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Experiments in Analogy
Goethe's Elective Affinities *and the Knowledge of Literature*

Did Goethe write experimental literature? Although Goethe's status as an unrelenting innovator in poetic genre and form is assured, some critics have contended that with his 1809 novel *Elective Affinities*, he founded one literary genre in particular: that of the experimental novel. Typical is an essay by the Swiss critic Beda Allemann, which opens with the declaration that one is tempted to see in Goethe's novel »already … a *roman expérimental* in the precise sense of Emile Zola.«[1] Of course, Zola's *roman expérimental* was not an »experimental novel« in the sense of Georges Perec and the OuLiPo, but instead experimental in the sense that it sought to test natural-scientific hypotheses in and through literature.[2] As Zola put it, in his 1880 manifesto, »We [novelists] are, in a word, experimental moralists, showing by experiment in what way a passion acts in a certain social condition.«[3] On this view, poetic discourse need not be opposed to scientific thought; in the hands of a talented author like Goethe or Zola, the one could even contribute to the other, generating real knowledge about the natural world.

1 Beda Allemann: Zur Funktion der chemischen Gleichnisrede in Goethes »Wahlverwandtschaften«, in: Untersuchungen zur Literatur als Geschichte. Festschrift für Benno von Wiese, ed. Vincent Günther et al., Berlin 1973, pp. 199-218; here p. 200. All translations from the German are my own, unless otherwise noted.

2 Although the use of the term »experimental« with respect to literature is quite broad, invocations of the term »experimental literature« typically refer to: 1) the literary adaptation of natural-scientific experimental set-ups or theorems; 2) the construction of artificial or speculative fictional worlds (literary »thought experiments«); or 3) experiment at the formal level with language, structure, medium, etc. Naturally, many representatives of »experimental literature« activate more than one of these themes. See Marcus Krause and Nicolas Pethes: Zwischen Erfahrung und Möglichkeit. Literarische Experimentalkulturen im 19. Jahrhundert, in: Literarische Experimentalkulturen. Poetologien des Experiments im 19. Jahrhundert, ed. Marcus Krause and Nicolas Pethes, Würzburg 2005, pp. 7-18; here p. 7.

3 Émile Zola: The Experimental Novel and Other Essays, New York 1964, p. 25.

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Allemann was neither the first nor the last to see in *Elective Affinities* the trappings of a natural-scientific experiment. Indeed, Goethe himself seems to have suggested such a reading in an anonymous advertisement for the novel which he penned for Cotta's *Morgenblatt für gebildete Stände*. There, Goethe – writing of himself in the third person – speculates that the »continued natural-scientific work« of the author of *Elective Affinities* may have been the occasion for »this unusual title.«[4] The metaphor of »elective affinities« (*attractionibus electivus*) had become a dominant paradigm in eighteenth-century chemistry to explain the laws governing the composition and decomposition of elements in chemical reactions, and Goethe evidently assumed that the journal's readers would at least be familiar with the term.[5] Thus, without pausing to gloss the concept, he immediately adds that the novel's author (i. e., himself) »may have noticed« that the natural sciences often make use of anthropomorphic »analogies« [Gleichnisse] in order to make the unfamiliar comprehensible. What's more,

> [H]e may have also wanted, in an ethico-moral situation, to trace an analogy used in chemistry [chemische Gleichnisrede] back to its intellectual origins, all the more so as there is everywhere but one Nature and even the bright realm of reason's freedom is shot through with the inexorable traces of turbid, passionate necessity.[6]

While the announcement leaves vague what exactly this exploration of the intersections of science and literature entails, the novel itself soon makes it explicit. After discussing contemporary chemical theories of elective affinities, a married couple decide to invite two of their friends to their isolated country estate in what they repeatedly refer to as an »experiment.« Their assumption, guided by contemporary chemical theory, is that doing so will cause a so-called »double affinity« reaction (AB + CD → AC + BD) to take place. For just as, in a chemical reaction, placing two compounds in close proximity may cause existing bonds between elements to dissolve and new ones to form, so too the introduction of guests will enliven their own lives. Predictably, the characters recombine in ways that were not foreseen. Powerful forces are unleashed, and by the experiment's conclusion, two of the four are dead.

4 Johann Wolfgang von Goethe: Goethes Werke. Herausgegeben im Auftrage der Großherzogin Sophie von Sachsen, Weimar 1887-1919; here Section 1, Vol. 41, p. 34. Cited hereafter as [WA] with Section, volume, and page.

5 See Jeremy Adler: Goethe's use of chemical theory in his »Elective Affinities«, in: Romanticism and the Sciences, ed. Andrew Cunningham and Nicholas Jardine, Cambridge 1990, pp. 263-279.

6 WA 1.41: 34.

What is at stake in this literary »experiment«? Although the novel's affinities to natural-scientific inquiry are clear, Goethe's cryptic paratext in fact attests to the distance separating his era's conception of an »experimental novel« from Zola's naturalist epoch. As the subtitle of Zola's *Rougon-Macquart* cycle makes clear, the French naturalist's »natural and social history of a family under the Second Empire« shared the late nineteenth century's socio-biological obsession with »race«, »milieu«, and »dégénérescence.«[7] Goethe's anonymous advertisement for *Elective Affinities*, by contrast, signals his engagement with what might be termed »experiments in analogy« characteristic of late eighteenth and early nineteenth-century discourse. Although I will return to this term (and this announcement) in greater detail below, it is worth lingering over it here. Evidently, the status of analogy – an imperfect rendering of the German »Gleichnis«, whose meaning can range from simile to allegory or parable[8] – is central to the experiment undertaken in *Elective Affinities*. But how? Read carefully, Goethe's advertisement frames *Elective Affinities* as an »experiment in analogy« in a double sense. First, he presents the theory of »elective affinities« as part of a contemporary natural-scientific discourse, an *analogy* meant to explain the behavior of chemical elements. At the same time, he suggests that the behavior of human beings might be explained *in an analogous way*. Indeed, this is, properly speaking, the »hypothesis« that *Elective Affinities* sets out to test: namely, whether distinct domains of nature operate according to analogous principles, whether the same laws of attraction and repulsion governed inert chemical matter and living, breathing human beings. Analogy thus functions as both the literary-scientific *content* of Goethe's »experimental novel« and as its literary-scientific *method*; it names both a really existing pattern in the world as well as an instrument for uncovering this pattern.[9]

In the essay that follows, I attempt to shed some light upon the historical and discursive background against which such a literary-scientific »experiment in analogy« could have emerged. Prominent critics of prior generations often asserted that the late eighteenth century witnessed the decline of analogy in both literary and scientific discourse, replaced by the (Romantic) literary symbol in

7 Barbara Ventarola: Der Experimentalroman zwischen Wissenschaft und Romanexperiment. Überlegungen zu einer Neubewertung des Naturalismus Zolas, in: Poetica 42/3-4, 2010, pp. 277-324; here p. 280.

8 This is indicated by the title of Christian P. Weber's article: C. P. W.: Gleichnis (Analogy, Likeness, Parable, Simile), in: Goethe-Lexicon of Philosophical Concepts 2/1, 2022 https://goethe-lexicon.pitt.edu/GL/article/view/51 (05.05.2024).

9 I have adapted this distinction from the discussion of Erasmus Darwin's use of analogy in Devin Griffith: The Age of Analogy. Science and Literature Between the Darwins, Baltimore 2019, p. 53.

the former domain and the (Newtonian) mathematical equation in the latter.[10] But this is not correct. While Goethe's *Elective Affinities* is undoubtedly the most familiar poetic experiment of what, in the periodization of German literature, is often referred to as »the Age of Goethe«, it is not the only one. Such experiments in analogy can be found in authors ranging from Herder to Heinrich von Kleist, not to mention the bold, if not reckless, analogies of Romantic *Naturphilosophie*. In one particularly suggestive entry in his *Notes for a Universal Encyclopedia*, Novalis called for »experimentation with images and concepts in the imagination in a way entirely analogous to physical experimentation.«[11] His remarkable coinage for this new discipline was »the experimental physics of the mind«; its chief scientific instrument, the (no less inspired) »magic wand of analogy.«[12] Natural-scientific analogies were in the air in the Age of Goethe, as both object and method of inquiry. Indeed, one scholar of Romantic science and literature recently pointed out that the very frequency with which Goethe has his characters comment upon the analogy at the heart of *Elective Affinities* »reveals the degree to which analogies, such as chemical bonds and human relationships, had become a parlor game by the early nineteenth century.«[13] What appeared to later readers to be a pioneering blurring of the lines between scientific and literary discourses in Goethe's experimental novel was, in fact, a response to tendencies that had preceded it.

Yet it would be a mistake to read Goethe's occasionally ironic treatment of the subject of analogy – here and elsewhere in his writings – as a sign that he rejected their epistemic value. As Goethe put it in an apothegm: »Every existing thing is an analogue of all that exists, and thus existence always appears to us simultaneously distinct and related. If one follows analogy too far, everything collapses into identity; if one avoids it, everything disperses into sheer infinity.«[14] Goethe was not alone in this view. Several recent studies of Romantic science and literature have shown that the late eighteenth century saw a resurgence of interest in analogy as a scientifically legitimate form of reasoning: »Life science was built upon the principle of analogy, as vital powers were likened to gravitation, and strange hybrids like animal magnetism and elective affinity abounded. […] For scientists, philosophers, and poets (or polymaths like Coleridge, Goethe, and Schiller, who qualified as all three) the analogy was a viable heuris-

10 Here I diverge from Weber, who writes that »*Gleichnis* – in the sense of analogy – lost esteem as an instrument of knowledge during Goethe's time.« Weber 2022 (fn. 8).

11 Novalis: Notes for a Romantic Encyclopedia, ed. David Wood, Albany 2007, p. 162.

12 See Jürgen Daiber: Experimentalphysik des Geistes. Novalis und das romantische Experiment, Göttingen 2001.

13 Denise Gigante: Life. Organic Form and Romanticism, New Haven 2009, p. 42.

14 WA 2.11: 126.

tic approach to the phenomena of life.«[15] However, Goethe's remark suggests that analogy was not only a useful tool around 1800, but also an object of conviction. If analogy was a »viable heuristic approach« for philosophically inclined poet-scientists, a legitimate method of inquiry, this is because it rested upon a powerful set of metaphysical assumptions about nature itself, as a series of domains governed by analogous natural-scientific laws.[16] In the Age of Goethe, analogy seems to have functioned for many poet-scientists as object, method, and ontology in the study of nature.

The essay that follows sketches out some key features of the foundation upon which Goethe's »experiment in analogy« builds; as a result, it is mainly concerned with writings that preceded *Elective Affinities*, and not the novel itself. My hope is that it will, nonetheless, contribute to the growing body of literature that attempts to situate Goethe's treatment of a chemical analogy in its historical and scientific context. Thankfully, it is no longer the case, as Jeremy Adler wrote in 1986, that »the novel's relation to chemistry has received almost no attention« – due in no small part to the remarkable work of Adler himself.[17] Since then, critics have shown in great detail what, exactly, Goethe knew about the doctrine of »elective affinities« at the time of the novel's composition, mining the gaps between the author's real knowledge and the novel's presentation of it for Goethe's insights and commentary on scientific and social revolutions.[18] However, the focus on the specifics of the chemical doctrine of affinities has sometimes caused the broader context of thinking in and through analogies around 1800 to recede from focus. Although much has been written about the uses and abuses of analogy in German Romanticism and *Naturphilosophie*, less has been said about the ways in which the Romantic »hunt for analogies« built upon the thought of previous generations.[19] These authors – Herder, Hamann, the young Schiller – thus feature prominently below, alongside Goethe and Schelling.

15 Gigante 2009 (fn. 13), p. 42.

16 See in particular John H. Zammito: The Gestation of German Biology. Philosophy and Physiology from Stahl to Schelling, Chicago/London 2018, and Peter Hans Reill: Vitalizing Nature in the Enlightenment, Berkeley 2005.

17 Jeremy Adler: Newton, Goethe and »Die Wahlverwandtschaften« – On the Virtue of Contradictory Hypotheses, in: Wissenschaftskolleg zu Berlin, Jahrbuch 1985/86, pp. 211-221; here p. 212. See also Jeremy Adler: »Eine fast magische Anziehungskraft«. Goethes »Wahlverwandtschaften« und die Chemie seiner Zeit, Munich 1986.

18 See Christoph Hoffmann: »Zeitalter der Revolutionen«. Goethes »Wahlverwandtschaften« im Fokus des chemischen Paradigmenwechsels, in: Deutsche Vierteljahrsschrift für Literaturwissenschaft und Geistesgeschichte 67, 1993, pp. 417-450.

19 Schopenhauer quoted in Dietrich von Engelhardt: Natur und Geist, Evolution und Geschichte. Goethe in seiner Beziehung zur romantischen Naturforschung und metaphy-

I. Analogy and Inference

Analogy, from the Greek for »proper« relationship or »proportion«, first emerged as a mathematical concept among the Pythagorean school. There, it indicated equivalent relationships between sets of paired terms, such that a is to b as b is to c. In their simplest form, these relationships were either arithmetic (10 is to 6 as 6 is to 2, or in the conventional notation 10:6::6:2) or geometric (8:4::4:2).[20] Typically, these sets involved a shared middle term, seen as the mediator between extremes. Soon, however, the formula came to express any number of equivalence relationships among parallel sets, even without a shared term. Aristotle, less enamored than the Pythagoreans of numerical harmony, used it to describe patterns among living beings, such as feather:bird::scale:fish or blood:animals::sap:plants. The discovery of such analogical relationships quickly acquired powerful metaphysical potential: to the neo-Platonists it suggested an ordered universe, a cosmos filled with symmetries and equivalences across multiple planes of being. One version of this thought, of particular relevance to Goethe due to its resurgence in German hermeticism, is the macrocosm-microcosm doctrine, in which broader features of the cosmos as a whole were meant to have their equivalents or analogues in the »microcosm« that was the human being. (As Rolf Zimmermann has shown, Goethe was introduced to the hermetic tradition of analogical reasoning during his youthful convalescence in Frankfurt, and never really left it behind.)[21]

As a form of reasoning, the analogy is both flexible and fecund: simply suggesting that a formal similarity exists between two sets of things spurs the mind to find an analogy and supply the missing term(s). While analogical inference in mathematics is relatively straightforward, this is rarely the case in functional analogies. What is to an automobile that which an oar is to a boat? An engine? A tire? A drivetrain? Analogies rely on perceiving similarities or patterns that may not be apparent at first glance; for this reason, the analogical inference has often been linked to discourses of creativity and wit. As Novalis put it, »wit is creative – it creates similarities.«[22] But just this creative aspect has brought the analogical inference into epistemological ill-repute among many philosophers,

sischen Naturphilosophie, in: Goethe und die Verzeitlichung der Natur, ed. Peter Matussek, Munich 1998, pp. 58-74; here p. 59.

20 In this paragraph and the following, I draw in particular from Wolfgang Kluxen: Analogie, in: Historisches Wörterbuch der Philosophie, Vol. 1, ed. Joachim Ritter, Karlfried Gründer and Gottfried Gabriel, Basel 1973-2007, pp. 214-229.

21 See Rolf Christian Zimmermann: Das Weltbild des jungen Goethe, ²Munich 2002.

22 Quoted in Ulrich Stadler: »Ich lehre nicht, ich erzähle«. Über den Analogiegebrauch im Umkreis der Romantik, in: Athenäum 3, 1993, pp. 83-105; here p. 97, fn. 61.

who stress that it can only produce probable and not certain truth. Analogies may reveal deep-seated commonalities among apparently unrelated things, but they may also simply invent them. As a result, enthusiasm for analogical reasoning has waxed and waned historically. Both Hegel and Kant lamented their era's penchant for analogical reasoning; according to Hegel, the analogical inference anticipates its own conclusion by presuming that correspondences exist before setting out to find them.[23]

Because analogical reasoning cannot claim logical certainty, faith in analogy both relies upon and indexes a number of historically variable background assumptions about the nature of mind, world, and knowledge. To begin uncovering what these were in the Age of Goethe, we can return to the paratext in which Goethe announced the imminent publication of *Elective Affinities*:

> *Elective Affinities*, a novel
> by Goethe
>
> In two parts.
>
> It seems that the author's continued scientific studies were the cause of this unusual title. He may have noticed the natural sciences very often make use of analogies taken from the domain of human ethics [ethische Gleichnisse] in order to bring closer something that is quite distance from the circle of human knowledge. Thus, he may have also wanted, in an ethico-moral [sittlich] situation, to trace an analogy used in chemistry [chemische Gleichnisrede] back to its intellectual origins, all the more so as there is everywhere but one Nature and even the bright realm of reason's freedom is shot through with the inexorable traces of turbid, passionate necessity, which can only be fully extinguished by a higher hand, and perhaps not at all in this life.[24]

The short passage, which has inspired much commentary, is suggestive but obscure. In a few brief sentences, Goethe manages to entwine metaphorics and metaphysics, poetic and scientific knowledge, into a dense knot. Of particular significance is that Goethe's experiment transforms an analogy describing an isolated domain – that of chemistry – into an inference by analogy, linking two domains under a common form of lawfulness. Such a move immediately raises a host of questions: Is such an analogical inference justified? Do the same laws – or formally identical ones – govern interactions among humans and inter-

23 See Georg Friedrich Wilhelm Hegel: Werke, ed. Eva Moldenhauer and Karl Markus Michel, Frankfurt a. M. 1986; here Vol. 6, pp. 387-391. Hegel's preferred example of a flawed analogical inference involved the existence of men on the moon.

24 WA 1.41: 34.

actions among elements? And if such analogical relations between distinct domains of nature do exist, why would a poet be the one to uncover them?

Evidently, Goethe's paratext is meant to provoke these questions. At the same time, it repeatedly signals, with a kind of sovereign irony, his own distance from the hypotheses laid out there, which after all are only so many speculations on what »the author« may have had in mind by choosing such a title. On this basis, we may bracket, provisionally, the question of whether Goethe personally subscribed to the ideas espoused here and instead treat it as a kind of »discursive event.« As a text that is both of and about its times, discourse on contemporary literary-scientific discourse, it presents a rich starting point for reconstructing major features of the epoch in which it appeared.[25] In this regard, three features of the text are of particular salience. The first of these, which may be termed the »One Nature« hypothesis, is a set of beliefs which allowed analogy to function as object, method, and ontology of natural-philosophical thought around 1800; the second, the notion that poets, as privileged »readers« of Nature and *Gleichnis* alike, were particularly well-suited to carry out such experiments in analogy; the third, a kind of irony or skepticism regarding the first two positions, as if they belonged to a belief system whose foundation was crumbling. These three points provide the itinerary of my argument.

II. One Nature: Analogy as Ontology

How, exactly, does the analogy at the heart of Goethe's announcement – and by extension, his novel – work? Although the underlying train of thought is difficult to reconstruct exactly, it seems to depict a three-step epistemic transfer operation: first, the interactions of various elements has been observed by chemists to follow certain laws in their actions of de- and re-composition. Then, in order to make these phenomena intelligible, images and concepts from the sphere of human conduct – ethics, in the broad sense – have been imported into the natural sciences, through the use of the anthropomorphic analogy of »elective affinities.« Finally, in Goethe's novel, the anthropomorphic analogy from chemistry has been transported back into the realm from which it originated,

25 Sarah Maria Teresa Goeth has argued at length for a »second blossoming« [zweiter Frühling] of analogical thinking around 1800 in science and literature. S. M. T. G.: Analogie zwischen Wissenschaft und Ästhetik. Eine Vermittlungsfigur der Moderne bei Kant, Novalis und Goethe, Berlin 2023, p. 7. However, her reasons for doing so differ from mine. She sees it as an early anticipation of probabilistic and stochastic epistemologies of the nineteenth and twentieth centuries, whereas I stress its relation to the age's existential anxieties and metaphysical longings.

in order to see if interactions among human beings are governed by analogous laws, and thus can be explained by the same doctrine. The analogy has come full circle, albeit with an ironic twist: where the application of the term »elective« to chemical reactions seems to attribute mind to matter, the subsequent application of the chemical doctrine of »elective affinities« to human behavior imposes the iron laws of matter upon the activities of mind.

What prevents this series of operations from being a mere tautology, an exercise in circular reasoning, is the text's reference to the »one Nature« that underpins mind and matter alike. Throughout the Age of Goethe, the belief in an underlying unity of nature served not only as a deep metaphysical conviction but also as the foundation for such »experiments in analogy.« For such faith in analogy, as object and method of study, rests upon two key assumptions about mind and nature: first, that the forms of mind are adequate to the forms of world, that there be some sort of correspondence between the laws of thought and the laws of nature. Second, that the laws or principles governing one domain of nature resemble those governing another, that all of nature obeys a set of similar laws. To the modern ear, these sound like remarkable – and rather implausible – assumptions about the human being in relation to the natural world. Yet they were stock in trade for Goethe's contemporaries around 1800. Schelling, for example, concluded the rousing introduction to his *Ideas for a Philosophy of Nature*, published a year before he first met Goethe in 1798, with the assertion that a »secret bond […] couples our mind to nature.«[26] As a result,

> [W]e proceed with complete confidence in the agreement of Nature with the maxims of our reflective reason, from special subordinate laws to general higher laws; nor do we cease to assume *a priori,* even of phenomena which still stand isolated in the series of our perceptions, that *they* too are interconnected through some common principle. And we only believe in a Nature external to us where we discern multiplicity of effects and unity of means.[27]

According to this view, which might be termed the central axiom of Romantic *Naturphilosophie*, not only was Nature an analogue of Mind, but one could also »assume *a priori*« that all areas of Nature were in fact analogically related to one another, according to »some common principle.« This is what is meant by »multiplicity of effects and unity of means«: a common ratio (or *ratio,* in the Latin sense of »reason«) underpinning all phenomena.

26 Friedrich Wilhelm Joseph von Schelling: Ideas for a Philosophy of Nature as Introduction to the Study of This Science 1797. Second Edition 1803, trans. Errol E. Harris and Peter Heath, Cambridge 1988, p. 41.

27 Ibid.

Where did such assumptions come from? A clue is provided by Schelling's citation, a few pages later, of Spinoza's *Ethics*. One of the most important forces in the emergence of such faith in analogical inference was Spinoza – or, somewhat more specifically, *Herder*'s Spinoza. In recent years, scholars of both German Idealism and Romantic biology have stressed the importance of Herder's »vitalist« reinterpretation of Spinoza for nearly all major German thinkers of the generation that followed.[28] Simplified drastically, Spinoza's radical monism held that the mental and the physical, mind and nature, were simply two attributes of the same thing, one infinite and eternal substance that just *was* God. »Whatever is,« Spinoza wrote in his *Ethics*, »is in God, and nothing can be or be conceived without God.«[29] Yet Spinoza mocked those who imagined God as an anthropomorphic being »consisting of a body and a mind and subject to passions.«[30] Spinoza's pantheistic deity was not a personal God but consisted instead of divine nature in the literal sense of the term, endless but aimless substance, acting always in accordance with lawful necessity. This idiosyncratic conception of God (and nature) famously became the subject of much debate in the final decades of the eighteenth century as a result of the so-called *Spinozastreit*. Herder's 1787 text *God: Some Conversations* was one of the first pieces to offer a bold defense of Spinozism, although as many have noted, it represented less a faithful reproduction of Spinoza's thought than an image of Spinoza refracted through a contemporary lens, containing significant additions from Leibniz, Shaftesbury, and the early (pre-Critical) Kant. It is perhaps for this reason that it played such an important role in the emergence of a wave of »neo-Spinozism« that encompassed Goethe, Hegel, Schelling, Hölderlin, Novalis, and Friedrich Schlegel, among others.

With the »creative misreading« of Spinoza advanced in his dialogues on *God*, Herder brought new life into the Dutchman's rather austere *Deus sive Natura* (»God, or Nature«) for a generation of thinkers. Yet he had been grappling with Spinoza for more than two decades prior to the publication of *God*. In an aphorism from 1769, composed just after he had begun engaging with Spinoza, Herder writes that all phenomena are »the representation of a collection of very obscurely thinking forces, and at bottom all one! For life-forces, the forces of electricity and motion, the force of gravity must in the end yet be reducible to

28 In addition to Zammito 2018 (fn. 16), p. 180-185, see also Michael N. Forster: Herder and Spinoza, in: Spinoza and German Idealism, ed. Eckart Förster and Yitzhak Y. Melamed, Cambridge 2012, pp. 59-85, and Frederick C. Beiser: German Idealism: The Struggle Against Subjectivism 1781-1801, Cambridge/London 2002, pp. 367-368.

29 Benedict de Spinoza: Ethics, ed. Edwin Curley, New York 1996, p. 10 (Bk. 1, Prop. 15).

30 Ibid., 10 (Bk. 1, Prop 15, Sch.).

one.«[31] The passage demonstrates several key traits of Herder's reinterpretation; while Spinoza's monism is preserved, the universal principle underlying nature is no longer the somewhat dusty substance but instead the more lively notion of force. Further, Herder updated Spinoza's Cartesian mechanism with newer findings of the physical sciences, ranging from »life forces« to those of electricity and gravity. (Recall that Spinoza died a decade before the appearance of Newton's *Principia* in 1687.) Indeed, part of the appeal of Spinozistic monism lay, for Herder, in the fact »that all the complex forces discerned by ›experimental physics‹ needed to be interpreted in terms of a single universal force,« a creative capacity or *natura naturans* that he called God.[32] Finally, in contrast to Spinoza's relatively static God, who had neither aims nor ends, Herder tended to think of the divine nature as living and willing, an »obscurely thinking« being that expressed itself in similar ways across all domains of existence. This allowed for the reintroduction of organization and development into nature, as the gradual realization of a kind of obscure but intelligible plan uniting all realms of being.

The upshot of this is that Herder became arguably the most profound – and prolific – analogical thinker of the later eighteenth century.[33] The implications of his vitalistic reconception of creation are already evident in another text that Herder wrote shortly after he began reckoning with Spinoza in 1768-1769: his *Journal of My Travels in the Year 1769*. In striking form, Herder's account of his journey by sea from Riga to Nantes becomes a voyage of analogical discovery, as he discovers affinities among land, sea, and sky, the human and animal kingdoms, and much more: »Water is a heavier air: waves and currents are its winds: the fish its inhabitants: the seafloor is a new Earth. Who knows these? Which Columbus and Galileo can discover them?«[34] As it turned out, the new Galileo of the analogical cosmos was to be the author himself; his telescope, by which he reveals the distant and unexplored terrain, the analogical inference. As Herder continues: »Here, the bird of the sky sings, and by means of his head: the fish, what does he do? What sorts of new water senses does he possess, which we creatures of earth and air do not feel? Are they not to be discovered by analogy [analogisch zu entdecken]?«[35] This early text effervesces with analo-

31 Quoted in Forster 2002 (fn. 28), p. 78, fn. 98. I draw upon Forster in the sentences that follow.

32 Zammito 2018 (fn. 16), p. 180.

33 See in particular Hans Dietrich Irmscher: Beobachtungen zur Funktion der Analogie im Denken Herders, in: Deutsche Vierteljahrsschrift für Literaturwissenschaft und Geistesgeschichte 55, 1981, pp. 64-97.

34 Johann Gottfried Herder: Sämmtliche Werke, ed. Bernhard Suphan, Berlin 1877-1913, here Vol. 4, p. 351.

35 Ibid., p. 354.

gies, from the geological to the zoological to the historical. While it has been categorized as an »epistemological experiment« in the genre of travel writing, it must also be noted that the foundation of this unusual epistemology and experiment is analogy.[36] In one famous passage, Herder even suggests that an affinity between the herring of the North Sea and wandering Germanic tribes would be more than mere metaphor or flight of fancy, but instead reflects a real commonality. The significance for later »experiments in analogy« cannot be understated. With Herder, analogy is pattern, method, and metaphysics at once: one may use analogical inference from one domain to the next, from sky to sea, to uncover the really existing – preexisting! – analogies between them that are presumed to precede it. One implication, underscored by Herder's opening juxtaposition of his monotonous, bookish existence in Riga and the vital knowledge he acquired at sea, was that the world would disclose itself to those who attended to it sensually. Soon after this text was written, Herder would encounter the young Goethe in Strasbourg, where he conveyed to him not only his passion for Spinoza but also the rewards of taking nature as one's tutor. In an early *Sturm-und-Drang* poem of 1774 entitled »Epistle« [Sendschreiben], Goethe writes: »See, thus is Nature a living book / Whose sense may be taken, though oft mistook« – presaging the role of analogy as a mode of »reading« the Book of Nature that I return to below.[37]

However, more influential for later »experiments in analogy« was that Herder's analogical reasoning was not confined to the realm of living beings. Instead, his »vitalist dynamism« understood even the inorganic world as composed of so many living forces, all ultimately derived from the universal principle which is God. This led Herder to become an early champion of what would become one of the most powerful and most productive analogies of the Age of Goethe, that of »polarity.« By this was meant belief in a dynamic opposition of attractive and repulsive forces as a pattern or formal structure that repeats throughout all levels of organic and inorganic nature, including the human mind. The premise by which he arrived at this insight is relatively simple: If mind resembled nature, and nature everywhere resembled itself, then, as Herder wrote at the outset to his *On the Cognition and Sensation of the Human Soul*, »the more we thoughtfully observe the great drama of effective forces in nature, the less we can avoid everywhere feeling similarity with ourselves.«[38] For Herder, this feeling of affin-

36 See John K. Noyes: Knowledge, Travel, and Embodied Thought. Restlessness in Herder's »Journal of My Voyage in the Year 1769«, in: Transfers 6/3, 2016, pp. 49-64.

37 Quoted in Ernst Robert Curtius: European Literature and the Latin Middle Ages, trans. Colin Burrow, Princeton 2013, p. 325.

38 Johann Gottfried Herder: Philosophical Writings, ed. and trans. Michael N. Forster, Cambridge 2002, p. 187.

ity to the »great drama of effective forces in nature« had a very specific quality: it was characterized by the duality of attraction and repulsion, or as Herder put it in the same introduction, by »bodies' love and hate«:

> That Greek wise man who had an intimation of Newton's system in a dream spoke of bodies' *love* and *hate*; the great magnetism in nature which attracts and repels has long been considered as *soul of the world*. Likewise *warmth* and *coldness*, and the finest, noblest warmth, *electrical current*, this strange phenomenon of the great, all-present spirit of life. Likewise the great secret of the *progressive formation, renewal, refinement* of all beings, this abyss of hate and love, attraction and transformation into and from self.[39]

Once the references are clarified, the theme is easy to pick out: The Greek in question is Empedocles, the pre-Socratic poet-philosopher who introduced the four elements and the notion of love and strife as the forces that recombined them, whereas the Newtonianism alluded to is the famous problem from his *Opticks* of »what bodies attract one another, and what are the laws and properties of the attraction.«[40] Similarly, the domains of magnetism, electricity, and natural history, all phenomena of intense scientific interest at the time Herder wrote, seemed to be governed by analogous forces of repulsion and attraction. As he put it, this principle provided the key to the »great analogy of creation«: it was the analogy that explained analogy, as pattern, method, and metaphysics.[41]

In subsequent works, Herder returned to this law of attraction and repulsion again and again, as the »fundamental law« of the universe. His formulations often drew upon terms and images that anticipate the »experiment in analogy« announced by Goethe in the advertisement for *Elective Affinities*. For example, the final dialogue of Herder's *God: Some Conversations* culminates in the claim that,

> Everything attracts or repels or remains indifferent towards everything else, and the axis of this activity runs uninterrupted through all gradations. The chemist brings about nothing but unions and separations; Nature shows everywhere, in the richest and most profound ways, affinities [Verwandtschaften], friendships, and enmities. In Nature, what loves seeks and finds what it loves; for this reason, natural science itself has had no choice but to assume an *elective attraction* [Wahlanziehung] among the unions of bodies.[42]

39 See Herder 2002 (fn. 38), pp. 187-188.
40 Quoted in Adler 1990 (fn. 5), p. 264.
41 Herder 2002 (fn. 38), p. 214.
42 Herder 1877-1913 (fn. 34), Vol. 16, p. 558. In the second edition, the chemist brings about »weddings and divorces.«

From macro- to microcosm, from the formation of matter to the formation of human communities, all could be explained as progressive manifestations of the same formal principle of »love and hatred« among bodies, repeating over and over again at different levels. The forces in different systems »can be very different from one another and yet they work according to the same laws, for in Nature everything is ultimately linked, and there can only be *one* fundamental law, according to which even the most distinct things are ordered.«[43] Goethe, who read and reread Herder's »little book full of worthy thoughts of God« in Italy in the late summer of 1787, would have found there not only a remarkable faith in »one nature« and one law of »elective attraction« underpinning it, but also a fully developed analogical ontology and epistemology.[44]

Herder's *God*, Goethe remarked, was a delicate but powerful instrument; in the hands of one who knew how to use them, its »hypotheses« or »principles« could open up »the depths of nature.«[45] It is not difficult to see echoes of Herder's thought in the later, more familiar articulations of nature-philosophy provided by Schelling and Goethe. Although a detailed reconstruction of their respective doctrines is far beyond the scope of this paper, it is worth emphasizing that around 1800 both Goethe and Schelling began to develop visions of nature grounded in a principle of opposed forces of attraction and repulsion, on the one hand, and their return at ever higher levels of organization on the other.[46] The effect is a vision of natural order dominated by analogy, as »intensification« (Goethe) or »potentiation« (Schelling) leads the play of attraction and repulsion to repeat itself upon each stage or rung in the ladder of existence. In this way, sexual attraction becomes for Schelling a higher form of magnetism, thought a higher form of light.[47] Goethe, for his part, records in his fragment on »Polarity« a series of opposed dualisms in the natural world, all analogous to one another, ranging from »light and dark« to »thought and extension« to »breathing,« where attraction and repulsion manifest as inhalation and exhalation.[48] During the time of their closest collaboration, between 1798 and 1800, Goethe and Schelling's philosophical »experiments in analogy« were supplemented by real, repeated attempts to uncover the analogies linking diverse domains through joint optical and magnetic experiments.[49] While scholars tend to attribute this

43 Ibid., p. 559.

44 WA 1.32: 63.

45 WA 1.32: 111.

46 See however Zammito 2018 (fn. 16), pp. 286-317. For a broad overview of Goethe, Schelling, and *Naturphilosophie*, see Robert J. Richards: The Romantic Conception of Life, Chicago 2002.

47 Beiser 2002 (fn. 28), p. 538.

48 WA 2.11: 164-166.

49 Jeremy Adler: The Aesthetics of Magnetism. Science, Philosophy and Poetry in the Dia-

remarkable faith in a nature governed by a single law to a radicalization of Kant's arguments for a »dynamic« theory of matter in his *Metaphysical Foundations of Natural Science*, the affinities to Herder's own venture in analogical thinking are difficult to overlook. It is not implausible to wonder if his influence upon both Goethe and Schelling's philosophies of nature was concealed, in order to insist upon the more dignified Kantian pedigree.[50]

In this context, however, Herder's faith in analogy as pattern, method, and metaphysics is of less interest for its possible genetic influence on later generations than for what might be termed its symptomatic character, as an early response to structural challenges that faced natural philosophy in the Age of Goethe. For the modern reader, it is impossible to overlook the way in which analogy allows Herder (and then later Goethe, Schelling, Ritter, etc.) to link together a number of distinct, indeed heteroclite phenomena in disparate natural-scientific domains. For many years, this was interpreted as a kind of profound intellectual hubris on the part of *Naturphilosophen*, who preferred metaphysical simplicity to the muck of scientific empiricism.[51] But what if it was understood instead as a kind of defensive gesture? It must be recalled that the eighteenth century saw rapid and bewildering transformations in nearly all of the natural sciences, from physics to chemistry to natural history. According to the historian of science Peter Hans Reill, in the latter half of the century, experiments in nerve physiology, embryology, electricity, magnetism, and the chemistry of combustion pressed the framework of mechanistic science to its limits, suggesting a bevy of obscure and difficult to explain vital forces at work in the natural world.[52] This already formidable challenge to faith in the unity of nature was amplified by the emergence of skeptical doctrines, which called into question the epistemological legitimacy of any attempt to understand nature – as unity or multiplicity.

logue Between Goethe and Schelling, in: The Third Culture. Literature and Science, ed. Elinor S. Shaffer, Berlin 1997, pp. 66-102; here pp. 72-78.

50 See Zammito 2018 (fn. 16), p. 301. As Beiser notes, Herder was himself drawing upon Kant – albeit the pre-critical Kant, who had theorized the emergence of »the whole universe according to Newtonian principles« in his 1755 work on *Universal Natural History*, relying heavily upon attraction and repulsion as well as analogy. Frederick Beiser: Kant and Naturphilosophie, in: The Kantian Legacy in Nineteenth-Century Science, ed. Michael Friedman and Alfred Nordmann, Cambridge/London 2006, pp. 7-26; here p. 9. See further Nigel DaSouza: Herder's Theory of Organic Forces and Its Kantian Origins, in: Kant and His German Contemporaries, Vol. 2, ed. Daniel O. Dahlstrom, Cambridge 2018, pp. 109-127.

51 Beiser 2006 (fn. 50), p. 9.

52 Reill 2005 (fn. 16), pp. 7-8.

Analogical reasoning turned this weakness into a strength: it provided a way of acknowledging the diversity of phenomena while still preserving the fundamental intelligibility of the natural world, as so many distinct manifestations of a single underlying principle. Against this background, we can hear the note of urgency – and anxiety – when Herder's Spinozist mouthpiece asks in *God: Some Conversations* whether »the magnet, electrical force, light, heat and cold, attraction, gravity, and so forth function arbitrarily?«[53] If this were true, then one ought to abandon all mathematical and physical sciences and simply wait for revelation. But it is not and cannot be true: »The empirical natural sciences, which are not yet old, will one day advance so far in all of this that through a series of analogies [Reihe von Analogien] every blind arbitrariness will be expelled from the physical world, an arbitrariness in which everything would fall apart and all the laws of nature would in effect cease.«[54] For Herder, analogical reasoning held the world together, fended off chaos. Faith in analogy in the Age of Goethe, then, not only rested upon but itself asserted a kind of desperate faith: faith that nature was neither arbitrary nor chaotic, that the human mind was not alienated in nature but instead, somehow, at home there. Or, in Goethe's words, »there exists something unknown and lawful in the object which corresponds to what is unknown and lawful in the subject.«[55]

III. Metaphor as Metaphysics: Analogies in the Book of Nature

A first essential element of the epochal mode of thought that I have described here was the faith that nature and mind operated in analogous ways, that nature was fundamentally *intelligible* for human reason. But it was no less important that these analogies in nature be *legible* for one who knew where and how to look for them. As Pierre Hadot has shown, references to nature as an »encoded poem« were commonplace in the Age of Goethe; Schelling's *System of Transcendental Idealism*, for example, concludes with the assertion that »What we call Nature is a poem whose wondrous and mysterious writing remains indecipherable for us.«[56] Typically, these references have been understood in the context of post-Kantian Romantic aesthetics, which emphasize that in the productive powers of the genius, nature and art are one.[57] Against the background I have sketched here, however, a different interpretation is possible. If nature

53 Herder 1877-1913 (fn. 34), Vol. 16, p. 557.
54 Ibid., p. 557. This passage was deleted from the second edition, published in 1800.
55 WA 1.48: 204.
56 See Pierre Hadot: The Veil of Isis, Cambridge 2006.
57 But see Richards 2002 (fn. 46), pp. 159-164 for a more nuanced interpretation.

was a poem, containing metaphors, parables, and recurring motifs, then those with poetic sensibilities might be not only legitimate but even privileged readers and interpreters of natural-scientific phenomena. Such an argument was made by Goethe himself, who lamented in 1817 that »people forgot that science had developed out of poetry, and no one considered that after another swing of the historical pendulum [Umschwung von Zeiten], the two could perhaps encounter one another again on a higher level, to their mutual advantage.«[58] Who better to read nature's poetry than a scientist-poet?

Talk of nature as a poem belongs within the longer tradition of the »Book of Nature,« a rhetorical topos which dates back at least as far as Augustine. At its core, it holds that God authored two »books« to instruct human beings: that of scripture and that of the world itself, which could be »read« for its message. The topos of the Book of Nature enjoyed a marked resurgence in Germany in the second half of the eighteenth century.[59] The reasons for this are complex; for my purposes here, I would like to note only one aspect of the figure's usage in the Age of Goethe which bears particular importance for the issue of »experiments in analogy«: namely, the idea that God was not only an author but a poet, and had written this »Book« with a pronounced degree of parallelism and metaphor. The result was a peculiar privileging of poetic knowledge in the reading or interpretation of nature. As Johann Georg Hamann wrote in 1762: »Creation is a speech to creatures through creatures,« consisting of »jumbled verses and *disjecti membra poetae*. To gather these is the scholar's modest part; to interpret them, the philosopher's; to imitate them – or, bolder still – to bring them into right order, the poet's.«[60] Nature thus became, for those who knew how to read it – which meant here, to understand its analogies – a kind of divinely authored didactic poem [Lehrgedicht], in which phenomena in one domain echoed those in another.

Here too Herder served as an important discursive relay, this time in his status as a student of Hamann. A gifted philologist and a zealous Lutheran, Hamann saw manifestations of the divine word everywhere. For Hamann, »all that human beings are, think, feel, do – and not only human beings: nature, fauna and flora, earth and sky, mountains and streams, and all natural events – speak to us directly; are the form and substance of the language in which God im-

58 WA 2.6: 139-140.

59 I have explored this resurgence of the metaphor in greater depth in Jake Fraser: Metaphor as Archive. Blumenberg and the Book of Nature around 1800, in: Modern Language Notes 138, 2023, pp. 1132-1161.

60 Johann Georg Hamann: Writings on Philosophy and Language, ed. Kenneth Haynes, Cambridge 2007, pp. 65-66.

plants knowledge in us.«[61] In keeping with the topos of the Book of Nature, Hamann seems to have perceived both the created world and Scripture primarily as a set of mutually illuminating commentaries, capable of being deciphered by an astute reader. It is likely from him that Herder (eventually) learned to read the Mosaic creation story as natural-scientific allegory; from him too, the notion that creation itself contained natural analogies, parables that conveyed divine wisdom to human beings.[62] Thus, in his *Another Philosophy of History for the Education of Mankind*, Herder instructs his readers to seek out and find these metaphors, remarking that the growth of the tree, for example, is meant to instruct us upon the nature of human history, in which no age stands on its own, but instead builds upon what came before for the sake of what comes after: »Thus speaks analogy in nature, God's speaking model in all his works!«[63] As parables authored by God, such analogies taken from nature were not the inventions of poets, mere metaphors, but instead possessed a kind of metaphysical grounding.

To contemporary ears, faith in the Book of Nature – and, correspondingly, faith in the »reality« of metaphor – may sound dubious or simply banal, an elementary is/ought confusion or a metaphysical justification *ex post facto* for rhetorical commonplaces. Yet as the examples of Hamann and Herder show (and later Schiller, Schelling, Goethe, Kleist, Ritter, and Novalis, among others), for authors of the late-eighteenth and early-nineteenth centuries, such an approach in fact constituted a bold intellectual heuristic. By collapsing the very distinction between analogy and metaphor, the metaphorics of the Book of Nature allowed for a metaphysics of analogy, elevating the poetic *Gleichnis* as a method for study of the empirical world. This speculative entanglement of metaphysics and metaphorics even received a material grounding through pedagogical practices of the era. Herder's »method« for analogical discovery became for Schiller a practical exercise in learning to read Nature's didactic poem via Schiller's friend and high school teacher Jacob Abel, a pedagogical reformer and Herder enthusiast. Abel sought to teach his pupils to perceive the analogies among physical, psychic, and theological domains by instructing them to carefully record everyday observations from various walks of life in notebooks. These individual experiences were then shared and discussed in class as a group, where students were encouraged to find the general laws linking diverse phenomena they observed in nature, history, and their own minds, and to draw inferences from

61 Isaiah Berlin: Three Critics of the Enlightenment, ed. Henry Hardy, Princeton ²2013, p. 317.

62 H. B. Nisbet: On the Literature and Thought of the German Classical Era, Cambridge 2021, p. 148.

63 Herder 2002 (fn. 38), p. 299.

them.[64] (Schiller was not the only one to receive Herder's interest in analogy through Abel; the natural philosopher Carl Friedrich Kielmeyer, who exerted tremendous influence on Goethe and Schelling's notions of polarity and intensification, was also a student of his at the *Karlsschule* in Stuttgart.)[65]

As an adult, Schiller would come to reject his youthful faith in analogy, mocking the metaphorics of the Book of Nature in a Kantian poem on »Mortal Knowledge.« Yet traces of it can be seen in his »Theosophy of Julius,« a metaphysical manifesto embedded in Schiller's early *Philosophical Letters* (1786) that is typically thought to be modeled upon Schiller's own writings from his school days.[66] It begins with the declaration »The universe is a thought of God's,« and continues:

> Thus, the great composition which we call the world is now of interest to me only because it exists in order to signify to me in symbolic fashion the manifold statements of that Being. Everything within me and without is but a hieroglyph of a force [Kraft] which resembles me. The laws of nature are the ciphers which the Thinking Being [i. e., God] combines to make itself comprehensible to the thinking being [i. e., Man] – the alphabet, by means of which all minds interact with the most complete mind and with themselves.[67]

The modifications to the ontology of analogy discussed in the previous section are apparent. While Herder's doctrine of dynamic vitalism is preserved, the metaphorics of the Book of Nature add an additional metaphysical twist. Now, creation is full of natural analogies, divine metaphors which provide the real basis for familiar tropes like the river of time, eternity as a circle, and so forth. As the »Theosophy« declares, »Every state of the human soul has some sort of parable [Parabel] in physical creation, through which it is signified, and not only artists and poets, but even the most abstract thinkers have drawn upon this rich magazine. Lively activity we call fire, time is a river that rapidly rolls away from us, eternity is a circle, a secret cloaks itself in midnight, and truth resides in the light of the sun.«[68] Through faith in the Book of Nature, there arises a chiasmatic exchange between word and world: these stock »parables« are not – or not just –

64 Rüdiger Safranski: Friedrich Schiller. Oder die Erfindung des deutschen Idealismus, Munich 2004, pp. 46-47.

65 Zammito 2018 (fn. 16), p. 295.

66 Frederick Beiser: Schiller as Philosopher, Oxford 2005, p. 29.

67 Friedrich Schiller: Werke. Nationalausgabe, ed. Julius Petersen et al., Weimar 1943; here Vol. 20, pp. 115-116.

68 Ibid., p. 116.

the clichés of mortal poets, but instead divine metaphors, inscribed into the text of nature. Here, one sees confirmed Blumenberg's wry observation, from the very end of his *Paradigms for a Metaphorology*, that »metaphysics has often revealed itself to us to be metaphorics taken at its word.«[69] Accordingly, it is easier to understand how an era that thought in these terms could believe that similar laws of attraction or elective affinities could hold in the domains of chemistry and human affairs: both laws were written with the same »alphabet,« and followed the same grammar.

Goethe, too, seems to have drawn some of his faith in analogy from the metaphorics of the Book of Nature. In a letter to Charlotte von Stein from June of 1786, Goethe writes that »I cannot tell you how readable the book of nature is becoming for me; my long efforts at deciphering, letter by letter, have helped me; now all of a sudden it is having its effect, and my quiet joy is inexpressible.«[70] Only a few months later, Goethe would embark upon his Italian journey, and his extensive study of the Book of Nature would soon bear fruit in the discovery of the laws of development governing the vegetal kingdom. Significantly, the metaphorics of legibility and natural analogy return at a decisive moment in the poem that commemorates this happy marriage of science and literature, »The Metamorphosis of Plants.« Just after the poem's speaker has finished explaining to his intradiegetic companion the development of plants in the form of a marriage allegory, he declares: »Every plant announces to you now the eternal laws / Every flower, it speaks louder and louder to you. / But once you have here deciphered the Goddess's sacred letters / You will then see them wherever you look, even though the scripts are diverse.«[71] Here, the mutual entanglements of metaphysics and metaphorics suggested by the Book of Nature are particularly clear. Not only is the »text« of the laws governing one kingdom of nature legible; what's more, one who learns to read the text of the »eternal laws« governing botanical life will then be able to refind the same letters spelling out the laws of other kingdoms. That is to say, while the text of nature may be long and varied, the careful observer will note that each chapter has been composed with the same underlying characters and syntax. The first demonstration of this follows immediately: »O, think of how, out of the seed of acquaintance / in us tender familiarity gradually sprouted / how friendship burst forth from deep within, / And how, finally, eros begat blossoms and fruits.«[72] The analogy drawn here is clear, and not only to the speaker's beloved (typically understood to be a stand-in for Christiane Vulpius): the seed is to fruits as acquaintance is

69 Hans Blumenberg: Paradigms for a Metaphorology, Ithaca 2010, p. 12.
70 WA 4.7: 230.
71 WA 1.1: 292.
72 WA 1.1: 292.

to pregnancy. The reproduction of plants and the reproduction of humans are linked analogically. They follow, if not the same laws, then at least similar formal patterns across distinct domains or stanzas of Nature: they are the same »sacred letters,« even if they appear in »different scripts.«

While this seems, at first glance, to be a rather conventional trope linking the poem to its addressee, Goethe had something more fundamental in mind. Around the time the »Metamorphosis of Plants« was written, he was deeply engaged with Schelling's *Naturphilosophie*; indeed, the poem was composed a week after the first two met to carry out experiments together and to discuss their respective philosophies of nature. Not long after, Goethe announced to Knebel his intention to follow »The Metamorphosis of Plants« with a didactic poem on magnetic forces; he and Schelling also seem to have planned to compose a neo-Lucretian poem together, laying out the universal principles of polarity, potentiation, and morphology in verse.[73] While neither of these projects was ever completed, one may still hear echoes of this plan in a distich from »God, Mood, and World« which runs: »The secret of magnets, explain that to me! / No more a secret, than eros and enmity.«[74] As in the previous didactic poem, an analogy is used to indicate that the primal or Ur-phenomena in distinct realms of nature are governed by analogous operations of attraction and repulsion – the same letters in »diverse scripts.« Given its failure, one might ask: was such a poem ever possible? Certainly a didactic poem that covered all of these domains would be a daunting undertaking. As Schelling put it, in his *Philosophy of Art* (1802-1803), »Since the universe is in form and content one, there can also be only one absolute didactic poem [Lehrgedicht], namely the poem of the nature of things, of which all individual didactic poems are mere fragments.«[75] But, he continued, this absolute poem could not be written until nature philosophy was complete and nature had been grasped in its unity. Then, science would flow back into the »ocean« of poetry, which was, after all, where it had begun with Parmenides and Empedocles. Natural science would not, could not become poetry until natural scientists had finished reading and interpreting the »encoded poem« that was nature.

Hamann, Herder, Goethe, Schiller, Schelling: For an entire generation of German poets and philosophers, the metaphysics of analogy, together with the metaphorics of the Book of Nature, served to turn Nature itself into a didactic poem. Even Kleist – normally an outlier in the Age of Goethe – seems to have read nature in this way. In a series of letters sent by the young poet to his fiancée

73 Adler 1997 (fn. 49), p. 75.

74 WA 1.2: 218.

75 Quoted in H. B. Nisbet: Lucretius in Eighteenth-Century Germany, in: The Modern Language Review 81/1, 1986, pp. 97-115; p. 111.

Wilhelmine von Zenge in 1800, he explains that »there are moments where such signals from nature can delight us, like the friendly discourse of a teacher,« as they are capable of teaching the observer »what no book would have told him.«[76] Kleist exhorts his fiancée to employ his own technique for deciphering the Book of Nature, which is to »ask of every appearance [in Nature] either: what does this point toward? in which case the answer will provide you with some sort of useful lesson; or, if that doesn't work, at least ask: what does that resemble? and then the discovery of an analogy [Gleichnis] will at least sharpen your mind.«[77] Kleist himself seems to have used such a technique often, and not just to develop the analogies that made up his famous (and famously apocryphal) »magazine of ideas« [*Ideenmagazin*]. In later essays, he repeatedly invokes – albeit in a decidedly ironic tone – a lesson he has learned from the latest »experimental physics«: namely, that electrically charged »bodies« [Körper] have the tendency to electrify neutral bodies introduced into their vicinity with the opposite charge.[78] In his essay on »The Gradual Completion of Thoughts While Speaking,« he refers to this as »a remarkable congruence between the appearances of the physical and the moral world, which, were one to pursue it, would hold up even in the minor details,« while in the »Very Latest Educational Plan« (1810), he writes of electrical polarity that »this extremely peculiar law can also be found in the moral world, in a way that to our knowledge has to date received little attention.«[79] The analogy between the behavior of electrified bodies in organic and inorganic nature derived from »experimental physics« served Kleist as the basis for a number of his bolder thought experiments – among them, that the true cause of the French Revolution was that the presence of the king's master of ceremonies induced a polarization in Mirabeau that was »discharged« in his declaration of a national assembly. For those who, like Kleist, knew how to read the world like a book, one could find in nature parables to explain human history, and vice-versa.

IV. The End of Analogy

The aim of the preceding has been to situate the analogy at the core of Goethe's *Elective Affinities* within a much broader historical and discursive context. This intellectual-historical epoch, which could be dubbed »the Age of Analogy« to

76 Heinrich von Kleist: Sämtliche Werke und Briefe, ed. Helmut Sembdner, Munich ²2008; here Vol. 1, p. 593.
77 Ibid., p. 593.
78 Ibid., p. 321.
79 Ibid., p. 330.

indicate the ways in which it does and does not overlap with the Age of Goethe, is characterized by 1) a metaphysics of natural analogy, in which radically distinct domains of Nature – as well as the human mind – were thought to follow analogous laws; and 2) a faith, supported by the metaphorics of the Book of Nature, that these laws could be uncovered through the experimental generation of what looked like poetic *Gleichnisse*. However, the chronologically-latest examples of such experiments in analogy which I have cited – Goethe's announcement of *Elective Affinities* and Kleist's essays – also 3) indicate a certain ironic distance from the assumptions of the prior half-century. In concluding, let me return to Goethe's novel by briefly saying something about the end of this epoch.

By 1800, faith in the metaphorics of the Book of Nature and the metaphysics of analogy was under attack from many sides. Critical philosophy would emphasize the limitations of subjective perceptions of analogy in the generation of reliable, which is to say: objective knowledge. In an anonymous review of Herder's *Ideas for the Philosophy of History of Mankind*, Kant took Herder to task for an abuse of analogical inference. Herder, Kant wrote, had blurred the boundaries of poetry and philosophy in his over-reliance upon analogies and *Gleichnisse*, such that he mistook »synonyms for explanations« und »allegories for truths.«[80] In particular, Kant took offense at Herder's attempts to infer via analogy the nature of human life after death. Herder, like many of his contemporaries, clung tightly to the belief that natural phenomena like the metamorphosis of plants and caterpillars foreshadowed the fate of the human soul, serving as a kind of divine parable to indicate that the individual would live on, albeit in different form. In his words, »thus Nature also shows us, in these analogies of becoming, i. e. transitioning creatures, why she wove the sleep of death into her world of forms.«[81] Kant's reply to his former student is devastating: »Here nature lets us see nothing other than that she abandons individuals to complete destruction and preserves only the kind; but there one demands to know whether also the individual in the human being will survive his destruction here on earth, which might be inferred from moral or, if one will, metaphysical grounds, but never from any analogy with that visible generation.«[82] Not only had Herder failed to construct the analogy with care – after all, even individual butterflies still *died* – his use of it lapsed into a pre-Critical metaphysics. There was no *a priori* guarantee that the laws governing distinct domains of Nature coincided with one another, let alone with the laws of the mind. The natural

80 Immanuel Kant: Anthropology, History, and Education, ed. and trans. Günter Zöller and Robert B. Louden, Cambridge 2007, p. 138.

81 Herder 1877-1913 (fn. 34), Vol. 13, p. 194.

82 Kant 2007 (fn. 80), p. 131.

analogies that one read *out* of the Book of Nature risked being analogies that had merely been read *into* it.

The collapse of the metaphysics of analogy left traces in nearly all the authors of the late-eighteenth and early-nineteenth centuries. The confrontation with Kant's critical epistemology proved to be a watershed moment; some found themselves forced to abandon philosophical positions upon which they had staked their entire existence. Kleist's Kant-Crisis (and his subsequent shelving of the »magazine of ideas« based on natural analogies or *Gleichnisse*) is well-known. Schiller's own metaphysical crisis – upon which I suspect Kleist's was modeled – is recorded in his *Philosophical Letters*, when the young Julius is confronted with skeptical arguments and forced to discard in despair his system founded upon deciphering the »cipher-writing of nature.« Schiller drew the metaphorical consequences of this critique of the Book of Nature in a late, post-Kantian poem entitled »Mortal Knowledge,« which reads: »Because you read in her what you have yourself written into her, […] you believe, mistakenly, that your mind grasps mighty Nature.«[83] Others – most famously Schelling – sought to reinforce their position against the critique that the analogies they thought they uncovered in nature were the result of subjective projection by insisting upon the real (and not just apparent) identity of the laws governing subject and object. He was followed in this by Hamann, Herder, Novalis and Ritter, among others.

And Goethe? Grounded in empirical observation and famously averse to epistemology, Goethe was never struck by this epochal crisis in the way that his contemporaries were.[84] Indeed, his remarks on analogy throughout his life demonstrate a kind of measured balance, as in this passage from the *Maxims*: »Thinking according to analogies is not to be condemned; analogy has the advantage that it does not conclude and does not want finality. Induction, by contrast, is pernicious, for it keeps its aim in view and, while working towards it, leaves both truth and falsity in its wake.«[85] The analogy does not replace physical experiment and observation but instead inspires it. An analogy or *Gleichnis* linking, say, the laws determining chemical attraction and those which govern interpersonal affairs is at best a relation to be explored, and not a postulated identity to be confirmed or rejected. Thus, in *Elective Affinities* it is Eduard who seeks to prove a hypothesis through induction: he constantly seeks physical analogues for his relationship to Ottilie (the copied contract, the inscribed glass,

83 Schiller 1943 (fn. 67), Vol. 1, p. 271.

84 On Goethe, Kant, and analogy see Eva Geulen: Aus dem Leben der Form. Goethes Morphologie und die Nager, Berlin 2016, pp. 87-98.

85 WA 1.42: 180.

even his own life when he goes to war) and performs »experiments« to test them. For the reader, his folly is clear.

Nonetheless, there is a moment in *Elective Affinities* when it seems as if the analogy around which Goethe's novel is structured is tested and found wanting. This occurs in chapter 12 of Book 1, where the »cross-wise« exchange of all four elements occurs for the first and last time. It is the day after Eduard's nocturnal visit to Charlotte's quarters, in the wake of what Eva Horn once termed »likely the strangest sex scene in world literature.«[86] The chiasmatic partner swap that occurred the night before in phantasy will occur, if only briefly, in reality. Eduard, Charlotte, and the Captain have gone for an evening walk to take the canoe out onto the lake, while Ottilie is at home, finishing the duplication of the sales contract. But just before the boat casts off, Eduard, impatient to see Ottilie, leaps back onto shore. Abandoning his wife and friend to the »fluctuating element« of water, he rushes home to find his hitherto imaginary unification with Ottilie made real, in the form of the indistinguishability of their handwriting on the two versions of the contract. Confronted with this sign of their love, the two embrace.

Meanwhile, Charlotte's anxiety to terminate the canoe ride early and return home leads the Captain to inadvertently run the boat aground. He carries Charlotte to the shore, and as he places her down, they kiss for the first and only time. I quote what happens next at length:

> The kiss which her friend had dared to give her and which she had almost given him in return brought Charlotte to her senses. She pressed his hand but did not raise him. Bending down to him and laying a hand on his shoulder she cried »We cannot prevent this moment from marking an epoch in our lives; but whether it be one worthy of us, that we can still decide. You must separate [scheiden], my dear friend, and you will separate [scheiden]. The count is making arrangements to advance you, which is a cause of joy to me and also of grief. I wanted to say nothing about it, until it was certain; but now the moment obliges me to reveal my secret. I can forgive you and forgive myself only if we have the courage to alter our situation, since it is not within our power to alter our feelings. She raised him up, took his arm to support herself, and they returned to the Hall in silence.[87]

86 Eva Horn: Chemie der Leidenschaft: Johann Wolfgang von Goethes »Die Wahlverwandtschaften«, in: Leidenschaften literarisch, ed. Reingard M. Nischik, Konstanz 1998, pp. 163-181; here p. 169.

87 Johann Wolfgang Goethe: Elective Affinities, trans. David Constantine, Oxford 1999, pp. 83-84, trans. slightly modified.

Significantly, the two new pairs of lovers have formed exactly simultaneously: Eduard and Ottilie at the house, and Charlotte and the Captain at the pond. This would seem to signal the culmination of the partner swap presaged by the chemical analogy of the book's fourth chapter. Yet what follows in this passage does not confirm the analogy, but instead points up its limitations. The natural forces or laws of attraction and repulsion are, in this »moment,« given their due, but they are immediately thwarted by uniquely human counter-forces. As Charlotte explains to the Captain, »epoch« and »feelings« are beyond their control, but »worth« and »situation« remain subject to their free determination. Even the chemical analogy's rhetoric of involuntary – because irresistible – separation or dissolution [Scheiden] is invoked here, but only in order to be inverted. Where Charlotte was dismayed by the reference to chemical »separations« in the first conversation, here, she embraces it as an act of a free or sovereign will. Only in relationships between human beings do the *Elective Affinities* become what the analogy originally implied: elected or chosen [gewählte] affinities.

In this encounter between Charlotte and the Captain, it would seem that the natural-scientific analogy posited at the novel's outset is tested and the hypothesis is rejected. By belonging to the realm of freedom, the moral laws that determine human conduct override those physical ones which determine mere nature, and overcome them. But perhaps, given Goethe's well-known distaste for the Newtonian *experimentum crucis*, it is overhasty to conclude that Charlotte's speech to the Captain is intended to prove that the titular analogy of *Elective Affinities* does not hold. Instead, insofar as these moral laws are themselves subordinated to the laws of character – by which I mean, these sentences could only have come from Charlotte – then Goethe's social or societal novel brings something new into view. In a novel whose characters cannot but act as they do, from Eduard to Luciane, from Ottilie to the Architect, what binds is not fate but character, not destiny but type. In Goethe's literary experiment, then, the metaphysics of analogy are replaced by the science of character; one form of experiment replaces another. As he wrote in a fragment: »The task and activity of the tragic poet is nothing other than to prove in the past tense a psycho-social phenomenon, presented in the form of a readily graspable experiment.«[88] To display just such a phenomenon in the present is now the task of the novel; indeed, if one changes the generic references, one could be forgiven for thinking that this was a quote from Zola. The study of analogical relations between micro- and macrocosm, between the moral and the physical worlds, gives way to a careful observation of individuals' actions and interactions within a given psycho-social milieu. In making this shift from analogy to character, from nature

88 WA 1.42: 250.

to the psycho-social, *Elective Affinities* bring one epoch to a close, while setting the stage for the *roman expérimental* of the 19th century. But that is a story for another time.

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