Luis Fellipe Garcia

1 Introduction: The Resurgence of Classical German Natural Philosophy

An investigation into nature and natural phenomena in classical German philosophy may not seem to be a particularly promising enterprise. After all, this period in the history of ideas is believed to have been ushered in by Kant's methodological innovation according to which philosophy should focus not so much on the objects of cognition as on the way in which the human mind produces concepts of objects. This approach enabled fruitful investigations into multiple areas in which the human mind manifests its rational activities, such as morality, politics, history, art, religion, and philosophy itself. At the same time, Kant's method seems to have led to several attempts to reduce natural phenomena to the ways in which the human mind produces cognitions. Accordingly, the philosophical movement ignited by the early reception of Kant's philosophy is often called German *Idealism*, which suggests that, for the philosophers of this period, the human mind and its ideas take priority over nature and its phenomena.

This does not mean, however, that the concept of nature was neglected by the philosophers of the time. On the contrary, Kant explicitly developed a metaphysics of nature and Schelling sketched the project of a natural philosophy under the rubric *Naturphilosophie*, which turned into a sort of research program for philosophers and scientists of the time. Such a research program encountered a welcoming soil as it resonated with the investigations into natural phenomena carried out by authors such as Herder and Goethe. In little time, *Naturphilosophie* was taken up and further developed by philosophers as diverse as the romantics and Hegel. The conceptual problems put forward by these different works on natural philosophy became so widespread at the turn of the nineteenth century that a commentator calls the period from 1780 to 1830 a nature-philosophical epoch (Engelhardt 1976, p. 6).

Now, how is it possible that a period in the history of ideas usually associated with idealism is arguably also a nature-philosophical epoch? Facing this puzzle, commentators have traditionally argued that the countless works on natural philosophy at the time consisted of preposterous attempts to reduce natural phenomena to idealistic *a priori* mental constructions (Adickes 1924; Lauth 1974; Pippin 1989). German natural philosophers at the turn of the nineteenth century, so the story goes, would have neglected the role of experience and focused on *a priori* deductions of natural phenomena, thereby taking an opposite path to that which would soon bear so much fruit for modern science (Adickes 1924,

 https://doi.org/10.1515/9783111002453-001

pp. 58 – 59; Lauth 1974, p. 399; Pippin 1989, pp. 60 – 66). As a result, the natural philosophy developed by classical German philosophers has been dismissed as a piece of dogmatic metaphysics of little philosophical and scientific interest.

In the last few decades, several scholars have contributed to casting doubt on this negative assessment. It has been argued that the natural philosophy of the time should be read in the broader context of the adjustment of worldviews required by revolutionary developments in the sciences (Friedman 2013a, p. x; 2013a, p. 73) and the subsequent transformations of our attitudes toward the natural world (Nassar and Fisher 2015, pp. 6 – 7). In addition, some commentators have highlighted the specific contribution of the natural philosophy of the time to the development of particular branches of modern science, such as electromagnetism (Williams 1973; Friedman 2007) and biology (Zammito 2018; Steigerwald 2019). As regards the history of philosophy, it has been argued that natural philosophy played such a key role in the emergence of German Idealism that "above the portals of the academy of absolute idealism there is written the inscription 'Let no one enter who has not studied *Naturphilosophie*'" (Beiser 2002, p. 506). Finally, from a more contemporary perspective, it has been suggested that the approach to nature developed by classical German philosophers is a powerful tool to tackle the environmental crisis (Schmied-Kowarzik 1985; Bonsiepen 1997), and that it has even contributed "to the emergence of ecology and ecological thinking more generally" (Nassar 2022, p. 2).

This collected volume, based on a conference organized at LMU Munich in April 2021, aims to contribute to this ongoing renaissance of classical German natural philosophy. It contains chapters on many authors of the period, including not only the classical figures of Kant, Fichte, Schelling, and Hegel, but also authors such as Herder, Novalis, Goethe, and Feuerbach. By including articles on so many different thinkers, the volume aims to focus more on the conceptual problems facing the project of a philosophy of nature than on the overall philosophical enterprise of individual philosophers of the time. Moreover, the volume adopts a nature-centered approach, meaning that both the chapters and the structure of the volume seek to foreground the specific challenges faced by a philosophical inquiry into nature, leaving implicit the potential consequences for a theory of cognition.[1] In what

1 In this regard, this volume differs from the recently published collected volume *Nature and Naturalism in Classical German Philosophy* where the contributions revolve around four main topics: naturalism, life, second nature, normativity (Corti and Schülein 2023, pp. 3 – 8). The main topics of the articles in this volume are, by contrast: visions of nature, inorganic nature, and organic nature. I take both volumes to shed light on different aspects of the potential contributions of classical German philosophy to discussions on nature.

follows, I shall discuss, first, some of the aspects put forward by the recent literature on the topic and, second, the specific contributions to this volume.

1 Recent Literature

To facilitate the discussion of the recent literature on classical German natural philosophy, I divided it into three broad categories: (1) the relationship between philosophy and the modern natural sciences, (2) the problems of experience and history, and (3) the contemporary stakes of the philosophy of nature developed at the time.

1.1 Philosophy and the Modern Natural Sciences

As Bonsiepen has noticed, the expressions '*Metaphysik der Natur*' and '*Naturphilosophie*' are German translations of '*philosophia naturalis*', which was a general concept used in the early modern period to cover the fields of "cosmology, teleology as the doctrine of organisms, and psychology" (Bonsiepen 1997, p. 13). The term was often used by philosophers from the empirical tradition, such as Bacon and Hobbes, as well as by scientists such as Newton, who titled his most known work *Philosophiae Naturalis Principia Mathematica* (*Mathematical Principles of Natural Philosophy*). This polysemic aspect of the word '*philosophia naturalis*' coupled with the rapid development of the natural sciences throughout the eighteenth century posed a challenge to the philosophers of the time, namely: should *philosophia naturalis* be identified with modern science or is there something specifically philosophical about *philosophia naturalis* that cannot be accounted for by the new sciences?

Fleshing out the specific function of philosophy in relation to science was arguably a shared project for classical German philosophers (Engelhardt 1976, p. 15; Falkenburg 1987, p. 9). However, there is little agreement on the specific ways in which they carried out this common project. The two main points of contention are, on the one hand, the relationship between philosophy of nature and metaphysics and, on the other, the relationship between philosophy of nature and modern science. As regards metaphysics, some commentators argue that all philosophers of the period endorse metaphysical approaches to nature (Falkenburg 1987); others try to draw a line between transcendental natural philosophies and metaphysical natural philosophies (Engelhardt 1976; Lauth 1984; Bonsiepen 1997). To complicate matters, it is far from clear that the different authors of the period ascribe the same meaning to the word 'metaphysics'. Some scholars even suggest that the dif-

ferent approaches to nature developed at the time reflect different paradigms of thought (Siemek 1989; Gloy 1992).

As for science, some commentators classify the natural philosophies of the period based on degrees of commitment to modern science. Yet they disagree on whether such a commitment is to be praised or criticized. Bonsiepen, for instance, argues that Kant's and Fries' natural philosophies should be preferred over Schelling's and Hegel's due to the formers' more positive evaluation of modern science (Bonsiepen 1997, p. 557). Falkenburg, by contrast, praises Hegel's natural philosophy for its critical potential in relation to science (Falkenburg 1987, p. 126). Moreover, there is little agreement on whether and which authors of the period would have a critical stance toward modern science. Thus, several studies have called into question the alleged negative relation to the sciences of authors such as Schelling (Friedman 2013b; Zammito 2018), the romantics (Cunningham and Jardine 1990; Nassar 2022), and Hegel (Renault 2001; Rand 2007; Westphal 2008).

Many questions thus remain open: Are the natural philosophies developed in Germany at the turn of the nineteenth century pieces of metaphysics? What kind of metaphysics? Do classical German philosophers attempt to criticize the implicit assumptions of modern science, or rather to transform philosophy to accommodate it to the development of the sciences? What is the role of philosophy in relation to science? Drawing on these open questions, the chapters in this volume shed light on the specific ways in which the natural philosophers of the time worked out different conceptions of nature.

1.2 Experience and History

The increasing interest in *Naturphilosophie* in recent decades has contributed to shedding light on overlooked aspects of the history of classical German philosophy. In my view, two aspects of this issue deserve special attention: the role of empiricism and the emergence of historical accounts of the objective world.

The role of empiricism within this tradition, the main figures of which describe themselves as idealists, is a fascinating issue. Eckart Förster, for instance, claims that Goethe's works on morphology led him to develop the "method of the intuitive understanding" (Förster 2018, p. 262), which is said to be key to the elaboration of Hegel's logic (Förster 2018, p. 295). Drawing on Förster, Troy Vine argues that Goethe's method cannot be fully understood without considering the influence of Francis Bacon (Vine, in this volume). Similarly, Idit Chikurel claims that Bacon's thought had a crucial impact on Maimon's probabilistic view of science (Chikurel 2024). Jelscha Schmid also highlights the role of empiricism in the works of authors such as Kant, Maimon, and Schelling, but claims that they

were influenced not so much by the "Bacon-Boyle-Hook" method of gathering data for future generalizations as by the "Galilean-Newtonian view" of experimentation, according to which "the main function of experiments is to test [...] hypotheses" (Schmid 2022, pp. 32–33). Dalia Nassar even identifies an overlooked "philosophical tradition" in the period that she calls "romantic empiricism" (Nassar 2022, p. 1), but she traces it back to the views of Buffon and Diderot on natural history (Nassar 2022, p. 32).

A closely related issue is the relationship between natural history and natural philosophy. As John Zammito puts it, up until the eighteenth century, natural history aimed at describing "the material environment" whereas natural philosophers tried to explain "the physical world in terms of general principles" (Zammito 2018, p. 1). In his view, *Naturphilosophie* belongs to a paradigm shift following which "naturalists undertook to reformulate some domains of natural history into a distinct branch of natural philosophy" (Zammito 2018, p. 2). If this point is relatively uncontroversial, the outcome of such an attempt to bring together historical descriptions and philosophical explanations is a matter of contention. As early as 1872, Kuno Fischer suggested that Schelling's *Naturphilosophie* enunciated for the first time "with complete clarity and from a philosophical standpoint the principle of organic development that underlies" the Darwinism of the nineteenth century (Fischer 1872, 448). Drawing on Fischer, Richards suggests that Schelling played a key role in "the infusion of time into nature" (Richards 2002, p. 11) being thus a forerunner of Darwin's evolutionism (2002, pp. 298–306). In a similar vein, Heckmann argues for a complementarity between *Naturphilosophie* and the theory of evolution (1985, p. 315). By contrast, it has been argued that the developmental accounts of nature elaborated by classical German philosophers were purely *a priori* and thus fundamentally different from the chronological history of nature later formulated in the theory of evolution (Engelhardt 1984, p. 312; Bonsiepen 1986, p. 169; Warnke 1993, p. 148). More recently, Berger attempted to steer a middle course between both positions by arguing that even though Schelling and Hegel have non-temporal conceptions of development, there is the potential within their framework "for conceiving of spirit as historically emergent from nature" (Berger 2024, p. 335).

From a broader perspective, commentators have argued that the natural philosophies of the time were key to the emergence of new methods to approach the history of human rationality, especially Hegel's dialectics (Neuser 1993) and his history of human institutions (Beiser 2003) as well as Schelling's later accounts of the historicity of human reason (Sandkühler 1984). Along similar lines, Illetterati has argued for an entanglement between the concepts of life and reason in Hegel's philosophy (Illetterati 1995) and, more recently, Karen Ng has suggested that the core tenets of Hegel's logic lie in the notion of self-organizing inner purpose, which

Hegel is said to extract from Kant's attempts to make sense of organic phenomena in the third *Critique* (Ng 2020, pp. 5–9). Some scholars have even seen in the natural philosophies of the time the seeds for the development of a materialistic alternative to the idealistic tradition (Černý 1984).

Again, many questions remain open. Is the natural history tackled by natural philosophers a chronological one? What is the status of the *a priori* and *a posteriori* for the philosophers of the time? Do they even endorse this distinction? How do they address the contingencies of the natural world? The chapters of this volume contribute to addressing several of these questions in the domains of both inorganic and organic nature.

1.3 Contemporary Stakes

The potential contemporary relevance of classical German natural philosophy has become a matter of heated debates since the revival of interest in these works in the 1980s. The discussions revolve around two main issues: their alleged anticipation of conceptual frameworks relevant to contemporary scientific theories and their potential contributions to discussions on the environmental crisis.

As regards science, it has been argued that classical German philosophers played an important role in the emergence of new domains of investigation, such as biology (Zammito 2018) and electromagnetism (Friedman 2007). It has also been claimed that the natural philosophy of the time has anticipated key tenets of Einstein's theory of relativity (Wandschneider 1982; Paolucci 1984) and of the contemporary paradigm of self-organization in natural sciences such as Ilya Prigogine's non-equilibrium thermodynamics and Hermann Haken's synergetics (Heuser-Keßler 1986). The specific relationship of classical German natural philosophies to contemporary theories remains, however, a point of contention (Küppers 1992; Wahsner 1996). Even the influence of German natural philosophy upon the science of its own time has been contested (Breidbach 2007). While the degree of influence exerted by these works remains a topic of heated debates, their relevance is usually discussed in connection with scientific developments that require new conceptual frameworks, or, to use Thomas Kuhn's famous expression, new scientific paradigms (Kuhn 2012/1962, Schmid 2018).

Since the 1980s, commentators have frequently suggested the contemporary relevance of classical German natural philosophies for discussions on the ecological crisis. Already in 1985, Schmied-Kowarziek argued for what he calls an "immense significance" of Schelling's philosophy of nature for the present, insofar as it lays the grounds for a philosophical discussion of the ecological crisis (Schmied-Kowarzik 1985). In contrast, Siemek claims that Schelling's natural phi-

losophy, to the extent that it tends to deify nature, does not contribute to the further development of our knowledge of nature (Siemek 1989, p. 394). Along similar lines, Bonsiepen argues that the natural philosophies developed by Schelling and Hegel are not well suited to tackle environmental challenges due to their negative views of modern science; on his account, Kant and Fries offer a better tool to address these issues insofar as they have a more positive "evaluation of the possibilities of modern science" (Bonsiepen 1997, p. 557). Yet, contrary to Bonsiepen, several authors have located the ecological potential of the natural philosophies of the time in their critical approach to modern science (Stone 2005, p. xi; Nassar and Fisher 2015; Pinsdorf 2020). The specific relationship between the ecological potential of the natural philosophies of the time and their degree of endorsement of modern science remains an open question.

Some interpreters have taken a step further in fleshing out the specific ways in which classical German authors could contribute to contemporary debates in environmental ethics. Thus, Angela Breitenbach argues that Kant's attribution of value to nature based on an analogy with reason avoids the pitfalls of anthropocentric and biocentric positions in environmental debates, since it neither attributes value solely to human beings as the former nor bestows intrinsic value upon nature as the latter (Breitenbach 2009, p. 11; Breitenbach 2022). By contrast, Nassar draws on the romantics to argue for an "ecological model of knowledge that avoids both "extend[ing] human values to the more-than-human world" and "speak[ing] on behalf of the natural world" (Nassar 2022, p. 167). In her view, "once we begin to think of knowledge as collaboration and to recognize nature as a collaborator", as the romantics stimulate us to do, "we open up a new path for environmental ethics" (Nassar 2022, p. 174). Connections with contemporary environmental debates have also been drawn based on the works of other thinkers of the period such as Novalis (Valpione 2023) and Alexander von Humboldt (Pinsdorf 2020).

The chapters of the present volume engage with many of these questions, such as: What contributions could the natural philosophies of the time offer to our contemporary discussions on the environmental crisis? Do these potential contributions imply a negative assessment of modern science? What is the relevance of these works for contemporary discussions on science and philosophy of science?

2 Overview of Contributions

The chapters in this volume are divided into three sections according to their topics and angles of approach: visions of nature, inorganic nature, and organic nature. There are two reasons for this division. First, I tried to organize the discussion according to conceptual challenges and not according to authors. Thus, each part of

the book provides different philosophical perspectives on similar issues. Second, the titles of each part aim to bring forward the different aspects of the philosophical investigations into nature at the time, leaving implicit their potential consequences for discussions about the human mind. Importantly, such a division does not imply that an article placed under one heading bypasses issues belonging to another part. For instance, a chapter in the part 'inorganic nature' may also discuss problems related to organic nature. However, I consider these headings to capture each article's main field of investigation.

2.1 Visions of Nature

The expression 'visions of nature', which gives the title to the first part of the book, is extracted from the inaugural chapter of the volume, John Zammito's "Three Visions of Nature for German Idealism: Kant, Herder, Goethe". Zammito suggests that the concepts underlying the visions of nature of three thinkers of the time were key to the emergence of German Idealism and Romanticism, namely: Kant's technic of nature, Herder's *natura naturans*, and Goethe's formative drive (*Bildungstrieb*). He argues that Kant's third *Critique* introduces the notion of an inner causality of nature, the technic of nature, which leads to a conception of nature as a system according to the rule of purpose. Even if, for Kant, such a system cannot be constitutively grasped, his approach to nature has created, according to Zammito, a philosophical agenda for Kant's successors. As for Herder, Zammito claims that he should "be taken to be as important as Kant in shaping the German scientific horizon of 1800". For Zammito, Herder reads into Spinoza's *natura naturans* a dynamic materialism, which leads him to conceive of the physical world from a developmental perspective. Goethe, says the author, conceives of natural products as processes of formations and transformations. This "key shift [...] from product to process" is said to have been fundamental to future developments in philosophy and science. In Zammito's view, Kant's inner purpose, Herder's natural history, and Goethe's process of formation have thus shaped the philosophical agenda of the time.

In chapter 3, Laure Cahen-Maurel claims that an original conception of nature emerges from Novalis' philosophical engagement with Fichte. Cahen-Maurel suggests that Novalis, in a creative engagement with Fichte's notion of Not-I, conceives of nature as a You. Contrary to the anti-Fichtean position that she claims to be often attributed to Novalis, she argues that such a conception of nature is a further elaboration of Fichte's notion of check (*Anstoß*) and summon (*Aufforderung*). In her view, Novalis works out implicit aspects of these Fichtean concepts to develop his own conception of nature, which could therefore be viewed as "an extension of

Fichte's transcendental epistemology". More precisely, she proposes to take the notion of nature as a You as an example of the method of extension, paradigmatic of transcendental philosophy. According to this method, the human mind seeks to grasp the unknown by a constant progression from the known to the unknown, in this case, from the self-knowledge of the I to nature. Specifically, the progression runs from the notion of Not-I to the notion of It, and from there to the one of You. Each step of the way, the mind gets closer to capturing what nature is.

Chapter 4, Johanna Hueck's "Schelling on Comprehending Nature as an Absolute Activity: From Intellectual Intuition to Ecstasy of Reason", explores Schelling's attempts at conceiving of nature as an absolute activity both in his early and intermediary works. She claims that from early on Schelling identifies a key challenge to his attempt at conceiving of nature as something living, namely, it requires a mode of cognition that enables a non-objectifying access to our surroundings. Hueck identifies two modes of cognition Schelling works out to tackle this problem: intellectual intuition, as formulated in Schelling's early works on natural philosophy; and ecstasy of reason, as formulated in the 1821 Erlangen lectures. In Hueck's view, intellectual intuition is a non-discursive mode of cognition that requires the abstraction from one's own subjectivity. This abstraction is said to remain unexplained in Schelling's early works. The author suggests that Schelling's 1821 strategy is to be preferred in that it describes the self-retraction of reason required to grasp processes as processes, including the "pure processuality" of thinking.

Anton Kabeshkin's "Hegel and the Rationality of Nature" argues that Hegel believed his own conception of the rationality of nature to be beneficial for natural scientists. Contrary to deflationary views according to which Hegel endorsed a strict division of tasks between natural philosophy and science, Kabeshkin claims that Hegel believed that scientists should make metaphysical assumptions about the rationality of nature. He concedes that Hegel, contrary to Schelling, was never explicit about the way in which his philosophy could influence the progress of empirical sciences. However, he contends that Hegel thought that making correct metaphysical assumptions is important for empirical research.

In the final chapter of this first part, Silvestre Gristina engages with what he calls "Ludwig Feuerbach's Ecological Humanism". The author claims that Feuerbach works out a model to conceive of nature in contraposition to two other models he sees in classical German philosophy: Hegel's so-called exploitative model, which is entangled with an idea of what "nature is and must be for humanity"; and Schelling's contemplative model, according to which nature is given the priority over the human mind. The former model is said to subordinate space to time, the latter, time to space. In contrast to both models, the author suggests that Feuer-

bach puts forward an ecological model according to which nature and humans stand in a relation of "subjective-objective co-construction".

All in all, the chapters in this first part of the volume present seven different visions or conceptions of nature: inner purpose, developmental history, process of formation, otherness, absolute activity, an early stage of rationality, and an essential correlate of humanity. All these visions contribute to ongoing debates both on the concept of nature and on the history of classical German philosophy.

2.2 Inorganic Nature

The second part of the book gathers chapters focused on some aspect of inorganic nature. Even if the issues discussed often have consequences to approaches to organic and human nature, the key concepts of these chapters belong to the domain of inorganic nature. This is paradigmatically the case in Stephen Howard's "Kant's Concept of Force and its Application in Physics and Psychology". Howard claims that Kant holds a single concept of force that he applies both to physics and psychology. While he acknowledges that Kant carefully separates the physical and mental domains of investigation, he suggests a significant methodological continuity in that Kant is said to apply the "reduction method" in dealing with both physical and mental forces. In Howard's view, Kant uses the same method in psychology as in physics, namely, the reduction of various forces to a set of fundamental forces. Howard argues that, in various texts, Kant himself suggests using this method to investigate the human mind.

Luis Fellipe Garcia's "From Kant to Schelling: Metaphysics of Nature and the Rise of Modern Science" argues that Schelling's first book on natural philosophy, the 1797 *Ideas for a Philosophy of Nature*, is a continuation of Kant's attempt at working out a metaphysics of nature in the *Metaphysical Foundations of Natural Science*. Garcia argues that both Kant and Schelling take up the challenge of reassessing the role of philosophy in light of the rapid development of modern science. The author argues, on the one hand, that Kant's and Schelling's positions are similar in that both authors consider metaphysics of nature to belong to an intermediary domain of investigation between pure theoretical philosophy and science. On the other hand, he claims that both authors differ in that they focus on different challenges posed by the rise of modern science: Kant focuses on the mathematization of nature and therefore tailors his metaphysics of nature to ground physics, whereas Schelling focuses on the transformable character of nature and thus tailors his metaphysics of nature to ground chemistry.

In chapter 9, Troy Vine examines "Goethe's Rational Empiricism". Drawing on a reported conversation between Goethe and Sulpiz Boisserée, the author argues

that the main sources for the development of Goethe's methodology are Spinoza, Francis Bacon, and Kant. In Vine's view, commentators tend to overlook at least one of these sources, which leads to incomplete accounts of Goethe's method. In particular, the author claims that Goethe elaborates a three-stage method, resembling Bacon's empirical method, to pave the way to a Spinozistic "*scientia intuitiva* of inorganic nature". In his view, Goethe's creative engagement with Kant's philosophy provides him with a framework to bring Spinoza's rationalism and Bacon's empiricism together. More precisely, the author claims that Goethe draws on Kant to work out the three different ways in which nature appears to the human mind, the third and highest stage being the one leading to Spinoza's *scientia intuitiva.*

Emmanuel Chaput's "Hegel's Concept of Inorganic Nature as *Umwelt*" claims that Hegel conceives of inorganic nature not only as a lifeless dimension of nature contrasted to organic nature, but also as the set of natural objects that appear to living beings. Chaput argues that this latter sense of inorganic nature, which he takes to appear in the Organics chapter of Hegel's philosophy of nature, anticipates some of the main traits of what would later be called environment (*Umwelt*). The author further claims that this sense of inorganic nature "implies the attribution of subjectivity to non-human animals" and opens up the horizon for a qualified naturalistic reading of Hegel's philosophy.

Overall, this second part of the volume sheds light on the potential contributions of the accounts of inorganic nature developed at the time to a better understanding of human psychology, to different models of science, to the development of a new method of research, and even to broaching new fields of investigation.

2.3 Organic Nature

The third part of the volume is dedicated to discussions of organic nature. Márcio Suzuki's "Nature *versus* Life: Dialectics and Physiology in Schelling" argues that Schelling's engagement with the physiology of his time, especially with the works of the Scottish physician John Brown, played a key role in the emergence of his dialectical conception of nature. Suzuki claims that Schelling draws on Brown's account of the relationship between excitability and exciting powers as well as on the theory of diseases based thereon, to elaborate a dialectics of nature essentially different from the dialectics later developed by Hegel. The author argues that, in contrast to "Hegel's pacified version of dialectics", Schelling's dialectics of nature is based on a permanent struggle between functions that maintain the vital process by keeping each other in check. For Suzuki, this allows Schelling to avoid the Hegelian notion of sublation (*Aufhebung*). Moreover, Schelling's ver-

sion of dialectics is said to differ from Hegel's in that Schelling attributes a central role to the individual. On this reading, Schelling conceives of the individual as a power to resist the constant pressure for its own dissolution, which, in the author's view, contrasts to the Hegelian view according to which the individual is reduced to a step for the realization of the species. On Suzuki's account, such a resistance consists in the manifestation of life.

Chapter 12, Stefania Achella's "Anatomopathology of Reason: Bichat's Legacy in Hegel's Philosophy", argues for the influence of the French scientist Xavier François Bichat's concept of death on Hegel's dialectics. In Achella's view, Bichat introduces a paradigm shift in the discussions on the concept of life in the nineteenth century by researching corpses for the sake of better understanding the process of life. Contrary to physiologists of the time, Bichat is said to elaborate a theory of diseases not entirely based on physiological functions, but focused also on the anatomical structure of organs, tissues, and cells: this approach leads to the emergence of a field of investigation called anatomopathology. Achella claims that this methodological innovation influenced Hegel's attempt to reconstruct the living process of thought out of a dissection of abstract—or dead—thoughts. As a result, she suggests that Hegel carries out a sort of anatomopathology of Reason.

Levin Zendeh's "The Emergence of Sentience: Hegel's Conception of Animals" argues that Hegel elaborates an emergentist account of sentience. According to this view, sentience enables the animal to determine itself in a way that is "irreducible to efficient causation". The author claims that the attribution of emergentism to Hegel's conception of sentience allows for the compatibilization of two Hegelian theses: the doctrine interruption, according to which an animal can cancel the effects to which it is subject; and the doctrine of stages, according to which nature is organized in a series of stages in such a way that higher stages result from lower ones. In Zendeh's view, Hegel's emergentism consists in the view that the lower stages of nature enable the animal to exert its sentience, which is a capacity for interrupting certain causal chains through self-determination.

In chapter 14, "Great Chains of Being in Schelling's Würzburg System", Benjamin Berger explores a tension in Schelling's conception of the stages of organic nature. Drawing on Arthur Lovejoy's claim that Schelling "temporalizes the great chain of being", Berger claims that Schelling oscillates between the traditional way of accounting for an "atemporal chain of natural forms" and the more radical aim of accounting for "the historical generation of those forms". In Berger's view, both the purely rational and the historical ways of conceiving of the chain of being can be found in Schelling's 1804 Würzburg System, which he takes to be evidence of Schelling's interest in a history of nature also in a chronological sense. Berger further argues that this tension between purely rational and historical series should not necessarily be read in light of Schelling's late distinction between ra-

tional philosophy and metaphysical empiricism. In his view, such a tension suggests rather that Schelling seeks to conceive of the historical series of natural forms as entirely rational.

In the final chapter of the volume, "In What Sense is Nature a Scale of Degrees? Schelling and Hegel on Degrees and Stages in Nature", Victor Béguin compares Schelling's and Hegel's conceptions of stages (*Stufen*) of nature. He claims that the debate between both philosophers on the concept of *Stufen* reveals fundamental differences between their projects of a philosophy of nature. Schelling is said to employ the concept of *Stufen* to refer to "the actual process of nature and its philosophical exposition" and to use it as basis for his further elaboration of a sort of "scalar ontology": the doctrine of potencies (*Potenzenlehre*). Hegel, in his turn, is said to conceive of *Stufen* not as stages of nature, but as stages of the concept, so that nature appears as a series of stages only in the conceptual (philosophical) discourse about it. The author sides with Hegel's account by claiming that the stages of nature are levels of abstraction that unveil the inner workings of dialectical thought.

The chapters in this part of the volume thus show the impact of the investigation into organic nature on discussions on the status of sensibility and thought. On the one hand, the emergence of sensibility becomes a key issue in the debates on the specific ways in which organic nature depends on inorganic nature. On the other hand, the new research on life sciences broaches new ways to conceive of the process of thought. In both cases, one should deal with the challenge of conceiving of the relationship between rational and temporal developments of different levels of organization in nature.

Overall, the authors hope that the chapters of this volume can stimulate further research in this still understudied field of investigation and accordingly bolster our understanding of the natural world.[2]

---

2 The starting point for this book is the conference "The Concept of Nature in German Idealism", which I organized in April 2021 as an Alexander von Humboldt postdoctoral fellow at the LMU Munich. I would like to thank the Humboldt Foundation, the LMU, and my then host, Ives Radrizzani, for their support in organizing this event. The research that went into the preparation and publication of this book was carried out as part of my Marie Curie project "Schelling's Philosophy of Nature and the Environmental Challenge", funded by the European Union (HORIZON-MSCA-2021-PF-01; project: 101068328). I am grateful to the European Union for supporting this project as well as to KU Leuven and Karin de Boer for hosting me during this fellowship.

3 Citations and Abbreviations

Since the volume covers a broad spectrum of classical authors who have intensively engaged with each other's works, I sought to unify as much as possible the referencing system used by the various contributors. This has been done to facilitate the work of future researchers. Accordingly, in all chapters, Kant is quoted according to the Akademie-Ausgabe (AA), Fichte and Schelling according to the editions of the Bavarian Academy of Science (respectively: GA and HKA), and Hegel according to the North Rhine-Westphalian Academy of Sciences edition (GW). Sometimes it was necessary to deviate from this principle, as in the case of Schelling's works that have not yet been edited by the Bavarian Academy. In these cases, the previous standard edition of the author's work has been used (Schelling's SW). If, as in the case of Goethe, no standard version of the complete works has yet been established, the author has been quoted from various editions (LA, HA, FA). A glossary of abbreviations has been added to each chapter to ensure that they can be used independently.

In addition, all translations used by the contributors are either identified at the beginning of the chapter or properly cited after the reference to the complete works. Thus, "GW 20, p. 237; 1970, vol. I, p. 205" refers to page 237 of the twentieth volume of Hegel's complete works and to page 205 of the volume I of Michael Petry's 1970 translation. This double reference intends to help both specialists and non-specialists to locate the passages and their respective translations more easily. In some cases where the English edition explicitly refers to the pagination of the author's complete works, such as the Cambridge edition of Kant's works, only a footnote identifying the translation or group of translations used throughout the chapter text has been added at the beginning of the chapter. All translations of the works of classical German philosophers used by each contributor are listed separately in the bibliography of each chapter so that future researchers can have an overview of the available translations.

Bibliography

Adickes, Erich (1924): *Kant als Naturforscher.* Berlin, New York: De Gruyter.

Beiser, Frederick (2002): *German Idealism: The Struggle against Subjectivism (1781–1801).* Cambridge, MA: Harvard University Press.

Beiser, Frederick (2003): "Hegel and Naturphilosophie". In: *Studies in History and Philosophy of Science* 34, pp. 135–147.

Berger, Benjamin (2024): *Schelling, Hegel, and the Philosophy of Nature: From Matter to Spirit.* London: Routledge.

Bonsiepen, Wolfgang (1986): "Hegels kritische Auseinandersetzung mit der zeitgenössischen Evolutionstheorie". In: R.P. Horstmann/M.J. Petry (Eds.): *Hegels Philosophie der Natur: Beziehungen zwischen empirischer und spekulativer Naturerkenntnis.* Stuttgart: Klett-Cotta, pp. 151 – 171.

Bonsiepen, Wolfgang (1997): *Die Begründung einer Naturphilosophie bei Kant, Schelling, Fries und Hegel.* Frankfurt am Main: Klostermann.

Breidbach, Olaf (2007): "The Culture of Science and Experiments in Jena around 1800". In: R.M. Brain/R.S. Cohen/O.Knudsen (Eds.): *Hans Christian Ørsted and the Romantic Legacy in Science.* Dordrecht: Springer, pp. 177 – 216.

Breitenbach, Angela (2009): *Die Analogie von Vernunft und Natur Eine Umweltphilosophie nach Kant.* Berlin, New York: De Gruyter.

Breitenbach, Angela (2022): "Kant on the Value of Nature". In: *Studi Kantiani* 35: 11 – 25.

Chikurel, Idit (2024): "Maimon as a Baconian: natural histories, induction and the ladder of certainty". In: *Inquiry: An Interdisciplinary Journal of Philosophy* (ahead of print at: https://doi.org/10.1080/0020174X.2024.2309908).

Černý, Jiří (1984): "Von der *natura naturans* zum 'unvordenklichen Sein'. Eine Linie des Materialismus bei Schelling?". In: H.J. Sandkühler (Ed.): *Natur und geschichtlicher Prozeß. Studien zur Naturphilosophie F.W.J. Schellings.* Frankfurt am Main: Suhrkamp, pp. 127 – 144.

Corti, Luca and Schülein, Johannes-Georg (2023): "Nature and Naturalism: The Relevance of Classical German Philosophy". In: L. Corti/J.G. Schülein (Eds.): *Nature and Naturalism in Classical German Philosophy.* London: Routledge, pp. 1 – 18.

Cunningham, Andrew and Jardine, Nicholas (Eds.) (1990): *Romanticism and the Sciences*. Cambridge: Cambridge University Press.

Engelhardt, Dietrich von (1976): *Hegel und die Chemie: Studie zur Philosophie und Wissenschaft der Natur um 1800.* Wiesbaden: Pressler.

Engelhardt, Dietrich von (1984): "Schellings philosophische Grundlegung der Medizin". In: H.J. Sandkühler (Ed.): *Natur und geschichtlicher Prozess: Studien zur Naturphilosophie F.W.J. Schellings.* Frankfurt am Main: Suhrkamp, pp. 305 – 325.

Falkenburg, Brigitte (1987): *Die Form der Materie. Zur Metaphysik der Natur bei Kant und Hegel.* Frankfurt am Main: Athenäum.

Fischer, Kuno (1872): *Friedrich Wilhelm Joseph Schelling. Geschichte der neurn Philosophie*, vol. 6. Heidelberg: Friedrich Wassermann.

Fisher, Luke and Nassar, Dalia (2015): "Introduction: Goethe and Environmentalism". In: *Goethe Yearbook* 22, pp. 3 – 22.

Förster, Eckart (2018): *Die 25 Jahre der Philosophie: Eine systematische Rekonstruktion.* 3., verbesserte Auflage. Frankfurt am Main: Klostermann

Friedman, Michael (2007): "Kant – Naturphilosophie – Electromagnetism". In: R.M. Brain/R.S. Cohen/O. Knudsen (Eds.): *Hans Christian Ørsted and The Romantic Legacy in Science.* Dordrecht: Springer, pp. 135 – 158.

Friedman, Michael (2013a): *Kant's Construction of Nature: A Reading of the Metaphysical Foundation of Natural Science.* Cambridge: Cambridge University Press.

Friedman, Michael (2013b): "Philosophy of Natural Science in Idealism and Neo-Kantianism". In: K. Ameriks/N. Boyle/L. Disley (Eds.): *The Impact of Idealism: The Legacy of Post-Kantian German Thought. Philosophy and Natural Sciences*, vol. 1. Cambridge: Cambridge University Press, pp. 72 – 104.

Gloy, Karen (1992): "Die Naturauffassung bei Kant, Fichte und Schelling". In: *Fichte-Studien* 6, pp. 253 – 275.

Heckmann, Reinhard (1985): "Natur – Geist – Identität. Die Aktualität von Schellings Naturphilosophie im Hinblick auf das moderne evolutionäre Weltbild" In: R. Heckmann/H. Krings/R. Meyer (Eds.): *Natur und Subjektivität. Zur Auseinandersetzung mit der Naturphilosophie des jungen Schelling.* Stuttgart: Frommann-Holzboog, pp. 291 – 344.

Heuser-Keßler, Marie-Luise (1986): *Die Produktivität der Natur. Schellings Naturphilosophie und das neue Paradigma der Selbstorganisation in den Naturwissenschaften.* Berlin: Duncker & Humblot.

Illetterati, Luca (1995): *Natura e ragione: sullo sviluppo dell'idea di natura in Hegel.* Trento: Verifiche.

Kuhn, Thomas (2012/1962): *The Structure of Scientific Revolutions*, 50th anniversary ed. Chicago, London: University of Chicago Press.

Küppers, Bernd-Olaf (1992): *Natur als Organismus. Schellings Naturphilosophie und Ihre Bedeutung für die moderne Biologie.* Frankfurt am Main: Vittorio Klostermann.

Lauth, Reinhard (1974): "Die zweite philosophische Auseinandersetzung zwischen Fichte und Schelling über die Naturphilosophie und die Transzendentalphilosophie und ihr Verhältnis zueinander". In: *Kant-Studien* 65, pp. 397 – 435.

Lauth, Reinhard (1984): *Die transzendentale Naturlehre Fichtes nach den Prinzipien der Wissenschaftslehre.* Hamburg: Meiner.

Nassar, Dalia (2022): *Romantic Empiricism: Nature, Art, and Ecology from Herder to Humboldt.* Oxford, New York: Oxford University Press.

Neuser, Wolfgang (1993): "Einfluß der Schellingschen Naturphilosophie auf die Systembildung bei Hegel: Selbstorganisation versus rekursive Logik". In: K. Gloy/P. Burger (Eds.): *Die Naturphilosophie im Deutschen Idealismus.* Stuttgart: Frommann-Holzboog, pp. 238 – 266.

Ng, Karen (2020): *Hegel's Concept of Life: Self-Consciousness, Freedom, Logic.* Oxford: Oxford University Press.

Paolucci, Henry (1984): "Hegel and the Celestial Mechanics of Newton and Einstein". In: R.S. Cohen/M.W. Wartofsky (Eds.): *Hegel and the Sciences.* Dordrecht: D. Reidel, pp. 55 – 85.

Pinsdorf, Christina (2020): "Romantischer Empirismus im Anthropozän A.v. Humboldts und F.W.J. Schellings Ideen für die Environmental Humanities". In: *HiN – Alexander Von Humboldt Im Netz. Internationale Zeitschrift für Humboldt-Studien* 21, no. 40, pp. 59 – 97.

Pippin, Robert (1989): *Hegel's Idealism: The Satisfactions of Self-Consciousness.* Cambridge: Cambridge University Press.

Rand, Sebastian (2007): "The Importance and Relevance of Hegel's Philosophy of Nature". In: *Review of Metaphysics* 61, no. 2, pp. 379 – 400.

Renault, Emmanuel (2001): *Hegel. La naturalisation de la dialectique.* Paris: Vrin.

Richards, Robert (2002): *The Romantic Conception of Life: Science and Philosophy in the Age of Goethe.* Chicago: University of Chicago Press.

Sandkühler, Hans Jörg (1984): "Natur und geschichtliche Prozeß. Von Schellings Philosophie der Natur und der zweiten Natur zur Wissenschaft der Geschichte". In: H.J. Sandkühler (Ed.): *Natur und geschichtlicher Prozeß. Studien zur Naturphilosophie F.W.J. Schellings.* Frankfurt am Main: Suhrkamp, pp. 13 – 82.

Schmid, Jelscha (2018): "Schelling's Method of *Darstellung*: Presenting Nature through Experiment". In: *Studies in History and Philosophy of Science* 69, pp. 12 – 22.

Schmid, Jelscha (2022): *The Methods of Metaphilosophy. Kant, Maimon, and Schelling on How to Philosophize about Philosophy.* Frankfurt am Main: Klostermann.

Schmied-Kowarzik, Wolfdietrich (1985): "Die existentiell-praktische Einheit von Mensch und Natur. Zur Bedeutsamkeit der Naturphilosophie Schellings für die Ökologiedebatte". In: R. Heckmann/H. Krings/R. Meyer (Eds.): *Natur und Subjektivität. Zur Auseinandersetzung mit der Naturphilosophie des jungen Schelling.* Stuttgart: Frommann-Holzboog, pp. 375 – 389.

Schwenzfeuer, Sebastian (2012): *Natur und Subjekt. Die Grundlegung der schellingschen Naturphilosophie.* Freiburg: Karl Alber.

Siemek, Marek (1989): "Schelling gegen Fichte. Zwei Paradigmen des nachkantischen Denkens". In: Albert Mues (Ed.): *Transzendentalphilosophie als System.* Hamburg: Meiner, pp. 388 – 395.

Steigerwald, Joan (2019): *Experimenting at the Boundaries of Life: Organic Vitality in Germany around 1800.* Pittsburgh: University of Pittsburgh Press.

Stone, Alison (2005): *Petrified Intelligence: Nature in Hegel's Philosophy.* Albany: State University of New York Press.

Valpione, Giulia (2023): "Novalis' Metaphysics of Having: A Step Towards an Environmental Conception of the Human-Nature Relationship". In: *Human Affairs* (ahead of print at: https://doi.org/10.1515/humaff-2023-0074).

Wandschneider, Dieter (1982): *Raum, Zeit, Relativität: Grundbestimmungen der Physik in der Perspektive der Hegelschen Naturphilosophie.* Frankfurt am Main: Klostermann.

Wahsner, Renate (1996): *Zur Kritik der Hegelschen Naturphilosophie: Über ihren Sinn im Lichte der heutigen Naturerkenntnis.* Frankfurt am Main: Peter Lang.

Warnke, Camilla (1993): "'Der stete und feste Gang der Natur zur Organisation': Schellings Begriff der organischen Entwicklung". In: K. Gloy/P. Burger (Eds.): *Die Naturphilosophie im deutschen Idealismus.* Stuttgart: Frommann-Holzboog, pp. 116 – 148.

Westphal, Kenneth (2008): "Philosophizing about Nature: Hegel's Philosophical Project". In: F. Beiser (Ed.): *The Cambridge Companion to Hegel & Nineteenth Century Philosophy.* Cambridge: Cambridge University Press, pp. 281 – 310.

Williams, Leslie Peirce (1973): "Kant, Naturphilosophie and scientific method". In: R. Giere/R. Westfall (Eds.): *Foundations of Scientific Method: The Nineteenth Century.* Bloomington: Indiana University Press, pp. 3 – 22.

Zammito, John (2018): *The Gestation of German Biology: Philosophy and Physiology from Stahl to Schelling.* Chicago: University of Chicago Press.