* 72, no. 3 (2011): 413–36, <https://doi.org/10.1353/jhi.2011.0025>

⁷⁷ This aspect of Kant and his reception in Romanticism has been the subject of numerous studies. See, among others, Holland, *German Romanticism and Science*, Robert J. Richards, *The Romantic Conception of Life: Science and Philosophy in the Age of Goethe* (Chicago: University of Chicago Press, 2010), and Joan Steigerwald, *Experimenting at the Boundaries of Life: Organic Vitality in Germany around 1800* (Pittsburgh: University of Pittsburgh Press, 2019).

force inhering in living individuals, referred to as the “formative drive” by the German naturalist Johann Friedrich Blumenbach in his 1781 tract on the *Bildungstrieb*.⁷⁸ Six years later, in the *Critique of Judgment*, Kant turns directly to this hypothesis, asking to what extent human cognition might be able to recognize such internal purposiveness in the world, a purposiveness he refers to, after Aristotle’s third cause, as a mode of technics.⁷⁹

The systems that deal with the technic of nature, i.e., with nature's power to produce [things] in terms of the rule of purposes, are of two kinds: one interprets natural purposes idealistically, the other realistically. The idealistic interpretation maintains that all purposiveness of nature is unintentional, the realistic interpretation maintains that some of this purposiveness (the purposiveness in organized beings) is intentional, from which we could then infer, as a hypothesis, the consequence that the technic of nature is intentional, i.e., a purpose, even as concerns all other products of nature in their relation to the whole of nature.⁸⁰

True to form, Kant details two ways of explaining the appearance of autotelic organization in nature: on the one hand, there is a realist view which sees such autopoietic activity as an internal feature of life. Idealism, on the other hand, sees these patterns as cognitive projections that can never map directly onto the phenomena they aim to describe. On what side of the Kantian boundary does this seeming purposefulness lie? Does organic spontaneity belong to nature, Kant asks, or is it a projection of mind?

This dilemma seems to force Kant’s hand in choosing between stubbornly denying the appearance of purposive activity in nature or making what he would consider an irrational statement about the teleology of the organism, dogmatically referring to a

⁷⁸ Cf. Johann Friedrich Blumenbach. *Über den Bildungstrieb und das Zeugungsgeschäfte* (Göttingen: Dieterich, 1781).

⁷⁹ Cf. Aristotle, *Metaphysics*, trans. Hugh Lawson-Tancred (New York: Penguin, 1998), V.2.

⁸⁰ Paul Guyer trans. See CJ A 318/B322: “Die Systeme in Ansehung der Technik der Natur, d.i. ihrer produktiven Kraft nach der Regel der Zwecke, sind zwiefach: des Idealismus, oder des Realismus der Naturzwecke. Der erstere ist die Behauptung: daß alle Zweckmäßigkeit der Natur unabsichtlich, der zweite: daß einige derselben (in organisierten Wesen) absichtlich sei.“

qualitas occulta in describing natural phenomena. In order to extricate himself from this uncomfortable position, Kant introduces a new type of judgment as a means of cautiously acknowledging the possibility that the autotelic capacity of life to self-organize might exhibit a form of what he calls “purposiveness without a purpose,” a mode of activity wherein regulated patterns emerge in nature without being predetermined by mechanical laws.⁸¹ The judgments we make regarding such phenomena, which Kant refers to as regulative, reflexive forms of judgment, seek to combine the normative force of reason’s autonomy with the theoretical capacity of the understanding to make judgments about the composition of the world. While appearing to take seriously the possibility that the autotelic formation of natural life might exceed the causal, determinative relations of rational mechanistic forces, however, Kant quickly reduces the explanatory efficacy of this operative mode of judgment by maintaining that regulative, reflexive judgments possess only tentative, subjunctive validity.⁸² As Kant explains in the “Ideas for a Universal History with a Cosmopolitan Aim,” any analogies we draw between the ideal realm of ends—the stuff of reason and human freedom—and the realm of purposeless, empirical necessity must be taken with a grain of salt. The notion that life presents a spontaneous activity that self-organizes without reference to human forms of cognition suggests little more than a “useful idea,” a heuristic aid that tells us nothing about the inaccessible realm of nature as it exists in itself.⁸³ The “chasm” described by Kant at the

⁸¹ Also see Kant’s “Analytic of the Beautiful” in CJ §10, 219-2220/64-65.

⁸² For more on this, see the introduction to Paul Guyer, *Kant’s Critique of the Power of Judgment: Critical Essays* (London: Rowman & Littlefield, 2003), 1 – 49.

⁸³ See section 8 in Kant’s “Ideen zu einer allgemeinen Geschichte in weltbürgerlicher Absicht:” “Wenn man indessen annehmen darf: daß die Natur selbst im Spiele der menschlichen Freiheit nicht ohne Plan und Endabsicht verfare, so könnte diese Idee doch wohl brauchbar werden; und ob wir gleich zu kurzsichtig sind, den geheimen Mechanism ihrer Veranstaltung zu durchschauen, so dürfte diese Idee uns doch zum

beginning of the *Critique of Judgment* between reason—acting as its own law-giver—and the understanding—which aims to grasp “nature as an object of the senses”—is left fully intact.⁸⁴ Both domains are secured against any “reciprocal influence.”⁸⁵

While the tentative status of such ‘useful ideas’ is underscored by Kant in an attempt to highlight the limits of human reason, his Romantic readers aim to establish more substantial connections between humans and nature by revising the very architecture of the understanding. Novalis, for his part, questions the efficacy of Kant’s underlying attempt to tear organic life asunder from mechanical motion by opposing real and ideal technics of nature. For Novalis, a true ‘technic of nature’ would seek to uncover points of relation between mechanical and organic processes by combining these forms of activity into a greater whole. “Empiricism is true idealism,” Novalis writes in a fragment from *Pollen*.⁸⁶ According to this relational approach, mechanics would embody not inflexible determinacy but an experimental “doctrine of construction of the universally lively” that cannot be reduced to *a priori* cognitive processes or to the Newtonian rational mechanics embraced by Kant.⁸⁷ This Romantic understanding of mechanics presents an experimental discourse defined by an attunement to the specificities of technical media

Leitfaden dienen, ein sonst planloses Aggregat menschlicher Handlungen wenigstens im Großen als ein System darzustellen.”

⁸⁴ CJ §9, 52/54: “Der Verstand ist a priori gesetzgebend für die Natur als Objekt der Sinne, zu einem theoretischen Erkenntnis derselben in einer möglichen Erfahrung. Die Vernunft ist a priori gesetzgebend für die Freiheit und ihre eigene Kausalität, als das Übersinnliche in dem Subjekte, zu einem unbedingtpraktischen Erkenntnis. Das Gebiet des Naturbegriffs, unter der einen, und das des Freiheitsbegriffs, unter der anderen Gesetzgebung, sind gegen allen wechselseitigen Einfluß, den für sich (ein jedes nach seinen Grundgesetzen) auf einander haben könnten, durch die große Kluft, welche das Übersinnliche von den Erscheinungen trennt, gänzlich abgesondert. Der Freiheitsbegriff bestimmt nichts in Ansehung der theoretischen Erkenntnis der Natur; der Naturbegriff eben sowohl nichts in Ansehung der praktischen Gesetze der Freiheit.”

⁸⁵ Ibid.

⁸⁶ NS III, 316. Nr. 402.

⁸⁷ NS III: 92.

and their employment in the natural world, a central feature of what Gilbert Simondon calls mechanology in his own remarks on Romanticism, as we have seen. Organic life, conversely, cannot be viewed over and above mechanical forms of material relationality. Life is instead embedded within mechanical processes, a feature of Romantic thought that seeks to articulate an externalized understanding of the Kantian ‘technic of nature.’ In order to achieve this “construction of the universal lively,” for Novalis, a new relation between Kant’s architectonics of the understanding and technical media must be established, one that expands our understanding of technics beyond the bounds of the Aristotelean efficient cause.⁸⁸ “Architectonics,” Novalis writes in an entry to his *Notes for a Romantic Encyclopedia*: “Shouldn’t crystallization, natural architectonics, and *technics in general*—have had any influence at all on *previous construction and technics*?”⁸⁹ Instead of restricting natural phenomena and technics to their roles within metaphysical structures of thought, Novalis wonders if there may be an exteriorized, material mode of technical discourse that comes to shape how we think about forms of cognition and their relation to the world.

In order to articulate this discursive shift more fully, highlighting the way in which mechanics becomes entangled in cognition and organic life, it may prove useful to cast a glance at the readymade association Novalis finds in Kant’s philosophy of nature between mechanical forms of motion and the category of relation, a connection Novalis uses to outline a more flexible understanding of mechanics as an experimental comportment towards the understanding of natural processes and technical media. In the

⁸⁸ NS III: 92.

⁸⁹ NS III, 34: “Architektonik. Sollte nicht die Krystallisation, die Naturarchitektonik und *Technik überhaupt*—Einfluß auf die *frühere Baukunst und Technik überhaupt* gehabt haben?”

Metaphysical Foundations of the Natural Sciences, one of the central texts explored by Novalis in his “Kant Studies,” Kant attempts to show how his metaphysical approach to the forms of cognition, presented by what he calls the architecture of the understanding, might aid researchers more invested in the empirical investigation of natural phenomena than in metaphysical speculation per se.⁹⁰ Through his method of “Transcendental Deduction,” in which the basic forms of empirical experience reveal themselves piecemeal in a series of logical steps, Kant attempts to illustrate how the transcendental framework provided by the table of categories provides the natural observer with a secure foundation upon which to investigate the operative concepts of matter, motion, and rest.⁹¹ Doubling down on the divide he had already established in the first *Critique* between ideal and empirical modes of thought, Kant takes an important cue from Newton’s philosophy of nature by separating relative, empirical space from the frame provided to perception by nonextensive, absolute space, one of the two a priori forms of sense intuition detailed by the “Transcendental Aesthetic” in the *Critique of Pure Reason*.⁹² This privileged observational standpoint provided to the understanding by absolute space, we will see, becomes an important point of criticism for Romantics who prove skeptical of the anthropocentric attitude displayed in Kantian epistemology and nature philosophy. The Kantian subject, existing at a metaphysical remove from relative, empirical space, occupies a god’s eye view of the world filtered through the lens of such nonextensive

⁹⁰ For Kant, “Human reason is by nature architectonic, i.e., it considers all cognitions as belonging to a possible system, and hence it permits only such principles as at least do not render an intended cognition incapable of standing together with others in some system or other.” *KrV* 474:502. Guyer trans.

⁹¹ For more on Kant’s transcendental deduction, see Henry E. Allison, *Kant’s Transcendental Idealism* (New Haven: Yale University Press, 2004) and Paul Guyer *Kant and the Claims of Knowledge* (Cambridge, Cambridge University Press, 1987).

⁹² *CPR* 23:37 – 26:41.

space.⁹³ Beginning from this transcendental viewpoint, Kant suggests that we are able to logically deduce four different forms of matter and motion, forms which fit hand in glove with the categories provided by the understanding:

Space, which is itself mobile, is called *material*, or also *relative space*; *space*, in which ultimately all motion must be conceived, is consequently itself entirely *immobile*, and is called *pure*, or also *absolute space*.⁹⁴

This definition of what Kant calls the “quantity” of motion, phoronomy, is followed by three other forms of motion, each matched with a logical category found in the table of categories. Dynamics, which corresponds to the quality of movement, takes the vector of an object’s motion into account.⁹⁵ The third form, mechanics, deals in the category of relation, highlighting a dialectic of motion and rest in the way objects relate to space. While motion in objects only appears against a resting backdrop, rest, in effect, can only be seen in contrast to motion.⁹⁶ Phenomenology, the fourth form of motion, corresponds to the modality of perception required to cognize this dialectical movement.⁹⁷

These four forms of motion, unfolding step by step over the course of the Kantian deduction, represent different stages in our phenomenal understanding of the relationship between object, perceived motion, and the space occupied by motive force. Novalis, for his part, seeks to collapse the relational and absolute forms of space into each other by calling for a reflexive overlap of observational and speculative practices in the constitution of natural knowledge. Foreshadowing the collapse of the *khôra* into the

⁹³ See especially Kant’s “Vorrede.” Cf. Konstantin Pollok, *Kants Metaphysische Anfangsgründe der Naturwissenschaft: Ein kritischer Kommentar* (Hamburg: Felix Meiner Verlag, 2001).

⁹⁴ NS II, 392 - 393.

⁹⁵ Cf. *Metaphysische Anfangsgründe*, 496/31.

⁹⁶ *Ibid*, 536/106.

⁹⁷ *Ibid*, 534/138.

extensive space of the *polis*, a core feature of Novalis’s poetic writings that will be explored at the end of this chapter, Novalis’s call for the novice to become ‘mechanically adept’ attempts to restage the dialectical relationality of Kantian mechanics as a radically material approach to natural knowledge grounded in an exteriorized mode of cognition. “The true observer is an *artist*,” Novalis writes. “The empirical and the speculative search are both infinite” operations, he notes, referring to this reciprocal relation as an experimental attitude.⁹⁸ “Seeking both at once—the experimental path, it is the true way.”⁹⁹ Whereas for Kant, modes of aesthesis seem to have little effect on processes of poetic making, just as natural observation has no real effect on the forms provided by the architecture of reason, such natural observation, for Novalis, is imbued with material processes that are definitively experimental and speculative, processes which aim at realizing a vision of philosophy that embraces contingency in an attempt to provide a new “schema of the future.”¹⁰⁰ This embrace of corporeal contingency, in fact, leads Novalis to outline a novel mode of aesthesis, calling for the construction of a revised version of the transcendental aesthetic by moving the material relationality of mechanical discourse to the forefront of aesthetic perception: “Space and Time – Sense Intu[ition] a priori – w[hat] / i[s] t[hat] / Geometry Mechanics / Figural Schema of / Motion.”¹⁰¹ The suggested recursive loop between technical operations, natural processes, and the architecture of mind leads Novalis to highlight what he sees as a direct correlation between the motivating question of Kantian philosophy and the negentropic aims of

⁹⁸ NS III, 391. “Das empirische und d[as] speculative Suchen ist beydes unendlich.“

⁹⁹ NS III, 393. “In Beyden zug[eich] zu suchen—der experimentierende Gang, das ist d[as] Ächte.“

¹⁰⁰ NS III, 420.

¹⁰¹ NS III, 392 Nr 660: “Raum and Zeit – Sinnliche Ansch[auung] a priori – w[as] / h[eißt] d[as] / Geometrie Mechanik / Figuren Bewegungs/Schema.“

mechanology. The possibility of a priori synthetic judgments, capable of mediating between thought's architecture and the sensuous stuff of the phenomenal world, becomes bound to the task of constructing a negentropic *perpetuum mobile*:

Kant's question: are synthetic judgments possible? may be specifically expressed in the most varied manner. E.g. = is philosophy an art (dogmatics) (science) = Is there an art of invention devoid of data, an absolute art of invention [...] = is *perpetuum mobile* possible?¹⁰²

It is here that we see the very beginnings of Novalis's attempt to articulate the role technics plays in a "self-sorting system of nature," an autopoietic mode of self-expression in nature that is further developed in his encyclopedia project.¹⁰³ The *perpetuum mobile* provides a vision of nature and technical assemblage where "thing and tool" are combined into one and in which knowledge becomes integrally linked to poetic processes of making. "We only know," writes Novalis in his *Pollen* fragments, "insofar as we realize."¹⁰⁴

Mechanology and future technics: the construction of a living encyclopedics

Novalis's search for what he calls an "intellectual motive principle" in the wake of Kant's philosophy of nature, we have seen, leads him to suggest that the relationality inherent to mechanical forms of motion might provide a radical new form of aesthesis rooted in the material operations of technical media.¹⁰⁵ This mode of relationality, which we are calling, after Simondon, mechanology, highlights the way in which Romantic considerations of complex technical assemblages are not excluded from the recursive

¹⁰² Trans. Wood, 328.

¹⁰³ NS III, 340: Nr. 475.

¹⁰⁴ NS 3:357 Nr. 539.

¹⁰⁵ NS II, 384: "Die geistige Bewegungsprincip kommt erst alsdann in Betracht, wenn die möglichen Factoren einer Bewegung überhaupt dargethan sind."

logic of reciprocity used to explain life, as was the case with Kant, but instead become part and parcel of a dynamic overlay of organic and mechanical modes of approaching nature for Novalis. While searching for what he calls an absolute “art of invention” that might help us understand the functionality of *a priori* synthetic judgments, judgments which should bridge the gap between nonempirical and empirical modes of experience, Novalis turns away from the rigid architecture of Kantian reason and towards a more dynamic, flexible system of organization aimed at the construction of a *perpetuum mobile*.¹⁰⁶ Mechanics, when viewed in this light, becomes a material and experimental science seeking to establish synergistic relations between technical objects, humans, and the natural environment.¹⁰⁷

Novalis’s most enduring reflections on this vision for a *perpetuum mobile* can be found in his encyclopedia project, the *Allgemeine Brouillon*. Consisting of a series of fragments composed in 1798 and 1799, Novalis’s *Notes for a Romantic Encyclopedic* presents both a formal poetic enquiry into the ability of the Romantic fragment to mediate successfully between part and whole as well as a speculative attempt to articulate what it might mean to construct a *perpetuum mobile* for Romantic mechanology.¹⁰⁸ To begin with, let us turn to the way in which the call for mechanics to construct a negentropic machine is embedded within a series of reflections on the shifting relationship between life, technical mediation, and the organization of knowledge at the end of the eighteenth

¹⁰⁶ NS III, 388.

¹⁰⁷ The connection made between Romanticism and the theorization of negentropy by Erwin Schroedinger, who draws on Goethe’s poetics in his lectures *What is Life*, will be explored in chapter 3. Also see *What Is Life?: With Mind and Matter and Autobiographical Sketches* (Cambridge, Cambridge University Press, 2012).

¹⁰⁸ Philippe Lacoue-Labarthe and Jean-Luc Nancy have provided the most enduring reflection on this medial status of early romantic form. See the chapter on the “Fragment” in *L’absolu littéraire* and Leif Weatherby’s more recent “A Reconsideration of the Romantic Fragment,” 407 – 425.

century. In one entry marked “Encyclopedics,” Novalis states that “Every S[cience] has its God, which is also its aim. Thus mechanics actually lives from perpetual motion—and seeks at the same time, as its highest aim, to construct a *perpetuum mobile*.”¹⁰⁹ We can clearly see how this vision of encyclopedic organization forgoes any linear relationship between empirical data and systems of knowledge, favoring a recursive loop that sees progressive speculation as an integral mediating force in the relationship between knower and known.¹¹⁰ A feedback system of theorization and observation is proposed by Novalis, placing the knower not at a remove from the natural operation being examined, but squarely within it. In another entry marked “Encyclopedics Nr. 517,” Novalis writes that “[a]ll good researchers—doctors, observers and thinkers—do things like Copernicus. They turn the data and method inside out in order to see if there isn’t a better way.”¹¹¹ This Romantic approach to encyclopedics, what Novalis refers to as a “self-sorting system of nature,” presents an alternative to Enlightenment practices of knowledge formation by seeking to participate in the autopoietic activity of the natural phenomena which encyclopedics seeks to describe.¹¹² This interactive process of unfolding, what Simondon refers to as “genetic encyclopedics,” is further explored by Novalis in his analysis of the double history of the encyclopedic object and its concept:¹¹³

598. Enc[yclopedics]. Every S[cience] has a double hist[ory]—the Hist[ory] of the object—the history of [the] Obj[ect], as concept. History

¹⁰⁹ NS III, 296: Nr. 314. “Enc[lopaedistik]. Jede W[issenschaft] hat ihren Gott, der zugleich ihr Ziel ist. So lebt eigentlich die Mechanik vom Perpetuo mobili—und sucht zu gleicher Zeit, als ihr höchstes Problem, ein *perpetuum mobile* zu construieren.“

¹¹⁰ This recursive feature of romantic thought has been highlighted in recent years by the philosopher Yuk Hui. See *Recursivity and Contingency*.

¹¹¹ NS III, 355: Nr. 517: “Wie Copernikus machens alle gute Forscher—Aerzte, und Beobachter und Denker—sie drehn die Data und d[ie] Methode um, um zu sehn, obs da nicht besser geht.”

¹¹² Cf. NS III, 422. Nr. 784.

¹¹³ See Simondon. *Modes d’existence*, 96–106 and Jean-Hugues Barthélémy. *Simondon ou l’encyclopédisme Génétique* (Paris: Presses Universitaires de France, 2008).

of the [Matter]—Hist[ory] of the S[cience]. (*Every Hist[ory] is 3fold—past, present, and future*).¹¹⁴

Objects are bound to the discursive relations that seek to describe them. Human ways of relating to nature and to technical media are inextricably bound to the stories they tell about life and technology. This experimental comportment does not mean, however, that humans are free to construct any fictions they please. In another note on the possibility of creating a *perpetuum mobile*, this time in reference to Schelling's natural-philosophical treatise *On the World Soul*, Novalis remarks that

Nature is eternal—not vice versa—it maintains itself by itself. What it is once brought to do, it continues producing eternally according to the law of inertia. The reason for transience is to be sought in the intellect.
Perpetuum mobile.¹¹⁵

A key feature of the project of constructing a living encyclopedics consists in the way such organizational activity proves capable of articulating a view of the natural world that is integrally opposed to the anthropocentric forms of knowledge Romantics like Novalis find in Kant. Whereas Kant insists on keeping the observer at an ontological remove from the natural world, presenting a transcendental framework which does no justice to organic life or to the role played by technical discourse in knowledge formation, Novalis's *Allgemeine Brouillon* enacts a relational and material mode of construction and critique. His proposed “critique of human intelligence as the highest metric we have” would enable humans to forge new relations between nature and technology, providing a

¹¹⁴ NS III, 372: 598. “Enc[yclopaedistik]. Jede W[issenschaft] hat eine doppelte Gesch[ichte] – die Gesch[ichte] d[es] Gegenstandes—die Geschpichte[d[es] Gegenst[andes], als Begriff. Geschichte [d]er Sache—Gesch[ichte] d[er] W[issenschaft]. (*Alle Gesch[ichte] ist 3fach—Vorzeit, Gegenwart und Zukunft*).“

¹¹⁵ NS III, 110-111. “Die Natur ist *ewig* – nicht umgekehrt – sie erhält *sich von selbst*. Wozu sie einmal veranlaßt ist, das bringt sie nach Gesetzen der Trägheit immer fort hervor. Im Geiste ist der Grund der Vergänglichkeit zu suchen. *Perpetuum mobile*.“

“propaedeutic of all other critical disciplines.”¹¹⁶ This form of critique, referred to elsewhere as a doctrine of the “regular, complete construction of philosophy’s task,” consists in nothing more than an “ordering of data according to the required equivalences.”¹¹⁷ Forgoing the Kantian split between natural knowledge and technical discourse, Novalis’s thought experiments concerning the construction of a *perpetuum mobile* collapse into the attempt to articulate a “formative doctrine of the universal scientific organ—or better yet, of intelligence.”¹¹⁸

Novalis’s project of becoming what he calls “mechanically adept” opens up onto a broader cosmological principle of energetic reciprocity in which human knowledge and technical mediation are embedded within environmental processes, participating in the construction of the natural operations they seek to describe.¹¹⁹ “The result of a complete scientific universal-machine would be nature, or chaos.”¹²⁰ In order for Novalis to ensure that this project of Romantic mechanology ends in the self-articulation of the lifeworld, resulting in stability for the natural environment rather than entropic decay, we must clarify the position of the subject along the circuit we have been tracing between natural and technical processes. Selfhood, for Novalis, represents a material point of relation between machine and milieu: “the seat of the soul is there, where inner and outer worlds

¹¹⁶ NS III, 359. Nr. 540. “Eine Kritik der menschl[ichen] Intelligenz) als des *höchstgrädigen Meters*, den wir haben) muß gleichsam die Propaedeutik aller übrigen kritischen Disciplinen seyn.“

¹¹⁷ NS III, 347. Nr. 488. “Die Kritik im engern Sinn ist die Lehre von der regelmä[ßigen], vollst[ändigen] Construction der *Aufgabe* z.b. der Philosophie, derselben als Wissenschaft. Sie ordnet gleichsam die Data zu den nothwendigen Gleichungen.“

¹¹⁸ NS 3/5 361. Nr. 552: “Bildungslehre d[es] allg[emeinen] wissensch[aftlichen] Organs—oder besser der Intelligenz“

¹¹⁹ NS III, 245. Nr. 47: “Der Lehrling darf noch nicht raisonirren. Erst muß er mechanisch fertig werden, dann kann er anfangen nachzudenken.“

¹²⁰ NS III, 91.

touch. Where they interpenetrate—it is at every point of their interpenetration.”¹²¹ This medial status of selfhood, according to Novalis, must be embraced. The subject presents a “self-tool,” he writes elsewhere, while pointing out two possibilities for the observation of more complex mechanical assemblages:

Main observation of the mechanic: one considers the *machine* (Conc[ept] of the Machine) either in static, or mechanical moments, i.e. either in relation to the *equilibrium of its parts*, or in *motion*.¹²²

While insisting on the relational force of such interactivity, Novalis aims to show how human agents, no longer the center of the post-Copernican universe, can nevertheless be kept in the loop when confronted with complex technical and natural processes by participating in the productive processes of encyclopedic documentation and design. This form of symbiosis is achieved when humans begin to see themselves as a medium of expression for the natural world, hinting at a vision of encyclopedic practice that focuses on human participation in the self-articulation of the universe. In a note from his “Medical Notebooks,” Novalis turns directly to this role of the human knower as a negentropic medium of expression:

Authentic desire is also a *Perpetuum mobile*—it always produces itself anew (Mechanics is by and large the most useful form of analogy for Physics) and that this doesn’t happen—Friction—is the reason for all displeasure in the world.¹²³

¹²¹ NS II, 418-419, Nr. 19/20: “Der Sitz der Seele ist da, wo sich Innenwelt und Außenwelt berühren. Wo sie sich durchdringen—ist er in jedem Punkte der Durchdringung.“

¹²² NS III, 245, Nr. 46. “Hauptbetrachtung des Mechanikers. Man betrachtet eine *maschine* (Begr[iff] d[er] Maschine) entw[eder] im statischen, oder mechanischen Momente d.h. entw[eder] in Beziehung auf das *Gleichgewicht der Theile*, oder in *Bewegung*.“

¹²³ NS III, 562, No. 47. “Der ächte Genuß ist auch ein *Perpetuum mobile*—Er bringt sich (Überhaupt ist die Mechanik die brauchbarste Formel der Analogie für die Physik) eigentlich immer selbst wieder hervor und daß dies nicht geschieht—die *Friction*—ist der Grund alles Mißvergnügens in der Welt.“

True desire does not necessitate a colonial attitude towards life. Novalis's thought experiments with the *perpetuum mobile* serve to highlight alternative modes of entanglement with the natural universe via the organizational capacity of technical media. The speculative labor this requires, however, must be met with an experimental ethos rooted in an ethical approach to the living.

This relational view of selfhood and its integral role in the project of Romantic mechanology is explored further in "Alle Menschen seh ich leben," a late poem by Novalis which thematizes the speculative activity of constructing a living encyclopedics by cataloguing different forms of motion arising in response to a variety of observational vantage points with respect to natural motion. The first lines of the poem open at a distant remove from the action observed by the speaker, much in the way Kant's transcendental subject exists at an ontological remove from the natural world:

All the people I see living
Many floating gently on
Few are toiling, striving forward
Yet it falls just to the one
Lightly Striving, floating living.¹²⁴

¹²⁴ NS I, 420. no. 32: Alle Menschen seh ich leben,
Viele leicht vorüberschweben
Wenig mühsam vorwärtsstreben
Doch nur Einem ists gegeben
Leichtes Streben, schwebend leben.

Wahrlich der Genuß ziemt Toren,
An der Zeit sind sie verloren,
Gleichen ganz den Ephemerem.
In dem Streit mit Sturm und Wogen
Wird der Weise fortgezogen,
Kämpft um niemals aufzuhören,
Und so wird die Zeit betrogen,
Endlich unters Joch gebogen,
Muß des Weisen Macht vermehren.

—
Ruh ist Göttern nur gegeben,

Over the course of the poem, this transcendental attitude is replaced by a viewpoint from which the hero-sage finds himself in a “fight with storm and waves,” at the end finding that “[r]est is only given to the gods.”¹²⁵ Since “for us, life is acting,” the only possible pleasure the speaker finds is through an “exercise of potency” in collaboration with such natural forces.¹²⁶ While rejecting any mode of observation that would privilege an anthropocentric attitude towards natural knowledge, the poem underscores a series of energetic opportunities unfolded within what Novalis refers to as the “betrayal of time, the negentropic capacity of life to explore different forms of motive power such as “striving onward,” “floating by,” and “lightly striving.”¹²⁷ This encyclopedic documentation of forms of motion and their affective resonance presents Novalis with a chance to investigate energetic potentialities in human relations to nature, while also reflecting on the role played by technical media in this process. In this way, human systems of knowledge provide a medium for nature’s own activity as a “self-sorting system,” opening up a recursive exchange between speculation and observation that enables us to understand the experimental attitude underlying Novalis’s calls to construct a *perpetuum mobile*:

Encyclopedics 320. Fut[ure] doctrine of human[kind], everything that is predicated from God contains the *future human doctrine*. Every machine, that now lives from the great *perpetuo mobile*, must become a perpetuum

Ihnen ziemt der Überfluß,
Doch für uns ist Handeln Leben,
Macht zu üben nur Genuß.

¹²⁵ Ibid.

¹²⁶ Ibid.

¹²⁷ It is for similar reasons that Gabriel Trop has used the poem to outline what he refers to as a “thermodynamic conception of the absolute” in Novalis. See Gabriel Trop, “Novalis and the Absolute of Attraction,” in *Seminar: A Journal of Germanic Studies*, vol. 50 (2014): 276–94, <http://www.utpjournals.press/doi/full/10.3138/sem.50.3.276>.

mobile—each human, who now lives from and through God, should become God.¹²⁸

Human beings, like the sage in Novalis's poem, should strive to become completely embedded in the motions and rhythms of nature, losing themselves in the energetic embrace of the cosmos they strive to understand.

***Kuber* as Cosmogram: towards a new *nomos* of technical resonance**

The mechanological comportment required to construct a *perpetuum mobile*, as we have seen, necessitates a drastic shift in the Romantic technical imagination. Humans must account not only for simple tools but also for more concrete mechanical assemblages, machines which force us to reconsider the ways in which our entanglements with the natural world are technically mediated. The ship provides Novalis with a vivid example of this process of concretization, providing a metonymic tool for the establishment of Romantic mechanology writ large. Further contours of this development appear in Novalis's outline of a living encyclopedics, highlighting the ways in which technical relationality serves as a mediating force between local techno-cultural practices and the holistic cosmology informing Novalis's natural philosophy. The aim of such mediating activity is nothing less than the articulation of negentropic forms of interaction between humans, technical objects, and nature. The construction of a *perpetuum mobile* constitutes a material process that Novalis sketches in his notes on Kant, in his remarks on Schelling's *World Soul* essay, and in the *Encyclopedia* project. The outcome of this heightened sense of attunement between nature, technics, and humans, however, is by no

¹²⁸ NS III, 297. Nr. 320. "Zuk[unkfts]Lehre der Menschh[eit]. (Theologie.) Alles was von Gott paediciert wird enthält die *Menschliche Zukunftslehre*. Jede Maschine, die jetzt vom Großen Perpetuo mobili lebt, soll selbst Perpetuum mobile—jeder Mensch, der jetzt von Gott und d[urch] Gott lebt, soll selbst werden."

means a foregone conclusion: “[t]he result of a complete scientific universal-machine would be nature, or chaos.”¹²⁹ Attempts to construct a functional *perpetuum mobile* can lead to entropic decay and disorder, in fact, if we do not properly attend to the epistemic and ethical aspects of our relationship to nature. An important way we have seen Novalis insure this project against ecological catastrophe is by highlighting the many ways in which the subject itself is always already imbricated in technical media and natural processes. This co-determination of humans, nature, and technicity undermines anthropocentric attitudes toward the employment of reason, foreshadowing later critiques of technology levelled by philosophers such as Peter Sloterdijk and Martin Heidegger.¹³⁰ Warning against the “mechanistic triumph” of machines over the lifeworld signified by the paradoxical adherence to an ideology of the organism, Heidegger urges his readers to take seriously the threat posed by the enframing function of modern technology, which threatens to colonize every aspect of the lifeworld.¹³¹ This resonance between the critique of anthropocentric forms of knowledge in Romanticism and the critique of technology levelled by Heidegger has much in common with the experimental attitude towards nature and technical objects found in Simondon’s conception of mechanology, as commentators such as Yuk Hui have noted.¹³² Novalis, however, adopts a more progressive attitude towards the possibilities inherent to complex technical assemblages

¹²⁹ NS III, 91.

¹³⁰ Cf. Peter Sloterdijk, *Sphären: Mikrosphärologie. Sphären: Bd. 2: Globen* (Frankfurt am Main: Suhrkamp, 1999), 47-142

¹³¹ Cf. *Denkwege* XII-XV: “It might very well still take a considerable time to recognize that the ‘organism’ and the ‘organic’ present themselves as the mechanistic-technological triumph of modernity over the domain of growth, nature.”

¹³² See *Recursivity and Contingency*, 1 – 40.

than Heidegger would.¹³³ Much like Simondon, Novalis holds an experimental attitude towards the construction of negentropic technical assemblages. While highlighting the need for more synergistic machines, Novalis also presents a broader view of the universe itself as a functional, cosmological *perpetuum mobile*.

While Schelling's *World Soul* essay provides Novalis with the blueprint for a complex, dynamic machine with infinite motive power, it is up to the Romantic encyclopedist and poet to document and experiment with the ways in which technical objects can tap into and equitably distribute the resources made available to humans who see nature as a *perpetuum mobile*. This dual feature of Romantic attitudes towards technical objects, viewed as what John Tresch refers to as "cosmograms" linking concrete devices to more abstract metaphysical structures, is highlighted by Novalis at the very outset of *Heinrich von Ofterdingen*.¹³⁴ One of two incomplete *Bildungsromane* the poet left behind after his death, *Heinrich von Ofterdingen* tells the story of an eponymous hero journeying with his mother from their native home in Augsburg to his grandfather's court in Thuringia. While the plot appears to be set entirely in the high Middle Ages, readers are confronted in the opening lines with an anachronistic timekeeping device that seems ill-placed in this medievalizing universe. In the first

¹³³ See especially Simondon's description of the experimental comportment towards nature and technical objects he finds in writers such as Goethe and E.T.A. Hoffmann. *Modes d'existence*, 128-29.

¹³⁴ See John Tresch, "Technological World-Pictures: Cosmic Things and Cosmograms," *Isis* 98, no. 1 (March 2007): 84-99, <https://doi.org/10.1086/512833>, as well as his more recent essay "Around the Pluriverse in Eight Objects: Cosmograms for the Critical Zone," in Latour and Weibel (eds.) *Critical Zones: The Science and Politics of Landing on Earth* (Karlsruhe: ZKM - Center for Art and Media Karlsruhe, 2020).

sentence, readers hear the ticking second hands of a wall clock, a device that was not invented until a number of centuries after the supposed setting:¹³⁵

The parents already lay asleep as the wall clock beat its steady pulse and wind rustled outside the rattling windows; the room brightened from the alternating glance of the moon. The young man lay restless in bed, thinking of the stranger and his tales.¹³⁶

This temporal solecism opens up a space of alterity between the self-enclosed cosmos of the novel's medieval setting and the standardizing rhythms of modernity experienced at the turn of the nineteenth century in Europe. While the clock's second hand never makes a second appearance, it calls the reader's attention to a dual aspect of technics: while constituted by concrete technical objects, the technosphere nevertheless possesses the additional function of participating in the construction of vast cosmologies—stories we tell ourselves about the way in which nature, technical media, and humans interact.

One of the most important of these stories explored by Novalis's novel concerns the status of the *nomos* with respect to the distribution of spatial relations between humans and the environment. While scholars such as Frederick Beiser have highlighted the ways in which Romantic aesthetic production seeks to combine natural knowledge with ethical action, providing points of contact between Kant's "starry heavens" of the physical universe and the "moral law" inside the subject, little has been written on how the externalization of the technic of nature by Novalis and early Romantics leads to the articulation of a new ethos: a romantic political ecology that is rooted in the complex

¹³⁵ Cf. Gerhard Dohrn-van Rossum, *History of the Hour: Clocks and Modern Temporal Orders* (Chicago: University of Chicago Press, 1996).

¹³⁶ NS I, 195: "Die Eltern lagen schon und schliefen, die Wanduhr schlug ihren einförmigen Takt, vor den klappernden Fenstern sauste der Wind; abwechselnd wurde die Stube hell von dem Schimmer des Mondes. Der Jüngling lag unruhig auf seinem Lager und gedacht des Fremden und seiner Erzählungen."

operations of technical media.¹³⁷ After being confronted with his father's cynical attitude towards the aim of creating more equitable relations between humans, technical objects, and the natural universe—"Träume sind Schäume," his father exclaims after hearing about his dream of the blue flower, "dreams are suds"—Heinrich finds himself searching for an alternative to this cynical law of the father, according to which dreaming of a better world appears as a useless task.¹³⁸ Along his journey, Heinrich and his mother are accompanied by two well-travelled merchants who recount wondrous stories of their encounters with an array of medievalizing characters, including miners, knights, and poets from faraway lands. Heinrich is especially taken by the tales he hears about poets from a mythical golden age. In these stories, Heinrich is introduced to a new cosmology in which "the entirety of nature" appears "livelier and more sensible" than the present, a time in which "hidden effects moved lifeless bodies."¹³⁹ This view of a time in which "direct communication with the heavens" seemed possible provides Heinrich with an early glimpse of alternatives to the compliant cynicism of anthropocentric life.¹⁴⁰

The Romantic longing for an irrecoverable past, as many scholars have noted, is used by Novalis primarily as a means of illustrating a more forward-looking vision for life on earth, providing the contours of a future in which technical mediation establishes the basis for more sustainable interactions between humans and the natural world.¹⁴¹

¹³⁷ Kant, AA V, 161: „Zwei Dinge erfüllen das Gemüt mit immer neuer und zunehmenden Bewunderung und Ehrfurcht, je öfter und anhaltender sich das Nachdenken damit beschäftigt: *Der bestirnte Himmel über mir, und das moralische Gesetz in mir.*“

¹³⁸ NS I, 195.

¹³⁹ NS I, 195.

¹⁴⁰ NS I, 198. This cynical, bureaucratic aspect of Novalis' *Bildungsroman* has been pointed out most prominently by Friedrich Kittler. See "Heinrich von Ofterdingen als Nachrichteneinfluss" in *Die Wahrheit der technologischen Welt*.

¹⁴¹ Cf. Hans Joachim Mähl, *Die Idee Des Goldenen Zeitalters Im Werk Des Novalis : Studien Zur Wesensbestimmung Der Frühromantischen Utopie Und Zu Ihren Ideengeschichtlichen*. Tübingen : M.

While the subtitles of the novel's first section, *Die Erwartung*, and of the incomplete second part, *Die Erfüllung*, seem to remind the reader of the difficulty of realizing any emancipatory dreams, the poetics of *Heinrich von Ofterdingen* nevertheless insists on the urgent need to reject the complacency of conservative cynicism regarding the deployment of new media with an experimental and open approach towards technics. In one of the merchants' tales, for example, Heinrich hears a version of the legend of Arion, a lyre-playing hero from Book 1 of Herodotus's *Histories*. Without revealing his source directly, Novalis adapts the legend as told by Herodotus in order to recover an often-overlooked usage of the term *nomos* in ancient Greek: the 'stirring song' of the *óρθιος nomos*.¹⁴² Providing a musical alternative to unmediated harmony between Kant's "law within" and the physical law of the "starry skies above," this forgotten understanding of the term *nomos* does not reduce law to natural necessity, the *physis*; nor does it defer to the arbitrary decision-making of a sovereign being or state, a false dilemma which lies at the heart of Aristoteles's *Nicomachean Ethics* and Plato's *Meno*.¹⁴³ The *óρθιος nomos* provides Novalis with a way of showing how attunement to the operations of technical media can create material points of resonance between ecology and political life, establishing a more flexible understanding of natural processes and human activity than can be found in the embrace of a "new *nomos* of the earth" by thinkers such as Latour.¹⁴⁴ This alternative *nomos*, furthermore, has explicitly democratic connotations: the term is

Niemeyer, 1994. This overlap between romantic thinking about nature and technics has also been highlighted by Dennis Mahoney. Cf. *Die Poetisierung der Natur bei Novalis*. Bouvier, 1980, 13.

¹⁴² Herodotus. *Histories* I, 24-25.

¹⁴³ Cf. Aristotle, *Nicomachean Ethics*, Ed. and trans. Robert Crisp (New York: Cambridge University Press, 2014); Plato, *Meno* (Indianapolis: Hackett, 1980).

¹⁴⁴ See Bruno Latour. *Facing Gaia: Eight Lectures on the New Climatic Regime*, trans. Catherine Porter (New York: Polity, 2017), 219-54.

introduced by Aristophanes in the *Knights* fragment as the chorus celebrates the removal of a tyrant by the demos, who finally recognizes Arion as its rightful leader.¹⁴⁵

Novalis's main source for invoking this *nomos* of resonance, however, is Herodotus's *Histories*. Although the legend provides material for a number of Romantic writings, including poems by Ludwig Tieck and August Wilhelm Schlegel, Novalis's treatment of the tale in *Heinrich von Ofterdingen* is unique in its insistence on tracing the 'stirring song' of the hero back to the material, medial conditions of the song's production. In Novalis's retelling of the myth, a "miraculous instrument" or "tool" is placed in Arion's hands that is capable of reanimating the slumbering forces of the natural world.¹⁴⁶ Arion, whom the merchants of Novalis's novel refer to tellingly as a "Tonkünstler," a "sound artist," embarks on a seaward journey to a foreign land while carrying a brilliant trove of gifts bestowed to him over the course of his travels.¹⁴⁷ Upon his departure, the sound artist Arion is overcome by a band of marauders who threaten to steal his wealth and toss him into the sea. The hero begs for his life, but quickly realizes that such pleas are useless. The assailants are merciless. They take all of his money and present him with a grim choice: Arion must kill himself immediately and receive a proper burial on land or allow himself to be cast into the ocean's depths. Overcome with despair, the hero chooses the latter option, asking for just one dying wish: he requests to play one final song on his instrument, the "miraculous tool" that accompanies him on all of his journeys.¹⁴⁸ The mention here of the instrument upon which the *óρθιος nomos* is played

¹⁴⁵ See *Knights*. 1279.

¹⁴⁶ NS I, 207.

¹⁴⁷ NS I, 208.

¹⁴⁸ NS I, 209-210.

is not found in Herodotus's *Histories*. It is a unique invention by Novalis, whose storytelling merchants highlight the importance of technical objects in establishing new points of resonance between humans and nature.¹⁴⁹ After throwing himself overboard, Arion is unexpectedly rescued by a large sea creature, who thanks him for playing his wonderful song.¹⁵⁰ Tool-based harmony provides the basis for a forgotten type of attunement between humans and nature, a type of synergistic relational exchange made available when technical media are seen as externalizations of the recursive functionality of Kantian reciprocity.

The challenge posed by Novalis's vision of romantic mechanology is the following: how might this seemingly forgotten law of technically mediated attunement be introduced to a world that is no longer defined solely by simple tools and instruments? The introduction of complex machines can afford humans greater access to the motive resources of the cosmos, as Novalis explains throughout his writings on the *perpetuum mobile*. Such advanced machinery, however, can also accelerate processes of entropic decay, contributing to the destruction of life and chaotic disequilibrium for the natural universe. With the careful construction of poetic and epistemic media as described in the *Notes for a Romantic Encyclopedia*, however, Novalis seeks to call attention to the synergistic capabilities inherent to machines, which allow us to forge increasingly complex ways for humans to relate to themselves and to nature. In the *Pollen* fragments, Novalis employs the metonymic device of a ship and shipmaking for conceptualizing ways in which an evolutionary uptick in technological complexity experienced at the turn

¹⁴⁹ Ibid.

¹⁵⁰ NS I, 211.

of the nineteenth century can be met with a new understanding of the human as irreducibly embedded within natural and technical processes.¹⁵¹ In his retelling of the Arion legend, Novalis once more turns to the ship as a way of conceptualizing this historical shift from organology to mechanology. In one more striking revision of the legend, Novalis's merchants describe how the catastrophic fate awaiting Arion's assailants may be tied to the loss of control over the ship's steering, which is itself an unintended consequence of their ignorant refusal to listen to the *óρθιος nomos*.¹⁵² While the marauders of Herodotus's version of the legend happily listen to the stirring song of the hero before throwing Arion overboard, their counterparts in *Heinrich von Ofterdingen* fill their ears with wax so as not to be swept away by the music's charm:

They knew full well that, if they listened to his magic song, their hearts would soften and they would be seized with remorse; they therefore decided to grant his request, but filled their ears during the song, hearing nothing so they could stick to their plan.¹⁵³

In a striking reversal of Homeric ocularcentricism, Novalis presents the hero's lied as a siren song for the assailants. As cynics of the Anthropocene, the antagonists fear the resonant power of Arion's music, the hidden capabilities of his wondrous instrument. While Herodotus's hero relates his tale to his companion Periander after returning to shore, and he is even able to confront his assailants when they arrive upon the mainland, in *Heinrich von Ofterdingen*, the marauders' failure to hear the *óρθιος nomos* sets them on a path of irreversible self-destruction. At first, they fight ruthlessly among themselves

¹⁵¹ NS II, 453: 88.

¹⁵² Also see the "Eröffnung" to Wolf, *Fortuna di mare*, 23 – 60.

¹⁵³ NS I, 211. "Sie wussten recht wohl, dass, wenn sie einen Zaubergesang hörten, ihre Herzen erweicht und sie von Reue ergriffen werden würden; daher nahmen sie sich vor, ihm zwar diese letzte Bitte zu gewähren, während des Gesanges aber sich die Ohren fest zu verstopfen, dass sie nichts davon vernähmen und so bei ihrem Vorhaben bleiben könnten."

over Arion's splendid riches. A deadly fight takes many of their lives, and the treasure itself is lost in the struggle.¹⁵⁴ The confusion and loss of life also leads to a loss of control for the remaining crew on board: "the few who remained were unable to govern the ship alone, and were quickly swept to shore, where the ship collapsed and sunk."¹⁵⁵

While allegorizing the catastrophic effects of ignoring the tool's mediated form of resonance, Novalis uses the verb *regieren* to call attention to the way in which the ship might be understood as a metonymic device for working through the political and ecological changes initiated by the historical appearance of complex machines. After refraining from listening to the *nomos* of even a simple instrument, Arion's assailants are poorly equipped to deal with the more complicated feedback mechanisms of the ship's steering rudder. They are not attuned to the ways in which the ship's motion responds to the ocean's tides and flows. Externalizing the complex recursive functionality of the Kantian mode of reciprocity, the failed steering presented in *Heinrich von Ofterdingen* suggests an important point of nondistinction between the environmentality of the ocean and the realm of political decision-making. Falling neither on the side of a realist technic of nature, according to which interaction between humans and the natural environment is determined by the laws of the physical universe alone, nor on the side of an idealizing technics that would reduce the alterity of natural motion to a projection of human desire, the ship's capacity to run aground under these conditions presents a stark warning from Novalis to his readers: already by the beginning of the nineteenth century, humans are entering a time in which they can no longer distinguish between the governmentality of

¹⁵⁴ Cf. *Histories* I, 24-25. NS I, 212.

¹⁵⁵ Ibid. "[D]ie wenigen die übrig geblieben, hatten allein das Schiff nicht regieren können, und es war bald auf den Strand geraten, wo es scheiterte und unterging."

the *polis*, with its extensive technologies of control presented through the familiar metaphor of a ship, and the non-extensive space of what the ancient Greeks called *khôra*, signifying both the sea itself as a space outside of the *polis* and the metaphysical container upon which the entirety of the universe rests.¹⁵⁶ Completing the collapse of Kant's absolute non-empirical space into the relative space of perceived phenomena, a technically mediated epistemology and poetics that Novalis began to articulate in his vision of the novice "becom[ing] mechanically adept," Novalis puts forth an understanding of technical mediation which harbors no Promethean illusions about the impact of technology on nature. Human beings cannot simply engineer their way out of environmental disaster by filling the planet with ever newer mechanisms of control.¹⁵⁷ On the other hand, Novalis's vision of Romantic mechanology also resists the cynical realism embraced as a "new nomos of the earth," a determinism which would ignore the mediating status of technical objects in the organization of knowledge, as well as the vital role played by the *polis* in keeping human subjects afloat during times of ecological crisis.¹⁵⁸

Coda

As we have seen over the course of this chapter, Novalis's invocation of the *óρθιος nomos* played by Arion constitutes the introduction of a new law of attunement for Romantic thinking about technology and the environment. Through the invocation of the musical instrument, a harmonious resonance materializes and mediates the two poles of what Kant refers to as the 'technics of nature:' realism and idealism. Laying the

¹⁵⁶ See Derrida, *Khôra*, 75 and Siegert, "The Cultural Techniques of Seafaring," 68-69.

¹⁵⁷ NS III, 245. Nr 47.

¹⁵⁸ See Latour. *Facing Gaia*, 219-254.

groundwork for a negentropic political ecology externalizing the recursive functionality of Kant's mode of reciprocity, Novalis shows how the machinic ideal of constructing a *perpetuum mobile* might provide a more synergistic, non-colonizing approach towards nature by reflecting carefully on the energetic and organizational capacity of technical media. Refusing to reduce the *nomos* to the unmediated architecture of the understanding or to the motive force of the physical universe, this new sense of attunement aims to create stability and resonance between humans and nature by paying careful attention to the design and employment of complex devices. Referring to this process as becoming "mechanically adept" in the *Notes for a Romantic Encyclopedia*, a mode of relation between technology and nature that Gilbert Simondon calls mechanology in his reflections on Goethe and E.T.A. Hoffmann, Novalis hints at the possibility of establishing and maintaining equitable relations between humans and the lifeworld by exploring the evolutionary increase in technical complexity occurring at the turn of the nineteenth century. Such Romantic aims, of course, are not easily realized, as Novalis acknowledges in an entry to the *Notes for a Romantic Encyclopedia*. "The simpler the laws," he writes, "the more difficult their application," reflecting on the role complexity plays in the negentropic ideal of constructing a *perpetuum mobile*.¹⁵⁹ As the ship's criminal crew experiences in Novalis's adaptation of the Arion legend, such attempts to modulate complicated feedback systems can lead to utter catastrophe for human subjects, especially for those who refuse to listen to the *nomos* of resonant, material technicity.

¹⁵⁹ NS III, 219. "Je einfacher die Gesetze, je schwieriger in der Anwendung. Simplification ist also nicht zur Beförderung der Trägheit, sondern, wie der Staat etc. Mittel zur Erweckung der höchsten, complicirtesten *Thätigkeit*—höchster Reitz. Der höchste Grundsatz würde die *höchste Thätigkeit* erwecken und nothwendig machen."

The medial status of the ship's steering device will be investigated further in the fourth chapter, which attends to the ways in which Goethe seeks to outline a material understanding of the temporal process Kant calls *Antizipation*.¹⁶⁰ Mediating between a priori forms of intuition and the empirical temporality of sense data, *Antizipation* presents Goethe with a way of re-establishing a forgotten link between organic formation and technical modulation, the absence of which is mourned by the court poet Torquato Tasso in his closing monologue.¹⁶¹ Before exploring this technics of anticipation in Goethe's morphology, however, we must first turn to the Romantic *Naturphilosoph* Friedrich Schelling, whose *Weltseele* essay has provided Novalis with an instance of a working *perpetuum mobile*. While Schelling himself first explores this machinic ideal only in 1809, his writings on nature philosophy from 1795 to 1800 present an important reminder of the ways in which the specificities of organic life must be carefully considered when reflecting on experimental forms of relation between technology and the environment.

¹⁶⁰ FA I.9: 270.

¹⁶¹ FA 1.5: 834.

3. Between function and figuration: machine and organization in Schelling's *World Soul*

In the last chapter, we saw how Novalis's reflections on the scientific systematization and poetic presentation of natural knowledge in his philosophical notebooks and in the *Notes for a Romantic Encyclopedia* led him to suggest that all systems of knowledge ultimately participate in the construction of the phenomena they aim to describe. On this account, Romantic nature philosophy and poetics present an externalized, material supplement to the teleological character of what Kant calls the "technic of nature" in the *Critique of Judgment*.¹⁶² Conjoining considerations of organic life's self-motivated activity with an attunement to the complexity and materiality of technical media, Novalis urges his fellow Romantics to adopt a relational account of knowledge, one that is recursive and self-reflective while remaining empirically grounded, able to be traced back to the realm of observable phenomena. The key to understanding this shift in the Romantic 'technic of nature,' for Novalis, can be found by paying close attention to the ways in which the evolutionary uptick in the complexity of technical media is reflected in attempts to describe the complexity of organic life in nature philosophy at the end of the eighteenth century. Urging readers to explore the development from simple tools to complex machines through the retelling of the Arion legend in *Heinrich von Ofterdingen*, Novalis employs the crucial Simondonian shift from organology to mechanology as a means of drawing attention to the ways in which life itself (and our understanding of it) becomes imbricated in the operations of technical

¹⁶² CJ A 318/B322.

media. While appearing in excess of strictly Newtonian considerations of causal determination, organic life appears in its actuality as a parasitic supplement with regards to a technical *a priori*.

In this chapter, we will see how this line of mechanological questioning undertaken by Novalis is in a certain way reverse-engineered by Friedrich Schelling. In Schelling's writings on natural philosophy throughout the 1790s, the composition of organic life and its spontaneous self-organization take center stage. While Novalis's methodology starts with the novice "becoming mechanically adept," ultimately teasing out a resonant *nomos* inherent to both the organism and the operations of technical media, Schelling's investigation of the Kantian technics of nature begins and ends with the exploration of life, that *je ne sais quoi* of the organism's autopoetic, self-organizing activity.¹⁶³ This is not to say, however, that Schelling presents us with a vision of the organic that is completely devoid of *a priori* technical mediation. On the contrary, Schelling makes it clear in some of his earliest works that he is seeking to arrive at a point of nondistinction between the realism of natural knowledge and the idealism of speculative philosophy, a point where the Kantian *Kluft* between causal mechanism and spontaneous teleology explored in the third *Critique* would finally fade away.¹⁶⁴ While searching for this point of non-distinction between organism and mechanism in writings such as the *World Soul*, Schelling draws our attention to a more central, often overlooked conceptual divide between *machine* and *organization*. While the machine presents a vision of a complex whole wherein functionality determines the figuration of every part,

¹⁶³ NS III, 245. Nr 47.

¹⁶⁴See paragraph 9 of the introduction to the *Critique of Judgment*. CJ 52/54.

in the organization of dynamic systems (such as organisms and systems of thought), function is subordinated to the figurative determination of the part as it relates to the whole.¹⁶⁵ Leaving open the question of whether or not the machine and the speculative schema of organization can reflexively determine one another through the Kantian motion of reciprocity, the recursive logic lying at the heart of Schelling's entire philosophy during these years, the *World Soul* puts on full display the difficulty of avoiding technical media when discussing organic activity. It is only in and through material exteriorization that the machine's mechanical repetitions can produce the spontaneous alterity that is called, for lack of a better term, life. Schelling's writings thus serve as a reminder to Romantic poetics of the ongoing centrality of the organism and the theorization of life for mechanological considerations of technical organization in its multiple modes.

As a result of Schelling's rather counterintuitive attitude towards the role played by the organism in romantic nature philosophy, commentators such as Leif Weatherby have called attention to a type of organological thinking in his writings, wherein the human being might be considered as part of a broader network of historical determinations provided by the material medium of the tool, or *organon*.¹⁶⁶ Supplementing this organological approach to Schelling's understanding of the tool and human, this chapter seeks to highlight the numerous ways in which Schelling is led to thematize the evolutionary shift in technical complexity from tool to the machine as part of a broader set of natural scientific, aesthetic, and philosophical concerns, matters which

¹⁶⁵ SW I:7, 210.

¹⁶⁶ See chapter 5 of Leif Weatherby, *Transplanting the Metaphysical Organ*, 171 – 205.

move Romanticism beyond organology and more fully into the domain of mechanological thinking proper. This move from organology to mechanology is a definitive shift in the history of science and technology, according to Simondon. Presenting what the philosopher Yuk Hui has recently referred to as the first world soul without a demiurge, Schelling's natural-philosophical writings can be seen as an early Romantic attempt to explore a cosmology that overcomes the technocratic, hylomorphic impulses found in Kantian metaphysics and in uses of instrumental reason, while presenting a vision of the cosmos as a dynamically self-organizing machine.¹⁶⁷ Although Schelling never appears to respond directly to Novalis's claim that his *World Soul* presents a functional *perpetuum mobile*, a vision of nature as "eternal," "maintain[ing] itself by itself [...] according to the law of inertia," Schelling will go on to explore the hypothesis that his much-lauded equilibrious "band of forces" presents the possibility of this negentropic basis for life in the 1809 *On the Essence of Human Freedom*.¹⁶⁸ With the machine as its material supplement, the technical medium through which the absolute of nature takes on finite appearance for knowers, "the band of forces that make up life could equally be insoluble according to their nature," Schelling writes.¹⁶⁹ This band of forces itself could constitute a functional "*perpetuum mobile*."¹⁷⁰ The dynamic equilibrium lauded here often appears directly inspired by the writings of Schelling's friend, the

¹⁶⁷ For Hui's remarks on Schelling and Plato, see *The Question Concerning Technology in China: An Essay in Cosmotronics* (Cambridge: MIT Press, 2019), 69. For a more elaborate reading of the role technē plays in Schelling's nature philosophy, see Hui, *Recursivity and Contingency*, 34 – 44.

¹⁶⁸ NS III, 110-111. "Die Natur ist ewig – nicht umgekehrt – sie erhält *sich von selbst*. Wozu sie einmal veranlaßt ist, das bringt sie nach Gesetzen der Trägheit immer fort hervor. Im Geiste ist der Grund der Vergänglichkeit zu suchen. Perpetuum mobile."

¹⁶⁹ SW I, 17, 377.

¹⁷⁰ Ibid: "das Band der Kräfte, welche das Leben ausmachen, könnte seiner Natur nach ebensowohl unauflöslich sein, und wenn irgend etwas, scheint ein Geschöpf, welches das fehlerhaft Gewordene in sich durch eigne Kräfte wieder ergänzt, dazu bestimmt, ein Perpetuum mobile zu sein."

physician and mystic Franz von Baader. In a notebook entry from 1789, Baader gives voice to a negentropic mode of organic health that will appear time and again in Schelling's own writings. "We are thus seeking, with hope of profit, to work on force and time at once—i.e. we are seeking the perpetuum mobile," he writes in a diary entry from February 25, 1789.¹⁷¹ While exhibiting more direct concern for the role played by organic life in the project of mechanology than we saw in writings from Novalis, Schelling's exploration of life as an infinite process akin to a *perptuum mobile* in his 1809 essay on human freedom presents the results of a lifelong attempt at exploring how philosophy can overcome the divide between mechanics—which Schelling associates with determinative causality—and the organic spontaneity that constitutes life, both when it finds itself in balance and during its more disequilibrium moments.

Plato's *Timaeus* and the Possibility of Form

Schelling's attempt to explore what a world soul without a demiurge might look like for Romantic technics, nature philosophy, and cosmology first takes on concrete form in the 1798 *World Soul* essay, before culminating in the 1809 *Freedom* essay. This lifelong project, however, can be traced back to two relatively hermetic treatises from 1794, one discussing Platonic cosmology and the other ostensibly exploring the status of metaphysics after Kant. Both written while Schelling was still a student at the Tübinger Stift, Schelling's notes to Plato's *Timaeus* and his subsequent essay *On the Possibility of a Form for All Philosophy* bear witness to the inextricable link between philosophical speculation and natural formation for Schelling, even during his earliest years. In the

¹⁷¹ Franz von Baader, *Sämmtliche Werke: Band 11*, ed. Franz Hoffmann (Hamburg: Nabu, 2013), 202. "Wir suchen also mit Hoffnung des Gewinnstes an Kraft und Zeit zugleich zu arbeiten—d.h. wir suchen das Perpetuum mobile."

notes to *Timaeus*, Schelling explores what he calls Plato's "transference [*Übertragung*] of the subjective onto the objective" in the myth of the demiurges as related to Socrates by Timaeus, a traveler from Italy who tells of the cosmic way in which immaterial forms come to take on material appearance in the finite realm.¹⁷² As opposed to earlier variations of the demiurgic mythology, such as the one penned by Hesiod, wherein the demiurges are troublemaking agents of chaos released upon the world by Pandora as punishment for Prometheus's theft of fire and deception of Zeus, in Plato's *Timaeus*, the demiurges are technical agents of positive creation on a universal scale.¹⁷³ They are the cosmic technocrats ultimately responsible for mediation between the Idea (*eidos*) and its material manifestation.¹⁷⁴

It is here, at the site of mediation between form and matter, eternal ideas and their temporal manifestation, that Schelling's exploration of demiurgic technical activity begins. In his notes to Plato's dialogue, which are in many ways an attempt to read the Platonic cosmology as an allegory for the Kantian architecture of the understanding, Schelling has two primary aims: first and foremost, these notes attempt to explore the possibility that the "technic of the demiurge," which Schelling also refers to as a singular *Baumeister*, might be envisioned as an early exploration of the Kantian 'technic of Nature.'¹⁷⁵ The *Timaeus* thus provides Schelling with what he calls a 'true myth,' aiding philosophy in exploring the complex relationship between concepts of reason, sense

¹⁷² See Friedrich Wilhelm Joseph von Schelling and Hermann Krings, *Timaeus 1794: Zur Bedeutung der Timaeus-handschrift für Schellings Naturphilosophie* (Stuttgart: Frommann-Holzboog, 1994).

¹⁷³ Cf. Hesiod, *Theogony: And, Works and Days*, trans. M. L. West (Oxford: Oxford University Press, 1999).

¹⁷⁴ See section 28a – 31b in the *Timaeus*. Plato, *Timaeus and Critias*, ed. Thomas Kjeller Johansen, trans. Desmond Lee (London: Penguin Classics, 2008), 18-21.

¹⁷⁵ Plato, *Timaeus*, 34.

intuitions, and judgment in Kant's metaphysics, aesthetics, and nature philosophy.¹⁷⁶ As the beings responsible for the creation of all visible forms, even including the earth itself, the demiurges function as 'divine craftsmen,' or 'engineers' as one commentator has recently described.¹⁷⁷ The demiurges' role in Platonic creation mythology is deceptively simple: they are responsible for making copies of the *Ideas* and distributing them throughout the *khôra*, a sort of primordial receptive flux.¹⁷⁸ As mediators between the divine and the everyday, however, the demiurges' existence raise a number of questions: how can we be sure that the visible copies of the forms produced by the demiurges are true to the originals, which remain completely hidden from sight? How is it possible that the chaotic flux of the *khôra* presents a third between being and becoming, while the activity of the demiurges is also presented as the only way to overcome the gap between the atemporal realm of forms and the world of finite appearances? What role does the *khôra* in fact play in giving shape to the world, of the *in*-formation of forms of appearance, as Derrida puts it?¹⁷⁹ Are the demiurges even ultimately necessary? If so, where do these cosmic engineers come from? Do they exist in the realm of appearance, or of unchanging being?

This set of problems, Schelling realizes, is not just a Platonic one, but is endemic to all of philosophy including Kant. Refracting the demiurgic myth through the prism of the architecture of the understanding, Schelling argues that the originary forms of

¹⁷⁶ SW I, 1: 119.

¹⁷⁷ For more on this, see Daniel W. Graham's *Ancient Philosophy: The Fundamentals* (New York: John Wiley & Sons, 2020), 85-87.

¹⁷⁸ Plato, *Timaeus*, 18-21.

¹⁷⁹ Derrida, *Khôra*, 27. For more on the impact of the Platonic *khôra* in Schelling's nature philosophy, see Anna Vaughn Clissold's "Matters of Necessity: Schelling's *Timaeus* and the Relation of Plato's *Chora* to the Understanding of Nature," *European Romantic Review* 12, no. 2 (March 1, 2001): 175-84.

<https://doi.org/10.1080/10509580108570133>.

judgment and intuition in fact present the same sort of confusion as the *Timaeus* did for Plato, with no way of providing coherence to the faculties in their interrelation.¹⁸⁰ In response to this epistemological problem, Schelling offers what he refers to as an “a priori determination through the causality of the concept [*Begriff*],” in which the idea unfolds as its own end, akin to the living organism. Like it does for Blumenbach in the *Bildungstrieb*, this slow coming into appearance of the cosmos would in effect bypass the demiurges by directly combining the fluid medium of *khôra* with the figurative activity of *technē*.¹⁸¹ While this suggestion is not articulated at length by Schelling in his notes to *Timaeus*, this intuition sets Schelling on a path that will shape his nature philosophy for years to come. Seeking to overcome the opposition of form and matter, both in its Platonic and hylomorphic forms, Schelling will suggest that the technic of nature is only able to be articulated in the activity of a third, in the externalization of the concept.¹⁸²

While Schelling’s notes to the *Timaeus* often raise more questions than they answer with regards to this relationship between formal concepts, technical mediation, and the world-soul as it exists in actuality, his next writings turn more directly to the relationship between the originary forms of the absolute and their sensuous

¹⁸⁰ Schelling, *Timaeus*, 36: “Demnach wäre nach Plato die Form dieser Untersuchung eine reine, ursprüngliche Form, ohne die keine empirische *Untersuchung* möglich seyn würde, also eine Form, die auch im göttlichen Verstande ursprünglich vorhanden war, u. vom Demiurg alsdann auf die Materie angewandt u. dem menschlichen Verstand als reine ursprüngliche Form mitgeteilt wurde.”

¹⁸¹ Ibid, 33.

¹⁸² Ibid, 34: “Ebenso auffallend mußte [...] die Beobachtung seyn, daß allen Naturwesen, in uns ein Begriff zu Grunde liege, der die Form jedes einzelnen, zu ihm gehörigen Gegenstands, ausdrücke, doch aber durch keinen einzelnen, sondern nur durch die Gattung erreicht werde. Eine solche Zusammenstimmung aller Wesen in Einem Begriff konnte er sich nicht anders als möglich denken, denn nur durch die Causalität eines Begriffs, der der Technik des Weltbaumeisters absichtlich zu Grunde gelegen habe, u. der allein eine Allgemeinheit enthalten könne, die für alle einzelne Darstellungen deßelben in concreto zureicht, ohne doch von einem einigen ganz ausgedrückt zu werden. Ein solcher Begriff konnte nicht Werk der Materie seyn, er mußte Produkt der reinen Verstandesform seyn, durch die die Materie zuerst fähig wurde, Begriffe darzustellen.”

materialization. Schelling's 1794 *On the Possibility of a Form for Philosophy* further explores the medial relations between the Idea and its temporal, material manifestation, while emphasizing the continued importance of post-Kantian philosophical themes for many of the formal concerns that are often seen as endogenous to Romantic poetics.¹⁸³ While not quite exhibiting the innovative panache and theoretical insight of the writings Schelling will produce in subsequent years, *On the Possibility of Form* presents a helpful presentation of the impasse inherent to Fichtean idealism that will lead Schelling away from formal explorations of a metaphysical articulation of the absolute and back to living appearance in nature and aesthetic activity. It is, of course, important not to overstate the importance of Fichte's transcendental philosophy on Schelling's writings during this time. However, it is also important to appreciate the ways in which this text does provide an early commentary on Fichte, experimenting with a systematic distinction between material form and formal form that he develops throughout his writings.¹⁸⁴ No one writing after Kant seems to have gone beyond Kant, on the one hand. But Fichte's *Wissenschaftslehre* raises the question of a necessary point of unification for theoretical and practical philosophy, a mediating third that Kant was unable to provide in the *Critique of Judgment*.¹⁸⁵ It is this unavoidable third, however, that will lead Schelling away from Fichte and towards the philosophy of nature.

Collapsing Technics into Mechanics? Schelling's *On the I*

While the Kantian outlook on Platonic cosmology provided by Schelling in his 1794 notes on *Timaeus* present a revealing initial attempt to illustrate what a world soul

¹⁸³ See Frank, *Einführung*; Beiser, *Romantic Imperative*, and the more recent Nassar, *Romantic Absolute*.

¹⁸⁴ SW I, 1: 270.

¹⁸⁵ See the opening paragraphs to the *Form* essay. SW I, 1: 265-267.

without a demiurge might look like, it is not until the following year, while penning the treatise *On the I as Principle of Philosophy*, that Schelling begins truly developing the radical attitude towards nature and technical media such a new cosmology would require. Written during Schelling's final year as a student at the theological seminary in Tübingen, *On the I* outlines what appears to be a Fichtean response to some of the most pressing issues of late eighteenth century theoretical discourse. In a letter to Hegel written while composing the essay, Schelling announced to his childhood friend that he was working on a "counterpart [*Gegenstück*] to Spinoza's *Ethics*," in which the *I* reveals itself as the one true substance and subject of philosophy.¹⁸⁶ Just over a month later, this phrasing would appear verbatim in the foreword that Schelling published for *On the I*.¹⁸⁷ Turning again to the self-positing I of Fichte's practical philosophy, *On the I* also takes pains to separate its aims from that of Kant's student and popularizer Carl Leonhard Reinhold. While criticizing the one-sided empiricism of Reinhold's reading of Kant, in which the grounds for the unity of consciousness are provided by the faculty of representation [*Vorstellungsvermögen*] by virtue of its mediating role of subsuming the manifold of sense data under unified concepts of the understanding, Schelling argues that is it solely through the I's self-assertion as reflective consciousness that the unification of ideas and their temporal, material appearance can be assured.¹⁸⁸

¹⁸⁶ SW I, 2: 20.

¹⁸⁷ Ibid, 80.

¹⁸⁸ Ibid 98-99. "Reinhold hat das empirisch-bedingte Ich zum Princip der Philosophie erhoben." Ensuring such systemic unity, of course, was also the professed aim of Kant's third critique, where Kant introduced a new type of judgments that were both regulatory and reflexive, particularly when discussing the "Technic of Nature" in the Critique of Teleological Judgment. See Eckart Förster, "The Hidden Plan of Nature," in *Kant's Idea for a Universal History with a Cosmopolitan Aim: A Critical Guide*, ed. Amelie Oksenberg Rorty and James Schmidt, 187-99 (Cambridge: Cambridge University Press, 2009) and the introduction to Paul Guyer's *Kant's Critique of the Power of Judgment*, 1 – 49.

Despite his initial avowal of the self-positing I as put forward by Fichte in the 1794 *Wissenschaftslehre*, Schelling discovers over the course of writing *On the I* that the formalist metaphysics of Fichte's methodology results in the content of thought being completely torn asunder from any concrete form of artistic, natural-scientific, and ethical practice. It is only as a result of the formal unity of the subject's consciousnesses, for Fichte, that the human being can ever be led to posit itself practically in an act of self-creation.¹⁸⁹ While all knowledge must ultimately result from this self-positing, it remains extremely unclear for Schelling exactly how this self-coherent absolute I would present itself in a way that is non-contingent and unmired by appearance. As Schelling astutely summarizes towards the end of *On the I*, the neurotic self-reflective consciousness of Fichte's *Wissenschaftslehre* is entirely cut off from the possibility of material expression. The gap between ultimate metaphysical reality [*Realität*] and actuality [*Wirklichkeit*] can only be traversed by the presentation [*Darstellung*] of finite entities.¹⁹⁰ As Hegel would put it in *On the Difference Between Fichte's and Schelling's Systems of Philosophy*, Fichte provides a "mere subjective unification of subject and object" that leaves much to be desired for Schelling.¹⁹¹ This unresolved metaphysical conflict between the idea and its material appearance will necessitate the creation of a more creative, materialist epistemology for Schelling in the coming years, what he calls a 'new schema' that is not just transcendental and atemporal but is immanently accessible to finite subjects bound

¹⁸⁹ SW I, 2: 78. "Gebt dem Menschen das Bewußtseyn dessen, was er *ist*, er wird bald auch lernen, zu seyn, was er *soll*: Gebt ihm *theoretische* Achtung für sich selbst, die *praktische* wird bald nachfolgen."

¹⁹⁰ SW I, 2:172. "Endliche Wesen müssen existiren, damit das Unendliche seine Realität in der *Wirklichkeit* darstelle."

¹⁹¹ Author trans. Hegel. *Werke* 2, 10.

by the constraints of “temporal production.”¹⁹² The incessant “conflict between morality and finite natural laws,” for Schelling,

can only be mediated by means of a new schema, namely, that of temporal production, so that law, which is based on a requirement of Being, becomes a requirement of *Becoming*.¹⁹³

Like the *khôra* in Plato’s *Timaeus*, this new schema would mediate between being and becoming, creating a new flexible understanding of the *nomos*. In the end, however, it is not the atemporal absolute of self-positing identity that provides the foundational for philosophical contact with the material world, Schelling realizes. It is the technical act of complex organization, of the temporal production of “Hervorbringen in der Zeit,” occurring via self-achieved intuition, that will provide this point of contact.

Over the course of writing *On the I*, Schelling begins to articulate more clearly the limitations he sees in Fichte’s brand of transcendental idealism, particularly as these limitations relate to what will become the driving concern of his writings in the coming years: conjoining the material reality of natural and aesthetic production to the metaphysical desire for coherence in the creative presentation of ideas. First and foremost, *On the I* seeks to overcome the limits that had been placed by Kant on metaphysical speculation, poetic activity, and natural knowledge as a result of the categorical denial of the existence of things in themselves, of any entity “that is only conceivable through itself, i.e. through its Being” alone.¹⁹⁴ The articulation of such an entity, of this particular “something” [*etwas*] that Schelling and other Idealist

¹⁹² SW I, 2: 127.

¹⁹³ Ibid. “Dieser Widerstreit zwischem dem *Moral* und dem *Naturgesetz* der Endlichkeit kann nur durch ein neues Schema, nemlich das des *Hervorbringens in der Zeit* vermittelt werden, so daß nun jenes Gesez, das auf eine Forderung des *Seyns* geht, zu einer Forderung des *Werdens* wird.”

¹⁹⁴ SW I, 2: 86, “ein Etwas, das nur dich sich selbst, d.h. durch sein Seyn denkbar ist.”

philosophers would call the *Grund* and then the *Urgrund*, would yield a theoretical purview that precedes all metaphysical distinction between an Idea and its manifestation, between beings and their appearance. It is vitally important for aesthetics, natural philosophy, and politics that such a point of nondistinction be taken seriously, Schelling believes. Without this originary moment of speculative disclosure, there can be no meaningful production of poetic beauty, nor can there be any access granted to the hidden mechanisms behind natural phenomena. Providing a unifying force for disparate modes of philosophical enquiry, this speculative philosophy serves to undo the constraints of what Hölderlin calls the “Kantian boundary” that severs empirical reality from Idealist aims.¹⁹⁵ This project thus puts Schelling’s project squarely in line with that of Novalis and other Romantic readers of Kant during the years following the release of the third *Critique*. While Kant’s critical philosophy proves helpful for delineating the boundaries of philosophical enquiry in its various modes, Kant himself proves unable to ascribe any reality to such a position beyond the subjective validity of a regulative ideal, an *as if* statement that is only tentatively useful for knowledge.¹⁹⁶

This does not mean that Schelling is completely departing from Kant, however. As Schelling would explain fourteen years later in a reflection on his earlier essay written in 1809, *On the I* presents an important “attempt[...] to show [*darstellen*] how the results of critical philosophy return us to last principles of all knowledge.”¹⁹⁷ Instead of completely barring humans from the *telos* of ends, the clarity and definition of Kant’s

¹⁹⁵ See Frank’s *Einführung*, 138-139.

¹⁹⁶ For more on this, see Guyer’s “Introduction,” 1 – 49.

¹⁹⁷ SW I, 2: 70 – 71. “Ich habe versucht, die Resultate der kritischen Philosophie in ihrer Zurückführung auf die letzten Principien alles Wissens darzustellen.”

critical method reveals the unexpected contours of an unforeseen ground, recruiting metaphysics, aesthetics, and natural philosophy in the development of new speculative practices. While “Kant gave the results,” it is “the premises” which “are still missing,” for Schelling.¹⁹⁸ While for Kant, the expression of a unifying perspective entails nothing more than regression into dogmatism or a turn to utter mysticism, for Schelling, achieving this “unity of willing and action” is as necessary and natural as “the mechanism of the body and the unity of consciousness” is for the human.¹⁹⁹ As the *telos* provided by the *Grund* is neither completely real nor wholly ideal, its exploration in *On the I* presents an initial attempt to articulate what Schelling will come to call the ‘band of forces’ in later writings.²⁰⁰ Connecting the organic vitality of living beings with the mechanical causality that determines their interactions with empirical reality, the *Grund* presents a sense of natural purpose that is both wildly speculative and definitively material, breathing further life back into the technics of nature after Kant.

The first place Schelling explores in his search for this third position, however, is not in the organic forms of nature but in the higher-order function of human consciousness that Fichte believes to be completely unmired by the contingencies of matter. This Absolute I, on Fichte’s account, is also somehow unsullied by the imperfections of perception and linguistic mediation. The I presents nothing less than a vision of an “absolute in us, that will not be bound by any mere word of human

¹⁹⁸ SW 1, 2: “Kant hat die Resultate gegeben: die Prämissen fehlen noch.”

¹⁹⁹ SW 1, 2: 78. “dahin soll ja der Mensch kommen, daß Einheit des Wollens und des Handelns ihm so natürlich wird, als der Mechanismus seines Körpers, und die Einheit seines Bewußtseyns.”

²⁰⁰ SW I, 17, 377.

language.”²⁰¹ Throughout *On the I*, Schelling investigates two possible means of accessing such a purified form of self-knowledge. The first and most obvious of these is accessed through what Kant calls the intellectual intuition, a higher-order form of what Schelling refers to as “self-achieved intuition” [*selbsterrungenes Anschauen*].²⁰² Whereas Kant vigorously denied the possibility of such forms of intuition, since intellectual intuition bypasses the senses and leaves its products unconfirmable and non-communicable for members of the *sensus communis*, Fichte had begun arguing in the first installment of the *Wissenschaftslehre* that the only way to provide a stable starting point for knowledge was in this “nonmediated consciousness, that I act.”²⁰³ In his description of this possible unity for consciousness achieved through nothing more than the act of the subject asserting its own capacity for self-reflection, however, Schelling begins casting doubt on the ability of this transcendental method to establish meaningful relationship to the world around it. In fact, the method of intellectual intuition proposed by Fichte does little more than defer and deflect the motivating question of Kantian critique: “How are synthetic *a priori* judgments possible = the question, how does the absolute I come to depart from itself and to oppose a not-I” to itself, Schelling explains.²⁰⁴ Whereas Kant leaves this ontological chasm intact, Fichte simply pretends it doesn’t exist: “for the absolute I, there is no possibility, actuality and necessity.”²⁰⁵ As Fichteian reflective

²⁰¹ SW I, 2: “und ich denke, daß jenes Absolute in uns durch kein bloßes Wort einer menschlichen Sprache gefesselt wird.”

²⁰² SW I, 2: 146.

²⁰³ SW I, 2: “das unmittelbare Bewußtseyn, dass ich handle, und was ich handle“ und so „der einzige feste Standpunkt für die Philosophie.”

²⁰⁴ SW I, 2: 99. “Wie sind synthetische Urtheile *a priori* möglich = die Frage, „wie kommt das absolute Ich dazu, aus sich selbst herauszugehen, und sich ein Nicht-Ich schlechthin entgegenzusetzen.”

²⁰⁵ SW I, 2: 163 “Für das absolute Ich giebt es keine Möglichkeit, Wirklichkeit und Notwendigkeit.”

consciousness necessarily exists outside of all forms of modality and temporal constructs, “what it posits, is fixed [*bestimmt*] through the mere form of its pure being.”²⁰⁶

From within the Kantian forms of modality, however, Schelling notices a second, more fruitful possibility for overcoming the divide established between empirical and transcendental modes of philosophical activity. Through the collapse of the modes of possibility [*Möglichkeit*] and actuality [*Wirklichkeit*] into one another, Schelling sees the contours of a naturalized method of speculation that is both scientifically viable and philosophically vigorous, provided by what Kant refers to as the intuitive understanding [*intuitiver Verstand*].²⁰⁷ While Kant, for his part, saw the intuitive understanding as analogous to the false (because non-falsifiable) transcendental method of intellectual intuition (since intuitive understanding bypasses the important distinction between what is conceptually possible for thought and what is actual, that is, what is verifiable in and through the senses), Schelling sees in the collapse of possibility into actuality the starting point of a new methodology that would define his nature philosophy and aesthetics for years to come. In collapsing possibility and actuality into a unified approach towards sensuous production, a production which in effect combines the creative potentiality of that which is possible with an unwavering commitment to material actuality, Schelling is arguing for a quite radical revision of the technic of nature. Nature is not just defined by the receptivity of forms. It is a dynamic theater of temporal, material production. Rather than forcing judgment into a corner when deciding if the autotelic activity of biotic matter

²⁰⁶ Ibid: “denn alles, was das *absolute* Ich setzt, ist durch die blosse Form des reinen Seyns bestimmt.“

²⁰⁷ See Dalia Nassar’s “Pure versus Empirical Forms of Thought: Schelling’s Critique of Kant’s Categories and the Beginnings of Naturphilosophie,” *Journal of the History of Philosophy* 52, no. 1 (2014): 113–34. <https://doi.org/10.1353/hph.2014.0016> and Eckart Förster, *Die 25 Jahre Der Philosophie*.

is verifiable and thereby actual, or if such perceived autopoietic spontaneity is not instead just a projection of the observer's felt possibility of subjective freedom, this new technic seeks to actualize the possible through what Schelling dubs *Hervorbringung in der Zeit*:²⁰⁸

a new question introduces itself: how the transcendental (defined through Absolute causality) causality of the empirical I could be brought into agreement [*übereinstimmen*] with the natural causality of the same I?²⁰⁹

Any sort of post-Kantian agreement between natural observation and transcendental speculation must show how the spontaneity of the I is reflected in the spontaneity of the organism, as Schelling will describe in the coming years. The I is always already a player onstage in the theater of nature, he realizes. The question of ends and the technic of nature, however, also leads Schelling back to the question of the mechanism and its role in co-determining the organic process:

And so the finite I should strive to bring about in the world, that which is actual [*wirklich*] in infinity, and the highest vocation of the human is this—to make the unity of ends into mechanism and mechanism into the unity of ends.²¹⁰

Mechanism, in effect, cannot be properly understood without asking the question of ends. Yet this does not mean that we are embracing a view of nature as completely determined by mechanistic forces. After all, it is the spontaneity of the I that has initially introduced this division of organism and mechanism in the first place. It is this activity of

²⁰⁸ SW I, 2 127: “Dieser Widerstreit zwischem der *Moral* und dem *Naturgesetz* der Endlichkeit kann nur durch ein neues Schema, nemlich das des *Hervorbringens in der Zeit* vermittelt werden, so daß nun jenes Gesez, das auf eine Forderung des *Seyns* geht, zu einer Forderung des *Werdens* wird.”

²⁰⁹ SW 1, 2: “so tritt die neue Frage ein: wie die transzendente (durch absolute Kausalität bestimmte) Kausalität des empirischen Ichs mit der Naturkausalität desselben Ichs übereinstimmen könne?”

²¹⁰ SW 1, 2: 94. “Also soll auch das endliche Ich streben, in der Welt das hervorzubringen, was in Unendlich Wirklich ist, und der höchste Beruf des Menschen ist—Einheit der Zwecke in der Welt zum Mechanism, Mechanism aber zur Einheit der Zwecke zu machen.”

spontaneous striving, we will see, that will lead Schelling to explore the synergistic ideal of a *Perpetuum mobile* as the most radical product of this new stagecraft of nature, as it was for Novalis. But for Schelling, the question of life and organic motion also poses the question of the organization of the Idea and its fuller presentation beyond the divide between practical and theoretical philosophy. In order to arrive at this more complete expression, however, Schelling first must begin articulating the collapse of mechanics into technics, providing grounds for the flexible understanding of *nomos* we have been calling mechanology:

If there were mechanism or technic of nature for the infinite I, technic would be mechanism for it and mechanism, technic, that is, both would collapse in its absolute being.²¹¹

This collapse of technics and mechanics does not mean leaving the organic behind, but spontaneously creating these concepts and overcoming unnecessary conceptual divisions inherited from philosophers like Kant. The point is to bring technics and mechanics together under a common aim: the production and exploration of the organism, which elicits a strange reflection on the relationship between the machine and organization in the *World Soul*.²¹²

Mental Health Between Figure and Function: from the *Ideas* to the *World Soul*

Schelling's first attempt at fleshing out the role this type of organic spontaneity plays in the technical arrangement of the idea, which serves to show how the realist sphere of the not-I, of mechanical causality, becomes attached to the self-revealing ends of Kant's 'technics of nature,' can be found in the 1797 *Ideas for a Philosophy of Nature*.

²¹¹ SW I, 2 174: "Gäbe es für das unendliche Ich Mechanism oder Technik der Natur, so wäre ihm Technik Mechanism und Mechanism Technik, d.h. beide fielen in seinem absoluten Seyn zusammen."

²¹² See Weatherby, *Transplanting the Metaphysical Organ*, 171 – 205.

The *Ideas* was written just a year after Schelling first met the poet Goethe, whose profound and often overlooked reflections on Kant in his writings on morphology will prove an enormous source of inspiration for Schelling's subsequent work.²¹³ The *Ideas* presents for the first time a philosophy of nature that seeks to show how knowledge might be arranged as a result of the schema of temporal production Schelling outlined in *On the I*, the schema of immanent 'Hervorbringung in der Zeit.'²¹⁴ The professed aim of this new methodology, which seeks to arrive at a point of non-distinction between empirical knowledge and the transcendental ends of speculative philosophy, is to "let natural science itself arise philosophically," as Schelling describes in the preface.²¹⁵ A true philosophy of nature cannot impose exogenous principles onto its object of study, Schelling realizes. We must instead exorcise nature philosophy of these technocratic impulses and heal our thinking of these metaphysical "mental illnesses."²¹⁶ Natural observation should not seek to project the pathologies of metaphysics onto nature by assuming the universe to be passive, compliant, and ready to conform itself to the observer's ends.²¹⁷ Instead, philosophy itself must become organic, proceeding step by step and unfolding "genetically."²¹⁸ Letting nature arise in this temporal fashion and

²¹³ For more on this relationship, see Robert Richards' "Nature is the Poetry of Mind, or How Schelling Solved Goethe's Kantian Problems" in *The Kantian Legacy in Nineteenth-Century Science*, eds. Michael Friedman and Alfred Nordmann, 27 - 50 (Cambridge: MIT Press, 2006).

²¹⁴ SW I, 2: 127.

²¹⁵ SW I, 5: 64. "Ziel ist: die Naturwissenschaft selbst erst philosophisch *entstehen* lassen."

²¹⁶ See SW I, 5: 71. "Bloße Spekulation ist also eine *Geisteskrankheit* des Menschen."

²¹⁷ This realization that nature is not passive but itself active and alive, in fact, is the first step on a long road of recovery for metaphysics, which Schelling will go on to diagnose as a mental pathology or illness whose most recognizable symptom is an unnatural (and structurally insurmountable) separation between subject and object.

²¹⁸ SW I, 5: 93. Also see Marie-Luise Heuser-Kessler, *Die Produktivität Der Natur: Schellings Naturphilosophie und das neue Paradigma der Selbstorganisation in den Naturwissenschaften* (Berlin: Duncker & Humblot, 1986); Bruce Matthews, *Schelling's Organic Form of Philosophy Life as the Schema of Freedom* (Albany: State University of New York Press, 2011) and Steigerwald, *Experimenting at the Boundaries of Life*.

recording the process of material unfolding, Schelling suggests, may teach speculative philosophy a thing or two about itself and its aim of materializing the type of freedom that remained unactualizable for Fichte's "subjective synthesis of the I and not-I," and for Reinhold in his empirically motivated presentation of the *Vorstellungsvermögen*.²¹⁹ Through the technique of the unobstructed recording of the Absolute in its temporal, material manifestations, the *Ideas* hopes to articulate a "foundational science of natural philosophy" which Schelling refers to, after Kant, as a dynamic system.²²⁰ The *Ideas* thus follows closely on the heels of Kant's methodology as laid out in in the 1780 *Metaphysical Foundations of the Natural Sciences*. However, while Kant's nature philosophy proceeds schematically in its approach to material forms and their relation to the table of categories, Schelling, on the other hand, makes clear that his method of construction is intended to be a mental *reconstruction* that keeps sensuous experience in the loop. Schelling thus aims to establish a dynamic equilibrium between speculation and materiality:

Originally there is an absolute equilibrium of forces and consciousness in the human. But one can abolish [*aufheben*] this equilibrium through freedom, in order to reestablish it through freedom. And health rests only in the equilibrium of forces.²²¹

This dynamic interplay of the disruption and re-establishment of equilibrium for the human becomes a model for thinking through the relationship between lawfulness and spontaneity in natural systems, a type of metaequilibrium Schelling will articulate more

²¹⁹ See Reinhold, *Versuch einer neuen Theorie des menschlichen Vorstellungsvermögens*, ed. Otto Onnasch (Hamburg: Meiner Verlag, 2010).

²²⁰ SW I, 5: 64.

²²¹ SW I, 5: 71. "Ursprünglich ist im Menschen ein absolutes Gleichgewicht der Kräfte und des Bewußtseyns. Aber er kann dieses Gleichgewicht durch Freyheit aufheben, um es durch Freyheit wieder herzustellen. Aber nur im Gleichgewicht der Kräfte ist Gesundheit."

fully in writings such as the *World Soul* and *On the Essence of Human Freedom*. For now, it is important to appreciate the ways in which Schelling is already trying to mark out a sphere of natural experience that surpasses the limits of causal determination and mechanical laws:

as soon as we cross over into the realm of *organic nature*, every mechanical connection between cause and effect ceases for us. Every product exists for its own self, its existence is not dependent on any other existence.²²²

While not yet fully embracing the Kantian logic of recursivity as a means of understanding this realm of organic nature, which, in a strange plot twist for the unfolding story of Romantic mechanology, will actually reintroduce the very possibility of machinic activity in nature, Schelling here presents an understanding of life that is far more complex and material, far less metaphysical, than that which we find in Kant or any of his predecessors. Whereas life, for Kant, presents an undecidable antinomy for the faculty of judgment, like the ineffable *vis viva* debated by Leibniz and Cartesian philosophers a century earlier, for Schelling, life is simply a matter of heightened complexity in the organization of matter: “*life is to be found* in mere organized matter,” he writes in the *World Soul*.²²³ Bypassing metaphysical debate about the distinction between biotic and biotic matter or the nature of what Mephistopheles calls that “special sap of life” in *Faust*, Schelling reroutes the metaphysical tendencies of philosophical approaches to natural knowledge into a conversation about philosophy’s own pathological desire for unbridled freedom. What is at stake, more than anything else, is an

²²² SW I, 5: 93. “sobald wir ins Gebiet der *organischen Natur* übertreten, hört für uns alle mechanische Verknüpfung von Ursache und Wirkung auf“. Jedes organische Produkt besteht *für sich selbst*, sein Daseyn ist von keinem andern Daseyn abhängig.”

²²³ SW I, 6: 99. “In blos organisirter Materie *ist das Leben zu finden*.”

analysis of how equilibrium is lost and re-established for the complex material organizations we call organisms, and of thereby determining the relationship between absolute and relative equilibrium in our determination of systemic health for nature and the individual.²²⁴ It is here, at the conjuncture of metaequilibrious stability and dynamic motion, we will see, that the question of the possibility of the *perpetuum mobile* is posed at the culminating moment of Schelling's nature philosophy. Right when the technic of nature externalizes itself as a third, materializing the operability of the synthetic judgment *a priori*, the negentropic aims of romantic mechanology become clearly visible once again. But the possibility of this new technique of nature is not fully outlined in the *Ideas*. Instead, it is posed at the end of the essay as a project to be taken on in at some point the future: "In the intuition itself there was a constant exchange and coming together of opposing activity. This exchange was ended by spirit by returning to itself, through its freedom, as it is."²²⁵ But what does the actuality of material phenomena, the ostensible stuff of the natural world, have to do with this constant possibility of spirit's return to itself and its own freedom in this dualism of polarity? How is this possible without making forays into the material world?

The following year, in 1798, Schelling realizes that the presentation of nature provided in the *Ideas* is too bogged down by concerns that are not endemic to natural life, but are symptomatic of unnecessary metaphysical strictures and philosophical schemas.

"The schema of completion for any metaphysical system, be it even nature as a whole, or

²²⁴ SW I: 5, 102.

²²⁵ SW 1, 5: 217. "In der Anschauung selbst war ein steter Wechsel und ein stetes Zusammentreffen entgegengesetzter Thätigkeit. Diesen Wechsel endet der Geist dadurch, daß er *frey*, wie er ist, zu sich selbst zurückkehrt."

material bodies in particular, is the table of categories,” Kant insisted.²²⁶ The process of healing from that pathology whose symptom appears as a product of the Kantian boundary, Schelling admits, has only just begun. While the *Ideas* provides a productive initial reflection on the role played by the technic of nature in smoothing over the tension between the material determination of bodies and their manifest, spontaneous purposiveness, Schelling discovers at the end of the *Ideas* that, if he wants to present an understanding of nature that allows for both empirical reality and creative freedom, he must shed once more a layer of Kantian clothing that had been obstructing his view of the universe. In *On the World Soul*, Schelling makes another attempt at outlining a third position that would unite realism and idealism, a philosophy of nature which functions organically in its dynamic presentation of ideas and mechanically in its adherence to the materiality of sensuous experience. From the very start, *On the World Soul* presents a markedly less schematic (and less Kantian) presentation of natural science than Schelling provided in the *Ideas*. As he writes in the introduction, this new system is to be understood as a break from, not a continuation of, his previous essay. Parting from the technocratic adherence to Kant’s table of categories in the organization of natural phenomena, which Schelling had directly adapted from the *Metaphysical Foundations* in the *Ideas*, *On the World Soul* seeks to purge philosophy more thoroughly of the demiurgic impulses that haunted the Kantian formulation of the technics of nature. While presenting a view of the cosmos as a functional *perpetuum mobile*, as Novalis will note in his own remarks on the essay, Schelling’s *World Soul* highlights the undisturbed

²²⁶ *MAgN*: 474-77. “Das Schema aber zur Vollständigkeit eines metaphysischen Systems, es sei der Natur überhaupt, oder der körperlichen Natur insbesondere, ist die Tafel der Kategorien.”

importance of technical mediation for natural philosophy's stated goal of studying the universe in its material modes of appearance.²²⁷ Ostensibly a tract on the irreducible organicity of nature philosophy, as countless commentators have described, *On the World Soul* nevertheless outlines an experimental and speculative approach to nature that achieves full expression in the electrical experiments of Martin Van Marum's "friction machines" and the dramaturgic "Theaterblitz" of the eighteenth-century theater.²²⁸ It is technical media after all, which bring nature into the realm of appearance, Schelling discovers.

What is perhaps most immediately pressing for our reading of the *World Soul*, however, is that, from the very start, Schelling argues against any uncritically vitalist views of organic activity. Despite appearances, Schelling's *On the World Soul* is shot through with a complex, often ambivalent attitude towards the quick and easy distinction between biotic and abiotic matter that is often associated with his thinking, as commentators such as Leif Weatherby and Yuk Hui have noted. The divide between organic life and mechanical causality, in fact, is so troubling for Schelling that he argues that, "as soon as our gaze elevates itself to the idea of Nature as a *Whole*, the opposition between mechanism and organism [...] disappears."²²⁹ When we learn to approach nature as a singular and complex system of organization, as Spinoza urged his readers to do in the *Ethics*, we can finally overcome artificial distinctions between subject and object,

²²⁷ NS III, 245. Nr 47.

²²⁸ SW I, 6: 118 - 119: "Am deutlichsten sieht man diese Eigenschaft leichtverbrennlicher Körper, die Luft um sich her sammeln, an dem sogenannten Hexenmehl, das von den Theaterblitzen her bekannt ist."

²²⁹ SW I, 6: 68. "Sobald nur unsre Betrachtung zur Idee der Natur als eines *Ganzen* sich emporhebt, verschwindet der Gegensatz zwischen Mechanismus und Organismus, der die Fortschritte der Naturwissenschaft lange genug aufgehalten hat[...]"

organic and mechanical motion, those divisions which have hindered our understanding of the natural world for far too long. This does not mean there is no difference at all between living and non-living matter, however. For Schelling, the point is “not, where there is no mechanism, lies the organism, but rather the opposite, where no organism is, lies mechanism.”²³⁰ The seemingly transcendental spontaneity often attributed to organic life arises as a rupture that is actually endemic to mechanical repetition. The organism is a difference that is produced immanently from within the cosmic machine, rather than transcendently. As in Erwin Schroedinger’s famous explanation of life’s self-organizational capabilities, in which entropy is never wholly overcome but simply restructured, Schelling’s understanding of the organism does not exist at odds with mechanical determination.²³¹ Organic life appears, rather, as its cosmic byproduct.

It is for this reason that, for Schelling, the antinomy between organic spontaneity and mechanical determination must be resolved through a more basic unifying principle, a principle which Schelling refers to as the World Soul, after the vision of Gaia explored in the foundational mythology of Plato’s *Timaeus*.²³² The challenge Schelling faces in making this case for this unifying principle, which does not rely on the *deus ex machina* of demiurgic cosmology but must provide grounds for its own appearance, is the following: how might this third, this vanishing point at which the lines of mechanical and organic thinking converge in the distance, be reflected back onto the natural observer, the *I* of transcendental philosophy that finds itself cast to sea, unable to locate its position in

²³⁰ SW I, 6: 60. "Nicht, wo kein Mechanismus ist, ist Organismus, sondern umgekehrt, wo kein Organismus ist, ist Mechanismus."

²³¹ Schroedinger importantly drew at length on Goethe in these lectures, as we will see in the next chapter. See Erwin Schroedinger, *What Is Life?* (Cambridge: Cambridge University Press, 2014).

²³² SW I, 6: 77. "Dualismus in der Natur führt auf ein organisierendes Prinzip."

the midst of all of the chaotic motion of becoming? In order to answer this question, Schelling suggests that the world soul, far from being understood as a monolithic entity such as the much-discussed *Gaia* of Lovelock in recent years, must be viewed as a recursive organization with very particular mereological coordinates: “*Organisation* is for me nothing other than the delayed form of cause and effect.”²³³ Organisation, in effect, is nothing but the name Schelling gives to the negentropic complexity of Kant’s logic of recursivity, the *Wechselwirkung* underwriting the natural philosophical approach to life: “Only where nature has not inhibited [*gehemmt*] the current, does it flow forwards (in a direct line). Where nature inhibits it, the current returns back to itself (in a circular line).”²³⁴ Deferring what has been referred to as the “tragedy” of the absolute in Schelling, which would present a vision of nature as necessarily entropic and fated to decay, the world soul leverages confrontation with *Hemmung* as a means of self-organizing at ever higher levels of complexity.²³⁵ It uses the opportunity of *Hemmung* to “spread out,” as Goethe will write in the opening lines of his poem dedicated to the *World Soul*. And only here, at the point where we finally see nature as a singular organization through the self-reflective activity of speculative philosophy, does the world soul turn back on itself in order to draw a sphere. For it is once we return to this lower-level divide between organism and mechanism that we can understand the creation of systemic spheres and their function. And the creation of spheres, for Schelling, is the key

²³³ SW I, 6 69. “*Organisation* ist mir überhaupt nichts anders, als der aufgehaltne Strom von Ursachen und Wirkungen.”

²³⁴ SW I, 6: 69. “Nur wo die Natur diesen Strom nicht gehemmt hat, fließt er vorwärts (in gerader Linie). Wo sie ihn hemmt kehrt er (in einer Kreislinie) in sich selbst zurück.”

²³⁵ See David Farrell Krell, *The Tragic Absolute: German Idealism and the Languishing of God* (Bloomington: Indiana University Press, 2005).

to unlocking all forms of natural individuation. Sphereology is the best way to explore not why there is something rather than nothing, but rather, how there appears to be one thing and *many things* all at once:

*So the universal mechanism must be inhibited through to the infinite, and there will be so many individual, singular worlds, as there are spheres, within which the universal mechanism returns to itself, and so at the end of the world there is—an Organization, and a universal Organism itself is the condition (and thereby a positive) of the Mechanism.*²³⁶

From within the universal mechanism, a plurality of spheres erupts. If we follow nature's repetitions long and hard enough, we will gain insight into the production of difference initiated with the spontaneous eruption of the organic:

Every organization is a self-contained whole, in which everything is *simultaneous*, and where the mechanical mode of explanation breaks down, because in such a whole there can be no *before* and no *after*.²³⁷

All organization appears as a spheric construction, for Schelling, and an organic explanation for the vital machine is what nature philosophy needs in order to return to itself in a moment of self-reflection. Temporal production for Schelling thus presents a profoundly forward-facing philosophy in a way that is often overlooked in favor of a metaphysics of tragedy. Pushing back against entropic decline, Schelling's nature looks to maintain itself for posterity, as in the line from Seneca used by Schelling as an epigraph to section two.²³⁸

²³⁶ SW I, 6: 69. "So muß auch der allgemeine Mechanismus ins Unendliche fort gehemmt werden, und es wird so viele *einzelne, besondre Welten geben*, als es Sphären giebt, innerhalb welcher der allgemeine Mechanismus in sich selbst zurückkehrt, und so ist am Ende die *Welt*—eine *Organisation*, und ein *allgemeiner Organismus* selbst die *Bedingung* (und insofern das *Positive*) des *Mechanismus*."

²³⁷ SW I, 6: 237. "Jede Organisation ist ein in sich beschloßnes Ganzes, in welchem alles *zugleich* ist, und wo die mechanische Erklärungsart uns ganz verläßt, weil es in einem solchen Ganzen kein *Vor* und kein *Nach* gibt."

²³⁸ SW I, 6: 75. "Veniet tempus, quo posterit tam aperta nos nescisse mirentur."

Here we must turn to the often overlooked and quixotic engagement with the tentative distinction Schelling starts to employ between *machine* and *organization*. While seeking to articulate a position from which to view nature that is not predetermined by the overhasty distinction between organism and mechanism, Schelling's *World Soul* seeks to redistribute and remediate all forms of relationality between organic and non-organic life through the higher-order division between the determinative functionality of the machine and the figurative activity of ideal organization:

what actually first separates organization from the machine, in which the function (the property) of each individual part is dependent on its *figure*, is that in the organization the *figure* of each part, conversely, is dependent on its *property*.²³⁹

The goal of nature philosophy now becomes simply this: how do we invent new ways of redistributing forms of relationality between organism and mechanism by reflecting on this dramatic tension between figurative organization and functional machinery? The construction of spheres is an activity that can be clearly described as an organological one, as Leif Weatherby has rightly noted.²⁴⁰ The question of individuation posed by mechanology, however, has not yet been fully explored in Schelling. If there is a point of nondistinction which leads to the construction of new spheres, like in the I and not I, how do we understand the interplay of part and whole for nature? Is nature one, or is it many spheres? Is it more properly understood in its function, or through the figurative activity so often lauded by vitalists?

²³⁹ SW I, 7: 210. "und welcher erst eigentlich die Organisation von der Maschine unterscheidet, in welcher die Function (die Eigenschaft) jedes einzelnen Theils von seiner *Figur* abhängig ist, da umgekehrt in der Organisation die *Figur* jedes Theiles von seiner *Eigenschaft* abhängt."

²⁴⁰ Cf. *Transplanting the Metaphysical Organ*, 171 – 205. For an introduction to further points of resonance between Schelling and Simondon's work, see Hui's "The Parallax of Individuation: Simondon and Schelling," *Angelaki* 21, no. 4 (October 1, 2016): 77–89. <https://doi.org/10.1080/0969725X.2016.1229427>.

Technics and Health, Evolution and Involution: the *First Outline* of 1799

After leading nature philosophy to a point of non-distinction between organism and mechanism in the *World Soul*, it appears that Schelling was simply drawing our attention to another insurmountable boundary, this one appearing between the functionality of the machine and the figurative activity of organization in the cosmos. Where and how does this gap come about within nature, or, for that matter, for philosophy? How are we to overcome this new aporia in order to rejoin realism and idealism? While it is not until his discussion of the *perpetuum mobile* in the 1809 *On the Essence of Human Freedom*, as we will see, that Schelling directly addresses this set of concerns, it is important to account for the ways in which, over the next few years, Schelling begins to take technical mediation more and more seriously as a mode of activity capable of providing points of contact between the organization and the machine. “To philosophize about nature,” Schelling writes in the *First Outline of a System of Nature*, is to “create [*schaffen*] nature”²⁴¹ Released just one year after *On the World Soul*, the *First Outline* presents a vision of the universe as a set of forces that are capable of exceeding the bounds of all observable phenomena, while nevertheless referring back to the figurative activity of Kantian *Konstruktion*.²⁴² Moving beyond the hylomorphic strictures of metaphysical thinking, the *First Outline* puts forward the radical premise that nature, exceeding all human modes of interaction, simply provides the technical grounds for its own appearance.²⁴³ As ecocritics have so often stressed in recent years, such environmental explorations of Romanticism neither indulge in the Promethean

²⁴¹ SW I, 7: 67. “Über Natur philosophieren = die Natur zu schaffen.”

²⁴² SW I, 7: 297. “Die einzige Aufgabe der Naturwissenschaft ist: *die Materie zu construiren*.”

²⁴³ David Wellbery has written on this at length, particularly in “Form Und Idee.”

aspirations of creation *ex nihilo* nor impose metaphysical forms onto a landscape seen as empty and lying in wait for humans. Schelling's unfolding technics of nature consists rather in the production of what Eric Hörl has called the "technoecology of sense."²⁴⁴ Combining speculation and observation, this mode of technical mediation consists in the "reciprocal determination of receptivity and *activity that is found in everything organic*."²⁴⁵ Expounding on the non-anthropocentric purview of the *World Soul*, the *First Outline* presents a vision of nature as an all-embracing (yet synthetic) organism.²⁴⁶ As a product of the recursive motion of the category of relation, the organization of the world soul presents itself as an ecological communality, grounds for an expanded *sensus communis* of all living things upon which a new *cosmo-polis* might be constructed.

This does not mean, of course, that Schelling is indifferent to the specific makeup of human beings or other organisms. Just as not all technologies (or ecologies) are created identically, nature philosophy must attend to specific modes of individuation in order to gain knowledge of the organization of the universe as a whole *and* in its parts. While looking for a purview from which nature might be understood along the lines of this recursive motion between parts and whole, Schelling aims in the *First Outline* to highlight the long-term evolutionary processes at work in nature.²⁴⁷ It is for this reason that we must study the specificities of organic life in all its appearances, since the whole of the natural world "follows the same dynamic sequence of steps [*dynamische*

²⁴⁴ See the introduction to Erich Hörl, *General Ecology: The New Ecological Paradigm* (London: Bloomsbury, 2017), 1 – 74. For more on Romanticism and environment, see Timothy Morton, *Ecology without Nature: Rethinking Environmental Aesthetics* (Cambridge, Mass.: Harvard University Press, 2009) and Kate Rigby's recent *Reclaiming Romanticism: Towards an Eco-poetics of Decolonization* (London: Bloomsbury, 2020).

²⁴⁵ SW I, 7: 69. "Wechselbestimmung der Receptivität und der *Thätigkeit in allem Organischen*."

²⁴⁶ Ibid. "Die Natur geht auf einen *allgemeinen Organismus*."

²⁴⁷ SW I, 7: 67.

Stufenfolge] as the organic.”²⁴⁸ Leading us beyond a view of the individual as a tool [*Werkzeug*] that becomes subordinated to the machinic whole, the speculative methodology presented by the *First Outline* already contains important intimations of the aesthetic aims that will define Schelling’s philosophical writings in the coming years. It is “the possibility of the representation [*Darstellung*] of the infinite in the finite” that “is the highest problem of all science.”²⁴⁹ Only in the “absolute activity” of creative speculation does the “infinite product” make itself (re)presentable.”²⁵⁰

Health and dynamic equilibrium, of course, are key to this process, calling forth an interplay of part and whole that forces us to consider the evolutionary boundaries of organology. Leading us beyond the tool (which establishes a merely causal and mimetic relation between part and whole), the *First Outline* presents a renewed investigation of the organizational machine that is the ultimate product of mechanology’s development. We must remember here that, in discussing the product, we are no longer discussing just the figuration of (self)-organization, but the functional output of the machine. The straight line must become *gehemmt* in order to figure at a higher (more complex) level, producing a sphere: “if nature is absolute activity, so must this activity appear inhibited into infinity.”²⁵¹ A dialectics of recursive motion between the organization and machine is the only way to provide a philosophy of nature that is actual in its appearance and speculative in its approach to figurative possibility. “When in organic nature only the

²⁴⁸ SW I, 7: 72. “Die Allgemeine Natur dieselbe dynamische Stufenfolge herrscht wie in der organischen.”

²⁴⁹ SW I, 7: 79. “Möglichkeit der Darstellung des Unendlichen im Endlichen – ist höchstes Problem aller Wissenschaften.”

²⁵⁰ Ibid. “Absolute Thätigkeit ist nicht durch ein endliches, sondern durch ein unendliches Product darstellbar.”

²⁵¹ SW I, 7: 81. “Ist die Natur absolute Thätigkeit, so muß diese Thätigkeit ials ins Unendliche gehemmt erscheinen.”

general organism self-contracts, as it were, so must at least the *analogy* of the entirety of nature appear in all organic forces.”²⁵² This technique of analogy, in fact, will be born out in the entirety of nature in the valediction of Schelling’s natural philosophical project, the 1809 *Freedom Essay*.

For now, an important question remains, one which cuts to the core of the recursive interrelation between organization and machine: what exactly are we to make of individuation, the material field whereupon function and figuration first seem to bifurcate? Is individuation itself anything more than illusory appearance? If individuation is to be understood as more than a fleeting illusion, how does this figurative activity relate to nature as a whole? Schelling poses this question and seeks to answer it, predictably, in the language of ‘dynamic organization’ he assumes from Franz Baader. As a symptom of both dynamic activity and disequilibrium instability, the individual, for Schelling, appears as a strange byproduct of the whole, the origins of which we must now trace. At the end of the *First Outline*, Schelling writes, “the dynamic organization of the universe is deduced” at this point, “but not its framework [*Gerüste*]” proper. Such an “organization supposes an evolution of the universe out of a unified originary process.” We must now make sense of nature as a spontaneous whole, on the one hand, but also its presentation of “disintegration [...] into ever new products.”²⁵³ Individuation, like philosophy, seems to tend inevitably towards sickness and pathology. Now the individual must be brought back to health:

²⁵² SW I, 7: 219. “Wenn in der organischen Natur nur der allgemeine Organismus gleichsam sich contrahirt, so müssen in der allgemeinen Natur wenigstens die *Analoga* aller jener organischen Kräfte vorkommen.”

²⁵³ SW I, 7: 265. “Die dynamische Organisation des Universums ist abgeleitet; nicht aber das Gerüste derselben. Jene Organisation setzte eine Evolution des Universums aus Einem ursprünglichen Product, ein Zerfallen dieses Products in immer neue Producte voraus.”

It was assumed that nature is the development from one originary involution. This involution however [...] can be nothing real, it can only be imagined as an *Act*, an absolute synthesis, which is only ideal, and marks the turning point of both transcendental philosophy and nature philosophy at once.²⁵⁴

Freedom through *technē*: Schelling's 1800 *System of Transcendental Idealism*

In his next major work, the 1800 *System of Transcendental Idealism*, Schelling returns to the aesthetic and epistemological concerns he had begun exploring in earlier writings such as the *Timaeus* notes and *On the I*. Hoping to show how the immanent organizational capacity of nature is reflected in what he begins to call the “mechanism of the I,” the *System* presents the summary presentation of the recursive loop between function and figuration that defines Schelling's views on material individuation.²⁵⁵ In the *System*, a treatise which is often viewed as the culmination of Schelling's efforts to present a coherent philosophical system accounting for both mechanical determination and spontaneous freedom, Schelling doubles down on his efforts to explain individuating consciousness along purely organic lines. Insisting that the organism arises as a sort of rupture from within determinative causality, philosophy itself presents a “free imitation” of the mechanical in the *System*.²⁵⁶ The organic arises as a mode of thought from the “free repetition of the original series of actions,” Schelling writes, a series “in which the one act of self-consciousness evolves.”²⁵⁷ Through this notion of free repetition, in which we begin to see the payoff of Schelling's incessant engagement with Kantian epistemology,

²⁵⁴ SW I, 7: 271. “Es wurde vorausgesetzt, die Natur sey Entwicklung aus Einer ursprünglichen Involution. Diese Involution kann aber nach dem Obigen nichts Reelles seyn: sie kann nur als *Act* vorgestellt werden, als absolute Synthesis, welche nur ideel ist, und gleichsam den Wendepunkt der Transcendental- und der Naturphilosophie bezeichnet.”

²⁵⁵ See, for example, SW I, 9a: 77.

²⁵⁶ SW I, 9a: 89.

²⁵⁷ Ibid. “free repetition of the original series of actions, in which the one act of self-consciousness evolves.”

the technic of nature externalizes itself, taking on the form of a technical externality that appears as both “*monument and document at once.*” Despite the inadequacy of Kant’s metaphysics of nature, it is the rigid architecture of the understanding that bears organic fruit in and through such ‘free repetition’ of the I’s mechanism. Only with the production of a third, a technical mediation between organism and mechanism, can Schelling present a harmonious “coexistence of mechanism with purposiveness in nature.”²⁵⁸ Between figuration and function, the I posits itself as unity, only to refract back upon itself the movement of the whole of nature.

As a result of this spheric activity, it is aesthetics that serves as the third between organism and mechanism for the *System*, materializing the technical activity required to overcome the Kantian boundary. Presenting an *a priori* set of conditions for the ways in which Idealist philosophy’s exploration of apperceptive epistemic structures may provide knowledge of the determining conditions of sense experience, Schelling’s individuated “mechanism of the I” becomes the bedrock for experimenting with the possibility of reciprocal relations between the autopoietic activity of organization and the functional determinacy of the machine.²⁵⁹ Such recursive *Wechselwirkung*, however, requires the I to continue taking the object-causality of sense perception seriously. In a reference to Kant’s “Ideas for a Universal History,” Schelling writes, the temporal unfolding of succession is a necessary movement in order establish and reestablish dynamic health:

The deduction of history leads to the evidence, that that which we are to see as the ultimate ground of harmony between subject and object of action must be thought of as an absolute Identity, which, when imagined as a substantial or personal entity, would not be better than positing a mere

²⁵⁸ SW I, 9a: 27-28. “Coexistenz des Mechanismus mit Zweckmäßigkeit in Natur.”

²⁵⁹ SW I, 9a: 26.

abstraction, an opinion which could only be imposed on idealism through the gravest misunderstanding.²⁶⁰

Establishing harmony between subject and object, in effect, requires moving beyond both blind individuation and abstraction, since neither are adequate mediators between the real and the ideal. This new movement between part and whole, Schelling writes, is established through the balancing act of mechanological activity, as the *techne* of the third is externalized in the lever:²⁶¹

All matter is the mere expression of a balance of opposing activities, which mutually reduce each other to a mere substrate of activity. (Think of the lever, both weights act only on the hypomochlion, which is therefore the common substrate of their activity. Moreover, this substrate does not arise voluntarily through free production, but completely involuntarily, by means of a third activity, which is as necessary as the identity of self-consciousness.²⁶²

Equilibrium and Schelling's *Perpetuum mobile* in 1802/1809

The goal of collapsing mechanics into the teleological considerations of organic thinking in Schelling's nature philosophy, we have seen, has led to the appraisal of technical media as grounds for the recursive motion linking organization to the machine, providing hope for the establishment of new relations between figure and function through the expressive freedom of aesthetic activity. While the 1800 *System* proves by

²⁶⁰ SW I, 9a: 27. "Deduction der Geschichte führt zugleich auf den Beweis, daß das, was wir als den letzten Grund der Harmonie zwischen dem Subjectiven und Objectiven des Handelns anzusehen haben, zwar als ein absolut Identisches gedacht werden muß, welches aber als substantielles oder als persönliches Wesen vorzustellen, um nichts besser wäre, als es ein bloßes Abstractum zu setzen, welche Meinung man dem Idealismus nur durch das gröbste Misverständnis aufbürden konnte."

²⁶¹ For more on this, see Jocelyn Holland's new *The Lever as Instrument of Reason*.

²⁶² SW I, 9a: 93. "Aller Stoff ist bloßer Ausdruck eines Gleichgewichts entgegengesetzter Thätigkeiten, die sich wechselseitig auf ein bloßes Substrat von Thätigkeit reduciren. (Man denke sich den Hebel, beyde Gewichte wirken nur auf das Hypomochlion, welches also das gemeinschaftliche Substrat ihrer Thätigkeit ist. –Jenes Substrat entsteht überdieß nicht etwa willkührlich durch freye Production, sondern völlig unwillkührlich, mittelst einer dritten Thätigkeit, die so notwendig ist, als die Identität des Selbstbewußtseyns."

and large to be the valediction of Schelling's attempts to combine speculative metaphysics with the concreteness and materiality of natural knowledge, there nonetheless remain two texts in his oeuvre that continue this strand of thinking which we have been calling mechanological. Although Schelling was initially hesitant to embrace the "vital mechanism" that Kierkegaard saw in *On the World Soul*, he returns two times to the stated aim of romantic mechanology, as outlined by Novalis, a vision of nature as a functional, negentropic *perpetuum mobile*. In two texts from 1802 and 1809, both written after he had ostensibly left nature philosophy behind, Schelling turns directly to the aim of exploring a *perpetuum mobile*.

The first of these texts consists of an often overlooked fragment dating from 1802 called the "Fragment of a Treatise," a manuscript which was first made available more than two hundred years after Schelling initially sketched it.²⁶³ Bearing unmistakable signs of the "identity philosophy" that is seen to define Schelling's work during this period, wherein the three-act dramaturgical structure of technical activity proposed by the nature philosophy ends up staging the absolute as an unattainable object, the 1802 "Fragment of a Treatise" presents a further symptom of the pathology identified in the *Ideas* which separates subject and object.²⁶⁴ Despite its melancholic, tragic prose, however, the "Fragment of a Treatise" also begins revealing the ultimate endgame of Schelling's method of 'temporal production' between machine and organization. The "Fragment of a

²⁶³ Cf. Barnara Loer, *Das Absolute und die Wirklichkeit in Schellings Philosophie: Mit der Erstedition einer Handschrift aus dem Berliner Schelling-Nachlass* (Berlin: Walter de Gruyter, 2012).

²⁶⁴ Cf. Frank, Schelling and Xavier Tilliette, *Schelling: une philosophie en devenir* (Paris: J. Vrin, 1970). For this reason what Farrell Krell has called Schelling's "tragic absolute" is much more fitting with regards to Schelling's identity philosophy than to his philosophy of nature, although this remains a common mischaracterization of Schelling's nature philosophy.

Treatise” presents the absolute as a restless, vital machine: “an in itself indescribable essence, since it never stands still, is only ever there in motion. Where you want to grab the wheel, in order to bring it to a halt, you will just disturb it.”²⁶⁵ The natural world presents the paradoxical “eternal drifting and tossing about, (*perpetuum mobile*) in which eternal freedom is enclosed.”²⁶⁶ Through their disequilibrium motion, the spheres of nature are drawn and redrawn, framing and reframing the I and the World Soul, as cosmograms of themselves and of each other.

Seven years later, in the 1809 treatise *Philosophical Investigations into the Essence of Human Freedom*, Schelling sets out to explore the dynamic equilibrium presented by the ‘band of forces’ one last time. Only now, the *perpetuum mobile* presents the possibility of negentropic complexity as the organizing principle of all of nature (and in its expression, as philosophy). Despite his professed aims of discussing the metaphysics of human freedom and its relation to evil, Schelling takes pain to articulate how seemingly theological problems concerning the origins of evil (as a necessary byproduct of individuation) are in fact symptomatic of philosophy’s refusal to take seriously the alterity of the natural world: “Since its very beginning (in Descartes), all of modern European philosophy has been prone to this common error, that nature is not available to it, and it is not seen in its living ground.”²⁶⁷ Without nature being available, or *vorhanden*, we can neither know the universe nor engage with it in its irreducible

²⁶⁵ *Das Absolute und die Wirklichkeit*, 47: “Ein an sich unbeschreibliches Wesen, weil es nirgends still hält, nur in der Bewegung da ist. Wo du in das Rad eingreifen willst, es zum Stehen zu bringen, wird es gestört.”

²⁶⁶ *Ibid*, 48: “ewiges Treiben und Umherwerfen, (*perpetuum mobile*) in das die ewige Freiheit eingeschlossen ist.”

²⁶⁷ SW I, 17 129: “Die ganze neu europäische Philosophie seit ihrem Beginn (durch Descartes) hat diesen gemeinschaftlichen Mangel, da die Natur für sie nicht vorhanden ist, und da es ihr am lebendigen Grunde fehlt.”

technoecological complexity. So how does the sphere of the individual link up to the World Soul, Schelling asks? Directly by establishing the harmonious “band of forces,” which constitute life. In effect, individuation is not merely appearance. Its spontaneity constitutes the defining motion of Romantic nature philosophy and poetics: “the band of forces constituting life could, according to their nature, just as well be insoluble [...], destined to be a *perpetuum mobile*.”²⁶⁸ Negentropy consists in the technical ordering of life, as Schroedinger will explain with reference to both Spinoza’s materialism and the vitality of Goethe’s poetics. The play of the one and the many is always an exercise in the theater of technics, Schelling realizes. The world soul is always a cosmogram of itself, and of its subject-observer.²⁶⁹

²⁶⁸ SW I, 17: 377: “das Band der Kräfte, welche das Leben ausmachen, könnte seiner Natur nach ebensowohl unauflöslich sein, und wenn irgend etwas, scheint ein Geschöpf, welches das fehlerhaft Gewordene in sich durch eigne Kräfte wieder ergänzt, dazu bestimmt, ein Perpetuum mobile zu sein.”

²⁶⁹ Tresch, “Technological World-Pictures.”

4. Being as *Poesis*: Hölderlin's Paratactic Ecology

In the first two chapters, we have explored the ways in which the *perpetuum mobile* appears as an organizing principle for the project of romantic mechanology in writings by Novalis and Schelling. Wavering between an ecstatic, utopian attitude towards the organizational complexity of technical media and careful concern for the ways in which such media help account for the alterity and complexity of the natural world, the call to create a *perpetuum mobile* expresses the utmost desire for a material manifestation of Kant's mode of reciprocity in Romanticism. This mode of reciprocity, or *Wechselwirkung*, underwrites both organic complexity and political community in Kantian philosophy, as we have seen.²⁷⁰ Through the development of a radicalized version of reciprocity, Romantic writers create for themselves a new set of speculative tools for describing the evolving modes of interaction between natural knowledge, poetic inspiration, and political ecology at the turn of the nineteenth century. Understanding the strange call to both "live from and create" a *perpetuum mobile*, as Novalis succinctly puts it in an entry to his *Notes for a Romantic Encyclopedia*, becomes crucial for appreciating the ways in which technical media become capable of producing, destabilizing, and restabilizing relations between humans and the natural environment around this time.²⁷¹ This exploration of both the ecological limits and the emancipatory potential of technical media serves as one of the defining aims of mechanology. We have seen this project of mechanology unfold along the evolutionary lines traced by Gilbert Simondon, whose

²⁷⁰ See CJ §8, 216 and lectures 12 and 13 of Arendt's *Das Urteilen*, 106-20.

²⁷¹ NS III, 296: Nr. 314.

overlooked analysis of the importance of technical objects for Romantic literature has served as a starting point for our undertaking.²⁷² Over the course of Schelling's nature philosophy, the *perpetuum mobile* comes to assume the form of a speculative conduit between the subject and the universe as a whole. It is not just the singular existence of a species or a particular ecosystem that is at stake. Indeed, speculation regarding perpetual motion is meant to circumvent any lower-order distinction nature philosophy might try to make between organic spontaneity and mechanical determination. The *perpetuum mobile* presents the possibility of a new mode of energetic exchange used to explain how the mysterious 'band of forces' constituting life might relate to the universe at large, a universe which, when taken as a whole, appears eerily indifferent to the plight of finite (that is, organic) individuated beings.²⁷³ The philosophical and poetic project of mechanology, however, aims to link such stoic speculation about the indifference of the universe towards the organic back up to the earthly political and ethical demands placed upon philosophy by the confrontation with life in its many concrete forms. While the organicity of a particular set of individuals is never assumed in the form of a metaphysical judgment—indeed life is anything but a stable state, Schelling and the natural sciences remind us—the continued existence of the *World Soul* will nevertheless depend on the ability to reintegrate the physical (and theological) waste of *Abfall* back into the recursive operation of spheric systems and their construction.²⁷⁴

²⁷² Simondon, *Modes d'existence*, 128-29.

²⁷³ SW I, 17: 37.

²⁷⁴ Ibid, 92: "kurz, es ist hier kein Abfall möglich, keine Trennung der Prinzipien, wo noch keine absolute oder persönliche Einheit ist."

Romantic metaphysics needs biota in order to be initiated. But even more so, Romantic metaphysics needs the metabolic properties of technical media in order to move beyond a vision of life that can be reducible to any one preconceived form.²⁷⁵ For Schelling, this metabolic function of the *perpetuum mobile* is assumed, rather than illustrated. His writings nevertheless make it clear that the reintegration of waste into a technically mediated cosmic system remains a key problem for mechanology, one that needs to be solved in order for romantics to fully overcome the divide placed by the Kantian boundary between organic and mechanical modes of poetry and thought. In this next chapter, we will turn more directly to the role played by waste and its relation to the unfolding system of mechanology, focusing on Hölderlin, whose work provides monumental contributions to this political and ecological project. While Hölderlin never directly invokes the possibility of constructing a *perpetuum mobile*, his writings elucidate several key aspects of the central relationship between technical media and political ecology we have been exploring. For Hölderlin, as it was for Novalis, the uncritical espousal of the organic as a model for thought is a nonstarter. As scholars such as Rainer Nägele have noted, Hölderlin's rather quixotic embrace of what the Greeks called *mechané* presents a wholesale refusal of the distinction between organic and nonorganic categories of thought.²⁷⁶ While rejecting a vitalist attitude towards poetic creation, Hölderlin espouses the production and exploration of alternative modes of poetry he dubs *inorganic*, *disorganic*, and *aorgic* throughout his writings.²⁷⁷ Irreducible to both organic

²⁷⁵ Cf. Gerad Gentry, "The Concept of Life in German Idealism and Its Aristotelian Roots," *Intellectual History Review* 31, no. 3 (July 3, 2021): 379–90, <https://doi.org/10.1080/17496977.2021.1957328>.

²⁷⁶ Rainer Nägele, *Hölderlins Kritik Kritik der poetischen Vernunft* (Basel/Wien: Engeler, 2005): 133–48.

²⁷⁷ For more on Hölderlin's coinage of the term *aorgic*, see Ernst Mörgel's *Natur als Revolution: Hölderlins Empedokles-Tragödie* (Heidelberg: Metzler, 1992), 15.

spontaneity and mechanical determination, this series of conceptual innovations we find in Hölderlin's work serves to uncover a contingent and symbiotic interrelationship between humans, nature, and technics. For Hölderlin, this symbiosis is tasked with keeping the integrity of singular terms intact, while also revealing new dimensions of the whole of nature through a synthesis that is intuited rather than signified. This preferred type of thinking can be understood, with Theodor Adorno, as *paratactic* rather than *dialectic*. Within and throughout the incessant production and integration of new concepts, we find a dynamic mode of encounter with the natural world that stages a radical recuperative potential for technical media in Hölderlin's writings.

Gleaning the *aorgic*: Hölderlin's Rivers and the *Mechané* of Poetry

The privileged location for an energetic exchange between the environmental *khôra* and the expansive *polis*, for Hölderlin, is the river, whose praises are sung throughout his poems and essays.²⁷⁸ "It is here that we want to build," Hölderlin writes in "The Ister," a hymn devoted to one of Europe's most important waterways, "because streams make arable / the land."²⁷⁹ As the site upon which human history begins to assume the geological contours associated with the Anthropocene, rivers like the Danube discussed in this poem serve as crucial points of mediation between ecological processes and the accelerating pace of cultural and technological production Goethe will later diagnose as *veloziferisch*. Just as the ever-evolving subject of Schelling's *World Soul* comes to acquire the status of a geological force while reflecting on itself as a technic of

²⁷⁸ For an overview of current work on the topic of *khôra* in Hölderlin's reception of Greek philosophy, see Csaba Szabó's essay "Nature, Nurse, *Khôra*: Notes on the Poetics of Hölderlin's Ode 'Man'" in *Hölderlin's Philosophy of Nature*, ed. Rochelle Tobias (Edinburgh: Edinburgh University Press, 2020), 199 – 218.

²⁷⁹ HSA II: 190. "Hier aber wollen wir bauen. / Denn Ströme machen urbar / Das Land."

nature, Hölderlin's rivers point to a deeply-rooted Romantic desire to understand how the investigation of technical media might help produce newer and more stable relations between humans and environment.²⁸⁰ For Hölderlin, we will see, the geological assumed by humans during the Anthropocene is articulated as a sort of poetic gleaning of the natural, which Hölderlin illustrates in the poem "Remembrance" ["Andenken"]. "It is the sea / That takes and gives remembrance," Hölderlin writes, suggesting that the archival capacity and mnemonic function of the written word does not suggest anything singular about poetry.²⁸¹ Bodies of water also leave records of events which constitute the archives of natural history. What is singular about poetry, for Hölderlin, is its capacity to glean the *aorgic* remains from these shores: "And love no less keeps eyes attentively fixed / But what is lasting is formed by the poets."²⁸² It is the ability of technical media such as the written word to move speculatively towards the future that lies at the core of Hölderlin's thinking. Even his writings on tragedy, we will see, are composed with an eye towards catastrophic possibilities endemic to the present.

To begin grasping these central features of Hölderlin's ontopoetics, let us first examine how the river takes the form of a complex palimpsest of cultural and geographic properties, collapsing previously constructed boundaries between human and natural history. In "The Ister," Hölderlin describes the Danube as "appearing almost / to move backwards" due to its unusual flow eastward, from the Black Forest in Central Europe to

²⁸⁰ For an introduction to how the subject of nature philosophy assumes the contours of a geological force in Schelling, see the conclusion on "Transcendental Geology" in Iain Hamilton Grant, *Philosophies of Nature after Schelling* (London: Continuum, 2008), 199 – 206.

²⁸¹ Trans. Michael Hamburger. See Friedrich Hölderlin, *Selected Poems and Fragments*, ed. Jeremy Adler (New York: Penguin Classics, 1998), 253 and HSA II 189: "Es nehmet aber / Und giebt Gedächtnis die See." For more on Hölderlin's geotechnics, see Burkhardt Wolf, *Fortuna di mare*, 397 – 405.

²⁸² Translation modified. See *Selected Poems and Fragments*, 253 and HSA II 189: "Und die Lieb auch heftet fleißig die Augen. / Was bleibt aber, stiften die Dichter."

the Black Sea at the edge of the continent.²⁸³ “I mean,” the poem continues, “it must come / From the east. / There would be / Much could be said about this.”²⁸⁴ Baffled by the river’s ability to subvert the expected direction of flow, Hölderlin adds, “Not for nothing rivers flow / Through dry land. But how?”²⁸⁵ How would such a body of water maintain a symbiotic relationship to the landscape through which it so violently carves an unexpected path? How does the riverbed’s activity maintain a dynamic equilibrium such that every bit of waste is reintegrated back into the ecosystem? It seems nothing here occurs without reason, no motion is *umsonst*. And yet, “[a] sign is needed,” the poem adds, pointing towards a need for semiotic mediation in poetic reflections on natural motion.²⁸⁶ This need for mediation, however, is not to be confused with the colonizing force of anthropocentric forms of reason. “The Ister” does not seek to illustrate the subsumption of the natural world to human systems of knowledge. Rather than relying on these unidirectional flows between observer and observed nature, Hölderlin seeks to provide an awareness of the ways in which rivers can subvert human attempts to colonize the earth: “But the rock needs incisions / And the earth needs furrows, / Would be desolate else, unabiding” reads the antepenultimate line, before the poem concludes, “Yet what that one does, the river, / Nobody knows.”²⁸⁷ Transcendent and mysterious, the river’s flow cannot be reduced to *a priori* forms of aesthesis or grasped with *a priori* forms of judgments. No matter how developed systems of thought might become, they

²⁸³ Translation modified. *Selected Poems and Fragments*, 257; HSA II 191: “Der scheine aber fast / Rückwärts zu gehen.”

²⁸⁴ Translation modified. *Selected Poems and Fragments*, 257; HSA II 191: “Ich mein, er müsse kommen / Von Osten. Vieles wäre / Zu sagen davon.”

²⁸⁵ Ibid. “Umsonst nicht gehn / Im Troknen die Ströme. Aber wie?”

²⁸⁶ Ibid. “Ein Zeichen braucht es.”

²⁸⁷ Ibid. “Es brauchet aber Stiche der Fels / Und Furchen die Erd‘, / Unwirthbar wär es, ohne Weile; / Was aber jener tuet, der Strom, / Weiß niemand.”

are ultimately inadequate for achieving a real understanding of natural activity.

Acknowledging that the river cannot be subsumed to any of these processes, Hölderlin ascribes to the river the creative capacities of a Fichtean *Tat*.

The cultural production of poetry, meanwhile, is always already a sort of agriculture requiring a material substrate, a *Grund* Hölderlin locates in a variety of ecological processes. The rivers found throughout Hölderlin's poems become cognized by human subjects only indirectly and from oblique angles, a feature of his writings that has long puzzled many commentators.²⁸⁸ This relationship between humans and nature in Hölderlin's poetics might be properly understood as a form of "parataxis" or "aconceptual synthesis," as Theodor Adorno recommends.²⁸⁹ Comparing Hölderlin's poems to Beethoven's late works, wherein contrapuntal resolution is often expected for the listener but almost always deferred, Adorno writes that the "prototype for Hölderlin's late poetry" is the "aconceptual synthesis" one finds in "great music" such as Beethoven's Ninth Symphony.²⁹⁰ This vision of natural life presents "an abandoned, flowing nature that transcends itself precisely through having escaped from the spell of the domination of nature."²⁹¹

The river, for Hölderlin, comes to assume a new form of ecological agency, hinting at a mode of autotelic motion in nature that refuses any *a priori* distinction between mechanism and teleology in natural philosophy. At this point, we can begin

²⁸⁸ For a good overview of these conversations, see the introduction to *Hölderlin's Philosophy of Nature*, 1 – 20 and May Mergenthaler, "Hölderlin's 'Der Ister' and Ecology in Rochelle Tobias's 'Untamed Earth,'" *MLN* 136, no. 3 (2021): 517–30, <https://doi.org/10.1353/mln.2021.0036>.

²⁸⁹ See Adorno, "Parataxis: On Hölderlin's Late Poetry," in *Notes to Literature*, ed. Rolf Tiedemann, trans. Shierry Weber Nicholson, 367 - 413 (New York: Columbia University Press, 2019), 394.

²⁹⁰ *Ibid.*

²⁹¹ *Ibid.*

appreciating the centrality of the river for the broader onto-poetic aim of overcoming the Kantian boundary, the artificial divide Kant created between the rigid architecture of the understanding and the manifold forms of sense experience available to the subject. In the third *Critique*, Kant himself makes the river a privileged site for discussing a perceived tension between autotelic organisms and mechanistic forces in nature. The flow of a river, Kant explains in the *Critique of Judgment*, exemplifies the ways in which nature can deceive human observers into thinking there are teleological forces at work in phenomena which ultimately possess no such self-determining agency.²⁹² These natural phenomena are not ends-in-themselves, even if they do appear free and spontaneous. Rivers serve as a useful illustration of how “extrinsic purposiveness of natural things” provides no proof of “the principle of final causes. [...]” the telos that ultimately underwrites the Kantian technic of nature.”²⁹³ Kant explains:

For although these features of the earth's surface were very necessary, in order that the vegetable and animal kingdoms could arise and be sustained, [...] still there is nothing about these features that forces us to assume a causality in terms of purposes so as to account for their possibility.²⁹⁴

The river, in effect, is pure mechanism without teleology. Although the river's flows might seem to promote organic growth in many ways, its own movements are wholly

²⁹² Cf. §67 CJ 378.

²⁹³ Ibid. Trans. Paul Guyer. “Wir haben oben von der *äußeren* Zweckmäßigkeit der Naturdinge gesagt: daß sie keine hinreichende Berechtigung gebe, sie zugleich als Zwecke der Natur, zu Erklärungsgründen ihres Daseins, und die zufällig-zweckmäßigen Wirkungen derselben in der Idee, zu Gründen ihres Daseins nach dem Prinzip der Endursachen zu brauchen. So kann man die *Flüsse*, weil sie die Gemeinschaft im Innern der Länder unter Völkern befördern, die *Gebirge*, weil sie zu diesen die Quellen und zur Erhaltung derselben den Schneevorrat für regenlose Zeiten enthalten, imgleichen den *Abhang* der Länder, der diese Gewässer abführt und das Land trocken werden läßt, darum nicht sofort für Naturzwecke halten; weil, obzwar diese Gestalt der Oberfläche der Erde zur Entstehung und Erhaltung des Gewächs- und Tierreichs sehr nötig war, sie doch nichts an sich hat, zu dessen Möglichkeit man sich genötigt sähe eine Kausalität nach Zwecken anzunehmen. [...] Von Dingen, deren keines für sich als Zweck anzusehen man Ursache hat, kann das äußere Verhältnis nur hypothetisch für zweckmäßig beurteilt werden.”

²⁹⁴ Ibid.

shaped by exogenous mechanistic causalities. While in the preceding section, the “Dialectic of Teleological Judgment,” Kant hopes to show some degree of overlap between organism and mechanism by combining regulative and reflective modes of judgments, these new forms of judgments possess only the tentative validity of *as if* statements.²⁹⁵ While this point of criticism is taken up by Hölderlin directly in the fragment “Being and Judgment,” which we will discuss in the next section, for now, it is sufficient to say that Hölderlin, unlike Kant, is dissatisfied with the ways in which philosophy attempts to use the organism as a screen upon which to project reason’s own perceived agency, to the exclusion of appreciating the complexity of other phenomena. As Martin Heidegger would summarize one and a half centuries later, such an uncritical adherence to an organic ideology presents nothing more than early signs of a “mechanistic-*technological* ‘triumph’ of modernity over the domain of growth.”²⁹⁶ If nature “transcends itself” in the river, as Adorno puts it, philosophies of nature must overcome the divide put in place between biotic and abiotic matter in order to properly understand its flows.²⁹⁷

In order to appreciate how this ‘aconceptual synthesis’ functions for Hölderlin, we must look more fully to how the river subverts this growing tension between organic spontaneity and mechanical determination experienced at the end of the eighteenth century, a tension which had found its fullest expression in Kant’s “Critique of Teleological Judgment.” Of course, Hölderlin’s embrace of what he calls the *aorgic* and

²⁹⁵ Cf. Guyer, “Kant’s Principle of Reflecting Judgment,” 1 - 49.

²⁹⁶ Heidegger, *Ponderings*, XII-XV. For more on the relation between Heidegger’s philosophy of technology and Hölderlin’s ecopoetics, see Yuk Hui. “Machine and Ecology.”

²⁹⁷ Cf. Adorno, “Parataxis,” 394.

disorganic suggests a much more complicated view of the natural world, one that does not give epistemic priority to organic growth in any way. Rainer Nägele has gone so far as to suggest that a certain type of mechanical repetition is a precondition for poetics more generally, according to Hölderlin. *Mechané*, for Hölderlin, “is the machine of phenomenalization,” Nägele explains “and the theatrical machine is in a certain sense the model of presentation *per se*.”²⁹⁸ Poetry presents a form of what the Greeks called *mechané* (μηχανή), which Hölderlin likens to a “lawlike calculation.”²⁹⁹ It is one of numerous “other modes of operation, through which the beautiful is brought forth,” modes which subvert the spontaneous interiority of organic models of poetry and human self-understanding.³⁰⁰ Hölderlin devotes numerous passages to explaining how this embrace of *mechané* might help bring the lofty, transcendental attitude often assumed by poetry back down to earth. Contributing to what Nägele refers to as a wholesale ‘Critique of Poetic Reason,’ Hölderlin writes in his “Comments on Sophocles” that this “law of calculation” seeks to describe “how the human, as a sensing system [...] develops itself under the influence” of disparate elements in a long series.³⁰¹ Rather than being produced as fully autonomous functions, human modes of aesthesis “always proceed according to a secure rule,” finding more “equilibrium in the tragic than in pure succession.”³⁰² Unseating the primacy of the organic, the repetitive force of *mechané*

²⁹⁸ See *Kritik der poetischen Vernunft*, 137: *Mechané* “ist die Maschine der Phänomenalisierung und die Theatermaschine ist gewissermaßen das Modell von Darstellung überhaupt.“

²⁹⁹ HSA V: 195.

³⁰⁰ *Ibid.*

³⁰¹ *Ibid.*

³⁰² *Ibid.* “Das Gesetz, der Kalkul, die Art, wie ein Eimpfindungssystem, der ganze Mensch, als unter dem Einflusse des Elements sich entwickelt und Vorstellung und Empfindung und Räsonnement in verschiedenen Sukzessionen, aber immer nach einer sichern Regel nacheinander hervorgehen, ist im Tragischen mehr Gleichgewicht als reine Aufeinanderfolge.”

presents the opportunity for a new sort of *Wechselwirkung* to establish itself as a flexible series, overcoming the sharp divide between a rule-bound technics and “pure succession.”³⁰³

Articulating a form of flexible reciprocity that can be found in the mechanical series comprises one of Hölderlin’s foremost contributions to Romantic mechanology. In this way, Hölderlin hopes to link politics with a new sort of ecological thinking, creating a *sensus communis* that is no longer tied to anthropocentric forms of reason, an ambition which ecocritics such as Kate Rigby have recently identified with Romanticism.³⁰⁴ The mnemonic and self-creating operations of nature provide one example of this project, as bodies of water such as the river assume a force that is both technical and geological, as Burckhardt Wolf has stressed.³⁰⁵ But how does Hölderlin deal with the ethical questions introduced with the presence of living beings, beings which, despite their lack of metaphysical priority per se, are of foremost concern for mechanology when it seeks to outline a political ecology? How does Hölderlin deal with the question of biological life, and of what makes life move?

In a commentary from his late “Pindar Odes” project, the river appears as the very site upon which these questions are both posed and answered. While rivers themselves are inorganic, these bodies of water make way for organisms while also occurring prior to, and even as a condition of, diverse conceptions of life. In a recent essay, Rochelle Tobias explains:

Hölderlin’s [...] commentary culminates in the paradox that rivers are determined to be a determining force; they are shaped to shape the earth.

³⁰³ Ibid.

³⁰⁴ Cf. Rigby. *Reclaiming Romanticism*, 13-14.

³⁰⁵ *Fortuna di mare*, 397 – 405.

Their form and tempo come from the land they are charged with engraving in a circular process. Thanks to this circle, however, they also make the earth legible for the first time as a living organism instead of a blank slate, *die ewig lebende ungeschriebene Wildniß*.³⁰⁶

While creating the conditions of life, the river is not exactly life itself. Neither wholly organic nor whole inorganic, the ‘eternally living unwritten wilderness’ presented by the river suggests a striking alternative to the organic/mechanical divide as it was found in Kant. This central feature of Hölderlin’s thinking on rivers is made especially clear in the ninth and final of the “Pindar Odes.” Not only is this piece titled “Das Belebende,” that which animates or gives life, the text deals with one of the very first uses of the *automaton* concept in ancient Greek, commentators have pointed out.³⁰⁷ The *automaton* represents the energetic motion of drunken centaurs, and Hölderlin’s translation and commentary of Pindar’s 166th Ode tells the story of the centaurs crashing the wedding feast of Pirithous in a wild bacchanalian display.³⁰⁸ Not only were the centaurs described by Pindar as originary *automata*, however, they are also some of the earliest “teachers of the natural sciences,” as Hölderlin’s commentary describes:

Its image is [...] in places within nature where the shore is rich in rocks and grottoes, especially in places where originally the river had to leave the chain of mountains in order to tear through the land in their course. Centaurs are also therefore originally teachers of natural science, because it is from that point of view which nature can best be viewed.³⁰⁹

³⁰⁶ Tobias, “The Untamed Earth: The Labour of Rivers in Hölderlin’s ‘The Ister’” in *Hölderlin’s Philosophy of Nature*, ed. Tobias Rochelle, 75 - 93 (Edinburgh: Edinburgh University Press, 2020), 89.

³⁰⁷ For an overview of Hölderlin’s Pindar project, see Heike Bartel’s *Centaurengesänge: Friedrich Hölderlins Pindarfragmente* (Würzburg: Königshausen und Neumann, 2000).

³⁰⁸ Cf. Markus Fink. *Pindarfragmente: Neun Hölderlin-Deutungen* (Tübingen: Max Niemeyer Verlag, 1982), 111 – 126.

³⁰⁹ HSA V: “Sein Bild ist deswegen an Stellen der Natur, wo das Gestade reich *an Felsen und Grotten ist, besonders an Orten, wo ursprünglich der Strom die Kette der Gebirge verlassen und ihre Richtung quer durchreißen mußte*. Centauren sind deswegen auch ursprünglich Lehrer der Naturwissenschaft, weil sich aus jenem Gesichtspunkte die Natur am besten einsehnen läßt.”

In addition to veiled references to early thinking about technical media and their relation to myth, the ninth and final of Hölderlin's "Pindar Odes" makes a reference to the punishment endured by Prometheus for introducing technics to humans. Towards the end of the ode, we see a connection established between rivers and the learned centaur Chiron, whose life is exchanged for the god Prometheus, according to Aeschylus.³¹⁰ "The songs of Ossian in particular are true songs of the Centaur," Hölderlin's commentary concludes.³¹¹ They are "sung with the spirit of the river, and are like the Greek Chiron, who also taught Achilles to play strings."³¹² Chiron is celebrated by Hölderlin not only as a centaur whose river-like spirit leads to true nature philosophy, but also as a noble hero who exchanged his immortality for the life of the eternally damned Prometheus. The introduction of technics by this Titan, whose spirit serves as a "prox[y] of the aorgic" in Hölderlin, enters into a complex system of *Wechselwirkung* with the river.³¹³

Poesis at the Kantian Boundary: "Being and Judgment" and the "Thalia Fragment"

The Fichtean *Tat* ascribed to the river in the poem "The Ister," we have seen, requires a wholesale reconsideration of several aspects of the reception of Kantian aesthetics and nature philosophy in Hölderlin. As was the case in our investigation of both Novalis and Schelling, understanding Hölderlin's reaction to Kant requires moving carefully through the theory of judgment and making our way out to the other side. For

³¹⁰ Aeschylus, *Prometheus Bound and Other Plays*, trans. Phillip Vellacott (London: Penguin UK, 2003).

³¹¹ HSA V: "Die Gesänge des Ossian besonders sind wahrhaftige Centaurengesänge."

³¹² Ibid. "mit dem Stromgeist gesungen, und wie vom griechischen Chiron, der den Achill auch das Saitenspiel gelehrt."

³¹³ Cf. Achim Geisenhanslüke, "The Order of the Unbound: Time and History in Hölderlin's 'The Titans,'" trans. Nathan Tayler in *Hölderlin's Philosophy of Nature*, ed. Rochelle Tobias, 58 – 72 (Edinburg: Edinburg University Press, 2020).

For more on the titans and Hölderlin's concept of the *aorgic*, see Anke Bennholdt-Thomsen, "Die Bedeutung der Titanen in Hölderlins Spätwerk," *Hölderlin Jahrbuch* 25 (1986-7): 226-54.

Hölderlin, as it was for Schelling and Novalis, part of the problem with Kant's theory of judgment is the mere tentative validity Kant ascribes to the teleological aspects associated with the technic of nature, which essentially leaves no way of determining whether organic spontaneity is a mere projection of human freedom by reason or if it presents an actual product of a self-determining external agent. In order to appreciate the ways in which Hölderlin's ontopoetic considerations of the river aim to move beyond the boundary Kant puts in place between intrinsic and extrinsic purposiveness in our relation to nature, it will prove useful to turn directly to Hölderlin's own reactions to Kant's theory of judgment. These reactions can be gleaned from many of Hölderlin's theoretical writings dating from the first half of the 1790s. In numerous fragments and letters, such as "Being and Judgment," the "Thalia Fragment," and the now-famous letter to Christian Neuffer, in which Hölderlin discusses his aim of overcoming what he coins the 'Kantian Boundary,' we see Hölderlin laying the groundwork for the metabolic exchange between *polis* and *khôra* that will be staged by a new material form of recursivity organized around the concept of *Energie*.³¹⁴

The goal of exploring the negentropic potential of a *perpetuum mobile* which can retool human relations to the environment is staged once more for Romanticism as a sort of reciprocal exchange that undermines the traditional distinction between *physis* and *nomos*. As we have seen time and again, the Romantic effort to overcome the strictures of Kant's vision for a fixed, *a priori* architecture of the understanding is paradigmatic for much of early Romantic philosophy and poetry. Not just in Hölderlin, but in a wide

³¹⁴ For a systematic approach to this early period of writing, see Dieter Henrich's *Der Grund im Bewusstsein: Untersuchungen zu Hölderlins Denken (1794 - 1795)* (Stuttgart: Klett-Cotta, 1992).

number of Romantic writings from the end of the eighteenth century, we see the speculative ambitions of Romantic mechanology expressed in the desire to experiment with new forms such as the fragment, which is deemed capable of producing unforeseen relations between part and whole for members of a post-Kantian *sensus communis*. In order to retool the mode of *reciprocity*, the category whose function it is to mediate between part and whole for the community of knowers as well as explain the complex organization of organic entities, Novalis suggested searching for an *a priori* technics that would provide a material point of externality for concepts of the understanding.³¹⁵ Rather than remaining transcendent and fixed, concepts themselves must participate in these complex modes of exchange between humans and the lifeworld. Schelling's vision of conjoining mechanics to technics in *On the I* and in his notes to Plato's *Timaeus* has pointed to the need for a more functional apparatus of exchange between ideal concepts and the contingent reality of the world as it is experienced for knowers.³¹⁶ For Hölderlin, the apparatus of exchange between forms of thought and the content of experience is given a deceptively simple name: *poesis*. The process of technical making, for Hölderlin, highlights the importance of technical mediation in the energetic exchange between humans and nature, an exchange through which *being* becomes bound to modes of material *making*.

One of Hölderlin's earliest and most significant encounters with Kant's theory of judgment can be found in a now-famous letter to his friend Christian Neuffer. Dated November 10, 1794, the letter states that Hölderlin has begun working on an essay

³¹⁵ NS III, 34: "Architektonik. Sollte nicht die Krystallisation, die Naturarchitektonik und *Technik überhaupt*—Einfluß auf die *frühere Baukunst und Technik überhaupt* gehabt haben?"

³¹⁶ SW I, 2: 127.

concerning “aesthetic ideas” in the tradition of Schiller’s 1792 treatise *On Grace and Dignity*.³¹⁷ In this essay, Schiller argues that it is the free play of beauty which provides a point of mediation between human freedom and the determining force of natural law: “if the human were merely a sensuous creature, nature would both give laws and determine how they are applied,” he writes.³¹⁸ When we consider such free play of beauty, Schiller continues, nature comes to “share dominion with freedom, and although her law endures, it is spirit from now on which decides each case.”³¹⁹ Nature and human freedom, on this view, would enter a sort of power-sharing agreement, where any dispute between *physis* and *nomos* would be somehow resolved by a mysterious force Schiller simply refers to as ‘spirit.’ While full of praise for this initial attempt to overcome the *Kluft* between sense experience and the understanding, Hölderlin suggests that Schiller’s proposal of a free play of beauty, a proposal which foreshadows the later development of the *Spieltrieb* in the *Aesthetic Education of Man*, ultimately falls short of accomplishing what Schiller sets out to achieve. *On Grace and Dignity*, in Hölderlin’s view, “wagered one step fewer over the Kantian boundary than he should have,” he explains to Neuffer.³²⁰ While hinting at the possibility that a point of contact may yet exist which allows for meaningful exchange between aesthetics, politics, and nature knowledge, Hölderlin seems dissatisfied with Schiller’s reliance on the *deus ex machina* of ‘spirit’ and the spontaneous play of freedom, a concept of play that open up more questions than it could possibly answer.

³¹⁷ For a more detailed account of this exchange, see Frank, *Einführung*, 138-39.

³¹⁸ Schiller, *SW V*, 443.

³¹⁹ *Ibid.* “Wäre der Mensch bloß ein Sinnenwesen, so würde die Natur zugleich die *Gesetze* geben und die *Fälle* der Anwendung bestimmen; jetzt theilt sie das Regiment mit der Freiheit, und obgleich ihre Gesetze Bestand haben, so ist es nunmehr doch der Geist, der über die Fälle entscheidet.”

³²⁰ HSA VI.1: 137.

Hölderlin, at the time he writes to Neuffer, is working on a piece that directly addresses this complex set of issues. While it is difficult to discern exactly which piece of writing Hölderlin may be referring to in his letter, “Being and Judgment” is often assumed to represent Hölderlin’s own initial attempt at overcoming the “Kantian Boundary.”³²¹ In two dense paragraphs, “Being and Judgment” describes the crucial opposition between unmediated “Being,” which presumably lies beyond the realm of human cognition, and the faculty of judgment, which necessarily forecloses access to the ontological realm of unadulterated Being for philosophy. Whether the product of Fichtean intellectual intuition or Spinoza’s famous ‘third kind of knowledge,’ any claims to knowledge regarding this realm of Being, according to Kant, must be arrived at through the operations of reflexive judgment. Any experience of ‘Being’ is always already mediated by judgment. Even reflexive judgment, which provides systemic coherence to ideas through a series of algorithmic loops for consciousness, subsuming ever greater sets of experience under its singular law, never provides a wholesale unification of thought. Claims to such a unification essentially do not fully appreciate the mediating role played by judgment, Kant explains time and again throughout the three *Critiques*. Although unificatory coherence can be posited as a regulatory ideal for guiding ethical or political action in an individual case, such coherence will never constitute a stable transcendental state for the subject over time. The operations of judgment thus present an originary separation for ontology, representing an unmendable tear into the fabric of being that seems to completely foreclose the possibility of coherent self-

³²¹ Cf. Frank, *Einführung*, 138 – 39.

knowledge. Judgment is thus “in the highest and strictest sense the originary separation of the object and subject,” Hölderlin writes, an object and a subject which seemed to be “intimately united in the intellectual intuition,” but in fact come into appearance through the immanent workings of judgment. Hölderlin playfully refers to this set of operations as an *Ur*-separation, “*Ur-Teilung*.”³²² Seeking a way out of this bind presented by Kantian judgment, Hölderlin makes a surprising suggestion: perhaps we should try instead to reverse the assumed temporal flow of the relationship between possibility and actuality. Unlike Schelling and Goethe, Hölderlin does not propose collapsing these modes into each other and embracing the intuitive understanding directly.³²³ Instead, he suggests that “[a]ctuality and possibility are distinguished, like mediated and immediate consciousness.”³²⁴ “When I think of an object as possible,” he continues, “I just repeat the previous [state of] consciousness, through which it is actual. There is for us no conceivable possibility, that was not an actuality.”³²⁵ Rather than seeing possibility as a theoretical prospect which precedes actuality, Hölderlin suggests that the opposite may be the case. Possibility, for Hölderlin, is relayed into the past as a means of bypassing the separating function of judgment. Rather than projecting onto the future, possibility points to a layer of actuality that already existed beforehand, lying just beneath the surface and waiting to be uncovered.

³²² HSA IV:1, 216. “*Urteil*. ist im höchsten und strengsten Sinne die ursprüngliche Trennung des in der intellektualen Anschauung innigst vereinigten Objekts und Subjekts, diejenige Trennung, wodurch erst Objekt und Subjekt möglich wird.”

³²³ This corresponds to Kant’s definition of intuitive understanding: “the distinction of possible from actual things is one that is merely subjectively valid for the human understanding” (KU, AA 5:402).

³²⁴ HSA IV:1, 216.

³²⁵ HSA IV:1, 216. “Wirklichkeit und Möglichkeit ist unterschieden, wie mittelbares und unmittelbares Bewußtsein. Wenn ich einen Gegenstand als möglich denke, so wiederhol ich nur das vorhergegangene Bewußtsein, kraft dessen er wirklich ist. Es gibt für uns keine denkbare Möglichkeit, die nicht Wirklichkeit war.”

By reversing the temporal flow between these two modes, Hölderlin suggests that self-coherence is not to be viewed as a type of reflective coherence foreclosed by the past. Self-coherence presents an emancipatory ideal towards which Romanticism should strive. Here we begin to see how the poetic activity of gleaning nature's 'remains' begins to link up to the Kantian theory of judgment. While it is difficult to make out much more detail regarding Hölderlin's plans for this rather cryptic, unpublished fragment, "Being and Judgment" nevertheless serves to reveal the importance for Hölderlin of navigating the internal pathways of judgment until making it out to the other side. This, for Hölderlin, means achieving an understanding of Being that encompasses the natural world in all its complexity and alterity. Although Kantian judgment forecloses all meaningful pathways between possibility and actuality and back again, Hölderlin's fragment suggests that "Being expresses the connection between subject and object," the connection that is found when we move beyond the Kantian boundary.³²⁶ Rather than embracing a form of intellectual intuition where there is no longer any possible separation between possibility and actuality, Hölderlin suggests that a new form of connection might be made when we consider the ways in which nature itself reveals a host of possibilities that were previously actualized. Nature, too, has a present, past, and a future. Instead of tracing a straight line from present actuality back to historical past, Hölderlin suggests that we need more combinatory sets of practices that recuperate the emancipatory possibilities that are lost when we turn away from nature in its actuality. Through these practices, Romanticism seeks to unite ethics, aesthetics, and politics into a

³²⁶ HSA IV:1, 21.

“complete system of all ideas” as Hölderlin puts it in the “Earliest System Fragment of Idealism,” a manifesto he co-authored with Hegel and Schelling while the three were roommates in Tübingen.³²⁷ While the energetic exchange constituting this activity for Romanticism will be more fully articulated in the much later essay “The Modes of Operations of the Poetic Spirit,” it is already clear during his early student years that Hölderlin recognizes the need for an interrogation of the technics of nature, particularly as it relates to the temporal and figurative process of *Bildung*. As the deferral of the possibility of environmental tragedy, this process of *Bildung* is key to establishing negentropic forms of interaction through the maintenance of paratactic difference. Initiated by the poetic gleaning of the river, *Bildung* marks the “eccentric path” that comprises Hölderlin’s contribution to mechanology, carving a mode of co-existence between realist and idealist modes of onto-poetic production.³²⁸

This suggested mode of co-existence between Realism and Idealism allows for both the givenness of the natural world and the free production of art and politics. Such co-existence is illustrated quite clearly in the “Thalia Fragment,” an early study for the incomplete epistolary novel *Hyperion*. In this piece, Hölderlin turns directly to this relationship between the poetic activity of *Kunst*—constituting the material process of *technē*—and the sensuous givenness of the natural world. From the very first lines, the “Thalia Fragment” reads more like a theoretical treatise than a work of epistolary fiction. In dense, philosophical prose, the protagonist describes what he refers to as the “two

³²⁷ HSA IV:1, 297. “eine Ethik. Da die ganze Metaphysik künftig in die *Moral* fällt – wovon Kant mit seinen beiden praktischen Postulaten nur ein *Beispiel* gegeben, nichts *erschöpft* hat –, so wird diese Ethik nichts anderes als ein vollständiges System aller Ideen oder, was dasselbe ist, aller praktischen Postulate sein.“

³²⁸ HSA III:1 163.

ideals of human existence.”³²⁹ Each of these two ideals corresponds to a possible compartment human beings might assume in relation to nature. Regulative and constitutive at once, the first of these ideals constitutes an idyllic “state of highest simplicity” for humankind.³³⁰ In this Edenic state, human needs are met not through sweat and hard labor, but “through the mere organization of Nature.”³³¹ In a strange reversal, the purposiveness that is attributed by Kantian philosophy to the activity of reason is presented as a small, passive part of a much broader system of environmental self-organization. Without direct, conscious intervention in this metabolic exchange, humans are nevertheless presented as necessary aspects of these broader interactions. The other state presented by Hyperion introduces the work of *Bildung* into the realm of human existence. This ideal represents a “state of highest cultivation,” wherein the same exchange “would take place via infinitely manifold and reinforced needs and forces,” that is, “through the organization, that we are capable of providing to ourselves.”³³² Humans can provide themselves with tools for creating their own unique types of metabolic exchange, Hölderlin seems to suggest. Such exchange is achieved through introducing technical media to the world-making activity of romantic poetics. The two paths, ultimately, are two sides of the same coin:

The eccentric path, that the human [...] runs through from one point (of more or less simplicity) to the other (of more or less complete *Bildung*) appears, according to its essential tendencies, to be always self-same.³³³

³²⁹ HSA III:1 163.

³³⁰ Ibid.

³³¹ Ibid.

³³² Ibid.

³³³ HSA III:1, 163: “Die exzentrische Bahn, die der Mensch [...] von einem Punkt (der mehr oder weniger reinen Einfalt) zum andern (der mehr oder weniger vollendeten Bildung) durchläuft, scheint sich, *nach ihren wesentlichen Richtungen*, immer gleich zu sein.”

This surprising collapse of self-determination into natural development, however, also reveals a hidden danger for human ambitions. While we might desire to "be *in* and *above* everything" in nature, the letter continues, Hyperion cites the famous inscription on the grave of the Jesuit priest Ignatius Loyola as a dire warning against the exploitation of the natural environment: "non coerceri maximo, contineri tamen a minimo."³³⁴ It is up to humans to decide if the twin ideals of human existence will develop into an "all-desiring, all-subsuming dangerous side of the human" or into "the highest and most beautiful states achievable for humans."³³⁵ "In which sense these should apply specifically," the passage concludes, "must be decided by the free will of each person."³³⁶

Expressing hatred of the death-like intermediary things, the *Mitteldinge* that muddy our vision of these two ideals of existence, Hyperion's letter goes on to suggest that the approach taken to the natural world by Romantic mechanology must be careful and measured, a relation that might be understood as analogous to Goethe's tender empiricism. Both Realism and Idealism present different sides of actual processes in nature, processes which can exist simultaneously without a synthesizing term overdetermining their co-relation. But this paratactic interrelation is only made possible when humans do not become a colonizing force standing over and above nature, subsuming the environment under the operations of human reason. The narcissistic, expansive desires of anthropocentric reason must be reined in, Hölderlin suggests, while the temporal figuration of *Bildung* must be recognized as the result of a cross-pollination

³³⁴ Ibid. "non coerceri maximo, contineri tamen a minimo."

³³⁵ Ibid. "alles begehrende, alles unterjochende gefährliche Seite des Menschen" or "den höchsten und schönsten ihm erreichbaren Zustand."

³³⁶ Ibid. "In welchem Sinne sie für jeden gelten soll, muß sein freier Wille entscheiden."

of ideal and real technics of nature. If we do not see this, it is because “[w]e dream of *Bildung* but possess none,” as Hölderlin writes elsewhere.³³⁷ In this piece, Hölderlin urges his friend to appreciate the force of *Bildung* not as a universalizing activity but as a local cultural product that can be grasped consciously and with full awareness of its situatedness: “It indeed makes a difference” he continues, “if the *Bildungstrieb* operates blindly or consciously, if it knows where it comes from and where it’s heading.”³³⁸ As the “free unfolding of the national,” *Bildung* presents a sort of geological force through which the earth acts in the form of human subjects.³³⁹ While at first glance, this portrayal of *Bildung* in the “Thalia Fragment” and the *Gesichtspunct* seem to map neatly onto the distinction between *natura naturata* and *natura naturans* that Schelling inherited from Spinoza, the *vis formative* associated with the term since its introduction into nature philosophy by Blumenbach in 1781 has now become a composite of the ideal and real, consisting in organic and mechanic features.³⁴⁰ While Leif Weatherby has referred to this synthetic characteristic as an *organological* aspect of Hölderlin’s thought, the ethical and environmental aspects of this exchange suggest that a step is even being made beyond organology towards the mode of investigation Gilbert Simondon called mechanology. Highlighting the role played by technical media in the reciprocal exchange between humans and nature, mechanology is articulated as worldmaking *poesis* and as an environmental ethics.

³³⁷ HSA IV:1, 221.

³³⁸ HSA IV:1, 221. “Es ist nämlich ein Unterschied, ob jener Bildungstrieb blind wirkt oder mit Bewußtsein, ob er weiß, woraus er hervorging und wohin er strebt.“

³³⁹ HSA IV:1, 221.

³⁴⁰ Cf. Blumenbach, *Über den Bildungstrieb*, 39 – 43.

The Death of Empedocles: Tragedy as/of Externalization

In order to appreciate fully the contributions made by this idea of a combinatory and material onto-poetics towards articulating the ethical aims of Romantic mechanology, we must turn to Hölderlin's unique concept of tragedy, which is central to his thinking on organic finitude and its importance for political ecology.³⁴¹ In Hölderlin's numerous writings on Greek tragedy, particularly in the *Empedokles* drama and his related essays, we find the staging of a tension between the desire for connection to a metaphysical absolute that transcends any finite boundaries of judgment, and the pitfalls of such desire, particularly when it leads human beings to exert themselves as a colonizing force over and above the natural environment.³⁴² In this way, tragedy cuts both ways, for Hölderlin. It appears as a politically neutral "empty vessel" without content when examined side by side with the relational potential of Kantian *Wechselwirkung*, on the one hand.³⁴³ On the other hand, however, tragedy serves as a dire warning for inhabitants of the Anthropocene. It appears as a mode of poetic production that is capable of bypassing judgment, like the intellectual intuition lauded by Fichte and the *mechané* underwriting poetic production.³⁴⁴ Yet, "[i]t is the deepest interiority that expresses itself in the tragic dramatic poem," Hölderlin writes in the *Allgemeiner Grund*.³⁴⁵ "The tragic ode also represents the inner in positive differentiation" while "expressing an infinite divinity."³⁴⁶

³⁴¹ For an overview of Hölderlin's unique relation to tragic thinking, see Achim Geisenhanslüke, *Nach der Tragödie: Lyrik und Moderne Bei Hegel und Hölderlin* (Boston: Brill, 2012).

³⁴² Cf. David Farrell Krell, *The Tragic Absolute*.

³⁴³ HSA V: 196.

³⁴⁴ For more on Fichtean intellectual intuition and Hölderlin's poetry, see Ernst Cassirer's essay "Hölderlin und der deutsche Idealismus" in *Idee und Gestalt* (New Haven: Yale University Press, 1989/1924), 113 – 156.

³⁴⁵ HSA V: 150.

³⁴⁶ *Ibid.*

The worldmaking capabilities of tragedy serve as a speculative reminder of the many worlds that can be made and unmade for mechanology. While technical mediation provides a model of complexity and “positive differentiation” that can assist humans in understanding the recursive reciprocity of natural life, as Kant and others emphasized, such technicity must allow for the self-creating *Tat* of the environment in order to continue to thrive.

Rather than placing emphasis on past worlds and the mnemonic capacity of tragedy to record history, Hölderlin’s vision for tragedy is organized around a more speculation vision for *poesis* and the *Wechselwirkung* established between material creation and the natural world. Tragedy, on this view, seeks to present catastrophes that are yet to come, dealing in possible futures that may be rapidly approaching but which have not yet been experienced. “There is no conceivable possibility,” Hölderlin reminds us, “that was not actuality.”³⁴⁷ Tragedy represents a preventative sort of care for the environment, amplifying calls for the creation of a new political ecology organized around the energetic principle of perpetual motion, also laying the groundwork for a more positive role assumed by technical media. While highlighting the inadequacies of the Kantian architecture of the understanding in responding to the set of challenges posed by the Anthropocene, Hölderlin’s writings on tragedy echo Novalis’s call to establish a “prior technics” by encouraging a more reflective approach to technical media, looking towards their organizational capacity to establish more negentropic relations to the environment.³⁴⁸ “The tragic ode begins in supernal fire; pure spirit pure intensity has

³⁴⁷ HSA IV:1, 216. “Es gibt für uns keine denkbare Möglichkeit, die nicht Wirklichkeit war.”

³⁴⁸ NS I, 212.

overstepped its boundaries [...]“ Hölderlin writes in the first lines of the *Grund zum Empedokles*.³⁴⁹ Hölderlin suggests that the suffering and temporal finitude associated with tragedy since the Greeks can only properly be understood when they are explored as a reaction to the introduction of Promethean fire, of technics, to the human world. He continues:

pure spirit pure intensity [...] has failed to moderate sufficiently those alliances in life that necessarily and thus even without fire incline to contact, as it were, alliances that through their quite intense attunement tend to excess rather than moderation when it comes to consciousness, reflection, or physical sensuality; through excess of intensity, therefore, conflict has arisen, a conflict that the tragic ode conjures up at the very outset in order to depict what is pure.³⁵⁰

While refusing to be contained by boundaries separating the divine and the human, this drive to ‘present the pure’ produces nothing less than the paradoxical, tragic situation of technical media in attempts to overcome the Kantian boundary. While producing a longing for immediacy, this desire to ‘present the pure’ results in the loss of a “harmonious opposition” between nature and art, an equilibrium that seemed to have been established at one point in time.³⁵¹ Resulting in a tragic inability for human thought to reconcile mechanical and organic modes of organizing natural motion, the introduction of technical media into human (and natural) history initiates a struggle that can only be overcome when we consider a new perspective embodied by the *aorgic*:

³⁴⁹ Trans. David Farrell Krell, “The Tragic Ode,” *The Death of Empedocles: A Mourning-Play* (Ithaca: State University of New York Press, 2008), 142; HSA IV:1, 153 – 54.

HSA IV:1, 149: “Die tragische Ode fängt im höchsten Feuer an.”

³⁵⁰ Ibid; “der reine Geist, die reine Innigkeit hat ihre Grenze überschritten, sie hat diejenigen Verbindungen des Lebens, die notwendig, also gleichsam ohnedies zum Kontakt geneigt sind, und durch die ganze innige Stimmung dazu übermäßig geneigt werden, das Bewußtsein, das Nachdenken, oder die physische Sinnlichkeit nicht mäßig genug gehalten, und so ist, durch Übermaß der Innigkeit, der Zwist entstanden, den die tragische Ode gleich zu Anfang fingiert, um das Reine darzustellen.”

³⁵¹ HSA IV:1, 152. 2. “Natur und Kunst sind sich im reinen Leben nur harmonisch entgegengesetzt. Die Kunst ist die Blüte, die Vollendung der Natur.”

At the midpoint lies the death of the individual, namely, the moment when the organic dispenses with its ego, its particularized existence, which went to the extreme; the aorgic dispenses with its universality, not in ideal mixture, as it was at the commencement, but in its real supreme struggle; such dispensings occur when the particular, having gone to its extreme, increasingly universalizes itself and becomes active against the extreme of the aorgic; the particular has to tear itself away from its midpoint more and more, while the aorgic, acting against the extreme of the particular, has to concentrate itself more and more; it achieves for itself with ever greater success a midpoint, thus becoming something superlatively particular, at which point the organizational that has become aorgic appears to find itself again and to revert to itself by fastening onto the individuality of the aorgic, and the object, the aorgic, appears to find itself when, at the very moment it takes on individuality, the organic too finds itself at the uttermost extreme of the aorgic [...]³⁵²

Presenting what Hölderlin tellingly refers to as ‘a third’ term between organism and mechanism, this concept of the *aorgic* presents a novel mediating force between whole and part, capable of providing balance to a world in which humans have become expansive geological agents with far-reaching consequences for their actions. Humans are autonomous in a new way; they are *ailingly* so [“leidende selbsttätig”], Hölderlin describes.³⁵³ Irreducible to nature and culture as distinct categories, the *aorgic* presents a strange substance, a [Stoff] that “differs from the poets own mind” as well as to the natural environment.³⁵⁴ The *aorgic* presents a proxy for Romantic mechanology and its

³⁵² Trans. David Farrell Krell, “The Basis of Empedocles,” *The Death of Empedocles*, 145; HSA IV:1, 153 – 154. “In der Mitte liegt der Kampf und der Tod des einzelnen, derjenige Moment, wo das organische seine Ichheit, sein besonderes Dasein, das zum Extreme geworden war, das Aorgische seine Allgemeinheit nicht wie zu Anfang in idealer Vermischung, sondern in realem höchstem Kampf abgelegt, indem als Besondere auf seinem Extrem gegen das Extrem des Aorgischen sich tätig immer mehr verallgemeinern, immer mehr von seinem Mittelpunkte sich reißen muß, as Aorgische gegen das Extrem des Besondern sich immer mehr konzentrieren und immer mehr einen Mittelpunkt gewinnen und zum Besondersten werden muß, wo dann das aorgisch gewordene Organische sich selber wieder zu finden und zu sich selber zurückkehren scheint, indem es an die Individualität des Aorgischen sich hält [...] so daß in diesem Moment, in dieser Geburt der höchsten Feindeligkeit die höchste Versöhnung wirklich zu sein scheint.”

³⁵³ HSA IV:1, 152.

³⁵⁴ Ibid. Trans. modified.

aim of finding a new sense of *Wechselwirkung* which can function materially and in the plural—paratactically, rather than synthetically.

The tragic potential for this paratactic mode of the *aorgic* is played out in the numerous drafts of *The Death of Empedocles* that Hölderlin penned from 1797 to 1800. Narrating the infamous death of the presocratic philosopher Empedocles, who throws himself into the fires of Mount Aetna in order to be remembered by posterity, *The Death of Empedocles* draws on accounts found in Diogenes Laërtius's *Lives of the Philosophers* and Horace's *Ars Poetica*, focusing on Empedocles's exile from the ancient community of Akragas.³⁵⁵ In Hölderlin's *Empedocles*, we read the story of the presocratic philosopher as he is cast out of his community for climbing up to Mount Olympus, showing utter disregard for the divide between humans and the divine. While exemplifying, on the one hand, the Romantic longing for a transcendent beyond that cannot be contained by any human boundaries, the play, on the other hand, subtly portrays the danger of passing over into what Hölderlin calls the “all-desiring, all-subsuming and dangerous side of humanity.”³⁵⁶ *The Death of Empedocles* is in fact full of subtle warnings from characters hinting at the possibility that Empedocles's desire for a certain sort of transcendence might be deeply problematic, presenting symptoms of a more manic colonizing tendency than the philosopher is ready to admit: “do you not know the forces of nature,” asks Pausanias in the first act of Hölderlin's first draft, “with which you are familiar, as no other mortal, / and can channel, as you wish, in quiet

³⁵⁵ For a recent discussion of this set of influences, see John T. Hamilton, “Florilegia: Influence and Cross-Pollination between Celan and Hölderlin, Pindar and Horace,” *MLN* 135, no. 3 (2020): 600–19, <http://dx.doi.org/10.1353/mln.2020.0048>.

³⁵⁶ HSA IV:1, 152.

domination?”³⁵⁷ Empedokles, in fact, is quick to respond in the affirmative here, proudly claiming that everything can be fit within the grasp he holds over nature: “Right! I know everything, and can master everything / As the work of my own hands, I know it / Through and through [...] Mine is the world, and subservient and servile / are its forces to me / a maiden / becomes nature, needing a master.”³⁵⁸ Empedocles’s eventual fate, as he throws himself into volcanic fire, is the direct result of this more troubling sort of tragedy, wherein nature is perceived to be lacking and requiring domination, never seen in its alterity.³⁵⁹ Tragedy becomes antithetical to the tie between nature and technical media constituted by the *aorgic*, as the revealed finitude of Empedocles’s knowledge is tied closely to the tragic mortality of all organic beings.

Over the course of multiple drafts, Hölderlin portrays the eponymous hero of *The Death of Empedocles* in moments as less heroic than one might expect. Empedocles cuts an often-lonely figure whose refusal to accept parataxis borders on the neurotic. Already in the first draft, the need to exercise power and control over nature results in a hard split between technical and epistemic labor, a split that is expressed in Empedocles’s interactions with his servants. Before Empedocles decides to leave human society and

³⁵⁷ HSA IV:1, 109: “Und kennst du nicht die Kräfte der Natur, / Daß du vertraulich wie kein Sterblicher. Sie, wie du magst, in stiller Herrschaft lenkest?”

³⁵⁸ HSA IV:1, 109. “Recht! Alles weiß ich, alles kann ich meistern.

Wie meiner Hände Werk, erkenn ich es
Durchaus und lenke, wie ich will,
Ein Herr der Geister, das Lebendige.
Mein ist die Welt, und untertan und dienstbar
Sind alle Kräfte mir

zur Magd ist mir
die herrnbedürftige Natur geworden.”

³⁵⁹ HSA IV:1, 115: “Delia: Dich entzündet, große Seele! der Tod / Des Großen, aber es sonnen / Die Herzen der Sterblichen auch an mildem Lichte sich gern [...]”

walk up to the top of Mount Aetna, his servant is requested to pick up the *Reisegerät* for him before he continues on his own. The manual labor of picking up this tool for his master is the “last service” of Empedocles’s slaves.³⁶⁰ Maintaining a separation between physical and mental labor for his brand of presocratic philosophy, Empedocles becomes an image of what Hegel would later call unhappy consciousness in the *Phenomenology of Spirit*.³⁶¹ Alienated from the material tools of meaning-making that are forged in the relation between humans and the earth, Empedocles finds himself torn asunder from the *polis* as a result. In the end, he cannot bear the thought of inhabiting the *khôra* lying outside the city limits. Unable to impose his own law on the *physis* of nature, Empedocles sees no choice but to kill himself. Rather than experimenting with a new, flexible *nomos*, he decides to end his life in a tragic leap into flames.³⁶²

Hylomorphism and its Discontents: Kantian Aesthesis and Hölderlin’s “Operations of the Poetic Spirit”

Hölderlin deals directly with issues concerning nonequilibrium flow and metabolic exchange between onto-poetic system and the natural environment in what is perhaps his most sustained reflection on the role played by nature and sense experience for his speculative poetics. In the 1800 “On the Operations of Poetic Spirit,” Hölderlin addresses the issue of *poesis* as it relates to the two key operations of Kantian judgment, reflective synthesis and concrete analysis, as well as the need to move beyond judgment entirely when discussing the *Tat* of natural beings like the river. While the river presents a form of what Hölderlin calls a “living unity,” it nevertheless embodies what is a

³⁶⁰ HSA IV:1, 38.

³⁶¹ See the section on the “Freedom of Self-Consciousness,” Hegel, *Phänomenologie des Geistes*, 163 – 77, *Werke* 3.

³⁶² Cf. HSA IV: 85.

prothetic sort of life. While the tragic mode serves to highlight the colonizing dangers of anthropocentric reason, the ability of poetics to materialize the reciprocal functionality of *Wechselwirkung* presents for Hölderlin new opportunities for exchange between the environmental *khôra* and the extended *polis*. At stake for Hölderlin is nothing less than the production of being through *poesis*, where the *mechané* of poetic production establishes the contours of a novel political ecology. An unlikely interrogation of the concept of *Energie*, in Hölderlin, here becomes central for overcoming the Kantian boundary and healing the resultant split of sense experience into form and matter.³⁶³

In “Operations of the Poetic Spirit,” Hölderlin discusses the creative, world-making capacities of the two primary operations of Kantian judgment: reflective and determinative forms of judgment. Instead of forcing an impossible decision between the two when the understanding attempts to process sense data, Hölderlin suggests that we remain focused on the relational capacities of *Wechselwirkung* in a metabolic exchange. The poetic spirit is only able to achieve this state of complexity “when it is not lacking in harmonious unity, meaning and energy.”³⁶⁴ As we have seen in the case of Novalis and Schelling, the separation of extensive and non-extensive types of spatial relations is symptomatic of a technocratic neuroticism in which individuals attempt to bend nature to their will, rather than working at the development of more relational understandings of experience through which *polis* and *khôra* might be conjoined. For Novalis, this need for a deeper mode of relationality leads to the exploration of a material *nomos* of resonance that could be established by humans through careful attention to technical mediation.

³⁶³ On hylomorphism and Kant, see Gentry’s “The Concept of Life in German Idealism,” 379 – 90.

³⁶⁴ HSA V: 150.

Hölderlin's focus, tellingly, lies on the conceptual labor performed by the term *Energie*. While Hölderlin was writing some decades before the disciplinary development of thermodynamics and energy science throughout the nineteenth century, his use of the term stages the exact collapse of the non-extensive environmental *khôra* into the *polis* that we have been outlining. As Johannes Lehmann has shown, the *Energie* concept at the time was employed to forge new relationships between Cartesian extension and Newtonian law by collapsing extensive and nonextensive modes of spatial experience into one another.³⁶⁵ Leading to the experiment with more relational conceptions of *nomos* and *physis*, Hölderlin's poetics suggest that a more negentropic meaning-making system might be created for political ecology. The creation of this new negentropic political ecology, however, must be met with a sensitivity towards the selection and development of individuated beings. Moving from the abstract towards the concrete, Hölderlin highlights what it is about the poetic act that *Wechselwirkung* in Kant seems to be lacking: "brought to free individuality, to unity and identity in itself, the pure subjective life is first made available through the selection of its object."³⁶⁶ Rejecting monistic abstraction, this operation of selection becomes crucial for the establishment of a new

³⁶⁵ Cf. Johannes Lehmann, "Energie, Gesetz und Leben um 1800" in *Sexualität, Recht, Leben. Die Entstehung eines Dispositivs um 1800*, ed. Maximilian Bergengruen, Hubert Thüring, and Johannes F. Lehmann, 41 - 66 (Munich: Wilhelm Fink, 2005), 42. "Anstatt wie Leibniz Körper und Seele mit dem komplizierten Gleichnis parallellaufender Uhren zu beschreiben oder wie Platner in ihren gegenseitigen Verhältnissen, Einschränkungen und Beziehungen zu analysieren, lösen sie den einen Pol des Dualismus auf und setzen alles auf den Term des Körpers und seiner Bewegungsgesetze. Diese atheistische Radikalposition, die zugleich zentrale dynamische Begriffe besetzt, ist in ihrer provokativen Wirksamkeit kaum zu überschätzen. Von diesem Extrempunkt aus entwickelt sich in Aufnahme und Zurückweisung dieser Position in der zweiten Hälfte des 18. Jahrhunderts wiederum ein dualistisches Denken, aber nicht mehr wie bei Descartes mit der exklusiven Opposition von *res extensa* und *res cogitans*, sondern mit der inklusiven Opposition von gesetzmäßiger und lebendiger, bzw. energetischer Bewegung."

³⁶⁶ SW 4, 275: "Zur freien Individualität, zur Einheit und Identität in sich selbst gebracht, wird das reine subjektive Leben erst durch die Wahl seines Gegenstands."

sensus communis that takes into account the politics of thinking environmentally.³⁶⁷

Reintegrating the theoretical *Abfall* lying beyond the Kantian boundary, Hölderlin's

"Modes of Operations" are "led by judgment," but in a different form:

grasped in their totality, those three qualities might express themselves as efforts to recognize the harmonically-opposed in the living unity, and the living unity in the harmonically-opposed, i.e. in the more subjective or more objective state. For it is exactly these different states that emerge from them as a unification of the same.³⁶⁸

Poesis is a question of life, for Hölderlin. Life, on the other hand, is a question of *techne*, of the process of *Bildung* underlying the *Wechselwirkung* of Kantian and post-Kantian nature philosophy.

Just as Novalis attempted to rewrite the transcendental aesthetic along the lines of an *a priori* technical mediation he referred to as 'mechanical,' Hölderlin's employment of the *Energie* concept presents the possibility that a sustainable metabolic exchange between humans and the environment might be established through the collapse of the *polis* and *khôra* into a more collaborate spatial ecology. Through this relational understanding of modes of aesthetic experience, the exploration of technical media becomes itself a form of *poesis* for Hölderlin, much like it would be for later philosophers such as Martin Heidegger and Bernard Stiegler. In light of this, the energetic ideal of a *perpetuum mobile* becomes a constitutive feature of nature and a regulatory ideal for judgment, both of which relate to each other through parataxis. Rather than an all-

³⁶⁷ For a recent attempt to link *Wechselwirkung* to ecological concerns for romanticism, see Heinrich Detering's *Menschen im Weltgarten*, 342 – 45.

³⁶⁸ SW 4, 270: "als in ihrer Ganzheit begriffen, gewinnen, jene drei Eigenschaften mögen als Bestrebungen, das Harmoniscentgegensetzte in der lebendigen Einheit oder diese in jenem zu erkennen, im subjektiveren oder objektiveren Zustände sich äußern. Denn eben diese verschiedenen Zustände gehen auch aus ihr als der Vereinigung derselben hervor."

consuming ecological machine subordinating all purposes to its functionality, the negentropic exchange of Romantic mechanology helps link judgment to being without reducing either to *a priori* technocratic processes. Recursive operations require the eccentric *Bahn* linking *Kunst* and *Natur*, though we may not always foresee the ways in which this route returns to itself. Nor are we always present at the moments in which this figurative activity takes place, Hölderlin acknowledges. Neither *Natur* nor *Kunst* gets ultimate priority over the other. Instead, the two exist in a dynamic and non-equilibrium exchange through Hölderlin's onto-poetic contributions to mechanology.

5. Goethe's Technics of *Antizipation*: Negentropy and Futurity

* *Parts of this chapter have been published as* Bryan Norton. "Veloziferisch (Velociferian)." *Goethe-Lexicon of Philosophical Concepts 1, no. 1 (January 31, 2021): 113–20. <https://doi.org/10.5195/glpc.2021.25>.*

Over the last three chapters, we have seen time and again how the technical imagination of German Romanticism presents a materialized and externalized version of what Kant called the "technic of nature" in the *Critique of Judgment*.³⁶⁹ For Kant, the technic of nature presents a mere thought experiment, postulating a theoretical boundary between the spontaneous, recursive rhythms of organic life's self-organization and non-living phenomena that are determined solely by linear causal chains.³⁷⁰ While it is ultimately impossible to tell if this division corresponds to any deeper sense of reality, which Kant refers to as the noumenal realm of things in themselves, it is nevertheless important, on Kant's view, to explore the tentative hypothesis that life provides itself with its own form of teleological motivation. This spontaneous path of organic development possesses hidden affinities with the freedom of the subject through its use of reason, for Kant.³⁷¹ For his Romantic readers, however, the technic of nature provides the foundation for a much more radical, material understanding of the relationship between thought and world. While Kant only attributes tentative validity to the possibility that organic systems might present a sort of purposiveness without a purpose, Romantics like

³⁶⁹ CJ A 318/B322: "Die Systeme in Ansehung der Technik der Natur, d.i. ihrer produktiven Kraft nach der Regel der Zwecke, sind zwiefach: des Idealismus, oder des Realismus der Naturzwecke. Der erstere ist die Behauptung: daß alle Zweckmäßigkeit der Natur unabsichtlich, der zweite: daß einige derselben (in organisierten Wesen) absichtlich sei."

³⁷⁰ Ibid.

³⁷¹ For a more detailed analysis, see Förster's "The Hidden Plan of Nature," 187–99.

Novalis, Schelling, and Hölderlin respond not with an immediate embrace of the autotelic nature of the organism, but with an attempt to come to terms with the role played by technical media in teleology, revealing a broad impact for the way life is understood and encountered for poetry and philosophy. Rather than uncritically accepting the Aristotelean presuppositions informing the Kantian understanding of technics, a metaphysics that Martin Heidegger would urge modern readers to revive in his seminal “Question Concerning Technology,” Romanticism asks after what Novalis refers to as a “prior technic” for reason, a mode of technical externality that might serve as a material substrate for the rigid architecture of the understanding.³⁷² Rather than creating and enforcing an insurmountable boundary between organism and mechanism, the project of Romanticism appears as an attempt to explore the ways in which technical media ultimately lend coherence to categories such as ‘organic’ and ‘mechanical’ in the first place. But that is not to say that Romantics are completely indifferent to the fate of the environment and its colonization through modern technology and other externalized forms of instrumental reason. As Novalis urges us to take seriously the ways in which the recursive figuration often attributed by natural philosophy to organic systems is itself a projection of the increasing complexity of technical media, the example of a boat’s rudder and its reciprocal interactions with the ocean’s currents in *Heinrich von Ofterdingen* have served as an initial reminder that Romantic mechanology is always already an investigation of the role played by technical media in political ecology.³⁷³ Mechanology investigates the relation between *technē*, *physis*, and *nomos*, as revealed by

³⁷² NS III, 34. Also see Jocelyn Holland, “From Romantic Tools to Technics: Heideggerian Questions in Novalis’s Anthropology,” *Configurations* 18, no. 3 (2010): 291–307.

³⁷³ NS I, 212.

Novalis's employment of the verb *regieren* in his retelling of the Arion legend from Herodotus's *Histories*.³⁷⁴ For the *Naturphilosoph* Schelling, the set of epistemological, political, and environmental concerns brought about by technical media leads to the creation of a new tentative boundary between organization and system, one which would supplant the "Kantian boundary" between organism and mechanism as it is articulated in Kant's theory of judgment.³⁷⁵ While this boundary remains theoretical and tentative—indeed it remains unclear if Schelling believes we might discover a higher unity that combines the figurative spontaneity of organization with the functionality of the system—Schelling nevertheless reminds readers that the figurative activity of life and its temporal *Bildung* necessarily possesses an undeniable ethical and political dimension. For Hölderlin, this possibility for figuration is understood as a form of metabolic exchange, of *Energie*, as he puts it in "The Modes of Operation of the Poetic Spirit."

It is at this juncture that we must turn to Goethe, whose poetic writings are used by the twentieth century physicist and philosopher Erwin Schroedinger as a means of illustrating the energetic complexity of living things as *temporally* and *temporarily* distinct from that of abiotic matter. Referring to the energetic capacities of life as a form of negative or free entropy, Schroedinger turns to several poems by Goethe in his 1944 lectures *What is Life?* to illustrate how organisms can defer the increase of entropy over time by redistributing it spatially throughout their milieu.³⁷⁶ In this way, Goethe serves as an important cross point for theorizations of complexity in biological life and

³⁷⁴ Ibid.

³⁷⁵ SW I:7, 210.

³⁷⁶ Lectures two, three, and four all begin with epigrams taken from Goethe's poetry. See Schrödinger, *What is Life?*, 19, 32, 46.

explorations of individuation in technical objects as examined by Simondon, an overlap that has come to the fore in recent decades through the work of Bernard Stiegler.³⁷⁷ Not only does Goethe provide one of the central literary references throughout Simondon's presentation of a 'general technology,' or mechanology, with *Faust* presenting a warning against colonizing abuses of technical media, Goethe is himself quick to respond to the crisis of Kantian judgment as it is understood by Novalis, Schelling, and Hölderlin.³⁷⁸ While refusing to adhere to an uncritical embrace of organic vitality, a feature of his writing that has been recently highlighted by Amanda Jo Goldstein, Goethe provides a warning against sacrificing the 'special sap' constituting life to an unnecessary divide between realism and idealism, organism and mechanism.³⁷⁹ The Romantic technical imagination is not a fantasy aimed at colonizing the lifeworld through tools or complex machinery. It aims to produce new forms of synergistic co-existence for technical media and the lifeworld, which serves as the technical object's own milieu and material support.

Goethean Individuation between the *Urpflanze* and the Technical Object

At the very beginning of *Elective Affinities*, the character Eduard's practice of grafting in a garden provides a point of entry for understanding how Romantic reactions to Kant call for an external and material understanding of Kant's mode of reciprocity:

³⁷⁷ See for example Stiegler's "nouveau conflit des facultés et des fonctions dans l'Anthropocène" in *La technique et le temps*, 847 – 76 (Paris: Fayard, 2018).

³⁷⁸ Simondon, *Modes d'existence*, 58.

³⁷⁹ Amanda Jo Goldstein, *Sweet Science: Romantic Materialism and the New Logics of Life* (Chicago: University of Chicago Press, 2017), 72 – 99. For more on the relationship between technics and the organic in Goethe, see Helmut Müller-Sievers, "The Curse of Technics: A Gloss on the World-Curse in Goethe's Faust," *MLN* 131, no. 3 (2016): 656–61, <https://doi.org/10.1353/mln.2016.0043>.

Eduard—so we are calling a rich baron of the best age—Eduard had spent the most pleasant hours of an April afternoon in his nursery, grafting freshly obtained slips onto young stems.³⁸⁰

While rejecting the givenness of organic individuation, the practice of grafting illustrates the all-important movement between individuation and transindividuation that is so central for Simondonian mechanology and Romantic theories of *Wechselwirkung*.³⁸¹ In *On the Modes of Existence of Technical Objects*, Simondon also makes a crucial distinction between *organology* and *mechanology*, one which is already operative, we have seen, in the technical imagination of Romanticism and Idealism. Whereas *organology* provides a philosophical and historical context for thinking about how tools evolve coevally to processes of hominization and speciation, *mechanology* is developed partially as an early response to what Thomas Carlyle refers to as the “age of the machines,” where technical media exercise a new extended form of agency over society and nature. Such media come to determine the contours of organic individuals and entire social configurations.³⁸² While criticizing the colonial tendencies that present themselves as a result of this shift, the conceptual apparatus of mechanology allows thinkers like Goethe and Hölderlin to view ecological concerns more clearly as they relate to technical media. Goethe’s *Faust*, for example, provides an important reference point in Simondon when he discusses the ethical and political dimensions of the shift from organology to mechanology. As *Faust* presents an allegory of modernity’s simultaneous embrace and

³⁸⁰ Author trans. Cf. HU 6, 242: “Eduard – so nennen wir einen reichen Baron im besten Mannesalter – Eduard hatte in seiner Baumschule die schönste Stunde eines Aprilmittags zugebracht, um frisch erhaltene Pfropfreiser auf junge Stämme zu bringen.”

³⁸¹ Siahrei Biareishyk has taken important steps in this direction. See “Rethinking Romanticism with Spinoza: Encounter and Individuation in Novalis, Ritter, and Baader,” *The Germanic Review: Literature, Culture, Theory* 94, no. 4 (October 2, 2019): 271–98, <https://doi.org/10.1080/00168890.2019.1659223>.

³⁸² Cf. Thomas Carlyle, “Signs of the Times,” in *A Carlyle Reader. Selections from the Writings of Thomas Carlyle*, ed. G. B. Tennyson, 31 - 54 (Cambridge: Cambridge UP, 1969), 34.

sacrifice of the organic ‘special sap of life,’ Goethe’s work serves as an ongoing reminder of the importance of individuation and *Bildung* for the reciprocal exchange required by mechanology between technical media and political ecology. As “[a] hot cathode lamp is a technical element much more than a complete technical individual,” Simondon writes in *Modes of Existence*,

[o]ne can compare it to the organ of a living body. It would be possible in this sense to define a general organology, which studies technical objects at the level of the element, and that which would be part of technology, with mechanology, which studies *completed technical individuals*.³⁸³

Goethe’s contribution to an ethics of mechanology is to be understood insofar as Goethe himself is a thinker of the *milieu* and of *individuation*. While Schroedinger may have refrained from directly examining the role played by technical media in navigating a relationship between interiority and exteriority in figurative processes of *Bildung*, writings from Bernard Stiegler have emphasized exactly this aspect of technical media and its development in response to Kantian judgment.³⁸⁴ The externality of *Bildung*, in effect, assumes the contours of what Stiegler refers to as a “theater of individuation.”³⁸⁵

³⁸³ My emphasis. Simondon, *Modes d’existence*, 80-81: “Les objets techniques infra-individuels peuvent être nommés éléments techniques; ils se distinguent des véritables individus en ce sens qu’ils ne possèdent pas de milieu associé; ils peuvent s’intégrer dans un individu; une lampe à cathode chaude est un élément technique plutôt qu’un individu technique complet; on peut la comparer à ce qu’est un organe dans un corps vivant. Il sera en ce sens possible de définir une organologie Générale, étudiant les objets techniques au niveau de l’élément, et qui ferait partie de la technologie avec la mécanologie, qui étudierait les individus techniques complets.”

³⁸⁴ Stiegler, *La Technique et le Temps 3*, 651 – 68.

³⁸⁵ Bernard Stiegler outlines this rather pragmatically, with a nod to Schroedinger, in “The Theater of Individuation: Phase-Shift and Resolution in Simondon and Heidegger,” trans. Kristina Lebedeva, *Parrhesia* 7 (2009): 47: “in or from the process of psychic and collective individuation that has opened up history as individuation of the West, in the possible after of such a Western process if it is true that it is rather a question of thinking how that which—having begun and thus necessarily also having an end—we would essentially be in charge of individuating today, in and as the end of the individuation of the West, namely, the nascent figure of another time, the accidental and yet necessary conditions of a renewed individuation – stating precisely the necessity of such an accident, as ‘resolution,’ but a resolution insofar as it has the capacity to affirm a reinvented phase-shift in the face of an entropic and increasingly hegemonic tendency.”

The methodology of intuitive understanding developed within Goethe's morphology makes nature philosophy into exactly such a 'theater of individuations.' Whereas intellectual intuition bypasses the senses and makes no attempt to connect back to external reality, the collapse of actuality and possibility in intuitive understanding highlights the reciprocity and recursivity of knowledge production through poetics and nature philosophy.³⁸⁶ Over the course of developing this participatory methodology, Goethe forgoes the ideality of his *Urpflanze* in order to focus on the materiality and externality of *Bildung*. This focus on materiality and externality, however, requires overcoming the rift between *Wort* and *Tat* identified by Götz at the end of Act IV in *Götz von Berlichingen*.³⁸⁷

Ach! Writing is busy idleness, it irritates me so. By writing, what I've done, I become resentful of the loss of time, during which I could be doing something.³⁸⁸

Understanding this process of rejoining *Wort* and *Tat*, for Goethe, does not just mean breaking with the angsty pessimism of the *Storm and Stress* movement, however. Reconnecting *Wort* and *Tat* means breaking with the inherently conservative attitude towards technical media scholars have so often associated with Goethe in the past. Even Ernst Kapp's groundbreaking *Elements of a Philosophy of Technology*, while providing a

³⁸⁶ Eckart Förster and Dalia Nassar are particularly insightful on this aspect of Goethe's thinking. See Nassar's "From a Philosophy of Self to a Philosophy of Nature: Goethe and the Development of Schelling's Naturphilosophie," *Archiv für Geschichte der Philosophie* 92, no. 3 (January 2010), 304 - 321 <https://doi.org/10.1515/agph.2010.014> and "'Idealism Is Nothing but Genuine Empiricism': Novalis, Goethe, and the Ideal of Romantic Science," *Goethe Yearbook* 18, no. 1 (May 18, 2011): 67-95, <https://doi.org/10.1353/gyr.2011.0471>. Also see Förster, *Die 25 Jahre der Philosophie*, 253 - 76.

³⁸⁷ Ernst Cassirer identifies this tension between *Wort* and *Tat* as the central engine of conceptual innovation throughout Goethe's oeuvre. See "Goethes Pandora" in *Idee und Gestalt*, 18 - 22.

³⁸⁸ Author trans. HU 4: 154. "Ach! Schreiben ist geschäftiger Müßiggang, es kommt mir sauer an. Indem ich schreibe, was ich getan, ärgere ich mich über den Verlust der Zeit, in der ich etwas tun könnte."

useful analysis of Götz's prosthetic hand, seems implicitly to endorse Götz's realist ethos and cynicism about the true figurative possibilities of new media.³⁸⁹

While Goethe was by no means a profuturist when it came to new technology, it needs to be emphasized that what he refers to as 'tender empiricism' also entails a forward-facing understanding of technical media, an understanding that is exhibited throughout Goethe's morphology. A complex approach to technical media can be seen if we look forward to the neologism *veloziferisch* Goethe developed during the 1820s. At the end of book two of *Wilhelm Meister's Journeyman Years*, in the excursus titled "Observations in the Mindset of the Wanderers" ("Betrachtungen im Sinne der Wanderer"), Goethe decries his age as one which "lets nothing ripen."³⁹⁰ It is a time of accelerated intensity in which "one lives from hand to mouth, each moment consuming the previous moment, wasting day after day without producing anything lasting."³⁹¹

Scathingly, Goethe continues:

Do we not already have enough pages for all the daily papers! A good head can surely intercalate one and the other. In this way everything that anybody goes about doing, writing, even what one intends to do in the future, it is all dragged before the public eye. No one can suffer or enjoy themselves for a moment except as a means of mere entertainment for others; and so it springs from house to house, city to city, from domain to domain and ultimately from corner to corner of the globe, everything *veloziferisch*.³⁹²

³⁸⁹ Cf. Kapp, *Grundlinien einer Philosophie der Technik*, 102 – 03. Also see Jeffrey West Kirkwood and Leif Weatherby, "Operations of Culture: Ernst Kapp's Philosophy of Technology," *Grey Room* 72 (September 2018): 6–15, https://doi.org/10.1162/grey_a_00250.

³⁹⁰ FA 1.10:563: "nichts reif werden läßt."

³⁹¹ Ibid: "man im nächsten Augenblick den vorhergehenden verspeist, den Tag im Tage vertut, und so immer aus der Hand in den Mund lebt, ohne irgend etwas vor sich zu bringen."

³⁹² Ibid. "Haben wir doch schon Blätter für sämtliche Tageszeiten! ein guter Kopf könnte wohl noch eins und das andere interkalieren. Dadurch wird alles was ein jeder tut, treibt, dichtet, ja was er vor hat, in's öffentliche geschleppt. Niemand darf sich freuen oder leiden als zum Zeitvertrieb der übrigen; und so springt's von Haus zu Haus, von Stadt zu Stadt, von Reich zu Reich, und zuletzt von Weltteil zu Weltteil, alles veloziferisch."

This fragment, a verbatim transcription of an unsent letter from four years prior, has caught the critical imagination of a number of theorists who have taken inspiration from this early diagnosis of modernity they find in Goethe's oeuvre. The term is seen as an expression of Goethe's "discovery of slowness," which presents a precursor of sorts to the contemporary interest in "slow thinking" in a number of fields.³⁹³ Yet, *veloziferisch* is also a surprisingly plastic and dynamic concept that interfaces with Goethe's lifelong reflection on organic growth and the work of figuration in nature and thought. The construction of the term even presents an imaginative product of figuration itself, as *veloziferisch* is a portmanteau of the Italian term *velocità*, signifying speed, and the German *luziferisch*, that which concerns the devil, Lucifer. The term *veloziferisch* marks a hurried pace of motion, at which point nothing can ripen or reach its full potential. Even more fittingly, Goethe's term suggests a boundary or a limit point for modern growth and technological acceleration. *Veloziferisch* describes motion at a speed that has surpassed that of *Bildung*—of organic, healthy motion.³⁹⁴ Technical media must take the individuation of life's diverse forms into account if it is to sustain its own range of morphological evolutions. There are upper and lower limits for such evolution, in fact.

Negation and Individuation: Negentropy and the Energetics of *Bildung*

While Goethe would have been hesitant to define in detail or quantify the limit posed on the speed of *Bildung* by the activity he would refer to as *das Veloziferische*, it is

³⁹³ See, for example, Manfred Osten's "*Alles veloziferisch*" oder Goethes Entdeckung der Langsamkeit, (Göttingen: Wallstein, 2013).

³⁹⁴ Hartmut Rosa in particular has often highlighted this aspect of Goethe's writings. See Hartmut Rosa, *Beschleunigung: Die Veränderung der Zeitstrukturen in der Moderne* (Frankfurt a.M.: Suhrkamp, 2017), 72 and Jonathan Trejo-Mathys, "Translator's Introduction: Modernity and Time," in Hartmut Rosa, *Social Acceleration: A New Theory of Modernity*, trans. Jonathan Trejo-Mathys (New York: Columbia UP, 2013), xi.

equally important to reflect on the work performed by the “luciferian” element, which in the Goethean imaginary is integrally connected to the dialectical work of negation. While the work of negation has been hinted at by Novalis, and by Schelling in his writings on the productive work of *Hemmung*, it is Goethe who most fully appreciates the figurative potential of negativity in this regard. At the center of this set of concerns lies the question of individuation as it is posed by Kantian *aesthesis*: how does a substance receive its contours without positing a thing in itself?³⁹⁵ Negativity, seen in this light, is about forming boundaries between a system and its environment, while also maintaining channels of communication between inside and outside. The negative enclosure presented by boundary formation is a necessary feature of individuation, its production, and its decomposition. In Goethe’s *Faust*, for example, it is the demonic figure Mephistopheles who refers to himself as “the spirit who constantly negates.”³⁹⁶ While it may be tempting to understand the *Faust* tragedy as the work of pure negation alone, let us not forget that Faust’s fate is tied to his “Ungeduld,” to his impatient desire to throw himself into the torrents of modern life and forgo his previous existence of scholarly reflection, the Mephistophelean pronouncement linking the *luciferian* to negation may also serve as a reminder of the productive, even necessary role of negation, for Goethe, when it is not coupled with breakneck speeds. The connection between productivity and luciferian negation is playfully pushed to the allegorical limit in book eight of Goethe’s autobiography, *Poetry and Truth*, where he discusses the creation of the devil Lucifer as a result of the productive drive’s need for incessant cosmological activity:

³⁹⁵ For more on this, see Andree Hahmann, *Kritische Metaphysik Der Substanz: Kant im Widerspruch zu Leibniz* (Berlin: Walter de Gruyter, 2009).

³⁹⁶ FA 1.7:65: “der Geist, der stets verneint.”

Let me imagine, if I may, a deity which has produced itself from eternity; because production itself cannot be thought without diversity, so it must necessarily appear to itself as a second, which we recognize under the name of the Son.³⁹⁷

This mitotic process of reproduction through self-division repeats itself once more until all three members of the holy trinity have come into appearance. Although this effectively closes the circle of the Christian godhead, creation does not stop there. It must continue further outward on its path of autopoietic expansion: “Because the productive drive must always push onwards, so a fourth was created [. . .] And this was Lucifer, to whom the entire force of creation was thus conferred.”³⁹⁸ Even the godhead must submit to the demands of the productive drive, which becomes bound to the negativity of Lucifer while passing from the infinite into the finite realm.

The connection that Goethe draws between the bifurcations of the productive drive and Lucifer’s reign over creation in Judeo-Christian mythology serves to put an organic, productive spin on the idea, initially outlined by Spinoza in his *Ethics*, that negation, as a cosmic-ontological force, possesses some form of figurative functionality in the universe: “Since figure is nothing but determination, and determination is negation, figure can be nothing other than negation.”³⁹⁹ While Spinoza intended to explain why negation could never actually exist in a universe that was not finite, but composed of a single infinite all-encompassing substance, Goethe embraced this suggested view of

³⁹⁷ FA 1.14:383. “Ich möchte mir wohl eine Gottheit vorstellen, die sich von Ewigkeit her selbst produziert; da sich aber Produktion nicht ohne Mannigfaltigkeit denken läßt, so mußte sie sich notwendig sogleich als ein Zweites erscheinen, welches wir unter dem Namen des Sohns anerkennen.”

³⁹⁸ FA 1.14:383: “Da jedoch der Produktionstrieb immer fortging, so erschufen sie ein Viertes [. . .] Dieses war nun Lucifer, welchem von nun an die ganze Schöpfungskraft übertragen war.”

³⁹⁹ Cf. Yitzhak Y. Melamed, “‘Omnis Determinatio Est Negatio’: Determination, Negation, and Self-Negation in Spinoza, Kant, and Hegel in *Spinoza and German Idealism*, ed. Eckart Förster and Yitzhak Y. Melamed, 175 – 196 (Cambridge: Cambridge University Press, 2012).

negativity as a means of understanding the “productive drive” underlying the complex activity of the organic world. Here we begin to understand the stakes of individuation in the distinction Simondon makes between mechanology and organology, as Goethean negation falls squarely in line with the often-misunderstood productive force of *Hemmung* in Schelling’s nature philosophy. Negation serves as the precondition of life’s negentropic recursivity, for Goethe as it had for Schelling.⁴⁰⁰ This revisionist take on Spinozist negativity also puts Goethe’s thinking into further contact with Schrödinger’s thinking, drawing further attention to the thermodynamic context of the critique levied by *das Veloziferische*. Schrödinger, who was not by chance an avid reader of both Goethe’s poetics and Spinozist philosophy, famously made the case that biological organisms, while not exactly rooted in principles that are exogenous to the rest of the physical universe, possess astoundingly intricate ways of negotiating these principles in exchange with their surroundings.⁴⁰¹ The second law of thermodynamics, which states that entropy increases irreversibly over time, is never broken in the achievement of organic growth and reproduction. Instead, entropy is simply negotiated and redistributed in highly diffuse ways across an organism’s milieu. Disorder and death are deferred in complex ways, but never overcome.⁴⁰² The *Veloziferische* serves to remind us that the bifurcations of the productive drive can only function so quickly, otherwise they become chaotic and destructive, impossible to subdue in their velocity. The integrity of individuated beings, for Goethe, is at stake.

⁴⁰⁰ Yuk Hui touches on this, albeit briefly, in *Recursivity and Contingency*, 32.

⁴⁰¹ Schrödinger, *What is Life*, 76 – 85.

⁴⁰² See chapter 6 on “Order, Disorder and Entropy,” *Ibid.*, 56 – 66.

Goethe was keen to articulate an alternative form of negation which, like Schrödinger's negentropy, would play a productive, figurative role, moving at speeds capable of guiding organic matter along on its path of autopoietic formation. This requires the drawing of an open boundary between a system and its associated milieu, as we have seen. A prominent instance of this type of figurative negativity can be found in Goethe's 1803 poem "Weltseele," or "World-Soul," titled after the philosopher F. W. J. Schelling's 1798 essay of the same name.⁴⁰³ In this cosmic paean composed of nine rhymed quatrains, Goethe lauds the dialectical dynamism of Schelling's vision of the cosmos as a complex mode of organization. The poem presents the reader with a celebration of natural motion, beginning with an energetic urge for the "world soul" to expand itself into space and to fill the empty *khôra* with its life force. "Verteilet euch," "disperse," the poet exclaims to the dynamo, urging it onward and outward in its energetic expansion. Already in the first line the organism is referred to in the plural, and the world soul is encouraged along in its mitotic, expansive bifurcations. "Rip yourselves enraptured through the next zones / into the All and fill it out!"⁴⁰⁴ In the third stanza, the poem encourages racing, powerful (*gewaltig*) comets onward in their journey through the heavens.⁴⁰⁵ In the fourth, the world soul shows a keenness to exhibit its capacity for figurative negation, "grasp[ing] rapidly towards unformed earth" with the creative force of youth.⁴⁰⁶ In the fifth stanza, the cosmic force begins to slowly retreat from its

⁴⁰³ Gabriel Trop has recently proposed reading this figurative force as a sort of "affirmative disequilibrium." See Gabriel Trop, "Affirmative Disequilibrium: Hogarth, Schiller, Schelling, and Goethe," *The Germanic Review: Literature, Culture, Theory* 92, no. 2 (April 3, 2017): 169–88, <https://doi.org/10.1080/00168890.2017.1297615>.

⁴⁰⁴ Author trans. FA 1.2:491: "Begeistert reißt euch durch die nächsten Zonen / Ins All und füllt es aus!"

⁴⁰⁵ FA 1.2:492.

⁴⁰⁶ Ibid. "greift rasch nach ungeformten Erden."

previously expansive, outward-moving impulse. Yet it nonetheless maintains its function as determinatively figurative, providing a natural grapheme of sorts by pre-scribing (*vorschreiben*) solid, recognizable form to piles of previously nondescript stone found in cavernous vaults.⁴⁰⁷ It is here we see how the poem stages a new technic of nature in verse. At the end of the poem, the world-soul eventually runs out of steam. A seemingly inexhaustible, boundless striving (*unbegrenztes Streben*) is dissolved in a blissful exchange of glances with the cosmos, receiving back the life it had given.⁴⁰⁸ The deferral of entropy in the autotelic structure of life is nevertheless still *only a deferral*. Entropy seems never fully overcome at this moment, however. Despite a seemingly irreversible closure at the end, there remains hope that other divisions might later occur, creating once more an open and expansive system of exchange: “No being can fully disintegrate into nothing,” Goethe reminds us at the beginning of “Vermächtnis.”⁴⁰⁹ Tellingly, Schroedinger makes a point of quoting from this very poem at the beginning of one of his lectures.⁴¹⁰

While these passages show that it is not velocity per se that is the object of critique for Goethe, it is clear that he believes a turning point has been reached in the pace of life by the time he creates the term *das Veloziferische* in the 1820s. Modernity has by this time accelerated, in Goethe’s view, in a manner that is particularly detrimental to reflection and organic growth. Life and thought, when dominated by ever speedier systems of communication and transportation, become disformed, rather than carefully

⁴⁰⁷ Ibid.

⁴⁰⁸ Ibid.

⁴⁰⁹ FA 1.2:685-86; “Kein Wesen kann zu Nichts zerfallen.”

⁴¹⁰ Schrödinger, *What is Life*, 19.

formed and individuated. In such instances, technical media are complicit in the disfigurement of life, rather than serving to support it as a parasitic supplement. In a letter to his friend the composer Carl Friedrich Zelter, Goethe describes his distaste for what he sees as the senseless chase after wealth (*Reichtum*) and speed (*Schnelligkeit*) that is visible all around him, especially in cities like Berlin.⁴¹¹ He cites the railroad, express mail, the steam ship, and quickened communication networks as symptoms of this *veloziferisch* tendency.⁴¹² Of course, Goethe was not alone in this critical attitude. In the same year as the term *veloziferisch* went into print, Thomas Carlyle famously described this set of developments as a “mechanical age” and “the Age of Machinery,” describing this new period as an age “which, with its whole undivided might, forwards, teaches and practises the great art of adapting means to ends.”⁴¹³ The mechanical nature of modernity emphasized in Carlyle’s essay, in fact, may prove useful for achieving an understanding of the *veloziferisch* as a limit point of sorts for modernity. It is here that we begin to understand how the project of mechanology for Romanticism is not an uncritical embrace of instrumental reason but an attempt to connect the complexity of technical media with an attunement to ecological concerns. *Das Veloziferische* suggests that a sort of transgression has taken place. *Das veloziferische* marks the limit beyond which machinic motion simply outpaces that of *Bildung* and of organic movement. It serves to uncover a dangerous separation that has taken place between the mechanical and the organic, a traumatic rupture lying at the very heart of modernity’s self-image. The term enacts the rapid speed at which the technicity of figuration—encompassing, poetry, thought, and

⁴¹¹ Cited in Osten, “*Alles Veloziferisch*,” 11.

⁴¹² *Ibid.*

⁴¹³ Carlyle, “Signs of the Times,” 24.

life— loses control, passing over into the totalizing, hegemonic technologos of a modernity threatening to fly off the rails.

Form and Matter: The Steering Function of Technical Media

It is important not to confuse Carlyle's 'age of machinery,' however, with the project of mechanology writ large. Here we must investigate how the steering function of technical media, or *Steuerung*, functions in Goethe's writings as an attempt to outline a new conception of form that provides a corrective force for life's disfigurement. This new conception of form, differing significantly from the Platonic eidetic and Aristotelian-hylomorphic models, articulates the ways in which form is irreducibly bound to materiality in an interactive process of co-emergence.⁴¹⁴ While Plato's *Timaeus* and Aristotle's *Physics* understand form as an entity that is initially separate and distinct from concrete matter, as the two are conjoined through the *technē* of an artist or demiurge, we have already seen in Schelling the historical development of an endogenous, even functional conceptualization of form.⁴¹⁵ This new understanding is developed further and more explicitly by Goethe, for whom the autopoetic growth of vegetal life, the writing of an inspired poem, and the aggregative, archival logic of the morphology all bear witness to an autopoetic logic of processual growth and spontaneous production.⁴¹⁶ This organic conception of form, of course, is often set in direct opposition to technical discourse, in particular cybernetic notions of control, or *Steuerung*, which one finds in the constructivist form of Niklas Luhmann's systems theory and in the predicative,

⁴¹⁴ David Wellbery has recently hinted at these aspects of Goethe's writings. See "Form und Idee."

⁴¹⁵ Also see Chapter 2, "Logic and Contingency" in Yuk Hui, *Recursivity and Contingency*, 85 - 144 and David E. Wellbery. "Skizze eines Begriffsfeldes um 1800."

⁴¹⁶ Also see Eva Geulen's *Aus dem Leben der Form*.

automotive logic of Norbert Wiener's take on Bergsonian biological time in his *Cybernetics*.⁴¹⁷ Organic life, as hinted at by commentators working in the history of science such as John Tresch and Bruno Latour, often appears torn asunder from considerations of the mechanical at the turn of the nineteenth century.⁴¹⁸ But how are we to make sense of the resistance to steering, to mechanisms of *Steuerung* and its theorization in conceptualizations of an autotelic notion of form, a sense of agency which seems to be explicitly mourned by Torquato Tasso in his closing monologue?⁴¹⁹ How is one to understand the seemingly controlled *Takt* of hexameter verse tapped by Goethe on the back of his lover in the *Römische Elegien*, or Goethe's suggestions for modulating the rate of vegetal growth in the *Metamorphose der Pflanzen* alongside this new understanding of form as endogenous and emergent? Understanding the sense of *Steuerung* mourned by Tasso, in fact, requires turning our attention not only to the intimate connection between form and matter, but to the irreducible *technicity* of Goethe's understanding of the temporal emergence of forms.

The ineluctable technicity of temporal processes of *Bildung*, which Bernard Stiegler has dubbed the lack or fault [*Faut*] of Epimetheus in *Technics and Time 1*, is confronted directly by Goethe in his own re-telling of the Prometheus myth in *Pandora*, an unfinished project which, perhaps unsurprisingly, contains an iteration of the term *steuern*.⁴²⁰ It is only the theological, metaphysical "presence of the Lord," "die Gegenwart des Herrn," Prometheus reminds his brother, Epimetheus, "which increases

⁴¹⁷ See in particular the first chapter on "Newtonian and Bergsonian Time" in Wiener's *Cybernetics*, 15 -30 and Wellbery's discussion of Luhmann's "constructivist concept" of form in "Form und Idee."

⁴¹⁸ See Tresch, *The Romantic Machine*, 1 – 25. Also see Latour, *We Have Never Been Modern*.

⁴¹⁹ FA 1.5: 834.

⁴²⁰ Cf. *La technique et le temps 1: La faute d'Épiméthée* in Bernard Stiegler, *La technique et temps*, 40-311.

every good” and “controls all possible loss.”⁴²¹ It is only at the locality of undiluted presence—the appearance of the ineffable *Urpflanze* in its totality—that one finds perfect harmony between form and matter through the modulation afforded by *Steuerung*. *Steuerung* is nevertheless an important political device for the human *polis* as well. At the end of *Torquato Tasso*, we see the young poet mourning his bitter, uncertain fate. The heartbroken and isolated poet Tasso finds himself cast aside by the court he had long served. All along, he had been a mere plaything for aristocratic intrigue, deprived of the restless sort of agency that was so often explored during Goethe’s *Sturm und Drang* years. In the final scene, Tasso finds himself alone onstage with Antonio, the peevish, manipulative secretary who had seemed hellbent on thwarting his artistic and romantic ambitions at every turn. Only at this moment does Tasso realize it may be in fact have been Antonio all along who was trying to protect him from the unpredictable whims of the duke and of the princess whose station he had unwittingly insulted in the previous scene: “Oh noble man / You remain fest and calm / I appear to be just a wave moved by a storm,” Tasso cries, continuing in a metaphoric flurry:⁴²²

The rudder is broken
 And the ship is creaking on all sides.
 The floor beneath my feet is being torn apart
 I’m grasping at you with both arms!
 Thus grasps at last even the skipper
 Tightly to the rocks, where he shall be wrecked.⁴²³

⁴²¹ “Eile! Gegenwart des Herrn / Mehrt jedes Gute, steuert möglichem Verlust.” HA 5: 357.

⁴²² FA 1.5:834. “O edler Mann! Du stehest fest und still, / Ich schein nur die sturmbewegte Welle.”

⁴²³ Ibid. “Zerbrochen ist das Steuer und es kracht / Das Schiff an allen Seiten. Berstend reißt / Der Boden unter meinen Füßen auf! / Ich fasse dich mit beiden Armen an! / So klammert sich der Schiffer endlich noch / Am Felsen fest, an dem er scheitern sollte.”

Rather than a mechanism for a ruling class or a sovereign to maintain political control over and above its subjects, the *Steuer* here appears as an everyday cultural technique for the maintenance of health and stability. Like the *kuber* of the ancient Greeks, this form of *Wechselwirkung* enables one to navigate the throes of life's torrents more smoothly. When these steering devices break down, we may find ourselves thrown violently overboard, clinging desperately to the side of a rocky cliff, as Tasso clings to Antonio both literally and metaphorically when the curtain falls.⁴²⁴

Another noteworthy feature of Tasso's closing speech is the way in which Goethe revises the familiar metaphorology of the shipwreck as described by Hans Blumenberg. Whereas Blumenberg tells us that the political and aesthetic lessons of catastrophe, historic or literary, can best be learned from a safe distance on shore, Goethe positions the speaker Tasso directly on board the metaphorical vessel.⁴²⁵ Goethe's protagonist can no longer experience the critical distance between subject and object that is required for Kantian aesthetics and epistemology to function properly, placing his fate squarely in line with the Romantic project.⁴²⁶ Not only is this liminal space between subject and object critical for the immanent unfolding of natural knowledge that Goethe, after Schelling, refers to as intuitive understanding, but this inability to maintain a critical distance hints at the crucial role *Steuerung* plays in developing an alternative form of the technic of nature. Whereas for Kant, the question of how and why we perceive the spontaneous development of natural forms is just an exercise in epistemology, for Goethe, it becomes

⁴²⁴ Ibid.

⁴²⁵ *Schiffbruch mit Zuschauer*, 27 – 46.

⁴²⁶ Cf. Frederick C. Beiser, *The Romantic Imperative*, 4 – 14.

a matter of practical knowledge and of technical exchange between natural life and human aesthetic and political judgment.

The operability of the rudder provides a cosmogram for the recursivity of post-Kantian *Wechselwirkung*, stressing the importance of maintaining a measure of stability in our personal and political affairs. *Steuerung* in this sense presents the payoff for the technology of an attunement to technical mediation. The stability this affords is not to be confused with a sort of technocratic, totalitarian neuroticism desiring control over every aspect of the world. The *Steuer* must remain open and responsive to the vagaries of the tide and to the changing winds. Goethe reminds us of this in *Pandora*, his incomplete dramatic adaptation of the legend of Epimetheus and Prometheus.⁴²⁷ In this fragment, which Goethe began at the end of 1807 and ultimately sets aside two years later in order to write *Die Wahlverwandtschaften*, Goethe explores the Olympian aftermath of the introduction of primal technology to human society, whereby Prometheus steals fire from the gods and gives it to humans. While there is indeed much work to be done on this often-overlooked fragment, one of the most immediately striking aspects of this piece is the way in which Goethe aims to strike a balance between condemnation of an uncritical, Promethean attitude towards technological change and acknowledgment of the role technology plays in introducing an element of contingency into human affairs, refusing the technocratic impulse that is often associated with hylomorphic thinking.⁴²⁸ “Light the

⁴²⁷ Hans Gadamer explores this openness in part/whole relations in *Vom geistigen Lauf des Menschen. Studien zur unvollendeten Dichtung Goethes* (Duderstadt: Küpper, 1949), 7. For a more recent intervention, see Sean Franzel, “Koselleck’s Timely Goethe?,” *Goethe Yearbook* 26 (2019): 293.

⁴²⁸ Ernst Cassirer praises this piece rather surprisingly as his most complete philosophical work. See “Goethes Pandora,” 4 – 22.

fire!⁴²⁹ begins a refrain from a metalsmith, who is at one point castigated for his uncritically optimistic views of fire's capability: "Fire is up above / Highest, he did it / He stole it. / He who kindled it, / Forges alliances, / Hammered out, rounding / crowning the head."⁴³⁰ In the midst of all the chaos ensuing from the opening of Pandora's box, which lets the unpredictable demiurges out into the world, Prometheus reprimands his brother:

Look down at the misery! Look at the glow!
 Did Eos miss the well-trodden path today?
 Red embers shine forth from the noon
 A fire in your forest, your homes
 Appears to be flaring up.⁴³¹

And yet the presence of the lord, in the ensuing lines, "die Gegenwart des Herrn," is able to increase all possible good and make up for these losses: "Haste! The presence of the Lord / increases ever good, controlling possible loss."⁴³² Neither the *Tat* of a Götze von Berlichingen nor perfect control can stop the entropic decay of any one particular individuated object, it would appear. But this does not mean there is no possible rejuvenation on another, experimental level. While complete control may present an impossible ideal, the material exchange of *Steuerung* is subtly presented as a way of making good on the introduction of technics: "What do I have to lose, now that Pandora has fled? / It's burning there! More handsomely will it be built back up again [...]," Epimetheus replies to his brother.⁴³³

⁴²⁹ HU 5, 337: "Zündet das Feuer an!"

⁴³⁰ Ibid: "Feuer ist obenan. / Höchstes, er hat's getan, / Der es geraubt. / Wer es entzündete, / Sich es verbündete, / Schmiedete, ründete / Kronen dem Haupt."

⁴³¹ Ibid: "Blick' auf aus deinem Jammer! Schau' die Röte dort! / Verfehlet Eos wohlgewohnten Pfades heut'? / Vom Mittag dorthier leuchtet rote Glut empor. / Ein Brand in deinen Wäldern, deinen Wohnungen / Scheint aufzuflammen."

⁴³² Ibid. "Eile! Gegenwart des Herrn / Mehrt jedes Gute, steuert möglichem Verlust."

⁴³³ Ibid. "Was hab' ich zu verlieren, da Pandora floh? / Das brenne dort! Viel schöner baut sich's wieder auf."

Although this sense of contingency and openness in our attitude towards the fire of technical life is not explored any further in the unfinished fragment, Goethe had already hinted at this possibility for a negentropic sort of futurity in his morphological writings from the 1790s. In his *Versuch die Metamorphose der Pflanzen zu erklären*, Goethe uses the undeniably Kantian term *Antizipation* when discussing the botanist Linnaeus's theory of prolepsis. According to Linnaeus, each type of plant and tree in nature has a particular rate of growth that is inherent to its species.⁴³⁴ Here we see the temporal politics of technical media come to the fore. The specificity of the term *Antizipation* used by Goethe is equally important to understand fully how technical media and organic life exist hand in hand for Goethe. Rather than using the Linnéan terms *prolepsis* or *prolepse*, which Linnaeus himself employs to describe nature's ability to progressively take on new forms within a fixed period frame, Goethe employs the germanizing word *Antizipation* in his interrogation of the speed of *Bildung* in the *Morphology*.⁴³⁵ Indeed the entire section, paragraph 17, is not called Linné's Theorie von der Prolepsis, but rather Linné's "Theorie von der Antizipation." While *Antizipation* is thematized nowhere in Linné, nor is it discussed in popular lexicons from the time such as the *Adelung* or *Zedler*, the term appears first in Kant's *Critique of Pure Reason* to describe the temporal logic which mediates the relationship *a priori* forms of intuition, which structure our sense perception and the Kantian the architecture of the understanding, and the material content provided by experience to these forms.⁴³⁶

⁴³⁴ Cf. *Prolepsis Plantarum*. Upsalæ, 1760.

⁴³⁵ For more on this conceptual field, see Lothar Kugelmann's dissertation *Antizipation: eine begriffsgeschichtliche Untersuchung* (Göttingen: Vandenhoeck & Ruprecht, 1986).

⁴³⁶ Cf. *Kritik der reinen Vernunft* A:17/B:31 – A:41-B:58.

Although the *Metamorphose der Pflanzen* was purportedly composed at a time when Goethe was taking a break from considerations related to Kantian philosophy, recent writings by Eva Geulen and others have forced us to challenge this accepted wisdom.⁴³⁷ Goethe's thinking at this time bears the unmistakable stamp of Kantian concerns regarding the technics of nature. When applying the Kantian concept of *Antizipation* to Linnaeus's botany, Goethe argues that the rate of natural figuration and its contingent play of form and matter are in fact not fixed, but can be carefully modulated through natural and technical knowledge: "man kann den Blütenstand beschleunigen," you can even accelerate *Bildung*, Goethe summarizes in the next section.⁴³⁸ Goethe is by no means uncritically in favor of the 'slow' or trying to protect a sense of *a priori* organic preciousness in his writing. Rather than providing static and predetermined senses of futurity, such accelerated forms appear as a product of open exchange between natural processes and the operations of technical media. We see once more that the resonant *nomos* of Romantic technical mediation is not to be confused with an unyieldingly conservative *nomos* of the earth, where *physis* is the only *nomos* available to humans, resulting in the erasure of all technical mediation and their affective resonances. Nor is this, however, to be confused with a form of human sovereignty that can exist without relation to an ecological milieu. Goethe is truly looking out onto the future of political ecology, with a wholesale critique of *Antizipation* in any fixed form.

⁴³⁷ *Aus dem Leben der Form*, 10-11.

⁴³⁸ HU 13, 98.

6. Coda

Over the past four chapters, we have seen how attempts to embrace and radicalize the Kantian *Technik der Natur* lead to an energetic exploration of the productive activities of technical media, provoking writers as diverse as Novalis, Schelling, Hölderlin, and Goethe to two important sets of reflections: on the one hand, the attempt to articulate a technic of nature that moves beyond the boundary set by Kantian judgment for reason and sense experience leads to a renewed interest in the possibility of creating a *perpetuum mobile*. Like the seventeenth-century priest-cum-astronomer Christoph Scheiner, who sketched a *perpetuum mobile* by simply drawing a frame around the limits of the known universe, these reflections reveal a rather complex set of relations between technical possibility, cosmology, and ecological concerns at the dawn of the Anthropocene.⁴³⁹ At the same time, the complex interrelation between technical media and political ecology lead to a widespread attempt to reconsider the boundary between the *polis* and the environmental space that marks its outside, what the Greeks called *khôra*. As this classical distinction was in many ways reformulated by Kant in the distinction drawn between relative (i.e. extended) and absolute (i.e. non-extended) space for human modes of perception, the Romantics take it upon themselves to draw ever newer modes of *Wechselwirkung* that might lead to alternative understandings of politics, ecology, and their interrelation. For Novalis, this new sort of *Wechselwirkung* is drawn up with reference to the *orthios nomos* of Herodotus's Arion legend, pointing to the

⁴³⁹ For more on this and other fascinating attempts, see the British patent clerk turned amateur historian Henry Dircks's *Perpetuum Mobile; or, Search for Self-Motive Power from the 13th to the 19th Century*. (London: Charing Cross, 1861), 24 – 28.

possibility of a new mode of co-production and co-actualization of human life and natural environment, a process of exchange in which technical media plays a central role. For Novalis, this type of *Wechselwirkung* leads directly to a dynamic ideal he finds in Schelling's *World Soul*. While pointing to a possible aporia between the functionality of the system and the figurative operations of organization, however, Schelling himself leaves open the question of whether or not what Simondon refers to as a 'general technology' might serve as an adequate frame for understanding nature. Schelling reminds us that the stakes of Romantic mechanology are not merely epistemological, metaphysical, or cosmological. Indeed, they are ecological and, in a very important way, existential for twenty-first century readers. This more explicitly ecological and political side of the project is explored in Hölderlin, for whom the term *Energie* serves as an important point of collapse between *polis* and *khôra*, leading to a wide-ranging reflection on *poesis* as a theater of experimentation capable of overcoming hylomorphic models for natural and technical figuration. The aim of presenting new models for the relationship between form and matter is only made available through an attunement to the animating powers of rivers and other natural forces that bring us beyond an *a priori* distinction between organism and mechanism. In Goethe, finally, the non-metaphysical vibrancy and vulnerability of living beings is brought to the fore. Goethe's morphology and poetic writings serve to present a more material and everyday dimension to Romantic nature philosophy and political ecology, while providing a set of poetic textures for understanding and thinking through the negentropic aims of mechanology.

Bibliography

- Adler, Jeremy D. *Eine fast magische Anziehungskraft: Goethes "Wahlverwandtschaften" und die Chemie seiner Zeit*. Munich: C.H. Beck, 1987.
- Adorno, Theodor. "Parataxis: On Hölderlin's Late Poetry" In *Notes to Literature*. Edited by Rolf Tiedemann. Translated by Shierry Weber Nicholson, 367 – 413. New York: Columbia University Press, 2019.
- Allison, Henry E. *Kant's Transcendental Idealism*. New Haven: Yale University Press, 2004.
- Arendt, Hannah. *Das Urteilen*. Munich: Piper, 2012.
- Aristotle. *Metaphysics*. Translated by Hugh Lawson-Tancred. New York: Penguin, 1998.
- . *Nicomachean Ethics*. Edited and translated by Roger Crisp. Cambridge: Cambridge University Press, 2014.
- Franz von Baader, *Sämmtliche Werke: Band 11*. Edited by Franz Hoffmann. Hamburg, Nabu: 2013.
- Bartel, Heike. *Centaurengesänge: Friedrich Hölderlins Pindarfragmente*. Würzburg: Königshausen und Neumann, 2000.
- Barthélémy, Jean-Hugues. *Simondon ou l'encyclopédisme Génétique*. Paris: Presses Universitaires de France, 2008.
- Beiser, Frederick C. *German Idealism: The Struggle against Subjectivism, 1781-1801*. Cambridge: Harvard University Press, 2002.
- . *The Romantic Imperative* (Cambridge: Harvard University Press, 2006).
- Bennholdt-Thomsen, Anke. "Die Bedeutung der Titanen in Hölderlins Spätwerk," *Hölderlin Jahrbuch* 25 (1986-7): 226-54.
- Biareishyk, Siahrei. "Rethinking Romanticism with Spinoza: Encounter and Individuation in Novalis, Ritter, and Baader," *The Germanic Review: Literature, Culture, Theory* 94, no. 4 (October 2, 2019): 271–98, <https://doi.org/10.1080/00168890.2019.1659223>.
- Blumenbach, Johann Friedrich. *Über den Bildungstrieb und das Zeugungsgeschäfte*. Göttingen: Dieterich, 1781.

- Blumenberg, Hans. *Schiffbruch mit Zuschauer: Paradigma einer Daseinsmetapher*. Frankfurt am Main: Suhrkamp, 1997.
- Böhme, Gernot. *Goethes Faust als philosophischer Text*. Zug, Switzerland: Graue Edition, 2005.
- Campe, Rüdiger. "Das Argument der Form in Schlegels »Gespräch Über Die Poesie.« *MERKUR* 68, no. 777 (2014): 110–21.
- . "Das Problem der Prosa und die Form des Romans: Überlegungen zu Friedrich Schlegels Theorie und Praxis um 1800." In *Die Farben der Prosa*, Edited by Eva Eßlinger, Heide Volkening, and Cornelia Zumbusch, 45 – 64. Freiburg: Rombach, 2016.
- Carlyle, Thomas. "Signs of the Times." In *A Carlyle Reader. Selections from the Writings of Thomas Carlyle*. Edited by G. B. Tennyson, 31 – 54. Cambridge: Cambridge UP, 1969.
- Cassirer, Ernst. *Idee und Gestalt*. New Haven: Yale University Press, 1989/1924.
- Chaouli, Michel. *Thinking with Kant's Critique of Judgment*. Cambridge: Harvard University Press, 2017.
- . *The Laboratory of Poetry: Chemistry and Poetics in the Work of Friedrich Schlegel*. Baltimore: Johns Hopkins University Press, 2002.
- Clissold, Anna Vaughn. "Matters of Necessity: Schelling's Timaeus and the Relation of Plato's Chora to the Understanding of Nature," *European Romantic Review* 12, no. 2 (March 1, 2001): 175–84. <https://doi.org/10.1080/10509580108570133>.
- Derrida, Jacques. *Khôra, Un des trois Essais avec Passions et Sauf Le Nom*. Galilée, Paris, 1993.
- Detering, Heinrich. *Menschen im Weltgarten: Die Entdeckung der Ökologie in der Literatur von Haller bis Humboldt*. Göttingen. Wallstein Verlag, 2020.
- Dircks, Henry. *Perpetuum Mobile; or, Search for Self-Motive Power from the 13th to the 19th Century*. London: Charing Cross, 1861.
- Fink, Markus. *Pindarfragmente: Neun Hölderlin-Deutungen*. Tübingen: Max Niemeyer Verlag, 1982.
- Förster, Eckart. *Die 25 Jahre Der Philosophie: Eine Systematische Rekonstruktion*. Frankfurt am Main: Vittorio Klostermann, 2011.

- . "The Hidden Plan of Nature," in *Kant's Idea for a Universal History with a Cosmopolitan Aim: A Critical Guide*, Edited by Amelie Oksenberg Rorty and James Schmidt, 187-99. Cambridge: Cambridge University Press, 2009.
- Frank, Manfred. *Einführung in die frühromantische Ästhetik: Vorlesungen*. Frankfurt am Main, Suhrkamp: 1989.
- . "Unendliche Annäherung": *die Anfänge der philosophischen Frühromantik*. Berlin: Suhrkamp, 1997.
- and Gerhard Kurz. "Ordo inversus. Zu einer Reflexionsfigur bei Novalis, Hölderlin, Kleist und Kafka." In *Geist und Zeichen: Festschr. für Arthur Henkel zu seinem 60. Geburtstag*, Edited by Anton Herbert, 75 – 97. Heidelberg: Winter, 1977.
- Franzel, Sean. "Koselleck's Timely Goethe?," *Goethe Yearbook* 26 (2019): 283 – 299.
- Freudenthal, Gideon. "Perpetuum Mobile: The Leibniz-Papin Controversy," *Studies in History and Philosophy of Science Part A* 33, no. 3 (2002): 573–637.
- Gadamer, Hans. *Vom geistigen Lauf des Menschen. Studien zur unvollendeten Dichtung Goethes*. Duderstadt: Küpper, 1949.
- Gabriel, Markus. *Transcendental Ontology: Essays in German Idealism*. New York: Continuum, 2011.
- Gane, Nicholas. "Radical Post-Humanism: Friedrich Kittler and the Primacy of Technology," *Theory, Culture & Society* 22, no. 3 (June 2005): 25–41.
- Geisenhanslüke, Achim. *Nach der Tragödie: Lyrik und Moderne Bei Hegel und Hölderlin* (Boston: Brill, 2012).
- . "The Order of the Unbound: Time and History in Hölderlin's 'The Titans.'" In *Hölderlin's Philosophy of Nature*, 58 - 72. Translated by Nathan Tayler. Edinburgh: Edinburgh University Press, 2020.
- Gentry, Gerard. "The Concept of Life in German Idealism and Its Aristotelian Roots," *Intellectual History Review* 31, no. 3 (July 3, 2021): 379–90, <https://doi.org/10.1080/17496977.2021.1957328>.
- Geulen, Eva. *Aus dem Leben der Form: Goethes Morphologie und die Nager*. Berlin: August Verlag, 2016.
- Goethe, Johann Wolfgang von. *Sämtliche Werke, Briefe, Tagebücher und Gespräche*. Edited by Hendrik Birus, Dieter Borchmeyer, Karl Eibl, et. al. 40 vols. Frankfurt a.M.: Deutscher Klassiker Verlag, 1987–2013.

- Goldstein, Amanda Jo. *Sweet Science: Romantic Materialism and the New Logics of Life*. Chicago: University of Chicago Press, 2017.
- Graham, Daniel W. *Ancient Philosophy: The Fundamentals*. New York: John Wiley & Sons, 2020.
- Grant, Iain Hamilton. *Philosophies of Nature after Schelling*. London: Continuum, 2008.
- Guyer, Paul. *Kant and the Claims of Knowledge*. Cambridge, Cambridge University Press, 1987.
- . "Kant's Principle of Reflecting Judgment." In *Kant's Critique of the Power of Judgment: Critical Essays*, edited by Paul Guyer, 1 – 49. London: Rowman & Littlefield, 2003.
- Hahmann, Andree. *Kritische Metaphysik Der Substanz: Kant im Widerspruch zu Leibniz*. Berlin: Walter de Gruyter, 2009.
- Hamilton, John T. "Florilegia: Influence and Cross-Pollination between Celan and Hölderlin, Pindar and Horace," *MLN* 135, no. 3 (2020): 600–19, <http://dx.doi.org/10.1353/mln.2020.0048>.
- Hansen, Mark B. N. "The Ontology of Media Operations, or, Where Is the Technics in Cultural Techniques?," *Zeitschrift für Medien- und Kulturforschung* 8, no. 2 (2017): 169–86, <https://doi.org/10.28937/1000107980>.
- Hegel, Georg Wilhelm Friedrich. *Werke in 20 Bänden*. Edited by Eva Moldenhauer and Karl Markus Michel. Frankfurt am Main: Suhrkamp, 1986/2000.
- Henrich, Dieter. *Der Grund im Bewusstsein: Untersuchungen zu Hölderlins Denken (1794 - 1795)*. Stuttgart: Klett-Cotta, 1992.
- Herodotus. *The Histories*. Edited by John M. Marincola, Translated by Aubrey de Sélincourt. London/New York: Penguin Classics, 2003.
- Hesiod, *Theogony: Works and Days*. Translated by M. L. West. Oxford: Oxford University Press, 1999.
- Heuser-Kessler, Marie-Luise. *Die Produktivität Der Natur: Schellings Naturphilosophie und das neue Paradigma der Selbstorganisation in den Naturwissenschaften*. Berlin: Duncker & Humblot, 1986.
- Hölderlin, Friedrich. *Sämtliche Werke (15 Volumes)*. Edited by Friedrich Beissner. Stuttgart: Cotta, 1944 – 1990.

- Hölderlin, Friedrich. *Selected Poems and Fragments*, Edited by Jeremy Adler. Translated by Michael Hamburger. New York: Penguin Classics, 1998.
- . *The Death of Empedocles: A Mourning-Play*. Translated by David Farrell Krell. Ithaca: State University of New York Press, 2008.
- Hörl, Erich. *General Ecology: The New Ecological Paradigm*. London: Bloomsbury, 2017.
- Holland, Jocelyn. *German Romanticism and Science: The Procreative Poetics of Goethe, Novalis, and Ritter*. London: Routledge, 2009.
- . *The Lever as Instrument of Reason: Technological Constructions of Knowledge around 1800*. New York: Bloomsbury Academic, 2019.
- . “The Poet as Artisan: Novalis’ Werkzeug and the Making of Romanticism,” *MLN* 121 (2006): 617–30.
- . “From Romantic Tools to Technics: Heideggerian Questions in Novalis’s Anthropology,” *Configurations* 18, no. 3 (August 13, 2011): 291–307, <https://doi.org/10.1353/con.2010.0021>.
- Yuk Hui. “Cosmotechnics as Cosmopolitics.” *E-Flux* 86, no. 86 (2017).
- . “Machine and Ecology,” *Angelaki* 25, no. 4 (July 3, 2020): 54–66, <https://doi.org/10.1080/0969725X.2020.1790835>.
- . “The Parallax of Individuation: Simondon and Schelling,” *Angelaki* 21, no. 4 (October 1, 2016): 77–89. <https://doi.org/10.1080/0969725X.2016.1229427>.
- . *Recursivity and Contingency*. London: Rowman & Littlefield International, 2019.
- . *The Question Concerning Technology in China: An Essay in Cosmotechnics*. Cambridge: MIT Press, 2019.
- Iltis, Carolyn. “Leibniz and the Vis Viva Controversy,” *Isis* 62, no. 1 (1971): 21–35.
- Kant, Immanuel. *Werkausgabe* (12 Volumes). Edited by Wilhelm Weischedel. Frankfurt am Main: Suhrkamp, 1977.
- Kapp, Ernst. *Grundlinien einer Philosophie der Technik*. Hamburg: Meiner, 2015.
- Kirkwood, Jeffrey West, and Leif Weatherby. “Operations of Culture: Ernst Kapp’s Philosophy of Technology.” *Grey Room* 72 (September 2018): 6–15. https://doi.org/10.1162/grey_a_00250.

- Kittler, Friedrich. "There Is No Software." In *The Truth of the Technological World: Essays on the Genealogy of Presence*, Translated by Erik Butler, 219 – 229. Stanford: Stanford University Press, 2014.
- . "Towards an Ontology of Media," in *Theory, Culture & Society* 26, no. 2–3 (March 2009): 23–31, <https://doi.org/10.1177/0263276409103106>
- Krell, David Farrell. *The Tragic Absolute: German Idealism and the Languishing of God*. Bloomington: Indiana University Press, 2005.
- Kugelman, Lothar. *Antizipation: eine begriffsgeschichtliche Untersuchung*. Göttingen: Vandenhoeck & Ruprecht, 1986.
- Lacoue-Labarthe, Philippe and Jean-Luc Nancy. *L'absolu littéraire: Théorie de la littérature du romantisme allemande*. Paris: Seuil, 1978.
- Latour, Bruno. *Facing Gaia: Eight Lectures on the New Climatic Regime*. Translated by Catherine Porter. New York: Polity, 2017.
- . *We Have Never Been Modern*. Translated by Catherine Porter. Cambridge: Harvard University Press, 2012.
- Lehmann, Johannes. "Energie, Gesetz und Leben um 1800." In *Sexualität, Recht, Leben. Die Entstehung eines Dispositivs um 1800*, edited Maximilian Bergengruen, Hubert Thüring, and Johannes F. Lehmann, 41 – 66. Munich: Wilhelm Fink, 2005.
- Leibniz. *Hauptschriften zur Grundlegung der Philosophie I*. Edited by Ernst Cassirer. Hamburg: Meiner, 1996.
- Linnaeus. Cf. *Prolepsis Plantarum*. Upsaliae, 1760.
- Loer, Barnara. *Das Absolute und die Wirklichkeit in Schellings Philosophie: Mit der Erstedition einer Handschrift aus dem Berliner Schelling-Nachlass*. Berlin: Walter de Gruyter, 2012.
- Mähl, Hans Joachim. *Die Idee des Goldenen Zeitalters im Werk des Novalis: Studien zur Wesensbestimmung der frühromantischen Utopie und zu ihren ideengeschichtlichen Voraussetzungen*. Tübingen: M. Niemeyer, 1994.
- Mahoney, Dennis. *Die Poetisierung der Natur bei Novalis*. Bonn: Bouvier, 1980.
- Marx, Leo. "Technology: The Emergence of a Hazardous Concept," *Technology and Culture* 51, no. 3 (2010): 561–77, <https://doi.org/10.1353/tech.2010.0009>.

- Yitzhak Y. Melamed, “‘Omnis Determinatio Est Negatio’: Determination, Negation, and Self-Negation in Spinoza, Kant, and Hegel.” In *Spinoza and German Idealism*. Edited by Eckart Förster and Yitzhak Y. Melamed, 175 – 196 Cambridge: Cambridge University Press, 2012.
- Mergenthaler, May. “Hölderlin’s ‘Der Ister’ and Ecology in Rochelle Tobias’s ‘Untamed Earth,’” *MLN* 136, no. 3 (2021): 517–30, <https://doi.org/10.1353/mln.2021.0036>.
- Morton, Timothy. *Ecology Without Nature: Rethinking Environmental Aesthetics*. Cambridge: Harvard University Press, 2009.
- Mörgel, Ernst. *Natur als Revolution: Hölderlins Empedokles-Tragödie*. Heidelberg: Metzler, 1992.
- Müller-Sievers, Helmut. “The Curse of Technics: A Gloss on the World-Curse in Goethe’s *Faust*,” *MLN* 131, no. 3 (2016): 656–61, <https://doi.org/10.1353/mln.2016.0043>.
- Matthews, Bruce. *Schelling’s Organic Form of Philosophy Life as the Schema of Freedom*. Albany: State University of New York Press, 2011.
- Nägele, Rainer. *Hölderlins Kritik der poetischen Vernunft*. Basel/Wien: Engeler, 2005.
- Nassar, Dalia. “From a Philosophy of Self to a Philosophy of Nature: Goethe and the Development of Schelling’s Naturphilosophie.” *Goethe Yearbook* 18 (2011): 67 – 95.
- . “Pure versus Empirical Forms of Thought: Schelling’s Critique of Kant’s Categories and the Beginnings of Naturphilosophie,” *Journal of the History of Philosophy* 52, no. 1 (2014): 113–34. <https://doi.org/10.1353/hph.2014.0016>
- . *The Romantic Absolute: Being and Knowing in Early German Romantic Philosophy, 1795-1804*. Chicago: University of Chicago Press, 2013.
- Norton, Bryan. “Veloziferisch (Velociferian).” *Goethe-Lexicon of Philosophical Concepts* 1, no. 1 (January 31, 2021): 113–20. <https://doi.org/10.5195/glpc.2021.25>.
- Novalis. *Novalis Schriften: die Werke Friedrich von Hardenbergs*. Edited by Paul Kluckhohn and Richard Samuel. Stuttgart: Kohlhammer Verlag, 1960-1988.
- Osten, Manfred. “*Alles veloziferisch*” oder *Goethes Entdeckung der Langsamkeit*. Göttingen: Wallstein Verlag, 2013.

- Peters, John Durham. *The Marvelous Clouds: Toward a Philosophy of Elemental Media*. Chicago: University of Chicago Press, 2015.
- Plato, *Meno*. Translated by G.M.A. Grube. Indianapolis: Hackett, 1980.
- . *Timaeus and Critias*. Edited by Thomas Kjeller Johansen. Translated by Desmond Lee. London: Penguin Classics, 2008.
- Pollok, Konstantin. *Kants Metaphysische Anfangsgründe der Naturwissenschaft: Ein kritischer Kommentar*. Hamburg: Felix Meiner Verlag, 2001.
- Reinhold, Carl Leonhard. *Versuch einer neuen Theorie des menschlichen Vorstellungsvermögens*. Edited by Otto Onnasch. Hamburg: Meiner Verlag 2010.
- Richards, Robert J. “Nature is the Poetry of Mind, or How Schelling Solved Goethe’s Kantian Problems.” In *The Kantian Legacy in Nineteenth-Century Science*, edited by Michael Friedman and Alfred Nordmann, 27-50. Cambridge: MIT Press, 2006.
- . *The Romantic Conception of Life: Science and Philosophy in the Age of Goethe*. Chicago: University of Chicago Press, 2010.
- Rigby, Kate. *Reclaiming Romanticism: Towards an Eco-poetics of Decolonization*. London: Bloomsbury, 2020.
- Rosa, Hartmut. *Beschleunigung: Die Veränderung der Zeitstrukturen in der Moderne*. Frankfurt a.M.: Suhrkamp, 2017.
- Rossum, Gerhard Dohrn-van. *History of the Hour: Clocks and Modern Temporal Orders*. Chicago: University of Chicago Press, 1996.
- Schelling, Friedrich Wilhelm Joseph. *Werke (Historisch-kritische Ausgabe)*. Edited by Thomas Buchheim, Jochem Hennigfeld, Wilhelm G. Jacobs, Jörg Jantzen, and Siegbert Peetz. Stuttgart: Frommann-Holzboog, 1976 – .
- and Hermann Krings. *Timaeus 1794: Zur Bedeutung der Timaeus-handschrift für Schellings Naturphilosophie*. Stuttgart: Frommann-Holzboog, 1994).
- Schiller, Friedrich. *Sämtliche Werke*. Munich: Hanser, 1962.
- Schrodinger, Erwin. *What Is Life?: With Mind and Matter and Autobiographical Sketches*. Cambridge, Cambridge University Press, 2012.
- Siegert, Bernard. “Medusas of the Western Pacific: The Cultural Techniques of

- Seafaring.” In *Cultural Techniques: Grids, Filters, Doors, and Other Articulations of the Real*, 68 – 81. Translated by Geoffrey Winthrop Young New York: Fordham University Press, 2015.
- Simondon, Gilbert. *Du mode d’existence des objets techniques*. Paris: Aubier, 1958/1989.
- Sloterdijk, Peter. *Sphären: Mikrosphärologie. Sphären: Bd. 2: Globen*. Frankfurt am Main: Suhrkamp, 1999.
- Specht, Benjamin. *Physik als Kunst: Die Poetisierung der Elektrizität um 1800*. Berlin: Walter de Gruyter, 2010.
- Steigerwald, Joan. *Experimenting at the Boundaries of Life: Organic Vitality in Germany around 1800*. Pittsburgh: University of Pittsburgh Press, 2019.
- Bernard Stiegler. *La technique et le temps* Paris: Fayard, 2018.
- . “Kant, Art, and Time,” *Boundary 2* 44, no. 1 (February 1, 2017): 19–34, <https://doi.org/10.1215/01903659-3725845>.
- . “Le nouveau conflit des facultés et des fonctions dans l’Anthropocène” in *La Technique et le Temps*, 847 – 76. Paris: Fayard, 2018.
- . “The Theater of Individuation: Phase-Shift and Resolution in Simondon and Heidegger,” trans. Kristina Lebedeva, *Parrhesia* 7 (2009): 46 – 57.
- Szabó, Csaba. “Nature, Nurse, *Khôra*: Notes on the Poetics of Hölderlin’s Ode ‘Man’.” In *Hölderlin’s Philosophy of Nature*, Edited by Rochelle Tobias, 199 – 218. Edinburgh: Edinburgh University Press, 2020.
- Tilliette, Xavier. *Schelling: une philosophie en devenir*. Paris: J. Vrin, 1970.
- Rochelle Tobias. “Introduction.” In *Hölderlin’s Philosophy of Nature*, Edited by Rochelle Tobias, 1- 20. Edinburgh: Edinburgh University Press, 2020.
- . “The Untamed Earth: The Labour of Rivers in Hölderlin’s ‘The Ister’” in *Hölderlin’s Philosophy of Nature*, Edited by Rochelle Tobias, 75 – 93. Edinburgh: Edinburgh University Press, 2020.
- Trejo-Mathys, Jonathan. “Translator’s Introduction: Modernity and Time.” In Hartmut Rosa, *Social Acceleration: A New Theory of Modernity*, xi – xxxi. New York: Columbia University Press, 2013.
- Tresch, John. *The Romantic Machine: Utopian Science and Technology After Napoleon*. Chicago: University of Chicago Press, 2012.

- . “Technological World-Pictures: Cosmic Things and Cosmograms,” *Isis* 98, no. 1 (March 2007): 84–99, <https://doi.org/10.1086/512833>.
- . “Around the Pluriverse in Eight Objects: Cosmograms for the Critical Zone.” In *Critical Zones: The Science and Politics of Landing on Earth*. Edited by Bruno Latour and Peter Weibel. Cambridge: MIT Press, 2020).
- Trop, Gabriel. “Affirmative Disequilibrium: Hogarth, Schiller, Schelling, and Goethe,” *The Germanic Review: Literature, Culture, Theory* 92, no. 2 (April 3, 2017): 169–88, <https://doi.org/10.1080/00168890.2017.1297615>.
- . “Novalis and the Absolute of Attraction,” *Seminar: A Journal of Germanic Studies* 50, no. 3 (September 26, 2014): 276–94.
- Weatherby, Leif. “A Reconsideration of the Romantic Fragment,” *The Germanic Review: Literature, Culture, Theory* 92, no. 4 (October 2, 2017): 407–25, <https://doi.org/10.1080/00168890.2017.1370953>.
- . *Transplanting the Metaphysical Organ: German Romanticism Between Leibniz and Marx*. Oxford: Oxford University Press, 2016.
- Wellbery, David. “Form.” *Goethe-Lexicon of Philosophical Concepts* 1, no. 1 (January 29, 2021), <https://doi.org/10.5195/glpc.2021.38>.
- . “Form Und Idee. Skizze Eines Begriffsfeldes Um 1800.” In *Morphologie Und Moderne: Goethes anschauliches Denken in den Geistes- Und Kulturwissenschaften Seit 1800*, Edited by Jonas Maatsch, 17 – 42. Berlin: De Gruyter, 2014.
- Wiener, Norbert. *Cybernetics: Or the Control and Communication in the Animal and the Machine*. Cambridge: MIT Press, 2013.
- Wolf, Burkhardt. *Fortuna di mare: Literatur und Seefahrt*. Zürich: Diaphanes, 2013.
- Wood, David. “Novalis: Kant Studies (1797),” *The Philosophical Forum* 32 (2001), <https://doi.org/10.1111/0031-806X.00072>.