TANGLED UP IN TRUTHS: GERMAN LITERARY CONCEPTIONS OF NATURE BETWEEN ROMANTIC SCIENCE AND OBJECTIVE EMPIRICISM

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ABSTRACT

Lindsey J. Brandt: Tangled up in Truths: German Literary Conceptions of Nature between Romantic Science and Objective Empiricism
(Under the direction of Eric S. Downing)

This dissertation explores the relationship between literature and science in German-speaking Europe of the 1830s and 1840s against the backdrop of large shifts in conceptions of nature and natural inquiry. Many scientific and literary writers of this period reflected on the increasing tensions between early 19th century Romantic science and modern empirical science, as well as the implications of these tensions for fields such as biology and geology. The key texts examined in this context include Lorenz Oken's journal *Isis*; Carl Gustav Carus's *Neun Briefe über Landschaftsmalerei* and *Zehn Briefe über das Erdleben*; Annette von Droste-Hülshoff's essay "Westfälische Schilderungen aus einer Westfälischen Feder" and poems "Die Mergelgrube" and "Der Hünenstein"; Adalbert Stifter's painting "Bewegung II" and prose tale *Kalkstein*; and Georg Büchner's prose work *Lenz*, trial lecture "Über Schädelnerven," and dissertation on the nervous system of the barbel fish. Several of the texts examined here seek to reconcile the newer trend toward objective empiricism with older elements of nature discourse reflected, for instance, in Friedrich Schelling's *Naturphilosophie* and the aesthetic-scientific approaches of Johann Wolfgang von Goethe and Alexander von Humboldt. As such, the writers in question often advocate for aesthetically inspired ways of knowing nature (i.e., through literature, *Stimmung*-oriented landscape painting, and more poetically attuned forms of science) as necessary complements

to empirical science. Defending the aesthetic perspective was especially important at this time, as a rising trend toward disciplinarity threatened to isolate modes of knowledge—such as poetry and science—that were previously considered inextricable from one another.

Particularly within the realm of literary history, this period of the 1830s and 1840s is typically framed in terms of political events; likewise, literary works are often interpreted and categorized based on their authors' political views. My findings suggest that, by examining the literary and scientific writings of this era in dialogue with one another, another reading of this period is possible. Namely, literary and scientific authors across the political spectrum express common concerns about the increasingly complicated relationship between humans and nature, as well as the capacity of the arts and the sciences to gain knowledge about that relationship.

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INTRODUCTION

> If it form the one landscape that we, the inconstant ones,
> Are consistently homesick for, this is chiefly
> Because it dissolves in water.
>
> - W.H. Auden, "In Praise of Limestone"

The interest behind this project was sparked by an observation that, at first, seemed rather mundane and inconsequential: erosion imagery in Adalbert Stifter's mid-19th century tale *Kalkstein* (*Limestone*).[1] Why, I wondered, does so much of the physical description in this story revolve around wornness and dissolution? Why do the physical qualities of the limestone landscape described also seem to pervade the human realm, and vice versa? What I initially reduced to a descriptive obsession on Stifter's part slowly evolved into a series of exciting discoveries about the way conceptions of nature and human nature were shifting in the German-speaking lands leading up to the mid-19th century. This dissertation will present many of those discoveries throughout the next few chapters.

Limestone, however, deserves its own brief moment in the sun. Throughout the course of this project, I remained astounded at the power of the image of that eroded limestone landscape, as well as its constant relevance to 19th century nature discourse. Admittedly, Stifter's affinity for limestone was not an arbitrary one without weight or precedent. The story's foregrounding of limestone and its unique qualities resonates with observations already established by Johann Wolfgang von Goethe in his 1809 novel *Die*

[1] Adalbert Stifter, *Bunte Steine. Erzählungen,* Munich, Goldmann, 1983.

Wahlverwandtschaften. In the famous chemistry parable of this novel, the captain cites limestone as an example of a substance that readily interacts or unites with other substances and is thus continuously in a state of transformation:

> Diejenigen Naturen, die sich beim Zusammentreffen einander schnell ergreifen und wechselseitig bestimmen, nennen wir verwandt. An den Alkalien und Säuren, […] sich am entschiedensten suchen und fassen, sich modifizieren und zusammen einen neuen Körper bilden, ist diese Verwandtschaft auffallend genug. Gedenken wir nur des Kalks, der zu allen Säuren eine große Neigung, eine entschiedene Vereinigungslust äußert![2]

In Goethe's story, this scientific explanation serves as a playful metaphor to shed light on the mysteries of human attraction and relationships. Although he is using scientific language here, the captain is alluding to a particular human personality or predisposition that mirrors limestone's tendency to dissolve into its surroundings and give itself over to change. By exploring the ways that natural laws might also serve as analogies for explaining human nature, this famous literary conversation reflects one of the most urgent concerns of the early 19th century: namely, the complicated relationship between humans and the natural world.

Eroded limestone was a particularly appealing object of reflection in this early and mid-19th century context because of its capacity to make visible both nature's own artistry and the terrifyingly deep history of that artistry. Both concepts pervaded the European popular imagination during this period and are reflected, for instance, in the era's obsession with landscape painting. Early Romantic landscape painters tended to exaggerate and anthropomorphize these qualities, as if nature itself were a forceful, conscious actor endowed with just as much or more power and agency than the human world. Paintings from the late and post-Romantic period—to which the amateur painters Adalbert Stifter and Carl Gustav Carus belong—tend to present scenes that are less turbulent and overtly terrifying. However,

[2] Johann Wolfgang von Goethe, *Die Wahlverwandtschaften*, Köln, Anaconda, 2008: 45.

they still offer visual allusions to nature's deep history and foreground its powerful, if gentle, ability to draw in the human observer and elicit an affective response or altered perspective. Limestone landscapes, with their worn and rounded contours and labyrinthine fissures, offer precisely this quiet, unexpected realization of the sublime.

Literary authors' fascination with limestone has endured in the 20th and 21st centuries as well, particularly in the Anglo-American tradition. We see this in the poetry of W. H. Auden, for instance, and, more recently, in the work of contemporary British scientist and nature writer Julian Hofmann. As if channeling Stifter's vision, Hofmann's essay "Time in the Karst Country" reflects on a transformative experience charting bird habitat in the limestone karst region of northern Greece:

> As I walk the last of the ridge I feel an affinity with stone. Along with my concerns for the future of birds on the plateau—their flight patterns more fragile than I'd imagined—the place has absorbed me into its pattern. I'm encircled by an expanse of dissolving land, an entrancing work of water worn away over ineffable ages beneath the same passing sun. And over the months I've understood this landscape's capacity to alter my perception. It has opened me to the unfathomable beauty of distance and deep time, but also proximity: the things revealed when we draw near. How the envious solidity of stone is also inconstant, its eroding designs as rich as a shepherd's weathered smile.[3]

This excerpt reiterates limestone's ability to open up a window into nature's eternal processes of movement and change; its susceptibility to erosion is a conspicuous reminder that even something as solid and permanent as a rock has a story of development. Rock, too, must be born and shaped, Hofmann realizes, and it will also eventually weather and fade away, though at a massively different scale than the human lifespan.

As Hofmann's account suggests, limestone has a remarkable capacity to draw the human viewer into its own story, by provoking reflection about its deep, unfathomable

[3] Julian Hofmann, "Time in the Karst Country," http://www.terrain.org/place/27/. Accessed 02/05/2015.

history of change. Stifter's *Kalkstein*—written within 20 years of Charles Lyell's popularization of the idea we now call "deep time"[4]—offers a similar insight: that limestone landscapes slowly teach us to engage in the practice of *Betrachtung* (contemplative viewing) rather than mere *Beobachtung* (observation). Not only is the limestone itself susceptible to dissolution, then, but it also invites us to let go of our own boundaries—to become mentally and emotionally absorbed in the story of the landscape. Gradually, as Hofmann explains and Stifter shows in his story, a sense of kinship and sympathetic affinity emerge between us and that landscape—a process that Stifter might have called *Stimmung*. The insights that Hofmann presents in this 21st-century essay thus reflect the legacy of a kind of vision propounded by 19th-century German thinkers like Goethe and Stifter who sought ways to integrate scientific observation and aesthetic contemplation when viewing nature. To them, both science and poetry required this "attuned" entanglement between the human subject and the object observed. Only in the later 19th century would objectivity and subjective distance become the hallmark standards of scientific inquiry.

Within the 19th century context, the image of limestone clearly conveys important Romantic concepts and epistemic values, such as the historical-developmental view of the natural world and the idea of a necessary entanglement between humans and nature for both poetic and scientific inquiry. And yet, a limestone karst is hardly the vibrant, conventionally stunning Alpine landscape that one would expect to see in a Romantic landscape painting. Its features are conspicuously aged and worn down, and its colors are dull and faded. Always in a visible state of transition, limestone thus also presents a powerful metaphor for the precarious situation of nature-oriented German writers during the 1830s and 1840s, such as

[4] Charles Lyell, *The Principles of Geology*, 3 vols. London: John Murray, 1830-1833.

Stifter, Annette von Droste-Hülshoff, and Georg Büchner: these writers remained captivated by the influential Romantic work of earlier decades, but they also recognized that its dominance was dissolving and fading away into the past.

Like the image of limestone presented in Stifter's *Kalkstein*, much of the literature of Stifter's era is deeply invested in Romantic conceptions of nature, and yet it is also decidedly non-Romantic at the same time, as it always foregrounds the erosion and inevitable loss of that cultural paradigm, particularly in light of new trends in the sciences. These qualities of transience and transition are not often recognized by literary scholars as a distinguishing marker for this era; rather, the period's literary works tend to be categorized according to their authors' political affinities and activities, whether revolutionary (i.e., *Vormärz*) or reactionary or passive (i.e., *Biedermeier*). However, across the political spectrum, this era's literary authors often have similar views on newly emerging conceptions of nature and natural inquiry as Romantic influence fades. As if both asking and responding to the question "What comes next?," their literary worlds help probe and guide the new nature discourse as it takes shape, borrowing from old and new values and ideologies. This dissertation project seeks to understand how they negotiated this threshold moment and why they felt compelled to occupy that threshold at all.

19th-Century Literature and Science

19th-century science and history of science scholarship can help shed important light on these literary authors' attention to nature. Since Stifter, Droste, and Büchner were all drawn to the natural sciences, whether professionally or as amateurs, a number of scientific topics enter into their works directly. As expected, then, shifting nature conceptions in their writing often correspond to tensions and moments of ambivalence in the realm of science.

The fact that many authors of this era were attuned to scientific discourse is not surprising: not only did the first half of the 19th century see a massive surge in popular interest in scientific study and nature collecting, but the practice of science itself was changing in conspicuous ways. Over the course of these authors' lifetimes, objective empiricism in the natural sciences was beginning to exclude and surpass Romantic idealist thought, which had stimulated a rich tradition of natural inquiry in the decades leading up to mid-century, particularly in the life sciences. Human observation and contemplation were increasingly enhanced by and sometimes replaced with specialized instruments and complex measurement techniques.

Much of the conflicted, ambivalent nature discourse reflected in literature of the 1830s and 1840s resonates with contemporaneous scientific and philosophical writing by figures such as Carl Gustav Carus, Lorenz Oken, and even Georg Büchner himself. Particularly striking is the fact that both the literary and scientific authors of this period seem to understand their primary task to be one of reconciliation. Unable to disavow the Romantic values they still recognize as productive, these important figures strive to find points of compatibility and complementarity between older and newly emerging ways of knowing nature and performing science. In many cases, the literary and scientific writers examined in this project embrace both Romantic idealism and objective empiricism for their concrete achievements but simultaneously reveal the deficiencies and blind spots inherent in these approaches. Moreover, these writers at times foster an almost mystical respect for the dynamism and deep history of nature, but they also endorse practical measures to make nature less unpredictable and less threatening to the human world.

Scholars of German literature have written extensively on nature discourse in literature and science up to 1850. However, with the exception of some scholarship on individual authors or works, little attention has been devoted to the transitional period of the 1830s and 1840s in this context of literature and science. Instead, present research tends to focus on the relationship between Romantic literature and science[5] or the relationship between Goethe's literature and science.[6] Additionally, a significant amount of scholarship examines the trend towards objective empiricism around 1850 and its significance for nature discourse in Realist literature.[7] In part because scholars tend to confine their analysis to traditional period boundaries, such as "Realism," "Romanticism," and "The Age of Goethe," the transitional period of the 1830s and 1840s is often pigeonholed into one era or overlooked altogether.

Even those works that try to track nature discourse through the long 19th century tend to brush over the period in question. Robert Richards's seminal work *The Romantic*

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[5] See: Nicholas Saul, *Die deutsche literarische Romantik und die Wissenschaften*, Munich, Iudicium, 1991; Helmut Müller-Sievers, *Self-Generation: Biology, Philosophy, and Literature Around 1800*, Stanford, CA, Stanford UP, 1997; Robert J. Richards, *The Romantic Conception of Life: Science and Philosophy in the Age of Goethe*, Chicago, U Chicago P, 2002; Michel Chaouli, *The Laboratory of Poetry. Chemistry and Poetics in the Work of Friedrich Schlegel,* Baltimore, MD, Johns Hopkins UP, 2002; Noah Heringman, *Romantic Rocks, Aesthetic Geology,* Ithaca, NY, Cornell UP, 2004; Jocelyn Holland, *German Romanticism and Science: The Procreative Poetics of Goethe, Novalis, and Ritter*, New York, Routledge, 2009.

[6] To give just a sample of the scholarship on Goethe and science over the last 25 years: Karl Fin, *Goethe's History of Science*, New York, Cambridge UP, 1991; Otto Krätz, *Goethe und die Naturwissenschaften*, Munich, Callwey, 1992; Roger Stephenson, *Goethe's Conception of Knowledge and Science*, Edinburgh, Edinburgh UP, 1995; Frederick Amrine, *Goethe in the History of Science*, New York, Lang, 1996; David Seamon, *Goethe's Way of Science: A Phenomenology of Nature*, New York, SUNY, 1998; Rudolf Steiner, John Barnes, and Johann Wolfgang von Goethe, *Nature's Open Secret: Introductions to Goethe's Scientific Writings*, Great Barrington, MA: Anthroposophic Press, 2000; Aekav Ishihara, *Goethes Buch Der Natur: Ein Beispiel der Rezeption Naturwissenschaftlicher Erkenntnisse und Methoden in der Literatur seiner Zeit*, Würzburg, Königshausen & Neumann, 2005; Olaf Breidbach, *Goethes Naturverständnis*, Munich, Fink, 2011.

[7] See: Mark Lehrer, *Intellektuelle Aporien und literarische Originalität: Wissenschaftsgeschichtliche Studien zum deutschen Realismus: Keller, Raabe und Fontane*, New York, Peter Lang, 1991; Thomas L. Buckley, *Nature, Science, Realism: A Re-Examination of Programmatic Realism and the Works of Adalbert Stifter and Gottfried Keller,* New York, Peter Lang, 1995; Lutz Danneberg and Friedrich Vollhardt, eds., *Wissen in Literatur im 19. Jahrhundert,* Tübingen, Niemeyer, 2002.

Conception of Life, for instance, does attempt to trace the scientific legacy of Romantic thought beyond its apparent demise in the middle decades of the 19th century.[8] However, he confines his main analysis to influential thinkers in "the age of Goethe" and ultimately identifies Charles Darwin as a late inheritor of this tradition. In doing so, he declines to consider how Romantically inflected conceptions of nature and natural inquiry might have been carried on in literature in the decades after Goethe's death. As Jutta Müller-Tamm points out, the first half of the 19th century is a period of rich exchange between science and literature: "Ideen, von einer wissenschaftlichen Disziplin verabschiedet, werden in der Literatur tradiert, von wo aus sie gegebenfalls in den wissenschaftlichen Diskurs zurückkehen."[9] Because of this interplay, literature was able to adopt and preserve conceptions of nature and natural inquiry that had fallen out of favor in the sciences. Ideas that seemed unfashionable in the sciences were thus able to survive in literature, much of which articulated a desire for retaining some aspects of Romantic thought in modern science. Yet, the important work of this era's literature generally remains unnoticed. Even those scholars who have identified a Romantic afterlife in early 20th century conceptions of nature typically fail to acknowledge how the literature of these transitional decades between Romanticism and Realism helped make that afterlife possible.

Because the very concept of science was so deeply in flux over the course of the 19th century, it is impossible to give a comprehensive account of the scientific context of the literature examined in this project. Denise Phillips points out that the concept of "natural science" carried out by natural scientists (*Naturwissenschaftler*) was virtually non-existent in

[8] Richards.

[9] Jutta Müller-Tamm, *Kunst als Gipfel der Wissenschaft: ästhetische und wissenschaftliche Weltaneignung bei Carl Gustav Carus,* Berlin, Walter de Gruyter, 1995: 1.

the 18th century; instead, naturalists (*Naturforscher*) pursued the "study of nature." The latter was a much broader concept that was not confined to a single epistemic category but included philosophy, physics, natural history, and aesthetic contemplation.[10] As the "study of nature" was becoming institutionalized in universities as distinct bodies of knowledge in the first half of the 19th century, the natural sciences began to emerge as individual disciplines with more streamlined methodologies. This dissertation project examines a number of instances where literature and aesthetic discourse are involved in the continued negotiation of how the natural sciences should look and what values they should reflect. As Lorraine Daston and Peter Galison have made clear, perspectives on these values shift enormously over the course of the 19th century, as the concept of the involved scientific self seeking the "true ideas" behind nature is replaced by the detached scientific self aspiring to mechanical objectivity in his recording of data and images.[11]

Finally, not only was the concept of science itself changing but ideas of nature were undergoing crucial transformations at this time as well. A great deal of this change can be attributed to science itself—to new discoveries and theories such as deep time and cell theory, for instance. But philosophical and aesthetic models for understanding the human-nature relationship played a critical role in shaping nature discourse, not only in reaction to developments in science but often in productive cooperation with it as well. Richards's monograph and Cunningham and Jardine's compendium of essays show, for instance, how certain ideas propounded by Friedrich Schelling's *Naturphilosophie* were particularly fruitful

[10] Denise Phillips, *Acolytes of Nature: Defining Natural Science in Germany, 1770-1850*, Chicago, U of Chicago P, 2012: 30ff.

[11] Lorraine Daston and Peter Galison, *Objectivity*, New York, Zone Books, 2007.

in aiding scientific discovery.[12] Despite the fact that some of the more problematic tenets of the philosophy have long vanished, Schelling's emphasis on the developmental history of the earth and its creatures, as well as the idea of the unity of all of nature, have had a lasting impact on science, particularly within geology and evolutionary biology. Moreover, due in part to increased interest in the life sciences, the holistic-organic model of understanding nature reflected in Romantic *Naturphilosophie* pervaded nature discourse in the first decades of the 19th century. As Caroline Welsh points out, the notion of *Gemütsstimmung* (mood/attunement) in landscape aesthetics also significantly influenced scientific and popular conceptions of nature, providing an appealing model for understanding the invisible coordination of parts within an organic system.[13] However, in the late 1830s and 1840s, a number of literary works begin to register a sense of stasis and division rather than a dynamic holism, both within nature itself and between humans and their natural environments. In the chapters to follow, I will examine this shift in nature discourse within those literary works and their complex scientific contexts.

Chapter Overview

The aim of the first chapter of this project is to set the stage for the literary analysis presented in Chapters 2, 3, and 4 by introducing a number of thinkers and ideas that shaped the early 19th century scientific-aesthetic discourse that would be so influential for literary conceptions of nature in subsequent decades. Opening with observations about the Romantic scientist and philosopher Lorenz Oken (1779–1851) and his popular journal *Isis*, the chapter

[12] Richards; Andrew Cunningham and Nicholas Jardine, eds., *Romanticism and the Sciences*, Cambridge, Cambridge UP, 1990.

[13] Caroline Welsh, "Nerven-Saiten-Stimmung: Zum Wandel einer Denkfigur zwischen Musik und Wissenschaft 1750-1850," in *Berichte zur Wissenschaftsgeschichte* 31 (2008): 116; 122f.

shows how Oken's writing and his work in general reflect the realities of what many historians of science call the "second scientific revolution." This revolution entailed the emergence of disciplinarity and the separation of natural science from other modes of natural inquiry, such as philosophy and poetry. Scholars often refer to those figures who remained loyal to the notion of unity between different modes of knowledge (i.e., science, philosophy, and poetry) during this time "Romantic scientists." However, because this label is used in scholarship fairly loosely and often without an attempt to define the term, this chapter outlines and elaborates on a handful of common values that appear to constitute Romantic science. It then gives a brief overview of key ideas from influential thinkers such as Schelling, Goethe, Humboldt, and Carus. In reconstructing early 19th century scientific-aesthetic discourse, this chapter enables a productive discussion of the legacy of those discourses as they are negotiated in the literature of subsequent decades.

Chapter 2 focuses on the Westphalian author and nature enthusiast Annette von Droste-Hülshoff (1797–1848), exploring the idea of nature presented in her essay "Westfälische Schilderungen aus einer westfälischen Feder" and her lyric poems "Die Mergelgrube" and "Der Hünenstein." Many scholars have claimed that Droste's view of nature was conflicted and ambivalent because of tensions between her religiosity and her interest in science. This chapter shows that large shifts within science and nature discourse themselves contribute greatly to this sense of ambivalence, and to her attraction to "threshold spaces" in her literary portrayals of nature. The analysis presented here shows how influential the concept of physiognomic reading was, not only as an (admittedly problematic) practice for reading and categorizing human facial features, but also as a practice for reading the "faces" of nature. Determining the physiognomic character of landscapes was a popular

notion in geography and landscape aesthetics, and it also appears in Droste's essay "Westfälische Schilderungen" as a way of understanding the relationship between humans and nature in particular geographic regions.

The second half of the chapter turns to two of Droste's lyric poems. A reading of "Die Mergelgrube" uses the poem's geological and paleontological references to shed light on Droste's fascination with the rock and fossil evidence of the Earth's deep history and the many contradictions within science and nature discourses as this complex history was being untangled. The poem "Der Hünenstein," a poem about a poet's encounter with a megalithic tomb at twilight reflects a lament about the gradual death of the Romantic idea of nature as dynamic and able to affect the human spirit. Both poems suggest an ambivalence toward current scientific practices and toward the way modern trends in science were changing nature itself and thus also the human capacity to be moved by it. Both poems advocate for poetic vision and contemplation alongside scientific inquiry and reflect concern about the strained relationship between humans and their natural environments.

Chapter 3 draws from the observation with which I began this introduction—the imagery of eroded limestone in Adalbert Stifter's *Kalkstein*. The chapter begins with an image of a landscape painting drawn by Stifter (1805–1868) and explores his interest in the possibility of movement and dynamism within inorganic nature as referenced in the painting. Before moving into an analysis of Stifter's prose tale *Kalkstein*, it explores the interdependence between scientific and aesthetic vision as reflected in the landscape paintings and landscape painting theories of Stifter and Carl Gustav Carus (1789–1869). As Stifter's painting journal and Carus's *Neun Briefe über Landschaftsmalerei* show, *Gemütsstimmung* plays an important role in the nature conception of some late and post-

Romantic thinkers who are still trying to capture the dynamism and power of nature within the visual arts. They seek to make movement visible and depict the natural world in such a way that it might move the viewer as an actual landscape would.

The second half of the chapter examines the landscape described in *Kalkstein* and recognizes various ways in which Romantic conceptions of science and nature (embodied in the priest figure) collide and come into productive contact with objective-empirical conceptions of science and nature (embodied in the surveyor figure). As with Droste's poetry, Stifter's prose highlights a desire for reconciliation between conflicting modes of knowledge, and it often identifies older, Romantic values as a corrective to the newer technology-mediated and data-driven approach to science. Despite Stifter's sober, realistic tone, the story is richly allegorical and emphasizes unity and codependence—between humans and nature, the organic and inorganic realms, and old and new ways of knowing nature.

Chapter 4 is the final chapter, and it examines the scientific and literary work of probably the most obvious intermediary figure in this context: Georg Büchner (1813–1837). Because Büchner's own voice is so difficult to extract from the voices of his literary characters (and sometimes even his scientific writing), the analysis here focuses on drawing out and examining some of the key contradictions that his literary and scientific works bring to light. A brief look at Büchner's dissertation, *Mémoire sur le Système Nerveux du Barbeaux* shows how his work as a comparative anatomist in the 1830s combines detail-oriented empirical study with the Romantically inflected genetic-morphological approach, as Oken and Goethe often had done in their work.

The chapter then moves to a reading of the prose piece *Lenz* and examines the protagonist Lenz's schizophrenic behavior, which appears to hinge on a kind of schizophrenia toward nature that is also present in the drama *Woyzeck*. The reading explores ways in which this pathology towards nature also resonates with other instances of schisms in Büchner's writing, specifically as he explores the implications of different scientific selves (i.e., in his dissertation and in *Woyzeck*) and different poetic selves (i.e., in the "Kunstgespräch" in *Lenz*). The final section of this chapter returns to Büchner's scientific writing by presenting a reading of his trial lecture "Über Schädelnerven." This lecture praises the genetic-morphological method of scientific inquiry and explains how it can be used to hypothesize the origin of cranial nerves by tracing their development back to the spinal marrow. Though his tone in this lecture (essentially a "job talk") reflects confidence in this scientific approach and its productive potential, the radical doubt surrounding scientific discourse in his literature lingers and thus challenges the reliability of Büchner's stated position in this scientific text.

The writing of these various literary and scientific thinkers reflects a strong central theme: that the threat of irreconcilable tensions in science and nature discourse is felt acutely in the first half of the 19th century, but all the more so in the 1830s and 1840s as important Romantic values were reaching the brink of extinction. Both the specific problems of this great shift and its potential solutions are incorporated into the literary worlds of this era. The result is a rich conversation about the confluence of science, nature, and aesthetics that deserves a legacy of its own.

CHAPTER ONE

Lorenz Oken's *Isis*: Defending Romantic Values at the Dawn of Disciplinarity

When Lorenz Oken (1779-1851) founded the journal *Isis: oder Encyclopädische Zeitung* in 1816, he was already beginning to receive significant acclaim in and around German-speaking Europe for his important contributions to science. His prolific, inspiring work in biology and comparative anatomy was praised by a number of budding scientific figures of the 19th century. One such figure was the Baltic German embryologist Karl Ernst von Baer, who later cited Oken as a key influence for his own work. In 1828, von Baer described Oken's developmental perspective on biology as an important turning point that had made it possible for von Baer himself to make his famous discovery of the mammalian ovum in 1827. He wrote that many of Oken's writings "haben […] die Erkenntniss der Entwickelungsgeschichte dadurch unendlich gefördert dass sie die Naturforscher zu einem deutlichern Bewusstseyn brachten."[14] As Robert Richards has pointed out in his seminal work *The Romantic Conception of Nature: Science and Philosophy in the Age of Goethe*, von Baer disapproved of the more blatantly speculative aspects of Oken's writing—for instance,

[14] Karl Ernst von Baer, *Über entwickelungsgeschichte der Thiere* (2 vols.), vol. 1, Königsberg, Bornträger, 1828-1837: xvii-xviii. Accessed on 12-20-2014: https://books.google.com/books?id=ev7OAAAAMAAJ&pg=PP1#v=onepage&q&f=false

Note: The term *Entwicklung* at this time was broader in scope than the notion of evolution and was used to refer to both ontgeny (the origination and development of an individual organism) and phylogeny (the origination and development of a species).

his ideas on recapitulation.[15] However, the new historical-developmental view of nature advocated by Oken and other proponents of *Naturphilosophie* nonetheless struck a chord with von Baer, as it did with many others in the scientific community. This chord would continue to resonate throughout German culture long after the demise of *Naturphilosophie* around mid-century. In *Das Ende der Naturgeschichte*, Wolf Lepenies explains how the new historical-developmental view of nature had a crucial impact on the range of scientific discovery possible in the 19th century.[16] For decades, Romantic philosophers like Friedrich Schelling articulated and rearticulated the notion that science should seek to uncover the often invisible deep history of the earth and trace the development of all of its living and non-living forms; however, it was scientists like Oken, Johann Wolfgang von Goethe, and Carl Gustav Carus who integrated this new kind of vision into the actual day-to-day scientific practice.

Oken's prolific scientific publications but also the very founding of his journal project *Isis* stand as testaments to the complex scientific *Zeitgeist* of the first half of the 19th century in Germany—the historical context that serves as the backbone of this dissertation. Oken's long legacy speaks to the lasting relevance of his scientific and political vision for German society, which for him were deeply intertwined. This was a period of scientific discovery that brought momentous changes in the way that humans viewed nature and their own place within the realm of nature. From the discovery and mainstream acceptance of geological "deep time" to modern cell theory and embryology, to morphological theories that paved the way for theories of evolution, early 19th century science was rapidly reconstructing the

[15] Richards 494.

[16] Wolf Lepenies, *Das Ende der Naturgeschichte: Wandel kultureller Selbstverständlichkeiten in den Wissenschaften des 18. und 19. Jahrhunderts*, Frankfurt, Suhrkamp, 1978.

worldviews of the Western hemisphere. It was, however, by no means a monolithic movement without tensions and conflict. The frequent dissonance between old and new values and ideologies was inevitable, and it posed conspicuous challenges that were frequently explored in both the literary and scientific writing of this era. Chapters two, three, and four will focus primarily on literary responses to some of these tensions, particularly as they relate to the relationship between science and aesthetics. The present chapter, on the other hand, will begin with a section exploring one way that the public—literary authors included—might have been exposed to debates about scientific and aesthetic discourse in the first place: through science-oriented periodicals. Although Lorenz Oken is perhaps the least poetically inclined figure covered in this project, his influence on many important figures who bridged the science-art divide was far-reaching. Moreover, his journal *Isis* sheds light on specific tensions within scientific discourse during this era and showcases some of the reasons why this was such a complex and transitional period for the relationship between science and aesthetics.

The *Isis: oder Encyclopädische Zeitung*

In 1816, during his tenure as professor of anatomy at Jena (1807-1819), Oken founded the biweekly journal *Isis: oder Encyclopädische Zeitung* and established himself as its editor. The reputation of the *Isis* was tenuous in the early years due to the radical tone of some of the essays it published in the wake of the Napoleonic Wars, and Oken was dismissed from his post in Jena in 1819 as a result. However, in spite of—or, rather, perhaps because of—state efforts to censor the publication in Jena, both Oken himself and the *Isis* remained popular throughout the German speaking lands.

While the *Isis* was less geared toward the enlightenment of the general public than Oken's 13-volume *Allgemeine Naturgeschichte für alle Stände* (1833-1841), he nonetheless intended to use the journal to promote a broader dissemination of knowledge, especially among the educated classes. In the inaugural issue of the *Isis*, Oken states that the *Isis* will serve to collect and present valuable information in a variety of forms, particularly in the areas of natural science and travel, but also in history, technology, art, and poetry. Ultimately, the journal, he says, is meant to present a forum in which

> nach und nach eine Einsicht in das große Räderwerk der Natur hervorgehen kann. Wir hoffen hirinn [sic] dem wissenschaftlichen Mann wissenschaftlich brauchbare Gegenstände an die Hand zu geben, so daß er sich in unserem Blatt über alle Entdeckungen, treuen, glaubwürdigen Raths erholen kann, während wir die Darstellung so einzurichten trachten, daß jeder Gebildete daran freundlichen Antheil nehmen mag.[17]

Moreover, while one of the journal's clear goals is to promote broader collaboration and sharing of information in the natural sciences, Oken emphasizes the importance of poetic reflection as a necessary complement to the journal's scientific pursuits:

> Die Kunst […] steh[t] bei uns in geziemender Verehrung. Jeder Gebildete ist ihr hold. Sie erfreut das Leben, erhebt das Gemüth, löst die geheimsten Räthsel der Philosophie auf Sinnliche, fast greifbare Weise, und ist ein heiliges Mittelglied zwischen Leben und Wissen, zwischen Genießen und Glauben, zwischen Welt und Gott.[18]

Like many of the great polymaths of his era—such as Humboldt, Goethe, and Carus—Oken insists upon the interdependence between aesthetic and scientific sensibilities when investigating the natural world. The *Isis* is thus often perceived and even referred to in scholarship as one of the first truly "interdisciplinary" periodicals in the German tradition.

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[17] Lorenz Oken, ed., *Isis: oder encyclopädische Zeitung*, vol 1.1.1 (1817): 5. http://zs.thulb.uni-jena.de/. Accessed 12/20/2014. See also: Denise Phillips, *Acolytes of Nature: Defining Natural Science in Germany, 1770-1850*, Chicago, U of Chicago P, 2012: 129.

[18] Ibid. 6.

Indeed, contributions included "long articles from every possible field of natural science, philosophy, philology, and politics; short reports of discoveries; designs for new engines and machines, […] poems; long literary reviews; farm reports, brief notices of successful surgical operations; and innumerable reviews of books from every field."[19] The breadth of the journal's content was unprecedented.

However, the label of "interdisciplinarity" is, in reality, a misnomer for the journal, since disciplinarity itself is a modern phenomenon that was only just beginning to take shape during the first few decades of the 19th century. In spite of programmatic efforts on the part of Friedrich Schelling and other Romantic *Naturphilosophen* to maintain a harmonic synthesis of all modes of knowledge,[20] the institutionalization of knowledge at a growing number of universities throughout Europe led to an increasingly strict differentiation between academic fields and their corresponding modes of inquiry. This meant that the natural sciences themselves were increasingly defined against one another (i.e., the earth sciences versus the life sciences) and that they often fell into competition with one another for resources and precedence. Andrew Cunningham and Nicholas Jardine refer to this phenomenon as the "second revolution" in the history of science—namely, the period around 1800 during which the constellation of disciplines that we call "science" was formed.[21] Over the past few decades, historians of science have lent increasing scholarly attention to the

[19] Helmut Müller-Sievers, "Skullduggery: Goethe and Oken, Natural Philosophy and Freedom of the Press," *Modern Language Quarterly* 59.2 (June 1998): 253.

[20] For further elaboration Schelling's *Wissensystem*, see S. R. Morgan, "Schelling and the Origins of his *Naturphilosophie*," *Romanticism and the Sciences*, Andrew Cunningham and Nicholas Jardine, eds., Cambridge, Cambridge UP, 1990: 41. Schelling's work set out "a system based on the relation of the self's modes of self-perception regarded and formulated as formal bodies of knowledge, as disciplines."

[21] Andrew Cunningham and Nicholas Jardine, eds., *Romanticism and the Sciences*, Cambridge, Cambridge UP, 1990: 1.

significance of this second revolution. However, what is more important for this project is perhaps the fact that the *arts* and the sciences were also becoming wedged apart in a way that would have been unimaginable before 1800. In her monograph *Kunst als Gipfel der Wissenschaft*, Jutta Müller-Tamm observes:

> Während die Wissenschaft durch instrumentenvermittelte Beobachtung, experimentelle Verfahrensweisen und theoretische Konstruktion nach objektiver Naturerkenntnis strebt, wird die Kunst als eigengesetzlich begriffen und aus ihrer religiösen, gesellschaftlichen und beschreibend-didaktischen Funktionsbindung entlassen. Mit der Spaltung von exaktem Wissen und lebensweltlicher Erfahrung, von Rationalität und freiem Schöpfertum, von objektiver Naturerkenntnis und ganzheitlichem Naturerleben treten Wissenschaft und Kunst als autonome Sphären auseinander.[22]

Science-oriented poets like Goethe, and aesthetics-minded scientists like Humboldt, Carus, and Oken still belonged to older generations that took the intermingling of art and science for granted. However, the emergence of new trends and values in the sciences—such as objective empiricism and analytical-experimental methods—were leading more and more to the exclusion of aesthetic contemplation and its "ganzheitliches Naturerleben" from the domain of the natural sciences.

In some ways, the fact that Oken felt the need to establish a journal project like the *Isis* thus highlights his own concern about the modern trend toward disciplinarity and the restrictive discursive norms that were beginning to govern the distinct academic disciplines forming at this time. A few years prior to his decision to establish the journal *Isis*, Oken had submitted a paper to Wilhelm von Humboldt titled "Über den Werth der Naturgeschichte besonders für die Bildung der Deutschen."[23] The paper was intended as a speech for the 1810

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[22] Jutta Müller-Tamm, *Kunst als Gipfel der Wissenschaft: Ästhetische und wissenschaftliche Weltaneignung bei Carl Gustav Carus*, Berlin, Walter de Gruyter, 1995: 1.

[23]Lorenz Oken, *Über den Werth der Naturgeschichte besonders für die Bildung der Deutschen*, Jena, Frommann, 1809. Accessed on 12-22-2014:

inaugural ceremony of the University of Berlin, and while Oken never delivered it, it nonetheless captures his perspective on disciplinarity—particularly within the natural sciences, which he refers to here collectively as "natural history." He asks,

> Kann wohl etwas die Flucht alles wahrhaft gelehrten Sinnes, alles wissenschaftlichen Geistes mehr beurkunden, als das Unterfangen, einzelne Bruchstücke aus der Naturgeschichte herauszureissen, und sie als eine selbstständige Wissenschaft zu behandeln! […] Mit diesem Vereinzeln der Naturgeschichte geht aller wissenschaftliche Zusammenhang und der Sinn dafür verloren, und nur Wucher und Habsucht missbraucht die einzelnen, lockern Kenntnisse.[24]

Very much in the spirit of Humboldt's *Menschenbildung*,[25] Oken elaborates in this essay on the importance of universal education for shaping ideal citizens, regardless of their profession—as scholars, tradesmen, physicians, theologians, jurists, philologists, metaphysicians, or whatever else their vocation may be. Integral to this educational process is the notion of the human as a *creative* being who is intimately familiar with and connected to the created, creative world around him: "[J]eder soll Schöpfer in seinem Fache sein, jeder soll den Schatz aller Menschenbildung in sich tragen […] Es ist jedem Menschen die Naturkenntniss ein Bedürfniss."[26] For Oken, a broad education in the sciences is crucial for all professions, in the higher and lower social classes, and an aesthetic education also plays a role in helping one acquire "klare Erkenntniss seines eignen Wesens als Mensch und der Mitmenschen, des Wesens der Thiere, Pflanzen und Erden, und ihres Verhältnisses unter sich und gegen den Menschen und die gesammte geistige Welt, überhaupt Bildung zur ernsten

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http://ia902604.us.archive.org/4/items/ueberdenwerthder00oken/ueberdenwerthder00oken.pdf

[24] Ibid. 4f.

[25] Cunningham and Jardine 41.

[26] *Über den Werth* 7.

Humanist."[27] For him, this global approach to education was therefore also deeply rooted in politics: he understood it as a critical step toward fostering a German society capable of competing internationally. In the closing paragraph of this essay, he states: "Diese Wissenschaften […] dürfen nicht allein bleiben; der Kopf, die Seele, die ihnen allen fehlt, muss hinzukommen, […] wenn ein Mittelpunct der Bildung entstehen soll, durch den das Verständniss aller Stände vermittelt wird."[28] Maintaining a unification of the sciences—and a holistic, interdependent relationship between science and the arts—was the key to building up a unified German society.

Beyond this essay, which was composed in 1809, the opening issue of *Isis* cited above also clearly articulates Oken's desire to maintain a sense of radical inclusiveness among different modes of knowledge. The journal pledged that it would exclude "keine Betrachtung, welche bleibenden, befördernden Werth hat."[29] In fact, Helmut Müller-Sievers argues that Oken's editorial policy in the *Isis* was so radically open to public contribution that it was even too extreme for Goethe, insulting his "sphere of poetic science" by neglecting the value of individual authorship in favor of a public forum in the name of democracy. Still, the journal is, in other ways, just as conservative as it is radical, particularly when we consider its relationship to the idea of censorship. Oken certainly loathes political censorship, and this is why he allows the *Isis* to reach the level of controversy it does in 1819. However, what he also seems to be combating with this "radical openness" is another, more subtle, kind of censorship related to the state's institutionalization of science: namely, excessively strict discursive boundaries. By allowing a plethora of subjects to comingle in the

[27] Ibid 11.

[28] Ibid 16.

[29] *Isis* vol 1.1.1: 1.

same space with little or no editorial intervention, Oken is doing more than exhibiting the early Romantic "confusion of voices" or striving for *Universalpoesie*. He is provoking—and thus also drawing attention to—a kind of discursive censorship that reserves scientific writing for a narrow group of specialized experts. However irritating or radical it may have appeared to Goethe, Oken's journal *Isis* was at least in part reactionary because it adamantly resisted the modern trend toward specialized, discipline-specific writing. It renounced restrictive rules for what could and could not be said and for what counted as science—as *Wissenschaft*. This strategy was apparently successful, as the journal had a relatively large readership and would continue to be published until 1848.

Oken's position of openness is not surprising, considering his own approach to the practice of science, which was becoming less acceptable as the 19th century wore on and stricter methodological standards were introduced into German scientific communities. Grounded in Schelling's *Naturphilosophie*, Oken's scientific philosophy embraced the Romantic notion that scientific inquiry into nature should aim to restore the lost harmony between humans and their natural environments. However, in contrast with the prevailing models of Enlightenment-era science, such as mechanistic natural philosophy and descriptive natural history, *Naturphilosophie* especially espoused what Cunningham and Jardine have called "aesthetic modes of contemplation of nature" and "poetic modes of research into nature."[30] Particularly appealing for Oken was the way that *Naturphilosophie* conceptualized objects in nature as dynamic forms—as creative, generative, and historical rather than merely static, fixed, and subject to permanent categorization. Practicing scientists like Oken and the Danish thinker Henrik Steffens did use *Naturphilosophie* to try to overcome static

[30] Cunningham and Jardine 3.

conceptions of nature and the overly analytical methodologies of their predecessors. But, as Cunningham and Jardine point out, "the dynamic and synthetic histories of the development of nature which [Oken and Steffens] set out, are proposed as complements to and complements of—not as replacements for—descriptive natural histories [and mechanical philosophies]."[31] While some proponents of *Naturphilosophie*—including Schelling himself—often focused more on formulating an approach to scientific inquiry than actually carrying it out, Oken and Steffens were constantly trying to reconcile speculative aspects of *Naturphilosophie* with their own rigorous empirical observations. Perhaps it is due to the fact that Oken was intent on proving these philosophies and methods to be complementary rather than contradictory that he was able to thrive for many years in the European scientific community despite criticism of his more speculative assumptions. It also explains how he could have been so influential for a scientist with a very different scientific outlook—such as von Baer—despite Oken's own reputation as a "Romantic scientist."

Romantic Science and its Values

In the introduction, I acknowledged the challenges of using the labels "Romantic scientist" and "Romantic science," which appear frequently in scholarship and will also appear frequently throughout this dissertation. The intersection between Romantic metaphysics and Romantic scientific practices can be quite difficult to pin down, largely because history of science research over the past two centuries has recognized such a diverse spectrum of 19th century speculative thinkers as "Romantic scientists." There are, however, some core values that are fairly consistent within this context, and they reflect a confrontation with the more troubling aspects of the prevailing scientific philosophies and

[31] Ibid 4.

practices of this era, whether traditional or newly emerging. As I have elaborated above, Lorenz Oken was one of the most famous and influential but also one of the most controversial figures working within this milieu. A brief look at his journal *Isis* has given us some initial insight into the discursive boundaries he resisted, as well as the political implications he understood to be closely intertwined with producing and sharing scientific knowledge. Ironically, despite his sometimes divisive editorial decisions, one of Oken's most consistent messages—both politically and in his philosophy of science—was that of unity and reconciliation. For him, the possibility of a strong German political union was utterly dependent upon a superior educational infrastructure, and the educational ideal that he espoused trumpeted the merits of a broad humanistic education. One could only lift up a weak and divided Germany with well-rounded citizens, and this was only possible if education aimed to train all of the human faculties in tandem with one another.[32] Oken's articulation of this idea echoes Schelling's description of the various academic disciplines as interrelated parts of one organic, harmonious whole in his *Vorlesungen über die Methode des akademischen Studiums*.[33]

But the common theme of unity also extends further, and it is one of the values that ensures the longevity of the Romantic tradition's influence within German science, despite Romantic science's apparent defeat by proponents of objective empiricism. The idea of a necessary, underlying unity—between subject and object, and between humans and nature—pervades all of *Naturphilosophie* and thus also underpins Oken's view of nature. As noted

[32] Pierce C. Mullen, "The Romantic as Scientist: Lorenz Oken," *Studies in Romanticism* 16 (1977): 396.

[33] F. W. J. Schelling, "Vorlesungen über die Methode des akademischen Studiums," *Die Idee der deutschen Universität: die fünf Grundschriften aus der Zeit ihrer Neubegründung durch klassischen Idealismus und romantischen Realismus*, ed. Ernst Anrich, Darmstadt, Wissenschaftliche Buchgesellschaft, 1964.

above, most Romantic scientists do not understand empirical study to be a practice that is inconsistent with their own philosophical framework. On the contrary: taking Schelling's lead, they tend to subscribe to the idea that nature contains within itself a history of the path to consciousness that *must* be explored and uncovered through empirical scientific inquiry, and that their empirical findings about the natural world will necessarily reflect the metaphysics worked out in Schelling's *Naturphilosophie* because nature and the reflective mind are two sides of the same coin. The basic cosmology that grounds this perspective appropriates several elements of Biblical creation mythology, including the idea of an original "Fall" or rift. S. R. Morgan describes this old story of the Fall now cast in the new philosophical language as a "separation of the spirit [consciousness] from its own product [nature], and thus the creation of subject and object."[34] The notion of a subject-object division also reinforces the Romantics' skepticism toward mechanistic and descriptive approaches to science at the metaphorical level, as if the rift itself could be understood as the culmination of the disjunctive operations of analysis and categorization.

There are many iterations of this postlapsarian rift in the Romantic idealist philosophical tradition, including the notion that humans and nature have become estranged from one another and can only be reunited through a special kind of poetic-scientific interaction.[35] This brand of mythology was, perhaps unsurprisingly, also remarkably compatible with some of the prevailing scientific pursuits of the day. With increased public acceptance of geological "deep time"—the notion that the earth's history extended far

[34] Morgan 31.

[35] Pierre Hadot explores the history of this Neoplatonic configuration of nature in his monograph: Pierre Hadot, *The Veil of Isis: An Essay on the History of the Idea of Nature*, Trans. Michael Chase, Cambridge, MA, Belknap Press of Harvard UP, 2006. In this context, "Isis" represents the mysterious, estranged nature that humans will eternally seek to uncover and know. Oken's journal title *Isis* is a clear allusion to this mythological narrative of the human-nature relationship.

beyond the 6,000 years supposedly accounted for in the Bible—there emerged a new fascination with the history of the physical earth and the fossils buried within it that represented often mysterious life forms from long ago. A broadening public interest in collecting rocks, fossils, and other natural specimens from the late 18th century on only served to fuel the Romantic historical-developmental conception of nature and to encourage further reflection about the literal, rather than merely metaphysical, possibility of common origins among nature's diverse forms.

The study of morphology, for instance—a discipline in which not only Oken but also Goethe was heavily invested—drew in many ways from the philosophical framework outlined above while also relying on empirical study. By examining physiological and anatomical features found in nature (both recent and fossilized), morphologists hoped to use educated intuition to uncover the original "types" or "ideas" underlying nature's various forms. Within this Neoplatonic framework, the now-defunct discipline also worked to bring a sense of unity to different specimens by theorizing common points of origin and common courses of development that eventually diverged from one another to result in the variety and complexity now found in nature. The morphological approach is thus also often referred to as the "genetic method" because it attempts, through intuition, to trace the history of these natural forms—whether at the ontogenetic or phylogenetic level—back to the moment of genesis or least complexity. The historical, dynamic understanding of nature that morphology requires thus also aligns well with the creation mythology and anthropological assumptions of *Naturphilosophie* because one could, theoretically, use it to uncover past moments in the history of nature in which humans were more closely related to other species.

Morphology would eventually prove to be problematic as a science because it required a great degree of subjective interpretation via analogical and intuitive leaps. However, as Denise Phillips points out, *Naturphilosophen* firmly believed that the use of metaphor and analogy could "gesture toward fundamental, ideal connections that could not be represented directly."[36] Nonetheless, as noted previously, even the more intuition-driven work of Oken and Goethe always began with careful empirical study. The idealist notion that the diversity of natural forms on Earth were generated by one guiding "spirit" (*Geist*) or "idea" (*Idee*) simply reinforced their trust in analogy. Because the value of underlying unity was a given for the *Naturphilosophen*, the binary oppositions that science would increasingly superimpose upon nature—such as human/non-human, subject/object, organic/inorganic, and even living/non-living—were therefore often found to be problematic and worthy of resistance. For the *Naturphilosophen*, everything in nature simply presented a different manifestation of the same spirit or idea. Nature as a whole was to be seen as one large *living* organism whose many different parts were held together and coordinated by a common inner force.

This insistence on unity, reconciliation, and organic harmony is just one set of values that Romantically inclined scientists generally sought to uphold. These values served largely as a counterbalance to many disjunctive paradigms for understanding the natural world (i.e., via mechanistic or analytical models) and human knowledge and education (i.e., via stricter disciplinarity). Another way to think about this resistance to division and separation is through the important concept of "synthesis." That is, even when Romantic approaches to scientific inquiry involved the analysis and categorization of individual components of a

[36] Phillips 160.

system outside of their context, it was always necessary to revisit the context of the whole after collecting individual observations. By relating insights about the individual parts back to the operation of the entire corpus, one could better understand the significance of individual functions (i.e., of organs, bones, etc.) as well as the overall function of the whole. The synthetic perspective was also influential for the Romantics' early ecological thinking, insofar as it required that individual forms or phenomena in nature be examined not only in isolation but also in their greater environmental context. This general approach thus required the scientific observer to examine features of the part and the whole simultaneously. Especially Humboldt and Carus emphasize this latter step of synthetic, macro-level vision when understanding natural landscapes, for instance. For them, the operation of synthesis required an aesthetically trained eye and a certain degree of subjective imagination in addition to close-range empirical observation skills.

Closely related to the privileging of unity and synthesis is the way that this era of scientists valued the role of subjective participation as a particularly important element of responsible and adequate scientific inquiry. This epistemological value is reflected in the practice of morphology, for instance, in which the observing scientist compares multiple specimens in an attempt to "intuit" the common archetype from which they are all derived. Lorraine Daston and Peter Galison point out that it was common in the early 19th to value the practice of intuiting "perfect" or "true" forms in nature, particularly if one was trying to create representations of nature for teaching purposes, as scientific atlas makers often did: "Not only the [scientific] atlas makers themselves but also their artists were supposed to be familiar with a broad range of exemplars, so that each image would be the distillation of not

one but many individuals carefully observed—Goethe's idea *in* the observation."[37] Because this idea of subjective or imaginative intuition (*Anschauung*) cannot be disentangled from the Goethean approach to poetics and science—at least in the German tradition—I will explore it in more depth in the section in this chapter on Goethe and in chapter 3. In general, however, many important scientific thinkers of this era firmly believed in a necessary codependence between science and aesthetics; this perspective is also reflected in the critical attitude toward discourse differentiation and disciplinarity that we witness, for instance, in Oken's tone. If the scientific and aesthetic realms were no longer permitted to overlap, then empirical and poetic-subjective modes of observation would also eventually stand to become disentangled from one another. But precisely the combination of these two modes of vision is what constituted the unique, synthesizing approach to science that served the Romantics so well. We will see in later chapters that many literary authors and artists in the later decades try to hold onto the idea that empirical and aesthetic vision are compatible, even after the scientific community at large has rejected this notion. As will be discussed throughout this project, the discrepancy stems largely from a shift in the interpretation of empiricism toward *objective* empiricism, by which scientists attempted to remove all subjective influence from scientific observation.

The final characteristic that defines this transitional era of science and aesthetics is, perhaps unsurprisingly, the tendency to theorize models that allow scientific and aesthetic perception to comingle and profit from one another. A very prominent example of this can be found in the early 19th century concept of *Stimmung* (roughly translated as "attunement"), which is elaborated in the work of many important thinkers from this era who traverse the

[37] Lorraine Daston and Peter Galison, *Objectivity*, New York, Zone Books, 2007: 79.

art-science boundary. Although the term *Stimmung* was not always explicitly cited, a number of writers paraphrase the concept in their own cosmologies and aesthetic-scientific programs. It appears frequently in the context of landscape painting theories, such as that of Carl Gustav Carus, who emphasized the necessity of both scientific accuracy and the aesthetic *Totaleindruck* for success in landscape painting. Drawing on the notion of a special capacity for "attunement" between humans and nature, *Stimmung* provided not only an appealing ontological model for human-nature relations but also a model of scientific-aesthetic contemplation that reinforced the authority of the Goethean and Humboldtian approaches to science. In large part, it did so by emphasizing the importance of acquiring knowledge about nature through human sensitivity to and participation in nature's processes, rather than objective distance. It is thus important to recognize the role of *Stimmung*-oriented landscape discourse within scientific discourses of this era. The connection between *Stimmung* and science will be discussed further in the section in this chapter on Carus, but also in each of the subsequent chapters, all of which identify the lingering presence of *Stimmung* discourse in German literary depictions of nature in the 1830s and 1840s.

Within the German context, then, it is clear that aesthetic-intuitive attention to nature was seen as an important complement—perhaps even a corrective—to empirical attention, and that it provided a unique opportunity to grasp the complex dynamics of a particular natural environment. For many scientific thinkers of this period, divorcing aesthetic "big picture" contemplation from the realm of science also meant that science could no longer appropriately understand or represent something like an ecosystem with many interrelated parts. Perhaps worse, the epistemic value of objectivity—and likewise, the human distance it entailed—tended to lead to the misperception that humans are above or in control of nature.

As we will see in the literary works explored later in this project, this proves to be a particularly short-sighted and naïve assumption, because, as authors like Droste, Stifter, and Büchner well knew, nature is by no means static or without a power and agency of its own.

Scientific-Aesthetic Discourse around 1800

The key themes outlined above show that "Romantic science" often displayed a tendency to resist other trends, values, and epistemic virtues—whether these were remnants of older traditions or components of newer movements. As suggested before, this resistance was often directed toward models that were divisive in one way or another: whether those models opposed the fragmentation of knowledge (disciplinarity), the separation of art and science, or the strict division of nature into separate categories, such as human/non-human, organic/inorganic, living/non-living and so forth. Ever the proponents of global, holistic models of understanding, Romantic scientists were especially drawn to the life sciences because a living organism itself is an intricately connected system that has many individual parts but must also be grasped as a whole. The various branches of the life sciences necessitated models of understanding that could address and represent, to the extent possible, the dynamic qualities and developmental processes of living organisms. Cell theory, for instance, also reinforced the concept of unity so central to the Romantic imagination: "it provided the common source—the 'Urtypus'—of all life, the point of unity in diversity, which Romanticism supposed and demanded."[38] At the same time, one must also remember that the life sciences, quite simply, represented extraordinarily popular areas of study in the first decades of the 19th century. This era witnessed the coining of biology and its birth as a

[38] L.S. Jacyna, "Romantic thought and the origins of cell theory," *Romanticism and the Sciences*, Andrew Cunningham and Nicholas Jardine, eds., Cambridge, Cambridge UP, 1990: 167.

discipline (1800), the discovery of the mammalian ovum (1827), the formulation of modern cell theory (1838-39), and more generally, a massive surge in interest in subjects like anatomy, physiology, evolutionary and developmental biology (i.e., morphology and embryology), and even neurology.[39] Perhaps what is even more fascinating, then, is the way that scientists versed in *Naturphilosophie* tended to project biological models of understanding onto other, non-animal forms in nature, such as plants and geological formations. Due in large part to the monistic holism of *Naturphilosophie*, the definition of "life" was thus often extended to all of nature through the logic and language of analogy.

While most contemporary scholars who write about Romantic scientists focus on their biological research and corresponding influence in areas like evolutionary theory, this project seeks to show how a selection of influential early 19th century thinkers left behind a broader, and equally important, legacy of Romantic science: namely, a tendency to challenge the very assumptions and parameters of scientific inquiry and to uphold their own values within it a rapidly changing cultural environment. They knew, for instance, that altering or restricting the definition of "legitimate" natural inquiry also meant altering or restricting the human perception of nature itself, for better or for worse. And despite their keen interest in biology, they also knew that elevating humans and other organic forms above the rest of nature risked destroying the holistic, ecological conception of nature that underpinned their worldview. Finally, they recognized the interdependence of the natural sciences and other ways of knowing and promoted a careful balance between them.

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[39] See: Jacyna 161; Shirley A. Roe, "The Life Sciences," *The Cambridge History of Science: Volume 4, Eighteenth-Century Science*, ed. Roy Porter, Cambridge, Cambridge University Press, 2003: 416; and Lynn K. Nyhart, *Biology Takes Form: Animal Morphology and the German Universities, 1800-1900*, Chicago, U of Chicago P, 1995: 1, 95.

Especially in the early decades of the 19th century, there were a number of scientifically inclined thinkers who traversed the border of science and aesthetics—a border that was much more permeable around 1800 than it was by even 1830 or 1840. Their work and legacies bound the realms of science and aesthetics together in a way that made the two difficult to ever disentangle completely. Indeed, the fact that the relationship between science and aesthetics was so intensive and enthusiastically represented around 1800, just as disciplinarity was emerging, makes for a situation that is somewhat unique to the German tradition. The conceptions of and epistemologies of nature advanced by these influential "border-crossers" left their marks on science; equally important, however, is the fact that their models of natural inquiry were adopted in literature and landscape painting. The interchange between science and aesthetics during this era was so rich that literature often, by default, ended up preserving the Romantic values that science would soon cast aside as illegitimate, in the name of objectivity, materialism, positivism, or some other watchword of the day. Idealistic conceptions of nature, poetic epistemologies, and the possibility of reconciliation between humans and nature and different modes of natural inquiry are thus concerns that preoccupy German literature through the end of the 19th century and beyond.

Beyond Lorenz Oken, the figures whose work was the most impactful in this context include Friedrich Schelling, Johann Wolfgang von Goethe, Alexander von Humboldt, and Carl Gustav Carus. Their works that have a very specific influence on the literature discussed in this project will be introduced in the corresponding chapters. However, I will first take a moment here to introduce these figures' broader influence on science, aesthetics, and culture in general in the early 19th century German cultural context.

Friedrich Wilhelm Joseph Schelling (1775–1854)

Unlike the other major thinkers elaborated here, Friedrich Schelling was not a practitioner of scientific study, nor did he produce much in the way of poetry and art. Nonetheless, his *Naturphilosophie* had an unrivaled impact on the sciences and the arts in the early 19th century. According to Richards, this magnetic "philosopher king" of the Jena Romantics "reworked Kant's aesthetic doctrine so that artistic genius and scientific genius would become a Janus-like individual, with one heart animating the two approaches to nature."[40] On the one hand, Schelling was troubled by the mechanistic-deterministic worldview that was so dominant earlier in the 18th century because it grounded knowledge in a dead, fixed object world (categorizable by the Linnean natural historical model); with its reduction of human life to mechanical clockwork, this model also ultimately excluded the possibility of human free will. On the other hand, Schelling considered Kantian dualism—a subject-object dichotomy whereby the capacities of freedom and agency were attributed to human subjects alone—a problematic categorization for the non-human "object" world because it left nature without subject status or a creative capacity. Schelling's solution was to extend the notion of human subjectivity to the rest of nature. He did so by proposing an organic metaphysical system whereby human consciousness was generated from nature itself through a self-objectifying impulse; in turn, all of nature's forms were generated from this same path to consciousness. According to Schelling's paradigm, both man and nature had subject as well as object status: that is, both could be the originators of action but were also subject to the laws of mechanics and could be acted upon by external forces. Humans and nature, in other words, had the same origins and were two sides of the same coin. Each

[40] Richards 114.

played the role of both producer and product—in contrast to earlier and now re-emerging paradigms, in which the human (subject) world and the natural (object) world were distinctly isolated from one another. Most importantly for Schelling, because human consciousness was generated from nature itself, one could begin to unlock the structures and processes of human consciousness through the close, empirical study of the structures and processes of nature.

There were two significant consequences of Schelling's *Naturphilosophie* for both aesthetic and scientific representations of nature during the Romantic era and beyond. First, not only the human world but also the nonhuman world was now cast into a temporal model of generation and fluctuation rather than a static model of order. Because the keystone of Schelling's philosophy was the emergence of the human consciousness from nature, the natural world was increasingly viewed as a site into which human history and the earth's history were recorded, or written, together. Secondly, the non-human world, now conceived as actively generative rather than a finished work of God's creation—*natura naturans* rather than *nature naturata*—was imbued with vibrancy and creativity.

As indicated previously, despite his primary preoccupation with the metaphysical side of these questions, Schelling's characterization of humans and nature as productive and creative was profoundly influential for the sciences. His (and other Romantics') conception of the origin of consciousness as an organically occurring process had a particularly strong bearing on the emerging field of biology, as Richards points out. For Richards, the influence of Romantic thought on developments in the early 19th century life sciences are crucially underplayed and overlooked in scholarship. He maintains that advancements in biology, for one, proceeded in the direction that they did largely due to the far-reaching influence of the

organic model of development that underpinned Romantic philosophy. In particular, Schelling's emphasis on a historical reading of nature reinforced the morphological approach that would be so crucial to the scientific work of Goethe, Oken, and Büchner and also encourage aesthetic representations of nature as moving and dynamic. Because it presented humans and nature as products of the same organizing principle, Schelling's *Naturphilosophie* also reinforced the idea of a fundamental unity between humans and nature. It likewise lent new energy to the ancient notion that the same patterns reproduce themselves throughout different levels of the cosmos, resulting in parallels between macrocosm and microcosm.

As briefly noted above, Schelling was also a champion of integrating academic disciplines to produce universally educated minds. Not only did Schelling envision organic unity and codependence between humans and nature but he also believed that this codependence extended to the various faculties of the mind. Different modes of knowledge (increasingly known as academic disciplines) were complementary to and necessary for one another, which meant that the empirical study of nature was unfathomable without a philosophical engagement with nature, and vice versa.[41]

Johann Wolfgang von Goethe (1749–1832)

It would be difficult to overestimate the influence of Johann Wolfgang von Goethe in this confluence of early 19th century science and aesthetics, particularly when considering the impact of this era's complicated scientific-aesthetic discourse on 19th century German literature. Goethe himself was in many ways the ideal *Naturphilosoph*, combining poetic

[41] Elinor S. Schaffer, "Romantic philosophy and the organization of the disciplines: the founding of the Humboldt university of Berlin," in *Romanticism and the Sciences*, eds. Andrew Cunningham and Nicholas Jardine, Cambridge, Cambridge UP, 1990:

reflection and empirical observation in his prolific literary and scientific writings. Because of his legacy as *the* great German poet, he is an especially important figure in the context of this project's exploration of late and post-Romantic literary conception of nature. Although Humboldt, Oken, and Carus often reflect on aesthetics and praise the arts, Goethe is the one among them who actually embodies the convergence of science and poetry.

Goethe has numerous reflections and concrete contributions to scientific-aesthetic discourse that could be mentioned here. However, two stand out as particularly relevant for the conceptions of nature presented in the literature of Droste-Hülshoff, Stifter, and Büchner and for the approaches to natural inquiry espoused by Humboldt, Oken, and Carus. The first contribution is an epistemological stance that concerns the subject-object relationship at the basis of natural inquiry. Despite increasing pressure toward objectivity over the course of the 19th century, Goethe clung to the notion that science could—indeed, must—draw from a closer, more intimate encounter—one in which the human observer was actually a participant in the natural process being examined. It was important that the scientist himself be shaped and changed by this encounter in order to fully grasp the process or object at hand. This phenomenological approach to natural inquiry is most famously articulated in Goethe's *Metamorphose der Pflanzen* from 1790, which was later republished as an article in a series of writings called *Zur Morphologie* in 1817. This notion of an "entangled," participatory human subject is key to understanding the epistemological uncertainty that surrounds human-nature encounters in Droste, Stifter, and Büchner. Goethe's epistemology leans on empirical observation, which provides an intimate familiarity with the particularities of the object's form; however, it also requires aesthetic attention to the dynamic qualities of the object as a whole, which can only occur through subjective openness and self-immersion in the moment.

Only by first understanding the import of this Goethean epistemological paradigm can one come to understand why objectivity as an increasingly valued epistemic virtue in 19th century Europe is perceived by many *Naturforscher* as one-sided and hollow. Without the entangled relationship between human subject and natural object—a relationship that, in some ways, dissolved that very subject/object boundary—it seemed impossible to access the deep "truth" of nature. Thus, although Goethe recognizes the value of empirical observation for his work, this step only goes as far as what he calls a "zarte Empirie." In other words, this "gentle" version of empiricism is not exclusively based on the principle of subjective distance and objectivity.

Coinciding with this epistemological paradigm was the general shift toward a historical-developmental concept of nature and away from Linnean classification and purely mechanistic-materialist explanations of movement and change. This new metaphysical framework, advanced in large part by the Romantic movement, was a good fit for the epistemological paradigm elaborated above: if scientists wanted to grasp nature's dynamic relationships and the process of development behind the variety of living forms on earth, this task could not be achieved by merely assigning categories and identifying a chain of mechanical causes and effects.

The second of Goethe's important contributions, then, is his role in the popularization of the morphological-genetic method of natural inquiry through ideas like the *Urpflanze* that is expounded in his *Metamorphose der Pflanzen*. Goethe believed that forms in nature resulted from an interplay between the material world and the ideas or archetypes guiding the development of individual natural forms. As a result, his approach to natural inquiry required empirical attention to detail but also saw the practice of morphological study as an inherently

creative or productive process on the part of the human observer. It required the observer to use his or her imagination to conceptualize the "idea in the observation" or the archetype behind the individual specimen being observed.[42] This emphasis on deriving archetypes through a careful combination of empirical attention and creative reflection is described by Daston and Galison as the pursuit of "truth" in nature as opposed to the newer trend toward disinterested objectivity. The tension between these two very different "epistemic virtues" over the course of the 19th century would eventually dissolve in favor of objectivity within the realm of European science. However, thanks in large part to the Goethean cultural legacy in Germany, this "truth to nature" idealism remains an important—albeit contentious—value in literary configurations of the natural world for decades to come. As Droste's and Stifter's literature in particular will show, this is the case even when objectivity and the material world appear to be at the center of their aesthetic programs.

Alexander von Humboldt (1769-1859)

Born in Berlin in 1769, the geographer, naturalist, and passionate explorer Alexander von Humboldt became one of the most influential European thinkers of the 19th century. His work left a distinct mark on the realms of science and aesthetics and deeply inspired natural scientists, explorers, philosophers, and poets from Europe to the Americas. Some of the most famous of these include Ernst Haeckel and Charles Darwin, as well as Ralph Waldo Emerson and Henry David Thoreau—not to mention the many literary and scientific authors explored in this dissertation project. In the late 1790s, Humboldt spent time in Jena with his brother, Wilhelm, and came into contact with Goethe, Schiller, and the "Jena Romantics" Schlegel and Schelling. He would later write to Schelling in praise of his *Naturphilosophie*, although

[42] Daston and Galison 73.

he began to resent the more speculative proponents of Schelling's philosophy in his later years.[43] The time spent in Jena was clearly formative for Humboldt, and many of his publications over the next few years bore the stamp of the unique perspective on science and aesthetics that emanated from this late 18th century cultural milieu.

Earlier influences also had an impact on Humboldt's perspective on natural inquiry, however. Malcolm Nicolson cites Georg Forster's 1790 *Ansichten vom Niederrhein* as one important example of the scientific travelogues that would shape Humboldt's own writing during his scientific expeditions to the Americas (1799-1804) and Russia and northern Asia (1829).[44] This literary and scientific account of Forster's journey with Captain Cook from Germany to England received great acclaim in intellectual circles for its ability to harmonize scientific inquiry and aesthetic sensitivity. As such, it served as a model for future naturalist-explorers like Humboldt. Another crucial influence was Immanuel Kant's lectures on physical geography, which presented a critique of arbitrary taxonomic categories within geographic study.[45] Kant advocated, instead, for a more holistic view that organized geographical characteristics by the way that they actually coexisted in nature; such a model of geography should seek to collect knowledge not just about the individual forms and phenomena observed but also about the interrelations among them.[46] Johann Gottfried Herder's *Ideen zur Geschichte der Menschheit* (1784-1791) was another important influence, as it presented an attractive anthropological perspective that Humboldt could draw from during his expeditions. In this four-part masterwork, Herder claimed that individual cultures

[43] Richards 519.

[44] Malcolm Nicolson, "Alexander von Humboldt and the geography of vegetation," *Romanticism and the Sciences*, Andrew Cunningham and Nicholas Jardine, eds., Cambridge, Cambridge UP, 1990: 171.

[45] Ibid. 169.

[46] Ibid.

must also be studied in relation to their specific natural environments, because the development of these cultures is intricately bound up with the characteristics of the local climate and natural landscape. Understanding human culture as an advanced phase in the history of nature, Herder thus believed the history of the terrestrial earth to be deeply intertwined with the history of human civilization in general.

Within this intellectual context, Humboldt turned his own focus largely toward the geography of plants. He followed Kant in renouncing the Linnean paradigm of descriptive taxonomy and nomenclature: rather than focusing on the outward appearance of individual species, Humboldt redefined plant geography as a holistic practice that should elucidate the connections among different plants but also between plants and their specific geological and atmospheric habitats.[47] This position was articulated in a number of his works but perhaps most clearly in his 1806 *Ideen zu einer Physiognomik der Gewächse* and his 1807 *Ansichten der Natur*. Such a holistic approach to plant geography was important to Humboldt because he believed the total impression (*Totaleindruck*) of a landscape to have a significant moral influence on humans. For him, the unique character or "physiognomy" of a landscape was primarily determined by its vegetative cover, and this overall impression had the capacity to shape the (inner and outer) character of its human inhabitants. Humboldt's use of the concept of "physiognomy" to describe the "character" of a specific vegetative landscape and relate it to an analogous human "character" will be explored further in the chapter on Annette von Droste-Hülshoff. Even though he does not often employ the term *Stimmung* in his writing, it is worth noting that this model for understanding human-nature relations bears many similarities to the mechanisms of aesthetic attunement captured in the concept of *Stimmung*.

[47] Ibid.

Stimmung is thus a theme that recurs throughout this historical period in many forms of both literary and scientific writing.

As much as Humboldt subscribed to the values of holism and aesthetic unity, he did not, however, by any means deny the necessity of collecting meticulous empirical data. On the contrary: he made extensive use of measuring instruments on his many journeys. Nicolson points out, for example, that

> [t]he azure of the sky […] was not only to be appreciated aesthetically: it had to be quantified. Virtually everything that could be measured was measured. The readings were tabulated and compared between sites. The physical data were then correlated with the occurrence of the various types of vegetation. Such correlations would, it was hoped, aid in the discernment of the laws which governed the distribution of vegetation.[48]

Humboldt is, in fact, well known for his talent in combining "rigorous empiricism and experimentalism with idealism and holism" to promote a conception of nature that honored both aesthetic and scientific values.[49] His own kind of radical inclusiveness is reflected both in his actual approach to natural inquiry described above and his attempt to formulate a new kind of science. This new science was to provide a fairly exhaustive "physical description of the world" that could represent the terrestrial earth and human culture in all of its interconnectedness. This was the goal of his great, unfinished multi-volume work of popular science, *Kosmos*. Though the concept behind *Kosmos* made it difficult to implement—and notoriously difficult to read—Humboldt's ambitions to provide an all-encompassing, holistic view of nature were well received and secured him a long legacy in the German cultural tradition.

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[48] Ibid. 181.

[49] Cunningham and Jardine 3.

Carl Gustav Carus (1789-1869)

A less well-known figure with a nonetheless significant influence on early 19th century scientific and aesthetic discourse is the Saxon physician, anatomist, painter, and aesthetic theorist Carl Gustav Carus. Carus's own oeuvre reflects, in some ways, Lorenz Oken's program of discursive inclusiveness seen in the *Isis*: with almost 70 titles to his name, Carus was incredibly prolific and, though primarily a research scientist, he wrote on topics ranging from medical education to travel reflections to the aesthetics of landscape painting. His impressive versatility as a thinker was, in fact, even recognized by Goethe himself, who once wrote to Carus: "Fürwahr! Sie vereinigen soviel Eigenschaften, Fähigkeiten und Fertigkeiten, deren innigst lebendige Verbindung teilnehmendes Bewundern erregt."[50] As with other Romantically inclined scientists, the values of unity and harmony—among different modes of understanding and between man and nature—was crucial. Accordingly, his scientific philosophy was grounded in the notion that seemingly contradictory approaches and methodologies not only *could* be compatible but that they were necessarily compatible and often *had* to be used in tandem with one another.[51] However, because Carus was significantly younger than Goethe and Humboldt, the ideal of a harmonic synthesis between art and the sciences was becoming a challenging notion to defend already during his formative years. His writing thus often directly criticizes the isolation of different modes of knowledge from one another, whether art and science or different scientific disciplines. Accordingly, his style also tends to be fairly urgent and programmatic. However, just as often as Carus emphasizes the importance of aesthetic vision as a complement to scientific research, he also recognizes that the reverse is equally true. Müller-Tamm thus paraphrases

[50] Müller-Tamm 3.

[51] Ibid. 36.

his perspective as such: "Muß die Wissenschaft um nicht bloße Faktensammlung zu bleiben, ästhetische und subjektive Moment in sich aufnehmen, so kann umgekehrt die Kunst nur durch ihre wissenschaftliche Fundierung den Ansprüchen der Gegenwart standhalten."[52] Carus, like Humboldt and Goethe, was likewise critical of purely deductive speculation that sought no empirical foundation or confirmation.

Carus's approach to scientific study was very much influenced by Goethe's seminal morphological treatise *Metamorphose der Pflanzen*. The genetic method, especially as it was set out by Goethe in this work, spoke to Carus's desire to grasp the individual development of a natural form all at once when observing it—by holding a "temporal unity" of that form in the mind's eye. Because this approach to natural inquiry required not only sharp empirical observation and significant experience viewing natural forms but also a skillful "künstlerische Betätigung,"[53] it was especially appealing to him. Applied to his own research, which primarily fell into the area of zootomy, genetic analysis began with a first step of "descriptive anatomy," in which the actual form of the animal or skeleton was examined and described. The "genetic" step then used this information to map out the interconnectedness of the development of individual parts within body and the life phases of the organism as a whole over time. Often there was also a next step, comparative anatomy, which involved the comparison of this organism's specific phases of development and the relation of its components to those of other species throughout the animal kingdom. The ultimate goal was to uncover common developmental tendencies or laws throughout nature and identify

[52] Ibid. 4.

[53] Ibid. 32.

homologous anatomical structures among species.[54] This process is very similar to the approach that we see in the anatomical research of Oken, Goethe, and also Georg Büchner.

The practice of physiognomy was also alluring for Carus because it provided another possible interpretive framework for understanding how diverse particularity could have resulted from the existence of fundamental underlying types in nature.[55] Although this "discipline" would eventually prove very problematic, the mere attempt to use aesthetic-holistic vision to synthesize individual features into an image of the "character" of the whole, and then correlate that character with an underlying "type," reflects a similar operation of logic to that of morphology. That is, it takes an empirical account of the physical world and tries to intuitively trace that material manifestation back to some invisible essence or point of origin. Physiognomy is thus in many ways a product of the complex intersection of scientific, aesthetic, and philosophical discourses of this particular era. It stems from the drive to unite empirical data with the monistic unity underpinning *Naturphilosophie*. Ironically, then, the development of physiognomy as a practice was, to some extent, fueled by the desire to locate unity (or unities) within nature's chaotic diversity.

Not unlike Humboldt's concept of plant physiognomy, Carus's tendency toward "physiognomic reading" also extended to his theories of landscape aesthetics. In particular, his concept of "Gemütsstimmung" outlined in *Neun Brief über Landschaftsmalerei* (1819-1824) emphasized the importance of aesthetic perception for identifying the specific character reflected in the geological, vegetative, and atmospheric qualities that together comprise the overall impression of a landscape. As I outlined previously, Carus and other

[54] Ibid. 31.

[55] For more on Carus's involvement in the practice of physiognomy, see: Richard T. Gray, *About Face: German Physiognomic Thought from Lavater to Auschwitz,* Detroit, Wayne State UP, 2004.

proponents of *Stimmung* correlated the distinct individual "character" of a landscape with a corresponding affective response in the humans. For Carus—perhaps more than any of the other thinkers introduced in this project—the genetic method was thus to be extended to all of nature, including the inorganic realm. This is also where his influence on German literary conceptions of nature seem most conspicuous and most fascinating, particularly when read alongside the works of Adalbert Stifter. Carus's later volume *12 Briefe über das Erdleben* (1841) reinforces this position: in it, he insists upon the interdependence of all of nature and reiterates the necessity of maintaining a unity of organic and inorganic nature under the concept of one *living* whole.

CHAPTER TWO

Reading the Face of Nature: Geology, Biology, and Physiognomy in Annette von Droste-Hülshoff's Lyric Poetry

As is evident in much of Annette von Droste-Hülshoff's writing, Germany's most distinguished female poet of the 19th century possessed a remarkable, even encyclopedic, breadth of knowledge about objects of natural history. Indeed, in *Die geistige Welt der Dichterin Annette von Droste zu Hülshoff*, the most comprehensive account of Droste's extraliterary influences, author Josephine Nettesheim suggests that the presence of somewhat obscure scientific references in many of Droste's lyric poems renders them cryptic, if not illegible, for readers unaware of the scientific context of Droste's time.[56] This phenomenon is most clearly the case for the poems "Der Hünenstein" and "Die Mergelgrube," both of which were written in the spring of 1842 at Meersburg on Lake Constance and later published under the subheading "Haidebilder" in her 1844 volume *Gedichte*.[57] According to Nettesheim, these two poems in particular are "eng mit der erregenden Auseinandersetzung vor den wissenschaflichen Problemkreisen verbunden und gehören zu den aktuellsten Themen der Literatur und der Dichtung der Droste-Zeit."[58] And although it would certainly be misleading to characterize Droste as a scientist herself, her work bears witness to the fact that she was

[56] Josefine Nettesheim, *Die Geistige Welt der Dichterin Annette Droste zu Hülshoff,* Münster, Regensberg, 1967: 18.

[57] Roger Paulin, "Annette von Droste-Hülshoff," *Landmarks in German Women's Writing,* ed. Hilary Brown, Bern, Peter Lang, 2007: 84ff.

[58] Nettesheim 75.

both acquainted with many of the leading scientific theories of her day and deeply moved by their broader implications. Moreover, as many scholars have pointed out, works like "Die Mergelgrube" quite overtly thematize the broad dissemination and popularization of new scientific knowledge that seized the attention of early 19th century society.[59] Towards the end of "Die Mergelgrube," for instance, the lyrical subject encounters a shepherd figure outside the eponymous marl pit and asks, "Bertuchs Naturgeschichte; les't Ihr das?" As the question implies, the shepherd has been reading a copy of Friedrich Justin Bertuch's *Bilderbuch für Kinder*, a series of pedagogically oriented natural history encyclopedias published between 1792 and 1830 and often acquired by wealthy families at the time. The Hülshoff family did, in fact, own the second edition of this series, and it is said to have spent a great deal of time in the hands of Droste herself as she was growing up.[60] Although "Die Mergelgrube" does not include the subtitle of Bertuch's work, it is also worthy of mention because it very clearly exemplifies the mania for naming and collecting objects of nature that took the general population by storm during Droste's lifetime: "Eine angenehme Sammlung von Thieren, Pflanzen, Blumen, Früchten, Mineralien, Trachten und allerhand andern unterrichtenden Gegenständen aus dem Reiche der Natur, der Künste und Wissenschaften."[61]

The emphasis on natural history in Droste's poetry thus demonstrates both her own sense of "Wissbegier" and her commitment to the brand of Enlightenment knowledge

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[59] Thomas Pittrof, "'Bertuchs Naturgeschichte'; Les't Ihr Das? Annette Von Droste-Hülshoff: 'Die Mergelgrube.' Naturgeschichte, Poesie, Apokalypse," *Literaturwissenschaftliches Jahrbuch im Auftrage Der Görres-Gesellschaft* 42, 2001.

[60] *Historisch-kritische Ausgabe* 1,2: 162. According to this source, the family also likely owned Lorenz Oken's *Naturgeschichte für alle Stände*, 1839-41.

[61] Friedrich Justin Bertuch, *Bilderbuch für Kinder: enthaltend eine angenehme Sammlung von Thieren, Pflanzen, Blumen, Früchten, Mineralien, Trachten und allerhand andern unterrichtenden Gegenständen aus dem Reiche der Natur, der Künste und Wissenschaften*, Weimar, Verlag des Landes-Industrie-Comptoirs, 1798-1830. http://www.biodiversitylibrary.org/bibliography/95815#/summary

imparted by Bertuch's work and other popular household volumes such as Denis Diderot's *Encyclopédie, ou dictionnaire raisonné des sciences, des arts et des métiers* (1751-1770), Baron D'Holbach's *Système de la Nature* (1770), and Georges Cuvier's *Tableau élémentaire de l'histoire naturelle des animaux* (1798). Materials such as these had been circulating through Europe since the late 18th century and were intended to elevate the education of the general population and simultaneously rein in superstition and folk belief in the name of *Volksaufklärung*. Many of these works were compiled primarily with a readership of women and children in mind. It is, therefore, not surprising that Droste's careful attention to nature in her poetry often appears to be just as preoccupied with *naming* (as these books encouraged) as it is with actually *describing* nature. The extraordinary range of terminology that Droste employs in the process attests to her enthusiasm as an avid collector and categorizer of objects of natural history. What is perhaps more striking about her work, however, is the fact that her poetic treatment of these natural objects also reveals an astounding level of familiarity with key theories from a broad range of scientific discourses emerging in the early 19th century. For instance, "Die Mergelgrube" includes references to the theory of glacial erratics (*Findlinge*), theories of the origins of the earth, and paleontological explanations for unidentifiable species. Moreover, "Der Hünenstein" reveals a familiarity with historical and anthropological theories about megalithic tombs. As a number of scholars have pointed out, several of Droste's poems explore the key sources of dissonance between Biblical and scientific narratives of the Earth's history. Thomas Pittrof's article on "Die Mergelgrube," for example, illuminates the poem's stance toward theories of Catastrophism developed within the scope of geological and paleontological discovery.[62] Beyond that, Nettesheim outlines a

[62] Pittrof 145-73.

number of ways in which Droste incorporates elements of magnetism, mesmerism, galvanism, and homeopathy into several of her lyric and prose pieces.[63]

While it is useful (and often crucial for an informed reading) to unravel Droste's various references to contemporary scientific discourse, scholars tend to use these insights primarily as evidence of the sense of crisis she experienced as scientifically and religiously informed worldviews began colliding with ever increasing intensity. Both Droste's commitment to her Catholic faith and her struggle to maintain that faith in an increasingly secularized world have certainly been widely acknowledged, most notably in scholarship that examines her lyric cycle *Das Geistliche Jahr*. In this chapter, however, I would like to challenge traditional readings by demonstrating that science itself was by no means a stable or monolithic mode of inquiry from Droste's perspective and that the attempt to establish early 19th century science and religion as diametrical opposites runs the risk of obscuring other important epistemological tensions and oppositions. Thus, while the relationship between scientific and other important ways of knowing at this time certainly justifies analysis, one must also keep in mind that the question of what it meant to perform "Wissenschaft" was in the midst of a dramatic transition over the span of Droste's lifetime, as Romantic and objective-empirical modes of scientific inquiry collided with one another.

Science and Nature in Droste's Lyric: Inhabiting the Threshold

One of the most prominent problems emerging in this context is nature as an object of scientific study. In this chapter, I will show that, like the work of many other authors during this period, Droste's lyric often grapples with the question of how different approaches to

[63] Nettesheim 75ff.

scientific (as well as poetic) inquiry foster different ways of understanding nature and the relationship between humans and nature. This picture is complicated by the fact that, not only were competing models of science existent at this time, but the "nature" of nature itself was subject to a great deal of scrutiny. At least two very different ways of understanding nature prevailed at this time, and I locate moments in Droste's work that reflect an ambivalent oscillation between these conceptions. The first, a static, mechanistic conception of nature, proceeds from the assumption that the earth became fully formed within a relatively short, finite period (i.e., during God's act of creation). This model—often associated with Carl Linnaeus and Linnaean classification—clearly had theological significance and was also an important premise for the development of modern empirical science because it presented the natural world as constant and categorizable. The second, a dynamic, developmental conception of nature, became more influential as the 19th century's fascination with historical modes of understanding grew. This fascination was intensified by Idealist speculation (e.g., *Naturphilosophie*) as well as geological and biological discovery suggesting the instability of organic and inorganic forms. A great deal of scholarship has focused on the challenge posed by these conflicting conceptions of nature, especially as explored by Goethe and the Romantics; however, few scholars carry the analysis through to include post-Romantic authors such as Droste, as they are often already characterized as proto-Realists. Yet, as we will see, these two models of nature often become juxtaposed in very compelling ways in her work, particularly when they collide with shifting perspectives on science itself.

One particularly remarkable feature about Droste's approach to depicting nature, and—as some have noted—about late or post-Romantic representations of nature in general,

is the tendency to explore very different aspects and qualities of nature from those that the Romantics foregrounded. Nettesheim notes, for instance:

> statt der Rose wird die Distel oder die verborgene bescheidene Christrose besungen, statt der Nachtigall die unerotische Lerche, der asketisch geistige, beschiedene Vogel oder das sich opfernde Rotkehlchen mit der blutenden Brust. Nicht die satte paradiesiche Blumenlandschaft wird mehr lyrisch ausgesagt, sondern "the barren landscape": Wüste, Steppe, Heide, Moor (bekanntlich durchaus nicht nur in Westfalen!). Nicht Heroen und Olympier gilt es mehr zu feiern, sondern die "Unbesungenen" […] (18)

Nettesheim associates this shift in focus with the era's general preoccupation with the miniscule and the invisible, due in part to a rising interest in microscopic observation in science.[64] According to Nettesheim's reading, the memory of revolutionary political atmosphere prior to the Congress of Vienna in 1815, along with the rise of the bourgeoisie during this period also contributed to dramatic shifts in poetic symbology. These political conditions meant, for instance, that the low and the lowly featured increasingly prominently in literature: "man singt statt des Königsliedes das Lied vom Bettler."[65] Moreover, in emphasizing the turn towards a sober, even ascetic treatment of nature during Droste's era, Nettesheim touches on a characteristic that literary scholars frequently identify with a Biedermeier or proto-Realist aesthetic—namely a clear sense of the growing demythologization and disenchantment of nature. Some scholars, such as Ritchie Robertson, suggest that Droste's work, with what he sees as a penchant for objective vision, is even complicit in this process of demythologization, as she "rejects the Romantic attempt to elevate nature into a religious substitute, evoking many desolate landscapes and scenes of

[64] Nettesheim 18: "das Kleine und das Kleinste bis zum Unscheinbaren und Verkannten."

[65] Ibid.

suffering."[66] Pittrof addresses the persistence of these barren landscapes as well and notes that Droste's emphasis on inorganic aspects of nature such as stone and sand has been examined in relation to Paul Celan's poetry and hence deemed an early reflection of Modernism because it rejects beauty and harmony for a world perceived as decrepit and falling into ruin.

Like Pittrof, I will resist the urge to investigate the ways in which Droste's work might hold up as a prescient form of Modernism and, instead, seize the opportunity to examine it as a testimony to the pressing questions of her own historical moment. Her attention to inorganic nature and geology are particularly interesting for this analysis; however, I believe that they cannot be examined in a vacuum. Stones, sand, barren landscapes have a large role in her conception of nature, and yet, they are almost always explored through their relationship to organic, living nature. In this context, fossils assume a particularly interesting role because they represent an intermediate form between the living and the non-living. Moreover, Droste's depictions of inorganic elements are almost always coupled with an investigation of the various ways in which they do indeed have a kind of animation or force, whether through the aesthetic effect of an arrangement of stones, the earth's transformation of once-living bodies into rock, or the dynamic entanglement of humans and their native landscapes. And while Droste does often rein in fantastical vision to return to the sober present moment in her texts, it would be an exaggeration to say that she welcomed a disenchantment of nature simply because her landscapes tend toward desolation and barrenness. Droste's nature, regardless how destitute, always struggles to retain its vibrancy and power in an anthropocentric world that tries to contain and control it. The

[66] Ritchie Robertson, "German Literature and Thought from 1810 to 1890," ed. Helmut Walser Smith, *The Oxford Handbook of Modern German History*, Oxford, Oxford UP, 2011.

frequent position of her nature poetics at this threshold, I would argue, attests to her deep-seated need to observe and understand the relationship between humans and nature and how they move, arrest, animate, and transform one another in the rapidly changing world in which she finds herself.

Physiognomics and Ecological Reading

As I mentioned in the opening of this chapter, two of the most interesting encounters with inorganic nature in Droste's lyrical work appear in the poems "Die Mergelgrube" and "Der Hünenstein." Before turning to those pieces directly, however, I would like to attempt to establish a better sense of Droste's perception of nature and her understanding of the relationship between humans and the natural world, particularly regarding the relationship between biological and geological forms. I believe that her lesser known non-fictional work titled *Westfälische Schilderungen aus einer westfälischen Feder*[67] provides some crucial insight into the way she envisioned humans (organic bodies) and natural landscapes (inorganic bodies) as participants in a mutually dependent system. Droste sent this piece to her friend Levin Schücking in June of 1842 as a contribution to a planned collection of "historical" descriptions of local culture titled *Das malerische und romantische Deutschland im 19. Jahrhundert*. Droste was charged with the task of presenting a picture of life in Westphalia and drew a significant amount of material for this contribution from a literary "genre piece" about Westphalia that she had been working on since 1838. The latter was

[67] This essay is not to be confused with "Bilder aus Westphalen" (1842), which is referenced, for instance, in: Josephine Donovan, *European Local-Color Literature: National Tales, Dorfgeschichten, Romans Champetres*, London, Continuum, 2010, 120. The author addresses *Dorfliteratur* and *Dorfbilder* as precursors to *Blut und Boden* discourse. However, this genre of literature also reflects a struggle with larger questions of science, nature, religion, environment, and rapid societal change—and the related task of trying to reconcile a number of conflicting worldviews.

inspired by her veneration for the work of the American writer Washington Irving. The publication of this volume did not proceed as intended, however, and, instead, Droste's piece was published anonymously in 1844 in the "Historisch-politische Blätter für das katholische Deutschland."[68] The piece elicited a fair amount of controversy because of its occasionally derogatory depiction of Paderborn and the Sauerland vis-à-vis the Münsterland. However, it also occasionally received high praise. For instance, nearly 10 years after her death in 1848, the journal *Europa* included a pre-publication announcement of Droste's *Letzte Gabe* that failed to mention *Die Judenbuche* but characterized her "Westfälische Schilderungen" as "die meisterhaften Skizzen über Westfalen."[69] Although Droste correctly predicted the criticism that would result from the publication of this work in a broadly circulated periodical and regretted the upheaval that it provoked, she did not disavow it. On the contrary, she considered it important historical work that should have been published as a contribution to a volume that would demand "strenge Wahrheit […]" and would be read "nur von ernsten Männern."[70] Likewise, she associated the negative reaction with the inappropriateness of the publication genre in which it appeared. Journals were, namely, also accessible to "alle Laffen und Weiber" and published material that was easily perceived as sensationalized.[71]

The essay assumes the tone of a travel narrative, and the narrator very clearly makes an effort to present the material in a neutral, sober manner, while simultaneously indicating a

[68] A journal edited by Guido Görres. The eventual publication of Droste's piece proceeded to some extent against her will. After the failure of the Schücking/Bauer volume to crystallize, Droste noted in a letter to Schücking that her contribution was perhaps "zu scharf" and would bring her "tausend Feinde und Verdruß" (5,2: 508). She eventually relented under the condition that it be published anonymously.

[69] See also: Gertrud Bauer Pickar, *Ambivalence Transcended: A Study of the Writings of Annette von Droste-Hülshoff*. Columbia, SC, Camden House, 1997: 189.

[70] Pickar 189.

[71] Ibid.

deep level of familiarity with the region. It also employs the authoritative but inclusive "we" perspective that, for instance, also features as a prominent voice in many of Adalbert Stifter's narratives. The piece is divided into three chapters. The first primarily presents a general overview of the landscape features of Westphalia and its different regions, but it also introduces a number of reflections on the customs and moral character of the each subregion's inhabitants. Chapters two and three focus increasingly on aspects of the Westphalians' everyday life as well as local cultural traditions and celebratory practices. My analysis will focus primarily on the first section, as its attention to the relationship between the region's inhabitants and their environments opens up key insights into Droste's conception of nature. This perspective will help us gain a more nuanced understanding of the function of nature in her lyric poetry. In addition, the intersection between the conception of nature that she presents here and the "scientific" gaze that she attempts to adopt when characterizing the people and the landscapes of Westphalia represents a very important tension that resonates with much of the rest of her work.

It is evident already in the very first lines of this piece that Droste's conception of nature and her understanding of the relationship between humans and nature are significantly influenced by the concept of physiognomy and by Romantic philosophy. At first glance, these qualities may only seem coincidental, but the case builds as the narrative progresses. She begins:

> Wenn wir von Westphalen reden, so begreifen wir darunter einen großen, sehr verschiedenen Landstrich, verschieden nicht nur den weit auseinander liegenden Stammwurzeln seiner Bevölkerung nach, sondern auch in Allem, was die Physiognomie des Landes bildet, oder wesentlich darauf zurückwirkt, in Clima, Naturform, Erwerbsquellen, und, als Folge dessen, in Cultur, Sitten, Charakter, und selbst Körperbildung seiner Bewohner […] (45)

Her usage of the term "physiognomy" here lends significant insight into Droste's attempt to provide an accurate, authoritative account of Westphalia. One might tend to read past it as a descriptive metaphor simply employed to refer to the surface appearance of the land; however, both the term itself and the manner in which it foregrounds the relationship between humans and nature resonates with the work of some very significant thinkers addressing the notion of physiognomy during the early 19th century.

Although the term "physiognomics" tends to evoke associations with the abusive racial policies that developed towards the end of the 19th century and first half of the 20th century in Germany, its earlier forms were less misanthropic, though certainly no less problematic as an alleged model of reliable scientific inquiry. "Physiognomy"—that is, the evaluation of a person's inner character based on an interpretation of the body's external features—is an ancient notion that had long been dismissed as an occultist practice. However, in the wake of the Enlightenment, which provoked an urgent preoccupation with the question of human nature, the concept was set to gain new vitality. In his monograph on the history of physiognomics, Richard Gray traces the concept's primary avenue of influence in Enlightenment Germany through the Swiss pastor Johann Caspar Lavater, who published the four-volume work *Physiognomische Fragmente zur Beförderung der Menschenkenntnis und Menschenliebe* from 1775 to 1778. In the course of establishing this genealogy, Gray reflects further on reasons for the surprisingly broad appeal of Lavater's work:

> One of the commonplaces among scholars studying the history of modern physiognomics is the recognition that it thrives in particular during times of social and political disorientation. The transition from the absolutist state to civil society marked a period of particular disorientation with regard to the self-understanding and self-definition of the individual.[72]

[72] Richard T. Gray, *About Face: German Physiognomic Thought from Lavater to Auschwitz,* Detroit, Wayne State UP, 2004, xxxvii.

Yet, rather than explore the rising popularity of physiognomy primarily in relation to questions of governance, I would like to point to its significance for another disorienting shift that is a pervasive theme throughout Droste's work—namely, that of science. Physiognomic logic represented a model of inquiry that, for many, seemed to hold unique potential in the realm of science because, rather than examining phenomena in isolation as a mechanistic approach would, it read them as expressions of a greater signifying system. This approach was eventually used as an attempt not only to reveal knowledge about the nature of individual humans, but also to explore the "nature" of specific regions of nature itself. We will also see in *Westfälische Schilderungen* how Droste uses this logic to paint a picture of a world in which the features manifested in both humans and natural landscapes can be read within the same system.

While it is not my intent to assert physiognomics as an exclusively Romantic scientific practice, it is indeed interesting to note how attractive this idea became for some thinkers who were attracted Romantic philosophy. Many of these figures—Carl Gustav Carus in particular and Alexander von Humboldt as a "less Romantic" representative—were also instrumental in shaping the scientific discourse that appears to have had such a significant effect on Droste's literary work. According to Gray, the affinity between physiognomy and Romantic theories of science existed because both physiognomics and Schelling's *Naturphilosophie* propose a system of metaphysics in which material form is considered a legible expression, or a concrete manifestation, of an invisible but corresponding force or quality. Thus, the key task in both physiognomy and *Naturphilosophie* was to study the visible surface world in order to glean knowledge about its invisible, animating content. For physiognomy, this was the character and intellectual

capacity of the individual; for *Naturphilosophie*, the *Weltseele* was considered the organizing principle of nature. Schelling's system relied on the idea that there was a correspondence between the soul/mind and nature, nature became the site of this hermeneutic investigation; in like manner, proponents of physiognomics, such as Lavater and his successor Carl Gustav Carus, took human faces and bodies as their prime objects of study, presuming a correspondence between the expressed features of the human body and the qualities of that individual's soul/mind.[73] The study of physiognomy was apparently also particularly amenable to the holistic premises propounded by *Naturphilosophie*; consequently, the body as an object of physiognomic study came to be viewed increasingly as an organic totality throughout the early 19th century, in a way similar to the conception of nature as an organism within *Naturphilosophie*. Gray notes, for instance, how Carus's mid-19th century adaptation of Lavater's physiognomics "emphasize[d] [the body's] aesthetic character, the harmonious relation of each part to every other part to and to the somatic structure as a whole."[74] Finally, both Lavater and Carus believed that the interpretive practice of physiognomics required a special aesthetic sensibility or talent—an act of hermeneutic work that combined objective observation with a kind of imaginative work resembling a "poetic feeling."[75] Thus, even though physiognomics and *Naturphilosophie* emerged out of different philosophical contexts

[73] Gray 114. Gray actually uses *Seele*, not *Geist*, in this context.

[74] Ibid. Gray is referencing Carus's work *Symbolik der menschlichen Gestalt*. See also: Jutta Müller-Tamm, *Kunst als Gipfel der Wissenschaft: ästhetische und wissenschaftliche Weltaneignung bei Carl Gustav Carus,* Berlin, Walter de Gruyter, 1995: 118-19. Nonetheless, Müller-Tamm notes that Lavater, despite all his vocabulary of organicism, still viewed the body in mechanistic terms, "als zerlegbare Maschine, deren Einzelteile nach einer festen Grammatik in ihrer Bedeutung entschlüsselt werden, um daraus den Charakter zu konstruieren" (118).

[75] Gray 117.

and had, in many ways, different assumptions and different aims, they do bear similarities insofar as they both resist Newtonian mechanistic interpretations of the world.

The aspects they do share often rendered them in many ways commensurable for Romantically inclined minds. One such thinker was the explorer and biogeographer Alexander von Humboldt (1769-1859), whose work shared characteristics of both Lavaterian physiognomics and *Naturphilosophie* but applied them in a rather idiosyncratic manner. Humboldt's own "physiognomic" thinking furthered his achievements in the field of descriptive geography and generated its own influential legacy in the realm of natural description.[76] In his essay "Ideen zur Physiognomie der Gewächse," published in *Ansichten der Natur* in 1807, Humboldt introduced his version of physiognomy to improve upon the fragmenting gaze of Linnaean classification. He outlined a new scientific approach to understanding nature by documenting the overall vegetation patterns of specific geographical regions. In this essay, he articulates his interest in investigating how these patterns overlay geological forms to lend a distinctive "face" to individual landscapes; however, what is less often recognized is that this essay also reflects his desire to understand the complex relationship between organic and inorganic life and how they appear to animate one another. Plants, for Humboldt, are crucial because they play a mediating role in this relationship: "Unablässig sind sie bemüht den rohen Stoff der Erde organisch aneinander zu reihen und vorbereitend durch lebendige Kraft zu mischen, was nach tausend Umwandlungen zur regsamen Nervenfaser veredelt wird."[77] Reflections such as these speak to his dedication to

[76] See: Bettina Hey'l, *Das Ganze der Natur und die Differenzierung des Wissens: Alexander von Humboldt als Schriftsteller*, Berlin, Walter De Gruyter, 2007; Catherine E. Rigby, *Topographies of the Sacred: The Poetics of Place in European Romanticism,* Richmond, VA, U Virginia P, 2004. In Rigby's eyes: "Humboldt's landscape, however, does not comprise a static series of correspondences encoding a divine symbology" (77).

[77] Alexander von Humboldt, *Ansichten der Natur. Mit wissenschaftlichen Erläuterungen,* vol. 1, 3rd ed.,

modes of inquiry that attempt to understand nature as a whole. These reflections also set the stage for his later work, such as the renowned *Kosmos*, while also leaving a lasting impression on other explorers, scientists, philosophers, and artists. Indeed, Humboldt's steadfast study of the relationship between living and non-living components of regional environments often earns him credit as the world's first ecologist, even though the term "ecology" was not coined until 1866 by Ernst Haeckel.

When examining Humboldt's contributions within the broader history of the idea of physiognomics, scholars tend to emphasize the ways that Humboldt's work diverged from Lavater's work rather than characteristics that they shared. For instance, Humboldt was primarily interested in the physiognomy of landscapes rather than that of human subjects. Furthermore, he was much more interested in reading to determine the *Gesamteindruck* (total impression) imparted on humans by particular landscapes than deciphering which inherent qualities that landscape might be expressing. His goal was to understand the regional landscape's unique effect on the moral character of its inhabitants rather than to try to deduce the inherent moral character of humans based on their physical features. For Humboldt, the practice of reading landscape physiognomy allowed one to read the "Naturcharakter verschiedener Weltgegenden" as intimately related with "der Geschichte des Menschengeschlechtes und mit der seiner Kultur."[78] Emphasizing the role of the environment in influencing the direction of human history, he notes:

> Denn wenn auch der Anfang dieser Kultur nicht durch physische Einflüsse allein bestimmt wird, so hängt doch die Richtung derselben, so hängen Volkscharakter

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Stuttgart and Tübingen, J.G. Cott'scher Verlag, 1849: 173. Accessed 11/20/2012. http://books.google.com/books?id=EHEfx9uyA_0C&pg=PA176&dq=%22jede+zone+hat,%22+humboldt&hl=en&sa=X&ei=a1DXUIioCYzy9gTB7YCwBA&ved=0CEQQ6AEwAw#v=onepage&q&f=false.

[78] Humboldt 177.

> düstere oder heitere Stimmung der Menschheit großenteils von klimatischen Verhältnissen ab.[79]

Rather than risking Humboldt's humanist reputation by putting him in dialogue with Lavaterian physiognomics, scholars have mostly examined this approach to reading nature alongside Goethean optics and morphology, which are "concerned with the way in which natural phenomena disclose or […] 'give' themselves to a perceiving subject, who is, in turn, subtly altered in the encounter."[80]

Humboldt's idea of physiognomy also draws on a particularly Romantically inflected notion of *Stimmung*, which posits a sense of attunement between humans and nature that is the result of a presumed primordial kinship between the two. The lingering sense of attunement allows nature to "speak" to humans by stirring their emotions, but the humans also have to be attentive to nature for this "communication" to succeed. For the Romantics, true scientific inquiry involved this subject-entanglement. The scientific eye was like the eye of the painter, in that it required, as Rigby puts it, "that one immerse oneself in the ambience of a place, attending to the manner in which one thereby became attuned (*gestimmt*), physically and psychically, to the mode or mood (*Stimmung*) of its givenness."[81] Rigby thus views the Humboldtian engagement with the notion of physiognomy as a reworking of Schelling's *Weltseele*, but one that reveals particular manifestations in particular local geographic regions.

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[79] Ibid.

[80] Rigby 77.

[81] Rigby refers to this as a reworking of the idea of genius loci "in the guise of a given atmosphere or ambience: the local and the particular manifestation, perhaps, of what Schelling, reworking Neoplatonism, termed the 'soul of the world' in the book of that name" (78).

Despite stark differences in both assumption and intent between Lavater's and Humboldt's ideas of physiognomics, their ideas do bear some similarities that are significant for Droste's aesthetic as well. For instance, both men were very invested in the notion of science as a process of reading and both operated under the assumption that humans and nature are "readable" objects of study in general. Whether or not the influence can be traced back to Lavater or Humboldt, readability plays a crucial role in Droste's exploration of the topic of science and her approach to natural description in general. Furthermore, the emphasis on readability is particularly interesting in this scientific context because it further emphasizes the increasing sense of urgency over the first half of the 19th century for maintaining empiricism and holistic or ecological approaches as compatible.[82] For instance, Lavater and Humboldt were, on the one hand, both dedicated to cataloging individual external features of their objects of study in a rigorous, empirical manner. On the other hand, their insistence on reading these details within the context of a broader system is significant because it resists a mechanistic understanding of cause and effect.[83] Humboldt notes, for instance, the ways in which a "student of physiognomy" differs from a "systematizing botanist" schooled in the Linnaean tradition:

> Aber der botanische Systematiker trennt eine Menge von Pflanzengruppen welche der Physiognomiker sich gezwungen sieht, miteinander zu verbinden. Wo die Gewächse sich als Massen darstellen, fließen Umrisse und Verteilung der Blätter, Gestalt der Stämme und Zweige ineinander.[84]

[82] I am using "ecological" in the most general sense to denote the relationship between organisms and their environment.

[83] For Lavater, the physical characteristics of a human face were to be considered first individually, then in their entirety and thereby "evaluated" against an ideal. For Humboldt, the physiognomist was to document individual characteristics but not simply by identifying individual species.

[84] Humboldt 179.

As mentioned previously, this observation stems from the assumption that the scientist-as-reader can be trained to acquire a particular attunement to the object of study (whether human or nature) in order to assess its character as a whole. It also relates in many ways to Romantic aesthetics, and indeed, Humboldt at times compares his work to that of a landscape painter.[85]

If we return to the opening passage of Droste's *Westfälische Schilderungen* with this context in mind, we notice that her usage of physiognomy is primarily concerned with outlining the face of the Westphalian landscape in terms of its vegetative, mineral, and climatic patterns. Yet, these features are also bound up with the temperament, appearance, and activities of the people native to the region.[86]

> Wenn wir von Westphalen reden, so begreifen wir darunter einen großen, sehr verschiedenen Landstrich, verschieden nicht nur den weit auseinander liegenden Stammwurzeln seiner Bevölkerung nach, sondern auch in Allem, was die Physiognomie des Landes bildet, oder wesentlich darauf zurückwirkt, in Clima, Naturform, Erwerbsquellen, und, als Folge dessen, in Cultur, Sitten, Charakter, und selbst Körperbildung seiner Bewohner […][87]

She asserts that every local region has its own character, which is expressed not only in the arrangement of the landscape's various elements but also in the organization and external appearance of the life forms that inhabit it. As such, her assumptions appear to very distinctly echo the Humboldt's remarks in his *Ideen zur Physiognomie der Gewächse*:

> Jede Zone hat, außer den ihr eigenen Vorzügen, auch ihren eigentümlichen Charakter. Die urtiefe Kraft der Organisation fesselt, [...] alle tierische und vegetabilische Gestaltung an feste, ewig wiederkehrende Typen. Sowie man an einzelnen organischen Wesen eine bestimmte Physiognomie erkennt, wie

[85] Reminiscent of Carus's landscape aesthetics, which will be addressed more thoroughly my chapter on Stifter.

[86] Droste calls her work "scientific-historical," but it soon becomes clear that her work makes an attempt at what we would now call ethnographic work.

[87] *Historisch-kritische Ausgabe* 5,1: 45.

> beschreibende Botanik und Zoologie, im engeren Sinne des Wortes, Zergliederung der Tier und Pflanzenformen sind, so gibt es auch eine Naturphysiognomie, welche jedem Himmelsstriche ausschließlich zukommt.[88]

As we will see throughout Droste's piece, in attempting to capture the uniqueness of each region of Westphalia, she too appears to be seeking out that "Naturphysiognomie, welche jedem Himmelsstriche ausschließlich zukommt." Likewise, she appears to feel compelled to characterize each locale's inhabitants as equally unique and distinctive, regardless of whether or not these observations hold up as "empirically" correct. It will also become clear that, not only does Droste identify the physical environment's unique influence on the moral/psychic world of its inhabitants (as Humboldt might have[89]) but she also attempts, in a very methodical way, to draw connections between the external physical characteristics of the landscapes and the external physical appearances of its inhabitants. In Droste's physiognomy, then, the surface appearances of *both* nature and humans are "readable," and they are to be read *together*. This hermeneutic approach, however, often creates contradictions that riddle the text with subtle moments of dissonance. For instance, the bodies and faces of the native Westphalians themselves can be read in order to determine their presumptive moral characteristics, but Droste's reading also occasionally changes direction and attempts to explain these moral characteristics by linking them to the affective capacity of the landscapes in which they live. Such a sense of confusion surrounding the mechanisms of cause and effect when addressing questions of nature and human nature indicate that she is grappling with the difficulties of mapping out an ecological web of

[88] Humboldt 176.

[89] Ibid.

relations in an age that increasingly privileges mechanistic cause-and-effect explanations of the world.

After Droste's opening paragraphs, in which her descriptions of human and natural elements present the two as largely entangled and interconnected, she claims to proceed to an examination of the landscape "unabhängig von ihren Bewohnern, in sofern die Einwirkung derselben (durch Cultur etc .) auf deren äußere Form dieses erlaubt."[90] With this statement, she briefly acknowledges the superficial alterations to the face of the land that have occurred through human influence, thus providing us a glimpse into a subtle environmental critique that occasionally surfaces throughout the piece. I will return to this issue at a later point in the chapter. What is important for the moment, however, is the paradox that, while humans indeed possess the ability to distort the natural shape of the landscape through their various economic activities, they are nonetheless perceived in many ways as natural extensions of that land that also become damaged when it is damaged and altered when it is altered.

Droste begins her attempt to capture the true character of the Westphalian landscape by describing the northwestern-most reach of region, namely the Dukedom of Cleve. She claims that it actually belongs to the Rhineland rather than Westphalia; but, regardless of this cartographical oversight, she begins here and characterizes it as "eine trostlose Gegend" with "unabsehbare Sandflächen, nur am Horizonte hier und dort von kleinen Waldungen und einzelnen Baumgruppen unterbrochen."[91] What at first appears to be a critical assessment, perhaps even an outright rejection of this area, surprisingly transitions into a less discrediting description: the landscape is not so much unattractive as it is sleepy and lethargic, moving

[90] *Historisch-kritische Ausgabe* 5,1: 45-46.

[91] *Historisch-kritische Ausgabe* 5,1: 46.

with so much effort that "[d]ie von Seewinden geschwängerte Luft scheint nur im Schlafe aufzuzucken."[92] Although Droste had proposed that she restrict herself to landscape description, she cannot help but include here a few observations about the temperament of the region's inhabitants, which, remarkably, parallel her description of the land in many ways. Just as she describes the region as "lau" and "träumerisch," for instance, she characterizes a shepherd she encounters "in halb somnambüler Beschaulichkeit" with his sheep and "gleichfalls somnambüler Hund."[93] The inert qualities of the landscape and climate appear to set the stage for the inhabitants and animals, who are equally unwilling or unable to move and interact: they pay her so little attention that she simply continues on with no hope for further interaction. However, not only do the people and animals populating this area behave in tandem with their environment, but they also appear to resemble it physically as well. In fact, it was "die aus den seltenen Hütten immer blonder und weicher hervorschauenden Kindergesichten" that had signaled to her that she had crossed the border into Cleve in the first place. As the landscape is covered in sand, it too is blond, and the topography is described as bearing mild rather than sharp features. In the end, Droste reads the paleness and the mild features of both the people and the land as a quality of "jungfräulicher Einsamkeit."[94] Whatever this assessment might turn out to mean for her, the self-assured tone with which she aligns the physiognomy and the "temperament" of the land and its natives lends insight into her anthropological assumptions. For Droste, there is a

[92] Ibid.

[93] Ibid.

[94] Ibid.

natural kinship between humans and their native regions in both physical appearance and demeanor.

This trend persists throughout the first section of the essay: landscapes are presented in terms of their various topographical features, and their inhabitants' qualities are examined in relationship to them. Perhaps the most interesting observation with regard to this relationship, however, is revealed at the beginning of the second section, where Droste states that she will conclude dealing with the landscape itself and return to the question of the "Charakter der Eingeborenen" as well as the "gewöhnlich[en] Einfluss der Natur auf ihre Zöglinge."[95] Yet, what she elaborates here is not simply another description of homologous physiognomies of humans and nature, but, rather, a speculative explanation for an interesting incongruity that she discovers: Why, she asks, do the Paderbornians, native to the gently rolling landscape of northern Westphalia, seem to bear the "Stempel des Bergbewohners, sowohl moralisch als körperlich", which one rightly ought to associate with the people of the mountainous Sauerland region?[96] These observations contradict her entire method of reading thus far, which was based on the assumption of a natural, *visible* kinship and sense of belonging between humans and their respective "native" regions. The Sauerlander's true body form, she claims, is colossal in height and build, similar to the mountains from which he comes. His features are not "geschmeidig" but sharp, like the jagged landscape in which he has grown up.[97] Moreover, he exhibits an "eiserne Gesundheit," a metaphor that associates physiological health and strength with the abundance of iron ore resources in his

[95] Ibid 52.

[96] Ibid.

[97] Ibid 52.

mountainous environment.[98] The fact that the Paderbornians' appearance represents these qualities more than that of the Sauerlanders presents a true puzzle; however, she quickly dismisses this inconsistency as an anomaly. She wonders if one can attribute it to the fact that the Sauerlanders are active tradesmen and thus spend a great deal of time outside their native landscape, or the fact that they receive many foreign (presumably, often Paderbornian) guests in their communities and tend to engage in "auswärtige Heirathen" as well. Her lack of hesitation in placing two very different explanations alongside one another is fascinating: what changes the *physical* appearance of these people is *either* intermarriage *or* living in a different setting. This rhetorical detour sheds light on the urgency with which Droste is attempting to understand the puzzling relationship between humans and nature. Rather than conclude what one might expect—that the descendants of a particular tribe, identifiable by their shared familial features, simply left their home—she suggests that merely spending some time in other physical environments has caused their bodies to physically conform to those environments. This idea, once again, resonates with the notion of *Stimmung*—that humans "attune" themselves to their natural environments psychically and emotionally—but it also adds a physical component: that changing one's environment can also provoke physical changes.[99]

Surprisingly, the contradictory explanations Droste provides for these mismatched appearances—mixed blood and changed habitat—are combined into one very strange metaphorical image: rather than dwell on the phenomenon that this mountain clan's blood "sich täglich mehr verdünn[t]" because they stray from their homeland, she notes that we

[98] Ibid 53.

[99] These questions also resonate with the references to paleontological discourse that surface in her poetry as well, particularly the work of Lamarck.

should perhaps be even more astonished at "die Kraft einer Ader […], die, von so vielen Quellen verwässert, doch noch durchgängig einen scharfen, festen Strich zeichnet, wie der Rhein durch den Bodensee."[100] This image, like so much of Droste's work, reveals a startling association of biological and geological form that simultaneously naturalizes the human world and anthropomorphizes the non-human natural world. Here, the shape of the body is not only influenced by its native landscape, but the body itself is figured metaphorically like the ecology of a landscape, with its veins resembling rivers. For a moment, the two are superimposed in the imagination, lending further emphasis to the notion that humans and nature are reflections of one another. What is more, the rhetorical move in which she notes how surprising it is that the Sauerlander features have *not* been diluted further contributes to the naturalization of the physiognomic process: just like the Rhine is a distinct, legible border landmark created by nature, so too, are the "scharf[e], fest[e] Striche" of the Sauerlander natural signs that demarcate a distinct group and make it readable.

We can now return to the question of the dilemma presented by physiognomic readings: although the object of the reading is conceived of as part of an organic system, the information gleaned about that particular component within the system is often subject to individualized categorization nonetheless. Although Droste wholeheartedly subscribes to the notion of an organic model for understanding the relationship between Westphalia and its people in this text, the moment she attempts to render them *permanently* legible and categorizable, contradictions begin to emerge. These tensions reflect her general ambivalence between static and dynamic conceptions of nature and anticipate similar discrepancies in her lyrical work. Perhaps more importantly, her emphasis on the distinct recognizability of

[100] *Historisch-kritische Ausgabe* 5,1: 52

natural and human features sheds light on her reaction to the massive political, economic, and environmental changes looming at the horizon of her own era.[101] The text itself is written for the purpose of capturing and thus "preserving" the distinctness of a region with its various local communities and cultures, all of which, she anticipates, will no longer be recognizable in 40 years. And while it is easy to dismiss her anxiety regarding the "dilution" of the Sauerlanders' blood as a form of racism, it contributes to a broader picture in which fears about homogenization in general are expressed. In this piece, it is not only regional populations but also landscapes that are being stripped of their peculiarities and thereby made homogeneous: as Droste is writing, deciduous forests all over Germany are being replaced with more profitable pines, and meadows are being converted to monocultural grain fields. These changes upset her not only because of her nostalgia, but also, apparently, because she imagines humans and nature to be so in tandem with one another that these drastic changes in environment will radically alter the people who live there and thus also their unique customs and culture.

Die Mergelgrube

Droste's poem "Die Mergelgrube,"[102] written in 1842 and published in the *Gedichte* collection of 1844, provides a very different set of insights into nature and an approach to "reading" nature that bears little resemblance to the physiognomic method detailed above. The poem presents an intimate encounter with the natural world in which the lyrical subject

[101] See, for instance: David Blackbourn, *The Conquest of Nature: Water, Landscape, and the Making of Modern Germany*, London, Jonathan Cape, 2006; and James C. Scott, *Seeing Like State: How Certain Schemes to Improve the Human Condition Have Failed,* Yale UP, 1998.

[102] All citations of this poem are taken from: *Historisch-kritische Ausgabe* 1,1.

enters into a cavernous marl pit[103] and marvels at the "Trödelbude" of impressive stone deposits that the earth lays bare to her there. Caves such as these were popular destinations for fossil and stone enthusiasts throughout Droste's lifetime. Purportedly, a number of pits and quarries existed near Rüschhaus, the Hülshoff family's country estate near Münster, making it an ideal area for natural history enthusiasts like Droste herself to explore.[104] Rather than providing us with a description of the surface topography of the region that she is traversing, as in the *Westfälische Schilderungen*, however, "Die Mergelgrube" presents a lyrical subject who descends into a subterranean realm with the intention of exploring its depths. Here, he[105] can attempt to "read" the arrangement of the mineral deposits displayed inside the pit, in the way that a geologist might. While the lyrical voice does not make explicit note of any distinct layers present, he repeatedly calls attention to the great diversity of colors, textures, and patterns that nature has laid out in seemingly helter-skelter fashion: "Blau, gelb, zinnoberrot, als ob zur Gant […] Kein Pardelfell war je so bunt gefleckt / Kein Rebhuhn, keine Wachtel so gescheckt." Yet, because he points out that such a marvelous display is made possible by inserting a spade "drei Spannen in den Sand" (about two feet down) and extracting a "Schnitt," or cross section, of the earth, it is relatively clear that he has at least a superficial knowledge about stratigraphy, the process by which geologists

[103] Marl, or marlstone, is a fine-grained sedimentary rock containing clay, silt, and limestone. It was often excavated and used by farmers as a fertilizer and conditioner for lime-deficient soils. Note that the German word for marl, "Mergel," is also the surname of the Paderbornian protagonist Friedrich Mergel of *Die Judenbuche*. The crime story was composed between 1837 and 1841 and published in its entirety for the first time in 1842. Droste allegedly changed the name of the poem from "Die Sandgrube" to "Die Mergelgrube" (Nettesheim 90-91).

[104] *Historisch-kritische Ausgabe* 1,2: 161.

[105] Droste explicitly reveals the lyrical subject as a male subject at the end of the poem. This is also the case in "Der Hünenstein."

examine patterns of rock layers to determine past geological events.[106] It is not unlikely that Droste was familiar with the phenomenon of stratigraphical mapping, as these techniques had largely been developed in Thuringia and Saxony in the late 18th century as the mining industry there flourished and geology (then called "geognosy") began to emerge as a distinct discipline. Likewise, Droste's home region of Westphalia, particularly the Sauerland region, had a history of mining iron ore and other metals, as she mentions in *Westfälische Schilderungen*.[107] It is likely that geological concerns were of large importance to the people inhabiting this area as well and thus presented material for literary reflection. While *Westfälische Schilderungen* exhibited a kind of horizontal-spatial reading privileging questions of ecology, "Die Mergelgrube" makes it immediately clear that Droste is also invested in exploring a vertical-temporal reading that concerns itself with questions of geology and deep history.

The second strophe of the poem opens with a survey of the different rocks present—gneiss, feldspar, mica, porphyry, flint—a chaos of material that the lyrical subject can impressively identify and classify by name. However, mere naming does not appear to suffice; his next concern is one of legibility. How might he decipher the story that this arrangement of rocks wants to tell about the history of the earth? Appropriately, what follows the poetic cataloguing of rocks that initiates this strophe is a string of references to Abraham Werner's theory of Neptunism. This theory maintained that the Earth's present geological form had been created exclusively through a long process of precipitation and sedimentation

[106] For an in-depth discussion of stratigraphy as an important literary motif in English and German Romanticism, see: Noah Heringman, *Romantic Rocks, Aesthetic Geology*, Ithaca, NY, Cornell UP, 2004. For the importance of stratigraphical vision on Goethe's *Wilhelm Meisters Wanderjahre,* see: Andrew Piper, "Mapping Vision: Goethe, Cartography, and the Novel," *Spatial Turns: Space, Place, and Mobility in German Literary and Visual Culture*, eds. Jaimey Fisher and Barbara Mennel, Amsterdam, Rodopi, 2010.

[107] Martin J. S. Rudwick, *The Meaning of Fossils: Episodes in the History of Palaeontology*, 2nd rev. ed, New York: Science History Publications, 1976, 125-26

after a great universal flood (usually aligned with the Genesis flood narrative). A number of German writers and thinkers, including Goethe and Novalis, had studied under Werner at the Freiberg School of Mines in Saxony and had been fervent supporters of his theories. It is, therefore, not surprising that Droste would begin with the Neptunist interpretation of the earth's history, particularly given her religiosity and the theory's concordance with the creation narrative of Genesis. Proponents of Neptunism often believed that gravelly mineral deposits such as marl pits had been formed as flood waters carried sediment from other regions and released them haphazardly across the globe as the present-day continents built up from the floor of the prediluvial oceans.[108] Likewise, in attempting to "read" the rocks' history through their erratic placement, the lyrical subject of "Die Mergelgrube" cannot help but impose a Biblical narrative on the space: the "Schleusen" opened, dissolved the earth's order as it had existed, and then, as Noah's ark landed at Ararat: "eine fremde, üppige Natur, / Ein neues Leben quoll aus neuen Stoffen."[109] This Biblical line of interpretation is also expressed in the latter part of the poem's second strophe, which reflects on the rocks' foreignness: "Nur wenige [von diesen Steinen] hat dieser Grund gezeugt." To the lyrical subject, these stones do not appear to be "native species" to this area, but rather, migrant foundlings brought in by the "zorn'ge Welle." Each stone, he asserts in the third strophe, is an orphan, "weil von der Brust / Der mütterlichen sie gerissen sind / In fremde Wiege, schlummernd unbewusst." While the idea of a *Findling* is used here metaphorically to explore questions of origins, it is also a technical term ("erratic" in English) referring to stones whose lithology indicates that they originate from "parent bedrock" geographically

[108] Rudwick 111.

[109] This idea of a threshhold and new order also resonates with her own historical period in political terms as well as scientific. See Rudwick 109 on Cuvier's use of "revolution."

remote from their present location.[110] Erratic rocks can range in size from the smaller fragments we learn about in "Die Mergelgrube," to large blocks, such as the boulders that feature in her poem "Der Hünenstein"; however, the means by which these rocks were transported was the topic of much debate during most of Droste's lifetime. Her usage of the term here and in other contexts strongly suggests that she had some level of familiarity with contemporary geological theories surrounding these questions.

The anthropomorphizing of the foundling rocks at the end of the third strophe of "Die Mergelgrube" also glimpses a momentary return to the physiognomic work of *Westfälische Schilderungen*, as this heathland "orphanage" contains foundlings from diverse origins: "Die Mohren, Blaßgesicht, und rote Haut / Gleichförmig mit dem braunen Kleide!" This strophe resonates with *Westfälische Schilderungen* because the rocks bear the mark of foreign origins and create a sense of visual dissonance for the observer by openly displaying their own alienness within these surroundings. The lyrical voice's observation that these rocks are now embedded in a unifying medium of soil and thus clothed in the same uniform of a "braunen Kleide" reflects, on the one hand, concerns about the homogenization of unique regional cultures in favor of a national culture, as well as a sense of alarm about the increasing level of uniformity in the landscapes that these local communities inhabit. On the other hand, his lamenting speculation that these rocks' dislocation was caused by a Biblical event points longingly to a moment of Biblical prehistory (whether pre-Flood or pre-Fall) in which the scattered rocks—and by extension, the scattered human races—enjoyed a state of unity. For the lyrical subject, then, it seems that this original unity is forever lost and no longer accessible. Despite this unresolved contradiction, which is representative of Droste's

[110] Charles Lyell popularizes the idea of erratics and theorizes different ways in which they may have been transported, including glacial transport in *Principles of Geology* (1830-33): 263ff.

notorious ambivalence, it is significant to note that these human and geological histories are almost always presented as deeply intertwined, and—for poetic purposes—often interchangeable.

The idea of the *Findling* also resonates with another important layer of scientific discourse during the early 19th century that sought to determine not only how geological origins related to human origins but also how they related to the origins of other biological life forms. Geological and paleontological discoveries as well as new stratigraphical dating technologies were beginning to create obstacles for scientists who wished to adhere to religiously informed calculations of the timeline of the earth's history. These scientists, often including Neptunists, were gradually forced to adopt a more flexible interpretation of the various events involved in the Genesis creation narrative in order to accommodate these scientific findings and the various theories that emerged out of them. For instance, the discovery of fossils belonging to large, monstrous creatures that no longer seemed to inhabit the earth had complicated both Neptunist and Biblical narratives; many scientists throughout the 18th century had assumed the bones belonged to mythic animals that had existed before the Deluge and had been intentionally wiped out by it. When the superficial gravel deposits in which many of these fossils were found to be too shallow to match estimations for the era of the Flood, scientists began searching for other extinction theories that could be reconciled with the Biblical reading of history. Scientists like the French comparative anatomist Georges Cuvier entertained theories that the earth's history had been punctuated by a number of powerful local-scale catastrophes that may have caused these mysterious creatures to become extinct after the Flood.[111] Glacial drift and ice age theories also began to gain new

[111] Georges Cuvier had formulated these theories to help explain extinction.

traction in this context, as they helped explain, for instance, why mammoth bones were discovered in relatively young gravel deposits. Crucially, these post-Flood disaster theories also contributed to the preservation of Biblical timelines of the earth's history because the disappearance of these strange life forms could now be accounted for by more recent disasters.

According to Martin Rudwick in his important work *The Meaning of Fossils,* mammoth fossils, found throughout Siberia and Northern Europe during the 18th century, were a particularly interesting case in this context. Namely, these fossils sparked a debate about the possibility of extinction when Georges Cuvier determined in 1796 that they did, in fact, point to the existence of a separate species that no longer existed on earth.[112] It appears to be no coincidence that Droste included a reference to mammoth fossils in "Die Mergelgrube," as the mystery surrounding the mammoth's existence was at the center of scientific debates concerning the progression of both biological and geological history. Cuvier's work engaged scientists in a debate that dominated paleontology from the late 1790s to the 1820s. In this context, three possible explanations for the disappearance of earlier animals forms were under review: they had either become extinct (as Cuvier believed), had undergone transmutation (as Jean-Baptiste Lamarck believed), or they existed in an obscure place on earth where they were yet to be discovered. The latter was deemed least likely, and no one suspected that the former two were mutually inclusive, and thus the great Cuvier-Lamarck debate emerged. Because Cuvier's position was informed by an understanding of nature based on the fixity of species, he maintained that extinction was the only option.[113] Although Cuvier is said to have disregarded the need to reconcile science with

[112] Rudwick 107.

religion, his theory was popular because his understanding of species as a "temporally stable unit of nature" corresponds with the notion of a static order of creative design.[114] Lamarck, on the other hand, had an opposing view of nature that led him to believe that species division did not actually exist. Rather, he claimed, living organisms existed along a scale of higher and lower forms in a process of continual flux; his dynamic conception of nature, alongside *Naturphilosophie,* was often written off by Cuvier as unscientific.[115] Both theories exhibit the fact that, for a time, paleontology—which informed the fields of biology and geology in crucial ways—continuously uncovered troubling contradictions in existing approaches to natural inquiry. "Die Mergelgrube" suggests that Droste's passion for fossil collecting was not a mere hobby but, rather, a window into the kaleidoscopic new world of scientific knowledge that was emerging during her lifetime.

Although it is difficult to know to what extent Droste was aware of early 19th century biological discourse, it is clear that the petrified remains of past biological life forms provoked challenging questions about environments and environmental conditions that resonated throughout society. Both Cuvier and Lamarck realized that organisms and environments were closely attuned to one another and fit together like pieces of a puzzle. Because Cuvier believed in the fixity of species, organisms (in his interpretation) were constrained by their environments. Consequently, he believed that an alteration in the surrounding conditions of an organism would either cause it to perish or prompt it to migrate to more suitable conditions. Lamarck, on the other hand, thought that the specific conditions of an environment prompted organisms to "use or disuse" particular organs and thus adapt to

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[113] Rudwick 109.

[114] Rudwick 153-54.

[115] Ibid.

the conditions at hand. These altered traits were then believed to be passed on to their offspring. Each conception of biological development had interesting implications based on its assumptions and conclusions. In assuming the fixity of species, Cuvier's explanations for displaced and anomalous fossils naturalized not only the idea of extinction but also the idea of migration in the case of environmental change. However, if organisms were not understood to be fixed to a species and were thus able mutate, as Lamarck contended, then adaptation, rather than migration, became naturalized.

The most crucial issue here is that, in both theories, it is the variability of the natural environment that provokes a reaction in organisms. If we project these ideas metaphorically onto the human realm, as I believe Droste was fond of doing, her fears about the extinction of regional culture become apparent, particularly if one recalls the section of *Westfälische Schilderungen* in which she tries to account for discrepancies in the physical appearance of the Sauerlanders and the Paderbornians. When used at a metaphorical level to explore the relationship between humans and their specific environments in an ethnographical way, these theories point to major consequences: because regional traditions are so anchored in a sense of place, if environments happen to change, either a migration or a shift in the regional culture is inevitable. For Droste, who often expressed her concern about the disappearance of local traditions, physical alterations to the place anchoring that tradition guaranteed either migration or a corresponding change in the nature of the people, both of which would undermine the stability of those long-held traditions. This is not surprising, considering that Droste's lifespan coincided with the beginnings of a modern economy in Westphalia, including landscape-altering changes such as the introduction of railroad lines, engineered

forestry operations, and large-scale farming.[116] These observations are supported by Droste's impulse throughout *Westfälische Schilderungen* to condemn the environmental alterations occurring in Westphalia, such as replacing deciduous forests with more profitable pines, or expanding agriculture to "endlose Getreidseen."[117] Her message, even without considering this scientific discourse, seems to be clear: changing a landscape will necessarily change the people who inhabit it.

While the *Findling* discussion in earlier strophes of "Die Mergelgrube" seemed to lament the disintegration of nature and called upon science to reconstruct the story and reassemble the pieces, the image of nature that we encounter in the fourth strophe shows a sudden transformation. Nature is not simply scattered and silent, an elusive secret for humans to ponder: it is now also dynamic and communicative—but dying. This change in perspective is already announced by a rhetorical shift in which the lyrical subject begins referring to himself in the first person for the first time. Moreover, when he does, his position in the cave appears to represent an important threshold:

> Tief ins Gebröckel, in die Mergelgrube
> War ich gestiegen, denn der Wind zog scharf;
> Dort saß ich seitwärts in der Höhlenstube,
> Und horchte träumend auf der Luft Geharf.
> Es waren Klänge, wie wenn Geisterhall
> Melodisch schwinde im zerstörten All;

He is sitting "seitwärts" in the cave, one side of his body turned towards the outside world, one towards the cave's mysterious contents. Momentarily, his empirical eye refrains from scrutinizing the objects of his study, and his ear becomes the primary provider of sensory

[116] "Although the geometric, uniform forest was intended to facilitate management and extraction, it quickly became a powerful aesthetic as well. The visual sign of the well-managed forest, in Germany and in the many settings where scientific forestry took hold, came to be the regularity and neatness of its appearance. […] The more uniform the forest, the greater the possibilities for centralized management" (Scott 18).

[117] Droste 48.

information. What his senses convey is a vibrant, animated natural world outside the cave. He listens, "träumend auf der Luft Geharf," an unambiguous Romantic trope pointing to nature's capacity for vibrancy and animism as well as its ability to "speak to" humans by stirring emotions. His attunement to the wind here is reminiscent of the concept of *Stimmung* mentioned above, which, at least in the Romantic context, assumes that this capacity for attunement can be attributed to a common origin between man and nature, a primordial kinship. The *Findling* lament echoing from the opening strophes also has resonance in this context. That is, in the Romantic understanding of human-nature relations, humans have estranged themselves from nature by trying to become masters of it. By submitting it to a process of objectification, man has affirmed the subject-object divide and thus also nature's alienness.

As mentioned before, the lyrical subject is lamenting more than the mere fragmentation of nature in this second phase of the poem. In increasing intensity, he introduces signs of its death. Nature speaks to him quite spiritedly in the beginning of this section through the wind. Throughout the strophe, however, the general sense of its animated presence fades. At the end of this episode, he is desperate to hear its message but receives no response: "Findlinge zog ich Stück auf Stück hervor / Und lauschte, lauschte mit berauschtem Ohr." In his scientific pursuit to examine these fossilized remains, to classify them, call them by name, and possibly take them into his own possession (in the first section of the poem), he has cut himself off from them by asserting himself as master and knower. That part of nature still clinging to life now goes increasingly silent in his presence, drawing away from him and settling down into the ashes of its own demise: "Mir überm Haupt ein Rispeln und ein Schaffen, / Als scharre in der Asche man den Funken."

In the subsequent strophe, he characterizes the marlstone around him as a gray mass, "verödet" and "ausgebrannt." With only the separation of a semicolon, he begins describing himself in similar terms, as if nature's decline also necessarily reflects his own demise. He, too, ceases moving, just as the wind dies out and turns "lau." For the lyrical subject, this moment of stillness thus also signals the decline of an era of enchanted nature and human attunement to that enchantment. Nature, severed from its kinship to humans through detached, objectifying science, now refuses to beckon them into the enchanted state that makes poetry possible. Here the lyrical subject lies, closed within himself in a hallucinatory state between life and death. He is separated from the animated nature that once spoke to him from the outside world; this older model, his poetic self, is now also poised to become a fossil in the graveyard of the earth's past:

> Es ist gewiss, die alte Welt ist hin,
> Ich Petrefakt, ein Mammutsknochen drin!
> Und müde, müde sank ich an den Rand
> Der staub'gen Gruft; da rieselte der Grand
> Auf Haar und Kleider mir, ich ward so grau
> Wie eine Leich' im Katakomben-Bau

The only sign of hope in this passage resides in the fact that the last sparks ("Funken") of life within the lyrical subject and within the ashes of nature have not yet completely died out. In particular, the reader is left with the vague sense that the lyrical subject is clinging to this last spark in himself: "Ich selber schien ein Funken mir, der doch / Erzittert in der toten Asche noch, / Ein Findling im zerfallnen Weltenbau." Furthermore, the hypothetical similes introducing the events of this passage suggest that the impending moment of death has not actually set in but merely seems "as if" it has. A narrow possibility of hope for the poet may still exist.

The lyrical subject's insistence on dwelling at this threshold has a number of possible implications, even, perhaps, for a metalevel discussion of Droste's work. That is, Droste appears to be urgently preoccupied with her own "categorization"—with the legibility of her own position within German literary history. To what generation of writers does she properly belong? This dilemma is perhaps most clearly articulated at the close of the previous strophe: "Wie Neues quoll und Altes sich zersetzte - / War ich der erste Mensch oder der Letzte?" Is she the last of the great generation of Romantic geniuses? The last of a generation for whom science and art were considered codependent? The last of a generation of scientific thinkers for whom knowledge could be gleaned without subjecting nature to the petrifying forces of the objective gaze?[118] The lyrical subject's position at this threshold seems, in some ways (but not all), to present a reversal of the Romantic trope of the cave, as exemplified in Tieck's *Bergwerke zu Falun*. In Tieck's work, the protagonist is drawn to his demise by the enchanting qualities of nature *inside* the cave, such as the stones' mesmerizing beauty and a bewitching voice from below that activates his desire and beckons him to thrust himself into the womb of the earth. For the subject of "Die Mergelgrube," at least in the initial three strophes, the pit is a place for scientific observation and fact. While some poetic speculation exists, it is informative and pedagogical, given in the second person. It is only when the wind stirs his imagination from *outside* that the poem transitions into the more subjective first-person voice and he begins to imagine himself petrifacted and buried in the earth. Rather than bury himself in the past (alongside Romanticism), he regains his sobriety at the last moment and exits the cave. But it was the *Wissbegier*, that intense hunger for scientific knowledge

[118] The medusa head she references in the poem is particularly interesting for this question. While the "medusa fossil" represents a real paleontological finding--something like a prehistoric jellyfish--it also represents petrifaction as part of an aesthetic discourse: what does it mean to capture reality with art? Does art face the same dangers as science with regard to killing its subjects?

that brought him into the cave in the first place. The message is ambivalent: both succumbing to the unbridled imagination *and* devoting oneself to cold, distanced, empirical science can lead to one's undoing, whether that includes a tragic fall into an unknown abyss or becoming sealed off from the world in a process of petrifaction. In this space, at this threshold, he had hoped to find a common ground where science and poetic reflection could co-exist, but in the end, as with all attempts at reconciliation in this poem, this hope for unity is just a dream.

As he awakens from his trance and reemerges into the outside world, he stumbles upon a knitting shepherd who has cast aside Bertuch's *Naturgeschichte* in the moss beside him. When the lyrical subject asks, "Les't ihr das?" the shepherd claims: "Der lügt mal, Herr!! doch das ist just der Spaß!"[119] For him, science confounds his simple, literal understanding of the Bible because he believes, as many did, that the Flood could not have reigned over the earth long enough to transform snakes and bears into stone: "Man weiß ja doch, daß alles Vieh versoffen." When the lyrical subject hands him the medusa fossil and says, "Schau, / Das war ein Tier," he laughs long and hard. The final line is ambiguous because, in relaying that the shepherd thinks he is mad, the poem makes it unclear whether or not he is also admitting to his own insanity: "Daß ich verrückt sei, hätt' er nicht gedacht! -" He longs, perhaps, for an era that did not have to concern itself with this influx of puzzling scientific evidence, before nature was so overdetermined, combed over, and picked apart. And although these final strophes of the poem return to the narrative that sets scientific and religious interpretations of the earth's origins in dichotomous opposition to one another, it is clear from the poem's internal episode that "science" by no means connotes a monolithic approach, nor does it appear to reveal a unified picture of nature.

[119] Athough the author herself is female, the lyrical subject is revealed right at the end as a male (*Herr*), and a similar revelation occurs in "Der Hünenstein."

Der Hünenstein

The poem "Der Hünenstein,"[120] composed contemporaneously with "Die Mergelgrube" and likewise published under the heading "Die Haidebilder" in the 1844 *Gedichte* edition, presents yet another intimate encounter with nature that also involves an experience inside a grave.[121] However, as the title suggests, the historical narrative that Droste maps onto the poem's outdoor setting does not draw its vision from a Biblical tradition, but, rather, an interest in a pagan Germanic past. One feature that it does share with "Die Mergelgrube," however, is its preoccupation with artifacts as hermeneutic keys to reading or reconstructing the past. Yet, rather than paleontological, the artifacts in "Der Hünenstein" are anthropological in nature. A "Hünenstein," or "Hünengrab,"[122] is a megalithic tomb, which is a group of very large stones that were arranged as a burial site towards the end of the prehistoric era.[123] The term "Hüne" means "giant," as megalithic tombs remained a mystery for centuries and were long alleged to have been built by

[120] All citations of this poem are taken from: *Historisch-kritische Ausgabe* 1,2.

[121] The choice of a megalithic tomb as a subject of reflection is somewhat reminiscent of Romantic landscapes: Caspar David Friedrich completed several "Hünengrab" paintings around 1807.

[122] *Historisch-kritische Ausgabe* 1,2. Droste proposed both terms as titles for the poem, but the editor chose "Der Hünenstein."

[123] Interest in anthropology and human artifacts was also on the rise during Droste's lifetime. Christian Jürgensen Thomsen (1788-1865), for instance, invented the method of "closed finds" for dating human artifacts, which involved associating artifacts only with others found in the same excavation area. This allowed scientists to learn more about human civilization during each period (i.e., the Stone Age, Bronze Age, or Iron Age). His results were published in the *Ledetraad til Nordisk Oldkyndighed* (Guideline to Scandinavian Antiquity) in 1836 and were broadly influential. Droste herself is extremely interested in the topic of "instruments" and tracing human civilization through the advancing phases of human technology while also drawing attention to the coinciding shift in relationship between humans and nature. See, for instance: "Die Elemente," the opening poem of the collection "Fels, Wald und See." The cycle refers to each age of human civilization.

prehistoric giants.[124] As Nettesheim points out, the origins and functions of these stones were a subject of great debate throughout the 1830s and 1840s, making them a timely topic for Droste to have contemplated.[125] Nettesheim's analysis shows that the lyrical subject's understanding of the *Hünenstein* in the poem as both a sacrificial altar and a burial site attests to Droste's nuanced familiarity with both sides of the debate. My analysis, however, is concerned with determining how the sudden appearance of the *Hünengrab* prompts Droste's lyrical figure to read the natural space surrounding him. In exploring this question, I hope to uncover how the scientific discourses deemed important to Droste's work thus far can shed new light on the poem.

"Der Hünenstein" presents the lyrical subject's account of the events that led up to a strange encounter he experienced one evening while out on a walk. Briefly summarized: he leaves his house at twilight, preoccupied, distracted, and paying no regard to the landscape around him. He is completely lost in his own thoughts for quite some time, mentally composing and recomposing a piece of writing that has been frustrating him because he cannot seem to make any forward progress: "Entwürfe wurden aus Entwürfen reif, / Doch, wie die Schlange packt den eignen Schweif, / Fand ich mich immer auf derselben Stelle." Suddenly, a beetle lands on his face, which startles him and causes him to fall to the ground. When he looks up, he finds himself surrounded by giant rocks and realizes he is in a megalithic tomb, which at once thrills him and terrifies him. After a period of contemplation about the potential rituals performed at such a site so long ago, a figure in the form of a "Riesenleib" draws near, and he scares it away. Precisely at this moment, his footman arrives with a light and an umbrella and leads him home to escape the approaching storm. As he

[124] Nettesheim 75ff.

[125] Ibid.

turns back to face the tomb one last time before leaving, his vision sobers, and he realizes it was just a conventional gravestone covered in dust.

The most striking aspect of the poem at second glance is the dissonance between the knowing hindsight of the lyrical voice telling the story and his oblivion as a character in the story as it unfolds. Namely, the narrating self relays everything that the narrated self fails to see as he strides pensively through the nighttime landscape. Perhaps of greatest significance is the fact that the lyrical voice describes the land in a state of decrepitude, ghostly and gasping for its last breath: "Als wie ein siecher Greis die Heide lag / Und ihr Gestöhn des Mooses Teppich regte, / Krankhafte Funken im verwirrten Haar[.]" This observation certainly resonates with the general picture of nature in "Die Mergelgrube" as falling into ruin. Here, it seems to be perishing because man, like the self-absorbed wandering poet, has completed forgotten to acknowledge its existence. Indeed, in his account, the lyrical voice notes all of the aspects that he had previously *failed* to see: the grasses bending in the wind, the warm light of the glowworms, the rising moon. It is as if nature in its weak state was desperately trying to win his attention, but could to nothing to reach him. In a final act of desperation, nature flung a beetle at his face, and it is certainly not a coincidence that it landed "[a]ns Auge mir[.]" Finally, his eyes were open.

Before examining the lines that follow, it is important to briefly explore the crumbling relationship between humans and nature that is presented here. If we follow the line of reasoning presented in *Westfälische Schilderungen* and "Die Mergelgrube," it seems that nature is dying because man, often with the aid of science, has learned to contain its powers and subjugate it to his own will. In seeking to learn its secrets and rob it of all mystery, he has largely broken its spirit and thus all but laid it to rest. Because nature now

poses an increasingly diminishing obstacle on man's path to omniscience and omnipotence, the latter begins to forget it exists, as is evident in the poem. The poem's setting also seems to suggest that the natural setting has been altered for the benefit of man, as the wandering poet does not even need to open his eyes to his surroundings in order to traverse them: "Grad war der Weg, ganz sonder Steg und Bruch." One problem persists, however. In this landscape, which seems to have lost its vivacity and also its unique character, the poet simply cannot produce the work he once presumably could. In the retelling, the lyrical voice suggests that, at this moment, he was not able escape a certain conventionality that one would associate with a "schlechtes Buch" or a "Pfennigs-Magazin." He revisited a theme he'd tossed out ten different times, whittled away for a while, and discarded it again. This vicious cycle had gone on for some time until the beetle landed on his face and virtually thrust him at his muse. He looks up from the ground and thinks:

> Seltsames Lager, das ich mir erkor!
> Zur Rechten, Linken, schwoll Gestein empor,
> Gewalt'ge Blöcke, rohe Porphyrborde;
> Mir überm Haupte reckte sich der Bau,
> Langhaar'ge Flechten rührten meine Brau',
> Und mir zu Füßen schwankt' die Ginsterlode.
>
> Ich wußte gleich, es war ein Hünengrab [...]

His initial sense of wonder at this scene is reminiscent of a Romantic encounter with the sublime, showcasing a mixture of delight and terror. Moreover, there are signs that this moment presents a reunification of man and nature, as the descriptions of human and geological bodies begin to overlap once again:

> Wollüstig saugend an des Graunes Süße
> Bis es mit eis'gen Krallen mich gepackt,
> Bis wie ein Gletscher-Bronn des Blutes Takt
> Aufquoll und hämmert' unterm Mantelvließe.

After this initial reaction, the poet finally begins to recognize the sad state in which nature finds itself. In fact, the *Hünengrab* appears to be a burial site for nature itself—and a site where nature is also mourning its own death. The stone cover is like a widow sunken at its spouse's grave, with the moonlight shining down, pale and full of sorrow. Ashes are scattered around like cremated ruins, adding weight to another recurring trope in Droste's lyric. With the poet's attention finally in place, a lapwing screeches from amidst the moss and provokes in him a sudden explosion of the imagination. Now that he is attuned to the wind, it is "[a]ls bring' er Kunde aus dem Geisterland[,]" and he is now poised to bring an imaginative, poetic eye to the scene in front of him.

In the strophe that follows, he speculates about the particulars of the tomb: who moved these stones and piled them so high? What did they look like? For what purpose did they arrange them like this? Now that the poet has entered into this meditative state, the scene also begins to transition from speculative and questioning to descriptive: he visualizes the location where the urn must be buried and imagines "ein wildes Herz" within it. He senses the wrathful gods and their "Wolkenlocken," towering from above and rattling the stones in demand of their sacrifice. Through his newly activated imagination, the poet thus encounters the staging of a deeply polytheistic world—a visceral reminder of a long-gone era in which nature was *very* alive and, indeed, assigned great power and agency.

He also witnesses the danger it presents as the great ghostly figure in the sky suddenly begins to approach. Equipped with the talismanic properties of the "Kirchenduft in [s]einem Kleide," he shouts: "Komm her, komm nieder - um ist deine Zeit!" With this command, the ominous cloud begins to lift away and fade off across the heath. Once again, Droste's narrator appears to have narrowly escaped his peril, after which he promptly

awakens from his trancelike state and notes: “Noch einmal sah ich zum Gestein hinab: / Ach Gott, es war doch nur ein rohes Grab, / Das armen, ausgedorrten Staub bedeckte!” The subject’s sudden return to sober vision has transformed this spirited natural world back into dust and relegated it to its previous state of impoverishment and desiccation.

The quick reversal of perspective at the end of both “Der Hünenstein” and “Die Mergelgrube” seems to indicate that Droste perceives the balanced middle ground between the entangled subject and the detached observer as an increasingly impossible position. Furthermore, even though the lyrical subject’s entanglement with and attunement to nature is presented here as essential to the creation of worthy poetry—because nature stirs the imagination—this proximity to nature is simultaneously presented as potentially fatal. The danger, however, appears to be prompted by an attempt to reconcile Romantic and empirical positions. That is, a scientific (or poetic) approach that establishes humans as masters of the natural world can contain and control the forces of nature but, in so doing, it also renders nature lifeless. Yet, according to Droste’s ecological model, this trend toward an increasingly lifeless nature poses a risk, because this lifelessness will also eventually manifest itself in the humans who inhabit that nature. This dilemma might explain why Droste’s lyrical subjects become closer to encountering death the more closely they become intertwined with the nature that beckons them.

Finally, for Droste, nature—insofar as it compels man to mirror it—also has an important bearing on cultural production. As the landscapes of Europe were made increasingly rational and “legible” through new scientific technologies, spaces that were once untamed and dynamic underwent a number of physical transformations. Droste seems to

suggest that a natural world subjected to processes of standardization (e.g., through the draining of heaths or engineering of forests[126]) in turn changes the kind of art that can be produced within that world, because an alteration of nature necessarily elicits an alteration of the humans who create the art. Indeed, as the subject of "Der Hünenstein" observes, conventionalized surroundings only seem to lead to conventional art. Buried in this critique is a sense of anxiety about the fate of arguably less direct or "legible" literary forms like poetry. If a certain quality of nature is eradicated, might certain kinds of poetry one day become impossible or obsolete as well? For Droste, scientific approaches that privilege singular systems of legibility while renouncing aesthetic sensibility and other ways of knowing pose precisely this risk.

[126] The process of surveying in Stifter's *Kalkstein*, the subject of the next chapter, is another example of this kind of standardization. Although it doesn't literally alter the landscape, it "flattens" it by subjecting it to a standard scale that only measures select aspects and represents it in limited terms.

CHAPTER THREE

Training Scientific and Aesthetic Vision: *Stimmung* in the Work of Adalbert Stifter and Carl Gustav Carus

Fig. 1: Adalbert Stifter, "Bewegung II" (Oil Study)[127]

Denn wirklich ist ja von keinem Naturkörper ein absolutes Beharren zu denken und der scheinbar in größter Ruhe beharrende Stein durchfliegt mit der Erde in jeder Sekunde große Räume der Sonnenbahn und erfährt fortwährend unmerkliche chemische Aenderungen.

-Carl Gustav Carus, *Zwölf Briefe über das Erdleben*[128]

Scholarship has not yet definitively determined to what extent, if at all, the renowned Austrian literary writer and amateur landscape painter Adalbert Stifter (1805-1868) would have been familiar with the work of Carl Gustav Carus (1789-1869) when he composed the

[127] Adalbert Stifter, "Bewegung II" (Oil Study), 1858, Wien, Adalbert-Stifter-Gesellschaft.

[128] Carl Gustav Carus, *Zwölf Briefe über das Erdleben,* ed. Ekkehard Meffert, Stuttgart, Freies Geistesleben, 1986: 50. Hereafter referred to as *Zwölf Briefe*.

above-cited oil study "Bewegung II" in 1858.[129] In some ways, it may even seem a bold gesture to suggest a link between Stifter and the Saxonian polymath at all, given their difference in age and home region, as well as scholarship's tendency to associate them with contrasting aesthetic movements (Carus with Romanticism and Stifter with early Realism). For these reasons and others, only a handful of scholars have explored the possibility that Carus and his perspective on nature could have had a direct bearing on Stifter's work.[130] Yet, irrespective of traditional categories and whether or not direct lineages can be drawn, Carus's status as a physician, naturalist, painter, and scientific and aesthetic theorist does make his work an excellent window into the precarious state of European scientific and aesthetic discourse in the early 19th century, particularly in the decades leading up to mid-century. As will become clear throughout the chapter, it is precisely this period of epistemological disorientation that so deeply informs Stifter's development as a painter and literary writer.

As I indicated in the previous chapter, Romantic and analytical-empirical approaches to scientific inquiry were coming into increasing competition with one another during this era, particularly in the German-speaking realm, where Romantic *Naturphilosophie* had inspired a loyal following over the first few decades of the 19th century. Furthermore, developments in the institutionalization of knowledge also elicited widespread concern among many figures who considered themselves *Wissenschaftler* at a moment when *Wissenschaft* itself was being dissected and hierarchized into individual disciplines.[131]

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[129] Karl Möseneder suggests the likelihood that Stifter knew of Carus's *Neun Briefe über die Landschaftsmalerei* in: Möseneder, "Stimmung und Erdleben," *Adalbert Stifter. Dichter und Maler, Denkmalpfleger und Schulmann,* Tübingen, Niemeyer, 1996: 32, especially 38f.

[130] Ibid. 25; See also Alfred Doppler, "Stifters Briefe als Dokumentierung der Selbstdarstellung," *Stifter und Stifterforschung im 21. Jahhundert*, ed. Harmut Laufhütte et al, Tübingen, Niemeyer, 2007: 7.

[131] "Discipline" is, of course, an anachronistic term for this time period. Carus, for one, frequently tries to articulate the phenomenona of the differentiation of knowledge in general and scientific fields of study in

Historian Lynn Nyhart points out, for instance, that, throughout the first half of the 19th century, a discrepancy emerged with respect to the primary goals of different fields in many German universities, particularly between faculties representing the natural sciences and those representing the "human sciences," such as art and philosophy. Within the philosophical faculties, she notes, "'knowledge for its own sake' became a watchword covering both research and teaching."[132] But, for instance, within the medical faculties, the pursuit of knowledge "for its own sake" or for the purpose of a student's inner development (*Bildung*), was increasingly deemed insufficient and subordinated to an emphasis on practical skills development.[133] Likewise, political sponsors of the universities were becoming increasingly wary of funding the pursuit of philosophical knowledge. This was especially the case within the life sciences, which were primarily housed in the medical faculties. Here, it was emphasized that professorial commitment to knowledge for its own sake "needed to be tempered with the sort of training that made good servants of the state."[134]

Amidst this rush towards pragmatically oriented disciplinarity and the growing compartmentalization of "pure" and "practical" forms of knowledge acquisition, Carus became an important figure to address the increasingly fragile relationship between the emerging natural sciences and older, more philosophical modes of understanding nature, all which had largely been unified under the umbrella of "philosophia naturalis" until the late

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particular with terms such as "Seiten der Wissenschaft," "Zweige der Naturwissenschaft," "Stückwerk," "Verschiedenheit der Standpunkte der Wissenschaft." *Zwölf Briefe* 14, 17, 20, 22.

[132] Lynn K. Nyhart, *Biology Takes Form: Animal Morphology and the German Universities, 1800-1900*, Chicago, U of Chicago P, 1995: 38.

[133] Ibid.

[134] Ibid. 51. See also: James C. Scott, *Seeing Like State: How Certain Schemes to Improve the Human Condition Have Failed*, New Haven, CT, Yale UP, 1998. Scott accounts for a turn towards technoscientific practices in several German states and particularly focuses on the establishment of *Forstwissenschaft* practices to increase lumber productivity.

18th century. Likewise, he insisted upon the function of art as an important complement to science. The growing separation of knowledge into stand-alone disciplines, often with their own practical ends, elicited a sense of anxiety: Was it still possible to practice art, philosophy, and natural science in tandem with one another, or might the natural sciences now begin to eclipse art and philosophy as more legitimate ways of knowing? Consistently throughout his work, Carus insists on the interdependence between all three. In his 1831 aesthetic treatise *Neun Briefe über Landschaftsmalerei*, for instance, he frequently insists on the necessity of scientific training for landscape artists. At the same time, he asserts that detailed, empirical observation should be balanced with a philosophical and aesthetic sense for the whole, for artists and scientists alike.

These ideas reemerge with an emphasis on scientific conceptions of nature in his 1841 work *Zwölf Briefe über das Erdleben*, in which he introduces the concept of the "earth-life." Among other things, this work attempted to reintegrate the Romantic notion of the earth as a living, organic body into the purview of the empirical natural scientist. Ekkehard Meffert's 1986 edition of *Zwölf Briefe* acknowledges the foresight of this work and praises Carus's persistent efforts to establish synthesis and balance between diverging modes of knowledge at the threshold of such a great epistemological paradigm shift:

> Die mit einem genialen Mut zur Synthese geschriebenen "Zwölf Briefe über das Erdleben" sind am Beginn des naturwissenschaftlichen Zeitalters der erste Versuch einer Gesamtschau der Erde und des Kosmos, noch vor dem Werk "Kosmos" (1844ff.) von Alexander von Humboldt (1769-1859). Sie sprechen mit großem Weitblick den Gedanken aus, daß die Erde und ihr kosmischer Umkreis ein "*lebendiger Organismus eigener Art*" sind. Daher ist dieser große Ideenwurf von Carus weit mehr als bloß ein historisches Relikt des frühen 19. Jahrhunderts, sondern eine noch zu ergreifende und zu realisiernde Erkenntnisaufgabe.[135]

[135] Ekkehard Meffert, "Vorwort. Zur Intention der Neuherausgabe," In: *Zwölf Briefe* 10.

Due to Carus's association with Romantic landscape painting, and his occupation as a physician and zoologist, it is not surprisingly that he was personally invested in the relationship between art and science.[136] Beyond the two monographs mentioned, his numerous essays and compilations reflecting on the status of art and science between roughly 1820 and 1860 suggest that he was one of the earliest and most dedicated figures to recognize and grapple seriously with the increasingly strained relationship between art and science, even though his appeals seem to have fallen on deaf ears at times.[137] Moreover, his work brought him into contact with some of the most influential German intellectuals of his day—most notably, Johann Wolfgang von Goethe and Alexander von Humboldt,[138] who had indeed seemed to strike a fine balance in their scientific studies between the detail-oriented empirical study of nature and holistic-aesthetic vision, which Humboldt called the *Totaleindruck*.[139] Carus was therefore one of the most prolific thinkers to assert the

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[136] Carus's work as a physician and zoologist also explains in part why the model of the organic body is central to his understanding of landscape.

[137] Otto Bätschmann, "Carl Gustav Carus (1789-1869): Physician, Naturalist, Painter, and Theoretician of Landscape Painting," in: *Carl Gustav Carus, Nine Letters on Landscape Painting: Nine Letters on Landscape Painting, Written in the Years 1815-1824; with a Letter from Goethe by Way of Introduction,* Los Angeles, CA, Getty, 2002: 32f. Bätschmann surmises that Carus's attempt to intervene in landscape painting discourse with an essay on "earth-life painting" (essentially, Letter VIII) was ignored by the editors of the Munich *Kunst-Blatt* in the late 1820s. However, Möseneder points out that the "Morgenblatt für gebildete Stände" published a discussion on *Neun Briefe* in 1835 (38).

[138] Bätschmann 7ff.: Carus first established correspondence with Goethe when he sent him drafts of his *Lehrbuch der Zootomie* in 1818. In 1822, he sent him drafts of the letters I, II, III, V of *Neun Briefe*, together with 4 of his scientific illustrations. Goethe encouraged him to publish them and also promised to send him his next fascicle of his *Morphologie* (since Goethe had enjoyed Carus's work on zootomy). Carus's acquaintance with Humboldt started in 1826 and he was particularly fascinated with Humboldt's *Ansichten der Natur* (1807-1808), which also presented a conception of the earth as a living body with a physiognomy.

[139] Humboldt drew this concept from earlier art theoreticians such as Sulzer, Semler, and Fernow. See: Möseneder 38.

codependence of aesthetic theory and scientific methodology in the era immediately following the golden age of Goethean and Humboldtian science.[140]

Because Adalbert Stifter, 16 years Carus's junior, emerged as a promising writer precisely at the height of this scientific and aesthetic disorientation, a number of Carus's reflections can be taken up as useful starting points for understanding the nuances of the central questions probed in Stifter's paintings and prose. Reading these two writers in tandem reveals a number of shared thoughts and similar turns of phrase that can sharpen our understanding of how (and why) Stifter wrestled with the future of the relationship between science and art within his own milieu. And while Stifter's detail-obsessed vision has traditionally led scholars to associate him with the dawn of a general cultural shift away from Romantic speculative philosophy and towards scientific empiricism and literary realism, a comparative consideration of Carus's and Stifter's work suggests a *common* reluctance towards this shift for the sake of what it threatens to leave behind. For one, both figures hesitate to embrace a severed relationship between art and science. They also hesitate to embrace any approach to art *or* science that seeks to grasp the material world without explicit concern for the inherent limits of that approach, especially the limits of human perception. Empirical science and empirical aesthetic vision, despite their goals of disinterested objectivity, are thus often exposed by both Carus and Stifter as insufficient stand-alone sources of authority on the nature of reality. In fact, both thinkers frequently use "vision" as a metaphor for exploring and explaining the many competing ways of knowing that were diverging during their lifetimes and would soon be taken for granted as separate and distinct.

[140] Goethe's death in 1832 could be one marker of the end of this era. Humboldt lived on until 1859; however, his five-volume masterpiece *Kosmos*, though published between 1844 and 1862, was based on a series of lectures he gave in Berlin in 1826 and was originally scheduled for publication in 1829. The immense popularity of Humboldt's work may be partly attributable to a general nostalgia for this kind of big-picture speculative-scientific thinking after it had started to fall out of practice.

As the two citations at the opening of this chapter suggest, the final and perhaps most striking commonality between Carus and Stifter is their shared tendency to address the relationship between art and science through an investigation of the natural world. As it happens, they often explore this constellation of concerns in a very similar way. For instance, while both of them use some form of the written word to explore what it means to know nature, they are both just as deeply invested in exploring the merits of landscape painting and cultivating their own abilities as landscape painters. Indeed, Carus's own theories on landscape painting in *Neun Briefe über Landschaftsmalerei* and *Zwölf Briefe über das Erdleben* resonate strongly with Stifter's conception of nature as presented in both his painted and written work. Thus, just as the above-cited epigraph by Carus will prove to shed light on Stifter's painting "Bewegung II" (and its curious title), other insights from Carus will serve to sharpen my reading of Stifter's literary work. Beyond the painting "Bewegung II," this chapter will acknowledge key themes in a number of written works, such as *Der Nachsommer*, *Brigitta*, and *Granit*, but it will specifically focus on the novella *Kalkstein* from the *Bunte Steine* collection and the famous "Vorrede" to this volume. However, because many of the insights that I present in this chapter necessarily lead back to the unique capacities of landscape painting as a genre of art and a specific form of interaction with nature, I will begin there and then move on to the literature.

PART ONE — Dynamic Entanglement: *Stimmung* as a Model of Human-Nature Relations

The *Stimmungslandschaft* in Carus and Stifter

For Carus and Stifter, the task of the landscape painter involves a special kind of trained vision that is able to grasp nature simultaneously in a scientific way (i.e., by examining individual forms) and in an aesthetic way (i.e., by capturing the whole). Carus claims, in perhaps his most direct acknowledgment of the interdependability of science and art, that "[d]ie Darstellung der Wissenschaft kann daher nie ohne Kunst (ohne kunstgemäße Ordnung der Gedanken und Worte) gelingen, und die Erzeugung des Kunstwerks hinwiederum wird ohne Wissenschaft [...] unmöglich bleiben."[141] Stifter, by contrast, more often lets this perspective emerge through the experiences and reflections of his narrators and fictional characters. Heinrich Drendorf, the protagonist of Stifter's novel *Der Nachsommer*, is perhaps the most widely recognizable representative of this perspective—that "die Wissenschaft und Kunst keine Gegensätze bilden, sondern einander als Erkenntnis- bzw. Darstellungsweisen ergänzen."[142] Through a process of cultural education that very much echoes the training that Carus advocates in *Neun Briefe*, Stifter's fictional character Heinrich must learn to approach landscape painting—and nature in general—in a way that integrates empirically oriented and aesthetically oriented vision.

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[141] Carl Gustav Carus, *Neun Briefe über Landschaftsmalerei: geschrieben in den Jahren 1815 - 1824. Zuvor ein Brief von Goethe als Einleitung*, Leipzig, Fleischer, 1831: 36.

[142] Möseneder 37. Both Möseneder and Sean Ireton present evidence that Heinrich Drendorf's character is based on the Austrian geologist Friedrich Simony, a friend of Stifter's. Simony believed that landscape art could significantly contribute to geological insight and saw it as "nicht bloße Illustration, also Mittel zum Zweck, sondern Endziel, in dem sich empirische Beobachtung objektivierte" (Ibid.). See also: Sean Moore Ireton, "Geology, Mountaineering, and Self-Formation in Adalbert Stifter's *Der Nachsommer*," In: *Heights of Reflection: Mountains in the German Imagination from the Middle Ages to the Twenty-First Century*, eds. Caroline Schaumann and Sean Moore Ireton, Rochester, NY, Camden House, 2012: 193–209.

"Vision" is, admittedly, somewhat of a misnomer for the *Naturverständnis* that is most ardently advocated by Carus and Stifter, despite the important role of visual perception in scientific and aesthetic discourses of this era. Instead, the power of landscape painting derives from a web of relation and attraction within nature, and the binding forces within this system are remarkable precisely because they are largely *invisible*. This network of inherent relations is best captured by the German concept of *Stimmung*, whose history David Wellbery details in the *Historisches Wörterbuch ästhetischer Grundbegriffe*.[143] Wellbery does not explore the late and post-Romantic generations in his history of the term; however, *Stimmung* as he describes it—an "innere Stimmigkeit," a "Zugehörigkeit der Gegenstände," and an "einheitlich gefärbten Beziehungsflecht"—is nonetheless a central notion for many landscape painters of this era.[144] The model of *Stimmung* that grounds their conception of nature involves multiple layers of relation and attraction: among the individual elements within a natural landscape; between the observer/painter's mood and the landscape's overall effect; and between the landscape painting as a work of art and the viewer of that work.

Karl Möseneder has used Stifter's painting journals to suggest the importance of the *Stimmung* concept for Stifter's own study of landscapes and landscape painting.[145] Furthermore, an excerpt from the first page of Stifter's 1847 tale *Brigitta* suggests that Stifter used the *Stimmung* model to understand not only the landscape of the earth but also the

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[143] David Wellbery, "Stimmung," In: *Historisches Wörterbuch ästhetischer Grundbegriffe*, vol. 5, ed. Karlheinz Barck et al., Stuttgart, Metzler, 2003: 703-33.

[144] Wellbery 705. Notably, as Eric Downing points out, Wellbery moves from Enlightenment and early Romantic thinkers (Kant, Schiller, Goethe, Humboldt, Fichte) to early 19th century Modernism (Hofmannsthal) and fails to include the centrality of *Stimmung* to the rest of 19th century art and philosophy. See: Eric Downing, "Painting Magic in Keller's Der Grüne Heinrich," forthcoming.

[145] Möseneder 18ff.

landscape of the human body.[146] Thus, while this passage in particular refers the landscape of a *human* body and the mechanisms of *Stimmung* operating within and around it, it also lends insight into his perception of natural landscapes and the invisible forces of relation and attraction operating within and around them. According to the narrator of Brigitta, an intangible force organizes the body's various parts and motions to produce an idiosyncratic and mysteriously coordinated set of mannerisms—a *Totaleffekt*, whose "Grund wir nicht in Schnelligkeit hervor zu ziehen vermögen." From time to time, the narrator says, such an effect attracts us and opens our souls up to a kind of an inner beauty in this person, even if the external appearance happens to be ugly in a conventional sense. Ultimately, then, what provokes a moment of attraction between the viewer and the face or body of the person observed is a particular arrangement of inner and outer "Dinge und Beziehungen" that "wirken […] mit einem gewissen schönen und sanften Reize des Geheimnißvollen auf unsere Seele."[147] The aesthetic-emotive resonance fueling human-human attraction that Stifter's narrator describes here is almost identical to the model of human-nature attraction evoked by a *Stimmungslandschaft*. This passage in *Brigitta* resonates especially well with Carus's understanding of *Stimmung*.

Carus addresses the power of *Stimmung* in the third letter of his earlier work *Neun Briefe* with a section called "Von dem Entsprechen zwischen Gemütsstimmungen und Naturzustanden." In it, he places particular emphasis on one set of relations within this system of *Stimmung*: a form of correspondence between humans and nature that fuels the

[146] Stifter appears to have viewed the earth *as* a body—or, as Carus might have termed it, an "Erdleben." For a discussion of Adalbert Stifter and discourse of the body, see: Silke Brodersen, "Physiologische Körperfigurationen Bei Adalbert Stifter," *Organismus und Gesellschaft: Der Körper in der deutschsprachigen Literatur des Realismus (1830-1930)*, eds. Christiane Arndt and Silke Broderson, Bielefeld, transcript, 2011, 23–47.

[147] Adalbert Stifter, *Brigitta. Studien 1842-1845*, Prague, Vitalis, 2005: 123.

human impulse to create landscape paintings.[148] This process begins with the painter's willingness to be open and receptive to nature, which, in turn, makes it possible for the landscape to evoke within him a "veränderten inneren Zustand," often a specific emotion or "Gemüt" that corresponds in some way to the landscape's current state. Now an "angeschlagene Saite," the painter is brought into attunement with the particular moment of the overall scene.[149] Such a moment of attunement allows the painter to simultaneously experience himself as an individual form separate from the landscape but also as "Theil eines größern, ja unendlichen Ganzen." It is through this process that his "Ich" is coordinated with "einem neuen Kreise der Außenwelt."[150] The individual elements of the landscape are thus taken up into the painter's own feeling of oneness with the universe, and that sense of unity is then communicated further through the palpable *Stimmung* of the painted landscape experienced by the viewer. By this model, then, the human capacity to be affected by art rests upon the human capacity to be affected by nature. Likewise, an encounter with nature should be akin to an encounter with art: the human observer must show a willingness to be vulnerable and a readiness to be changed.

It is here that scientific encounters with nature begin to conflict with the aesthetic ideal described above. The increasing dominance of the empirical approach to conducting science, with its emphasis on objectivity and distance, threatens to sever this subjective-emotive connection between humans and nature. As a consequence, art—specifically,

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[148] *Neun Briefe* 43.

[149] *Neun Briefe* 47. Carus identifies the fundamental emotions as "Das Gefühl des Aufstrebens, der Ermuthigung, der Entwickelung, das Gefühl wahrer innerer Klarheit und Ruhe, das Gefühl des Hinwelkens, der Schwermuth und die Fühllosigkeit, Apathie" (46-47). Stifter was very interested in the emotions a landscape could evoke—chief among them, *angenehm-heiter*, *romantisch, feierlich,* and *sanft-melancholisch* (Möseneder 22).

[150] *Neun Briefe* 43.

landscape painting—is also in danger of losing its power in the face of an increasingly positivist paradigm that rejects non-empirical knowledge. It is, therefore, precisely these moments of *Gestimmtheit*, of feeling unified and attuned with nature, that Carus and Stifter long for and persistently attempt to recover within the shifting scientific paradigm of their time. One passage in Stifter's *Der Nachsommer* expresses this desire for unity amidst fragmentation very lucidly, and so I would like to present it briefly before moving on to the central works of my analysis. In it, protagonist Heinrich Drendorf reports that he once happened upon a heap of gravel one day and found himself trying to imagine a time when each piece was still part of a bigger whole:

> [ich war] einmal bei einem Haufen von Geschiebe stehen geblieben, das man aus einem Flußbette genommen und an der Straße aufgeschüttet hatte […] Ich erkannte in den roten, weißen, grauen, schwarzgelben und gesprenkelten Steinen, welche lauter plattgerundete Gestalten hatten, die Boten von unserem Gebirge, ich erkannte jeden aus seiner Felsenstadt, von der er sich losgetrennt hatte und von der er ausgesendet worden war. Hier lag er unter Kameraden, deren Geburtsstätte oft viele Meilen von der seinigen entfernt ist, alle waren sie an Gestalt gleich geworden, und alle harrten, daß sie zerschlagen und zu der Straße verwendet würden.
>
> Besonders kamen mir die Gedanken, wozu dann alles da sei, wie es entstanden sei, wie es zusammenhänge, und wie es zu unserem Herzen spreche.[151]

The fact that the final reflection of this passage is isolated as a stand-alone paragraph reinforces the centrality of these questions to Drendorf's inquiry into the natural world; likewise, it seems to sum up Stifter's most pressing questions, many of which are pursued by Carus as well. Contemplating this motley, haphazard heap of stones, Drendorf longs to understand their histories and their relations to one another; but above all, he wants their overall arrangement to speak to his heart—to stir his emotions, like the face of a landscape

[151] Stifter, *Der Nachsommer. Eine Erzählung*, Frankfurt a.M., 2008: 306. Note also the similarity here between Drendorf's description of the scattered rocks of many colors and Droste's reflections on the orphaned rocks in "Die Mergelgrube" explored in the previous chapter.

would. In other words, he is trying to recover a sense of the whole that they once constituted, and thereby also recover the potential for *Stimmung* within this heap. However, within the current scientific paradigm, nature is in danger of becoming precisely the opposite: an unorganized, disconnected pile of data that no longer has any sense of cohesion or connection to humans.

At the same time, the orphan status of each of these scattered stones—also reflected in the title of Stifter's 1853 collection *Bunte Steine*—suggests a critique of the fragmentation of knowledge into increasingly isolated disciplines throughout the first half of the 19th century. Formerly constituting one large, unified body, the now-scattered pebbles bear a shared history that is increasingly hidden from view. Much like the diverse branches of knowledge now emerging as separate disciplines, these pebbles' future relations are also uncertain, and it is not clear how or even whether they will ever be reunited. In his 1854 essay "Gelegentliche Betrachtungen über den Charakter des gegenwärtigen Standes der Naturwissenschaft," Carus presents a similar perspective on the increasing "Verschiedenheit der Standpunkte der Wissenschaft" over the previous half century:

> So kommt es denn, daß, wer so ziemlich ein halbes Jahrhundert den Gang dieser Wissenschaften ruhig teilnehmend beobachtete, bei all dergleichen Widersprüchen und Schwankungen wohl von Zeit zu Zeit sich versucht fühlen muß […] einige Resultate aus dem *bunten Chaos* dieses ewig verschiedenen und wechselnden Treibens in Gedanken zu befestigen und gelegentlich auszusprechen.[152]

The recurring theme, then, is one of reconciliation: how can one overcome the boundaries that have been drawn, both within the realm of nature (i.e., human/nonhuman, organic/inorganic) but also within the realm of knowledge (i.e., science/philosophy/art, life

[152] Carus, Carl Gustav, "Gelegentliche Betrachtungen über den Charakter des gegenwärtigen Standes der Naturwissenschaft," *Zwölf Briefe über das Erdleben*, ed. Ekkehard Meffert, Stuttgart, Freies Geistesleben, 1986: 21f (my emphasis).

science/earth science)? As this chapter progresses, I will use Carus's work to open up new insights into Stifter's resistance to such boundaries. In particular, I will show how a number of moments within Stifter's painting, prose, and essays reflect a desire to overcome these boundaries and to overturn the hierarchies that result from them. Rather than privileging humans over nature and science over art and thus robbing them of their power, Stifter, like Carus, insists upon models that recognize alikeness rather than difference and integration rather than segregation. Critical to Stifter's dissolution of boundaries is, on the one hand, an understanding of nature as *Stimmung*-oriented and, on the other, an assertion of non-empirical, non-positivist ways of knowing as necessary complements to scientific inquiry.

"Bewegung II": Erosion and the Dynamic Power of the Inorganic

The first work I'd like to turn to in this context is Stifter's painting "Bewegung II" (featured above). This painting seeks to reveal creative, active properties within nature, especially within the ostensibly nonliving inorganic realm of nature. Insights from Carus suggest that this tendency on Stifter's part is reflective of a broader trend propounded by followers of Romantic *Naturphilosophie*.

The painting journal Stifter kept between the years of 1854 and 1867 allows us to place his painting "Bewegung II" within the context of a broader project described as "Bewegung, strömendes Wasser," which also includes an unfinished oil painting of a creek bed in the foreground of a canyon ("Bewegung I") and an ink sketch of the larger context of "Bewegung II."[153] Although "strömendes Wasser" suggests that the notion of movement is directed at the water, Möseneder points out that the water in these scenes is much calmer and more shallow than the rivers and creeks in a number of Stifter's earlier paintings. Möseneder

[153] Möseneder 18f.

concludes that the mirror-like calm of the water invites the viewer to reflect and that this didactic quality also functions as a warning about the "zwar potentiell gefahrvollen, nun aber friedlichen Wassers am Fuße eines Bergmassivs."[154] While these observations have merit, I would like to present an alternative emphasis: namely that the movement announced by the title refers not so much to the water as it does to the rock. This claim will first be explored via insights gleaned from Carl Gustav Carus's *Zwölf Briefe über das Erdleben* and, subsequently, by Stifter's own novella *Kalkstein*.

When we consider "Bewegung II" alongside the excerpt from Carus's *Zwölf Briefe*, a striking correspondence between the two emerges. Both Stifter and Carus turn their attention to a rock—that is, to the inorganic realm—to reflect on phenomena of movement and change. In doing so, both commit to acknowledging natural processes that are virtually untraceable by the naked human eye. Carus marvels, for instance, at how an apparently static and unyielding ("beharrend") rock, is, on a planetary scale, actually soaring through the universe as a constituent part of the Earth in its orbit around the sun. The second part of his claim explores the idea that the rock is also "moving" insofar as it is being altered through constant chemical activity that is invisible to us, or "unmerkliche chemische Aenderungen."[155] From Carus's view, then, some phenomena appear static to the human eye merely because we cannot get close or distant enough to detect the movement. What he means by the phrase "chemische Aenderungen" in the second statement is not initially clear; however other passages in *Zwölf Briefe* point toward the phenomenon of erosion. The seventh letter, for instance, presents a description of the sandstone cliffs of Rathen southeast of Dresden and

[154] Möseneder 32.

[155] Carus, *Zwölf Briefe* 50.

calls attention to the "chemisch auflösende Kraft von Luft und Feuchtigkeit" for some kinds of rock, leading to the "Verwitterung ihrer Kanten."[156] For Carus, then, a rock does in fact "move" and change, but only on a microscopic or a cosmic scale for which unaided or untrained human perception is inadequate. His reference to erosion as one of the undetectable microscopic processes of nature also implies that human perception falls short not only in terms of spatial-visual scope but also temporal scope. That is, certain phenomena may be too large or small to witness, but also too fast or—in this case—too slow.

Stifter's painting appears to foreground the phenomenon of erosion as well. It is a *portrait* of a rock, but by also displaying its gleaming surface, the light above it, and the presence of moving water directly behind it, this likeness also tells a story. Yet, it is up to the viewer to collect the evidence—the rock's current form and the erosive forces surrounding it—and assemble the story of how these events unfolded over time.[157] The painting itself can neither capture nor prove the actual process of erosion, but it can invite the viewer to envision the process and marvel at how nature has laid out the evidence to tell its own story. And although a painting arrests time and thus displays precisely the opposite of movement (let alone the microscopic advancement of erosion), it is precisely its status as art, as the reproduction of nature, that brings the viewer to contemplate this phenomenon. Erosion itself, then, serves as a symbol for both the deficiencies of actual human perception and for the problem of human reliance on empirical science alone to understand nature; in turn, the painting brings to the fore those deficiencies just as much as it does the actual objects depicted.

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[156] Ibid. 159.

[157] See also: Möseneder 33.

Further exploration of Carus's preoccupation with erosion in *Zwölf Briefe* can help us gain additional insight into why the phenomenon of erosion is so important for Stifter. The broader context of Carus's first letter in *Zwölf Briefe*, for instance, suggests that his reasons for addressing the phenomena of movement and interactivity within the inorganic realm reach far beyond the passage cited and also beyond questions of scale and scope. The table of contents for *Zwölf Briefe* summarizes the "Erster Brief" as follows:

> **Erster Brief.**
> Einleitung. --- Fremdsein der meisten Menschen in der Natur. --- Begriff der Natur. --- Das Werdende. --- Nichtigkeit des angenommenen Unterschiedes einer organischen und unorganischen Natur. --- Es gibt keine todte Natur. ---[158]

As is indicated in this introductory outline, the first letter as a whole reveals a number of potential motivations for Carus's fixation on the figure of the rock in particular and the inorganic realm more generally. Most importantly, he spends a number of pages within this section refuting the scientific classification of organic and inorganic nature as fundamentally different from one another. His concern is not particularly surprising given the pervasive presence of "theory of life" debates within the sciences throughout his lifetime, which attempted uncover the basis of life and thereby establish criteria for living versus non-living nature. The concept of "Bewegung" is not irrelevant in this context, as the properties of movement and activity (versus stasis and passivity) for the definition of life were some of the earlier criteria proposed.[159] Furthermore, the development of the "life sciences" (i.e., biology) as an exclusive area of study separate from the study of the nonliving world slowly began to

[158] *Zwolf Briefe* 45.

[159] Sebastian Normandin and Charles T. Wolff, eds., *Vitalism and the Scientific Image in Post-Enlightenment Life Science, 1800-2010*, Dordrecht, Springer 2013: 306-07.

emerge around 1800 as well.[160] As Shirley A. Roe points out in her contribution to the 18th century science volume of the *Cambridge History of Science*, thinkers like Michel Foucault and Francois Jacob have illuminated the significance of this shift:

> life as a category of existence having a completely different character from existence in the inorganic realm was not a basic premise [in the 18th century]. This is not to say that animists and vitalists did not object to the overuse of mechanism in explaining the phenomena of living beings or that those materialists who wished to place life in matter itself did not imbue matter with qualities mechanists would have had little use for. But there is a difference between the organism of the 19th century and the organized being of the 18th century.[161]

For Carus, however, the organic and inorganic realms—though now increasingly distinguished from one another within the natural sciences—must be viewed as mutual participants in the same dynamic system. Moreover, what he finds most troubling within the emerging paradigm surrounding the definition of life is the notion that inorganic nature must necessarily be considered "dead." He believes that this misconception is a consequence of misguided belief in human superiority within scientific thought, which necessarily prevents scientists from conceiving of humans and their natural environments—animal, vegetable, or mineral—as interrelated components of the same organic system. He thus resents the fact that nature is, "wunderlicher Weise," so often viewed in terms of

> zweierlei Naturen neben einander bestehend […], von denen die eine belebt, die andre unbelebt sei, zu deren einer, der belebten, Menschen, Thiere und Pflanzen gerechnet wurden, während zu der andern, der unbelebten, Erd und Himmel mit ihren Erscheinungen, als etwas durchaus Heterogenes, gezählt wurde. Es ist dieses jedoch eine Unterscheidung, welche ich durch nichts gerechtfertigt wüßte, es müßte denn der engherzige und beschränkte Standpunkt sein, welchen ein Mensch annimmt, der sein Auge für das große und allgemeine Naturleben

[160] Shirley A. Roe, "The Life Sciences," *The Cambridge History of Science: Volume 4, Eighteenth-Century Science*, ed. Roy Porter, Cambridge, Cambridge University Press, 2003: 415.

[161] Ibid. 400.

> deßhalb verschließt, weil er egoistisch nur für Das, was ganz zunächst sein eigenes Leben angeht, Sinn hat.[162]

The perspective Carus offers here is deeply rooted in an organic model of nature and clearly reveals his lingering loyalty to early Romantic modes of understanding, which tended to explain individual components of nature primarily in relation to the whole rather than mechanistically and in isolation.[163]

Furthermore, this passage, among others, meditates on the kinship between humans and nature in a way that is very much resonant with Schelling's *Naturphilosophie*, of which Carus was a known proponent to some degree. In particular, *Naturphilosophie* claimed that a thorough empirical investigation of the natural world would ultimately be able to reveal the cosmic unity present in all objects of nature (humans included). All of nature, whether organic or inorganic was thought to be moved by the same divine spirit that had simply organized itself to a greater and lesser extent, thus exhibiting different levels of development. Within this framework, Schelling proposed that the organic (more highly organized) realm and the inorganic (less organized) realm differed only in terms of degree along a spectrum, not in kind.[164] Considering the inherent kinship that Carus thus presumes to be present in all of nature, it is easy to imagine why he might advocate for a more holistic perspective that maintains the "freudigen Ueberblick des großen und freien Naturlebens."[165] Indeed, a number

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[162] *Zwölf Briefe* 51.

[163] Frederick C. Beiser, *The Romantic Imperative: The Concept of Early German Romanticism*. Harvard UP, 2003. 158-59.

[164] Beiser, Frederick C. *German Idealism: The Struggle Against Subjectivism, 1781-1801*. Harvard University Press, 2009: 549. Jutta Müller-Tamm argues that he is for more in favor of a Goethean "zarte Empirie" and against the reduction of all nature to an idea or simply the expression of "eines Geistigen." See: Jutta Müller-Tamm, *Kunst als Gipfel der Wissenschaft: Ästhetische und wissenschaftliche Weltaneignung bei Carl Gustav Carus*, Berlin, Walter de Gruyter, 1995: 29.

[165] *Zwölf Briefe* 45.

of Carus's forerunners—figures like Humboldt and Goethe, who were immensely influential for budding scientists all throughout Europe—also emphasized the importance of reconciling details gleaned from scientific observation with serious contemplation of their overall connectedness, even if that contemplation entailed some level of philosophical musing or aesthetic imagination.

Carus certainly feared that the exclusion of the inorganic from a more highly developed and thus superior realm of "living" nature (culminating in the human) was a slippery slope that would only lead to increasing alienation between humans and nature in general. This tone abounds in the first letter, in which he urges also the reader to seriously consider the consequences of the increasingly troubling level of "Fremdsein der meisten Menschen in der Natur." However, the air of mysticism here should not strike us as unusual, as it accompanies a great deal of Romantically inflected writing on nature. Perhaps more noteworthy, then, is the letter's implied concern with metaphysical questions regarding the inorganic realm. Namely, Carus's remarks about the rock and its invisible movement draw attention to problems of ontology within an increasingly divisive scientific paradigm. By focusing on the distinction between the "living" and the "nonliving," scientific discourse seemed to be implying that the inorganic realm was not only "dead," but inconsequential, lacking any force or power of its own. Yet, as Carus points out, there are many moments in which inorganic nature seems to exert its own power and force. He points, for example, to an anecdote in which glacial ice cycles had repeatedly "lifted" large rocks and animals bones to the surface, in one instance even bringing nearly an entire skeleton of a horse back to the surface two years after it had tumbled down a ravine. He concludes, "In solchen Betrachtungen empfindet man nun freilich sogleich die innere Lebensthätigkeit des scheinbar

Todten und Unorganischen."[166] Here, Carus refers to such instances—that is, moments during which the earth appears to move and "act" with purpose—as manifestations of "Erdleben."[167] Though elaborated to a great extent in *Zwölf Briefe*, the notion of the "earth-life" had already been coined at least a decade earlier in the section of *Neun Briefe* discussed above. Here, Carus often described such moments of vitality as individual *Gemüthsstimmungen* of the earth—precisely the qualities that Romantic painters such as Caspar David Friedrich and Carus himself strived to capture:

> Welches sind nun aber die besondern in den mannichfaltigen Vewandlungen der landschaftlichen Natur ausgsprochenen Stimmungen? — Wenn wir erwägen, daß alle diese Verwandlungen nichts Anderes sind als Formen des Naturlebens, so können auch die verschiedenen in denselben ausgesprochenen Stimmungen nichts Anderes als Lebenszustände, Stadien des Naturlebens, bezeichnen.[168]

For Carus, nature possesses an inner unity that drives the development of the earth as one gigantic organism; each "metamorphosis" that occurs in nature is therefore just one miniscule movement in the overall development of the whole. In this earlier work, curiously, he does not once make reference to a distinction between "organic" and "inorganic" nature—neither preemptively or defensively—which suggests that the degree to which this distinction is employed in the sciences has escalated by the time he addresses it in *Zwölf Briefe* a decade or so later.

Carus's urgent insistence on to the potency and vitality of inorganic nature in *Zwölf Briefe* sheds some light on Stifter's painting as well, highlighting the latter's frequent attempt to capture vitality and meaning in nature that might otherwise appear "dead" and

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[166] Ibid 70.

[167] Ibid. See also Bätschmann 30, 63. Bätschmann describes this as an attempt to "infuse the arts with scientific attention to detail"; "historical painting of nature" is another way he translates "Erdlebenkunst," which draws out the reference to processes of formation and development.

[168] *Neun Briefe* 45.

inconsequential, both in his painting and his prose. Möseneder points out that Stifter's "Bewegung" project was planned around the concept of "strömendes Wasser" and that Stifter considered water the prime agent of vitality in nature, at times describing it in organic terms as "das bewegte Leben des Erdkörpers."[169] Yet, as I argue above, this painting is above all else a portrait of a weathered rock, thus featuring most prominently its face/body and the reality of its formation and development. With it, Stifter is moving beyond the age-old trope of flowing water to investigate the phenomena of movement and change in nature insofar as he acknowledges various "nonliving" agents and recipients of change across a broad spectrum. Like Carus, his keen eye recognizes the small actions and reactions within inorganic nature and wants to do them justice. He therefore attempts to capture in his art what science has begun to render a contradiction, namely, what Möseneder calls "geologische Bewegung":

> also das transitorische Moment auch im scheinbar Starren und Festen […]. Denn die Taleinschnitte, Rinnen und Furchen der Felsabhänge, die durch Sonne, Niederschläge, Frost und Wind abgesprengten Blöcke und die Geröllströme—sind sie nicht ebenso Resultate einer fortwährenden Bewegung wie die durch Wasserkraft transportieren und dabei abgeschliffenen Steine und der feinrieselnde Sand?[170]

A number of scholars have characterized Stifter's attention to these processes as a commitment to a "cyclical" conception of nature and thus also a yearning for tradition and natural order in the face of social revolution. Frequently, it is reduced to a reflection of his reverence for the ostensibly "small" processes in nature, as proclaimed in the "Vorrede" to *Bunte Steine*. Yet, as his painting suggests and his novella *Kalkstein* will show, it is plausible that this conservatism is also aimed at preserving a kind of vision—and by extension, a way

[169] Möseneder 34.

[170] Ibid 35.

of knowing—that is soon to be lost as the "nonliving" world is subordinated to that of the living as a class of inert objects. Time and again, both Carus and Stifter nudge their readers to reconsider the properties of inorganic nature that suggest a kind of vitality, or potential "subject" status: Might there be a hidden or latent form of power that inorganic materials such as light, wind, water, and rock possess? And to what extent do they "move" humans and influence our actions? In other words: are these presumably "dead" materials, in some way, imbued with life after all? And if so, what is the danger to us (and them) if we cast them aside, disregarding their participation in the phenomenon of life on earth? For both Carus and Stifter, the modern empirical approach to science, with its foundations in Cartesian dualism and objectivity, has turned a blind eye to these questions. Investigating them thus becomes a task that falls to art and philosophy.

PART TWO — Seeing *Stimmung*: Models of Scientific and Aesthetic Vision

Carus and "der freudige Überblick"[171]

For Carus, an attempt to contradict the specious divide between organic and inorganic nature within science must necessarily begin with a consideration, both literal and figurative, of perspective and scope—in other words, a consideration of vision. The steady advancement of positivism throughout Europe over the course of the 19th century meant that truth claims were increasingly held to the standards of visually ascertained, empirical evidence. Terms like science and knowledge, *Wissenschaft* and *Wissen*, thus increasingly denoted information that could be *observed* and recorded in the here and now, rather than intuited, imagined, or concluded through speculation. This shift in the definition of science itself, though taken for

[171] *Zwölf Briefe* 45.

granted from our contemporary perspective, put reconcilers like Carus, who strived to maintain both "empirische und spekulative Gesichtspunkte in der Naturbetrachtung," in a difficult position; for, as Jutta Müller-Tamm points out, "die Einheit der Natur ist empirisch wie theoretisch unableitbar."[172] Moreover, a great deal of Carus's writing, like that of many of his contemporaries, is anchored in a Romantic outlook that accepted speculation within the realm of scientific thinking and writing. And although Carus did publish several volumes dedicated to systematic scientific observation, he did not always feel the need to restrain himself from conjecture. In the words of one Carus scholar, "Like Schubert or Steffens, Carus has no compunction in combining precise observations of detail with remarkably free-ranging and unsubstantiated speculations about the universe."[173] Yet, his hesitation regarding the new direction of scientific inquiry is not only motivated by his cohort's declining legitimacy within the sciences. What Carus insists on reminding his readership is that, despite its advantages, empirical science's heavy reliance on visually acquired data for making knowledge claims is deficient from the start, due to the inherently limited capacities of human scope and perspective that necessarily distort reality. "Es wäre vergeblich, [...]" he notes "Beweise zu häufen, welche notwendig fruchtlos bleiben müssen, wo das Organ sie zu fassen mangelt."[174] Epistemological concerns related to vision in particular and the bounds of human perception in general are thus critical motivations for Carus's invective against what he sees as a misguided ostracism of inorganic nature within scientific study. *Zwölf Briefe*

[172] Müller-Tamm 20.

[173] Bätschmann 43.

[174] Carl Gustav Carus, "Von den Anforderungen an eine künftige Bearbeitung der Naturwissenschaften" (1822), *Zwölf Briefe über das Erdleben,* ed. Ekkehard Meffert, Stuttgart, Freies Geistesleben, 1986: 20.

bears witness to his desire for a way of knowing that *can* properly acknowledge inorganic beings as crucial participants in a living, dynamic system.

As briefly noted above, one of the ways that Carus tries to reframe scientific vision is through the assertion of what he calls the *Überblick*, the holistic-aesthetic conception of nature that played such a critical role in German scientific inquiry of previous decades, particularly for Goethe and Humboldt. Carus's desire to retain the *Überblick* beyond this period also in some ways anticipates evolutionary discourse within the German-speaking realm. For instance, Ernst Haeckel's term "Ökologie," coined several decades later in 1866, resonates with Carus's concerns. Bearing in mind that Haeckel's acknowledgment of the inorganic always serves his primary focus—the study of organic, *living* form—similarities between the two abound:

> Unter Oecologie verstehen wir die gesammte Wissenschaft von den Beziehungen der Organismen zur umgebenden Aussenwelt, wohin wir im weiteren Sinne alle Existenz-Bedingungen rechnen können. Diese sind theils organischer, theils anorganischer Natur.[175]

The *Überblick* is thus a precursor to "ecological" vision insofar as it examines systems holistically—the part in relation to the whole—rather than examining the components of the system in relation only to one another. The study of forms and phenomena in isolation, as the emerging scientific paradigm tended to do, necessarily involved a "fragmenting" scientific gaze that destroyed or at least obstructed this vision of the whole. For Carus, then, the necessity of overview-oriented vision lies precisely in its capacity to preserve the big picture, by seeking to understand forms and phenomena through a varied constellation of contributing factors and by acknowledging multiple, non-linear connections within a system. In other words, Carus's resistance to elevating living nature above nonliving nature was anchored in

[175] Ernst Haeckel, *Generelle Morphologie der Organismen: Allgemeine Grundzüge der organischen Formen-Wissenschaft, Erster Band: Allgemeine Anatomie der Organismen*, Berlin, Reimer 1866: 286.

an instinct about the great power and significance of a living organism's environment. Considering his passion for landscape painting, which by definition is invested in examining questions of atmosphere, environment, and inorganic form, this sense of alarm should not be surprising.

Moreover, Carus's dedication to this ecological, big-picture thinking must have felt particularly pressing in an era characterized by a mania for "small-picture" data collection microscopic analysis within the natural sciences. And while a heightened interest in microscopic study is not exclusively associated with the proliferation of biological study and its relentless attempts to define life, the two phenomena are certainly related. For one, the discovery of the mammalian ovum by Karl Ernst Baer in 1827 threatened to end a number of philosophical explanations for procreation and generation, and thus fueled more extensive study within embryology and microbiology.[176] Just a few years later, in 1830, British opticist Joseph Lister proposed important corrections to improve the function of the compound microscope with achromatic lenses; this modification was rapidly implemented across Europe and widely available as "the indispensable tool of all microscopists" by 1840.[177] Such key developments contributed to major improvements in microbiological research and paved the way for Theodor Schwann and Matthias Schleiden's 1839 articulation of the first two tenets of modern cell theory: that all living organisms consist of cells and that cells are the

[176] This discovery effectively dismissed preformationist theories of procreation. Interestingly, von Baer soon moved away from the life sciences to research geomorphology. One of his most notable scientific investigations from this period includes a complex theory of erosion.

[177] William Coleman, *Biology in the Nineteenth Century: Problems of Form, Function and Transformation*, Cambridge, Cambridge UP, 1971: 22; Olga Amsterdamska, "Microbiology," *The Cambridge History of Science. Vol. 6: The Modern Biological and Earth Sciences*, eds. Peter J. Bowler and John V. Pickstone, New York, NY, Cambridge UP, 2009: 317ff. Microorganisms were referred to as "infusoria" from the 1760s on (by Goethe and Carus as well).

basic units of life.[178] In many ways, then, scientific advancements around 1830 proved that small-scale observations can have colossal significance.

Indeed, despite Carus's hesitance toward the glorification of the life sciences, he does at times show great interest in microscopic scale, as we see in the above citation's reference to chemical erosion; in his praise of the cataloging of landscape flora that Humboldt promotes in *Ansichten der Natur*; and in his insistence in *Neun Briefe* that landscape painters undergo scientific training to understand the natural laws guiding the individual forms that they seek to represent. These are just a handful of the many examples suggesting that Carus does not dismiss detailed-oriented, microscopic-level study wholesale or consider it incompatible with the *Überblick*. Rather, he fears that the two are in danger of becoming mutually exclusive within the practices of scientific inquiry. Indeed, his two-fold description of the rock cited at the beginning of this chapter demonstrates the necessity of observation and reflection of both the macro and micro scale, and much of his other writing seeks a reconciliation of the "inner" and "outer" eye to promote a more nuanced understanding nature's basic patterns of operation. As Müller-Tamm points out, in order to prevent becoming "bloße Faktensammlung" with no subjective perspective to anchor it, Carus believes that the emphasis on microscopic data within science needs to be tempered with an effort "ästhetische und subjektive Momente in sich auf[zu]nehmen."[179]

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[178] Nick Hopwood, "Embryology," *The Cambridge History of Science. Vol. 6: The Modern Biological and Earth Sciences*, ed. Peter J. Bowler and John V. Pickstone, New York, NY, Cambridge UP, 2009: 292. Schwann made most of his discoveries working under physiologist Johannes Peter Müller at Humboldt University Berlin. The third tenet—that cells only arise from other, pre-existing cells--wasn't articulated and confirmed until 1855 by Rudolf Virchow.

[179] Müller-Tamm 4.

Knowing Nature in Stifter's *Kalkstein*: From "Beobachtung" to "Betrachtung"

To speak of themes of vision, perspective, and scope in the works of Adalbert Stifter is hardly a new endeavor, particularly because Stifter's prose is so well known for its rich visual detail and imagery.[180] Yet, a look at his novella *Kalkstein* suggests that these themes function not only as reflections on literary aesthetics but also as interventions in broader discourses, including the adequacy of empirical vision and representation and the fraught relationship between organic and inorganic nature.[181] *Kalkstein* thus confronts a similar constellation of concerns expressed by Carus in his *Neun Briefe* of 1831 and *Zwölf Briefe* of 1841. Bearing in mind Carus's call for a scientific approach that could successfully integrate microsopic detail and the ecological *Überblick*, Stifter's choice of a geological surveyor as the primary narrator for *Kalkstein* is compelling. For, at least upon first consideration, the integration of these perspectives is precisely what a surveyor strives to achieve: to gather detailed measurements about the land surrounding him, compile that data, and transform it into an *Überblick* in the form of a topographical or cadastral map. And, yet, Stifter's story soon makes it clear that such a superficial representation in no way measures up to the *Überblick* associated with the Humboldtian or Goethean scientific ideal. A typical surveyor's version of the *Überblick*, for instance, neither captures the unique individual character of a region, nor can it pay any heed to the interrelations between the inorganic forms that it measures and the organic forms—that is, humans, animals, and plants—inhabiting that

[180] See, for instance, Martin Selge, *Adalbert Stifter: Poesie aus dem Geist der Naturwissenschaft*, Stuttgart, Kohlhammer, 1976; Eric Downing, "Adalbert Stifter and the Scope of Realism," *The Germanic Review* 74.3 (Summer 1999): 229–241; Helena Ragg-Kirkby, "'Eine Immerwährende Umwandlung Der Ansichten': Narrators and Their Perspectives in the Works of Adalbert Stifter," *The Modern Language Review* 95.1 (January 1, 2000): 127–143; David Martyn, "The Picturesque as Art of the Average: Stifter's Statistical Poetics of Observation," *Monatshefte* 105.3 (2013): 426–442.

[181] *Kalkstein* was originally published as *Der arme Wohltäter* in 1848. My analysis is based on the second version of the story, which was reworked in 1851 and published as *Kalkstein* in the *Bunte Steine* collection of 1853. All citations are taken from: Adalbert Stifter, *Bunte Steine. Erzählungen,* Munich, Goldmann, 1983.

world. It is also blind to the dynamism of nature that produces meteorological events and phenomena like erosion. To survey is to record locations of points and planes; as a practice, then, it takes the earth for granted as a static, lifeless mass to be fixed on paper and divvied up amongst the living beings who inhabit it. This mode of seeing and knowing nature is thus a far cry from the dynamic, ecological view that Carus propounds. Likewise, as a manner of representation, the survey map is diametrically opposed to Carus's notion of the "earth-life" painting, which strives to depict a landscape in a way that references the uniqueness of its character, its dynamic *Stimmungen*, and the specific history inscribed into its present form. The survey view, by definition, is decidedly anti-Romantic and anti-landscape. So, why on earth would Stifter, a passionate devotee of landscape painting, delegate the primary narration of this landscape-obsessed novella to a surveyor? As it turns out, Stifter seems determined to make visible precisely what the survey view misses.

Stifter makes it clear relatively early on that themes of vision and seeing are intended to impart an important lesson in the story, and these lessons are not unrelated to Carus's assertions outlined above. Moreover, as I mentioned previously, Carus and Stifter both frequently use metaphors of vision to explore competing approaches to scientific study and competing ways of knowing in general. In the case of *Kalkstein*, the genesis of the novella's central relationship—that of the surveyor and the Steinkar pastor—can be traced back to a church celebration in a town called "Schauendorf." This name, "looking village," is appropriate because it is indeed the place where the surveyor first observes the pastor and describes his appearance and demeanor to the reader. It soon becomes apparent that the surveyor has a remarkably keen eye, as well as a predilection for conveying extensive visual detail. Noting that there is only one person at this gathering in Schauendorf who is "nicht zu

erkennen," the surveyor seeks to make this stranger "erkennbar," describing his appearance from head to toe and in painstaking detail down to the threads of his clothing:

> Er hatte den Anzug eines armen Landgeistlichen. Sein Rock war sehr abgetragen, die Fäden waren daran sichtbar, er glänzte an manchen Stellen, und an andern hatte er die schwarze Farbe verloren und war rötlich oder fahl. Die Knöpfe daran waren von starkem Bein. Die schwarze Weste war sehr lang und hatte ebenfalls beinerne Knöpfe […][182]

This description continues for several more sentences. Once the pastor stands up from the table, the narrator observes still more detail and proceeds to relay the remainder of his clothing, which was previously hidden from view. He then moves on to a description of the man's body:

> […] Sein körperliches Aussehen stimmte zu seinem Anzuge. Er hatte ein längliches, sanftes, fast eingeschüchterteres Angesicht mit sehr schönen klaren blauen Augen. Die braunen Haare gingen schlicht gegen hinten zusammen, es zogen sich schon weiße Fäden durch sie, die anzeigten, daß er sich bereits den fünfzig Jahren nähere oder daß er Sorge und Kummer gehabt haben müsse.[183]

After an exhaustive visual description of 434 words—just when the reader might expect to witness an interaction between the surveyor and this man—it is time for the latter to begin his long journey home. The surveyor thus does not come to know him personally but, as we later learn, he has internalized so much visual information that he easily recognizes the man when his work brings him back to the region almost a decade later. This situation, however, highlights the difference between knowing someone or something personally (*kennen*) and discerning or knowing by sight (*erkennen*). It also links the surveyor's dependence on that which is immediately visible and present with the latter, *erkennen*. Despite all of the surveyor's precision laid out in the narrative, his knowledge is soon revealed as shallow. Specifically, the surveyor is astounded at the pastor's abject poverty, which he has "noch

[182] *Kalkstein* 49f.

[183] Ibid.

niemals bei einem Menschen oberhalb des Bettlerstandes angetroffen," but he learns over time that the man's meager physical and material existence has little to do with hardship.[184] Thus, the irony of the story's original title, "Der arme Wohltäter," is that appearances often lie.[185] It soon becomes clear that the surveyor's mode of seeing and knowing frequently runs the risk of misreading signs and drawing false conclusions. Such misreadings are characteristic of the surveyor's interactions with the world, regarding not only his relationship with the pastor but also his relationship with the land he has been sent to study.

Upon his return to the Steinkar region eight years after the celebration in Schauendorf, the surveyor immediately turns his meticulous eye to the limestone karst topography surrounding him:

> [J]eder Hügel bestand aus nacktem, grauem Kalksteine, der […] in rundlichen breiten Gestalten auseinanderging, und an seinem Fuß eine lange gestreckte Sandbank um sich herum hatte. Durch diese Hügel ging in großen Windungen ein kleiner Fluß namens Zirder. Das Wasser des Flusses, das in der grauen und gelben Farbe des Steines und Sandes durch den Widerschein des Himmels oft dunkelblau erschien, dann die schmalen grünen Streifen, die oft am Saume des Wassers hingingen, und die anderen einzelnen Rasenflecke, die in dem Gesteine hie und da lagen, bildeten die ganze Abwechslung und Erquickung in dieser Gegend.[186]

Likewise, when he encounters the pastor again, he cannot help but scrutinize the latter's now aged appearance, assessing it extensively in three separate passages. Although it turns out that the pastor has no recollection of having encountered the surveyor, the surveyor seizes the occasion as an opportunity to boast about his own skills in observing and recognizing faces:

> Mein Beruf bringt es mit sich […] daß ich mit vielen Menschen verkehre und sie mir merke, und da habe ich denn im Merken eine solche Fertigkeit erlangt, daß

[184] Ibid. 52.

[185] A similar sentiment is echoed in the opening paragraph of *Brigitta*: "In dem Angesicht eines Häßlichen ist für uns oft eine innere Schönheit, die wir nicht auf der Stelle von seinem Werte herzuleiten vermögen, während uns oft die Züge eines andern kalt und leer sind, von denen alle sagen, daß sie die größte Schönheit besitzen" (123).

[186] Ibid. 50.

> ich auch Menschen erkenne, die ich vor Jahren und auch nur ein einziges Mal gesehen habe.[187]

After explaining this extraordinary proficiency in facial recognition, the surveyor's words shift to a condemnation of the landscape: "Und in dieser abscheulichen Gegend haben wir uns wiedergefunden." Ironically, this final remark invalidates everything preceding it by exposing his tendency toward *mis*reading faces, despite his proclamation to the contrary. This time, however, it is the physiognomy of the landscape that he misjudges, at least from the perspective of the pastor. Quick to defend it, the pastor remarks, "Sie ist, wie sie Gott erschaffen hat […] es wachsen hier nicht so viele Bäume wie in Schauendorf, aber manches Mal ist sie auch schön, und zuweilen ist sie schöner als alle andern in der Welt."[188]

When the surveyor asks how often the pastor visits this particular area, the latter replies: "Ich gehe heraus, um meine Füße zu üben, und sitze dann auf einem Stein, um die Dinge zu betrachten."[189] The pastor thus not only insists on a different reading of the landscape, but his choice of words also suggests that this reading is based on a different way of looking at it, which is represented by the verb *betrachten*. The surveyor, by contrast, describes his own mode of vision almost exclusively with words like *sehen, (be)merken,* and *beobachten*, which imply neutrality and even distance, while the pastor's vision is almost exclusively rendered as *betrachten*. With regard to knowing nature, *betrachten* is noteworthy because it conveys a close attunement to the natural world that develops through contemplative watchfulness and the immersion of oneself in it, rather than merely noticing or recording its appearance at a given moment. The pastor's defense of the landscape also

[187] Ibid.

[188] Ibid. 52.

[189] Ibid.

suggests that his manner of engaging with it acknowledges its dynamism and capacity for change. He asserts that it is how God created it but then describes this piece of creation as something that is not static in form or appearance but something that is "manches Mal […] schön, und zuweilen […] schöner als alle andern in der Welt." For the pastor, it is a moving, breathing system, and his relationship with it makes him an integral part of that system. Appropriately, when the surveyor first notices the pastor in his practice of *betrachten*, the man is literally entangled with the land, sitting in a sand heap with his "Schuhe fast in den Sand vergraben" and sand "auf den Schößen seines Rockes."[190]

Over time, the surveyor comes to value both the pastor's way of seeing and his intimate appreciation for the landscape and its peculiarities. *Betrachten* eventually becomes a shared practice between them that is occasionally paired with the pronoun "wir":

> Wir gingen später öfter mit einander in den Steinen herum oder saßen auf einem und betrachteten die andern. Er zeigten mir manches Tierchen, manche Pflanze, die der Gegend eigentümlich waren, er zeigte mir die Besonderheiten der Gegend und machte mich auf die Verschiedenheiten mancher Steinhügel aufmerksam, die der sorgfältigste Beobachter für ganz gleich gebildet angesehen haben würde.[191]

With this statement, the surveyor concedes that, despite his own skill for observing detail, the pastor's practice of *betrachten* has opened up a kind of perception that otherwise would have been inaccessible to him. The obvious irony here is that the presumed expert in observing landforms only truly learns to distinguish them with the help of the local pastor. This problem of perception, represented by the figure of the surveyor, resonates strongly with the penultimate letter of Carus's *Neun Briefe*, which addresses questions of vision and nature. As I previously noted, these earlier observations from the 1820s condemned the current state of painting for its failure to correctly capture the myriad forms present in nature, suggesting that

[190] Ibid. 51.

[191] Ibid. 53.

scientific study could help artists correct this vision. A decade later, specifically in *Zwölf Briefe*, Carus tends to reverse the recommendation, this time citing scientific vision as deficient and urgently in need of an aesthetic sensibility. In both cases, his admonishment of those self-proclaimed artists and scientists who observe nature with a crude, untutored eye is relevant for *Kalkstein*'s surveyor, who is excessively proficient at collecting data but painfully blind to the underlying patterns holding it together:

> Dem rohern Sinne nämlich erscheint in der Naturbetrachtung nur zu Vieles als willkürlich, als zufällig, als gesetzlos, denn er ist selbst noch außer dem Gesetz und eben darum um so befangener. Ihm ist es bedeutungslos, ob ein Gebirge nun gerade mit dieser oder jener Art der Linien sich umschreibt, ihm ist es gleichgültig, ob eine Wolke so oder so zieht, eine Welle in dieser oder jener Linie sich erhebt, ihm gilt es einerlei, ob ein Baum gerade so oder so gewachsen sei ja er wird wol [sic] kaum den Unterschied, den verschiedene Baumformen im Ganzen darbieten, als etwas Nothwendiges gewahr. Dergleichen Rohigkeit begleitet dann wol den Künstler sein ganzes Leben hindurch, wenn nicht eine kräftig und schön ausstrebende Seele ihn dagegen schützt oder eingreifende Wissenschaft ihn erweckt.[192]

In this passage, Carus speaks of the artist whose vision is in need of a scientific awakening to enhance his ability to distinguish all of nature's diverse forms and in a context that grasps their necessity.

Kalkstein, by contrast, presents a scientist who requires an awakening of his own, although the exact nature of this awakening is not initially clear. One might tend to characterize it as a spiritual awakening, given the pastor's religious status. And, yet, while the pastor's guidance often exudes a spiritual quality, this medial layer of the novella contains remarkably little talk of God or the Bible. Moreover, the Steinkar church is only described briefly in passing, and, with the exception of the schoolchildren, his congregation is absent from the story as well. The aging pastor primarily experiences a connection with the

[192] *Neun Briefe* 139f.

divine through personal contact with the natural world, and the "awakening" that he offers the surveyor is therefore reminiscent, if anything, of a perspective on nature espoused by Romantic *Naturphilosophen* or by Goethe. As such, the pastor is a relic of a bygone era in which philosophical contemplation enjoyed a role within scientific inquiry, and in which the function of the imagination, or inner eye, was just as important as detached, externally oriented empirical vision. These older modes of vision and the epistemological approach they represent might also explain why the pastor's time immersed in and actively contemplating the limestone landscape yields an intimate familiarity that trumps any superficial or crude knowledge that the surveyor can gather.

The pastor's intuitive, participatory relationship with his surroundings echoes Müller-Tamm's characterization of Carus's persistent plea for a more Goethean approach to understanding nature, whereby one should "im Bewusstsein, Teil der Natur zu sein, forschen; er soll die Natur in Beziehung zu sich auffassen, ohne darum seine Individualität ins Zentrum zu stellen."[193] The pastor figure does indeed evoke the approach to natural study described by Goethe's in his own writings on morphology several decades earlier. In these writings—most famously in *Metamorphose der Pflanzen*—Goethe celebrates the kind of scientist who so attentively watches a leaf unfold that its process of development shapes his own being in return. The Goethean scientist seeks to grasp at once the external form of the plant and the internal necessity of that form as a stage in its transformation over time. This approach to science tends to be expressed throughout Goethe's morphology writings as a process of *Anschauung*, but, notably for *Kalkstein*, the process is also often associated with the verb "betrachten," which is how the pastor's vision is described. According to Goethe, such an

[193] Müller-Tamm 45.

approach to scientific inquiry is necessary because it displays "eine aufrichtige, reine, belebende Teilnahme" towards nature as well as a sense for "Zusammenhang" and "das Ganze," in contrast to the emerging scientific paradigm of objective empiricism.[194] In the introductory essays later composed to frame his botanical study, Goethe also advocates for his approach by measuring it against what he views as negligent approaches to scientific inquiry. Perhaps unsurprisingly, *Kalkstein*'s surveyor figure, his methods, and the semantic choices associated with his character in the story echo Goethe's charges:

> Wenn der zur lebhaften Beobachtung aufgeforderte Mensch mit der Natur einen Kampf zu bestehen anfängt, so fühlt er zuerst einen ungeheueren Trieb, die Gegenstände sich zu unterwerfen. […] Leider findet man aber [..], bei denen die sich dem Erkennen, dem Wissen ergeben, selten eine wünschenswerte Teilnahme. Dem Verständigen, auf das Besondere Merkenden, genau Beobachtenden, auseinander Trennenden ist gewissermaßen das zur Last, was aus einer Idee kommt und auf sie zurückführt. Er ist in seinem Labyrinth auf eine eigene Weise zu Hause, ohne daß er sich um einen Faden bekümmerte, der durch und durch führte.[195]

Similar to Stifter's characterization of the surveyor's vision in *Kalkstein*, Goethe associates this inferior mode of scientific vision with verbs such as "beobachten, "erkennen," and "(be)merken." Likewise, his primary criticism stems from the fact that the corresponding form of science is based on distance and separation. In aiming to remove the human from its object of study, this approach effectively disregards the role of subjective participation, which would otherwise take the individual observations collected and integrate them with the inner eye to arrive at an image or idea of the whole, similar to the process of *Stimmung* outlined above. Moreover, Goethe frequently associates this objective, distanced approach with a tendency towards "Trennung" and thus a focus on the individual components of a

[194] Johann Wolfgang von Goethe, "Zur Morphologie: ersten Bandes erstes Heft 1817" in *Schriften zur Morphologie II: Morphologische Hefte 1817-1824*, Stuttgart, Cotta, 1824: 13, 15.

[195] Ibid. 13f.

natural body or process rather than the whole. He locates this impulse, for instance, in the study of chemistry and anatomy and notes that, although both have achieved a certain level of new insight into nature, these disciplines ultimately create divisions rather than exposing connections. The result is an image similar to Heinrich Drendorf's pile of gravel cited at the beginning of this chapter:

> [D]iese trennenden Bemühungen, immer und immer fortgesetzt, bringen auch manchen Nachteil hervor. Das Lebendige ist zwar in Elemente zerlegt, aber man kann es aus diesen nicht wieder zusammenstellen und beleben. Dieses gilt schon von vielen anorganischen, geschweige von organischen Körpern. Es hat sich daher auch in dem wissenschaftlichen Menschen zu allen Zeiten ein Trieb hervorgetan die lebendigen Bildungen als solche zu erkennen, ihre äußern sichtbaren, greiflichen Teile im Zusammenhange zu erfassen.[196]

Goethe lamented these divisive tendencies within the sciences and continually sought to reconcile the study of detail with an appreciation of the bigger picture. As it happens, Carus had composed a similar critique around the same time (ca. 1820):

> Wo vermag denn sonst der Mensch auch nur das Geringste lebendig zu erschaffen, wo führt eine Wissenschaft unmittelbar zur Belebung, wo nicht vielmehr zunächst zur Ertödtung, d. i. zur Zerlegung? — Man zerlegt das Pflanzenblatt in seine Zellen, Athmungsöffnungen, Gefäße und Fasern, das kleinste Thier lehrt uns die vergleichende Anatomie in noch kleinere Gebilde trennen, und doch! wer belebte mit all dieser Wissenschaft auch nur die kleinste Milbe, wer setzte dadurch das kleinste Pflanzenblatt zusammen?[197]

With the growing rift between science and art, as well as the rising status of modern empirical study and its technological trappings, the task of "beleben"—of reassembling and "revitalizing" dismantled objects of scientific study with an eye to the whole—increasingly fell outside the scope of what was now considered science. Moreover, the fact that thinkers

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[196] Ibid. 15.

[197] *Neun Briefe* 17f. The quote continued: "— Und nun betrachte die Schöpfungen der Kunst, welche, obwol nicht selbst in der Wirklichkeit lebend, doch für uns lebend scheinen können und so, als von Menschen geschaffen, die Verwandtschaft des Menschen zum Weltgeiste beurkunden." This reflection also asserts a sense of unity between humans and the spirit force of nature by highlighting their common compulsion to create.

like Carus were still calling for a counterbalance to science's dissecting impulse in subsequent decades (and continued to do so after Goethe's death) suggests that it was becoming an evermore elusive pursuit.

Goethe's disapproval of the "trennende Bemühungen" within science primarily addresses the treatment of organic nature. However, his emphasis on the importance of holistic-aesthetic vision for understanding both organic *and* inorganic bodies in the last passage suggests that he shares with the Romantic *Naturphilosophen* a tendency towards monism, acknowledging a quality of divinity or vitality in all of nature, whether organic or inorganic and whether animate or inanimate. Although a superficial comparison of *Kalkstein*'s surveyor and pastor might lead us to associate the surveyor with science, according to earlier definitions of science, such as those found in explanations by Goethe and Carus, the pastor possesses qualities that are equally, if not more, critical for fully grasping the karst landscape surrounding him. The pastor's intimate, participatory relationship with the environment—his "Teilnahme" as Goethe might put it—is a gesture of vulnerability, a willingness to be moved and changed by the object or process observed and thus also an acknowledgement of its power and presence. Time and again we witness the pastor's readiness to expose himself to the elements without fear. The combination of his accumulated experience with the land and his immersion in it makes his knowledge subtle and intuitive: it allows him, for instance, to sense what is otherwise undetectable and seemingly immaterial, such as the onset and severity of an approaching storm or the future threat of a washed-out river.

Physiognomies of Erosion: Learning to See Dynamic Entanglement in Nature

Just as the pastor teaches the surveyor to see the landscape in a different way, Stifter's own tendency toward didacticism reveals itself in this story. Just as the "Bewegung II" painting teaches its viewers how to see and reflect on the phenomenon of movement and dynamism in inorganic nature, his literary aesthetic in *Kalkstein* gradually teaches the reader how to view the natural landscape it presents. Not only does he call attention to the erosive qualities of this karst landscape, but he also presents these qualities in a certain pattern of repetition to create a sense of kinship and unity between the human and natural worlds.

The pastor's tendency to immerse himself in nature and become shaped by it points to the sense of entangled human-nature unity that Stifter is trying to achieve. The pastor buries himself in the sand, wanders for hours underneath the harsh sun, and plunges himself into deep water after a powerful storm floods the Zirder River. Moreover, the karst landscape itself reflects these same properties, as limestone rock is partially solvent in acidic water and thus chemically reactive and susceptible to change.[198] The pastor and his natural environment have a dynamic, reciprocal relationship that is repeatedly underscored by the narrative's tendency to draw out similarities in their physiognomies. The mirroring effect between humans and nature that Stifter creates here, however, is quite unlike the Romantic tendency to present landscape merely as a projection of the human psyche. Rather, the pastor and his karst landscape are bound to one another through a common essence coursing through their

[198] As noted in the introduction, it is limestone in the *Gleichnisrede* of Goethe's *Die Wahlverwandschaften* that is provided as the example of a weak compound that succumbs easily to the temptation of acid reactants and thus quickly dissolves its current bonds when it comes into contact with them. It is also interesting that limestone's susceptibility to changing physical form would, in many respects, render surveying and mapmaking problematic.

innermost being, which is signified by the blue waters of the Zirder river and the blue hue of the pastor's eyes.

This entangled relationship is introduced most powerfully by the scene in which the pastor is found sitting—immersed—in a sand heap at the beginning of the story. Appropriately, the ubiquity of sand in the story points to another striking physical feature shared by the pastor and his environment: both have a distinctively eroded and aged appearance. Despite the occasional hint of blue water, the landscape's colors are predominantly gray and yellow; similarly, its profile is dull and worn, with "rundlich" and "breit" hills through which "Windungen" have been carved by the modest river traversing it.[199] The overall character of this landscape stands in stark contrast to the dramatic "Wildnisse, Schlünde, Abgründe, Felsen und stürzende Wässer" that the surveyor prefers to see. Likewise, the pastor's face, with the exception of his eyes, also bears marks of weathering: his hair has grayed and "deutliche Falten" have developed in his face.[200] Just as the Steinkar's rock formations are relayed to the reader as "nackt" and largely lacking in vegetation on the surface, so too is the pastor's exterior described as worn and depleted. His clothing is utterly threadbare and his hat shows "nicht ein einziges Härchen auf ihm."[201] Unlike the surveyor, who frequently shields himself from the elements with his bulky outdoor gear, the only buffer shielding the pastor's body from the elements is a thin layer of fine linen.[202]

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[199] *Kalkstein* 50.

[200] Ibid. 51.

[201] Ibid. 52f.

[202] Unlike the pastor, who constantly immerses himself in nature, the surveyor seeks to shield himself from it. This distancing impulse also reflects the principle of objectivity that is so critical to empirical science. However, the surveyor's distance—whether fueled primarily by caution or a desire to remain objective—ironically

The congruence—one might say the *Gestimmtheit*—between the pastor and the Steinkar region is further underlined by a peculiar pairing of adjectives in the text that provide additional insight into Stifter's use of erosion as a key motif.[203] Early on, the surveyor characterizes the Steinkar as a "fürchterliche" Gegend. The reader is led to infer that he considers it ugly or uninspiring because he notes his preference for exciting, sublime landscapes with "zerissen" or "steil" features—as opposed to the dull colors, smooth lines, and round contours that make up his current work setting. In a subsequent passage, he then relates his encounter with the pastor sitting in the sand and describes the latter's destitute appearance as "ängstlich reinlich." Had the adjectives "fürchterlich" and "ängstlich" appeared in another context, their significance might seem marginal. But due to their proximity to one another as well as their role in further establishing the landscape and the pastor as analogous figures, the barely masked synonyms *Furcht* and *Angst* seem likely to be Stifter's way of reinforcing their *Gestimmtheit* at the verbal level. Not only are the surveyor's two objects of study pitiful or unpleasant to look at, but, through a kind of Freudian slip in the narrative, they are also revealed to the reader as fear-inducing, even if the surveyor does not appear to perceive them as such consciously. In both cases, the couched expression of fear is followed by a description of visible signs of exposure, weathering, and deterioration, which are captured with terms such as "nackt," "auseinander[gehen]," "Lockerheit," "das Unhaltbare," and "das Wesenlose."[204] Thus, precisely those features that connect the landscape and the pastor are also the characteristics that provoke the surveyor's discomfort:

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prevents him from correctly determining imminent danger, as we see in the rainstorm scene.

[203] Möseneder lays out further references to erosion in *Der Nachsommer* (36f.)

[204] Ibid.

namely, their susceptibility to physical transformation and the visible evidence of dissolution and decay, both on their bodies and all around them. Even the pastor's rectory is located within a cirque (*Kar*), a bowl-like geological feature usually formed by centuries of glaciers scrubbing away at the bedrock below. When the surveyor accompanies the pastor to his home for the first time, he notes that, here, even "das stärkste Gestein" [presumably granite] "sich ein wenig auflöset," and that they must descend down into the carved out area where the rectory is situated. The external appearances of both the pastor and the landscape are frightening, then, because they serve as a reminder of the old adage that the only constant is change. In this case, that transformation is a slow path towards decline, death, and disappearance.

The surveyor not only experiences fear and repulsion in the face of this world of dissolution and loss, but his negative reaction also seems partially triggered by what he longs for and does not find: signs of growth, fertility, and abundance. In other words, that which does not bear *Frucht* instills *Furcht*. Accordingly, the only respite he finds in this terrible landscape resides in the "schmalen grünen Streifen, die oft am Saume des Wassers hingingen, und die anderen einzelnen Rasenflecke, die in dem Gesteine hie und da liegen." His preference for such features is emphasized throughout the novella. Looking back, for instance, it suddenly becomes significant that the beginning of the surveyor's story included praise for the pastor of the nearby village of Schauendorf. In particular, the surveyor expresses his admiration for this pastor's flourishing orchards:

> Da kam ich in das nahe gelegene Dorf Schauendorf und lernte dessen Pfarrer kennen, einen vortrefflichen Mann, der die Obstbaumzucht eingeführt und gemacht hatte, daß das Dorf, das früher mit Hecken, Dickicht und Geniste

> umgeben war, jetzt einem Garten glich und in einer Fülle freundlicher Obstbäume dalag.[205]

Here, the surveyor identifies the Schauendorf pastor as an active cultivator of the land. Not only has this "admirable" pastor brought the unruly weed population under control by introducing "friendlier" plants, but he has also scaled up the area's productivity and thus transformed it into something that is both fruitful and beautiful, according to the surveyor. Likewise, when the surveyor visits the Steinkar pastor's rectory after descending into the cirque, his attention is focused on locating fertile land, which he spots only much further out in the distance: "[w]eit draußen gegen das Land hin lag auch ein fruchtbarerer Teil, der zu der Gemeinde gehörte, und der auch Acker-, Wiesen- und Kleegrund hatt." By contrast, the Steinkar pastor's favorite spots for contemplation, and the rectory in which he lives, are largely situated within a landscape of rocky, sandy barrenness and erosion, with only a small patch of the "freundlicherem Grün der Wiese."[206] While the Schauendorf pastor and his fruit-bearing trees represent youth, growth, and the proliferation of life and form, the Steinkar pastor and his limestone are associated with age, decline, and the slow degradation of form. The surveyor's inclination not only to perceive life in the organic realm alone but also to consider youthfulness as the essence of life extends to the human realm as well, as we witness in his encounter with the Steinkar schoolchildren:

> Sie sahen mich anfangs mit trotzigen und scheuen Angesichtern an; aber da ich von Jugend auf ein Kinderfreund gewesen bin, da ich stets die Kinder als Knospen der Menschheit außerordentlich geliebt habe und seit meiner Verehelichung selbst mit einer Anzahl davon gesegnet worden bin, […] so war ich bald von einem Kreise plaudernder und rühriger Kinder umringt.[207]

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[205] Ibid. 48

[206] Ibid. 53.

[207] Ibid. 67-68.

Not only does the surveyor associate the children with the fruit tree motif by referring to them as the "buds" of humanity, but he also self-identifies with their youthfulness by deeming himself a "Kinderfreund." Finally, he mentions his marriage and "numerous" children in this context as further evidence for his fondness of children but also, it seems, as a testament to his own his own "fruitfulness." The Steinkar pastor, by contrast, neither cultivates an orchard, nor does he have children of his own. In fact, because his twin brother (and only sibling) died without progeny and his father and grandfather were only children, his family line as he knows it will terminate at his death with no chance for continuance.

By revealing subtle distinctions in the surveyor's descriptions of his surroundings according to whether they are "fruitbearing" and "non-fruitbearing," Stifter sheds light on the subconscious judgments made by the surveyor, particularly in an era of science that increasingly equates nature with "living" nature. That humans and objects in the story who represent death and loss are associated with *Furcht* suggests that the surveyor perceives them as foreign; accordingly, he seeks to define himself against them. By the same token, the presence of the word *Freund* within descriptions of those humans and objects deemed full of vitality and productivity suggests that the surveyor feels an affinity toward them and thus self-identifies with them. The lopsided dichotomy and consequent process of exclusion that emerges here resonates with Carus's observations regarding the problem of anthropocentrism within scientific inquiry. As I noted in the introduction to this chapter, Carus specifically takes issue with the tendency within science to privilege the study of complex organisms because they are most similar to the human form. Because of this limited, "egoistic" perspective, Carus argues, the nonliving components of the natural world, such as the earth and sky, are unjustly disregarded as "etwas durchaus Heterogenes,"—in other words, as an

unknown, "fearsome," Other.[208] The constant temptation to alienate inorganic nature highlights, once again, the characteristic subject-object dualism accompanying the institutionalization of the sciences in the first half of the 19th century in Germany. *Kalkstein*'s surveyor takes the organic-inorganic distinction to another level, however. With his attention to questions of productivity and procreation, he widens the rift between organic and inorganic nature by sorting his objects of study based on their generative capacities, but with organic reproduction as a standard. The irony of his perspective lies in the contradiction that, even though the surveyor's conscious narration neglects inorganic nature as non-productive and thus inconsequential, his word choice betrays the response (i.e., fear) that it actually produces in him. It may not reproduce or give rise to life, but it can, apparently, *shape* living beings by provoking reactions.

Moreover, even with regard to the issue of reproduction, the surveyor stands to be enlightened by the pastor's unconventional conception of nature. One of the most conspicuous instances of the pastor's mentoring appears when he is bedridden toward the end of the novella. He asks the surveyor to report on the transformations taking place outside, noting specific processes that should be examined:

> Er fragte mich, ob die Brombeeren an dem Kulterloche schon zu reifen begännen, ob der Rasen gegen die Zirderhöhe, welchen der Frühling immer sehr schön grün färbe, schon im Vergelben und Ausdorren begriffen sei, ob die Hagebutten schon reiften, ob das Verwittern des Kalksteins vorwärts gehe, ob die in die Zirder

[208] *Zwölf Briefe* 51. In *Neun Briefe* (57), Carus makes a similar note about beauty in the enclosure to letter III (written ca. 1820): that humans tend to see beauty in more highly developed forms because these exhibit qualities of the divine (with the human as the pinnacle of this development). Landscape (or nature in general, but I think he means landscape here) is a strange case because it is then actually perceived as most beautiful when it is expressed *through* the human (i.e. as landscape painting). If more progressed forms are more beautiful, erosion is ugly/threatening because it feels not only less progressed but regressive. The conflict between a model of progress and a cyclical model (with "regessive" phases) also plagued Schelling, according to Bätschmann (4).

> gefallenen Stücke sich vermehrten und der Sand sich vervielfältige, und dergleichen mehr.[209]

The list begins with an organic process—here again, the flourishing of fruit—but ends with a more nuanced interest in the transformations occurring within the inorganic realm, namely, the continual weathering of the limestone and the resulting accumulation of sand. It is certainly no coincidence that the verbs the pastor reportedly uses to describe erosion—*sich vermehren* (to breed/procreate), *sich vervielfältigen* (to multiply)—are typically reserved to describe the reproductive processes of living organisms. The erosion motif so central to *Kalkstein* thus shows that, not only is inorganic nature always engaged in a continual process of movement and transformation, but it also has its own models of productivity and self-propagation. While organic generation is ultimately a mode of self-preservation in nature (albeit *ersatz* preservation), the eroding bodies of limestone in *Kalkstein* generate new form through a process of slow, steady self-sacrifice. These bodies sacrifice their material form as the sun, wind, and water slough off grain after grain of sand; in sacrificing themselves, they produce voids and generate new spaces, which is merely a different manifestation of the creative impulse in nature. And while the aggregate "parent" form will not recur in the image of the "offspring" grains of sand that it bears, those sand grains become integrated into future natural forms, both organic and inorganic. Erosion *is* the inorganic realm's contribution to productivity in nature, both in and of itself and because it creates the environmental and material potential for life.

[209] *Kalkstein* 75. The surveyor's addition of "und dergleichen mehr" suggests that he, as usual, doesn't have the skills to distinguish between which details are more important or heavily emphasized—it all has the same weight to him. This points to the "democracy of data" problem in empiricism: how do you draw out what is important?

The analogy that *Kalkstein* establishes between the pastor and the limestone is tenuous at times, but it does open the reader's eyes to important qualities of both figures that might otherwise go unrecognized. For instance, what initially appears to be a case of indigence or miserliness turns out to be a result of the pastor's commitment to extreme self-sacrifice; the money he intentionally lets go is able to accumulate and provide new, future opportunities for the Steinkar children. With this realization in mind, the limestone landscape (and by extension, stone in general) emerges as a generous *actor* in the economy of nature. Additionally, the text's exposure of erosion as an ultimately *productive* and life-giving process can be translated onto the pastor's circumstances. Most importantly, it helps overturn the myopic notion that his legacy will extinguish with his death. By foregoing material possessions in the present moment and allowing that wealth to accumulate, he creates the possibility for a new "form" to be built: specifically, a schoolhouse for the Steinkar schoolchildren to learn and flourish. The motivation for this commitment is the pastor's recognition that their current route to school poses too much danger. He thus makes his sacrifice in order to prevent their death—or, in other words, to protect and promote their *life*. Finally, even though the stones and the pastor do not have "living" progeny of their own, their charity nonetheless fosters ideal conditions for new life or contributes to the shaping of that life during its individual path of growth. It is therefore also significant that the pastor, with his plan for the schoolhouse, both conceives of a new space for the children's intellectual formation (*Bildung*) and, upon its successful implementation, *literally* changes their path.[210]

[210] The connection between the idea of *bilden*/*Bildung* as human education and *bilden*/*Bildung* as geological formation is discussed in: Ireton 194.

With *Kalkstein*'s exploration of the genesis and development of organisms, Stifter reveals his own preoccupation with theory of life discourse of the first half of the 19th century.[211] However, as I have shown above, he also uses this discourse metaphorically and extends it to understand non-organisms and non-physiological development.[212] In so doing, he explodes dichotomies that privilege life, such as procreative/non-procreative, living/nonliving, and organic/inorganic. Furthermore, while Goethean morphology and the flourishing fields of biology and comparative anatomy primarily seek to understand which inner regulatory systems (both physical and metaphysical) guide development, Stifter seems equally invested in revealing the dynamic interplay between internal *and* external (i.e., environmental) regulation. *Kalkstein* reveals that, just as a landscape of mostly non-living elements—for instance, a limestone karst—is an active contributor to the conditions that allow life to thrive, so too do natural environments in general provide more than merely a backdrop for a story or history as it develops. Especially in the eyes of a landscape painter like Stifter, natural environments are dynamic actors that move, shape, and share in the outcomes of the events that unfold within them. These qualities reinforce his assertion of the power of landscape and *Stimmung*.

PART THREE — *Stimmung* as a Corrective for a Divided Natural World

Uniting Subject and Object in Stifter's "Vorrede"

Stifter's narrative vision has often been described as "empirical" and his literary style deemed "anti-plot" or "non-narrative." However, the analysis of *Kalkstein* above suggests

[211] The oft-forgotten introductory frame narrative even rehashes the preformationism-epigenesis debate (with chiastic logic).

[212] For a discussion of Stifter's use of the discourse of the body to describe cityscapes, see Broderson.

that his nature descriptions represent a desire for unity in nature rather than a dissection of nature, or a "Zerbröckeln und Zerkrümmeln der Materie," as was so famously asserted by Friedrich Hebbel and echoed by other critics over the years.[213] Stifter's attempt to render visual detail—whether in pictorial or verbal form—is not a conservative gesture intended to arrest time or exert control over the object portrayed. In fact, this is actually a fitting characterization of the perspective that *Kalkstein*'s surveyor has to overcome. Instead, Stifter's work reflects the impulse to rescue nature from mere "object" status—a place of helplessness and inertia—and to acknowledge its great (and sometimes threatening) power.

Despite growing social and institutional pressure to discredit Romantic ideas such as organic dynamism and human entanglement in nature, these values are central to the agenda of both Stifter and Carus as objective empiricism becomes the watchword of the scientific world. This is particularly the case because modern empirical methods necessitate a clear division between the human subject and his objects of study, and because scientific knowledge gleaned for technological gain often asserts the subordination of nature to human control.[214] A critical attitude toward human superiority is thus a common theme for these authors, reinforced by Carus's plea for a less bio-centric science and Stifter's tendency to embrace the geological. Both suggest that the human does not have sole claim to subject status just because he is assumed to occupy the highest rung of the *scala naturae*. In embracing inorganic nature, Stifter and Carus are thus defending, more generally, a world of objects that is increasingly subordinated to human control and left with no capacity for

[213] Friedrich Hebbel, "Das Komma im Frack," *Werke* vol. 3, ed. Gerhard Fricke et al, München, Hanser, 1965: 682.

[214] For a comprehensive history of the progressive subordination of nature in modern Germany, see: David Blackbourn, *The Conquest of Nature: Water, Landscape, and the Making of Modern Germany*, London, Random House, 2011.

action. They want to show that the so-called object world, especially the *natural* world of objects, does indeed have agency and force and, as such, a kind of subject status. The concept of *Stimmung*, with its image of attunement and delicate entanglement between parts, offers one model of understanding nature that helps overcome these problematic divisions.

These two important *Stimmung*-related qualities combined—that is, the agency of the so-called "object world" of nature and the potential for attunement and alignment between humans and the various parts of nature—also very clearly inflect Stifter's aesthetic program as he describes it in the "Vorrede" to *Bunte Steine*. In an attempt to explain what others have found to be a flawed approach in his stories, he presents an explanation that initially seems like a contradiction:

> Es soll sogar in denselben nicht einmal Tugend und Sitte gepredigt werden, wie es gebräuchlich ist, sondern sie sollen nur durch das wirken, was sie sind. Wenn etwas Edles und Gutes in mir ist, so wird es von selber in meinen Schriften liegen, wenn aber dasselbe nicht in meinem Gemüte ist, so werde ich mich vergeblich bemühen, Hohes und Schönes darzustellen, es wird doch immer das Niedrige und Unedle durchscheinen [...][215]

According to his first statement, if the objects that he is presenting are "noble" and "good," then these qualities will also shine through in his art because they are *inherently* noble and good. This would be the case as long as the representation is true to the actual object depicted. In the second statement, however, he places significant emphasis on the notion that the artist himself has to be noble and good in order for these qualities to become detectable in his works. The latter is formulated in such a way that highlights its parallels with the former—the necessity of inherent goodness possessed by something in order for that goodness to manifest itself in representational form. At first glance, this appears to be a contradiction, or at least a conflation of two very different modes of aesthetic representation

[215] *Bunte Steine* 2.

here: a purely objective mode (the former) and purely subjective mode (the latter).[216] With the help of Carus, however, we can see that what initially seems contradictory, is actually an affirmation of Stifter's tendency to draw on the central operations of *Stimmung*. His art (here, his prose literature) *can* draw from both subjective and objective qualities because, for the attuned artist, the subject world and object world are intimately aligned—they echo one another. This notion is supported by similar remarks from Carus's *Neun Briefe*:

> Jede nachahmende Kunst wirkt aber auf uns nothwendig zweifach; einmal durch die Natur des nachgebildeten Gegenstandes, dessen Eigentümlichkeit auch im Bilde auf eine ähnliche Weise wie in der Natur uns afficiren wird, ein anderes Mal, in wiefern das Kunstwerk eine Schöpfung des Menschengeistes ist, welcher durch ein wahrhaftes Erscheinen seiner Gedanken ungefähr wie in höherem Sinn die Welt zu nennen ist, den das Gemeine erhebt.[217]

Here, Carus presents his theory of the "twofold effect" of art: that the creation of art is analogous to the creation of the world, and that the same divine force propels both activities. While a natural landscape leaves its viewer in awe of the creative activity that shaped it, the landscape painting has a second, more intense effect. Nature itself bears evidence of the phenomenon of divine creation, but a landscape painting references both divine creation (in the actual landscape) and artistic creation, which is seen as an extension the divine creative impulse in the human mind. Thus, not only does this moment of *Stimmung* between nature

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[216] Büchner's *Lenz* says something similar in the "Kunstgespräch."

[217] *Neun Briefe* 26f. A similar aesthetic argument appears in Stifter's late essay "Winterbriefe aus Kirchschlag" (1866) in which he writes: "Die Künste ahmen die Natur nach, die menschliche und außermenschliche, und weil in den Künsten das Schöne der Natur beschränkter, kleiner und nur von Menschen hervorgebracht erscheint, so wird es von den meisten Gemütern viel leichter aufgefaßt als in der Natur, ja es ist ein sehr gewöhnlicher Weg, daß ein Mensch erst aus dem Empfinden der Schönheit in der Kunst zum Empfinden der unendlich größeren Schönheit in der Natur hinübergeführt wird." In: Adalbert Stifter, "Winterbriefe aus Kirchschlag," *Vermischte Schriften, Schilderungen und Betrachtungen* (Gesammelte Werke in 14 Bänden), vol. 14, ed. Konrad Steffen, Basel, Birkhäuser, 1972: 16-42.

and the artist establish a kinship between them, but it also grounds this kinship in creativity and divinity.[218]

Stifter's own readings of landscape paintings suggest that he valued the kind of artistic ability that could reveal the invisible forces of creation—human and divine—inscribed within the visible realm. For instance, in his *Kunstbericht* of A. Achenbach's work "Nr. 40 Marine" exhibited in Linz in 1852, he writes: "Wie unmächtig scheint das Schiff mit seinen geschwellten Segeln in diesen Massen, aber es ist doch der unsichtbare Verstand, der das Schiff gebaut hat, leitet, und die Massen beherrscht. Eine ganze besondere Meisterschaft in Lasuren hat der Künstler in diesem Bild erreicht." While the object of study here is a ship rather than a landscape scene, the reading gives insight into his perspective on the process of landscape painting. In order to correctly capture the ship, Achenbach had to capture its createdness. That is, he had to let the ship speak to him—to let it reveal its own history of genesis and development so that these qualities would transfer through to the painting.

For Stifter and Carus, then, knowing an "object"—as an artist or scientist—is not about merely observing and recording it but about breaking down the subject-object boundary and coordinating the two with one another, as the process of *Stimmung* requires. Without this possibility for bridging the subject-object divide, humans and the non-human world become closed off from one another, and the artistic process loses its entire foundation. As the next and final section will show, this is precisely the threat that the dominance of empirical science poses to the human-nature relationship and, accordingly, to art.

[218] Adalbert Stifter, "Gemälde Ausstellung vom Juli 1852," in: *Schriften zur bildenden Kunst. Gesammelte Werke in 14 Bänden*, vol. 14, eds. Johannes John and Karl Möseneder, Stuttgart, Kohlhammer, 2011: 30f.

Stimmung: Unity without Uniformity

For the final section of this chapter, I will return to geological surveying as a way of knowing, a topic that I introduced at the beginning of the *Kalkstein* section. I proposed that the ultimate goal of the surveying endeavor—mapmaking—at first glance *appears* to be in line with the expectations of early 19th century science. After all, a surveyor collects microscopic detail and combines that data to form a cohesive picture of the whole. I then asserted that Stifter's *Kalkstein* shows how the work of the surveyor is deficient, even negligent, as a method for understanding nature. The surveyor's shortcomings become particularly clear when his approach is examined alongside the pastor, whose conception of nature appears to be deeply informed by the Goethean scientific approach and the notion of *Stimmung*. This juxtaposition within *Kalkstein* validates the *Stimmung* conception of nature and, in so doing, simultaneously reveals the most problematic aspects of the surveyor's perspective. To close this chapter, I would therefore like to briefly show how the innermost narrative of the story—the one in which the pastor shares the story of his childhood with the surveyor—provides further support for these observations.

To avoid dwelling on the details of this internal story, I will focus on two main themes that are relevant to the discussion at hand and seem to motivate the pastor's desire to impart his wisdom to the surveyor. Both themes are introduced as important lessons from the pastor's childhood and youth. And while these themes do not initially appear to be directly relevant to the discussions of art, science, and human nature-relations that are central to the

medial and outer frame narratives, their final message creates a sense of resonance between all three of the story's layers.

The first of these two lessons concerns the pastor's relationship to learning and the process of formal education. Although the pastor and his twin brother received the same education growing up, their levels of achievement were markedly different. Briefly stated, his brother was a strong pupil and he was not. Yet, if we examine the pastor's account of his own weaknesses during this period of his development, a common theme quickly emerges: he simply struggled to conform to a standard. In fact, in general, any abstract, standardized system proved difficult for him to internalize and reproduce. His account of the discrepancy between his brother's and his own abilities learning the alphabet, phonetics, and penmanship, for instance, exemplify this point:

> [der Bruder] konnte sich die Buchstaben merken, er konnte sie zu Silben verbinden, […] und seine Buchstaben standen in der Schrft gleich und auf der nämlichen Linie. Bei mir war das anders. Die Buchstaben wollten mir nicht einfallen, dann konnte ich die Silbe nicht sagen, die sie mir vorstellten […]. Bei dem Schreiben hielt ich die Feder sehr genau, sah fest auf die Linie, fuhr gleichmäßig auf und nieder, und doch standen die Buchstaben nicht gleich, sie senkten sich unter die Linie, sie sahen nach verschiednenen Richtungen und die Feder konnte keinen Haarstrich machen.[219]

Much like the Zirder River spilling out of its path after the storm, the boy's handwriting cannot be forced to stay within the space laid out for it. It is noteworthy here that it is not the boy's behavior but, rather, his way of relating to the world that has to be retrained in order for *Bildung* to occur. Only later, after he and his brother complete their practical, hands-on training in the estate's various workshops, is he able to succeed in (re)learning the more rudimentary concepts introduced during the earlier stages of his education. In other words, he had to establish a personal connection with the "Dinge" themselves in order to understand

[219] *Kalkstein* 80.

them. Moreover, not only is a tangible, material context an essential precondition for him to thrive intellectually, but he is also much more capable of success when he is able to set his own individual tempo for learning, as he does later on.[220] The lesson to be learned from this aspect of the story, then, is that social practices involving standardization—such as standardized methods of teaching and standard metrics of assessment—risk presenting a simplified, distorted interpretation of the learner's actual potential. Had the pastor not had a twin brother to assume responsibility of the estate's operations, he likely would have lacked any opportunity to start over and change the story of his own educational development.

As it turns out, surveying as a method of evaluating nature is problematic for similar reasons. It applies a standard unit of measurement[221] to a landscape and ultimately produces a map, which is an abstraction or "shorthand" version that renders land more universally legible. However, as such, the resulting cadastral or topographical map necessarily privileges certain kinds of data, rendering other, potentially valuable, qualities of the land useless. Through the application of such metrics, as James Scott points out, the practice of surveying achieves "an overall, aggregate, synoptic view of a selective reality […], making possible a high degree of schematic knowledge, control and manipulation."[222] Unlike the overview captured by a landscape painter, for instance, the surveyor's standardized overview does not attempt to capture the sense of harmony that integrates nature's multitudes into one diverse

[220] Also relevant is the fact that his brother's ultimate demise stems from his mishandling of a number of financial investments; the pastor, on the other hand, survives because he prefers to store his wealth in the form of material commodities (i.e., linens and silver).

[221] Stifter also expresses a general skepticism towards human measurements of time and space in the essay "Der Silvesterabend": "Und meint nicht jeder Mensch, er wisse, was der Raum ist, und mißt nicht jeder den Raum? Freilich mit einem Dinge, das wieder im Raum ist. (...)" In: Adalbert Stifter, "Der Silvesterabend," *Vermischte Schriften, Schilderungen und Betrachtungen* (Gesammelte Werke in 14 Bänden), vol. 14, ed. Konrad Steffen, Birkhäuser, Basel, 1972: 61-70.

[222] Scott 11.

but unified whole. Rather, it destroys diversity by distilling reality into a more simplified version, often for the sake of subordination and control. In this way, standardization is a "sameness" imposed upon nature from above and is thus markedly different from the *Stimmung*-related notion of a "chain of similarity" already inherent within nature's multitudes. With the pastor's didactic storytelling, then, Stifter appears to be promoting *Stimmung* as more complex model of knowing nature. The unique capacity of *Stimmung* is, namely, that it can maintain a sense of sameness and unity without introducing uniformity by eradicating individual difference.

The second relevant lesson in this context takes place in the infamous garden scene in which the boy tries to capture the attention of the laundry woman's daughter by luring her with fruit. The reference to Eden—here, an Eden quarantined by iron bars—is unmistakable. The girl, who is often seen carrying a basket of white linens through the garden, clearly embodies innocence and purity, and these ideals are endangered by the looming threat of temptation and seduction from the external world. However, there are also signs that the girl represents a sexualized, "veil of Isis" conception of nature, in which the deep inner truths of the natural world are understood as closed off and out of reach from humankind. These qualities are characteristic of what Pierre Hadot calls the "Promethean" tradition of relating to the natural world.[223] Within this tradition, nature was perceived to be withholding a secret that could only be revealed and possessed through the use of trickery and force—in other words, through a process of taming. In this particular setting in *Kalkstein*, the desire to "lift" the veil of Isis is signified by the covered basket, whose contents the boy desperately yearns to discover (and, eventually, possess as well). Moreover, the manner in which the boy

[223] Pierre Hadot, *The Veil of Isis: An Essay on the History of the Idea of Nature*, trans. Michael Chase, Cambridge, MA, Belknap Press, 2008
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approaches the girl in the first place is one of trickery, and it conjures up the taming or conquering of a wild animal. He places food in her path, lies in wait nearby, and approaches her slowly and carefully when she finally responds to his bait.[224]

The eventual condemnation of this romantic relationship by the girl's mother—here, a literal expulsion from the garden—signals both the end of the girl's innocence and an inauguration of self-knowledge and shame as the mother says, "Johanna, schäm dich."[225] The use of the girl's name and the notion of shame accompanying this expulsion indicate that the girl—now torn away from the blissful prelapsarian unity of self and world—has become a self-conscious subject. In fact, it is the boy who contaminates her world with this division in the first place, because acts of seduction and conquest capitalize on the power relations made possible precisely by a rigid separation between subject and object. The mother's condemnation of their relationship thus also seems to function as a denunciation of the boy's "Promethean" relationship with her daughter—his desire to know her and uncover the secrets she holds.

Because the children's relationship with one another also represents the relationship between humans and nature in general, this second lesson also functions as a kind of cautionary tale for the surveyor. With it, the pastor cautions him against forms of knowledge-

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[224] Stifter's interest in the theme of domesticating wild animals is further supported by a fragment essay that he wrote in 1845, called "Zur Psychologie der Tiere." In this essay, he tells of a man's attempt to tame a bull and train it to obey only him. One day, the bull escapes from the iron gate of the corral (reminiscent of the "Eisengitter" surrounding *Kalkstein*'s garden). Everyone present is astonished when the man's four-year-old son proves himself naturally adept at steering the bull back into his pen. The anecdote supports Stifter's suggestion at the beginning of the essay that animals and children have similar modes of perception and systems of motivation and action. In the same essay, he also refers to the animal as "ein in eine mehr oder minder unkenntliche Knospe eingewickelter Mensch" (10) as compared with *Kalkstein*'s reference to children as "Knospen der Menschheit" (67-68), as mentioned above. Two further anecdotes report on animals' clear lack of self-awareness as suggested by their interaction with mirrors. In: Adalbert Stifter, "Zur Psychologie der Tiere," *Vermischte Schriften, Schilderungen und Betrachtungen* (Gesammelte Werke in 14 Bänden), vol. 14, ed. Konrad Steffen, Birkhäuser, Basel, 1972: 10-15.

[225] *Kalkstein* 88.

making that extend and exploit the problematic subject-object divide that has been mentioned so often in this chapter. The surveyor's methods, by necessity, isolate him from his object of study, solidifying the subject-object divide that, according to Goethe and Romantic thinkers like Carus, ensures the death of the natural world. And while the garden scene in *Kalkstein* does not end in the girl's death per se, she is soon sent off to another city to be married. To the boy, her disappearance is experienced as a kind of death; in fact, this is so much the case that the pastor recalls the intense grieving that accompanied this loss: "Ich meinte damals, daß ich mir die Seele aus dem Körper weinen müsse."[226] Regardless of how oblivious he may have been about his own controlling or manipulative behavior, the story shows us that it was the boy's objectification of the girl that resulted in their eternal separation.

Considering these two lessons together and the message that they seek to impart about nature, it is clear where Stifter's sympathies lie. With *Kalkstein*, he is testing the viability of the geological survey—and, by extension, objective empiricism—as a way to grasp nature as a unified whole. But, with *Stimmung* as a counter-model, the science of surveying is revealed as deficient again and again. As the German word for surveyor—"Vermesser"—innocently suggests, every act of measuring (*messen*) is also an act of *mis*measuring (ver*messen*), due to the complexities that it omits. Likewise, by adopting the principles of objectivity and distance, it sets the stage for problematic divisions and hierarchies that render the object world—here, the natural world—lifeless and powerless. For a generation of artists who saw their work as the result of a dynamic, two-way exchange between humans and the object world, that lifelessness and powerlessness must, tragically, transfer, into the realm of art. Thus, while Stifter and Carus are both invested in science, they

[226] *Kalkstein* 89.

also show how a disproportionate reliance on empirical knowledge and empirically informed representation endangers nature as well as the future of art.

CHAPTER FOUR

"[N]otwendige Harmonie": The Paradox of Nature in Büchner's Scientific and Literary Writings[227]

Introduction

Perhaps the most obvious figure of analysis within this project's purview is Georg Büchner (1813-1837). For many scholars, this revolutionary activist, natural scientist, and literary writer embodies the strained relationship between science and art that defined the first half of the 19th century in the German-speaking lands.[228] His short life spanned an intense period of epistemological growing pains. For one, a growing valorization of objective empiricism began to invalidate speculative Romantic approaches to science such as *Naturphilosophie*. Moreover, Büchner's own activity as a scientific researcher also coincided with rapid and often contradicting theories in life-science disciplines such as biology and anatomy. His diverse range of preoccupations—much like those of Goethe, Carus, and Oken—suggests that predisciplinary models of knowledge were influential for his work. At

[227] The phrase "notwendige Harmonie" is taken from Büchner's *Probevorlesung*. The full sentence reads: "Alle Funktionen sind Wirkungen desselben; sie werden durch keine äußeren Zwecke bestimmt, und ihr sogenanntes zweckmäßiges Aufeinander- und Zusammenwirken ist nichts weiter, als die notwendige Harmonie in den Äußerungen eines und desselben Gesetzes, dessen Wirkungen sich natürlich nicht gegenseitig zerstören." Georg Büchner, *Sämtliche Werke, Briefe und Dokumente in zwei Bänden,* vol. 2: *Schriften, Briefe, Dokumente,* eds. Henri Poschmann et al., Frankfurt a.M., Deutscher Klassiker, 2006: 159.

[228] Otto Döhner, *Büchners Naturauffassung*, Marburg, Gorich & Weiershauser, 1967; Peter Ludwig, *"Es gibt eine Revolution in der Wissenschaft": Naturwissenschaft und Dichtung bei Georg Büchner*, St. Ingbert, Röhrig, 1998; Peter D. Smith, *Metaphor and Materiality: German Literature and the World-View of Science, 1780-1955*, Oxford, Legenda, 2000; Helmut, Müller-Sievers, *Desorientierung: Anatomie und Dichtung bei Georg Büchner*, Göttingen, Wallstein, 2003; John Reddick, "The Shattered Whole: Georg Büchner and *Naturphilosophie*," in: *Romanticism and the Sciences*, eds. Andrew Cunningham and Nicholas Jardine, Cambridge, Cambridge UP, 1990: 322-340.

times, however, his work also displays a dedication to rigorous empiricism and disciplinarity. These inconsistencies reflect as much about the culture in which Büchner was immersed as they do about his own habits and beliefs.

To complicate things, Büchner's own voice is notoriously difficult to extract from his writing. Helmut Müller-Sievers notes, for instance: "Ein Autor kann nur dann Gegenstand einer übergreifenden monographischen Untersuchung werden, wenn an sein Werk Fragen gerichtet werden können, die zumindest potentiell Aussicht auf eine Antwort haben, wenn wir [...] mit seinem Werk ins Gespräch kommen können."[229] Büchner's writing, with its unmarked citations and its "enteignete desorientierte Sprache" frequently eludes and even precludes interpretation, sending philologists chasing its many references "wie entlaufene Hunde."[230] Müller-Sievers rightly asserts that, because of this tendency towards unmarked citation, many of Büchner's texts—particularly his literary writing, but also his scientific contributions—are cryptic and cannot be trusted as stable or reliable sources of his personal beliefs. Despite countless academic articles that have attempted to read Büchner's own position through the expressions of his characters, this pursuit has proven largely futile.[231] In *Metaphor and Materiality*, Peter Smith has likewise demonstrated that scholarship has proven itself oddly effective at presenting diametrically opposed readings of Büchner's views on nature and science. To this day, scholars remain "divided as to whether Büchner should be

[229] Müller-Sievers *Desorientierung* 7.

[230] Müller-Sievers 7f. He sees Büchner's tendency towards disorientating citation as a result of his contact with the natural sciences, namely, with his "eigenen Desorientierung zwischen beschreibender und vergleichender Anatomie" (9).

[231] Müller-Sievers does say that the trial lecture "Über Schädelnerven" is likely the most straightforward piece by Büchner, but, as Döhner (via Smith) points out, even this piece could prove misleading, because it was written partly for an audience that included Lorenz Oken, whom he knew would be his future colleague (Smith 102).

regarded as an idealist or a materialist in his approach to *Natur*."[232] Smith cites John Reddick's scholarship, for instance, which sees Büchner as a backward-looking idealist who espouses the "holistic world-view" of figures like Goethe, Lavater, and Oken and who aims a critical eye toward teleological and mechanistic explanations of life.[233] At the same time, Smith identifies others, such as Walter Müller-Seidel and Otto Döhner, who maintain that Büchner's view of human history is "profoundly deterministic" and that his relationship to Romantic science is primarily a critical one; for this latter group, Büchner embodies "the new materialist scientific world-view, dominated by 'Beschreibung, Analyse und Erkenntnis.'"[234] They see Büchner's science itself as "a pronounced act of defiance towards the speculative science of the *Naturphilosophen* in Germany."[235] Whether Büchner was backward-looking, at the cutting edge of the empirical scientific movement of his day, or even a century ahead of his time, as some claim, my project is concerned with Büchner's writing in the context of the unique era in which he lived.

Like Müller-Sievers and Smith, then, I am less concerned with the impossible task of understanding Büchner's own voice than I am with probing the contradictions his works expose. These contradictions often allow insight into the way he perceived the dominant scientific and aesthetic discourses of his time. My previous chapters provide evidence that various literary and scientific figures from this era sought to reconcile increasingly competitive and mutually exclusive approaches to scientific inquiry. This desire exists in Büchner's writing as well, and it is precisely this impulse that fuels his critical destabilization

[232] Smith 98.
[233] Smith 99.

[234] Smith 102.

[235] Ibid 101.

of both the Romantic and the objective-empirical approach to science as independently viable methods. While these scientific paradigms were becoming increasingly disentangled from one another historically, figures like Droste-Hülshoff, Stifter, and Carus appear to have remained hopeful (or naive) enough to entertain models of integration and reconciliation. Büchner's work, on the other hand, suggests an interest in revealing the specific deficiencies of each model as a stand-alone mode of inquiry. As science in Europe sheds *Naturphilosophie* as a viable method of scientific engagement in favor of strict empiricism, Büchner does not necessarily embrace the shift. Instead, he often presents it as an epistemic value that is just as questionable as the idealist underpinnings of *Naturphilosophie*. This ambivalent position makes sense for a student of science who was, in the words of Müller-Sievers, "im Geist der vergleichenden Anatomie, d.h. im Spannungsfeld von empirischer Naturforschung und naturphilosophischer Spekulation ausgebildet."[236] It is also significant that Büchner produced almost all of his scientific (and literary) writing within five years of Goethe's death and that his approach to anatomical research appears to have been largely influenced by the morphological work of Goethe and Lorenz Oken. Perhaps for Büchner, then, as a practitioner of science who himself directly employed the empirical method to his anatomical objects of study, it was more readily clear that speculative or interpretive forms of scientific inquiry were at the brink of obsolescence, for better or for worse.

The relationship between Büchner's science and his literary writing is a complicated one that has stood at the center of a great deal of scholarship. While I do not claim that his science can or should be neatly projected onto his literature or his literature read as a simple extension or reflection of his scientific views, it is important to recognize the recurring

[236] Müller-Sievers 73.

constellation of concerns that pervades both genres. Chief among these concerns is the relationship between humans and nature, as well as the relationship between representation (whether scientific or aesthetic) and reality. Placing Büchner's writing alongside other scientifically inclined authors of this period—regardless of their politics—can bring to light some of the reasons why the very relationship between science and art (specifically literature) was also a central problem for him. Many polymaths at this time struggled with such issues: What was the relationship between science and literature to look like, particularly in an era in which non-scientific and non-empirical ways of knowing were increasingly being excluded from the realm of legitimate knowledge production? In examining Büchner's work, I do not intend to project the conclusions that I draw from one genre of writing onto the other; however, the likelihood that these two genres already stood in a tense relationship already makes them, in a way, inextricable from one another.

This project is concerned primarily with understanding how the 1830s and 1840s in Germany were perceived as an era of epistemological tension due to the rising status of empiricism and the increasing differentiation of knowledge. Accordingly, the sites of tension within Büchner's written work are of primary interest and relevance for this chapter. The first section of this chapter will outline some of the inherent contradictions found by scholarship within Büchner's scientific approach and his scientific presentation of nature. It will then explore how this ambivalence resonates with the nature depictions in his novella *Lenz* as well as the aesthetic quandary presented in the novella's famous *Kunstgespräch*. These observations will allow me to draw some conclusions about the function of Lenz the protagonist and his own ambivalent relationship to nature. In my reading, Lenz's own state of schizophrenia and sense of longing seems to reflect a broader sociocultural schizophrenia

with regard to the status of science and knowledge, rather than simply a fascination of the historical figure J.M.R Lenz. The fact that this schizophrenia about science also extends to his other works, such as *Woyzeck,* further speaks to its broader cultural resonance.

The second section of this chapter will draw from the *Stimmung* discussion from previous chapters to show how Büchner's work reveals some of the distinct growing pains associated with the rise in objective empiricism and the dominance of life science discourse within this era's scientific culture. My reading suggests that Büchner is revealing how life science discourse and discourses of the body are shedding their previous Romantic trappings. Specifically, I will show how scientific theories for the innerworkings of the organism collide with and sometimes begin to co-opt Romantic notions like *Stimmung* throughout the middle decades of the 19th century.

Part 1: Büchner's Science and its Contradictions

Descending from a long line of physicians and surgeons, Büchner decided to continue the family tradition by pursuing medicine. He began his studies in 1831 in Strasbourg. After a period of illness and a brief return to Hesse in 1834 (during which time he was involved in the *Hessischer Landbote* scandal), he returned to his studies in Strasbourg, completing his dissertation in 1836. This dissertation—titled *Mémoire sur le système nerveux du barbeau* (*Abhandlung über das Nervensystem der Barbe*)—presented an anatomical study of the nervous system of the barbel fish. The project was published by the *Société du museum d'histoire naturelle* the same year after Büchner had successfully presented his work in a number of lectures and won the society's approval.[237] Later in the year, he applied for an academic post at Zurich University and presented his now well-known "Probevorlesung" on

[237] Smith 95.

the 5th of November. Deemed a promising comparative anatomist, he was hired to begin lecturing immediately. Tragically, he fell ill in February of the following year and died.

Smith notes, however, that a such a brief sketch of Büchner's life and relatively short foray into biological research

> fail[s] to communicate the significance of his work for the emerging life-sciences or his abilities as an empirical scientist. His dissertation on the anatomy of the barbel was reviewed positively by Johannes Peter Müller (1801-1858), one of the key figures in the development of modern medical science.[238]

In general, Büchner sought to determine the origin and development of the brain in vertebrates.[239] The first paragraph of his dissertation outlines the key questions he sets out to explore:

> Welcherart ist die Beziehung zwischen den Hirnnerven und den Rückenmarksnerven, zwischen den Schädelwirbeln und den Anschwellungen des Gehirns? Welche von ihnen finden sich als erste auf der untersten Stufe der Rangordnung der Wirbeltiere? Welche sind die Gesetze, nach denen sich ihre Zahl vergrößert oder vermindert, sich ihre Verteilung kompliziert oder vereinfacht?[240]

He notes from the beginning that the answer to these questions are only made possible via the "genetische Methode," by which he means an "äußerst gewissenhaftes Vergleichen des Nervensystems der Wirbeltiere, ausgehend von den einfachsten Organisationen und fortschreitend Schritt für Schritt zu den entwickeltsten." Here he is referring to the morphological work of thinkers like Goethe and Lorenz Oken. Indeed, the theory of the vertebrate skull that had been separately propounded by each of them in previous decades

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[238] Smith 95-96. The "genetic method" refers to the general approach to scientific inquiry favored by Goethe and the *Naturphilosophen* (Müller-Sievers *Desorientierung* 73).

[239] Müller-Sievers provides a detailed history of research of the brain leading up to Büchner's dissertation in Chapter II of his *Desorientierung*.

[240] Büchner 2:504. The dissertation was, of course, composed in French. I will cite the widely used German translation from the Poschmann edition cited above.

was an important influence for Büchner.[241] However, he laments that anatomists cannot agree on "die Zahl, die Bedeutung und die Verteilung der Nerven," and for this reason, he concludes: "Der Natur selber muss man sich zuwenden."[242] He thus frames his project as an attempt to bring clarity to these questions by introducing a more rigorously empirical approach.

Already in the introduction of his project, we see a contradiction in methodology: he is admittedly drawn to, and indebted to, comparative anatomy and the interpretive morphological work that it entails. Yet, at the same time, one of his goals seems to involve refining the baseline for this comparative work. To do so, he tries to establish a clearer understanding of the nervous system of the lowest, simplest class of vertebrates, and he points out in his introductory pages that Carl Gustav Carus had deemed the barbel "den reinsten Typus der Knochenfische."[243] Büchner thus presents this species as an ideal object for close empirical study, due to its simplicity and relative symmetry. However, he later uses his empirical observations to imagine it as an original form from which he can understand the development of the nervous system in all other vertebrates.[244] His dual interest, in both a rigorous description of the anatomy of this fish and an interpretation of the relationship between the cranial nerve function with the fish and that of "weiter oben steheneden Tiere,"

[241] This theory proposed that the brain was created as a result of a metamorphosis at the top of the spine. Goethe claimed to have discovered this in 1790 and accused Oken of plagiarism when he announced his theory in 1807. The theory was later undermined (Smith 97).

[242] Büchner 2:504f.
[243] Ibid 505.

[244] See also: Helmut Müller-Sievers, "Of Fish and Men: The Importance of Georg Büchner's Anatomical Writings ," in: *MLN* 118.3 (April 2003): 713.

is also reflected in his choice to divide the dissertation into two larger sections: *Partie descriptive* ("Beschreibender Teil") and *Partie philosophique* ("Philosophischer Teil").[245]

The question of whether this pairing suggests his ambivalence as a scientist or his privileging of one approach over the other has been a particularly challenging question for scholars. Müller-Sievers, for instance, sees Büchner's entire dissertation in some ways as a (largely failed) attempt to lend validity to the genetic-interpretive project of morphology.[246] Smith, on the other hand, believes that Büchner's choice to begin with the descriptive section—which is significantly longer than the philosophical section—is significant; furthermore, he notes that Büchner's "repeated attacks on the futility of *a priori* thinking, such as characterized both Cartesian rationalism and idealist *Naturphilosophie*, lead one to conclude that although he was no follower of the French iatromechanists [...], Büchner was also far from being a mystic."[247] What is once again clear is that Büchner's work lends itself to a multitude of possible conclusions about his relationship to science, whether he intended it as such or not. The most oft-cited (and significantly shorter) piece of his scientific writing, his "Probevorlesung" of 1836, provides some clarity, however, and it is often considered the most direct articulation of his thoughts on the appropriate scientific philosophy and methodology. Because the trial lecture is more relevant for the analysis presented in the second half of this chapter, it will be covered in more depth later.

For the moment, then, I would like to dwell on the general problem of scientific methodology that the ambivalent structure and ambivalent claims of Büchner's dissertation clearly pose, as this tendency towards ambivalence and *Versöhnung* is a central theme of my

[245] Büchner 2:556.

[246] Müller-Sievers *Desorientierung* 74.

[247] Smith 102f.

entire project. Specifically, I will focus on the significance of the somewhat awkward relationship between Büchner's objective, empirical study in the first section and his subsequent inclusion of a more subjective, interpretative approach in the second section. The tension embodied by the mere structure of this dissertation—and the fact that he chose *not* to exclude either approach—lends insight into Büchner's era and the models of scientific inquiry available at that time. However, it also presents a fundamental incommensurability between these approaches because they involve different models for relating to nature. The previous chapters have already outlined some of the implications of excluding *Naturphilosophie* in favor of empiricism as an approach to understanding human-nature relations. To these authors, objective-empirical science yields a specific kind of knowledge about nature that is critical but also deficient when isolated from other ways of knowing. Unfortunately, the trend towards positivism during this era threatened to exclude and possibly extinguish other ways of knowing nature, and contemporaneous literature often grapples with this troubling reality. In Droste's case, the lyric poet stands at the brink of endangerment; for Stifter, both the landscape painter and the Goethean scientist are faced with an existential threat. However, of the literary authors studied in this project, the stakes seem especially high for Büchner, himself a formally trained scientist as well as a literary writer.

Though he begins with an empirical approach in his dissertation, Büchner's many references to *Naturphilosophen* (i.e., Carus, Oken) in his scientific writing, as well as his inclusion of morphological-genetic analysis[248] in the second part of his dissertation suggest that he was somewhat invested in the ideals of the *Naturphilosoph*-scientist described in

[248] The second part of this chapter will provide a more in-depth explanation of the morphological-genetic scientific mode of inquiry.

previous chapters. As a promoter of aesthetic science and scientific art, such a scientist would show dedication to detailed, empirical study but, in some ways, less adherence to the principles of objectivity and self-restraint that would soon become the hallmarks of modern science. This figure would also show a deep aesthetic interest in the natural objects of study at hand. Curiously, in the literature surveyed thus far, this idealized encounter with nature is often performed not by a scientist, strictly speaking; rather, it comes from someone who knows nature intimately in a different way, such as the priest in *Kalkstein* or the lyrical voice of "Die Mergelgrube." These works thus, in some ways, resist empirical objectivity by presenting human characters who have an entangled, participatory relationship with nature and are often more deeply attuned to the local natural world than the scientists who investigate them could hope to be. These figures, however, might also be portrayed as outdated, as is the case with *Kalkstein*'s priest; or the state of mind that allows them to become close to nature might be fleeting, as is the case with Droste's lyrical subjects. The result is a sense of impending loss. The literature thus present a warning that this model of entanglement with nature is fragile, as is the possibility of a more aesthetic form of science—and perhaps even art in general. At the same time, these literary figures' intimacy with nature also subtly points to the liability that accompanies such a relationship—the dangers of becoming *too* close. Droste's subject in "Die Mergelgrube," for instance, faces the threat of being swallowed up by the pit she's examining, of becoming petrified like her fossilized objects of study; likewise, Stifter's *Kalkstein* priest has taken on the physiognomy of the landscape around him but is also eroding and wasting away just as the limestone is.

The Double-Nature of Büchner's *Lenz*

The two main contradictions outlined above will prove fruitful for understanding how Büchner's concerns align with those that preoccupy Droste and Stifter. Recapitulated, these are: 1) the conflict in Büchner's dissertation between objective, empirical study and a more interpretive form of study (i.e., the "morphological-genetic method"); and 2) the notion that each corresponding relationship with nature is both necessary and, in some way, potentially perilous at the same time. Within this general context, I will consider Büchner's novella fragment *Lenz* and its eponymous protagonist, who is allegedly modeled on the *Sturm und Drang* author J. M. R. Lenz. While a number of scholars have attempted to uncover the relationship between the historical figure of Lenz and his literary counterpart, my analysis will focus on Lenz the literary character.[249]

The literary character Lenz, with his curious relationship to nature, provokes a number of problems that resonate with the concerns of Droste, Stifter, and Carus. For one, Lenz shows both an intimacy with nature and a peculiar vulnerability based on that intimacy, as is the case with the other characters described above. Moreover, at times, Lenz's notoriously schizophrenic behavior seems to contain within it—or perhaps even hinge upon—a largely schizophrenic relationship with nature. The two poles of this schizophrenia toward nature are already familiar in the context of this project: on one end, we have a human subject whose perception is sober, clear, and withdrawn (i.e., Droste's lyrical subjects before the trance, *Kalkstein*'s surveyor); on the other, the human subject is entangled with his environment and emotionally receptive to it (Droste's subjects in the trance state, *Kalkstein*'s

[249] All references to *Lenz* are taken from: Georg Büchner, *Sämtliche Werke, Briefe und Dokumente in zwei Bänden,* vol. 2: *Dichtungen,* eds. Henri Poschmann et al., Frankfurt a.M., Deutscher Klassiker, 2006: 225-250.

priest). Lenz's vacillation between two different attitudes or positions can in many ways be read as an extreme form of the dichotomies that appear in these other works.

Already in the first passage of the novella, two starkly different versions of Lenz emerge, which also correspond to two very different descriptions the natural environment. The shifts or breaks in Lenz's character are not always well delineated in the text, but signals do exist nonetheless, through chronological markers and descriptions of his disposition. In the first few sentences, for instance, he has a relatively sober outlook, continuing along the mountain path in a way that is described as "gleichgültig."[250] The suggestion here is that the indifference applies to his perception of the environment around him—to everything that is described up until this point in the narrative. It is, indeed, a bleak, largely gray picture, and, with the famous line "nun war es ihm manchmal unangenehm, dass er nicht auf dem Kopf gehen konnte,"[251] the narrator hints at Lenz's sense of discomfort or displeasure concerning this current order of things. Directly following this peculiar observation, however, the narrative creates a sudden chronological break in its description of Lenz's relationship with nature. This break is signaled by the word "[a]nfangs," which introduces an earlier period of time when Lenz was not yet sober and indifferent but, rather, extremely sensitive and reactive to his environment:

> Anfangs drängte es ihm in der Brust, wenn das Gestein so wegsprang, der graue Wald sich unter ihm schüttelte, und der Nebel die Formen bald verschlang, bald die gewaltigen Glieder halb enthüllte; es drängte in ihm, er suchte nach etwas, wie nach verlornen Träumen, aber er fand nichts.[252]

[250] Büchner 1:225.

[251] Ibid.

[252] Ibid.

Here, Lenz is stirred by his natural surroundings and moved to seek out something he has lost (or is currently losing). Furthermore, Büchner's repeated use of the word "drängen" gives the impression that nature is acting upon him or even entering into him; this is further underlined by the anthropomorphized descriptions of nature that are expressed with the active verbs *wegspringen*, *schütteln*, and *verschlingen* and the image of *gewaltige Glieder*. In contrast to the opening sentences, where Lenz was "gleichgültig" and nature seemed heavy, dull, and lethargic ("träg"), this glimpse into the past shows a strikingly different relationship. Here, Lenz is open and receptive to his natural environment and the environment itself is alive, even playful. The nature described in this scene—primarily comprised of inorganic elements and meteorological forces—includes storm winds that awaken, roar, and sing; clouds that gallop; and a sun drawing its sword against the snowflakes. Lenz shows his physical openness to it all by standing with "Augen und Mund weit offen" as the busy activity of the landscape encircles him and "[reißt] ihm in der Brust," stirring him emotionally.[253] In fact, one might even say that *when* Lenz presents himself as receptive, nature also emerges as a set of vibrant forces that interact with him and act upon him. Lenz experiences this activity—this *reißen* and *drängen* of nature—as both pleasure and pain, but in the end, he remains inclined to control it by absorbing it all into himself—"den Sturm in sich ziehen, Alles in sich fassen."[254] The dilemma presented by Lenz's extreme receptivity to nature resonates sharply with Stifter's priest and Droste's lyrical subjects: in opening himself up to nature, he runs the risk of becoming dissolved by it, of losing all boundaries of himself as an individual, as well

[253] Ibid. 226.

[254] Ibid.

as his autonomy. Yet, in seeking to control nature's power or distance himself from it, he also risks isolating himself completely.

In a manner that is once again abrupt, the narrative next presents an alternative mode of existence to Lenz's early interactive relationship with nature: it returns to the sober, removed perspective at the beginning of the story. This time, the break is marked even more distinctly by a semicolon and the conjunction "oder":

> […] er dehnte sich aus und lag über der Erde, er wühlte sich in das All hinein, es war eine Lust, die ihm wehe tat; oder er stand still und legte das Haupt in's Moos und schloß die Augen halb, und dann zog es weit von ihm, die Erde wich unter ihm, sie wurde klein wie ein wandelnder Stern […][255]

Lying stretched out on the earth, Lenz opens himself up completely to the universe; he then stands up and begins to close his eyes and, in doing so, closes himself off from his surroundings. When he does, the earth pulls away from him, transforming into a distant body, "wie ein wandelnder Stern," and leaving him isolated and alone. The initial, horizontal position reflects a model of dissolution into and oneness with nature, while the vertical position introduces a hierarchized model of detachment between Lenz and his natural surroundings. Both prove to be troubling for Lenz because they manifest only in their extreme forms. Indeed, the word "oder" suggests that this vacillation between extremes has recurred multiple times in the past rather than just once.[256] Being fully immersed in nature means being fully subject to its whims and moods, which can be violent ("gewaltig") and fear-inducing at times. It means a surrendering of individual control and of one's own will. However, when Lenz asserts a more sobered and distanced stance, nature itself becomes still

[255] Ibid. 226.

[256] Michael Hamburger also reads this sequence as an expression of the "habitual past" tense, translating it into English as "he would…" See: Georg Büchner, *Lenz,* trans. Michael Hamburger, Surrey, Oneworld Classics, 2008: 5.

and empty, leaving him feeling "entsetzlich einsam" and "allein, ganz allein, er wollte mit sich sprechen […]."[257]

Pathologizing the Space of Nature in *Lenz* and *Woyzeck*

The peculiar incongruences in Lenz's perception in this opening passage suggest that the descriptions of nature in the text are bound up with problems of space, scope, scale and vision, as is the case with literary descriptions of nature in other works from this era. The narration of Lenz's environment in this passage is focalized through Lenz himself, such that the reader experiences the scene through his view. Perhaps reflective of Lenz's own instability, the images that emerge are exceptionally disorienting for the reader due to their inconsistency: the narrator indicates that Lenz feels near to but also profoundly distant from the objects he observes and that those objects register for him as both small and larger than life at different times. The scale of things is distorted to Lenz, and the distance that he perceives among objects or between them and himself often fails to correspond to what his body actually experiences when traveling through space: "er begriff nicht, daß er so viel Zeit brauchte, um einen Abhang hinunter zu klimmen, einen fernen Punkt zu erreichen."[258] The text thus presents a juxtaposition of largely incompatible images of nature, both directly through the eyes of Lenz and also when describing Lenz's spatial confusion. These apparent contradictions attest to Lenz's unrest at both extremes and challenge the reader to consider the significance of the nature description presented in this passage.

Topics such as nature depiction and spatial orientation in *Lenz* have garnered a fair amount of scholarly attention over the years. One of the more comprehensive studies on the

[257] Büchner 1:226.
[258] Ibid. 225.

topic of *Lenz* and nature is Harald Schmidt's monograph dedicated to the connection between landscape and psychosis in the text. He views the protagonist's distorted, inconsistent spatial perception as a symptom of the specific pathological afflictions that plagued the historical figure J.M.R. Lenz.[259] Schmidt examines Büchner's literary portrayal of Lenz's spatial perception non-historically, through the lens of 20th century psychiatric research documenting the "Raumerlebenstörungen" experienced by sufferers of depression and schizophrenia. He believes that "[b]estimmte Komplexe in Büchners *Lenz* wären [...] nicht nur mit klinischem Material aus beiden Psychosen zu relationieren, sondern könnten durch Studien sowohl zur Melancholie wie zur Schizophrenie erhellt werden."[260] In other words, Schmidt asserts that the distorted nature description in *Lenz* aligns with the distortions in spatial perception reported by real psychiatric patients; with this connection, he attempts to shed light on J.M.R. Lenz's actual mental state and to illuminate Büchner's general interest in matters of the psyche. For Schmidt, the nature presented in *Lenz* shows how depression ("melancholia") is first and foremost a "raumzeitliche Grundstörung."[261]

While Schmidt views the sense of extreme closeness and isolating distance experienced by Lenz as two extreme symptoms of the same cluster of psychological disorders, I read them as two distinct and competing *versions* of Lenz—and by extension, two distinct versions of how human subjects might relate to nature. Schmidt's characterizations of these symptoms are nonetheless invaluable to my reading, as they highlight precisely the qualities that make *Lenz* interesting in the context of Büchner's

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[259] Harald Schmidt, *Melancholie und Landschaft: Die Psychotische und Asthetische Struktur der Naturschilderungen in Georg Buchners "Lenz,"* Wiesbaden, Springer, 1994.

[260] Ibid. 69.

[261] Ibid. 68.

science. Schmidt focuses on Lenz's feeling of "Weltverlust" or "Raumverlust" and draws from Hubert Tellerbach's study *Die Räumlichkeit der Melancholischen* to define melancholic space perception.[262] According to Tellerbach, the melancholic subject experiences an involuntary sense of estrangement from his environment—an "Entrückung" or "Entrücktsein [...] vom Umraum" in which the "interagierende Bezug des Subjekts zum Raum, den Dingen und Menschen verlorengegangen ist."[263] Citing Heidegger, Tellerbach frames this "Entrückung" as a deviation from the ordinary way of relating to the objects in one's immediate environment. Schmidt paraphrases the healthy, non-pathological relationship to one's environment as a "handelnde Vernetzung des Vorhandenen mit dem eigenen Dasein," and a "notwendig interagierendes Durchdringen des Raumes in Blick, Handlung und Fortbewegung, das die Dinge in eine existentielle Nähe zum Menschen rücke."[264] The melancholic-schizophrenic subject, however, loses a sense of interconnectedness between self and world and all sense of context; even the individual objects within that world form only a mosaic-like image in his perception and thus fail to reflect a harmonious whole. Objects in space become merely "eine Summe von Punkten für beliebig vorhandene Dinge, in der nichts mehr seinen Platz hat."[265]

Tellerbach and Schmidt assert that the melancholic-schizophrenic subject can also at times experience precisely the opposite of this estrangement and instead be overcome by a "beklemmende Enge" rather than an "öde leere Weite."[266] As the adjective "beklemmend"

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[262] Schmidt 96f.

[263] Ibid. 97.

[264] Ibid. 97.

[265] Ibid. 98.

suggests, this feeling of nearness to the objects in the surrounding world is a far cry from the sense of existential connectedness conveyed by the Heideggerian "In-der-Welt-sein" described above. It is the alternation between these extreme modes of spatial experience, along with a general flattening of the objects in the subject's field of vision, that characterize the melancholic-schizophrenic perception of space.[267] For Schmidt, this set of "psychotische Raumerlebensstörungen" explains many of the peculiarities of nature description in *Lenz*.

Schmidt's observations do offer a compelling perspective on the novella and invaluable tools for thinking about the "space of nature" in this passage. However, he fails to consider the chronology of Lenz's symptoms. The narrative does in fact hint at a process of development in his oscillation between one mode of perception and the other. For instance, Schmidt neglects to ask whether it is significant that Lenz is *closer* to nature in the period that is designated as "anfangs." He also fails to point out that Lenz only later learns to withdraw himself and to assume a more sober, distanced perspective on his environment. Moreover, the narrative begins with the latter and jumps back in time, as if to investigate the course of events that led to the problem at hand. Taken symbolically, this history of Lenz's pathological condition(s) could represent the development of a broader cultural shift with regard to the relationship between humans and nature.

Historically, this argument holds up, for the realms of science as well as aesthetics. 18th and early 19th century models of scientific inquiry and representation were driven by what Lorraine Daston and Peter Galison call a dedication to being "true to nature" rather than

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[266] Ibid. 100.

[267] While these are two different conditions, Schmidt consults other studies on space perception in melancholics and schizophrenics that suggest that the distubances in spatial experience for the related disorders are very similar and can thus be categorized together.

trying to capture an objective image of nature without influencing it.[268] Goethe is one oft-cited example of a scientist who subscribed to this particular epistemic virtue: while he was devoted to tireless empirical observation, he ultimately sought archetypes ([*Ur*]*typen*) in nature—exemplary forms that could not be seen directly but had to be intuited by direct and cumulative experience.[269] In other words, a scientist dedicated to uncovering the truth *within* or *behind* nature had to spend a great deal of time sitting in it and observing it closely, being impressed by its forms, and allowing those impressions to inspire a composite, "typical" image in the mind. Though diametrically opposed in scope, this perspective on nature is also related to the notion of physiognomy that underpins both Humboldtian science and *Stimmungslandschaft* aesthetics in the first half of the 19th century: in order to truly grasp the function of individual natural forms within a given spatial realm, a scientist (or artist) had to be open and receptive to the impression offered by the overall picture—the *Totaleindruck*, as Humboldt called it. Despite the physical distance between a landscape and its onlooker, for figures like Humboldt and Carus, the emotional attunement between the two reinforced an existential intimacy and a sense of interconnectedness between humans and nature. Though not physically immersed in the natural scene before him, the attuned landscape viewer experienced an emotional, even spiritual closeness to the *whole* of nature that would make him more adept at examining its individual components. Thus the relationship between observer and observed in this early 19th century "true to nature" paradigm—whether the nature observed was an individual form or an intricate system of forms—is one of mutual interaction and entanglement. The human was moved and shaped by the process of coming to

[268] Lorraine Daston and Peter Galison, *Objectivity*, New York, Zone Books, 2007: 18.

[269] Ibid. 69f. The term "epistemic virtue" is borrowed from Daston and Galison.

know nature, and the representation of nature that emerged—whether scientific or poetic—was one distinctly marked by an active human mind.

The rapid trend toward objective empiricism in the middle decades of the 19th century, however, frames human intervention in nature's processes and nature's representation as unacceptable acts of contamination and subjective imposition.[270] The older paradigm welcomed, even required, curation, synthesis, and interpretation provided by the trained eye of a so-called "genius of observation"; however, the newer paradigm increasingly cast the scientist as a will-less machine, an expert in self-restraint.[271] This tension between old (true) and new (objective) epistemic virtues with regard to studying nature is clearly visible in Büchner's dissertation methodology, and the shift in Lenz's manner of relating to nature seems to reflect this historical trajectory as well.[272]

A further dimension of the opening passage that Schmidt fails to acknowledge is the fact that, as I mentioned above, nature itself is characterized in two different ways in the narrative, depending on Lenz's manner of relating to it. When he opens himself up to nature, nature itself appears as forceful and dynamic, with a broad spectrum of actors. It moves him physically and emotionally. Conversely, when he closes himself off and becomes indifferent, the environment tends to feel lifeless, dull, and flat. Thus, rather than an involuntary mental disturbance, the shifting spatial perception he experiences seems to be at least partly determined or initiated by Lenz himself, depending on the way he approaches nature. If it is true that nature is "reacting" to Lenz just as much as he is reacting to it, then perhaps

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[270] See Ibid. 27f., 49f., etc.

[271] Ibid 58., 121

[272] Ibid. 16.

Büchner wanted to explore the consequences of different epistemic virtues and modes of representation. Perhaps he was trying to show that nature reflects the premises of our own methodologies and representational norms back to us (i.e., that we find nature as we expect it, or need it, to be). These two perspectives on nature—as something near and powerful, or something faraway and lifeless—largely reflect how nature was *required* to be imagined within these two different paradigms. The malleability of nature description in *Lenz* thus also strengthens the argument that Lenz's madness is actually two *separate* kinds of madness—two separate pathological conditions that each seem to have a specific symbolic resonance culturally.

Rather than trying to determine where Büchner's sympathies actually lie—a largely impossible and perhaps irrelevant pursuit—it is important to explore why both positions seem to be portrayed as pathological in Lenz's case. As Schmidt points out, Lenz's actual experience of "Nähe" to nature turns out to be "beklemmend," or oppressive, rather than harmonious: he's too involved, too affected, too entangled. In fact, he's nearly swallowed up by it at times; not only does he risk contaminating it but it seems to be contaminating him as well, causing him to lose the boundaries of his individual identity as an autonomous human. Likewise, the distance—and accompanying indifference—goes too far, and it is not only physical distance that he perceives but also ontological distance. He loses all sense of relation—between things and between himself and the world. The distance does not provide him a better overview or a clearer understanding of the relationship between the things around him; it simply removes all context. Lenz seems to flee repeatedly to each side of this spectrum—becoming more intimate or distant—and comes up empty handed regardless of what he tries. Truth-to-nature no longer seems safe (due to the mutual contamination it

involves); yet, objectivity still seems too cold and machine-like, still too inhuman for this world. Often, Lenz seems to be trapped either in a discursive world for which he has not yet totally evolved or an earlier discursive paradigm that he has outgrown and can only reach for "wie nach verlorenen Träumen."[273] The consequent friction seems to be the root of his neverending psychosis.

A brief look at Büchner's unfinished drama *Woyzeck* shows that the madness associated with this uncomfortable in-between space extends beyond *Lenz*. In the opening passage of the "Kombinierte Werkfassung" of *Woyzeck*,[274] Woyzeck the protagonist is presented as a figure whose natural environment oscillates between forceful animation and deadly silence. In one moment he perceives "[e]in Feuer um den Himmel und ein Getös herunter wie Posaunen"; in the next, he declares, "Still, alles still als wär die Welt tot."[275] As the story develops we come to associate Woyzeck's restless "Raserei" and lack of willpower with his "animistic" perception of nature, as Smith describes it. The experimenting doctor, on the other hand, represents the still, dead world and cannot understand why Woyzeck cannot show the same machine-like indifference that he can. In trying to convince Woyzeck to exert more willpower over his instincts and emotions, he proudly notes: "Ärger ist ungesund, ist unwissenschaftlich. Ich bin ruhig, mein Puls hat seine gewöhnlichen sechzig und ich sag's Ihm mit der größten Kaltblütigkeit."[276] Woyzeck's sensitivity to nature (and susceptibility to nature's call) is portrayed, however, as far from ideal. Yet, the doctor's sober "coldbloodedness" is equally questionable within the world of *Woyzeck*. It is clear that the

[273] Büchner 1:225.

[274] Büchner 1:145-173.
[275] Smith 117f.

[276] Büchner 1:157.

two live in entirely different—and mutually exclusive—paradigms and will never see eye to eye:

> **Woyzeck:** Herr Doktor, haben Sie schon was von der doppelten Natur gesehn? Wenn die Sonn in Mattag steht und es ist, als ging' die Welt in Feuer auf, hat schon eine fürchterliche Stimme zu mir geredt!
>
> **Doktor:** Woyzeck, Er hat eine Aberratio.[277]

To Woyzeck, there is a second side of nature that the doctor fails to see. But Woyzeck's ability to perceive what the doctor cannot is written off as an aberration, a pathology, in the eyes of this figure of scientific authority. On the narrative level, however, the doctor emerges as equally pathological because he is human who has transformed himself into a heartless machine in the name of science.

Though Droste, Carus, and Stifter tend to present characters and perspectives that attempt or at least optimistically hope for reconciliation between the old and new models of science and nature, Büchner makes them seem impossible to reconcile and yet also radically deficient—even pathological—as stand-alone approaches. There is no "middle ground" for characters like Lenz and Woyzeck to inhabit—only a widening rift. They *want* to be "close" to nature in the entangled, involved, Goethean sense, but that relationship is simply no longer acceptable, or even accessible in the way that it once was. Woyzeck still wishes for the revival of this increasingly obsolete science so that humans can continue striving to decode the mysterious book of nature. He exclaims, for instance: "Haben Sie schon gesehn, in was für Figuren die Schwämme auf dem Boden wachsen? Wer das lesen könnt!"[278] On the other

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[277] Ibid.
[278] Ibid.

end of the spectrum, both Lenz and Woyzeck are constantly plagued by the feeling of a hollow coldness where that warm, dynamic relationship with nature used to be. Within *Lenz*, the words "leer" and "Leere" appear 9 times and the word "kalt" appears 13 times, often together and often accompanied by an image of impending death:

> Je leerer, je kälter, je sterbender er sich innerlich fühlte, desto mehr drängte es ihn, eine Glut in sich zu wecken; es kamen ihm Erinnerungen an die Zeiten, wo alles in ihm sich drängte, wo er unter all seinen Empfindungen keuchte. Und jetzt so tot. Er verzweifelte an sich selbst […][279]

The more nature becomes lifeless, the more images of lifelessness apply to Lenz as well, and vice versa. This sense of decline helps explain why he both understands himself as dying and simultaneously feels that he is a "Mörder": if he once perceived the universe as one giant, interdependent organism, he has now cut himself out of it, and it has severed ties with *him*, leaving *both* now damaged and defective. Lenz's only hope for recovering the metaphysical connection that has been lost during this shift towards detachment and objective empiricism is Oberlin and the Christian religion. He thus tries to cultivate a religious identity to recover these lost connections and bring himself peace. More importantly, he puts his faith in the idea that such a step might help him revive this dying universe for which he feels responsible, despite his distance. When Lenz tries to channel God to resurrect a dead girl, he realizes that the answer is a disheartening "no."

In *Woyzeck*, coldness and death also loom large as the doctor's self-professed "Kaltblütigkeit" contaminates the subjects of his experiments. He encourages Woyzeck to assert more willpower over his emotions and instincts—in other words, to arrest or kill them in the name of cold indifference. Woyzeck argues that these drives are his "Natur," and the doctor assures him that they are meant to be stopped. But Büchner suggests otherwise. While

[279] Büchner 1:241.

it initially appears that Woyzeck's uncontrolled emotions are what drive him to kill Marie, the narrative repeats the "cold nature" language in the description of Marie after she has died: "Marie? Ha Marie? Still. Alles still! Da liegt was! kalt, naß, stille." The text thus implies that the doctor's influence is what finally pushes Wozyeck over the edge to become a coldblooded, indifferent murderer. And once again in Büchner's work, the death of a woman confirms the idea that nature itself is dead, and irreversibly so.

The Reliability of Objective Narration

In the previous section my analysis operated under the assumption that one must move beyond a biographical interpretation of J.M.R. Lenz and work to understand the novella as an attempt to navigate the shifting discourses and epistemological values of its own time. Specifically, the scientific discourse of Büchner's era proves useful in understanding the disturbed spatial perception portrayed in the novella. While Lenz the literary character can hardly be considered an example of a scientifically inclined subject, his ambivalent relationship with nature seems to shed some light on the difficult task Büchner faced as a scientist trying to navigate these shifting paradigms and define his own relationship to nature. Still, it would be a mistake to *equate* Lenz's dilemma as it has been outlined here with Büchner's. As Müller-Sievers points out, Büchner is more inclined to create characters who speak and act in a way that reflects contentious views circulating throughout society rather than his own personal beliefs.[280]

It is also important to note that, in the years following Goethe's death in 1832, attempts to define the scientific self in Germany necessarily involved reflection about the poetic self as well. The increasingly fraught relationship between the two was certainly

[280] Müller-Sievers *Desorientierung* 8.

germane to Büchner's situation as a scientist and literary writer. *Lenz* may less explicitly highlight the dilemma of the scientist than Büchner's other writings (such as *Woyzeck* or his scientific work). However, its preoccupation with human-nature relations in the opening passage contributes to some of the larger tensions lurking throughout Büchner's entire oeuvre. Of course, Lenz's—and, by extension, society's—conflicted relationship with nature also has implications for art. Aesthetic discourse was certainly following a related trend toward more objectively realist modes of representation over the course of the 19th century, and this is a problem that does not escape explicit attention in the novella's *Kunstgespräch*.

Even before the *Kunstgespräch*, however, the novella's own aesthetic approach experiments directly with objectivity as a narrative mode. Although two different versions of Lenz exist in the opening passage of the novella, the cold, detached narrative makes them difficult to discern initially. This is perhaps due to the fact that objective representation aims to give all phenomena equal weight, rather than making judgments and drawing out distinctions for the sake of comprehensibility. The field of vision presented is thus overwhelmingly uncurated, and the resulting pile of "data" is difficult to navigate. Moreover, the dearth of distinctions has a homogenizing effect on the text. Like an objective scientist, then, the narrator declines to tease out a coherent image of Lenz's life for the benefit of the reader. It soon becomes apparent that he does not succeed in this endeavor, but he strives to at least give the impression that he does not meddle in the information or discard the apparent anomalies. Like Stifter's surveyor with the limestone landscape, *Lenz*'s narrator gathers and presents information about his object of study, but he declines to forge the connections necessary to understand the core problem faced by Lenz. The narrator's scientific coolness aims to relay details in all of their imperfection and incompleteness so that he distills nothing

for the reader the way a true-to-nature scientist drawing a "typical" specimen for a scientific atlas might. In fact, not only does he refuse to insert his own interpretation so that a "true" or "characteristic" picture of Lenz emerges, but he also leaves the reader almost exclusively with strange contradictions and moments of dissonance.

One could say, then, that it is this narrator's deliberate agenda to rob the reader of a unified sense of character. Instead, he appears to step back and let the minute details of Lenz's life and inner life speak for themselves, however unwieldy, disparate, and inexplicable. None of nature's "accidents" are allowed to be expunged.[281] The narrator's relationship to his object of study—Lenz and his world—however unbiased it may aim to be, is thus not as unproblematic as its proponents might purport. At a linguistic level, the text displays some of the same problems that the world exhibits when Lenz views it from a sober, indifferent perspective. In fact, the qualities that would make for a good objective narrator are included in those qualities that Schmidt identifies as indicative of Lenz's madness—namely: indifference, coldness, and emotional distance from the surrounding world.

Most importantly, as the story of *Lenz* proceeds, certain moments in the text suggest that the narration is not actually as unbiased or distanced as it sets out to be. The narrator, for instance, allows himself some insight into Lenz's thoughts and sensations. Such insights are not unusual for an omniscient third-person narrator; however, they do provoke a sense of tension between the external appearance of events and Lenz's internal perception of them. At times, particularly when Lenz's impressions from the external world begin to accelerate, the narrator seems to momentarily lose his position of distance and pull the reader *into* Lenz's perspective. This shift is exaggerated by a shift in syntax from sober, hypotactic to frantic,

[281] This also is the experimental aesthetic approach that would win *Woyzeck* so much acclaim at the height of the Naturalism movement at the end of the century.

paratactic sentences. Therefore, not only do two versions of Lenz seem to exist here, as elaborated above, but the narrator also succumbs to a dual-perspective, dual-voice presentation of Lenz. Pure objectivity, it appears, is a rather hubristic pursuit; the dilemma of *Lenz*'s narrator reveals how difficult and unnatural it can be.

One of the central arguments in Daston and Galison's history of objectivity is that the epistemic virtue of objectivity should not be naturalized and taken for granted because it is itself a construction, a code of values:

> The values of objectivity are admittedly specific and strange: to refrain from retouching a photograph, or removing an artifact, or completing a fragmentary specimen is not obviously an act of virtue—not even to all other scientists, much less to humanity at large. Nor will everyone acknowledge resolute passivity or willed willessness as values worth aspiring to. […] they are […] values, rooted in a carefully cultivated self that is also the product of history.[282]

The authors point out that the representation of a thing says as much about the knower—his vision of what knowledge is and how it should be produced—as it does about the thing that is being known.[283] What makes *Lenz* a work of art and not just a scientific account is the fact that, in creating a certain kind of knowledge, it also reveals its own conditions of that knowledge creation. It reveals the gaps and fissures between knower and known, between narrator and narrated.

What the novella shows us, then, is that the narrator is not, after all, simply allowing nature to reveal itself without intervention; he is actually *imposing* the values of objectivity on the world he is representing and sometimes forcing it to comply. This primarily becomes visible when we consider the two different versions of Lenz discussed previously. The distant, "gleichgültig" version of Lenz sees through the same kind of filter as the narrator,

[282] Daston and Galison 53.

[283] Ibid.

and consequently, the syntax is in this section is fairly typical. Beginning with the word "Anfangs," however, the syntax changes and becomes very peculiar. As the narrator presents the other version of Lenz—the one who desperately seeks connection with nature—he begins listing his observations in rapid succession, often with no pause. This seems to occur because there is generally more movement within the scene at this point. Yet, the repetition of "und" between clauses reinforces the sense that this is a list of descriptions with little or no framing by the narrator. Consequently, there is little or no clear causality or temporality in this section, despite the fact that more action is happening; indeed, objective modes of representation—whether scientific or aesthetic—are notorious for their inability to capture movement. It therefore seems that the more resistant the narrator's object is to objective description, the more urgently the narrator tries to stick to pure description as a mode of representation. The exaggerated list of descriptions and the abnormal syntax make Lenz's behavior seem excessively aberrant precisely in those moments when he seeks out connection with nature.

Living Art and the Life Sciences

When trying to determine Büchner's position on aesthetics, scholars have typically turned to the so-called *Kunstgespräch*, which takes place between Lenz and Kaufmann in the middle of the novella. Robert Holub's oft-cited interpretation of this scene in *Reflections of Realism* sees the conversation as a complex, largely confounding attempt to define and evaluate the validity of realism in art. Holub points to three different points of discussion within the *Kunstgespräch* that consider realism's advantages and disadvantages: the possibility of "fidelity to life" in literature; Lenz's experience watching girls on a hillside and wishing to freeze that image like a "Medusenhaupt"; and Lenz's assessment of the narrative

potential in classical Italian painting versus Dutch painting. Ultimately, all three discussions circle around the tension that arises when realist values conflict with the temporality and vitality of life. For Holub, this tension should lead to the realization that art and life must be separated—that art can never actually *imitate* life and should not aim to. However, of the two characters in the story, it is only Kaufmann, a self proclaimed supporter ("Anhänger") of classical, idealist art—who is able to accept this perspective. Holub explains:

> In a certain way […], both Lenz and his would-be opponent [Kaufmann] postulate a separation of art and life: the latter explicitly in his call for idealism, and the former implicitly in his de facto separation of his own life from his aesthetic convictions to adhere to reality. And it is perhaps just this recognition and acceptance of the gulf between art and life that helps to define Kaufmann's sanity, whereas the refusal to admit a difference between the two, despite its necessity, characterizes Lenz's madness and his aesthetic views. In drawing the last consequences from realism, Lenz is unable to think of art and life as separate spheres; but in identifying them so closely, he is unable to grasp the reality upon which this type of art is supposed to be based.[284]

Lenz's dilemma is thus as follows: he values realism as a mode of knowledge and representation *and* he also simultaneously values "life" as an object of that knowledge and representation.

Here I agree with Holub's argument but would like to extend it by narrowing the definition of life that he uses. "Life" should not be understood in its most general sense—as "reality," that which happens or exists in the realm of human experience. Rather, it should be understood as "the living world" (as opposed to the nonliving world). If the object to be represented were already static or not living in the first place, realism would perhaps seem less problematic. The specific combination of (objective) realism *and* vitality is what is difficult to make compatible. It is no coincidence that a very similar constellation of questions is surfacing in scientific discourse in the 1830s. This is due to the confluence of

[284] Robert Holub, *Reflections of Realism: Paradox, Norm, and Ideology in Nineteenth-Century German Prose*, Detroit: Wayne State UP, 1991: 45.

objectivity as an ever-more dominant epistemic virtue in science and the urgency with which scientists in Germany were flocking to research in the life sciences rather than the earth sciences and botany. The notion of the "Medusenhaupt" and the implied concern that art can only capture and present life in a lifeless state thus resonates deeply with Büchner's pursuits and frustrations as a scientist. This would have been all the more pressing for him because he specialized in anatomy, a field in which one can only view, study, and explain the living object at hand once it is dead and cold.

Part 2: "Über Schädelnerven" and the Genetic Approach

The field of anatomy necessarily involves the study of an organism's life processes by examining its expired corpus. In 1836, the life sciences had only recently begun differentiating themselves from other branches of science, and anatomical study was surely difficult work without the help of a guiding theory. Büchner's views on comparative anatomy's usefulness for learning about the organic body are illuminated by his dissertation; however, scholars also often point to the much shorter essay "Über Schädelnerven" as a more concise version of the scientific view presented in his doctoral work.[285] Composed as a trial lecture—a speech required before he could be confirmed as "Privatdozent" at the newly founded University of Zurich in 1836—this essay addresses the relationship between cranial nerves ("Hirnnerven") and the spinal nerves (Rückenmarksnerven) in vertebrates. Before he is able to fully understand the function of these nerves in the living body, however, Büchner feels that he must better understand the origin of these vertebrate forms in nature and the paths of their development over time. He thus compares the cranial and spinal nerves in a

[285] Despite its broad use in scholarship, the title "Über Schädelnerven" was not actually used by Büchner but added by later editors (Büchner 2:909).

number of fish and frogs in the hope of determining a shared structural origin. Because Büchner believes in recapitulation theory,[286] he also expects to find similarities between the mature nervous systems of these simpler organisms and the nervous systems in miscarried fetuses of more complex organisms, such as humans. Overall, the aim of his work is to determine laws or patterns by which these homologous nerve systems might have evolved over time and resulted in the variances in the number, complexity, and function of specific nerves that are seen in nature's many different species.

Throughout his lecture, Büchner privileges the "genetic" mode of inquiry inherent in this kind of comparative work. This approach seeks to trace complex forms in nature back to one simple type or "Urtyp," and it is best known in the German tradition through the work of Goethe as well as Lorenz Oken. As mentioned previously in this chapter, both Goethe and Oken had independently theorized the emergence of the highly specialized cranium as an extension of the less complex spinal column.[287] In seeking to conceptualize the "Urpflanze" from which all other plants diverged and developed, Goethe's *Metamorphose der Pflanzen* also famously espoused the genetic method.[288] Büchner cites both figures, as well as Carl Gustav Carus, in his lecture and uses their work as the basis of his own investigations into the origins of the brain:

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[286] Recapitulation theory was a commonly held belief at the time among scientists. It was believed that ontogeny recapitulates phylogeny. In other words, the developmental phases of an individual organism over its lifetime (especially in the womb) recapitulate the all past evolutionary phases of that species.

[287] See, for instance, Richards 497ff.

[288] Because Oken was to be Büchner's future colleague in Zurich, some scholars have discounted the scientific view presented in his lecture as mere ingratiation towards Oken and his work. However, I agree with Reddick that Büchner deserves more credit and likely did espouse the genetic method because it was foundational for his own field of comparative anatomy. Very few scientists from this era can actually be placed squarely in one camp, whether purely empiricist, materialist, mechanist, speculative, or idealist. Such views were not always mutually exclusive although they may seem so from today's perspective.

> Nur für das Gehirn ließ sich bis jetzt kein so glückliches Resultat zeigen. Wenn Oken gesagt hatte: der Schädel ist eine Wirbelsäule, so mußte man auch sagen das Hirn ist ein metamorphosiertes Rückenmark und die Hirnnerven sind Spinalnerven. Wie aber dies im Einzelnen nachzuweisen sei, bleibt bis jetzt ein schweres Rätsel. Wie können die Massen des Gehirns auf die einfache Form des Rückenmarks zurückgeführt werden?[289]

Büchner is certain that there is a way to trace the emergence of the brain back to the spinal marrow; the pressing question, then, is how to *prove* that these ancient transformations occurred. Comparative anatomy cannot afford its practitioners the opportunity to travel back in time and make empirical observations about those actual processes. However, it does encourage the use of empirical data about presently existing organisms for speculation about past organisms and the stages of their phylogenetic development. Comparative anatomy as a practice thus aptly captures the scientific spirit of the times, as it marries objective empiricism and speculative, a priori thinking. It is thus no surprise that so many proponents of *Naturphilosophie* were at the forefront of comparative anatomy and remained dedicated to it even as its influence in the scientific community waned.

The idealist underpinnings of the genetic method propounded by many German comparative anatomists, however, made it an often controversial science, however appealing it may have been. We see in the excerpt above that even Büchner's language is colored by a desire to discover original unity by identifying common archetypes within the natural world. Reddick attributes this need to locate patterns of order and unity in nature to the overwhelming masses of unorganized scientific information that had accumulated over previous centuries:

[289] Büchner 2:160.

> Büchner puts a quite remarkable emphasis […] on his sense of the natural world as an *organic whole* characterized by *order*, *proportion*, *unity*, and essential *simplicity*. The study of the natural world, he says […], has taken on a new shape. Previously, botanists and zoologists, physiologists and comparative anatomists had been confronted by a monstrous chaos of data—'a huge mass of material, laboriously heaped up over the centuries, that had scarcely even been systematically catalogued', 'a confusion of weird forms under the wildest names', 'a mass of things that previously weighted heavily on one's memory as so many separate, unconnected facts'.[290]

The genetic method in comparative anatomy was in part so appealing because it historicized biology and in doing so could distill this chaos of data into tidy groups. Just as Goethe believed that all plant forms could be traced back to the form of simple leaf, Büchner appears to have believed that all organic forms, simple and complex, could be traced back to a few "einfache, natürliche Gruppen."[291] These forms were not necessarily visible in nature but they could be reconstructed after careful empirical observation. Büchner thus describes the aim of his work as such: "In der vergleichenden Anatomie [strebt] Alles nach einer gewissen Einheit, nach dem Zurückführen aller Formen auf den einfachsten primitiven Typus."[292]

To conclude this introduction to Büchner's Trial Lecture "Über Schädelnerven," I will return to the first two pages of the essay, which make clear why it was important to Büchner to discuss the viewpoint behind his own methodology. Here, Büchner famously defends the genetic method and its corresponding worldview (which he at times also calls the "philosophical view" of nature), by trying to discredit those scientists who espouse the diametric opposite perspective—which he calls the "teleological view" of nature.[293] Proponents of the latter—mostly found in England and France, he notes—explain living

[290] Reddick 326.

[291] Büchner 2:159.

[292] Ibid 160.

[293] As the edition author points out, the word choice "teleological" is somewhat odd here. What he seems to mean is teleological in the sense of "causative" (Büchner 2:913).

organisms and their functioning parts incorrectly. What drives nature in the teleological view is absolute necessity or purposiveness—"die *großmöglichste Zweckmäßigkeit*." Thus, forms (e.g., bones and organs) emerge to fulfill a purpose: they are necessary in order for the body to survive. In contrast, proponents of the philosophical view believe that all bodies are the manifestation of the same "Urgesetz," which is continually striving to reach the highest and purest forms. Büchner summarizes the difference as follows: "[D]ie Tränendrüse ist nicht da, damit das Auge feucht werde, sondern das Auge wird feucht, weil eine Tränendrüse da ist."[294] For Büchner, there is no externally imposed "Zweck" that drives the development of nature. Even the appearance of a "zweckmäßiges Aufeinander- und Zusammenwirken" within nature is just the "notwendige Harmonie in den Äußerungen eines und desselben Gesetzes."[295] These remarks are important because they also reveal Büchner's desire to understand the historical development of nature as open-ended and freely expressive rather than deterministic and purpose-driven. Although the lecture takes place well after Romanticism has been declared dead in Germany, Büchner still apparently tends to imagine nature's own creativity as something that unfolds much like the human poetic process. This tendency to view nature as both a symbol of freedom and a model for common origins also clearly reflects Büchner's liberal-democratic political perspective.

A "Notwendige Harmonie"?

If we had only been left with Büchner's scientific writing—specifically, the Trial Lecture—we might be inclined to believe that he was simply a *Naturphilosoph* clinging to an already obsolete Romantic worldview. But we do have remnants of his literary writing,

[294] Ibid 158.

[295] Ibid 159.

however sparse, and, as I have shown in the previous section, much of it portrays a world that is quite the opposite of an Idealist Romantic utopia—namely, a world that is hopelessly *dis*integrated, *dis*connected and *un*tidy. *Lenz*, for instance, conveys the story of a man who has not only lost a sense of continuity or common lineage with nature; he has become almost completely estranged from it. Even at the level of Lenz's physical body—and Woyzeck's as well, for that matter—there are clear signs of disintegration and confusion, as if the internal communication between organs has been scrambled and normal sensory operations such as vision, hearing, and spatial perception have been distorted. Büchner's science on the other hand—that is, the "philosophical"/genetic perspective in his Trial Lecture—claims that the coordination of a body's individual parts does not occur for the sake of that body's preservation or survival. Rather, this intricate cooperation simply reflects the great harmony inherent in nature. In other words, because each piece of nature's whole is derived from *one* single law, each part is necessarily calibrated to all of the other parts and should naturally work in tandem with them to produce increasingly higher and purer forms of life. And yet, it is precisely this model of "necessary harmony" that is so radically absent or radically perverted in Büchner's literary stories.

Because this harmony of the whole is what breaks down in the worlds of many of Büchner's literary characters, he must have been conscious of the problems and logical contradictions in his own scientific view presented in the Trial Lecture. Two aspects in particular seem to serve as significant obstacles.

The first problem with the "Goethean" genetic approach to scientific inquiry is that it relies heavily not only on speculation but also on Romantic metaphors, which are beginning to overextend themselves in the scientific context of the 1830s. One important metaphor in

this context is the notion of *Stimmung* that has already been discussed extensively in the previous chapter on Stifter and Carus. In this era, which sees an ever-increasing valorization of objective, empirical observation, scientific theories that depend on *Stimmung* as a model of logic begin to fail, since its mechanisms are metaphysical and thus cannot be observed. Though the term *Stimmung* itself is not always cited explicitly, the forces of *Stimmung* are often what hold the natural world together in the minds of the *Naturphilosophen* who practice the genetic method of science. In the Trial Lecture, Büchner's own mention of the harmonious self-alignment of organic bodies very clearly alludes to this concept.

Originating in the realm of music, *Stimmung* became a metaphorical "Denkfigur" for many different spheres of knowledge between the 18th and 20th centuries. According to Caroline Welsh, its primary use during the era in question fell into the categories of physiology, psychology, and aesthetics.[296] The concept's power lay in its ability to illustrate vividly the phenomenon by which an individual component of a group (i.e., a stringed instrument within an ensemble) is tuned and ready to be activated ("gereizt") to contribute a harmonic tone toward the sound of the whole. This "whole" is presumably a musical production whose power is much greater than the sum of its individual parts. Moreover, in the event of a key-change or a contingent event, the instrument has the ability to adapt via re-tuning, or "Umstimmung," in order to remain in coordination with the whole. A foundational idea for both Romantic poetics and the scientific pursuits of many *Naturphilosophen* was the more generalized version: that there is a natural readiness or underlying attunement (*Stimmung*) between a human's affective disposition ("Gemüt") and the surrounding natural environment. This attunement—or in Büchner's words, this "necessary harmony"—was

[296] Caroline Welsh, "Stimmung im Spannungsfeld zwischen Natur- und Geisteswissenschaften *NTM* 17.2 (2009) 144.

based on the idea of supreme original unity propounded by practitioners of the genetic method of science. The notion of *Stimmung* had also seeped into the field of physiology as early as the 18th century to help fill in the gaps that science could not yet explain. Namely, it provided a model for understanding the unknown processes by which organs and nerves within a body coordinated their activities (e.g., responding in tandem to external stimuli) in order to sustain the life of the organism. There are a number of instances in the early decades of the 19th century in which scientific writers refer to the *Lebensstimmung* of an organism, as well as instances of *Mißstimmung* when an illness or other pathological condition is present.[297]

Welsh notes that *Stimmung* was an appealing model of understanding for many diverse fields because of its strong metaphorical imagery but also because of its vagueness, which made it broadly applicable:

> Die Stimmung stellt eine Struktur, eine bestimmte Logik, zur Verfügung, nach der die Wechselwirkungen zwischen Innen und Außen, zwischen Seele und Körper, Auge und Lichtstrahl, Organismus und Umwelt, allgemeiner zwischen Zustand, Reiz, Reaktion und Folgezustand gedacht werden können.[298]

As differentiation of the sciences into concrete disciplines began to take place throughout the middle decades of the 19th century, however, *Stimmung* necessarily had to assume a narrower range of use. Throughout the second half of the century, it was used increasingly frequently in the *Geisteswissenschaften*, such as psychology, where empirical verification was less critical. This example thus illustrates the waning influence of Romantic metaphors in the natural sciences in the 1830s and the sense of disorientation that the impending loss of these important models of thinking may have provoked in young scientists like Büchner. Büchner

[297] Welsh 153ff.

[298] Ibid 145.

must have sensed that the metaphysical and at times even mystical underpinnings of the genetic method were nearing obsolescence. It is curious, moreover, that Lenz, the literary character perhaps most affected by this cultural shift away from an intimate, mystical relationship with nature suffers from a vague mental illness that, at times, seems aptly identified as a disharmony with his environment, a kind of "Mißstimmung."

The second, and, for Büchner likely more troubling, problem associated with the genetic method relates directly to the principles of genetic science itself. As mentioned above, Büchner opposes the "teleological" view of nature because it denies the existence of freedom in nature in two ways: by ascribing all action in nature to the principle of cause and effect and by supporting the idea of a predetermined purpose in nature and thus a fixed direction of development. The determinism inherent in this view clearly clashes with Büchner's liberal political agenda that so heavily relies on the notion of freedom. The freedom, open-endedness, and equality of origin inherent in the genetic view seems much better aligned with his political worldview. However, this may only be the case at first glance. Büchner's own scientific work, in which he attempts to prove the evolution of the spinal marrow into the more complex organ of the brain, has its own political implications: if nature, by definition, must produce evermore complex organisms (such as the human) and evermore complex organs within those organisms (such as the brain), isn't it creating its own hierarchies of governance within nature and within the body? Rather than a diffuse, "democratic" and freely-willed alignment of bodies that the *Stimmung* model can accommodate, doesn't the genetic view's principle of increasing complexity also eventually justify a problematic model of hierarchization? Much of Büchner's own empirical work did

indeed support this principle, affirming the brain as the center of command for the nervous system.

The political implications of hierarchization throughout all of nature might have been even more problematic for Büchner than hierarchization within the body, especially because his era was so steeped in Romantic mythology. That is, if nature itself suggests (via scientific evidence) that humans are *supposed* to be elevated above the other species as the "highest and purest" natural forms on earth, then the consequences for human-nature relations could be dire. Moreover, if humans were naturally, and thus rightly, poised to constitute a governing class above the rest of nature, then science might also find evidence to justify hierarchization amongst humans as well. If we look at the world of *Woyzeck*, all of these hypotheticals become realities: humans are told they must strive to overcome "Natur" and strip themselves of any qualities that seem animalistic rather than humanly. However, in the same world, becoming the "highest and purest" also means the coldest, most calculating, and the most removed from "Natur"—in other words, machine-like. Appropriately, in the drama, science is the predominant discourse used to advocate this shift.

Büchner's Trial Lecture "Über Schädelnerven" exhibits confidence in its perspective, and in it, he takes fairly clear stances with few loose ends. Just as this piece of scientific writing is relatively tidy and unified, so too is the view of nature presented there tidy and unified. However, his literature is just as radically chaotic and disjointed. The extreme level of tension between his science and his literature forces the reader to speculate more than is typical, just as I have done at times in this chapter, and just as others before me have done.

The clearest message we can take away from Büchner's work as a whole is, therefore, the idea that no single approach to science can yield a perfect, or even favorable, worldview. In fact, in the end, the older genetic approach and the newer objective-empirical approach to studying nature lead to the same conclusion: that humans and nature must necessarily be separated and that they will both suffer as a result. Whether a person chooses to embrace or resist the prevailing scientific trend or to embrace or resist the prevailing view of nature, chances are that he or she will end up like Lenz or Woyzeck: disoriented, despaired, and possibly even mad.

CONCLUSION

The literary worlds presented in the works of Droste, Stifter, and Büchner bear witness to the many conflicting ways of understanding the relationship between humans and nature in the middle decades of the 19th century. Yet, as this project has shown, literature did not *only* serve as a witness; it also sought to actively participate in the shaping of contemporaneous science and nature discourse. Moreover, because science and nature discourse were deeply influenced by the early 19th century phenomenon of disciplinarity, the literature of this era is also necessarily invested in examining the implications of competing ways of knowing nature, whether through the lens of art and literature or through one of the various scientific methodologies prevalent at the time. Even Droste and Stifter—who did not pursue science professionally as Büchner and Goethe had—made painstaking efforts to incorporate multiple scientific personas and perspectives into their literary worlds. As the previous chapters show, such perspectives were never taken for granted but, rather, challenged, analyzed, and often even corrected or counterbalanced with other perspectives on science and nature. This cohort of authors thus represents a distinct generation of writers who actively and self-consciously sought to influence the way their readership understood the relationship between humans and nature, and the role of the sciences and the arts in gaining knowledge about the human-nature relationship.

Academic readings of Droste, Stifter, and Büchner have traditionally oscillated between viewing these authors as either nostalgic and regressive or prescient and far-sighted,

though to differing extents; within literary scholarship, the work of all three authors is therefore frequently removed from its historical moment entirely. However, this project has shown that the major questions reflected in their works are, in fact, anchored very deeply in their own specific moment in the history of science and knowledge. Expanding the context of these literary works by showing the weight of Romantic nature discourse and tensions surrounding the trend toward objective empiricism allows us insight into just how unstable and transitional the epistemological paradigm of this period was. The analysis presented here has also shown that the birth of disciplinarity had an impact on literature's self-image vis-à-vis science that cannot be overlooked or underestimated as a defining characteristic of this era's cultural production.

Both the literary and scientific writers of this era clearly shared a number of common concerns: they lamented the growing divide between humans and nature; they favored reconciliation between older Romantic values and the various new trends gaining popularity throughout the 19th century; and they worried about how new approaches to science would alienate other ways of knowing, such as art and literature. They offer similar points of criticism and express similar desires—mostly for unity, harmony, and cooperation; and yet, they often see the importance of both older and newer values and rarely come down in one camp or the other, as much as they seem tempted to do so.

It is not my intention, however, to portray these writers as a definitively monolithic group. Their individual interests and experiences lend a distinct character to each and every work they wrote. Moreover, all three authors lived in very different parts of the German-speaking realm—though they had contact with several of the same influential works and thinkers. Because each of these writers views the primary conflicts at hand in a different

light, slightly different values are at stake for each one. Droste's lyric poetry, for instance, emphasizes the necessity of a dynamic, enchanted natural world in order for poetry to exist, since these qualities in nature are precisely what pull the human observer into a meditative, poetic trance. If newer scientific approaches now seek to distance humans from nature in the name of objectivity, then they erase the opportunity for that entangled, poetic moment. Likewise, if science is increasingly used to control and contain nature's power, rendering it lifeless and more standardized and "legible," poetry itself faces the threat of obsolescence. For Droste, the fossil is an important metaphor not only for this troubling petrifaction of nature but also for the way that modern science seems to be nudging non-scientific ways of knowing nature into extinction.

Stifter's *Kalkstein* expresses similar concerns about scientific methods of gaining knowledge about nature. Surveying, for instance, makes nature more standardized and legible, but it risks obscuring other dimensions of nature and discourages humans from knowing nature intimately. In both his and Droste's work, this more poetic, intimate relationship makes itself present through a mirroring of the physical features of humans and the landscapes in which they live. Stifter, like Droste, also fears that one-dimensional ways of knowing nature ultimately lead to the sense that all parts of nature are dead, static, and without any emotional impact for the observer. However, his tendency to reveal nature's deep history and dynamism in landscape painting suggests a slightly different concern. Despite his reputation as a proponent of sober, empirical vision who seeks to portray nature objectively in his work, my analysis shows that Stifter's depictions of nature in both his painting and literature are actually often in tension with this programmatic position of objectivity that he seems to present in his "Vorrede" to *Bunte Steine*. Instead, his work itself

often suggests that poetic-aesthetic vision, which more adequately grasps nature's complexities and subtle transformations, must serve as a counterbalance to the objective-scientific view.

Büchner's scientific writing recognizes the value of both Romantic (i.e. "genetic") and objective-empirical approaches to natural inquiry and even seeks to synthesize them in practice; much like Stifter with his painting, Büchner is interested in using observations about present forms to reconstruct the history of their development. His interest in maintaining a form of science that can grasp nature's dynamism aligns well with the agendas of the other two authors. His literary writing, however, is much more fatalistic in its outlook. With Droste and Stifter, reconciliation between different approaches to natural inquiry still seems vaguely possible in certain places and at certain moments. In Büchner's fiction, not only is there no longer any possibility for synthesizing the two, but each approach is also revealed as fundamentally flawed from the beginning. In a similar way, Droste and Stifter remain hopeful that harmony between humans and nature can at least be partly restored, especially through poetic reflection; Büchner's fiction, however, exposes this hope as a naïve dream with potentially dangerous consequences. As *Lenz* and *Woyzeck* seem to suggest, society has moved on and anyone clinging to nostalgic, Romantic notions of harmony will find himself irreversibly out of place in the world. As always, it is unclear whether Büchner's literary worlds are meant as a warning about some future moment that will occur if the status quo fails to change, or if it is truly already too late. In any case, he was certainly not the only literary or scientific thinker struggling with these tensions. The many literary and scientific writers addressed in this project collectively provide a timeless framework for thinking

through the implications of different approaches to natural inquiry, whether scientific, poetic, or even philosophical.

This project has opened up several promising new paths for future research. Tracing this constellation of questions through the second half of the 19th century and into the 20th century, for instance, would likely be a fascinating and fruitful project. Realist literature, for one, continues to struggle with the legitimacy of objectivity as a value for literature and the visual arts. Now clothed in the language of Realist discourse, the paradoxes populating Büchner's "Kunstgespräch" and Stifter's "Vorrede" continue to reverberate throughout Realist literature, as authors and narrators ponder whether "reality" is even empirically perceptible at all or, instead, a series of ideals that simply manifest themselves in material form. They also continue to explore whether a close-range, subjective perspective or a more distant and fact-oriented objective perspective is more conducive to capturing the "real." More specifically, the problem of representing "life" (i.e., living form) in art still preoccupies Realist authors, and the scientific and literary backstory provided by the current project can lead to a richer understanding of this elusive pursuit in the face of "objective" Realism. Moreover, as the narration of *Lenz* made clear, claims to objectivity can also be misleading to the person on the receiving end of the story because they can obscure the fact that human perspectives always involve a subjective lens; the question of the possibility of objectivity in general likewise permeates Realist literature and contributes to the unique "poetic Realism" tradition in Germany. That is, German literature never quite overcomes the tension between subjective and objective perceptions of reality that were so urgently addressed in the 1830s and 1840s in science, literature, and philosophy.

Nature also remains an important topic throughout Realism, both with regard to the question of how to appropriately represent a living, dynamic system in visual-art form and, later, with regard to environmental questions, which are increasingly influenced by late 19th century Darwinian discourse. Darwinian evolution reintroduced the notion that humans are necessarily "entangled" with their physical environments and that the development of the human species is inextricably linked to its surrounding natural conditions. Thus not only do ecological questions reemerge at this time, but the developmental perspective reappears as well, though in a more advanced scientific context. The Naturalist movement in literature both pursues radical objectivity in art and extends the environmental perspective to include social environments, revealing how not only natural but also social circumstances dictate the unfolding of one's psychological and physical development.

The early 20th century, particularly in the Austrian context, is another era rich with scientific advances and a complex scientific discourse. Interestingly, some of this era's literature revisits the notion of an irreparable rift between human subjects and the non-human object world (though in a way that is less explicitly focused on the natural world). Drawing in some ways from Romantic and post-Romantic discourse, Hugo von Hofmannsthal's "Ein Brief," for instance, reflects on moments of "interaction" between humans and non-human objects and longs for a common language that would allow these objects to "speak" to the human observer. To some extent reflecting the meditative approach to nature espoused in the early 19th century, Hofmannsthal's narrator seeks to attune himself to, or become impressed upon by, the vibrancy and animation of the non-human object world.

The theme of an increasingly impossible reconciliation—between humans and nature, life and non-life, subject and object, real and ideal, art and science, subjectivity and

objectivity—defined the transitional era between Romanticism and Realism; however, the desire to pursue a fuller, more balanced perception of reality nonetheless lingered long after the era's key thinkers were gone. Without a survey of the history of science and knowledge spanning this period, the many themes explored in this project may have simply appeared to be a series of unrelated concerns without much of an afterlife in the German tradition. However, the broader context shows that the constellation of science and nature-related questions addressed here are deeply entangled with one another, with no clear beginning or end. Because writers like Droste, Stifter, Carus, Büchner and Oken lived in an era in which these epistemological tensions reached a critical urgency, their writing provides key insights that allow us to better understand the impact of 19th century science and nature discourse on the German tradition as a whole.

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