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EXTERNALITY IN HEGEL'S PHILOSOPHY OF NATURE

A Dissertation

Submitted to the McAnulty College & Graduate School of the Liberal Arts

Duquesne University

In partial fulfillment of the requirements for

the degree of Doctor of Philosophy

By

Martin Krahn

December 2018

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Martin Krahn

EXTERNALITY IN HEGEL'S PHILOSOPHY OF NATURE

By

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Approved November 12, 2018

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ABSTRACT

EXTERNALITY IN HEGEL'S PHILOSOPHY OF NATURE

By

Martin Krahn December 2018

Dissertation supervised by Professor Jennifer Bates

The topic of my dissertation is the metaphysics of laws of nature in Hegel's philosophy of nature. I argue that Hegel differentiates laws of nature from norms of culture through a concept of "externality," according to which the universals or laws of nature stand outside of, apart from, independent from their particulars. He contrasts this with norms of culture, where the universals are internal to the particulars, such that in culture the particular events or actions shape the norms, whereas in nature, the laws remain the same through their independence from the particular events. I then address the consequences this particular understanding of "externality" has for Hegel's philosophy of nature, including its rejection of the role of induction in favor of a transcendental arguments for the laws of nature given only the idea that nature is this externalized structure; a metaphysical realist position about the existence of nature as entailed by an idealist epistemology pertaining to the laws and universals of nature; and finally, a defense of specific theories, universals, or laws of nature, which are derived from those a priori transcendental arguments. I conclude that while Hegel's philosophy of nature is a necessary consequence of his epistemological assumptions, which are plausible and defensible in their own right, these assumptions ultimately commit Hegel to problematic claims regarding the particular structures in nature. In particular, I show how Hegel's epistemology is fundamentally committed to a specific understanding of life and health that has since been challenged by evolutionary biology.

ACKNOWLEDGEMENT

I would first like to thank my dissertation director, Dr. Jennifer Bates, who devoted all of her time and energy into making sure that I was delivering the best possible work that I could.

I would also like to thank my committee members, Dr. Daniel Selcer, Dr. Jay Lampert, and Dr. Wolfgang Neuser, who together with Dr. Bates, were responsible for continually challenging me, in order that I could rise to new heights as a scholar and philosopher.

I would like to thank the US-Germany Fulbright Commission and Dr. Neuser for supporting my research in Kaiserslautern. I would also like to think the McAnulty College & Graduate School of Liberal Arts for supporting research on my dissertation.

Thanks goes out to all my friends in the Duquesne University Philosophy Department, especially Kelsey, Tristana, Boram, Jeff, Bethany, Tom, Zach, Angela, Matt, Alex, Dan, Thomas, Christopher, Jim, Sila, Karim, Dave, and Jacob. Words cannot describe how meaningful the discussions with and encouragement from all of you have been to me.

Finally, I want to thank my family, who have supported and encouraged me to pursue whatever path I've taken, and this path in particular.

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LIST OF ABBREVIATIONS

- A / B = Immanuel Kant, *Critique of Pure Reason*, cited according to the pagination of the 1781 and 1787 editions (A and B) (e.g. A19/B33).
- AK = *Immanuel Kan. Gesammelte Schriften,* ed. Royal Prussian Academy of the Sciences. Berlin: Reimer, 1902-, cited by volume and page number (e.g. AK 5: 45).
- EL = Encyclopedia of the Philosophical Sciences in Basic Outline. Part I: Science of Logic. Trans. Klaus Brinkmann and Daniel O. Dahlstrom. Cambridge: Cambridge University Press, 2010, cited by page and paragraph number, including indications for Remarks (=A) and Additions (=Z) (e.g. (§244; EL 303).
- EN = Hegel's Philosophy of Nature, Trans. M. J. Petry, 3 vols. London: George Allen and Unwin, 1970, cited by volume, page, and paragraph number, including indications for Remarks (=A) and Additions (=Z) (e.g. (§249A; EN I: 212). All citations are from the 1830 edition of the *Encyclopedia*, unless otherwise noted.
- ES = Hegel's Philosophy of Mind. Trans. W. Wallace & A. V. Miller. Oxford: Oxford University Press, 2007, cited by page and paragraph number, including indications for Remarks (=A) and Additions (=Z) (e.g. (§377Z; ES 3).
- GW = G. W. F. Hegel: Gesammelte Werke, Deutsche Forschungsgemeinschaft, Hamburg: Meiner, 1968-, cited by volume and page number (e.g. GW 8: 35).
- PS = *The Phenomenology of Spirit*. Trans. Terry Pinkard. Cambridge: Cambridge University Press, 2018.
- SL = *The Science of Logic*. Trans. George di Giovanni. Cambridge: Cambridge University Press, 2010.
- W = Werke in zwanzig Bänden. Ed. E. Moldenhauer and K. M. Michel, Frankfurt am Main: Suhrkamp Verlag, 1969-1972, cited by volume and page number (e.g. W 8: 35).

Introduction

This dissertation offers an account of the necessity of the *Philosophy of Nature* for Hegel's system and assesses its positions in a contemporary setting. For its focus, this dissertation takes the concept of "externality" [$\ddot{A}u\beta erlichkeit$] as fundamental to Hegel's understanding of a nature, where "externality" means that being is "external" to, or "outside" of thought. It is the contention of this dissertation that this externalized structure of being is not only a necessary form for being to take and is thus ineliminable from Hegel's philosophical system. It also means that the dialectic within nature presents itself differently from its instantiation in spirit and logic. Finally, this dissertation examines the plausibility of such an understanding of nature by following its consequences in the fields of philosophy of science, physics, chemistry, biology, and medicine. The conclusion drawn is that while a Hegelian philosophy of nature can retain a plausible and defensible presentation, there may also be critical limitations to its validity.

It has become common for articles and books on Hegel's *Philosophy of Nature* to begin by mentioning the generally poor reception of that aspect of his philosophy, and this introduction is no exception. The *Philosophy of Nature* is commonly represented as an overreaching of idealism into the domain of nature where, instead of discovering and explaining the various commonalities, generalizations, regularities, and laws based on controlled observation and experimentation, philosophy can simply derive such regularities by means of thought alone. For example, in claiming that it is not a "legitimate piece of philosophical thinking," George di Giovanni argues that "one could say of Hegel's *Philosophy of Nature* that it represents an illegitimate extrapolation of logical reflection."¹ Likewise Robert Pippin argues that "Hegel

¹ George di Giovanni, "More Comments on the Place of the Organic in Hegel's Philosophy of Nature," in *Hegel and the Sciences*, ed. Robert S. Cohen & Marx W. Wartofsky (Dordrecht: Kluwer, 1984), 104.

himself seems often much more ambitious about his system, that the major direction of his *Realphilosophie* involves a theory of systematic necessity that is not, I think it is safe to say, philosophically defensible."²

The indefensible and illegitimate claims they have in mind are the natural scientific claims contained throughout the Philosophy of Nature, which we now know to be false. These include a defense of a Goethean theory of color and light in opposition to that of Newton; a defense of the Empedoclean elements; and a rejection of an atomic theory of chemistry and support for the opposing "elective affinity" theory. While such claims do not always form an insuperable problem for a theoretical approach to nature (e.g. the history of science is full of mistakes and false claims), because Hegel's philosophy of nature is often read as providing an a priori derivation for such claims, it would carry the indefensible consequence of giving an absolute and necessary ground to claims about nature which we now know to be false. Moreover, to the extent that such claims might necessarily follow from more basic assumptions in Hegel's philosophy, it would be easy to construe the *Philosophy of Nature* as a *reductio ad absurdum* argument against Hegel's philosophy in its entirety. In response to this problem, many interpreters of Hegel attempt to excise the philosophy of nature from his theory, in order to preserve some of the more productive and defensible elements of his philosophy (e.g. his epistemology, theory of history, and theory of intersubjectivity). For example, following his criticism of Hegel's Realphilosophie, Pippin goes on to say that

the approach I have taken to Hegel ought to mean that a philosophic consideration of Nature and Spirit is not a deduction of the content and details of each, but a consideration of the particular ways in which necessary constraints imposed by a subject on itself, pure Notions, determine the form such investigations could take in various contexts.³

² Robert Pippin, *Hegel's Idealism: The Satisfactions of Self-Consciousness* (Cambridge: Cambridge University Press, 1989), 259-260.

³ Pippin, *Hegel's Idealism*, 259.

Despite these concerns, interest has developed more recently in Hegel's *Philosophy of Nature*, as well as the "Anthropology" in his *Philosophy of Spirit*. These texts have become the source material for various naturalistic interpretations of Hegel's philosophy, which distinguish themselves from those interpretations, based more in the *Phenomenology of Spirit* and the *Science of Logic*, which depict Hegel as primarily a transcendental philosopher or phenomenologist.⁴ The naturalistic interpretations aim to show that Hegel's understanding of human nature, consciousness and autonomy relies on an understanding of "habit" as second nature. Thus, these accounts attempt to situate the normativity of human action as the dialectical sublation of a first nature, referring to the condition of animals in general. While the exact consequences of understanding spirit as the sublation of nature differ in the various interpretations, they all recognize that spirit and logic depend in some way on Hegel's dialectical theory of nature, even as the structures of spirit and logic go beyond the natural and are not reducible to it.

Thus, for better or for worse, Hegel's *Philosophy of Nature* must be reckoned with as a part within his greater ontological system. This dissertation argues that the way in which nature belongs in this system, between the stages of logic and spirit, is as exhibiting forms of "externality." When considering what it means for nature to be external to itself, one finds that there are two answers to this question. The first relies heavily on Hegel's epistemology and ontology, according to which being must be regarded as an "idea." The idea is variously defined as the unity or identity of the ideal with the real, the concept with reality, or the concept with the object. All these definitions express the relationship of identity between thought and being, while

⁴ E.g. Heikki Ikäheimo, "Nature in Spirit: A New Direction for Hegel-studies and Hegelian philosophy," *Critical Horizons* 13, no. 2 (2012): 149-153; Terry Pinkard, *Hegel's Naturalism* (Oxford: Oxford University Press, 2013); David S. Stern, ed., *Essays on Hegel's* Philosophy of Subjective Spirit (Albany: SUNY Press, 2013).

at the same time not collapsing them into being the same, but rather maintaining the difference within the identity. Hegel takes the idea to be the truth of being, such that to understand what something is, one must examine the determinations it has as it presents itself to thought. While this form of the idea plays a role in all aspects of Hegel's philosophy, and thus forms the basis of his "absolute idealist" position, the idea also presents itself in different ways when considering a particular object. It is precisely in this respect that nature is different from spirit and logic, because nature, Hegel says, is the "idea in the form of otherness" (§254). This definition allows us now to say what is meant when it is said that nature is external to itself: nature is that, as which being is external to thought. This means that the being of nature is not thought-like, but rather is other than thought. The second way of answering the question of the meaning of nature's self-externality is that, in addition to the externalized relation between thought and being in nature, Hegel claims that nature is self-external within itself. By this, he means that being itself exhibits itself in nature as external to itself, for example by being spatiotemporally extended. This kind of externality ultimately compounds the difference in nature between thought and being, to the extent that being is even more differentiated and externalized in itself, and thus opposed to the unifying structure of thought, even as thought is able to grasp that which is external to it in its externality.

Hegel makes these claims at the beginning of the *Philosophy of Nature*, and they have been subject to much interpretation, to which my dissertation contributes.⁵ Specifically, I argue that externality, which distinguishes nature from logic and spirit, is a necessary consequence of Hegel's dialectic; determines nature as being metaphysically real, without thereby being any less

⁵ For the major publications in English-language Hegel scholarship, see Stephen Houlgate, ed., *Hegel and the Philosophy of Nature* (Albany: SUNY Press, 1998); *Owl of Minerva* 34, no. 1 (Fall/Winter 2002-03); Alison Stone, *Petrified Intelligence: Nature in Hegel's Philosophy* (Albany: SUNY Press, 2005).

ideal in a Hegelian sense; exhibits a dialectical structure where nature does not *appear* dialectical, but is so only *internally* or *implicitly;* and is a necessary presupposition for spirit, insofar as the latter is that which is constituted by the sublation of nature's externality.

That nature's externality is a necessary consequence of Hegel's dialectic is important for several reasons. First, it presents a challenge to interpretations that seek to remove the *Philosophy of Nature* from an adequately constructed Hegelian system. Claiming that nature's externality is necessary maintains, instead, that the legitimacy of the dialectic, both of the logic and of spirit, is possible only if nature is also articulated within the same system. Moreover, not only does this establish that nature as a whole is necessary, but also that all of the determinations of nature are necessary too. In contrast to an alternative metaphysics, where the laws of nature are not absolutely necessary, but only contingently necessary (if even that), Hegel's account exhibits the laws as following from the same necessity as the determinations of logic. Consequently, nature and its laws must be understood as being absolutely necessary.

Nature's externality also entails a metaphysically realistic account of nature. Contrary to the idea that Hegel's idealism entails that nature can only exist as an object for consciousness, defining nature as the "externalized" idea has for a consequence the claim that nature's being is independent of the existence of thought. As a result, Hegel's philosophy of nature, while still being idealistic in the sense that nature's laws are only intelligible through thinking them, nevertheless maintains the more plausible position of positing nature as capable of existing without the existence of thought or thinking subjects. I claim that while Hegel's absolute idealism establishes an identity between concept and object, it does not reduce these to being the same thing. Consequently, it becomes possible and important to keep the conceptual (and therefore epistemological) aspect analytically distinct from the objective (and therefore

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ontological) aspect. This distinction is important for my metaphysical realist interpretation because, while the philosophy of nature is framed as an analysis or examination of the concepts of nature, such an analysis yields the ontological consequence of the externality of the objects from the concept, and thus their ontological independence from concepts. Thus, while the concept is identical to the object, it is also different from it, and in nature, this difference is constituted as externality.

That Hegel's philosophy of nature is nevertheless idealistic also involves its being dialectically structured. By this, it is meant that in thinking the laws or concepts of nature, one is unable to posit a single determination without also positing others that are presupposed in the first. However, as a result of the way in which the being of nature is external to thought, the dialectical development, which is more familiar in the progression of the stages of spirit in the Phenomenology of Spirit or in the immanent unfolding of the concept in the Science of Logic, is in nature only something implicit and does not itself have an existing form. This ultimately means that in nature, the determinations of things remain rather static, or are only determined externally by other natural things; it is only by thinking about natural objects, and comprehending them according to their concepts and laws, that we see how all of these concepts and laws belong to a single unified structure: the idea of nature. This position, again, provides us with a plausible account for theorizing nature, where Hegel's unique dialectical epistemological method functions only with respect to the concepts of nature, and not to the objects, which ultimately do not appear dialectical. In other words, the dialectical development in nature is only present in our thinking about nature, but does not appear in nature itself.

Finally, as has been already mentioned, nature's externality is not only a necessary consequence of Hegel's dialectical thinking, but is moreover a necessary *presupposition* to the

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account of spirit in his philosophy. In other words, to the extent that interpreters would like to dismiss the philosophy of nature, while preserving Hegel's philosophical accounts of logic and spirit, one must nevertheless explain that which mediates logic and spirit. While logic can be construed as the abstraction of spirit's historical becoming and development, leaving behind only the pure form of this movement, one must nevertheless have an account of that which is abstracted: the matter. Or, seen from the other direction, once one begins with the pure and abstract form of conceptual movement, or with the presuppositionless notion of "pure being," in order to re-develop an account of spirit, it is necessary to introduce at the very least the forms of space and time, which are necessary for understanding spirit as a historical being. However, on Hegel's account, once one introduces the basic concepts of space and time, and articulates their structures, one is not led immediately into the subjective and intersubjective determinations of spirit, but rather first into the mechanical determinations of matter and motion. Consequently, it is not just space and time that is presupposed in the account of spirit, but the entire philosophy of nature, from mechanics and physics, to chemistry and biology.

As a result, Hegel's concept of externality in the theorization of nature lends itself to several plausible and defensible positions in that theorization. However, in addition to these principles, which are abstract claims pertaining to nature in general, Hegel's philosophy of nature is also committed to more specific conceptual determinations of nature, namely those determinations of externality itself. It has already been mentioned that conceptualizing externality in its most basic determination leads us to the concepts of space and time. Moreover, thinking concepts of space and time, given their internal dialectic, necessitate that the concepts of matter and motion also belong to a theory of nature. This dialectical movement does not stop with matter and motion, but rather entails that many more concepts not only belong to Hegel's

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theory of nature, but that they necessarily do so. Thus, one focus in this dissertation is to assess the plausibility of some of these concepts, given the developments in the natural sciences in the two centuries since the publication of Hegel's *Encyclopedia*. Specifically, this dissertation examines Hegel's physical theory of space, time, matter, and motion; his chemical theory of different kinds of reactions and processes; his biological theory of development and species; and his medical theory of physical and mental disease.

The conclusion drawn from these examinations is that, first, even if Hegel's dialectical epistemology entails that certain conceptual forms are necessary for the way in which nature's externality is determined, it is still possible to replace some of the specific outdated scientific theories with more current and developed ones. Second, however, while Hegel's philosophically developed concepts can approximate concepts used in more recent scientific theory, a perfect relationship of adequacy does not appear to be possible, specifically in the case of medicine. I conclude that the problem of Hegel's philosophy of nature is not that it is an illegitimate extension of an otherwise well-constructed epistemology. Instead, the philosophy of nature is a legitimate extension of an epistemology and ontology, which in this extension encounters problems when accounting for the actual objects of empirical science.

Chapter Outline

In Chapter 1, "The Otherness of the Idea," I argue that nature as the idea in the form of otherness is a necessary consequence of Hegel's dialectic, as articulated in the *Science of Logic*. The first step of this argument is to examine the manner in which the conceptual development in the logic is said to complete itself with the absolute idea. I argue that the main criterion for this completion is that the absolute idea is the identity of the concept with its object. The second step

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of this argument is to show that the completion of the logic still leaves other kinds of determination unarticulated, and specifically those determinations of the philosophy of nature and philosophy of spirit. Here I provide an interpretation of Hegel's claim that logic, nature, and spirit are all "modes" [*Weisen*] of the absolute idea (GW 12: 237/SL 736). I claim that whereas the logic exhibits the absolute idea as the enveloped identity of concept and object, nature exhibits the same identity as developed and externalized. In other words, whereas the logic prioritizes the identity of concept and object, nature will prioritize their difference, even as identity and difference are maintained within all modes of the absolute idea. I conclude that insofar as the logic completes itself in the form of the absolute idea, its conceptual dialectic must also present the determinations of the idea in its other modes, beginning with nature as the externalized mode of the absolute idea.

In Chapter 2, "The Impotence of Nature: Singulars, Contingency, and Stages," I argue that nature as the idea in the form of otherness, or as the externalized mode of the absolute idea, has a unique dialectical structure. This dialectical structure is based in the significance of identifying the idea as external, where I interpret this to mean that in nature, being is external to and other than thought. This articulation has three primary consequences. The first is that there is in nature universals or laws, which are to be fully distinguished from the singular, existing things, even as those laws determine those things. The second consequence is that in this distinction of universals and singulars, the singular things exhibit a contingent manner of determination, even as the determination by the laws is necessary. I argue here that the external relation between laws and things entails that while a single law or concept determines an individual in a necessary way, the particularity of this determination is dependent or contingent on the other laws and concepts that also are determining the individual. A good example of this

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is that while a monkey is an animal and thus exhibits the determination of being a living organism, the particular way in which a monkey is an organism (as distinct from the way a snail is an organism) relies on various chemical and environmental factors. Thus, the concepts or laws of life and organic being determine the organism in a necessary way, but the particular way in which it is an organism is the result of the contingency of these other external factors. In this way, no law can exhaust the determination of an individual, and individuals exhibit a contingency with respect to their lawful, necessary determination. The third consequence of the dialectic of nature is that the conceptual development, which embodies Hegel's method, pertains only to the laws or concepts of things, and not to the things themselves. This draws attention to the fact that whereas nature presents itself as externalized and particularized into a multiplicity of objects and structures, it is nevertheless *internally* or *implicitly* unified by a conceptual development.

In Chapter 3, "Ontology and Empirical Science: Mechanics, Physics and the Categories of Inorganic Nature," I argue that the primary epistemological device for generating the concepts of nature is Hegel's *a priori* dialectical method. This chapter introduces Hegel's engagement in the philosophy of nature with the empirical sciences and argues that the relation between the two is to find concepts in the empirical sciences that correspond with the conceptual forms derived through the *a priori* method. I demonstrate the epistemological priority of these conceptual forms by examining Hegel's analysis of the concepts of mechanics (i.e. space, time, matter, and motion), and the concepts of chemistry (i.e. combustion, neutralization, elective affinity). The concepts belonging to empirical science are shown to correspond to conceptual forms which are derived *a priori* through a dialectic, which takes for its starting point the abstract determination of externality. Establishing the distinction between *a priori* conceptual form and empirical

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conceptual content opens up the possibility for revising and updating a Hegelian philosophy of nature. However, the degree to which revision is possible is still limited by the conceptual forms, which insofar as they are derived *a priori* are absolute necessary.

In Chapter 4, "The Mutability of Species in Hegel's Philosophy of Biology," I argue that Hegel's biology is consistent with a concept of species that can undergo evolution, even as Hegel himself rejects the idea of evolution as it was understood in his time. The first part of this argument assesses Hegel's rejection of evolution and demonstrates that it relies on an understanding of evolution as a kind of development [Entwicklung]. I argue that, first, Hegel does attribute evolution or development to individual organisms in the form of their self-relating process of growth. This kind of development is not autonomous, but is rather something which organisms undergo, and so is distinct from the development of spirit, which is free and autonomous. This is not to say that spirit doesn't take on its own necessary forms as a result of the way in which it misrecognizes itself and its own freedom, but only that, unlike in nature, the forms that spirit takes are nevertheless always implicitly the result of its self-determination. Second, by limiting development to individual organisms, Hegel ultimately resembles Darwinian biology, which likewise rejects the evolution of species using a developmental framework. The second part of the argument shows that Hegel's species concept likewise avoids certain criticisms drawn from Darwinian biology against the idea of species as essential forms. I show that the dialectical relation Hegel claims to exist between the species concept and the sexual relationship concept can be interpreted to mean that species unities are ultimately dependent on relations of reproduction, rather than the reverse. This model is again closer to a Darwinian model, which maintains that species are reproductive lineages, in order that they can evolve through the effects of natural selection on the gene pool of a species. Ultimately, Hegel's biology

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includes an account of species as entities that can evolve, even as Hegel does not provide us with the theory or mechanisms of evolution.

In Chapter 5, "The Nature of Spirit: Physical and Mental Disease in Hegel's Philosophy," I argue that the transition from the nature to spirit, exemplified by Hegel's "Anthropology" is a development beyond nature itself, even as the "Anthropology" exhibits spirit in its natural form. Against interpretations that draw on the "Anthropology" in order to frame Hegel as compatible with naturalism, I argue that the "Anthropology" already anticipates the later developments of spirit, and so cannot be used as evidence for such a naturalism. As support for this claim, I frame my argument around the concept of mental disease in Hegel's "Anthropology." I argue that mental disease resembles physical disease as being the inadequacy of the particular to the universal. In assessing Hegel's disease, I show that it resembles a naturalistic approach to defining disease, as characterized in twentieth-century philosophy of medicine. Such an approach ultimately carries with it certain theoretical and ethical problems, which therefore also apply to Hegel's own theory. Next, I show that mental disease is nevertheless distinguished from physical disease in the specific relations that hold between the universal and the particular when examining organic being compared to examining spirit. Nevertheless, I argue that to the extent that mental disease differs from other kinds of spiritual conflicts or contradictions, it is due to the naturalness of the soul, the activity of which is not yet spirit itself, but only the natural potentiality for spirit's free, self-determining actions. Thus, the soul in relation to spirit turns out to have a greater resemblance to the organ-organism relationship, and so provides the basis for an account of mental disease.

In the "Conclusion," I reflect on the various strengths and weaknesses of Hegel's philosophy of nature, as outlined in the chapters, and offer suggestions for ways of developing

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Hegel's theory beyond its current form and limitations. I maintain that the strengths of Hegel's position draw from its dialectical method, its ontological account of nature in general, and its systematic understanding of the relations between nature and spirit. Because the epistemology developed in the Science of Logic extends to an account of nature, the persuasiveness of the former can also be attributed to the latter. Moreover, through the interpretation of the dialectic of nature, I claim that it is possible to avoid many problematic consequences and interpretations of an idealistic theory of nature. I also maintain the weaknesses of Hegel's position is its commitment to certain conceptual forms, to which no current scientific theory corresponds. Specifically, Hegel's concept of life seems both fundamental to Hegel's dialectical ontology and is at odds with evolutionary biological theory. I suggest that this weakness can then be addressed in two ways. Either we can claim that Hegel's *a priori* derivation of these conceptual forms was mistaken, in which case Hegel's general ontology can be preserved, provided that an adequate system of concepts can be validly demonstrated. Or we can accept that those conceptual forms are necessary consequences to Hegel's specific dialectical theory of nature, in which case we should look for ways to overcome the limitations of Hegel's theory. I end by suggesting that we examine and reconsider a few aspects of Hegel's theory with the aim of either revising Hegel's system or going beyond it.

Chapter 1: The Otherness of the Idea

The central problem with interpreting Hegel's philosophy of nature is situating it with respect to the scope of his logic. In Hegel's *Science of Logic*, the absolute idea is the philosophical method for exhibiting the true determinations of being. This method allows the conceptual determinations of an object to reveal their own inherent limitations and presuppositions, which enables the emergence of further concepts that account for and resolve the contradictions inherent in the previous ones. This process advances until it comprehends itself as a process, reaching the stage of the absolute idea. The absolute idea is the concept which grasps itself as concept, or that in which the object and the concept of the object, the known and the knowing, are identical. The process comes to an end with the presentation of the absolute idea, such that with every possible determination of being having been presented, the completion itself is exhibited with the unified structure of that very course of presentation.

Because the absolute idea claims to have validated the totality of logical determinations as the moments of the concept's unfolding, it would appear as though Hegel's system should end at precisely this point. In spite of this, Hegel suggests that the idea explicated thus far is "still logical; it is shut up in pure thought, the science only of the divine concept" (GW 12: 253/SL 752). This confinement of the idea to pure thought, or subjectivity, distinguishes it from the other modes of the idea: nature and spirit. Nature, he will argue, is the "idea in the form of otherness" (GW 20: 237/EN §247), and is the immediate successor of the logical idea. Nature emerges from logic by means of what Hegel variously describes as a "free discharge" [*frei entläßt*], an "absolute liberation" [*absolute Befreiung*], and a "decision" [*Entschluss*] (GW 12: 253/SL 752-3). Hegel concludes that the completion of the logic in reaching the absolute idea is precisely what enables it to determine itself further by means of an absolutely free decision, the

consequences of which come to express this freedom. Because the logic has completed itself, any further determinations resulting from this free decision will exhibit structures fundamentally different from those of the logic, ultimately constituting nature as the second sphere and science of Hegel's system.

In this chapter I present an interpretation of these passages to explain how the absolute idea can account for the ontological and epistemological position of Hegel's system as a whole, while still being limited to the logical form of this idea. First, I explain the difference between the logical and natural modes of the absolute idea: the former involves conceptual content determining a conceptual object, whereas the latter involves conceptual content determining a non-conceptual object. In other words, the object of a logical concept, on the one hand, is nothing other than the moments of its own determination, whereas the object of natural concept, on the other hand, is something other than and outside of that concept. This will ultimately mean that although the philosophy of nature deals exclusively with concepts (as established by the arguments of logic), internal to each natural concept is the determination that the object of that concept is not itself conceptual. I use two terms, "other than" and "outside of," because Hegel seems to emphasize nature's being the form of otherness specifically through an internal-external dialectic.¹ Articulating the precise nature of this dialectic in nature is the task of Chapter 2, but very briefly stated, externality not only describes the position of objects of nature with respect to

¹ Although much of my account of Hegel's philosophy of nature will bear similarities to Schelling's, articulating nature by means of an internal-external dialectic is unique to Hegel. In the Identity Philosophy of 1801 and 1804, Schelling instead uses the notion of a quantitative difference between subject and object, or ideal and real, while granting the qualitative identity. This means that in order to produce finitude when beginning from the absolute identity, or A=A, qualitative difference cannot be posited (or else the identity itself is invalidated); consequently *quantitative* difference accounts for the possibility of A=B. Nature, then, is this A=B, where reality is quantitatively greater than ideality, insofar as "One can say of reality therefore, though not of objectivity, that it is the predominant element in the whole series [of potencies and of individuals within potencies], since everything, even the subjective, strives toward it." See Schelling's (1801) *Presentation of My System of Philosophy* in *The Philosophical Rupture Between Fichte and Schelling*, trans. Michael G. Vater and David W. Wood (Albany: SUNY Press, 2012), 162, §50, Explanation 2.

their concepts and to spirit that is thinking nature; it also describes the relation of nature to itself as being spatially and temporally divided.²

Second, I provide a plausible interpretation for the transition from logic to nature. Because these passages are as difficult as they are brief, I show, first, that the distinction between logical and natural concepts is sufficient for the absolute idea of logic to determine itself further. In order to avoid circularity, I show that the completion of the logic in the absolute idea remains logical to the extent that the negativity and difference constituting the source of its movement remain internal to the concept or thought. Moreover, it is only once the absolute idea has been reached, that we are permitted to think of objects as external to the concept, provided that this "externality" is articulated conceptually. Finally, I clarify how Hegel's description of the transition from logic to nature as a "free decision" explains the uniqueness of this transition as its being the result of the logic's completion.

1.1. Absolute Idea and the Completion of the Logic

In explaining how Hegel's philosophy of nature functions as a "scientific" knowledge of nature, the most significant interpretative question regarding Hegel's logic is the account of its ending. I already mentioned above that the completion of the sphere of logic is at the same time

² Pure otherness or pure externality in opposition to the idea as a whole, rather than internal to the idea as a logical moment, will serve as the non-concept, through which the concept will present its determination. The externality of nature also serves nicely in contrast to the operations of consciousness or spirit that must first "internalize" the contents through intuition, sensation, and imagination. Jennifer Ann Bates emphasizes the role of imagination as constituting time and space through its inwardizing activity. See Bates, *Hegel's Theory of the Imagination* (Albany: SUNY Press, 2005). My position, in contrast will attempt to articulate the reality of time and space as determinations of a pure externality prior to the internalizing operation of consciousness, while also anticipating and recognizing that the philosophy of nature will have to be reconstructed by the philosophical activity of spirit. Initial evidence for this position can be found in the final section of the *Encyclopedia Logic* where Hegel defines nature as the "intuiting idea" [*die anschauende Idee*] (§244; GW 20: 231/EL 303). If imagination constitutes time for consciousness through its inwardizing activity, then nature is what is intuited *as* intuited, which is to say nature is what is external *as* external prior to any inwardizing.

the introduction of the sphere of nature, and that the sphere of logic completes itself as the absolute idea, which Hegel defines as the method that comprehends the entire series of logical concepts. In order to explain what the philosophy of nature is and how it is possible, it is first necessary therefore to explain how the completion of the logic is possible and why it must end with an account of method. In addition, it is necessary to explain how the completion of the logic can differentiate the sphere of logic from the subsequent sphere of nature.

I argue that answers to both of these questions can be given through understanding the significance of the absolute idea as the self-comprehending concept, or as the identity of the concept with reality. Understanding the absolute idea in terms of its relationship to conceptuality is important, first, because it can explain why the logic can reach a completion at all. Whereas some scholars have emphasized the significance and necessity of the logic reaching the completion by reframing the entire series of logical categories as the "method," I argue that it is equally important to emphasize that it is only as self-comprehending concept that the absolute idea can be articulated as method. In other words, the absolute idea in its form as method is only possible insofar as the method functions through the conceptual determinations of each category. Only the structure of concepts can allow for the kind of development Hegel observes in the method, in contrast to the structure of essence or of being.

Second, identifying the relation between method and conceptuality is consistent with his claims on method in the philosophy of nature. There, he claims that a philosophical consideration of nature is distinct from an empirical (theoretical) approach. Whereas empirical science constructs universal concepts for the individual things in nature by means of induction, a philosophical, speculative approach to nature generates concepts through an examination of the "conceptual determinations" [*Begriffsbestimmungen*] of each object in nature (what exactly this

means is addressed in the following). Thus, the articulation of method at the end of the logic provides not only a retrospective comprehension of the developmental process of the logic, but also an account of how the absolute idea exhibits itself in and as nature and spirit. Although nature and spirit will be distinct from logic in certain respects, Hegel describes them as all being "modes" [*Weisen*] of the idea's exhibition and so they all share this methodological form.

Third, articulating the way in which the absolute idea is the *self*-comprehending concept helps to explain how the completion of the logic, which simultaneously introduces the philosophy of nature, specifies the enclosed circle as *exclusively* logical, making the *Realphilosophie* possible at all. This consequence will be made clear by understanding how the definition of the absolute idea as the self-conceiving concept is arrived at through the immanent argumentation of the logic and comes to define the absolute idea specifically as the concept which is identical with its objectivity, and more generally as the identity of concept and reality (GW 12: 176/SL 673). This identity of concept and reality, however, can be exhibited through different modes, where these modes are logic, nature, and spirit. As logical, I argue that the identity of concept and reality, or as Hegel will also describe as the subject-object, will be articulated as limited to just the concept and conceptuality. Logic for Hegel, I argue, is about conceptuality. Nature, then, will be an articulation of the idea, the subject-object, as differentiated, or as in the form of otherness. Whereas in logic, the reality that is identical to the concept is understood only as a moment of conceptuality itself, in nature, reality will be understood as other than conceptuality. Spirit will then be the restoration of the initial identity after having been differentiated in nature. Logic is the *subject*-object, nature the subject-object, and spirit the subject-object.

Ultimately, the challenge of this section is to articulate how the logic can be a complete ontology in Hegel's system (a science of pure being), and at the same time a limited sphere distinct from the philosophy of nature. In other words, how can the logic both be the "universal mode [of the absolute idea] in which all particular modes are sublated and developed" and be just one mode distinct from the other two. If the logic is just a particular mode alongside the others, then its arguments may not have any bearing on nature or spirit, because each would just be a distinct "kind" of being. Alternatively, if the logic is the universal only, then the philosophies of nature and spirit would not appear to add anything new. Traditionally, this has meant asking the question of what can possibly be left to articulate once the logic has finished explaining all possible determinations of being. What can the philosophy of nature have to offer? My approach to this problem is to emphasize the account of the absolute idea in its immanently derived definition of being the identity of concept and object, and thereby the selfcomprehending concept. This account provides adequate resources for viewing the logic and the philosophy of nature in their respective places within Hegel's broader system and for addressing some of the issues internal to the logic regarding its completion.

1.1.1. Definitions of the Absolute Idea

I single out the *immanently* derived definition of the absolute idea as the one that provides the most significance for understanding the logic in its systematic position, but all three definitions must be shown to entail one another. These three definitions I will call (1) the definition of *immanence*, (2) the definition of *form*, and (3) the definition of *content*. The definition of *immanence* is so called because, like every other determination in Hegel's logic, the absolute idea is presented through a sublation of the previous categories. This means that every

category in the logic can be defined and understood specifically through being the determinate negation of the categories immediately preceding it. I have already provided *two* definitions in this category, namely (i) the identity of the concept with objectivity, and (ii) the identity of the concept with reality.³ Hegel distinguishes between these two definitions, since "the indeterminate expression 'reality' [*Realität*] means nothing but *determinate being*, and this the concept possesses in its particularity and singularity. *Objectivity* [*Objektivität*], moreover, is likewise the total *concept* that has withdrawn into *identity* with itself out of its determinateness" (GW 12: 176/SL 673). "Reality" is a determination belonging to the doctrine of being, and so is rightly observed to have been shown to be identical with the concept already in its moment of particularity and singularity. Reality is again shown to have acquired a significant relation to the concept in the form of judgment, which Hegel calls the "first *realization* [*Realisierung*] of the concept, for reality denotes in general the entry into *existence* as *determinate* being" (GW 12: 53/SL 550).

In contrast to this, "objectivity" is a determination of the doctrine of the concept, and is different from previous forms of immediacy, such as being, existence [*Dasein*], existence, actuality, and substantiality. Hegel defines objectivity as the "immediacy as which the concept has determined itself by the sublation of its abstraction and mediation" (GW 12: 130/SL 628). Although objectivity generally has the meaning of being both that which stands opposed to the self-subsistent concept and that which exists in and for itself, in the context of Hegel's logic, objectivity is presented as the sublation of the concept and so must be grasped through its own

³ Depending on the scope one takes regarding to this sublated result, Hegel also adds that the absolute idea can be understood as being (iii) the identity of practical and theoretical ideas of cognition, and (iv) the identity of life and cognition (GW 12: 236/SL 735). These definitions also belong to the category of immanence, since they refer to the idea as being the resolution and identity of previous stages of the logic. Viewing the absolute idea in these alternative ways allows Hegel to comment on the various characteristics it shares with each of its predecessors, while at the same time accounting for their shortcomings.

determinations without reference to the subjectivity of the concept.⁴ Such subjectivity is ultimately recovered through the development of objectivity in the moments of mechanism, chemism, and teleology, until at least the idea is presented as the immediate unity of the concept with objectivity.

Defining the absolute idea as the identity of the concept with objectivity and reality indicates a correspondence or adequate relation between the concept and what is opposed to that concept. Although as Hegel indicated, reality already was "identical" with the concept in its moments of particularity and singularity, and is again realized in the judgment, reality does not take on a fully independent form until it is presented as objectivity. As objectivity, that is as having emerged from the sublation of conceptual mediation, reality takes on a specific form different from the previous determinations of immediacy in the doctrines of being and essence. Through the examination of objectivity, it is shown that this objectivity is fully determined by the concept. However, we find once again that in the initial stages of the idea, this moment of reality or opposition has collapsed back into an immediate, though explicit identity with the concept. The moment of reality is discernible, first as the "body" in contrast to the "soul" of life, then as split between the "thing-in-itself" and the "object for cognition" in theoretical cognition, and finally split between the "merely apparent world" and the "good," or that which "ought-tobe" in practical cognition. In these initial stages of the idea, leading up to the absolute idea, this moment of reality is both distinguished from and identical to the concept, but only in an inadequate way. This is why in life, the terms of "body" and "soul" (as that of object and subject, respectively), are not fully identical. It is also why the objects in the idea of cognition are split

⁴ For a detailed analysis of Hegel's arguments in the Doctrine of the Concept, which trace the development from concept through judgment, syllogism and into objectivity, see Richard Dien Winfield, *From Concept to Objectivity* (Aldershot: Ashgate, 2006), Chapters 4-7.

between their in-itself and for-itself determinations. In this case, the concept determines its object to be identical with it, but does not initially "encounter" this object as identical with it; it must make it so. Only in the absolute idea is reality or objectivity both fully distinguished from the concept as opposed and independently posited, while at the same time being fully determined by the concept and is identical to that conceptual positing. For this reason, Hegel writes that "the idea as the unity of the subjective and the objective idea is the concept of the idea, for which the idea as such is the object [*Gegenstand*], for which it is the object [*Objekt*] – an object [*Objekt*] into which all determinations have gone together" (§236; GW 20: 228/EL 299). Here, it is evident that Hegel treats the moment of *Objektivität* of the absolute idea as equivalent to its *Gegenstand*, which I have argued is this moment of reality or that which "stands against" the concept.

Through the explanation of what it means to claim that the absolute idea is the identity of the concept with reality and with objectivity, we have arrived at another definition for it: the absolute idea is (v) the self-knowing [*sich selbst wissende*] (GW 12: 238/SL 737), or self-comprehending concept [*sich begreifende Begriff*] (GW 12: 253/SL 753).⁵ For the object to be identical with the concept, and for it to be so through the concept's own determination, is for the concept to encounter the object just as itself. Thus, the concept comprehends the object as being conceptually determined, and thus is comprehending itself. Hegel describes this structure by claiming that

The idea of the concept that is determined in and for itself is thereby posited, no longer just in the active subject but equally as an immediate actuality; and conversely, this actuality is posited as it is in cognition, as an objectivity that truly exists... Thus the subject now exists as *free, universal self-identity* for which the objectivity of the concept

⁵ I list this definition as the fifth of the definitions of immanence mainly because of its reference to the concept. Unlike the other definitions of immanence, this definition does not contain a reference to an identity between two formerly opposed moments (e.g. concept *and* reality, objectivity; theoretical *and* practical idea; cognition *and* life). Nevertheless, I hope to demonstrate the strong equivalence between this definition and (i) and (ii).

is a *given*, just as immediately *present* to the subject as the subject immediately knows itself to be the concept determined in and for itself. Accordingly, in this result *cognition* is restored and united with the practical idea; the previously discovered reality is at the same time determined as the realized absolute purpose, no longer an object of investigation, a merely objective world without the subjectivity of the concept, but as an objective world whose inner ground and actual subsistence is rather the concept. (GW 12: 235/SL 733-4).

To know and comprehend itself is for the concept to comprehend what opposes it, its objectivity, as already a determination of and identical to the concept itself.

It is important, however, to distinguish this "comprehension of the concept" from the initial presentation of the moments of the concept in the section on Subjectivity at the beginning of the Doctrine of the Concept. In that stage of the logic, conceptual determination is being presented and comprehended as a form of self-determination, consisting of the moments of universality, particularity, and singularity. What distinguishes this stage from the absolute idea is the explicit presence in the latter of the concept that is comprehending these moments of the concept, and generating the movement from one moment to the next. Hegel claims that although the "method here is only the movement of the *concept* itself ... we also have the *distinction* of the method from the concept as such, the particularization of the method" (GW 12: 238/SL 737). This passage has been used to justify the distinction of the absolute idea as method and it as the self-conceiving concept. However, Hegel goes on to clarify, as I indicated above, that this distinction is actually only between the absolute idea and the concept in its initial presentation: "As the concept was considered for itself, it appeared in its immediacy; the reflection, or the concept considering it, fell on the side of our knowledge" (GW 12: 238/SL 737). In other words, although "we" are investigating the concept, at this initial stage we do not yet see the concept investigate itself. It will later turn out that the "we" that observes this process and that moves

from one moment of the logic to the next is *the same thing* as the concept comprehending and knowing itself, i.e. the absolute idea, in the form of method.

I have now already introduced the second of the definitions of the absolute idea: the definition of *form*. Hegel understands the form of the absolute idea to be method. To understand what is meant by method, though, we must first look at the third of the definitions I listed above: the definition of *content*. Hegel claims that

The logical idea thus has itself, as the *infinite form*, for its content.... The absolute idea has only this for its content, namely that the form determination is its own completed totality, the pure content. Now the *determinateness* of the idea and the entire course traversed by this determinateness has constituted the subject matter [*Gegenstand*] of the science of logic, and out of this course the absolute idea has come forth *for itself*; thus to be for itself, however, has shown itself to amount to this, namely that the determinateness does not have the shape of a *content*, but that it is simply as *form*, and that accordingly the idea is the absolutely *universal idea*. (GW 12: 237/SL 736).

In this passage, Hegel claims, first, that the content of the absolute idea is itself as infinite form, and that this form determination is its own completed totality. Second, there is a distinction between the absolute idea as content and as form, such that as content, the absolute idea has not "come forth *for itself*." Finally, the consideration of the absolute idea as it is *for itself* is the absolute idea as form. As content, then, the absolute idea is still the totality of the logical form-determinations. Thus, the entire course of the logic is the presentation of the absolute idea, but such that it is not presented *as* the idea, that is as the idea *for itself*. The idea as *for itself*, or as form, is ultimately comprehending the idea as *method*.

Hegel provides several accounts of what it means for the absolute idea as form to be the method. In the Introduction to the *Science of Logic*, Hegel defines method as the "consciousness of the form of the inner self-movement of the content of logic" (GW 21: 37/SL 33). Later, he claims that it is "the absolute form that has proved itself to be the absolute foundation and the ultimate truth"; "the movement of the *concept* itself"; "the universal, internal and external mode,

free of restrictions, and as the absolutely infinite force to which no object that may present itself as something external, removed from reason and independent of it, could offer resistance, or be of a particular nature opposite to it, and could not be penetrated by it" (GW 12: 238/SL 737). Finally, he claims that method is "not only an aggregate of certain determinations, but the determinateness in-and-for-itself of the concept, and the concept is the middle term only because it equally has the significance of the objective; in the conclusion, therefore, the objective does not attain only an external determinateness by virtue of the method, but is posited rather in its identity with the subjective concept" (GW 12: 239/SL 738). If the content of the absolute idea is the totality of determinations that comprised the entire logic up until the absolute idea is presented for itself, then the method is the foundation of this process as its self-generated movement.

We have already seen this distinction above when distinguishing the presentation of the concept at the *beginning* of the Doctrine of the Concept from the presentation of the absolute idea at the *end*. We now learn that as self-comprehending concept, the initial presentation of the concept lacked the concept's own grasp of its own moments. Although in that presentation, *we* see how the concept's moments of universality, particularity, and singularity are all identical with one another, that knowledge is "outside" the immediate presentation of the determinations themselves. For this reason, each moment develops into the next, with singularity then developing into judgment as the immediate presentation of this initially *implicit*, or *external* identity of moments. The method, by contrast, "is this knowledge itself, for which the concept is not only as subject matter but is as its own subjective act, the *instrument* and the means of cognitive activity, distinct from this activity and yet the activity's own essentiality" (GW 12: 238/SL 737). As was mentioned above, although the knowledge and comprehension of each

stage of the logic "we" have throughout the process is not possessed by those stages, the comprehension is the force through which each moment develops into the next. "Our" knowledge was nothing other than the absolute idea's self-knowledge, insofar as each determination, through its own conceptual content, is led into its negation, and again into a determinate negation (i.e. a negation of a negation), concluding with a restored positing constituted through the determinate negation. The moments just described are in fact the three moments of the method: (1) beginning [*Anfang*], (2) progression [*Fortgang*], and (3) end [*Ende*]. These moments comprise the stages of the method, and are meant to describe the "universal character of [the] form" of the logic. In other words, every stage in the entire process of the logic should be comprehended in terms of this form.

1.1.2. Relations between the Definitions

At this point, we have shown three different ways in which the absolute idea can be understood. It is now necessary to articulate how each of these relate to one another. One relation which has already been mentioned briefly, is that between the *form* and *content* of the absolute idea, that is, between the *method* of the logic and the *totality* of its determinations. Despite both of these being the absolute idea, we have already seen Hegel distinguish between the sections of the logic, to which these refer. The totality of logical determinations, or the content, is everything up until the absolute idea presents itself for itself, which is then the method itself, or the form. Consequently, we can understand exactly how the method is the form of the content in different ways. One approach would be to say that every stage of the logic must exhibit the methodological form directly. This would mean not only that each stage of the logic has a beginning, progression, and end, but also would include everything implied by these terms,

which Hegel explains in the section on the absolute idea. The beginning is always an "immediate, but one that has the meaning and the form of abstract universality" (GW 12: 239/SL 738). The progression then generates a "second *universal* that has thereby arisen [as] thus the negative of the first, and in view of subsequent developments, the first negative.... It is therefore determined as the mediated - contains as such the determination of the first in it" (GW 12: 244-245/SL 744). Then, through grasping this first negative not just as a simple immediacy, but moreover as containing within it a negative relation to the first moment (thus, a second negative, or the negative of the negative), we at last reach the end, or result, which is "the *restoration* of the *first immediacy*, of simple universality; for the other of the other, the negative of the negative, is immediately the positive, the identical, the universal" (GW 12: 247/SL 746). The end is not *simply* identical to the beginning, however, but rather "the *third* is the immediate, but the immediate through sublation of mediation, the simple through the sublating of difference, the positive through the sublating of the negative" (GW 12: 248/SL 747). Hegel thus (reluctantly) counts four moments within the method: (1) first immediacy, (2) first or formal negative or mediated, (3) second negative or absolute negativity, (4) second immediacy or unity of immediacy and mediation.

The problem with a stronger and direct exhibition of the moments of the method in the stages of the logic is that it risks imposing an external schema on the whole process, and would sacrifice the immanent development particular to each of its stages. Hegel himself resists this interpretation of the method as introducing a kind of "formalism," which "by fastening a formal schema everywhere for the sake of external order, with no concept or immanent determination, has rendered that form tedious and has given it a bad name" (GW 12: 247-248/SL 747). In a sense, by trying to make *too* strong of a relation between this methodological form and its

content, we risk sacrificing what made the content particular, and might eliminate the distinction between form and content.

The alternative reading to the method, provided by Angelica Nuzzo, understands it as a specifically *retrospective* re-reading of the whole logic. Rather than try to comprehend every stage of the logic through this methodological scheme, this reading emphasizes a cut that is made between the immanent development of the logic and the presentation of method not only as the absolute idea's presentation for itself, but more importantly as the only way in which the logic can reach its end. Nuzzo argues that in order for the end of the logic to truly be absolute, and to comprehend the totality of the logic, "it must be demonstrated first that the idea is not coextensive with everything (everything there is and can be thought), and second that what constitutes the absolute idea is not restricted to the previous movement."⁶ In other words, in order for the absolute idea to be absolute, it must both include every logical form that has preceded it, while also excluding that same content. It must include those forms in order to actually be the totality and the absolute it claims to be. It must also exclude those forms, at least in the sense that what had preceded the absolute was not presented as the absolute. Therefore, the way in which the absolute idea can be the *end* of the logic *and* be the *absolute*, is by "[separating] or [disconnecting itself] from the preceding movement (from the movement from which it results) in order to recuperate it in a new comprehensive perspective."⁷

Nuzzo's reading provides a convincing account that the method must be removed from (and thus only *retrospectively* comprehensive of) the previous movement of the logic, in order that it can be both absolute and the end of the logic. However, one question regarding the

 ⁶ Angelica Nuzzo, "The End of Hegel's Logic: Absolute Idea as Absolute Method" in *Hegel's Theory of the Subject*, ed. David Gray Carlson (Basingstoke and New York: Palgrave Macmillan, 2005), 191.
 ⁷ Ibid., 192.

necessary "cut" made in order to make this distinction is precisely where it should be made. That is, where must the distinction be made between the preceding *immanent* movement of the logic and the retrospective comprehension and completion of it with the absolute idea. Nuzzo argues that this cut must be made *after* the absolute idea has been presented immanently: "On Hegel's account, the end of the logic is reached by the absolute method, not by the absolute idea that results from the forgoing movement."⁸ Specifically, Nuzzo argues that the immanently derived absolute idea is necessary, but not sufficient, for determining it as absolute idea from the absolute method, and consequently for ending the logic.⁹ The argument that distinguishes the absolute idea from the absolute method relies on the claim that the absolute idea emerged *immanently* and thus, and more importantly, *continuously* as part of the movement of the logic. Specifically, without establishing the idea as method, and consequently as that which reconstructs the entire logical movement, there is no reason for the absolute idea deduced *immanently* to be the end of the logic. It could just as easily be another moment within a process that could advance indefinitely.

Here, then, we have reached a question regarding the relation no longer between the definitions of *form* and *content*, but instead between *form* and *immanence*. Nuzzo's interpretation claims that understanding the absolute idea through its immanent determination, which I have claimed is the identity of concept with reality, or the self-comprehending concept, is not sufficient for understanding how it can complete the logic or be properly absolute. In fact, she claims that "the fact that the absolute idea is identical to the development of the logical science

⁸ Ibid., 191. David Gray Carlson makes a similar argument in *A Commentary to Hegel's "Science of Logic"* (Basingstoke and New York: Palgrave Macmillan, 2007): "Yet Absolute Idea is not the final step of the Logic. Absolute Idea must develop its moments of immediacy and mediation. When this is accomplished, we reach Absolute Knowing – the phrase that terminates the *Phenomenology* and that initiates the introductory materials as the very last step (and presupposition) of the entire SL" (594). Carlson's argument is a bit more schematic, claiming that the absolute must, like every other logical form, have a triadic presentation. Nuzzo's argument, on the other hand, is based much more on the role of the absolute idea, and in particular the absolute method, of ending the logic, where the former is necessary, but not sufficient for the task.

⁹ Nuzzo, "The End of Hegel's Logic," 190.

(is its one and only object) *contradicts* its absolute value – it does not constitute it."¹⁰ Incidentally, this shift from the definition of content (i.e. the totality of logical determinations), which I had been examining, to the definition of immanence (i.e. the identity of concept and object) in Nuzzo's argument exhibits either a reduction of the former to the latter, or else a sufficiently strong relation between the two. The argument proceeds on the assumption that understanding the absolute idea as it emerged immanently is the same as understanding it as the development of the logical science, and thus still part of the totality of the determinations, and not yet independent from it.

Against this account, however, I argue that the definition of immanence *is* sufficient for the absolute idea to be determined as absolute and for ending the logic. Two reasons must be given to make this claim. First, the cut needed to distinguish the process of non-absolute logical categories from the absolute is actually completed through the transition from the ideas of cognition (theoretical and practical) to the absolute idea, and thus requires no further separation between the absolute idea and the absolute method. Ultimately, deriving the absolute idea *immanently* cannot be reduced to establishing a simple continuity between it and the previous categories. Rather, the sublation that occurs at this stage exhibits both continuity and discontinuity, insofar as the absolute idea only reframes and comprehends what was implicitly, but nevertheless already present, in the idea of cognition. The movement of making explicit what is implicit is precisely what the method understood as the transition from the negativity internal to a concept to the comprehension of that negativity as a positive content, and thus as the basis for the movement of the whole logic.¹¹ Consequently, by understanding the absolute idea as

¹⁰ Ibid., 191.

¹¹ This is ultimately a claim about the nature of sublation, or determinate negation, and what kind of relation obtains between a logical category and its sublated result. While I think it is possible to interpret Hegel as either maintaining

already having distinguished itself from the rest of the logic with a discontinuous cut, the argument that the absolute idea is too bound up with the development of the logic, and thus not distinct from it, is not valid.

Yet, this argument is not enough for arguing that the definition of immanence is sufficient. By arguing that *every* sublation includes both continuity and discontinuity, we have ultimately restored a sort of meta-continuity between all of the categories established in the logic, namely that the genesis of the absolute idea is no different than that of any other category. Consequently, what would be needed for absoluteness and completion is a break from this higher-order continuity (or at least a different kind of transition between categories), which precisely comprehends the form of this development constitutive of the whole logic. This account finds support in Hegel's earlier account of method, that it is not simply the form of the whole movement, but rather the "consciousness" of that form. What is needed, then, is an argument *that* the definition of immanence positively accomplishes what is contained in the definition of form. In other words, it must be shown that the self-comprehending concept already contains the elements of the method. Above, I pointed out that Nuzzo identifies the absolute idea's initial immanent presentation with its being the development of the logical science. Against that position, I claim that while the method *should* be distinguished from the sum total of the categories as the development of the logic, nevertheless the absolute idea as the selfcomprehending concept should not be included among that development. Instead, the absolute idea is *already* set apart from that series in the way that Nuzzo claims the absolute method must set itself apart from it *and* the absolute idea.¹²

a continuity *or* a discontinuity (either of which yield interesting results), ultimately a more balanced and dialectical interpretation comprehending both is most appropriate.

¹² See H. S. Harris, *Hegel's Ladder, Vol 2: The Odyssey of Spirit* (Indianapolis: Hackett, 1997), 764: "As *recollective* this final phase of Experience is itself a 'shape of consciousness'; indeed it is the richest of all the

The strongest evidence for identifying the methodological form of the absolute idea with its being the self-comprehending concept is the emphasis throughout Hegel's work on tracing the conceptual determinations of an object in order to comprehend it in its truth. As mentioned above, Hegel claims that "what is to be considered as method here is only the movement of the *concept* itself. We already know the nature of this movement, but it now has, *first*, the added significance that the *concept is all*, and that its movement is the *universal absolute activity*, the self-determining and self-realizing movement" (GW 12: 238/SL 737). It was already shown that Hegel nevertheless distinguishes the method from the initial presentation of the concept in its moments of universality, particularity, and singularity. However, he argues in this passage that the method is the conceptual comprehension of conceptuality. In particular, what is introduced by conceptual determination that makes it the basis for the absolute idea, is its self-determining form. Only the concept can serve as the "unit" of Hegel's dialectical method, because only it stays the same through its determination. In the doctrine of being, all logical determinations are forms of immediacy, which entails that the transitions between categories prompted by their constitutive negativity are always presented as forms of becoming. That is, one determination is abandoned and a new one takes its place. In the doctrine of essence, where each determination is a kind of mediation, negativity operates in the form of "reflective determinations." Unlike in the doctrine of method, what is negated is preserved in the subsequent category, albeit in a "contradictory" way. Reflective determinations of the doctrine of essence have a common form of resulting from the negation of some given immediacy (this is why they are considered to be

shapes. ... But this cumulative 'shape' is different from all of the dancing shapes in the ring, precisely because it remembers them all, whereas the individuality depends upon their forgetting one another. We can think of this last shape as being 'in the ring' only if we think of it as being 'in the centre'; and that means that as a dancing shape it is not 'in the ring' at all. Its motion can only be a simple spinning revolution on the spot. *This is the best way of understanding the paradox that Absolute Knowing both is, and is not, a 'shape of consciousness*''' (emphasis added). Harris's claim regarding the position of Absolute Knowing within the presentation of spirit's development in the *Phenomenology of Spirit* is applicable to the account I am giving of the Absolute Idea in the logic.

forms of mediation). What is negated, then, both is and is not preserved, or is preserved precisely as not preserved. A reflective determination is what it is through *already having* negated its presupposition, and every attempt to recuperate that presupposition consequently must presuppose some other content as its negated immediacy. Consequently, essential, reflective determinations, do not develop, because each determination is preserved in its result in a negated, and therefore altered form.

Only the concept, then, preserves itself as it simultaneously differentiates itself, and thus can function as the basis for development. Hegel describes the doctrine of the concept as the domain of freedom, in contrast to the external relations of necessity in the determinations of being and essence. Freedom, in this context, is self-determination, or the way in which what determines is identical to what is determined (the determining with the determination) in conceptual determination. In Hegel's terminology, it is the claim that "the concept is now this absolute unity of *being* and *reflection* whereby *being-in-and-for-itself* only is by being equally reflection or positedness, and positedness only is by being equally in-and-for-itself' (GW 12: 12/SL 509). The concept differs both from the immediacy of being and from the mediation of essence, and establishes rather the identity of mediation and immediacy, being and essence. Whatever *is* is posited by the concept, and whatever is posited by the concept *is*. However, as was claimed above, the concept initially appears only in its immediate state, and its moments, although explicitly identical to one another, must develop themselves in order to present this identity. Thus, the movement from universality to particularity, singularity, and finally to judgment (and so on), is the development of the concept through its own form of selfdetermination. Development, then, is unique to the concept due its being freely self-determining. Consequently, I claim that the concept is the model Hegel needs to render the entire dialectical

development of the logic consistent. The concept is ultimately the fundamental logical structure that can endure the dialectical torsion inflicted by negativity.

There are two counterarguments to the interpretation I am providing here regarding the significance of the concept as the developmental and dialectical unit for the absolute method. First, it could be argued that the method should not be explained through reference to the concept alone, since "concept" is just one of the many determinations encountered in the total logical development. Even if we could establish a similarity between the method and conceptual development, we would also have to acknowledge the significant difference between them. A simple way of framing this difference is that the method has its own set of moments: beginning, progression, and end. These are explicitly distinct not only from the determinations of the concept but also from those of every other determination in the logic. These moments are unique to the method as being alone capable of retrospectively re-articulating the total development of the logic as a development. Second, it could be argued that it is only from the perspective of the absolute method that we can identify the concept as having a sufficiently adequate developmental form. This perspective was not contained by the concept in its initial presentation, where the concept's very first form of relating to itself was only the immediate relation contained in the copula of a judgment. In the judgment, we have the first instance of the identity of a concept with itself in its difference being expressed, even if the nature of this identity in the copula has an inadequate form. It would seem, then, the insight regarding the significance of the concept for the method is gained not necessarily from the concept itself but from already having reached the standpoint of method, and looking back on the concept. If the argument was meant to show that the concept's self-comprehension was sufficient for being the method, then this

counterargument claims that the only standpoint to make that claim *is* from that of the method itself.

Neither of these counterarguments, however, need to sufficiently challenge the claim being made. First, although it is true that the method has its own set of determinations, distinct from every other logical determination, I think it can be claimed that the concept's structure is still important for providing the absolute method with its developmental form. Specifically, we claimed that the absolute idea was the concept's self-comprehension of itself, or its being identical with reality. This means that the concept, which had begun as the merely immediate form of self-determination and development, came to determine and develop for itself a content or a reality that is adequate to itself. We pointed out that this development started with the judgment, where the form of the concept's self-relation (the copula of the judgment relating two concepts such as "Socrates is mortal") was inadequate. Despite positing an identity of the concept in its difference, the immediacy of the copula did not contain the form that expressed this very identity. This form ultimately becomes conceptual in the syllogism, specifically as the middle term between two termini. Yet ultimately with the syllogism as well, the external content that anchored the formal, conceptual mediation of syllogism, comes to no longer be separate from that mediation, which gives rise to the determinations of objectivity as the immediate reality resulting from the submersion and sublation of the concept. Ultimately, only with the absolute idea does the concept relate *conceptually* to itself, and thus grasp the developmental movement of the concept by means of that same movement. For the concept as the form of selfdetermination to have developed for itself a content which is itself self-determining, is precisely what is described by the method. Namely, this self-determining content is the unfolding of

determinations from one another. Consequently the self-comprehending conceptuality and methodological form explain the same movement.

Regarding the second counterargument, then, the above should suffice as well. The precise form of determination proper to the concept, when developed to the point of the absolute idea, is what allows for the retrospective re-articulation of the total logical development. This is perhaps best explained by Hegel's emphasis of the role of negativity within the method. I already described the moments of method above as advancing through stages of the positive, first negative, second negative, and second, restored positive. The significant moment within this schematic presentation of Hegel's dialectic moment is the second negative, which Hegel considers to be the negative of the negative, or absolute negativity. Regarding this moment, Hagel claims that

Hegel claims that

now the negativity just considered constitutes the *turning point* of the movement of the concept. It is the *simple point of the negative* self-*reference*, the innermost source of all activity, of living and spiritual self-movement; it is the dialectical soul which everything true possesses and through which alone it is true; for on this subjectivity alone rests the sublation of the opposition between concept and reality, and the unity of which is truth. (GW 12: 246/SL 745)

Grasping this absolute negativity, or the self-relating negativity, as in truth a resulting positive, or as a restored immediacy, is the shift from the moment of progress to the moment of end and result in the method. Consequently, it is this aspect that enables Hegel's dialectic to have the structure of development, as opposed to a negative or skeptical dialectic, which reduces claims to contradiction or nullity (GW 12: 243/SL 742). The fact that the result is the positive, or immediacy, but as the sublation of negativity or mediation, and thus is a unity of immediacy and mediation, or of positivity and negativity, is the dialectical truth at the core of Hegel's system.

This dialectical form is made possible only by the concept in Hegel's logic. In particular, the determination through the movement of negativity described in the method can be seen in its

nascent state in the self-differentiation and self-determination of the concept that characterizes the moments of universality, particularity, and singularity, which were briefly discussed above. This association is corroborated by the claim that the beginning has the "form of abstract universality" (GW 12: 239/SL 738) the progression is the "particularization" (GW 12: 250/SL 750), and the result is the "singular" (GW 12: 248/SL 747). It must be noted that the moments of the method are not *reducible* to those of the concept, insofar as the absolute idea as method is the form of a single structure that develops, whereas the moments of the concept, although they are moments of self-determination, lack the determinateness of the progress essential to development. Nevertheless, the intrinsic role that difference and negativity play for the determination of the content is shared by both.

Explaining how the methodological form draws from the absolute idea's immanent definition as the self-comprehending concept, or the identity of concept and reality, was the first task regarding the relation of the logic and the philosophy of nature. Specifically, it was shown how the absolute idea can reach its completion through presenting itself as the absolute method, which reconstructs the entire totality of logical determinations as a development. Without such a retrospective reconstruction, the series could have been construed as a merely negative dialectic that ends in a skepticism regarding the contents, namely that all determinations are contradictory and thus have no validity. Instead, through the reconstruction by the absolute method, which nevertheless must be separate from the reconstructed determinations, the logic can be completed, with the final determination being truly absolute as the foundation for the whole logic. Moreover, I argued that this methodological form should be understood not as separate from the absolute idea's immanently derived definition of being the identity of concept and reality, or as self-comprehending concept, but rather should be understood precisely *through* this definition. What

remains to be shown is, first, what is gained by identifying these two accounts of the absolute idea. That is, what does it mean to say that absolute method, whereby the totality of determinations of an idea are coordinated into an ordered development, is the same thing as grasping the content of these determinations through their *conceptual determinations*. Second, how does this explain how the logic can transition to the philosophy of nature in Hegel's system. Answering these questions is the task for the remainder of this chapter.

1.2. Modes of the Idea: Logic and Nature

Having shown that the logic completes itself with the absolute idea, or the concept which conceptually grasps itself, the question remains, what is left for Hegel's philosophy? In order to advance beyond the logic and into the philosophy of nature, I argue that the emergence of nature as a sphere distinct from logic in Hegel's system results from the particularity and limitation of the objects of logical concepts, and thus of the form of the absolute idea in its "logical mode." Although the absolute idea was determined precisely in its retrospective reconstruction of logical determinations, Hegel will argue that the absolute idea will continue its development through nature and spirit, which he claims to be particular modes of the idea. Ultimately, this must be argued by showing that the logic is only a specific expression of some greater systematic totality, which means that the totality must also be expressed in other ways to truly be "total" and absolute. In the following, I first provide a brief account of the different modes of the absolute idea, focusing on the logic and nature (a more in-depth account of nature is provided in Chapter 2). My claim will draw on the account of the absolute idea as the identity of the concept with reality, and in particular how in the logic, this identity is *simple [einfach*]. This will contrast with nature's being the idea in the form of otherness. I take this formal or modal difference of the

ideas as logic and nature, to mean that in logic, the objects of concepts are themselves *conceptual*, whereas in the philosophy of nature, the objects of concepts are *non-conceptual*. This is the same distinction as mentioned above as the *subject*-object [logic] and subject-*object* [nature], which was made possible by understanding the absolute idea as an identity of concept and reality. By showing that logic and nature are different forms of the same systematic totality, we can then offer an account of how the logic transitions into nature.

Before we advance this argument, let us first examine the passages where Hegel describes in what way logic is limited. Hegel claims that nature and spirit are different "modes of exhibiting [the absolute idea's] existence," (GW 12: 236/SL 735), in contrast to which logic is the "universal mode in which all particular modes are sublated and enveloped" (GW 12: 237/SL 736). The logical idea is "the idea in its pure essence, the idea which is enclosed in simple identity within its concept and in reflective semblance [*Schein*] has as yet to step into a form-determinateness"; it is moreover "only in this self-determination of apprehending itself; it is in pure thought, where difference is not yet otherness [*Anderssein*], but is and remains perfectly transparent to itself" (GW 12: 237/SL 736). Later, he claims that the logical idea is one that is

shut up in pure thought, the science only of the divine concept. Its systematic exposition is of course its realization, but one confined within the same sphere. Because the pure idea of cognition is to this extent shut up within subjectivity, it is the impulse to sublate it, and pure truth becomes as final result also the beginning of another sphere and science. (GW 12: 253/SL 752)

The claim that is repeated throughout is that logic, even in its absolute form, remains confined to the thought, the concept, or subjectivity. This confinement is characterized both as a "simple identity," which we may contrast to the "otherness" of the idea as nature, but also as a universality, which "envelops" and has "sublated" the other modes of the idea. This envelopment and sublatedness of the other modes within logic is important for explaining how the logic is

both a specific form of articulating determination, as opposed to nature and spirit, while nevertheless being general so as to contain those other modes implicitly. This would explain the manner in which difference in logic is not yet otherness [*Anderssein*], since logic does not exclude difference, but rather it has not been able to articulate a difference which has not been confined to thought. All difference, as far as the logic has been concerned, has been difference within thought, and not yet a determination of difference from thought, or otherness as such. Explaining how this externalization of difference from thought is what this chapter accomplishes.

In order to explain this confinement of logic and the transition to nature it ought to enable, I examine more closely the general structures of the objects of both logic and philosophy of nature. As was shown above, the totality of the logic, all of its determinations, are ultimately moments of the development of the concept which is in the process of conceiving itself. Therefore, conceptuality is the object of logic.¹³ This is perhaps difficult to claim since the "concept" itself is only one of the determinations of the logic, and one developed rather late in the process. Moreover, claiming that concepts are the object of logic would appear to be flatly contradicted by the beginning of the logic, which starts with "being, pure being, without any further determination" (GW 21: 68/SL 59).¹⁴ To deal with these criticisms, it is important to

¹³ I use the term "conceptuality" as a broader notion to indicate how even pure being is ultimately a determination of conceptuality. This is not to say that what it means to *be* is the same as what it means to be *conceptual*. The difficulty here is how to understand the claim that concept and reality are identical, such that determinations of being are at the same time determinations of thought, without thereby eliminating the dialectical nature of this identity that distinguishes the *senses* of being and thought. I address this difficulty again at the end of this chapter when distinguishing nature as the "non-conceptual" from the logical determination of objectivity, as the best candidate of the logic's anticipation of nature.

¹⁴ A strong reading of the logic as being about being is provided by Stephen Houlgate in *The Opening of Hegel's* Logic (West Lafayette: Purdue University Press, 2006). My position should not contradict the emphasis on the presuppositionless beginning of the logic, which leaves being as its only possible content. Nevertheless, by looking at the end of logic and the way in which the absolute idea comprehends the entirety of the logic, we say that the presentation of being in its truth is possible insofar as being is grasped by thought. This doesn't change anything about what it means to be, i.e. being still is pure immediacy, lacking in all determination, and thus is the same as

distinguish between the initial immanent presentation of the logical determinations (one could say, the *first* reading of the *Logic*) and the reconstruction of that same presentation from the perspective of the absolute idea (the *second* reading). While we must be careful to separate these levels involved in the logic, and in the analysis I provide here, it must be the case that *both* are operative, and that the reconstruction of the logic is consistent with its initial immanent presentation.¹⁵ For our purpose, we are emphasizing the reconstructed presentation of the logic in order better understand it's systematic position with respect to the philosophy of nature.

Logic, as well as philosophy of nature, is considered a philosophical science, to the extent that it deals with its object as conceptually determined. Therefore, let us claim that the beginning of the logic begins with (the concept of) pure being. I put "the concept of" in parentheses because what is most important about this beginning is its engagement with what pure being is, and not yet the manner in which it is comprehended. This beginning then discovers that pure being is the same as nothing, insofar as both are without determination, and shows us this identity of being and nothing in (the concept of) becoming. This process continues through various other determinations considered properly "ontological" such as finitude and infinity, one and many, until the next major transition is made from the doctrine of being to the doctrine of essence, or from immediate determinations to mediate determinations. This transition is the result of the realization that the determinations of immediacy, which are commonly associated with ontology, all rely on a negativity which is both other than and constitutive of that determination. Therefore, the determinations of immediacy give way to determinations of

nonbeing. The methodological reconstruction of being however makes sense of how this pure immediacy was intelligible as "pure immediacy."

¹⁵ Angelica Nuzzo provides such a close analysis and interpretation of the Doctrine of Being as containing immanent and methodological strands. The immanent strand is the sort of blind movement of the determinations, whereas the methodological strand observes the position of that determination with respect to its development. See Nuzzo, "Thinking Being: Method in Hegel's Logic of Being," in *A Companion to Hegel*, ed. Stephen Houlgate and Michael Baur (Oxford: Wiley-Blackwell, 2011).

mediation, such as essence, identity and difference, ground, condition, and so on. These mediate determinations involve an internal relatedness to the other, such that essence is what it is through a relation to the inessential, identity to difference, ground to grounded, etc. This process develops more complex determinations until finally the concept is the result. Just as the doctrine of being dealt with (concepts of) being, becoming, quantity, and measure, the doctrine of essence dealt with (concepts of) identity, difference, ground, and condition. Essence, however, by introducing a constitutive negativity, or relation to otherness, in its determinations can also be understood as revealing the act of thought as operating on the immediacy which is being thought. This is ultimately what enables the transition out of essence and into the concept, when it is revealed in reciprocity that "being-in-and-for-itself only is be being equally reflection or positedness, and positedness only is by being equally in-and-for-itself" (GW 12:12/SL 509).

The shift to the doctrine of the concept no longer considers mediation as a relation to an other, but rather considers determinations as being the result of mediation relating to itself. At this point in the logic, the object under consideration is (the concept of) the concept. Thus, there still remains a distinction between the scientific activity of comprehending the object under consideration, and the object itself under consideration, even though that object is now the concept itself. This distinction ultimately vanishes in the absolute idea. At that point of the logic, the idea is (the concept of) the concept of the concept. Let us break down these three levels. The absolute idea itself is considered the self-conceiving concept. In other words, it is the act of thought thinking itself. For thought to think itself ultimately means that the object of thought is comprehended with respect to its conceptual content, such that negativity is fundamental to determining the object and drives the object to develop itself into new forms. The presentation of this development, we established above, was proper to the absolute idea as also being the

absolute method. The identification of the absolute idea with both this account of method and the totality of the logic retroactively explains how it was that the beginning of the logic occurred. Logic is throughout a science which deals with conceptuality, but is legitimate in doing so because the absolute idea demonstrated that the concept is identical to its object. Finally, because the absolute idea is precisely this retroactive grounding of the whole developmental process of the logic, the highest order concept (i.e. the scientific activity of conceiving the object) is no longer *behind the scenes of* or *implicit in* the development of the logic, since it is now seen as belonging to the absolute idea. Because the absolute idea makes explicit the conceptual role of examining the categories scientifically, and because this role in the absolute idea is moreover explicitly associated with the development of every logical category, the highest order concept is no longer differentiated with what is finally contained explicitly in the absolute idea itself.

This recapitulation of the logic shows that it is a philosophical science which engages with its objects in accordance with their conceptual determinations. This can be seen as the result which will apply to Hegel's entire system, insofar as the philosophies of nature and spirit are also philosophical sciences. However, it was also shown that in logic the objects of those concepts were simply concepts themselves, having not yet determined an object distinct from the concepts. Even the categories of the objective logic, which may be considered more properly ontological and therefore are determinations of being rather than of the concept, are so determined by virtue of the identity in the logic of thought and being. The absolute idea establishes exactly this identity, according to which "the previously discovered reality is at the same time determined as the realized absolute purpose, no longer an object of investigation, a merely objective world without the subjectivity of the concept, but as an objective world whose inner ground and actual subsistence is rather the concept" (GW 12: 235/SL 734). Because being

and thought are identical, the analysis of pure being is at the same time an analysis of the concept of being. It is only because being is so immediate that its identity to thought is not established as belonging to its own concept. This interpretation of the logic therefore does not invalidate the initial immanent presentation of the objective logic as a doctrine of being and essence, but rather retroactively provides it with the ground for its validity, which it was unable to provide for itself prior to reaching the absolute idea. By rearticulating the argumentation of the logic as the developmental unfolding of the self-conceiving concept, and by recognizing that all determinations are the result of thought thinking itself, the logic is self-grounding. As a result, we can finally claim that logic, as a philosophical science, deals with the conceptual determination, being, and finishes with its own scientific activity of conceptual analysis of conceptuality. All of the logic, therefore, is restricted to the analysis of the concepts of conceptuality, without extending its scope outside of conceptuality.

The philosophy of nature is likewise a philosophical science and has for its object of examination the concepts of nature. This characterization of the philosophy of nature is intended to distinguish it from empirical science.¹⁶ Hegel asserts that empirical science, which he also calls physics, is the "theoretical" consideration of nature (§246; GW 20: 236/EN I: 196). This is also to distinguish it from the "practical" consideration examined in §245, and indicates that physics represents the theoretical form of the idea of cognition with respect to nature, and will ultimately emerge as one-sided. Physics, on the one hand, is aimed at "the cognition of the universal of nature, so as to be at the same time determined in itself" (§246; GW 20: 236/EN I:

¹⁶ The relationship between empirical science and philosophy of nature in Hegel's system is a topic that warrants far more consideration than I am able to provide here. Here I only establish the specificity of philosophy of nature as a science that examines objects regarding their conceptual determinations.

196-7). These universals include the "forces, laws, and genera," or any other law-like structure of nature. The philosophy of nature, on the other hand, is the "comprehending [begreifende] consideration" of nature, and as such deals with the same universals as are dealt with in physics. What distinguishes the two approaches, then, is that philosophy of nature deals with these universals "in their own, immanent necessity according to the self-determination of the concept" (§246GW 20: 236/EN I: 197). Although the philosophy of nature will ultimately also attempt to identify empirical appearances that correspond to these conceptual determinations, its own immanent method of conceiving nature through the necessity of its conceptual determination in no way relies on experience [Erfahrung] or intuition [Anschauung] (§246A; GW 20: 236/EN I: 197). By contrast, the universals of physics are inferred from the experience of singulars in nature, whether observed naturally or in a controlled experimental setting. Hegel characterizes the approach of physics as the theoretical form of cognition, which gave conceptual form (universality) to what was not conceptual (the singularities encountered in perception).¹⁷ These universals could therefore not be established with absolute necessity, since their ground remained external to conceptual determination and remained contingent. Philosophy of nature does not generate these universals from the singularities of experience (which can only produce relative universals, or particulars), but instead lets these universals emerge immanently and necessarily through the concepts of nature themselves.¹⁸ Hegel's claim is ultimately that empirical science is no less "theoretical" than philosophy of nature in that both conceive of what is universal in nature; but only philosophy of nature is aware of its theoretical activity so as to

¹⁷ Given that this account of science takes the form of the idea of theoretical cognition, it is unsurprising that this should sound a lot like Kant. It should be clear, therefore, that whatever Hegel's account of the human faculties for understanding may be, as advanced in the *Phenomenology of Spirit* or the *Philosophy of Spirit*, he ultimately finds this model of knowledge as inadequate. The conclusion of the *Science of Logic* provides this argument on purely logical grounds.

¹⁸ Wolfgang Neuser, *Natur und Begriff: Studien zur Theorienkonstitution und Begriffsgeschichte von Newton bis Hegel* (Stuttgart: Metzler, 1995), 176-179.

conceive its objects adequately. By being aware of its theoretical role, namely that the knowledge or cognition of nature is conceptual in kind, Hegel thinks that the knowledge philosophy is more adequate than that of physics, because the former establishes the relationships in nature precisely *insofar* as they are conceptual, rather than attempt to infer certain relations based on experience and observation.

That Hegel's philosophy of nature deals with the universals of nature conceptually rather than empirically does not therefore mean that it eschews nature itself in favor of theoretical accounts about nature, such that it would merely be a descriptive philosophy of science. By this I mean, that although the philosophy of nature takes the universal concepts of nature as its subject matter, these concepts are not to be considered simply as forms of knowledge contained in the empirical sciences, which are subject to change; rather, these universal concepts will be the very lawful structures in nature itself. The conclusion of the logic had shown that objectivity is determined by, and ultimately identical to, the conceptual determinations. Consequently, it is only by examining the explicit conceptual determinations of an object that it is possible to comprehend it in its truth. Hegel's argument in the logic was meant to show that the empirical approach of knowing nature by constructing universals on the basis of singularities fails in its aim. This failure is explained both on the basis of its inductive syllogistic reasoning and on the basis of the idea of cognition it presupposes. Although both of these appear in the Science of *Logic* as determinations of thought, the arguments there showed that neither are adequate for the comprehension and presentation of being in its truth. Such knowledge fails to find a necessary ground, since the universals are always subject to change on the basis of the singularities encountered in experience. Instead, the philosophy of nature constructs the universals in nature (e.g. forces, laws, genera) that emerge in accordance with conceptual necessity. These universals

belong to nature no differently than those obtained by empirical-inductive means, namely they are the laws, in accordance with which nature is organized and structured. Even though the philosophy considers nature through its conceptual determinations, it is precisely because it does so that the philosophy of nature considers nature as it truly is in itself, and is for this reason an ontological account of nature.

In order that the philosophy of nature can be an ontology of nature, however, Hegel adds an additional criterion that we find empirical appearances that "correspond" [entspricht] to the conceptual structures articulated. It is important to note that correspondence of the empirical instance to the conceptual determination is not the same as the philosophical comprehension of the conceptual determination of nature, which already posits an object external to the concept. Hegel indicates that such a process of associating the philosophically derived concepts with empirical instances must occur in every instance a new concept is encountered (§246A; GW 20: 236/EN I: 197).¹⁹ However, it is also important to show how the concepts in the philosophy of nature are in general uniquely structured to describing nature itself, in contrast to logical concepts. I claimed that logic was the science of conceptuality as such: the determinations of the objective logic, prior to the emergence of the concept itself, are simply the determination of immediacy and mediation that thought grasps in its object, whereas the subjective logic articulated the structures of this activity of conceptual determination itself. The philosophy of nature, then, will be the science of objects other than and outside of conceptual determination. Most importantly, however, is that by being a philosophical science, the philosophy of nature will examine the conceptual determination of this very externality to conceptual determination.²⁰

¹⁹ The central task of Chapters 3 and 4 is to show how the systematic account of nature in its externality will correspond to the objects of mechanics, physics, and organics

²⁰ This is similar to William Maker's position, which claims that while Hegel is a methodological idealist, insofar as "strictly self-determining thought [is] the only mode of philosophically justifiable cognition," he is not therefore a

The claim is ultimately that concepts determine not only themselves (as was shown in the logic), but also what is different from themselves (nature). Whereas the logic established itself as the concept that comprehends itself as its other, the philosophy of nature examines how this other to its concept is conceptually determined in its own right. This is, I take it, what is meant by the claim that nature is the "idea in the form of otherness" (§247; GW 20: 237/EN I: 205).

It is ultimately important to distinguish the meta-theoretical description of the philosophy of nature from the actual objects of its inquiry. This is because although I am emphasizing the role of nature as an idea, and that articulates an identity of concept and reality, the specific structure of the idea in the form of otherness, is going to divide the reality from the concept through the externalization of reality. This will mean that Hegel's philosophy of nature is both a realism and an idealism. It is an idealism insofar as the external relation of concept to reality is being conceptually determined, articulated, and comprehended; but precisely through this ideal determination, we find that nature is precisely something that is non-ideal, which forms the basis of its realism. Thus, on the meta-theoretical level, primarily established by the Science of Logic, philosophy of nature engages with the determinations of concepts. The logic demonstrated that objects are identical to their conceptual determinations, and any theoretical attempt to present an object otherwise (e.g. empirical science) fails. Consequently, insofar as the logic establishes the identity of conceptual determinations and objectivity, the philosophy of nature engages with the conceptual determinations of what is precisely other than, or outside of, conceptuality itself. Hegel uses the concept of "externality" [Äußerlichkeit] to describe two aspects that follow from

metaphysical idealist, which would claim that "reality is thought or thought-like, or is a derivative or product of thought." Instead, Maker claims that Hegel's concept of nature is incompatible with metaphysical idealism, insofar as nature is conceptualized as being other than thought. See in William Maker, "The Very Idea of the Idea of Nature, or Why Hegel Is Not an Idealist" in *Hegel and the Philosophy of Nature*, ed. Stephen Houlgate (Albany: SUNY Press, 1998), 1-28, especially 4.

this notion. First, nature is something other than mere conceptuality, distinguishing it from the logic which is precisely a science of conceptuality. Second, nature is external to itself in its own presentation, such that nature itself does not explicitly exhibit its conceptual determinations in its appearance, but is instead determined externally, or as having the determination of "being-beside-one-another" [*Außereinander*]. This latter concept gets particularly thematized in the Hegel's mechanics, insofar as being-beside-one-another describes nature's spatiotemporal determination. Moreover, Hegel suggests that this latter determination, which characterizes nature's relation to itself, is a consequence of the former determination, nature's relation to its conceptuality (§247; GW 20: 237/EN I: 205). It is precisely because nature is non-conceptual, i.e. determined as external to the concept, that it is also external in itself.

1.2.1. The Non-Conceptual: Nature or Objectivity

Before we move on to explain how the absolute idea comes to determine itself as nature, let us first address. one more argument against the claim that this transition, and thus a philosophy of nature, is at all possible. Specifically, this argument could challenge that my account of nature as the domain of objects which are non-conceptual, whereby they are considered external to the concepts, was already explained by Hegel in the "Objectivity" section of the logic. I indicated above that objectivity emerges in the Doctrine of the Concept as the sublation of subjective, or conceptual mediation. As this sublation, objectivity exhibits the differentiated moments of the concepts externally. This is present initially as mechanism, where the relations are possible only as the external communications between self-sufficient objects. That objectivity exhibits itself as bearing relations of externality, as opposed to the concept, and is characterized by the moments of "mechanism," "chemism," and "teleology," all suggest that objectivity already contains the determinations I am arguing belong to nature.²¹

One response to this argument, especially when wishing to explain the difference between seemingly corresponding logical and natural determinations such as chemism and chemical process, is to examine the description of each on the basis of their position in the immanent development of Hegel's system as a whole.²² Whereas objectivity in the logic is nothing more than the sublation of conceptual mediation, categories of the philosophy of nature all emerge from the initial determinations of space and time. Having to work through space and time provides the philosophy of nature a much different sequence and basis for content for the conceptual unfolding of determinations. "Mechanics" constitutes the domain of matter and motion, which emerge on the basis of the determinacy of space and time at the beginning of the philosophy of nature. Chemical process, however, emerges at the end of the "Physics," only after working through the concepts of light, heat, magnetism, and electricity, to name just a few. Finally, scholars like to point out that whereas in the logic, (external) teleology is a determination between chemism and life (or internal teleology), in the philosophy of nature chemical process advances almost directly to forms of life in the organics section, and (external) teleology does not have a corresponding determination in the *Realphilosophie* until perhaps in the philosophy of spirit. The differences between the logic and the philosophy of nature are

²¹ This argument is raised to a certain extent by John Burbidge. By comparing the logical determination of "chemism" with the natural determination of "chemical process," Burbidge claims that every a priori determination of thought is contained in the logic, and the philosophy of nature cannot advance on the basis of thought alone. Instead, the philosophy of nature works dialectically and methodologically through the contingent appearances of nature. I deal with Burbidge's argument more directly later in this chapter. See Burbidge, *Real Process: How Logic and Chemistry Combine in Hegel's Philosophy of Nature* (Toronto: University of Toronto Press, 1996); Burbidge, "Chemism and Chemistry," *Owl of Minerva* 34, no. 1 (Fall/Winter 2002-03): 3-17.

²² This approach is taken by Winfield in *From Concept to Objectivity*, Ch. 8.

explained on the basis of a distinction in the content, through which the methodological unfolding of determinations passes.

However, this argument doesn't really explain the basis for this distinction in the first place.²³ Instead we need to find some sort of positive content that distinguishes natural determinations from logical ones. Although one distinguishing element is the presence of space and time in nature, and their absence in logic, space and time will in fact be grounded in the more fundamental distinction of nature's non-conceptuality in the form of externality (this will be shown in more detail in Chapter 3). Instead, we should return to the claim that nature is not *merely* the non-conceptual, or as others will define it as the real or non-ideal, but is rather defined as the "idea in the form of otherness." The significance of this claim is that in nature the activity of the concept is explicit (i.e. conceptual determination is operative in nature, even when it determines a domain of simultaneously non-conceptual determinacy), whereas in logical objectivity its activity was implicit. In logical objectivity, on the one hand, conceptual determination was sublated, which meant that all determination was external. Consequently, the exclusively external determination of objectivity could not sustain itself, and gradually revealed an internal determination through the concept. Once this conceptual determination of objectivity presents itself in the logic (externally in teleology, and then internally as the idea of life), we have abandoned the externality of objectivity that was initially under consideration. Thus, the external determination of objectivity, which constituted its self-sufficiency resulting from its having sublated conceptual mediation, is at the same time the source of its inherent inadequacy, which gradually gives way to conceptual determination.

²³ Although this inadequate argument by description is implied in Winfield's *From Concept to Objectivity*, he elsewhere provides a more substantive argument for the difference between logic and nature. See Winfield, "Space, Time and Matter: Conceiving Nature Without Foundations," in *Hegel and the Philosophy of Nature*, ed. Stephen Houlgate (Albany: SUNY Press, 1998), 51-69.

In nature, on the other hand, the determination of externality of objects is *explicitly* grounded through its concept. Nature will be determined both externally by other objects in nature, and internally by the concepts; more importantly, the former form of determination is a consequence of the latter. Moreover, this kind of external determination in nature will develop differently than in logical objectivity (specifically, by exhibiting itself first as space and time) because the explicit conceptual presence in nature allows the determinacy of externality to persist as a true determination of being. The determination of non-conceptuality and externality in nature is therefore different than any other determination of the logic, because it is the first determination of otherness, immediacy, or externality that is explicitly a determination by the concept (following the emergence of the absolute idea). All other determinations within the logic are only moments that cannot fully be adequate to themselves, in contrast to which the determinations of nature beginning with "the *externality [Äußerlichkeit] of space and time[,]* absolutely [exist] for itself without subjectivity" (GW 12: 253/SL 753).

Having argued that nature is a possible domain of determinacy sufficiently different from that of the logic, it remains to be demonstrated how that domain is actually constituted. This is the task of the remainder of the chapter.

1.3. Logic's Transition into Nature

Strictly speaking, the conceptual structure of nature as different from logic can only be deduced using the resources of the logic at the point of its completion. That is, according to Hegel's method, it should be illegitimate to claim that such a thing as nature exists and has a particular structure, which we recognize as distinct from the structure of logical determinations, without first having shown how these emerged in the self-unfolding of the concept, which alone

began without presuppositions. To do otherwise is to introduce an assumption, namely the existence and determination of nature, which has not been examined sufficiently or critically. Nevertheless, I justified this approach by pointing out that the actual account Hegel gives of the transition from logic to nature is so brief and abstruse, that any interpretation of it alone cannot avoid being largely speculative. Instead, by establishing what Hegel takes to be the result of this transition, and by recognizing that these results must follow from what has been established by the logic alone in accordance with Hegel's criteria for presuppositionlessness, it should be possible to reverse engineer nature and to provide an adequate account of its genesis out of logic. Giving such an account is the task of this next section.

Although I have referred to the move from logic to nature as a "transition" [*Übergang*], Hegel explicitly rejects this term insofar as it might imply certain similarities to previous transitions within the logic.²⁴ "This determination, however, is nothing that has become, is not a transition, as was the case above when the subjective concept in its totality becomes objectivity, or the subjective purpose becomes life" (GW 12: 253/SL 752). Instead, Hegel describes this determination as a "liberation," [*Befreiung*], and as a decision [*Entschluss*] to "freely discharge itself" [*sich frei entlassen*] (§244; GW 20: 231/EL 303; GW 12: 253/SL 752-3). This reformulation has two implications. First, the transition from logic to nature cannot be of the same kind as that within logic, insofar as the logic can admit of no more determinations once it has reached completion in the absolute idea. Because the absolute idea is nothing other than the concept's self-unfolding, through which each logical determination emerges as the result of its immediate predecessor, it does not make sense to identify, on the one hand, the transition from

²⁴ As will be shown, Hegel disapproves of describing the transition from logic to nature as a "transition" [*Übergang*] ultimately for certain ontological reasons. However, because no other word adequately describes what is in common to all shifts from one determination to another within the system, I have resorted to using this term to describe any such occurrence in Hegel's system.

this total process to something outside this process with, on the other hand, the movement of the total process (i.e. the transition from logic to nature with logical transition). Consequently, Hegel must find alternative ways of characterizing this transition.

The second and perhaps more important implication is the reason for why the liberation of the absolute idea into nature is different from previous logical transitions. The primary reason Hegel differentiates these forms of transition is that within the logic, a transition is the becoming of one determination from another, such that the latter is negated and only preserved in the former as a moment. The transition from logic to nature is different in that

the simple being to which the idea determines itself remains perfectly transparent to it: it is the concept that in its determination remains with itself [*der in seiner Bestimmung bei sich selbst bleibende Begriff*]. The transition is to be grasped, therefore, in the sense that the idea freely discharges itself [*sich selbst frei entläßt*], absolutely certain of itself and internally at rest" (GW 12: 253/SL 752-753).

In this transition, the absolute idea of logic is not negated and preserved in its successor; instead it remains with itself while still determining itself as something beyond itself. We can see how this distinction fits the distinction of extra- and intra-logical transition: intra-logical transition, as articulated by the absolute idea, involves the development of determinations, such that one determination becomes a moment of its more complex successor. Extra-logical transition, or the move from logic to nature, however, does not belong to this development, insofar as it constitutes nature as something other than that development altogether. Because the absolute idea completed the logic by retroactively grounding its entire course of development insofar as that development was identical to, and nothing other than, the content of the self-conceiving concept, the absolute idea contains as moments only those determinations belonging to logic. Consequently, any subsequent transition cannot be of the same kind as that of the absolute idea.

Additionally, we can see why this specific transition is described as a "discharge" rather than a transition in the form of a "becoming" (GW 12: 253/SL 752-753). In the logic, the transition between determinations occurs such that one determination is negated and preserved (i.e. sublated) in its successor. The sublation of a determination means that the determination is no longer explicitly present on its own, but is rather only a moment of its successor. Therefore, the transition is characterized as a "becoming," wherein one determination perishes and another is generated. The transition from logic to nature does not fit this model because, as was shown above, the absolute idea does not perish in its generation of its other. Instead, the absolute idea "remains with itself ... absolutely certain of itself and internally at rest" (GW 12: 253/SL 753). Because the absolute idea is nothing other than this process of sublation, the generation of a successor determination does not occur by negating the absolute idea. Instead, it is the very activity of the absolute idea to generate its successor determination. Therefore, the transition is better described as a "discharge" than as a "becoming," where discharge connotes the self-preservation of the absolute idea through its generation of its other.

Having shown why the transition from logic to nature is significantly different from those occurring within the logic and which constitute the determination of the absolute idea, it must now be shown how this transition is at all possible. Before presenting the various interpretations of this transition as well as my own, I will first present the critique of this transition, most notably formulated by Schelling. This critique is important for framing the problems involved in establishing the possibility of a transition from logic to nature, given certain assumptions about Hegel's system, and therefore plays an important role for shaping how scholars have attempted to defend Hegel's position.

In his lectures on the history of philosophy [1833-4], Schelling criticizes the notion that the idea, defined as "subject and object, conscious of itself, as the Ideal and the Real, which therefore has no need any more to become more real and real in another way than it already is," would therefore progress further beyond itself.²⁵ Every prior progression within the logic occurred due to some sort of deficiency in the determination and the subsequent overcoming of that deficiency. However, the Idea is alone in its being without any such deficiency. At the same time, nature exists outside of the Idea, insofar as the latter comprises the totality of ideal determinations or what is logical, whereas nature, provided it is not "*a priori* nature," but instead actually existing nature, is opposed to this idea. Nature, not belonging to the idea but existing beyond it, can therefore only emerge as resulting from the idea's own immanent necessity. "But in the Idea there is no necessity at all for any kind of movement. The Idea could not, for instance, progress further in itself (for that is impossible, because it is already complete), but would rather have completely to break away from itself."²⁶ According to Schelling, the completion of the logic with the idea leaves no possibility for further development if that development is to issue from the idea alone. Hegel's system continues, so this interpretation claims, not because of the inner necessity of the idea to release itself, but because the philosopher encounters nature and the philosophy of nature as already existing. The transition from logic to philosophy of nature in Hegel's system could therefore only occur by introducing an additional premise, namely that nature exists.

The problem Schelling's critique poses to interpreters and defenders of Hegel's system is ultimately, how can nature emerge from logic without either (a) being just an extension of logic,

 ²⁵ F. W. J. Schelling, *On the History of Modern Philosophy*, trans. Andrew Bowie (Cambridge: Cambridge University Press, 1994), 154.
 ²⁶ Ibid, 154.

or (b) illegitimately introducing nature as an additional premise. The first alternative is problematic, insofar as the absolute idea is supposed to contain all possible logical determinations and the transitions between them, such that no further progress is supposed to be possible. Any purported philosophy of nature will therefore have to demonstrate how its determinations cannot be reduced to the determinations of the logic, insofar as the latter ought to occupy every determination of being by thought.²⁷ The second alternative more readily allows for the distinction between logic, or thought in general, and nature. However, this distinction only emerges from the more problematic position that the logic is so confined to thought as a domain of possibility, that it cuts itself off from grasping nature in its actuality. Actually existing nature is therefore only accessible by taking it as given. This alternative not only accepts the impossibility of the transition from logic to nature (and therefore has no need to interpret the passages where Hegel attempts to explain it), but also must abandon Hegel's commitment to thinking without presuppositions, insofar as nature appears to be unthinkable except as presupposed.

Some interpreters of Hegel's philosophy of nature accept Schelling's criticism that nature cannot be deduced from the logic. Alison Stone argues that although Hegel's logic does not simply describe the conceptual possibilities of nature in contrast to the actual existing nature, but instead describes "really existing ontological structures," Hegel nevertheless cannot explain the transition from logic to nature.²⁸ This is because the logic, in Stone's reading, is the exposition of pure forms of thought, and the transition from logic to nature would have to show how pure thought can transform itself into matter. Thus, even though Hegel is not attempting to derive

²⁷ Above, I argued for how the determinations of the philosophy of nature will be different from those of the logic. My task will therefore be to show how the transition between logic and nature is possible, such that this difference is upheld.

²⁸ Alison Stone, *Petrified Intelligence: Nature in Hegel's Philosophy* (Albany: SUNY Press, 2005), 102.

actual existence from logical possibility, he still seems to want to derive actual matter from actual thought. Stone resolves this issue by interpreting Hegel's system in a "non-linear" manner, where the philosophy of nature and philosophy of mind take priority over the logic. Stone argues this because insofar as the logic analyzes ontological structures as they exist in pure thought and

inasmuch as forms of thought actually exist without matter, they cannot exist as structures *of* anything, for in this mode they are unaccompanied by anything extraconceptual of which they could provide the structure.... For ontological structures to exist, they must exist as structures *of* matter, which means that matter must at every developmental stage exist alongside those structures (as that in which they are instantiated).²⁹

Consequently, Stone's nonlinear reading interprets the Hegel's logic as an analysis of forms in abstraction from the material world, and the transition from logic to nature is no longer an ontological shift, but instead an epistemic one.³⁰

A similar interpretation is provided by John Burbidge, who downplays the ontological implications of the transition from logic and nature, and instead emphasizes the epistemological transition of logic to philosophy of nature. By comparing the chapter on "Chemism" in the *Science of Logic* with the chapter on "Chemical Process," in the *Philosophy of Nature*, Burbidge analyzes the way in which the arguments in the logic differ from those in the philosophy of nature when assessing what would appear to be the same object. He concludes that the argumentation of the philosophy of nature is unique insofar as it "incorporates both the original general considerations and the specific details of experimental evidence and discerns there a new conceptual pattern, significantly different from what appeared in logic, but which may then be used to set the stage for the next section."³¹ The introduction of empirical evidence in Burbidge's interpretation is essential to Hegel's philosophy of nature, without which it cannot comprehend

²⁹ Ibid., 102.

³⁰ Ibid., 104.

³¹ John Burbidge, "Chemism and Chemistry," The Owl of Minerva 34, no. 1 (Fall/Winter 2002-03), 13.

the structures of nature as distinct from those of the logic. Consequently, Burbidge accepts that Hegel must introduce the "second hypothesis" of the existence of nature beyond thought, such that the philosophy of nature oscillates between the structures of thought yielded by logic and the contingencies and non-logical features found in existing nature. Like Stone, then, Burbidge dismisses the ontological aspects of the transition from logic to nature, and emphasizes the epistemic transition instead.

The problem with both of these interpretations is that they suggest a particular relationship between logical structures and natural structures, to which Hegel does not subscribe. Both Stone and Burbidge accept that there is some externally existing reality, which the logic cannot reach through its own resources (Stone alludes to matter as being inaccessible from the logic, and Burbidge maintains an *a priori/a posteriori* distinction between the logic and nature). Because they posit this additional ontological element, they both suggest ways of changing the relationship between logical structures and structures of the philosophy of nature. For Stone, logical structures are abstractions of natural and spiritual structures, leading her to describe her reading as Aristotelian rather Platonic.³² For Burbidge, the logic describes the relationships belonging to conceptuality, whereas the philosophy of nature describes how the contingencies of nature are organized by logical concepts. However, the act of concepts on nature is, according to Burbidge, a reflective method, not dissimilar from that of Kant in the *Critique of the Power of* Judgment. In both cases, philosophy attempts to seek regularity in the contingencies of nature which it encounters as empirically given. Neither Burbidge's nor Stone's reading provides an argument for this extra-conceptual reality and its relationship to concepts. However, it is the very purpose of the transition from logic to nature to justify the production of nature as a new domain

³² Stone, *Petrified Intelligence*, 104.

of determinations. Moreover, it is Hegel's position that nature is the idea in the form of otherness, such that the extra-conceptual reality, which Burbidge and Stone externally introduce in order to explain the difference between the philosophy of nature and the logic, is ultimately a moment determined by concepts. As I will argue in the next chapter, space, time and matter for Hegel, unlike for Kant, are conceptually determined moments, which are arrived at by considering the externality and the form of otherness of the idea, without having to introduce any additional premises.

In contrast to the more realist approach of Burbidge and Stone is Edward Halper's interpretation of the philosophy of nature, which sees it as an application of the logic to itself.³³ Halper rejects the premise maintained by Stone and Burbidge that Hegel must externally introduce some extra-conceptual reality in order to transition from the logic to the philosophy of nature. Halper's challenge is therefore to explain how this shift is possible given only the resources provided by the logic. By pointing to passages in the *Science of Logic*, where Hegel mentions that the conclusion of the logic with the absolute idea creates a circle that returns to the beginning of the logic with pure being (GW 12: 252/SL 751), Halper argues that the philosophy of nature is nothing other than the absolute idea's second pass through the unfolding of logical determinations. This second sequence of determinations is different from the first insofar as in the second each logical determination is "added" to the absolute idea. Consequently, nature is this second series of determinations, where each determination is an "irreducible composite" consisting of "two constituent logical categories, absolute idea and its determination."³⁴ Through such a reading, Halper claims to have explained how the determinations of nature, as these

³³ Edward Halper, "The Logic of Hegel's *Philosophy of Nature*: Nature, Space and Time," in *Hegel and the Philosophy of Nature*, ed. Stephen Houlgate (Albany: SUNY Press, 1998), 29-50; Halper, "The Idealism of Hegel's System," *Owl of Minerva* 34, no. 1 (Fall/Winter 2002-03): 19-58.

³⁴ Halper, "The Logic of Hegel's Philosophy of Nature," 33.

irreducible composites, are both distinct from those of the logic, while nevertheless being generated on the basis of the logical determinations alone. This avoids introducing an extra premise of a reality beyond the logic while still allowing for the distinction of nature from logic.

Halper's reading, however, struggles to show how these composite categories correspond to the determinations of nature. Although he attempts to provide a provisional account of which categories of the logic are combined with the absolute idea to form the corresponding categories of the philosophy of nature (and the philosophy of mind), the general account of categorial combination remains unconvincing. Moreover, as Richard Dien Winfield rightly points out, although Hegel's philosophy of nature undergoes a conceptual unfolding much like the logic, according to Halper's reading only one of the components of these composite categories undergoes conceptual development, namely the added logical determination, whereas the other (the absolute idea) is to remain an unchanging substrate.³⁵ This characteristic does not seem to fit Hegel's understanding of conceptual development, as advanced in the Logic, where the concepts develop because of the negativity belonging to the concept in its entirety. Ultimately, Halper's reading ends up reducing the philosophy of nature too much to an extension of the logic, insofar as he assumes categories of nature can only use logical categories as components. As I have begun to show above, and continue to show in the following chapters, the conceptual determinations of nature will have a fundamentally different structure than logical determinations, beginning with space and time as the immediate and abstract determination of externality. This unique structure allows for the conceptual development, similar to that of the logic, where the concepts are transformed in their entirety. Finally, this structure will be the

³⁵ Winfield, From Concept to Objectivity, 141.

direct result of the idea's decision to release itself into nature, and will not have to assume anything beyond what has been demonstrated in the logic.

The strongest interpretation for the possibility of the transition from logic to nature has been advanced by Dieter Wandschneider and William Maker. They use Hegel's own mention of the limitation of the logic to the domain of thought or the ideal to provide a dialectical argument for the necessity of the "non-ideal."³⁶ This argument claims that since the absolute idea is both the completion of the logical development and for that reason confined to thought, or ideality, Hegel's "law of dialectic" necessitates that something other than thought, or non-ideal, be posited.³⁷ Without this non-ideality, moreover, the absolute idea could not in itself be constituted as complete, because it can only be determined as the totality of ideality if something non-ideal is posited which does not belong to the absolute idea. Thus, the completion of the logic and the constitution of the non-ideal are said to occur in the same moment since each necessitates the other. The determination of non-ideality, or reality, is the dialectically derived nature. This nature is on the one hand neither reducible to the logic nor viewed as an extension of it, insofar as logic is defined by its ideality and nature its non-ideality. On the other hand, this dialectical derivation does not simply assume the external existence of reality, but rather demonstrates its necessity based on nothing more than the absolute idea as the completion of logical determination. This interpretation satisfies, then, both criteria of generating a domain of determinacy beyond the logic without illegitimately introducing additional premises regarding the existence of nature.

³⁶ This interpretation is found in Dieter Wandschneider & Vittorio Hösle, "Die Entäusserung der Idee zur Natur und ihre Zeitliche Entfaltung als Geist bei Hegel," *Hegel-Studien* 18 (1983): 173-199; Dieter Wandschneider, "Das Problem der Entäusserung der Idee zur Natur bei Hegel," *Hegel-Jahrbuch* (1990): 25-33; Dieter Wandschneider, "Nature and the Dialectic of Nature in Hegel's Objective Idealism," *Bulletin of the Hegel Society of Great Britain* 26 (Autumn/Winter 1992): 30-51; Maker, "The Very Idea of the Idea of Nature."

³⁷ Wandschneider, "Das Problem der Entäußerung der Idee zur Natur bei Hegel," 28.

One problem with this interpretation, which I aim to address and improve upon, is the notion of the "ideality" of the absolute idea qua logical totality. The proponents of this dialectical interpretation of the transition from logic to nature refer to the passage in the logic where Hegel mentions the confinement of the absolute idea to thought or subjectivity, and its resulting drive to sublate this limitation and introduce the next sphere, namely nature (GW 12: 253/SL 752). I also referred to this passage in order to suggest the possible distinction between the structure of logical concepts and natural concepts. However, the limiting determination of "ideality," to the exclusion of "reality," does not appear to be an explicit determination of the absolute idea, and in fact it is precisely the definition of the idea to be the identity of the concept (the ideal) and reality (GW 12: 174, 236/SL 671, 743). First, it must be pointed out that when nature is finally defined in the *Philosophy of Nature*, it is defined as the "idea in the form of otherness" (§247; GW 20: 237/EN I: 205). If nature is likewise an idea (in the sense we have been using and will specify more in Chapter 2) at the very least it would seem problematic to ground its emergence in the notion that ideality essentially pertains to logic.³⁸ Second, it seems illegitimate to define logic as pertaining to determinations of ideality, to the exclusion of reality, when such a distinction suggests a limiting function applied to every determination of the logic, including those of being, quantity, quality, and most significantly the logical determinations of ideality and reality. The notion that the logic had been limited to thought from beginning to end suggests a presupposition regarding the extension of logical determinacy in general, but such a presupposition should have been abandoned at the beginning of the logic with the introduction of pure being, without any

³⁸ Maker's response is that it is "while the concept of nature, is 'the idea in the form of otherness,' this does not mean that we think of nature as being an idea or even like an idea, but rather just the opposite." This explanation belongs to his interpretation of the philosophy of nature as methodologically idealist, without therefore being metaphysically idealist, insofar as the fundamental distinction between nature and thought is maintained. See Maker, "The Very Idea of the Idea of Nature," 4, 10.

further determination. Therefore, Hegel's remark that the absolute idea in its logical mode ought not to be taken as a rigorously derived determination of the logical method, but instead as an external description of the domain of logic in contrast to that of nature. Consequently, I find that using "ideality" as the essential determination for dialectically deriving nature as the "non-ideal" is illegitimate.

There remains, however, a different determination of the absolute idea, which can fill the position of "ideality" in the dialectical interpretation, and which avoids the problems that "ideality" had. That determination of the absolute idea is that of its being the simple identity of the subjective concept and object (GW 12: 237/SL 736). As was shown in Chapter 1, the absolute idea reaches an identity of subjective concept and object, such that the concept has itself for its object, making it the self-conceiving concept, and thereby completes the logic. Having an identity or adequation of concept and object expresses Hegel's notion of truth, and for that reason can legitimately conclude the logic without needing to produce further logical categories. Although the idea broadly understood is defined as such an identity of concept and object, and therefore would also include the ideas of life and cognition, both of these express their identity in certain immediate manners. This ultimately produced certain contradictions for the structures of life and cognition, where the subjective concept and object could not be both fully distinct and fully identical (in the case of the life, this was exhibited in soul and body, and in cognition, subjectivity and thing-in-itself). In the absolute idea, however, the identity of subjective concept and object is an immediacy resulting from the sublation of mediation, and therefore "harbors the most extreme opposition within" (GW 12: 236/SL 735).

I argue that the identity of the absolute idea is *simple*, and therefore only *logical*, insofar as it exhibits this sublated immediacy and identity as pertaining only to the subjective aspect of

the identity of subjective concept and object. By simple, I therefore mean that the identity of concept and reality remains only an identity within conceptual positing, and has not yet entered into the more complex, mediated identity, where reality is just as much considered different from conceptuality as identical to it. The identity exhibited in the absolute idea as logical manages to express itself through the sublation of opposition between the subjective concept and object, but does so insofar as that opposition is internal to, and therefore a moment of, conceptuality or subjectivity. For this reason, Hegel also describes the logical mode of the absolute idea as exhibiting "the self-movement of the absolute idea only as the original word, a word which is an *utterance*, but one that in being externally uttered has immediately vanished again. The idea is therefore, only in this self-determination of *apprehending itself*; it is in *pure thought*, where difference is not yet otherness, but is and remains perfectly transparent to itself" (GW 12: 237/SL 736). The absolute idea as logical expresses the form of dialectical method, where movement and development occur by means of the negativity immanent to determination. However, by being only the first, and therefore simple, mode of this structure, it remains to be seen how this structure will exist in the modes of opposition and re-established identity. These two modes would correspond to showing, first how the identity of subjective concept and object presents itself as object (the objective subject-object, or objective idea), then again as the reestablished identity (subject-object mode of subject-object).³⁹ More precisely, these latter two modes will correspond to nature and spirit in Hegel's system.

³⁹ Referring to the distinction of ideality and reality, it would be more accurate to say then, that the logic expresses the absolute idea (i.e. the identity of ideality and reality) *only* as ideal, without having shown how the absolute idea comes to express this identity in its difference as well. Therefore, reality cannot be expressed as identical to the idea *only* ideally, but must also do so *really*. This, then, is the project of the philosophies of nature and spirit. This point resolves some of the issues with claiming logic is defined as only the ideal whereas nature is the non-ideal, by showing that both spheres are claimed to be ideas as being identities of ideality and reality; the difference is in *how* these identities are expressed.

Schelling gives a similar explanation of the creation of nature by God in the (1810) "Stuttgart Private Lectures": "The primordial Being as the absolute identity of the Real and the Ideal is itself posited only in a subjective manner,

Further evidence for this interpretation is the contrast between the absolute idea qua logical as being a simple identity and the idea qua nature as being in the form of otherness. Hegel claims that the transition from logic to nature does not abandon or negate the logical idea, as may be said for previous intra-logical transitions. Instead the logical idea remains with itself as it also constitutes nature as its own externalization. Thus, logic and nature are both modes of the same absolute idea, provided that the logic is understood as the universal mode that envelops within it the particular modes, i.e. nature and spirit. The logical envelopment of nature can be explained as expressing as merely conceptual and subjective determination in the logic of what in nature will be determined as outside of and other than the concept. It follows, therefore, that the relationship between logic and nature as being modes of the idea, the former as in the form of simple identity and the latter in the form of otherness, corresponds with the structural differences established above.

Following this interpretation, the transition from logic to nature is dialectically necessary insofar as the completion of the logic with the absolute idea establishes at the same time (by way of externalizing what was originally enveloped) the sphere of nature. Insofar as both logic and nature are modes of the absolute idea, nature is a necessary result of the logic's completion with the absolute idea. Contrary to other interpretations, there is therefore no need for an additional premise of existing reality, insofar as the logic does contain all possible determination, but all determination only insofar as that determination is explicitly conceptual. The otherness of the concept, which is nature's own determination, is the release or liberation of the difference and opposition which had been confined to conceptuality. Finally, following Wandschneider and

whereas we also need to comprehend it objectively: the absolute identity of the Real and the Ideal must not only be *in and of itself* but also *outside itself*, [that is,] it must be actualized – it must also disclose itself in existence as that which, in its essence, is the absolute identity of the Real and the Ideal." See Schelling, "Stuttgart Seminars," in *Idealism and the Endgame of Theory*, trans. Thomas Pfau (Albany: SUNY Press, 1994), 200.

Hösle's interpretation, this externalizing movement of the idea's logical determinations can be understood as a *free* release insofar as it occurs out of the inner necessity of the absolute idea.⁴⁰ The dialectical interpretation advanced here shows that the "decision" of the absolute idea to externalize its determinations is not arbitrary, but is rather a necessary result insofar as the absolute idea as logical expresses itself as a simple identity and must therefore overcome this limitation by allowing its determinations to extend beyond explicit conceptuality. However, the necessity of this transition from logic to nature is not an external necessity, and does not operate on the absolute idea from without, but rather the absolute idea's own completeness and determination grounds its externalization into nature. Thus, the necessity is an internal necessity that follows from the absolute idea's own determination, which is to say freedom.

1.4. Conclusion

In order to explain how nature as a sphere beyond logic was not only possible but necessary within Hegel's system, I began this chapter by analyzing and distinguishing the general structure of the conceptual determinations of the logic and philosophy of nature. The purpose was to show in what way the conceptual determinations of nature could in fact be fundamentally different from and therefore irreducible to those of the logic. I showed that whereas in the logic, the concepts had for their objects or content conceptuality itself, the philosophy of nature dealt with concepts, the objects of which were other than and external to conceptuality. If such a distinction is to be the case, however, the structures of nature must nevertheless result from those of the logic. This led us to the initial question of how the transition from logic to nature is possible, if at all. Against other interpretations that claimed that the

⁴⁰ "Die Entäußerung der Idee zur Natur und ihre zeitliche Entfaltung als Geist bei Hegel," 179-180.

determinations of nature result from either the additional premise of existing nature, or the composition of logical categories, I sought to explain them as resulting from a dialectically necessary transition. Whereas others had offered a similar explanation by conceiving the logic as constituting ideality to the exclusion of reality, such that the completion of ideality entails its negation, which is then identified as nature, I emphasized the absolute idea's logical form as exhibiting a form of simple identity. This distinction was meant to improve upon issues with the ideal-real distinction, namely that the distinction is an illegitimate presupposition that would have conditioned the entire logical process, but should have been abandoned at the beginning of the logic. Thus, whereas the ideal-real distinction seemed to be arrived at externally, I argued that the logic's simple identity is an immanent determination of the absolute idea. Additionally, the notion of "simple identity" corresponded well both with nature's description as the idea in the form of otherness, and with the structures that follow from these descriptions. Consequently, nature is a dialectical result that emerges from logic insofar as the logic is the universal mode of the absolute idea, and as such only expresses it in its simple identity. To overcome this restriction, the absolute idea must come to express its determinations not merely in this identity, or as belonging only to conceptuality, but now also as external to conceptuality as such. This further form of determination present itself in nature.

Chapter 2: "The Impotence of Nature": Singulars, Contingency, and Stages

In this chapter, I examine the ontological and epistemological consequences of Hegel's claim that nature is the idea in the form of otherness. In particular, I show how nature, as this form of the idea, is first expressed as the distinction between and juxtaposition of the universal concepts (or laws) and the externally existing singulars (or instances).¹ This structure moreover takes on a specific modality that juxtaposes necessity and contingency. Finally, this structure affects the epistemological approach of the dialectical method, which functions internally to the existing nature, which otherwise appears externally as independent stages.

In Chapter 1, I established that Hegel's philosophy of nature deals with concepts, the objects of which are non-conceptual. While this conclusion was arrived at from the standpoint of the Hegel's logic, we are now able to see how it is presented in the philosophy of nature. This structure of nature is first exhibited simply as the separation of the internal concept qua universal from the external existent qua singular. This separation involves a distinction between, on the one hand, our ideal knowledge of nature, which is identical to the internal lawful structures of nature; and on the other hand, the real, existing things in nature that are determined by these lawful structures. Second, I argue that this structure entails a modal distinction between the aspects of nature. Through the separation and internalization of the universal from the singular, the singular things nature are determined in two different ways: by the internal conceptual

¹ Following M. J. Petry's translation of the Hegel's *Philosophy of Nature* and George di Giovanni's translation of Hegel's *Science of Logic*, I made the decision to translate *das Einzelne* and *die Einzelheit* as "singular" and "singularity," respectively. These are the terms that appear alongside universality [*die Allgemeinheit*] and particularity [*die Besonderheit*]. Choosing "singularity" rather than "individuality" is especially important because the second section of the Philosophy of Nature, "Physics," deals with different forms of individuality [*Individualität*], which I take to be different conceptually from singularity.

distinguished from their ideal determinations, they are further determinable through their real externality to each other. I argue that these kinds of determination take on different modalities, namely determination by the internal conceptual determination is necessary, whereas the external determination is contingent. As a result, whereas the categories derived from philosophy's dialectical method are necessarily exhibited in the existing things in nature, and the singular existing things do not fully correspond to their concept. Instead, the determination of the existing, singular things of nature remains contingent. Third, I argue that the externalized form of nature affects the epistemology of the philosophy of nature, in that the conceptual development characteristic of Hegel's dialectical method will pertain only to the internal conceptual aspect of nature. Externally, this development is exhibited as a system of discrete stages. This means that Hegel has a non-reductionist position regarding the laws of nature, where only a weak relation exists between the various stages of nature (e.g. a chemical process cannot fully be explained by mechanical properties). Moreover, this relation pertains only to their conceptual form, and not necessarily to the conceptual content. In other words, contradictions of each stage of nature are only resolved formally in their successive stage, and not materially.

My claim in this chapter is that these three characteristics all have as their ground the structure of natural concepts, in which the object is external from and other than its concept. This involves rejecting the thesis that the singularity and contingency of nature have a status independent of that which results from the absolute idea. As a result, the philosophy of nature does not proceed under the assumption that nature stands opposed to thought as a contingently determined totality of singulars. Instead, insofar as the philosophy of nature is an exposition of nature as a mode of the absolute idea, the singularization and contingency of nature must be seen as a consequence of the conceptual structure of nature. Therefore, although the philosophy of

nature is limited in its comprehension, insofar as the "it is the height of pointlessness to demand of the concept that it should comprehend, and as it is said, construct or deduce these contingencies" (§250A; GW 20: 240/EN I: 215), I argue that this limitation is self-prescribed, such that the contingency of nature is inscribed in its very conceptual necessity. In other words, it is not because nature is so chaotic, random, and contingent that philosophy is limited in its comprehension of it (implying an external limitation), but rather philosophy expresses nature as a form of the idea, which itself grounds the contingency of nature (implying an internal limitation).

Another way of stating what this chapter demonstrates is that Hegel's philosophy of nature is a form of metaphysical realism not simply in addition to, but rather precisely because of its idealist framework. This interpretative approach was already mentioned in Chapter 1 when discussing how the concepts of nature determine their object precisely as non-conceptual. However, in this chapter, I show what kinds of realist claims actually follow from Hegel's idealism. Specifically, these will include the external presence of nature as a multiplicity of singulars, which are determined both conceptually as to what they are, and non-conceptually through the contingent interaction between the singulars. I argue here that the idealism of Hegel's philosophy of nature establishes both the universality and irreducible singularity in nature. As a result, it follows from the ideal structure of nature that singulars in nature are determined in a real manner beyond the scope of the dialectical exhibition of the concepts of nature.

2.1. Universal and Singular

The primary way in which the externality particular to nature is exhibited is in its distinction and separation of the universal and singular moments of its conceptuality. Before

describing how this externality is presented, let us first recall how the determinations of Hegel's logic appeared. At the conclusion of the *Logic*, we saw that every determination was generated from an immanent method, where the form and content of one determination had its foundation in the internal negation and contradiction of the determination preceding it. When considered for itself, this method came to constitute the entirety of the logic, precisely insofar as every determination could therefore be considered a moment of this method. This method was also identified with the concept's self-comprehension, such that every determination in the logic is considered to be a simple determination of conceptuality, without having extended beyond that domain of conceptuality. This inherent limitation gave rise to the domain of nature, where the conceptually determined objectivity is no longer within the concept, but now has been "released" and exists now "outside" of the concept. Hegel also argued that the philosophy of nature, like empirical science, involves a cognition of the universals in nature, where those universals are the "forces, laws, and genera," that organize nature (§246; GW 20: 236/EN I: 197). The difference between empirical and speculative science was determined to be that between inductive reasoning and conceptual analysis and synthesis, respectively. However, this comparison to empirical science illustrates the obvious matter that nature itself does not exist in the form of universal, but as singular.² It is precisely the task of natural science in its empirical-inductive method to discover the universal by means of perceived regularities in the singulars. This first section deals with the speculative approach of reconciling the universality and singularity of nature.

Insofar as nature is the idea as external to itself, such that the conceptually determined objectivity is external to its conceptual form, it follows that nature itself has an inner and outer

² Hegel claims that "by thinking things, we transform them into something universal; things are singularities however, and the lion in general does not exist" (§246Z; GW 24: 1178/EN I: 198).

aspect. Hegel claims that "the concept is as something internal" in nature, as opposed to the determinations of the concept, which "have the appearance [*Schein*] of indifferent subsistence and singularization [*Vereinzelung*] from one another" (§248; GW 20: 237/EN I: 208). For example, in the case of single electric shock, the lawful structure that constitutes the event as an electric shock and not the radiation of heat, is not present in the event itself, but is rather something implicit in it. The juxtaposition occurs between what is externally present (i.e. the singular event) and what is internal (i.e. the lawful structure). Hegel adds that

nature is *implicitly* divine in that it is in the idea; however, how nature actually is, its being does not correspond to its concept; instead, the nature is the unresolved contradiction.... Thus, nature has also been regarded as the Idea's refuse [*Abfall*] from itself, insofar as the idea as this shape of externality is inadequate to itself. (§248A; GW 20: 237/EN I: 209)

These claims exhibit how the otherness or difference, which characterizes nature's particular expression of the absolute idea, establishes the distinction in the external appearance of nature and its internal conceptual form.

The internal-external dialectic of concepts and objects of nature can be interpreted either epistemologically or ontologically, both of which Hegel entertains. One way is to understand the concepts of nature as belonging to, and therefore "inside of," a thinking subject (e.g. human consciousness), in opposition to which the objects of nature are *external* to that consciousness.³ This standpoint grants that things in nature are not thought-like, but that thinking subjects grasp

³ Wolfgang Neuser holds this position: "Nature is that, which is posited against spirit... The concept and object in thinking are the same insofar as they are both spirit. However, in the case of objects of nature the concepts (like all concepts) are created by spirit; the object, however, which should be grasped with these concepts, is something alien to spirit, something that stands opposed to spirit, and thus nature," in "Die Naturphilosophie," in Hermann Drüe, et. al., *Hegel's >Enzyklopädie der philosophischen Wissenschaften* (1830): Ein Kommentar zum Systemgrundriß (Frankfurt: Suhrkamp, 2000), 142. "Objects of nature are, insofar as they are thought, objects, which in thinking are thought as located outside thinking," in Neuser, "Das Anderssein der Idee, das Außereinandersein der Natur und der Begriff der Natur," in *Logik, Mathematik und Naturphilosophie im objektiven Idealismus: Festschrift für Dieter Wandschneider*, ed. Wolfgang Neuser & Vittorio Hösle (Würzburg: Königshausen & Neumann, 2004), 43. My translation of the author's text.

them conceptually. In our comprehension of nature we recognize this antithesis between thought and the object. Hegel begins the philosophy of nature with an analysis of the theoretical and practical approaches to nature that express this very antithesis. Practically, nature is something opposed to us, and contains no absolute final purpose; nature lacks a kind of completeness in that it appears always only as a means to some further end, but never as an end in itself (§245; GW 20: 235/EN I: 195). Theoretically, we notice both that the objects of nature are not the same as our thoughts and universal characterizations of those objects, and that these objects nevertheless exhibit regularities and must therefore be determined in accordance with a universal. We see that events are always particular occasions of some common law, although the law we think when we cognize the objects of nature appears nowhere in nature itself. On the basis of these two approaches, we therefore conclude that the otherness of the objects from the concept is not just some feature of our subjective thinking, but is rather the form of nature itself. The laws and lawlike structures of nature are nothing other than the conceptual universals generated by the thinking subject.⁴ The other way to view the dialectic of concepts and objects in nature is to take the concepts as the laws and law-like structures alone.⁵ This approach downplays the function of the thinking subject in order to emphasize the logical, conceptual or ideal element inherent in objective being itself. It is not the thinking subject that conceptualizes nature, but rather nature is already in itself conceptually organized.

⁴ "Thus, Hegel's intention in his *Philosophy of Nature* is to show that the inner logic of concepts, which underlie [*zugrunde liegen*] a natural-scientific law, or the connection of which the law itself constitutes, are based on the unity of rational thinking." Neuser, *Natur und Begriff*, 188.

⁵ This is closer to Dieter Wandschneider's *objective-idealism* position: "The thought of an ideal underlying nature may at first appear outlandish. There is, however, good reason for this idea in view of the *law-like* character of nature. For the natural law which governs a stone is, for its part, not a stone," in Wandschneider, "The Philosophy of Nature of Kant, Schelling, and Hegel," trans. Patrick Leland, in *The Routledge Companion to Nineteenth Century Philosophy*, ed. Dean Moyar (London: Routledge, 2010), 88. "Hegel's idealism is called 'objective' because Hegel sets out from the objectively binding character of logic" in Wandschneider, "Hegel's Philosophy of Nature," trans. Jeffrey Edwards, in *The Bloomsbury Companion to Hegel*, ed. Allegra de Laurentiis & Jeffrey Edwards (London: Bloomsbury, 2013), 107-108.

The account of Hegel's logic provided in Chapter 1 should indicate that these approaches are just two complementary sides of Hegel's position. The transition from the idea of cognition to the absolute idea explicitly described the shift from a thinking subject that must impose its own conceptual structure on a reality beyond a thinking subject to a thinking subject whose conceptual determination is not confined within itself, but is just as much active already in objectivity (GW 12: 235/SL 733-734). Therefore, it is true that in the comprehension of nature as the idea in the form of otherness, or as this externalization of objectivity from the concept, the conceptuality internal to nature is the activity of a conscious thinking subject. It is also true however that this internal conceptuality is the lawful structure of nature itself. This identity is what enables a thinking subject to comprehend what nature is in itself by means of speculative philosophy.

For the purposes of this account, however, it is theoretically more effective to adopt the second approach, and therefore to consider the concepts as internal to nature itself. While it is true that the philosophy of nature is a "philosophy" and therefore presupposes spirit (i.e. a thinking, existing subject), the identity of spirit's conceptual thinking and the being of its object has been established in a way that allows us to examine that object as such.⁶ In addition, we have already abandoned the theoretical presuppositions and conditions of what spirit is at the beginning of the logic, and are only now advancing beyond the logic into nature, without yet having arrived at a concept of spirit. Therefore, it is important to comprehend nature as having an

⁶ I take this to be the accomplishment of Hegel's *Phenomenology of Spirit*, through its arriving at "Absolute Knowing." We transition from thinking the object in a negative relation to the subject, to thinking this negative relation as internal and constitutive to the object, now considered as substance that is also subject: "In my view, which must be justified by the exposition of the system itself, everything hangs on grasping and expressing the true not just as *substance* but just as much as *subject*" (GW 9:18/PS 12). "However much this negative now initially appears as the inequality between the I and the object, still it is just as much the inequality of substance with itself. What seems to take place outside of the substance, to be an activity directed against it, is its own doing, and substance shows that it is essentially subject" (GW 9:29/PS 23).

externality not only in relation to spirit, but more importantly in its own structure. This is because it must be on this basis alone, and through the dialectical thinking of nature in itself, that we will ultimately arrive at a concept of spirit as the truth of nature and as that which in retrospect was present all along. If we frame nature through an understanding of the thinking subjectivity of spirit, and on that basis generate a concept of spirit through the presentation of the philosophy of spirit, we risk begging the question, even when this account will have been *correct.* Instead, it is important to suspend that assumption and to demonstrate that understanding nature as it is in itself dialectically necessitates the emergence of spirit. In other words, even though both approaches to understanding nature as an idea are true, the dialectic nature of this truth is such that one (the subjective) must be presented only retrospectively after having presented the other (the objective). This repeats the claims from Chapter 1 regarding the logic, where the immanent and methodological strands of the logic must both be true, but the methodological truth is expressed only at the end. Not only will we have avoided begging the question of assuming spirit in order to explain it, but we will also have provided a more interesting understanding of nature *and* the systematic foundations of spirit in nature.⁷

Hegel describes this distinction between the inner concept and the external reality as an "unresolved contradiction" [*unaufgelöste Widerspruch*]. This means that what is externally

⁷ At the same time, however, we should note that this "objective-idealist" interpretative approach of Hegel's philosophy of nature should be distinguished from Schelling's philosophy of nature, which Schelling himself suggests is a kind of "objective idealism." See F. W. J. Schelling, (1801) *Presentation of My System of Philosophy*, 142. One area of distinction is Hegel's continuous emphasis on the internal *concept* which forms the basis of the development in the philosophy of nature. Throughout Schelling's various treatments of the philosophy of nature, he never considers the conceptual to be a genetic and developmental element of nature, but instead considers it to be Nature as producing itself, most notably in the (1799) *First Outline of a System of the Philosophy of Nature*, trans. Keith R. Peterson (Albany: SUNY Press), 2004. This distinction may suggest that Hegel's position does lean more towards an emphasis on the epistemological, subjective oriented approach than a stronger ontological, objective oriented approach. In spite of this, we will maintain the approach of considering Hegel's philosophy of nature as ontological, and will see how the emphasis of the conceptual in nature provides a unique account of nature in itself, distinct from that of Schelling.

apparent does not directly correspond to what is conceptually posited. This is because what is externally apparent appears as singularized and isolated [*vereinzelt*], existing in relative indifference to the other forms of determination in nature. These characteristics are different from the self-determining concept, which is characterized by its self-developmental movement. Even when such transformative and developmental structures are exhibited in nature (i.e. beginning with magnetism, electricity and chemism, and more explicitly present in plant and animal organisms), these more complex natural determinations do not eliminate the existence of the less complex determinations. Instead, all of the stages [*Stufen*] of nature will exist and exhibit themselves alongside the others.

This "unresolved contradiction" between the inner and outer aspects of nature can be seen to follow from the structure of the idea as nature, shown in the previous chapter. I claimed that the way in which nature is distinct from the logic, insofar as nature is the idea in the form of otherness, is that nature will involve concepts, the objects of which are not concepts. The conception of non-conceptuality formalized by the notion of externality and grounded by the release of the idea into nature is now presenting itself as this distinction between the inner concept and the outer being and appearance of nature. As a result, all of nature will exhibit this discrepancy or inadequacy between what is posited conceptually and what will appear externally. Each concept examined in the philosophy of nature will comprehend some universal structure of nature, while never appearing as a pure universal in nature. Instead, the philosophy of nature presents us with an analysis of the various categories and structures, which nature exhibits and through which nature is comprehended. There is no magnetism or chemical process as such, but rather various instances of magnetic and chemical processes.

One consequence of this externality of singular from the universal, or of the real from the ideal, is the simple observation that nature does not "think." It is shown in the conclusion of the philosophy of nature and its transition to the philosophy of spirit, that the conceptuality, which remains internal to nature, is finally fully explicit and exists for itself only as spirit. This ultimately means that nothing in nature exhibits its own conceptual activity, or is a thinking subject.⁸ Instead, what exists in nature functions through the various determinations of externality, which we have determined as being explicitly non-conceptual in kind. The conceptual interiority of nature is nevertheless operative both in determining the being of nature, and for grounding the development of the stages throughout nature, insofar as each stage will exhibit dialectical contradictions that can only be resolved by subsequent stages.

This way of conceiving nature supports a sufficiently realist approach that I argue can withstand certain criticisms of correlationism, according to which nature cannot exist without the existence of consciousness.⁹ The fact that despite being defined as an idea, i.e. as a subject-object, or conceptually determined totality, nature is explicitly determined as a non-thinking being, the reality of which is determined as external to and other than its conceptuality, entails that existing nature is not conceptual. This understanding of nature is of course known *to us* insofar as *we* are thinking, philosophizing subjects, and are comprehending nature through its

⁸ The precise nature of the "subjectivity" of animals will be examined in Chapter 4.

⁹ Quentin Meillassoux advances a critique of correlationism in his book *After Finitude: An Essay on the Necessity of Contingency*, trans. Ray Brassier (London: Continuum, 2008). He proposes a speculative realist position, in which certain properties of objects (specifically those that are mathematizable) are valid of an object, regardless of the subject's relation to those objects. Meillassoux's position rejects correlationism, where "By 'correlation' we mean the idea according to which we only ever have access to the correlation between thinking and being, and never to either term considered apart from the other. We will henceforth call *correlationism* any current of thought which maintains the unsurpassable character of the correlation so defined," (5). A correlationist position cannot grant validity to statements about what is 'ancestral,' or "any reality anterior to the emergence of the human species – or even anterior to every recognized form of life on earth" (10). Meillassoux characterizes Hegel's speculative or absolute idealism as a correlationist position. We will not consider here the details of Meillassoux's critique of Hegel, its validity, or the validity of Meillassoux's position as a sufficient response to the problem of "ancestrality" and "correlationism," but only note its relevance for thinking about interpretations of Hegel's philosophy of nature.

conceptual determinations. However, it is this same argumentation that establishes nature as something non-conceptual and real, precisely through being external to the concept. Thus, contrary to interpretations of Hegel's idealism, whereby everything that exists cannot exist without at the same time being a correlate of consciousness, by reading Hegel's philosophy of nature together with his logic, we can see that Hegel *does* think that nature is something that exists independently of the *existence* of thinking subjects. Instead, the conceptuality or universality should be understood as something only internal to nature, which in any form of thinking about nature (critical or not) we as thinking subjects grasp and raise to our consciousness. If all existing consciousness is eliminated, just as there was no consciousness was prior to the emergence of conscious beings, the existence of that which is not conscious, i.e. nature, is unaffected.¹⁰ Instead, only the existence of thought, i.e. consciousness and the intentional objects of consciousness.

This discrepancy between universal and singular is also driven by the determination of the singulars in nature which occurs both through the universal concepts and through the external relations of the singulars themselves. A chemical reaction in nature, for example, will be

¹⁰ Here I disagree with the claim by Jennifer Ann Bates, when she states that "Another, more post-Kantian Hegelianism, shows that if humans go extinct, the whole disappears with us," in Bates, "Hegel and the Concept of Extinction," *Philosophy Compass* 9, no. 4 (2014): 244. This is because, as argued above, I think there is a plausible interpretation of conceptuality functioning as the laws and the interiority of nature, without that conceptuality actually *existing*. Hegel claims later that it is spirit, and not nature, that is the "concept with a reality corresponding to it, or the concept which has existence [*Dasein*]" (§376; GW 20: 375/EN III: 211). Claiming that the extinction of conscious thinking beings also destroys what is not conscious or what is not a thought, is a form of metaphysical idealism, which I argue Hegel does not maintain.

In the explanation of her position, Bates does point out the necessity of comprehending both the ontological, objective, or substantial side of Hegel's idea of nature, as well as its epistemological, subjective side. I have tried to indicate that it is possible to maintain this dialectical understanding of nature, while consistently maintaining that the *existence* of knowledge of nature is separate from the *existence* of nature, even when the being and knowledge of nature are "identical." This is because the dialectical identity of being and knowledge does not thereby reduce them to being the same. Consequently, the being of nature must be identical to how it is in our knowledge, but it does not therefore follow that the existence of that knowledge is necessary for nature to exist.

determined through the universal concept of chemical process, which Hegel addresses in the "Physics." However, as a part of nature, the reaction in nature exists "outside of" the concept, and consequently as a singular occurrence. Consequently, this externally existing, non-conceptual aspect of chemical process will be susceptible to other external, non-conceptual forms of determination. In other words, every singular chemical reaction is both the same insofar as they are all structured by the universal concept of chemical reaction, but are also different insofar as they are conditioned by other factors in nature, such as electrical charge, mass, or temperature.¹¹

I argue that the external, non-conceptual determination of a singular in nature involves two components. First, the ways in which a singular is determined externally will ultimately be comprehended through other categories of nature, where those categories or kinds are established by the dialectical method of philosophy. A singular chemical reaction will exhibit the universal structure of chemical process while also being distinct from it due to the quantities of mass involved, the specific electric conditions operative, etc. The consideration of the animal, as the final most comprehensive category of nature, exhibits this most, insofar as animal organisms can differ in all sorts of ways due to chemical makeup (i.e. DNA). This indicates that each successive category of nature does not completely determine the singulars in nature, insofar as all of the stages of nature "have the appearance of indifferent subsistence" (§248; GW 20: 237/EN I: 208). Even though the final category of animal organism serves to comprehend phenomena

¹¹ The issue of the relationship between the various universals, or stages, of nature will be dealt with later in this chapter. Here, we mean only to show that for something to be a singular instance of a universal, it must be determined by some different form of determination besides that universal. While this requires that there be some sort of difference involved in the determination of a singular, what those determining moments are and what their relationship to each other is requires further argumentation. Thus, in considering a sea lion, we would be required to explain it in terms of being an animal, but also in terms of its chemical (i.e. genetic make-up) and mechanical (i.e. mass) characteristics, among others. However, whether or not its being an animal is reducible to its chemical or mechanical characteristics has not yet been dealt with.

inexplicable through the simpler mechanical and physical categories, the animal is not for that reason unaffected by those same conditions.

Second, however, is that even granting the multi-faceted determination of a natural singular, there is for Hegel an irreducible contingency in nature.¹² Even if every form of determination can be exhibited in the philosophy of nature, these concepts still do not explain the singularity of a singular, i.e. the specific conditions that give rise to this animal and not another. The philosophy of nature provides an account, therefore, only of the universal concepts of nature, while simultaneously acknowledging the externality of the singularity of nature to the concepts of nature, and consequently to the exhibition of the philosophy of nature itself.

While the necessity and contingency of nature, as distinct from freedom, are dealt with in the following section, what has been shown thus far is the specific structure of nature that distinguishes the singularity and universality of a concept, wherein the singularity constitutes the externally existing appearance, and the latter its implicit structure. This is to say that nature is not simply the material or the real, but is also structured by the conceptual or the ideal, even if this determination by the ideal is not total. Because the universal is only implicit, the external singularity therefore does not outwardly exhibit a conceptual structure. This was said to be consistent with the presentation of nature as the idea in the form of otherness, such that a concept has for its object something other than the concept. Consequently, the philosophy of nature seeks to comprehend the universal concepts of nature, as does natural science through its empiricalinductive methods. A complete exhibition of these universals would account for every structure,

¹² The encounter of consciousness with multi-faceted determination of an object is shown in the chapter on "Perception" in Hegel's *Phenomenology of Spirit*. Although in that stage of spirit, consciousness struggles to know whether its object is either the unity of its characteristics (the One) or those characteristics themselves in conjunction with each other (the Also), what both of these options presuppose is the complexity of properties determining the object itself. Thus, whereas in the *Phenomenology*, we are striving towards an adequate account or knowledge of this object, I take the *Philosophy of Nature* to be explaining what kinds of determining characteristics of an (natural) object are possible.

by which the natural singulars are determined, without thereby providing an account of every singularity in its uniqueness. Rather, it is precisely the structure of nature itself which establishes this singularity as a form of determination beyond that of the concept. In other words, the ideal structure of nature, as we have defined it, is such that it establishes its own limitations to what can be determined conceptually. This is because, as we showed in the previous chapter, nature emerged as the absolute idea in the form of otherness with the specific structure where the objects of its concepts of nature as non-conceptual and outside of the concept. The concepts of nature, such as space, time, motion, heat, chemical process and organism, are all universals with respect to the singular beings of nature, and whose conceptual content contains the externality of its being to its concept.¹³

2.2. Necessity and Contingency

The distinction between the concepts of nature and their objects, which coincided with the externalized distinction between universality and singularity, now also coincides with the modes of necessity and contingency in nature. In particular, this means that the existence of the singular objects of nature as singular cannot be deduced logically through Hegel's dialectical method, even when the relation between singularity and universality becomes an explicit moment of nature, as in the case of animal organisms.¹⁴ As a result, the externality of nature allows for its objects to be determined independently or externally from their conceptual universal form. This external form of determination exhibits nature's contingency. The

¹³ In Chapter 3, I show how this distinction the externality of natural concepts distinguish it from logical concepts, specifically in the case of the natural chemical process compared to the logical chemism.

¹⁴ Although I deal with the conceptual content of animal organisms in detail in Chapter 4, I argue here that every concept in nature, even those that include the relation of itself as universal to its singularity, nevertheless are separated from their objects through nature's essential externality.

conceptual universality in nature, on the other hand, exhibits the necessity in nature. In other words, insofar as nature is grasped and determined conceptually and universally, those determinations will involve certain relations necessarily. These necessary and conceptual determinations are ultimately what emerge from Hegel's dialectical method.

Before advancing, we must qualify that the model of necessity and contingency that we are proposing remains rather classical, and would struggle to account for the discoveries in quantum physics. Our interpretation of Hegel presents an account of the relationship of the universals (laws) and singulars (events) wherein, events are determined and completely by laws, while being irreducible to any one of them. In other words, singulars stand at the nexus of multiple kinds of determination, such that attempting to explain that singular completely with a single natural kind concept will fail. The necessity of this failure marks the contingency of nature, but does not thereby eliminate the lawfulness of events. The sorts of contingency and probabilistic events in quantum physics, regardless of which interpretation one adopts, is largely inconsistent with the interpretation of this account, particularly because it establishes a contingency and probability that is inexplainable by other factors. That one event occurs instead of another when both are probable, but where nothing explains why one happens and not the other, resists incorporation in Hegel's philosophy. The contingency and probability in quantum physics is therefore different from that of meteorology or biology, which can presuppose the "hidden variables" that quantum theory has rejected and is therefore more compatible with Hegel's account.

While this may pose a problem for assessing the relevance or validity of Hegel's philosophy for the understanding of nature today, such a problem is independent of Hegel's assessment of nineteenth century natural science. Instead, it is a disagreement grounded in

ontology. The Hegelian approach takes for its starting point the ontological assumptions and conclusions advanced in the *Science of Logic*, such that the *Philosophy of Nature* is advancing a thesis about the relation of universal and singular general to nature. That is, we have been interpreting Hegel's position as first and foremost an ontology of nature, which the natural sciences must presuppose in order to remain valid (Hegel had no reservations of criticizing on philosophical or ontological grounds various claims made by the natural sciences). A position that is equally comprehensive as Hegel's, which would be able to incorporate a quantum physical model, may therefore need to adopt a different set of presuppositions than those of Hegel.¹⁵

2.2.1. Logical Modality

In order to understand the modal determinations particular to nature, we must first look to the examination of modal categories in the *Science of Logic*. The discussion there establishes the account of necessity and contingency with respect to Hegel's system as a whole. On the basis of the account provided in the logic, we then look to the specific formulation and presentation of the modalities of nature, with particular emphasis on the distinction between the contingency of the external, existing singulars and the necessity of the inner conceptual universals.

The categories of necessity and contingency are dealt with explicitly in the *Science of Logic* as determinations of actuality. The first moment considers these determinations in their

¹⁵ By presuppositions, I am referring not only to the ontology that Hegel develops in the *Science of Logic*, which I take to be formative for his account of nature, but more importantly to various *unstated* presuppositions which Hegel believes to have done without, but which may nevertheless implicitly shape the course of the *Science of Logic* and its ontological commitments. For examples of criticisms raised against Hegel's unstated presuppositions include F.W.J. Schelling, *The Grounding of Positive Philosophy*, trans. Bruce Matthews (Albany: SUNY Press, 2007), and Gilles Deleuze, *Difference and Repetition*, trans. Paul Patton (New York: Columbia University Press, 1994). While I am unable to develop the argument further here, I do take Hegel's idealistic commitments that shape his philosophical system throughout, to also rule out a stronger theoretical role for contingency and empiricism regarding natural concepts.

merely formal sense. Actuality is, at first, "immediate, unreflected actuality," but which is also the "form-unity of the in-itselfness or inwardness and externality" (GW 11: 381/SL 478). It is important for Hegel that in considering modal categories, we must begin with actuality, not possibility. Actuality is the result in the dialectical process of the logic, where that which is is the manifestation, or the "actualization" of what is implicit or only in itself. Unlike in previous determinations of essence and reflection, however, the manifest and the implicit are thoroughly identical (this was not the case in, for example, grounded and ground, or the inessential and essential, which exhibit a "reflective shining of itself in an other" (GW 11: 381/SL 478)). The initial difference between the immediately manifest and the in-itself of actuality is therefore at first only formal. Consequently, the inwardness of actuality is its possibility, such that what is actual, or what is actualized, is possible.

This notion of possibility is only formal, however, and expresses only the self-identity of the content. Possibility is the simple non-contradictory form of anything at all. Hegel provides the examples that

It is possible that this evening the Moon will fall to the Earth, since the Moon is a body separate from the Earth and, therefore, can fall down just as much as a stone thrown into the air can. It is possible that the Turkish Sultan becomes Pope since he is a human being and, as such, can convert, become a Catholic priest, and so on. (§143Z; W 8: 283/EL 214).

This formal possibility is also only *merely* possible, and therefore lacks actuality. While what is possible is that which is actualized, in itself it is not actual, but only that which can be actual, i.e. what is possible. In other words, possibility forms the content of actuality, but is not itself actual. What can be actual is whatever does not contradict itself. However, being non-contradictory does not entail being actual, but only being possible. Because the merely formal possibility of A indicates that A is not actual, it also follows that not-A is possible. If not-A were not possible,

then A would not be possible, but would be actual and indeed necessary. The possibility of A, which entails the possibility of not-A, is however also the impossibility of A, since neither possibility excludes the other insofar as both are merely possible, but neither are actual. Because possibility is only formal or mere possibility without being actual (A) and entails the possibility of the contrary (not-A), it follows that what is formally possible cannot be actual without negating itself. This means that what is formally possible is also impossible, which yields a contradiction, where what is possible is therefore impossible by containing its opposite as also possible. This contradiction is therefore sublated such that the resulting determination is the actual and the possible together in a unity. The possible was the impossible only insofar as it was considered independent from the actual as the in-itself of actuality. The contradiction is resolved by considering possibility as explicitly in relation to the actual, where this identity of the actual and the possible is contingency.

In other words, Hegel argues that either possibility is only the non-contradictory form of something, or it requires some further condition that relates it to actuality. In the former, possibility lacks the determination of being actual because such an account also entails the possibility of that thing's opposite. Without any further determination other than non-contradictory form, both A and not-A are equally possible, and so neither can be actual, without some further claim regarding one or the other. The alternative is then to think of possibility as requiring both non-contradictoriness and some further conditioning in relation to what is already actual. In this case, something that is possible can really be actual, since there is a condition that determines that it is A that is an actual possibility, and not-A which is still possible but not actual. This further account of possibility, however, is a development from the initial merely formal concept, and is addressed below.

Stephen Houlgate thus describes this moment as the expansion of formal possibility from being *merely* possible to actually possible.¹⁶ By associating the possibility of A with the possibility of not-A, Houlgate claims that possibility has become "something definitive, irreducible or actual," insofar as possibility is not only what can be actual, but also as excluding the actuality of the not-A, which is also possible.¹⁷ The possibility of A is only secured as an actual possibility (something that actually could be) only if what is possible is A *or* not-A. For the possibility of A to exclude the possibility of not-A (which was shown to lead to the impossibility of both), possibility must be a moment of the actual, where A and not-A cannot both be actual. This does not however entail that not-A is not possible, but rather shows that for either A or not-A to be truly possible, and for the actuality of one to exclude that of the other, possibility itself must be preserved in actuality. In other words, that A is an actualized possibility, means that not-A is also possible. This actuality of the possible becomes the definition of contingency.

Contingency is the possible which excludes its opposite through its being actual, but is actual only as a mere possibility. What is contingent could be otherwise, because just as what is actual (A) is possible, so also is its opposite (not-A). Consequently, "the contingent thus has no ground because it is the contingent; and for that same reason it has a ground, because it is contingent" (GW 11: 384). Contingency has no ground insofar as its opposite is also possible, but precisely because the contingent is actual, it has a ground. Finally, the alternation or transition of each of these parts of contingency into the other entails the identity of possibility and actuality now in the form of necessity. Beatrice Longuenesse interprets the transition from

¹⁶ Stephen Houlgate, "Necessity and Contingency in Hegel's *Science of Logic*," *The Owl of Minerva* 27, no. 1 (Fall 1995): 40.

¹⁷ Ibid., 40.

contingency to necessity as a matter of "the laziness that is satisfied with defining the contingent as that which could possibly not be, and thus the actual as 'only possible,' will be just as easily satisfied with admitting that if nevertheless it is, it is because it is necessary."¹⁸ Longuenesse claimes that what is contingent can simply be considered necessary, since the possibility of being otherwise is merely a formal possibility; but because possibility can only be (actually) possible in contingency, one can just as easily consider that which is to be necessary. Karen Ng provides a similar account by claiming that "the sublation of this formal opposition leads to the determination that whatever is is necessary because the totality of what there is determines the full range of possible determinations."¹⁹ Both of these explanations however suggest that contingency drops out of consideration, leaving behind only the necessity of what is. However, Houlgate reminds us that what is necessary is not just what is, but rather what is as contingent. Hegel is therefore arguing for the necessity of contingency. In other words, what is necessary is neither A nor not-A, but rather contingency itself. Houlgate argues that "to the extent that possibility *must* take the form of contingency, it is apparent that not only contingency but also necessity arises from the ideas of actuality and possibility," and that consequently "for Hegel, indeed, necessity is initially nothing but the necessity of contingency."20

Thus, the line of thought is that what is actual is the actuality of what is possible. What is possible can only be possible by being the possibility of the actual, or by being contingency. That possibility cannot be as anything else other than contingency, means that contingency itself is necessary.²¹ That the contingent and contingency are in themselves necessary explains how the

¹⁸ Béatrice Longuenesse, *Hegel's Critique of Metaphysics*, trans. Nicole J. Simek (Cambridge University Press: Cambridge, 2007), 127.

¹⁹ Karen Ng, "Hegel's Logic of Actuality," *The Review of Metaphysics* 36, no. 1 (Sep. 2009): 161-162.

²⁰ Houlgate, "Necessity and Contingency in Hegel's Science of Logic," 41.

²¹ Houlgate adds that "the only thing necessitated by such necessity is the presence of contingency as such. Such necessity is not thought to govern what specific possibilities or contingent contents are actualized, because that is – *necessarily* – a matter of contingency." Ibid, 42.

transition from formal necessity to actuality occurs. Because contingency is necessary, and to be contingent is to be a determinate actuality (A), which could be otherwise (not-A), the actuality of necessity is said to have a content (GW 11: 385/SL 482). This means that the next set of modal categories are not simply formal, but are instead "real."

The actuality belonging to formal necessity is the focus of the next section of Hegel's analysis, namely real actuality. He argues that because the unity of necessity is only a simple and immediate unity, it remains "indifferent to its differences." These differences are the "variety of determinations" or the "manifold content in general" (GW 11: 385/SL 482). These become important particularly in the analysis of real possibility, as the in-itself of real actuality. Unlike formal possibility, which only indicated the abstract identity or absence of contradiction of a determination, real possibility involves "delv[ing] into the determinations, the circumstances, the conditions of a fact" (GW 11: 386/SL 482). Real possibility is then defined as "the immediately existent manifoldness of circumstances that refer to [a fact]" (GW 11: 386/SL 482). Whereas formal possibility was anything that did not inherently contradict itself, real possibility involves what is not contradictory within the domain of content that is already actual. Hegel observes that "this manifoldness of existence is therefore indeed both possibility and actuality, but their identity is at first only the *content* which is indifferent to these form determinations; they therefore constitute the form, determined as against their identity" (GW 11: 386/SL 483). What is really possible is thus the "posited whole of the form," or the "totality of conditions, a dispersed actuality which is not reflected into itself but is determined to be the in-itself of an other and intended in this determination to return to itself' (GW 11: 386-7/SL 483). Beatrice Longuenesse explains that

The real possibility of a living being is the totality of elements connected by chemical and mechanical relations, whose conjunction constitutes the unity of the biological

organism. Considered outside their unity in the organism, these elements have a "scattered actuality," with respect to which we can define another kind of possibility, "formal possibility": the regularities one can determine in their relations to other elements in virtue of the laws of interaction of material things.²²

Real possibility however sublates itself as a "self-rejoining." In providing the complete set of conditions that constitutes the real possibility of a fact, one ultimately provides nothing other than the fact itself. Thus, despite the real possibility being the in-itself of another, it ultimately sublates itself and returns to produce "the same moments that are already present" (GW 11: 387/SL 484). Unlike in formal possibility, where the possibility of an alternative was also entailed, in real possibility only the possibility of what is already actual can be expressed. While the moments of real possibility and real actuality can be distinguished whereby the possibility of A is conditioned by the actuality of B, because B is determinate and thus excludes not-B, the conditioned, real possibility of what is actual, and of nothing else besides. Consequently, Hegel claims that "what is really possible can no longer be otherwise; under the given conditions and circumstances, nothing else can follow. Real possibility and necessity are, therefore, only *apparently* distinguished" (GW 11: 388/SL 484). This necessity is nevertheless only a relative necessity, since it presupposes what is already given, i.e. a contingency.²⁴ Because real

²² Longuenesse, Hegel's Critique of Metaphysics, 135.

²³ Jay Lampert's emphasis on the role of multiplicity [*Mannigfältigkeit*] is useful here. Lampert draws attention to the introduction of multiplicity with the determinateness and content of real actuality. Consequently, the real possibility of A is conditioned by the real actuality of B, but where A and B are simply moments of the same multiplicity, such that B just is the real possibility of A. Hegel writes, "This manifoldness of existence is therefore indeed both possibility and actuality, but their identity is at first only the *content* which is indifferent to these form determinations; they therefore constitute the form, *determined* as against their identity" (GW 11: 386/SL 483). Lampert describes this actuality as being "the form of multiplicity by which contents relay the pregnancy of possibility" (77). See Lampert, "Hegel on Contingency, or, Fluidity and Multiplicity," *Bulletin of the Hegel Society of Great Britain* 26, no. 51/52 (2005): 74-82.

²⁴ Real or relative necessity is therefore what in Leibniz's philosophy is "physical" or "hypothetical" necessity: "That is, given that it was once such and such, it follows that such and such things will arise in the future." G. W. Leibniz, "On the Ultimate Origination of Things," in *Philosophical Essays*, trans. Roger Ariew (Hackett: Indianapolis, 1989), 150. Hegel's notion of formal necessity also corresponds well with Leibniz's notion of "absolute or metaphysical necessity, whose contrary implies a contradiction," (149). This is because Hegel's formal

possibility which became real necessity had to begin from the totality of conditions of the determinate, or real actuality, "real necessity is in itself also contingency" (GW 11: 389/SL 485).

For example, in asking whether it is *really* possible that I can run a four-minute mile by the end of the month, I am not asking whether the content of the claim is free of logical contradiction, but rather if that achievement is consistent with what is already actual. Its real possibility is therefore explained by examining all of the complex conditions needed for its actuality. However, we have shown that the complete set of conditions contained in this real possibility ultimately just expresses the actuality of the thing itself. This identity of real possibility and real actuality is real necessity, such that if it were *really possible* that I could run a four-minute mile at the end of the month, its conditions would have to be implicit in what is already actual. But because these conditions must be so specific to the actuality of this event (any number of circumstances could deter me from achieving this goal, so the "good fortune" that they do is ultimately a matter of the specificity of the totality of conditions), its real possibility is ultimately a necessity. Finally, this necessity is contingent since we are asking about the conditions of a specific event. Although it was shown that this achievement will occur if it is possible (and is therefore necessary), or will not happen if it is not possible, the decisive factor is the specific conditions of what is already actual.²⁵ This "already" of the *really* actual, and therefore of the really possible and the really necessary, is their contingency. What remains to be

necessity was the unity of formal possibility (i.e. that which is non-contradictory) and formal actuality, such that if something's non-contradictoriness entails its actuality, it is necessary. The contrary to formal necessary, would be neither actual nor possible, and so must be contradictory, as Leibniz describes.

²⁵ For Leibniz, the shift from absolute necessity to physical necessity, or contingency, was God's decision to create the best of all possible worlds. Everything in that world is also determined by its own physical necessity, but it does not therefore rule out the possibility of the world being otherwise, i.e. that the world is contingent in a way. Hegel has instead argued that the very forms actuality and possibility, and the movement of negativity between them, entails this contingent necessity of the world.

seen is how the contingency of this necessity no longer stands outside it, as an external condition, but where necessity itself posits this contingency as part of its own form.

Absolute necessity emerges as the final moment of modal reflection where contingency is no longer an external presupposition of (real) necessity, but is rather posited by necessity itself as its own determination. This is shown by examining real necessity once more, now considered as absolute actuality. First, real necessity has the immediacy of a determinate actuality. This actuality is considered absolute because it contains necessity as its in-itself. This is to say that whatever is actual is necessarily so, and can no longer be otherwise. However, Hegel goes on to claim that the determination of this actuality is ultimately empty; the necessity or absoluteness of the actual, which is its being the "unity of itself [actuality] and possibility," ultimately rests on contingency (GW 11: 389/SL 486). Although whatever is can no longer be otherwise, the determination of what is actual is a matter of contingency; there is no necessity to things being this way or another, but once the world *is* what it is, it must be so. This presupposition of contingency in real necessity is contained implicitly.

However, Hegel continues to show how contingency also *becomes* in necessity; that necessity deploys contingency as its own determination. This is because of the mechanism through which real necessity is the conversion of actuality into possibility and possibility back into actuality. In the previous moment of real necessity, we distinguished between real actuality and real possibility. Real actuality was the manifold, concrete existence; real possibility was the totality of its conditions. Thus, the possibility of the actual is just as determinate as the actual, such that by being the totality of conditions of the concrete existence, those conditions are nothing more than that thing itself. This is the movement within real necessity of actuality to possibility and back again. We can now see that the contingency is not only implicit as the

presupposition of determinacy in the given actual, but also the positing of that presupposition through the externalization of the contingent determination in the moment of real possibility. Just as the specific content of absolute actuality is contingent (could just as well be otherwise), it follows that the totality of its conditions is just as contingent (if the thing is contingent, then its conditions must also be contingent). By identifying the externally presupposed moment of contingency with the moment which emerges through the necessity's own movement, we see that contingency is itself a determination of necessity. This means that necessity is no longer relative to some contingent determination, but is rather absolute since it is "equally the sublating of this positedness, or the positing of *immediacy* and of the *in-itself*, just as in this very sublating it is the *determining* of it as *positedness*" (GW 11: 390/SL 486).

The resulting absolute necessity has essentially collapsed the distinction between actuality and possibility, which had persisted in the previous stages of modality.²⁶ Absolute necessity is therefore "being which in its negation, in essence, refers itself to itself and is being" (GW 11: 391/SL 487). Hegel explains absolute necessity as self-referring, self-grounding, necessary being in two ways. First, it *is* because it *is*. This is aspect of absolute necessity as immediate being that has neither condition nor ground; it simply is. Second, it is *because* it is. This aspect expresses absolute necessity's being just as much pure essence, or reflection, which "has a ground and a condition but has only itself for this ground and condition" (GW 11: 391/SL 487). With these two aspects, we see that what is necessary in absolute necessity is absolute necessity is absolute necessity itself. At the same time, because absolute necessity grounds *only* itself, it is considered

²⁶ Longuenesse observes that it is the attempts to think possibility as an independent, self-sufficient determination that leads to contradiction in both formal and real actuality: "Possible' is the defective category *par excellence*. For it corresponds to the moment of dissociation between being, i.e. the actual, and thought (of being), i.e. the possible. Nothing can fully express the possibility of an actuality except the thought of this actuality itself. The role of the category of 'possible' is only to make explicit the thought within actuality. Thus the formal possibility is non-contradiction, for it is the thinkable of a formal reflection. And the real possibility is the manifold of conditions, for it is the thinkable of an external reflection," *Hegel's Critique of Metaphysics*, 147.

to be "blind," which indicates the preservation and determination of contingency in it. Absolute necessity does not select one set of things and conditions, one world, as necessary rendering others impossible, because this would require a reason that these conditions are actual, thereby eliminating the contingency. Instead, it necessitates the contingency of the world. On the basis of this necessary contingency (i.e. of a set of conditions which has no reason but which cannot not be) actuality will have a determinate structure. This contingently grounded determinate structure was the determination of relative necessity. However, since the contingency is not external to determination of the actual, but is rather just a movement of absolute actuality and absolute necessity, the way in which the world is determined is not utterly ungrounded, but rather its way of being ungrounded must itself exhibit a specific structure.

Scholars have provided different interpretations of absolute necessity generating different sets of consequences for Hegel's system. Karen Ng argues that the affirmation of contingency by absolute necessity exhibits Hegel's more general focus for the actual, empirical world, and thereby entails that "not only are the categories empirically revisable, but such revisability and the continual activity of their determination and redetermination *is* the absolute necessity of the Concept rather than its downfall into contingency."²⁷ Ng takes the arguments of modal reflection to collapse the distinction between the transcendentality of categories and their empirical world as always already determined by thought, which in the philosophy of nature indicates that the categories will be revised in accordance with the contingent developments of that empirical world. Because absolute necessity determines itself through contingency, the conceptual is not

²⁷ Ng, "Hegel's Logic of Actuality," 172.

removed from the contingencies of the world, and therefore the categories of Hegel's system are subject to the same development based in the contingencies of the world.²⁸

Stephen Houlgate, however, argues for a more strict understanding of contingency and necessity, where it is precisely the categorial structure of being that is necessitated, while nevertheless allowing for contingency. He argues that "to say that being is absolute necessity is to say not only *that* it is through itself, but also that it is *what* it is through itself. In other words, it is to say that what being is – the 'content' that being has – follows of necessity from the very nature, or being, or 'form,' of being itself."²⁹ This content of being as absolute necessity Houlgate argues is "what follows from the fact that there are and must be finite, contingent beings in the world at all, namely that at some point those finite, contingent beings must cease to be."³⁰ In contrast to Ng's position, which emphasis the contingency of the necessity of the categories of being, Houlgate argues more for the necessity of the categorial structure of being, even when being must be contingent. In other words, being will be whatever it is (i.e. it is contingent), precisely because and as long as being must be and remain contingent.³¹ For example, John Burbidge adopts a position similar to Ng's to argue that the moments of chemical process in the Philosophy of Nature underwent changes in the various editions as a result of different encounters with empirical research.³² Houlgate, on the other hand, argues that the

²⁸ John Burbidge also has a similar position, where thought constantly works through contingent developments of being and continually regenerates its own necessary set of universals on its basis.

²⁹ Houlgate, "Necessity and Contingency in Hegel's Science of Logic," 46.

³⁰ Ibid, 46.

³¹ Beatrice Longuenesse's interpretation seems closer to Houlgate's. She argues that "there is no necessity before it is thought. For necessity is nothing other than the reflection of itself. But necessity reflected as such is no longer necessity. It is the freedom of the self-developing concept" *Hegel's Critique of Metaphysics*, 157. Although she emphasizes the role of thinking in the Doctrine of Essence more than Houlgate, they are in closer agreement on the autonomous determination of the structures of being and thought, that are not subject to contingent development. ³² Burbidge, *Real Process*, 189.

moments of chemical process are demonstrated *a priori* and are therefore necessary; revisions are possible only if previous arguments were in error.³³

2.2.2. Natural Modality

The claim made by the arguments of the logic that contingency is necessary is repeated in the philosophy of nature, where contingency and necessity are each given a distinct domain of determinacy. Hegel writes that

The *contradiction* of the idea, whereby as nature it is external to itself, is the contradiction, which on the one side is of the conceptually created necessity of its forms [*Gebilde*] and their rational determination in the organic totality, and on the other side is of the indifferent contingency of these forms and their indeterminable irregularity. The contingency and determinability from without [*von außen*] have legitimacy in the sphere of nature. (§250; GW 20: 239/EN I: 215)

The division, or contradiction, between the necessity and contingency in nature provides a modality for the external form of the idea described above. On the one hand, Hegel claims that the determination of singular things in nature is contingent, insofar as there is a determination "from without [*von außen*]" with respect to what is determined conceptually. On the other hand, whatever is expressed as belonging to the determination of a concept, i.e. a particular genus or law, is a necessary determination. This is similar to the idea of the laws of nature being mathematically formulated as a proportion between variables. In Newton's second law of mechanics, F=ma, the force of an object will necessarily be equal to the product of its mass and acceleration, but that force is at the same time *contingent* upon the determinations of mass and acceleration.³⁴

³³ Stephen Houlgate, "Logic and Nature in Hegel's Philosophy: A Response to John W. Burbidge," *The Owl of Minerva*, 34, no. 1 (Fall/Winter 2002-03): 123. I will return to this debate regarding the stages of chemical process in Chapter 3.

³⁴ Wandschneider refers to these as the "antecedent conditions," which as the "individual initial and marginal conditions of natural processes ... are not captured by natural laws, because these only formulate universal relations,

Just as the arguments of the logic showed that what is absolutely necessary is contingency, which has a specific structure, so too are things in nature subject to contingent determination, provided that in that contingent determination, the necessity of conceptual determination is still exhibited. This is to say that, like in real necessity, the laws of nature necessitate the events in the world, but presuppose the givenness or the contingency of what is in the world. The sublation of real necessity into absolute necessity does not eliminate that contingency, but shows how both it and the necessitation of the laws belong to the same structure. It follows that laws of nature are not contingent, but rather are absolutely necessary, which explains why they can be grasped with conceptual necessity through dialectical method. At the same time, however, because the conceptual in nature is something only internal to it, contingency appears to play a particularly strong role in the determination of the "concrete forms." We pointed out above that this internality of the concept with respect to the singular objects in nature results in there being no existence of "magnetic process" as such. We now see that the externality of the singular objects in nature means that they are conditioned by contingent determination from without, such that "monstrosities [Mißgeburten], deformities [*Mißförmigkeiten*], and borderline cases [*Mitteldinge*]" emerge (§250A; GW 20: 241/EN I: 216). It is the exposure to contingent determination from without, in addition to the necessity of conceptual determination, that causes the appearance of things in nature to deviate from their conceptual norm.35

while the individual character of a factual natural process is only characterized by the additional account of the antecedent conditions. These thus represent an element of the knowledge of nature which is not part of natural law and is in this respect contingent; and for exactly this reason knowledge of nature cannot ultimately do without empirical knowledge." Wandschneider, "Nature and the Dialectic of Nature in Hegel's Objective Idealism," 43. ³⁵ The existence of monstrosities as the deviation from a norm is possible only within the organic domain, which describes an implicitly subjective object, i.e. an object determined explicitly by a conceptual norm. There would be no such thing as a "monstrous magnetic process."

By relating the contingency of nature with the externalized structure of the idea, whereby objects of nature being constituted as outside the concept are through that very determination subject to external determination, we are differentiating our account of contingency from that which claims that the contingency of nature is grounded in the externality of nature from all determination of thought. The latter interpretation is provided by John Burbidge, and claims that the contingency of nature is associated with nature's being a reality external to thought, and which resists complete conceptual determination. While this sounds similar to the approach we have outlined above, we argued in Chapter 1 that Burbidge utilizes an *a priori-a posteriori* distinction, whereby the determinacies of nature are reflectively generated by an examination of what regular structures appear in empirical nature. Such an understanding of contingency ultimately appears to be closer to the contingency of *real* necessity, rather than the standpoint of absolute necessity, since in real necessity, contingency results from the presupposition of a given on the basis of which everything else is determined necessarily. Thus, for Burbidge, nature's contingency is an aspect of its givenness to thought, in which thought can only establish the necessities after the fact. Another way to frame this distinction is to say that for Burbidge nature is *external* to the idea, whereas I have argued that nature *is* the idea as self-external. As a result, for Burbidge all necessary structures in nature are contingent, whereas I argue that there are conceptual structures in nature that are *absolutely* necessary.

This interpretation of contingency is given a stronger reading as the existence of chance in nature by Raoni Padui.³⁶ Like Burbidge, Padui suggests that the contingency in nature is distinct from the contingency in the logic, insofar as the latter is an internally set determination by necessity, through which necessity determines itself, whereas the former is an *external*

³⁶ Padui, "The Necessity of Contingency and the Powerless of Nature: Hegel's Two Senses of Contingency" *Idealistic Studies* 40, no. 3 (2010): 243-255.

limitation of reason and its determinations of necessity. The contingency of nature thus resists conceptual determination, and exhibits therefore a kind of "impotence" [*Ohnmacht*], which explains the appearance of monstrosities, as those instances of things that violate, or are at extreme odds with the otherwise necessary course of nature. Padui stresses this distinction, whereby nature's "pre-categorical" contingency functions much more as a presence of chance and irrationality in nature.

This position is ultimately similar to a kind of Kantian approach to nature. For Kant, concepts or reason cannot completely comprehend nature because for something to be an object of possible experience, it must also be given to us as an intuition. Human intuition, however, has a specific form, namely as space and time, and this form is fundamentally heterogeneous from the categorial structures of reason. This means that there will always remain a gap between reason and the objects of nature, which is expressed as a form of contingency. The interpretation by Burbidge and Padui adopts a similar stance, although instead of using Kant's account of the irreducible fact of the form of human intuition, they ground this contingency in the irreducible "disjunction between the logical and the real, between the rational and the empirical."³⁷ At the same time, however, they want to grant that this disjunction is not a limitation of our capacity for knowledge, which is Kant's position, but identify this radical contingency as essential to nature itself. Consequently, this position seems to be at odds with itself by arguing on the one hand for a radical contingency as external to reason, but which is on the other hand grounded in something we can know about nature.

Against this position, we have proposed interpreting the contingency of nature as itself a consequence or determination of the ideal structure of nature. Nature exhibits contingency not in

³⁷ Ibid., 253.

spite of or in opposition to how it is grasped conceptually, but rather precisely because of and through it. Instead of granting priority to the appearance of the multiplicity of singular things, which express contingency and irrationality in nature, I take Hegel's position to be that this contingency and irrationality is the result of the "self-externality of the concept" (GW 12: 39/SL 536), or the structure of the idea as nature, which we have been advancing. This means that, contrary to the claim that the contingencies of the logic and nature are different, we argue nature's contingency has the same source in the necessity of the concept, which nevertheless therefore preserves the presence of contingency.

This leaves the question open, then, how *does* contingency function in nature. Is there genuine chance in nature or resistance to determination by the concept as suggested by these other interpretations? Or is contingency in nature still expressed within the bounds of conceptual determination? We have suggested that the primary form in which contingency is exhibited is as the "antecedent conditions" that determine that specific characteristics of a singular as a singular. When claiming that "this impotence [Jene Ohnmacht] of nature sets limits to philosophy, and it is the most improper thing [das Ungehörigste] to demand of the concept, that it should grasp [begreifen], and as it is said, construct and deduce nature's contingencies," Hegel uses an example of an individual's request for the philosophy of nature to deduce his quill (§250A; GW 20: 240/EN I: 215, 304). Hegel takes this request to be absurd, since it would require grasping the complete set of antecedent conditions, just as it was required to determine whether my running a 4-minute mile was possible and therefore necessary, or not. Such a fact is ultimately a matter of contingency, but for that reason not irrational, since contingency is necessary. As a result, the domain of real, singular things of nature is beyond the scope of philosophy, which deals only with the conceptual necessity. At the same time, we have argued that the externality of

those real things to the conceptual determination, is already an internal determination by the nature's ontological structure, and thus the contingency pertaining to the singulars is fully consistent with the necessity of the universal concepts in nature. This means that the singulars must be and be understood in and through universal concepts, even when the way in which they express this universality as singulars is contingent.

This expression of the necessity of the universal in and through the contingency of the singular is also exemplified for Hegel in the monstrosities of nature that "blur essential limits with intermediate and defective forms" (§250A; GW 20: 241/EN I: 216). Although this appears to be a stronger expression of contingency as violating certain necessary structures in nature (and was therefore the example that formed the basis for Padui's reading), we maintain that these monstrosities, emerge on the basis of the same contingency as described above. It is important to note, first, that monstrosities can exist only on the organic level. This is because defects and errors all presuppose some sort of normativity or purposiveness from which there is a deviation.³⁸ For Hegel, these purposive structures exist in nature as a conceptual determination and which exist in real singulars only at the organic level. Mechanical, electromagnetic, and chemical processes and properties act in accordance with simple external necessity, and admit of no inner purposiveness, from which deviation is possible. With organic objects, however, Hegel claims that, on the one hand, the external relation between universal and singular obtains, such that the living singulars are determined "from without," the specifics of which are contingent. On the other hand, because what it means to be a living singular is to be organized and determined by some sort of inner purpose or concept (i.e. genus), the aspects of the singular which emerge

³⁸ I develop an account of health and disease as naturalistic normative structures (i.e. norms without values) in Chapter 5.

contingently and in deviation from their genus, will appear as pathological states, and in extreme cases monstrosities.³⁹

In other words, we are rejecting the claim that contingency in nature is present as chance and irrationality, and are instead interpreting contingency as the "determinability from without [von außem]" (§250; GW 20: 239/EN I: 215). Specifically, we interpret this claim to mean that even when the philosophy of nature provides every possible kind of determinacy of nature, no one of those determinations succeeds in completely determining the object in nature, and overcoming that object's external determinability. More importantly, we interpret this external determinability to be precisely determinability through the other concepts of the philosophy of nature, and not a form of chance or randomness. When considering an instance of a chemical reaction, for example, insofar as it is a chemical reaction, it will necessarily exhibit a certain structure as established through the necessary conceptual development and articulated in the philosophy of nature. However, the concept of chemical process is not alone in determining the appearance of the singular chemical reaction, since there is also the *contingency* of nature, or the determinability of the singular occurrence from without [von außem]. However, "external [äußerliche] determinations" are precisely the content of the philosophy of nature. Consequently, we interpret that which further determines the singular instance of any universal concept to be the other concepts. In the case of a chemical reaction, the specific appearance is further determined by mass, heat, electromagnetic conditions, etc. All of these additional determinations provide further differentiation within the general structures of a chemical process (i.e. an acid-

³⁹ In a sense, the contingency intrinsic to the singularity of existing nature renders everything "monstrous," insofar as nothing is adequate to its concept. However, Hegel seems to reserve such normative terms as monstrosity, health and disease to the biological domain, in which alone nature involves a self-relatedness that can endure the negative inadequacy between universal and genus and exhibit it in the form of disease. Hegel writes that "the stone cannot become sick, because it perishes in the negative, is chemically dissolved, does not preserve its form, and is not the negative of itself, that encroaches its opposite, like in illness and self-feeling" (§371Z; GW 24: 1596/EN III: 194). These arguments are addressed in Chapter 5.

base neutralization process).⁴⁰ Such an application equally applies, and satisfactorily explains, the diversity of the organic world including its monstrosities. Whereas animals will exhibit the formal properties that distinguish them from both inorganic nature and plants, they are equally subject to environmental conditions of several sorts (chemical being the most interesting one when considering the field of genetics or organic chemistry).

Typically, we would expect later determinations in Hegel's system to sublate these external determinacies of all conceptual determinations, thus eliminating contingency altogether. We might expect that some concept not simply determine its object partially while leaving it exposed to external conditions, but rather that the concept would determine its object completely by positing its own presuppositions. Thus, we might expect that, for example the chemical process, which resolves the contradictions of electricity and the individuation of bodies by positing a process in which the individuality of bodies are constituted through dissolution and unification, would suffice to explain everything about a bodies that was presented in the course of the philosophy of nature. Or else, we might expect some other concept to articulate the process that leaves behind no external presupposition, but makes these into its own determination. This is ultimately true for Hegel, but once such a stage has been reached, it will no longer belong to the domain of nature. In nature, the highest stage, animal life, expresses what was implicit within the whole of nature. This means that while nature is presented most immediately as the pure and abstract externality of space and time, the dialectical relationship between these yields new concepts that introduce mediation and internal difference. This process

⁴⁰ Even elective affinity, which introduces the particularization of universal neutrality, and which concludes Hegel's "Physics" by arriving the complete subjection of the body's corporeality to the individuating process (i.e. conceptual determination), remains at the level of a universal, and so allows for other factors to specify which acids more strongly associate with which bases. The details of elective affinity and the other moments of chemical process are explained in Chapter 3.

continues to present as internal to the concept what had been external or, what is the same, implicit, until the final stage, the animal organism, establishes precisely this relationship of a conceptual interiority in opposition with and in relation to the exteriority (e.g. the failure of the living individual to be adequate to its genus as exhibited by disease).

However, even the animal organism, as the final stage of nature, exhibits the same contingent determination from without. This external aspect of the animal is apparent as the mortality of singular animals in distinction to the continuation of their species, which is simply the distinction between universal and singular as specific to the organic sphere. As already mentioned above, once the animal organism overcomes its finitude, which at the same time is making as its own what had always been contingent and externally conditioning it, the transition from nature to spirit will have taken place. In fact, precisely this external determination, which forms the basis for contingency, is specific to nature itself, whereas the complete determination of the object by the concept, which is the same as saying that the object becomes adequate to its concept, is characteristic of the self-determination or freedom of spirit. Only spirit exhibits the existing activity of the concept insofar as its presuppositions are posited by it, such as in the form of a historical past. Until that point, however, every sphere of nature, even the highest and most developed stage of animal organism, is subject to external, contingent determination.⁴¹

I have presented an interpretation of contingency in nature that rejects radical contingency in the form of chance or irrationality, and instead suggested that by contingency, Hegel means determination external to a particular concept. Because no concept in nature is totalizing, this means that contingency persists at all levels, and is thus ineliminable from nature in itself, even when we are suggesting that every kind of determination of nature is presented by

⁴¹ The specific structure of the subjectivity of organisms as still restricted to a natural form is provided in Chapter 3.

the philosophy of nature. Thus, even in those cases where objects appear irrational and in violation of or deviation from a concept, we suggest that Hegel's position is not to conclude that nature is therefore fundamentally "irrational," the laws of which could be probabilistic at best, as suggested by Padui. I argue instead that what appears contingent at one level must simply be explained at another level. For example, the congenital defects or the genetic mutations of an animal, which can play an essential role in the struggle for survival and the evolution of a species, are not the results of irreducible chance or inexplicable causes, but are instead explained by a set of chemical reactions in the formation and development of an embryo. Moreover, although we can be certain of the kinds of determinations in nature as necessary, explaining the specificity of a singular will always be matter of contingency.

2.3. System of Stages

Nature's externalization of the singular from the universal, and its modalization as contingency and necessity, has required that we invoke the diversity of stages in Hegel's philosophy of nature for a complete explanation. In order to explain how the singular that stands outside the universal concept, we interpreted the singular as specific to a particular universal of the philosophy of nature (e.g. magnetism or animal organism). This showed how the external and contingent determination, which makes the singular case of a universal appear unlike the universal itself, is not wholly irrational or indeterminate, but is rather just another universal. For example, temperature, mass, and electromagnetic circumstances will affect the occurrence and appearance of a chemical reaction, just as different chemical reactions affect the occurrence and appearance of organic processes. However, in order to justify this employment, we must now consider what relation exists between the various universal concepts of nature. Does Hegel

subscribe to reductionist position, where higher order phenomena can be explained by lower order processes, and would these explanations go so far as to eliminate the being of those higher order phenomena? Or does Hegel think that the diversity of phenomena in nature cannot be explained through a single set of concepts?

Our use of the diversity of universals in the explanation of the externality of the universal from the singular already suggests that Hegel does not hold a reductionist position. Every concept of nature fails to adequately grasp the totality of determinations in nature. Typically theoretical reduction functions by explaining higher order phenomena in terms of lower order, and therefore more fundamental principles. However, in Hegel's case, although the lower order concepts such as space, time and matter have greater extension, they are also less comprehensive. As a result of the limitations of their conceptual content, the contradictions of these concepts give rise to new concepts, which resolve the contradiction. As a result, Hegel's dialectical concepts would have us think that the highest order concepts are those that can explain the totality best (e.g. the absolute idea in the logic is the final concept which completes the logic by grasping the totality of its moments). Therefore, if there were such a concept in *nature*, it would be the final stage of the philosophy of nature, namely the animal organism. The animal organism is the most complex and robust concept of nature precisely insofar as its concept posits what had been implicit throughout the rest of nature.

However, even this concept did not fully determine its object, allowing singular animals to be affected by external conditions and circumstances. Consequently, for Hegel an existing singular of nature cannot be fully explained by any single concept, first, because the contingency of that singular and its externality with respect to a universal concept means that no concept in itself accounts for the "antecedent conditions" under which the singulars comes to exist as it

does. Second, these antecedent conditions will ultimately rely on the concepts found throughout the philosophy of nature as those categories through which nature is determined. An example of this non-reductionist explanation was found in the necessity of contingency in nature, such that the specific singular animal organism must be explained through various chemical events, which themselves may be conditioned by temperature and other factors. From this, it is evident that when explaining the singular animal, the structures involved in the universal animal are not enough, *but* to the extent that a complete explanation is possible, that explanation includes the other concepts in the philosophy of nature. This is in opposition to the account, wherein the contingency of the singular animal organism involves some irrational determination, entirely external to the apparatus of natural concepts and laws.

Hegel characterizes his non-reductionist account of nature's diverse set of determinations as a "system of stages [*System von Stufen*]" (§249; GW 20: 238/EN I: 212). Each stage signifies a different set of conceptual relations, which are the determinations of nature. Hegel describes nature as a system of stages because "it is the externality characteristic of nature, that lets the differences fall apart [*auseinanderfallen*] and emerge as indifferent existences" (§249A; GW 20: 239/EN I: 212). The way in which these differences appear, then, is as "the immediately concrete [or as] a set of properties, which are outside-one-another [*außereinander*] and more or less indifferent to one another. Simple subjective being-for-itself is therefore equally indifferent to these differences and abandons them to external, contingent determination" (§250; GW 20: 239-40/EN I: 215). This is to say that the various stages or conceptual structures of nature appear as indifferent and juxtaposed to each other, all co-existing in singulars to more or less of a degree. This does not necessarily mean that every universal must be apparent in every singular natural phenomenon (i.e. not everything in nature is exhibiting electric shock or the refraction of light),

but rather only establishes a distinction between stages that allows a singular thing in nature to be comprehended through different universal properties. For example, although much of what comprehends me as a human presupposes *at least* certain biological or even cultural conceptual frameworks, it is my mass that is most significant when considering the durability of the crowded elevator I stand in or the small airplane I fly in. Setting aside the explanation of singular things, which Hegel believes to be outside the scope of philosophy, the conceptual comprehension of the universals of nature views them as stages, each of which describes a structure of nature that as external and indifferent to the other stages and is therefore irreducible to them.

While this explains in what sense nature is comprehended in *stages*, it is equally important that these stages exist as a *system*. This is because whereas *externally*, i.e. at the level of appearance and singulars, the structures of nature exist indifferently to one another, *internally* the stages exist in dialectical relation to one another.

Nature is to be regarded as a system of stages, of which one necessarily follows from the other and is the proximate truth of that, from which it results; however, this is not as though the one *naturally* generated from the other, but rather in the internal idea, which constitutes the ground of nature. The *metamorphosis* belongs only to the concept as such, since its change is alone development. However, the concept is in nature only in part as something internal, and in part existing only as a living individual [*Individuum*]; *existing* metamorphosis is therefore limited to this alone [the living individual -MK]. (§249; GW 20: 238-9/EN I: 212)

As a consequence of the claim that the stages of nature are indifferent and external to one another, Hegel here asserts that "metamorphosis," development, or what we might now call "evolution" is not exhibited in anything in nature (except for individual organisms), since development is characteristic of the concept.⁴² Nevertheless, insofar as each stage is internally

⁴² In the remark, Hegel adds that "thinking consideration must reject such nebulous and basically sensuous representations, as for example the so-called emergence [*Hervorgehen*] of plants and animals from water, and then the emergence of the more developed animal organizations out of the less developed, and so on" (§249A; GW 20:

conceptual, there is a sequence of development that organizes the stages by complexity.⁴³ Specifically, the stages of nature follow from one another in accordance with the dialectical method seen in the logic, in which each stage is the truth of its predecessor. When grasped conceptually, each stage will reveal certain contradictions, the resolutions or sublations of which will form the basis of the subsequent stage. Unlike in logic and in spirit, where each stage itself goes through the development to become the next stage, in nature, we have already claimed that the stages remain indifferent to one another in their existence. For example, the transition in the philosophy of nature from the earth to the plant organism does not entail that the earth itself becomes a plant. Rather the concept of earth is sublated in the concept of the plant, while the existing earth remains the earth and distinct from existing plants. Thus, Hegel claims that "the dialectical concept, which guides the stages, is their inwardness [*das Innere*]" (§249A; GW 20: 239/EN I: 212).

There are however various ways in which this development of nature as exclusively internal to nature (until the appearance of organisms) can be characterized. Alison Stone suggests three different ways of describing the dialectical relationship between the concepts of nature: "logical," temporally "transformative", and non-temporally "transformative."⁴⁴ The logical

^{239/}EN I: 212). These are the most explicit assertions by Hegel of a rejection of evolutionary theory. We will look more closely at whether or not such a rejection is absolute when considering the sphere of organisms in Chapter 4. It should be noted that despite reaffirming the absence of metamorphosis or "*transmutation*" (the term used to describe evolutionary accounts before Darwin in the 17th and 18th century) in animal *organizations*, Hegel does claim that it is present in living *individuals*. Chapter 4 provides a more detailed account of Hegel's account of biological development and situates it with respect to the biological theories circulating during Hegel's time. I argue that while Hegel offers no positive account of evolution, and in fact explicitly rejects the idea of such an account, his own biological theory is no less consistent with a rejection of species fixism. As a result, species may be underdetermined and therefore capable of evolving, even if no such evolutionary process is advanced by Hegel. ⁴³ Establishing the inner dialectical core of nature as the *concept* is another way in which Hegel's philosophy of nature is distinct from Schelling's. In the *First Outline*, Schelling considers the unconditioned in nature as an absolute, infinite, *constructing activity* that produces the totality of objects in nature. Where Schelling opts for a productive, more substantial model for the unconditioned in nature, Hegel's inner concept frames the philosophy of nature by means of an epistemic and subjective model. These issues were explored earlier in Chapter 2. ⁴⁴ Stone, *Petrified Intelligence*, 64-66.

interpretation claims that each determination "can only subsist because some other form also exists which resolves its contradiction, a successor form which, in turn, only exists because it is accompanied by or embraced within something else which resolves *its* contradiction."⁴⁵ This interpretation will differ from the others in that it emphasizes a regressive argumentation, where succeeding determinations make possible preceding determinations. The alternative to the logical interpretation of the inner dialectic of nature is the "transformative" model. Here, "each form responds to its contradiction by actually *turning into* the successor form that it requires," offering a progressive account.⁴⁶ Most unique to this interpretation is the emphasis on the language of becoming and metamorphosis between concepts, specifically citing passages in the mechanics, such as "the truth of space is time, so that space becomes time; our transition to time is not subjective, space itself makes the transition" (§257Z; GW 24: 1202/EN I: 229), and "the line therefore passes into the plane" (§256; GW 20: 245/EN I: 226). Based on these instances, the transformative interpretation emphasizes the drive of each determination to resolve its own contradiction through transforming itself into its successor, whereas the logical interpretation views all the determinations as simultaneously necessary such that the successors can ground the predecessors.

Stone adds that within the transformative interpretation of nature's inner dialectic, there is a temporal and a non-temporal interpretation. She acknowledges that the language of transformation and metamorphosis may imply not only a logical development but also a temporal development. Understanding the transformations in Hegel's philosophy of nature to be happening in time would be problematic not only because it contradicts §249, discussed above, which locates metamorphosis within the concept alone, but also because it would indicate that

⁴⁵ Ibid., 64.

⁴⁶ Ibid., 64-65.

time itself would have been generated in time, insofar as time follows space in the order of argumentation. Consequently, Stone offers and defends a non-temporal reading of transformation. In this model, instead of viewing the transformation as happening *in time*, Stone claims that the transformation of forms occur eternally. Rather than thinking eternity as simply being completely outside of time, however, Stone argues that eternity for Hegel is also "uninterruptedly present, never coming into being or ceasing to be."⁴⁷ Consequently, "each natural form necessitates its successor by metamorphosing into it continuously, while reciprocally, being neverendingly regenerated from its own predecessor."⁴⁸ This model then explains the dialectic within nature as an active transformation of each form into one another, as is suggested by Hegel in certain cases, while locating this transformation in the eternal domain of the forms, and *not* in time.

The difficulty of deciding between interpretations is that not only is there evidence for both being true, but Hegel ultimately wants to understand these as true simultaneously. The fact that development or metamorphosis is present in nature, but only with respect to the inner conceptuality, simultaneously affirms and denies that transformation is present in any given determination. One issue with Stone's divorcing these aspects in Hegel's argument comes from using the language of "form" rather than that of "concept," "universal" and "singular." Does the form pertain to the informed singulars or just the pure form itself? Are forms of nature conditioned by matter intrinsically or extrinsically, i.e. are the forms of nature intrinsically different than the forms of nature or spirit, or simply different through their matter? When Hegel maintains a strong distinction between the inner conceptuality and universality, and external reality and singularity, and subsequently locates development exclusively in the inner

⁴⁷ Ibid., 66.

⁴⁸ Ibid., 66.

conceptuality, it can be difficult to make sense of Hegel's other claims that, for example, space or the line transform into their successor. Does the concept, or form, of space transform or does space itself transform? Is there a difference at this level?

The problem of interpreting nature's inner dialectic can be reformulated as understanding the relation between one stage and its proximate truth, i.e. its sublation. On the one hand, we can read sublation as actually indicating if not an overt and apparent *transformation* of one determination to another, then at least some sort of existing relation between determinations. Hegel provides us with several examples of this model throughout the text. With the abstract determinations of space and time, he has no problem of claiming that, for example, "this passing away and self-regeneration of space in time and time in space, in which time posits itself spatially as place, while this indifferent spatiality is posited immediately in a temporal manner, constitutes motion" (§261; GW 20: 252/EN I: 237). In this passage, as with the others mentioned above, Hegel claims that a successor stage (in this case, motion) is the synthesis of the contradictory elements of the previous stage. Hegel later cites the identity of magnetism, electricity, and chemism (the three moments of the physics of total individuality) as an empirically proven fact just as it is demonstrated philosophically (§313A; GW 20: 308-9/EN II: 106-7). This means that these stages do indicate an apparent relation to one another, even while maintaining their independence from each other. In these cases, Hegel establishes a strong relation between consecutive stages in the philosophy of nature, even where these relations can appear empirically.49

⁴⁹ In the case of 'magneto-electro-chemism,' Hegel will also insist that this identity remains an identity of different moments, and that "it is equally important that the *particular* forms in which the universal exists, and the *particular phenomena* of these forms, should also be *distinguished from each other*" (§313A; GW 20: 309/EN II: 107). Magnetism, chemism, and electricity are each their own independent stage, and yet at the same time they constitute particular moments of a greater "stage" of total individuality.

On the other hand, we could claim that sublations of and dialectical transitions between determinations of nature provide us nothing more than a resolution of contradiction at the level of conceptual form, but not of content. By form, we mean the way Hegel characterizing each stage of nature with language drawn from the logic (e.g. singularity, particularity, and universality), whereas by content we mean the specific concepts of natural science that correspond to these forms (e.g. light, gravity, heat). This model draws evidence from the fact that not every sequence of stages exhibits such a smooth transition or a plausible relation. We have indicated that Hegel resists identifying any kind of transformation between water and plants and animals, or between lower and higher order organizations of animals (§249A; GW 20: 239/EN I: 212). The moments of the physics of universal individuality also provide a questionable sequence of transformations if interpreted in any other way other than on the basis of conceptual form: Hegel passes from (1) the astrophysical determinations of (1a) sun, (1b) moon, (1c) comet, and (1d) planets, to (2) the elemental determinations of (2a) air, (2b) fire, (2c) water, and (2d) earth, to (3) the meteorological determinations of (3a) seasons & climates, (3b) earthquakes & volcanoes, (3c) clouds & thunderstorms.⁵⁰ Therefore, on the one hand, we have the transitions Stone references, which suggest a strong relation between moments, such that an actual transformation of the point into line, or of space and time into place and motion seems plausible. On the other hand, we have other sequences of stages, such as those in the physics of universal individuality, which are empirically more disconnected, and therefore suggest a less plausible case for transformations or relations between stages at the level of content. Consequently, any account of the dialectical movement between stages will have to explain the differences in the expression of the inner dialectical identity of nature's diverse stages.

⁵⁰ Astrophysics or "the free, physical bodies" appear in EN §275-280. Elemental physics appear in §281-285. Meteorology or "the elemental process" appear in §286-289.

One other aspect that could address the tension between these interpretations is a consideration of development with respect to the abstraction or concretion of determinations. As the determinations become more developed through the dialectical method described in Chapter 1, the internal dialectic of nature itself will gradually be made more explicit until it is fully present in the animal. This development is ultimately a development from abstract determinations to concrete ones. In nature, however, because of the external positioning of the ideal and real, or universal and singular moments, the dialectical relations will exist at first in the ideal and abstract, and only subsequently to become more explicit in the real and concrete. This would mean that the apparent inconsistent treatment of transformation and relation between the stages throughout the text is potentially resolvable, specifically by examining the determinacy of each stage with respect to its position within the development of the whole philosophy of nature. For example, the fact that many of Stone's examples of transformations between forms are drawn more prominently from the abstract concepts of mechanics, prior to their being anything actually real (insofar as Hegel claims that *matter* is the first moment of *reality* in nature), suggests that the transformation is still restricted to the abstract, ideal moment of nature.⁵¹ The absence of language of transformation in the physics of universal individuality (i.e. astrophysics, elements, and meteorology), where there exists a more apparent distinction between real and ideal, can then be explained, insofar as these determinations are still relatively abstract, and therefore exhibit the inner dialectic identity less prominently. In the physics of total individuality (i.e. magnetism, electricity and chemism), the determinations are more developed, and therefore

⁵¹ "The transition from ideality to reality, from abstraction to concrete being, here from space and time to reality, which appears as *matter*, is inconceivable for understanding, for which it therefore always makes itself into something external and as something given" (§261A; GW 20: 252/EN I: 237). Hegel is here highlighting the significance of deriving matter, i.e. what is real, from space and time, i.e. what is ideal. This argumentation works through dialectical reasoning, which shows the fluidity of concept, whereas the understanding considers them to be fixed and rigid.

would exhibit the dialectical identity between them more explicitly. This approach may still have difficulties addressing the stages of organics (geology, plant biology, and zoology), insofar as Hegel once again insists that no form of development exists between the earth, plants, and animals. However, dialectical relations between the stages of organics may be possible on the model of the identity of electricity, magnetism and chemism.

The interpretative approach that we adopt follows claims that the dialectical development occurs specifically with respect to the forms of concepts and not to their content. Specifically, we will proceed on the assumption that development appears no where in nature (until the stage of organisms), and otherwise should only be regarded as a logical transition between stages. We alternatively described this as development and dialectical relation with regard to the form of the concepts, but not with respect to the content, insofar as some sets of consecutive stages admit of no plausible relation at the level of content. Within any given stage, the relations between concepts and terms should be regarded as real, but these stages remain independent from one another. However, as we advance and arrive at more developed determinations of nature, we should examine to what extent the inner dialectic begins to reveal itself, as Hegel would imply when discussing electromagnetism. We must also consider to what extent Hegel's observations of the appearance of dialectical relations in nature rely on the natural scientific claims made at the time. This applies both to his affirmative statements when discussing electromagnetism and the absence of such statements when discussing the elements and meteorology.

If Hegel's philosophy of nature and its dialectic structure *could* establish dialectical relations regarding content, as in the case in the identity of electromagnetism, then it *would* provide a stronger argument regarding nature. In fact, it should be the case that if we correctly identify the concepts of natural sciences to the conceptual forms established through the

dialectical method of Hegel's philosophy of nature, then there would also be a direct dialectical relation between the content of those concepts. If this were the case, then the philosophy of nature would be able to demonstrate the actual necessary arrangement of determinations of nature, and the ways in which the contradictions of one stage are positively resolved by another. In other words, it would demonstrate that every natural science has a limited validity for its own domain, but that ultimately the determinations of mechanics presuppose and resolved by the determinations of physics, and those of physics presuppose and are resolved by those of biology. However, if this were the case, then the philosophy of nature could be demonstrably false, insofar as it would provide an absolute grounding for scientific claims about nature, which we may no longer consider to be legitimate.

Although we will examine some of Hegel's interventions with the natural sciences for the possibility that the stronger position can be maintained, if it remains the case that they appear to justify relations only at the level of conceptual form, then the philosophy of nature can remain consistent only if we weaken its scope. We indicated in Chapter 1 that Hegel acknowledges a secondary procedure within the philosophy of nature that establishes the correspondence between the philosophical conceptual forms and the natural scientific concepts. We can therefore invoke this same distinction here in order to consider as necessary only those conceptual forms and their interrelations while allowing for newer natural scientific concepts to fill in for those forms. Rather than there being a true dialectical sequence inherent in the content of the specific concepts drawn by each science, we claim that only the logical form of those concepts can be seen to unify them. This weaker version would allow Hegel to make transitions between natural sciences, including between those that admit of no apparent connection. Using this model, we also argue that nature must exhibit the range of logical forms, which are established necessarily

through the dialectical method, but that the natural scientific concepts that correspond to these structures and provide them with content are not determined by the same necessity. Instead, the natural sciences can change to provide better empirical evidence for the dialectically demonstrated conceptual forms, provided that they remain consistent with those forms.

2.4. Conclusion

I began the chapter by claiming that nature would exhibit unique structures that result from its being the idea in the form of otherness. The first of these structures to be addressed was the externality of the universal from the singular, or of the ideal from the real. This is most fundamental expression of the external form nature takes, insofar as it indicates the "unresolved contradiction" and essential inadequacy between nature's inner laws and its external appearance. The second structure then addressed the modality of these sides of nature, where the inner laws are necessary determinations, but the external singulars are determined contingently. By looking briefly at the Science of Logic, we showed how Hegel argues for a contingency that is not only ineliminable, but in fact belongs to the very movement of absolute necessity. In nature, however, this systematic contingency receives its own mode of appearance in the form of monstrosities. Monstrosities indicate for Hegel that no concept dealt with in the philosophy of nature succeeds in completely determining its object, but rather the contingency of nature allows for the singular things in nature to be determined in ways that deviate from the laws. This is possible because the singular things in nature are not subject to simply one law, but rather all of laws simultaneously. This position then led us to a discussion of the dialectical method as it applies to the philosophy of nature. This method takes on a unique status within Hegel's system insofar as it establishes relations between the various concepts of nature by means of their sequence in the dialectical

development. However, these relations or developmental transitions appear no where in nature, which appears as independently situated stages. Instead, the transitions are only internal to nature as pertaining to its conceptual aspect. I concluded that this was best explained by claiming that only the logical form of the concepts exhibit the dialectical relations, whereas the content of the concepts, which are drawn from the natural sciences, do not. Finally, I had suggested that these three claims about nature constitute a modest form of realism, even as they follow from Hegel's idealist project. This is because these three structures all indicate an explicit difference between how nature exists (in its contingent singularity) and how nature is known (in its necessary universality), even when this distinction is generated precisely through the structure of nature as an idea. For Hegel, it is only insofar as we can properly think and formulate these external structures that they can exhibit being in its truth; for nature, this means that philosophical thinking articulates the truth of nature as functioning in ways independent of how it is thought.

Chapter 3 - Ontology and Empirical Science: Mechanics, Physics and the Categories of Inorganic Nature

In this chapter, I examine the relationship between the ontological or conceptual determinations and their corresponding empirical scientific cases throughout the "Mechanics" and "Physics" sections of Hegel's *Philosophy of Nature*. Whereas in Chapters 1 and 2, my arguments dealt with nature globally and systematically, the argument of this chapter deals with specific characteristics of nature as articulated by the scientific doctrines of classical mechanics and chemistry. In this chapter I show, first, that the ontological framework thus far articulated necessarily also appears as particular stages of nature, which we encounter empirically. This is evident in the transition from externality in the global sense, as was discussed in Chapter 2, to externality as a particular determination of natural being itself, beginning with the concepts of space and time. Second, I show that in Hegel's philosophy of nature the dialectical development of the empirical concepts of the sciences is ultimately guided by underlying ontological determinations, which logically depend on the understanding of nature as the idea in its externality. In particular, this means that all structures of nature provided by experience and empirical science must be articulable by Hegel's *a priori* philosophical method. Experience only provides the empirical content that corresponds to the necessary determinations derived from the dialectical development that takes its starting point to be externality in its immediacy.

In other words, in addition to the distinction between the concept and reality, or universal and particular, which was the focus of my Chapter 2, it is important to make a further distinction within the concept itself between what I shall call its ontological and empirical aspects. This distinction has its basis in the fact that Hegel acknowledges that the empirical sciences and the philosophy of nature ultimately deal with the same concepts. However, because empirical

science, as Hegel understands it, arrives at these concepts by beginning with existing particulars, whereas the philosophy of nature arrives at the concepts through the *a priori* dialectical method, it is possible to distinguish these concepts as resulting from different epistemic practices.¹ Hegel seems to concede this when he claims both that philosophy of nature considers the same universals as does "empirical physics," and that philosophy of nature must also "make known the *empirical* appearance, which corresponds to the same [conceptual determination -MK] [*empirische Erscheinung, welche derselben entspricht*]" (§246A; GW 20: 236/EN I: 197). Demonstrating the correspondence of the empirical concept with the philosophical, or

ontological, concept is ultimately showing that they are the same concept. However, that it is possible to make this distinction also enables a way for a Hegelian philosophy of nature both to abandon falsified natural scientific claims in favor of new ones, provided that the new concepts correspond to those conceptual structures yielded by the *a priori* dialectical method. Because of this provision that the *a priori* strongly conditions the validity of the natural scientific concepts, I regard the former, namely those structures developed through the dialectical method, as ontological, and the latter, which are the results of scientific epistemic practices, as empirical.

¹ Because Hegel frames his own philosophical approach to cognizing nature as the sole alternative to "empirical science," his notion of the latter is, on the one hand, very broad, and, on the other hand, fails to capture the different epistemic practices within the natural sciences, both in his own time and at present, not to mention the significant sociological factors that play an active role in the production of scientific knowledge. Perhaps, the best way of understanding his notion of empirical science is that of a physical theory which uses evidence acquired from observation of, or experimentation in, the existing world to confirm its truth or indicate its falsity. Such an account, for Hegel, represents the epistemic practice of advancing from particular to universal, and as such encompasses a great deal of scientific methods. His assumption is that, except for his own approach, this alternative "empirical" method is the only approach for acquiring knowledge about the existing world. Construction of theoretical claims that does not make use of such testing or observation as evidence or support for these claims would, for Hegel, not qualify as knowledge. As mentioned, such an account also disregards the sociological factors that play a role in scientific knowledge. While Hegel does grant that the particular historical circumstances of spirit's existence can condition its scientific practices and its understanding of nature (e.g. "Observing Reason" in Phenomenology of Spirit), Hegel's approach in the Philosophy of Nature is from the standpoint of absolute knowing, and so claims to have abandoned all other presuppositions that may implicitly condition an account of nature, and to thereby present a true account of nature itself.

This chapter contains two sections. First, I examine Hegel's analysis of space, time, matter, and motion as the paradigmatic concepts of mechanics for comprehending nature's "being-outside-one-another" [$Au\beta ereinander$] and singularization [Vereinzelung].² These determinations result from considering nature's externality in its most abstract and immediate sense, and therefore appears at the beginning of the *Philosophy of Nature*. Second, I examine Hegel's analysis of chemical processes that concludes the physics and introduces the "organic physics." In this analysis, Hegel shows that the contradictions involved in the qualitative individuation of nature characteristic of Hegel's physics, or as Hegel defines as nature's particularity [*Besonderheit*] and individuality [*Individualität*], necessarily give rise to the determinations of subjectivity characteristic of organic physics.³ These determinations of subjectivity are examined in greater detail in Chapter 4.

The overall approach of this chapter is to examine Hegel's appropriation of concepts from particular empirical sciences, and to show how in each case, he finds dialectical contradictions, which necessitate a transition to a new structure. The specific stages and concepts I have chosen in this chapter were chosen for their significance as transitional moments in the *Philosophy of Nature*, namely for introducing what Wolfgang Neuser calls the fundamental structures [*Grundstrukturen*] of nature's externality: being-outside-one-another, individuality,

² Petry translates Außereinander as "extrinsicality," whereas Miller translates it in various places as "being-outsideof-one-another," "mutual outsideness," "self-externality" (which is also used to translate Außersichsein), and most frequently as "asunderness."

³ As mentioned in Chapter 2, I have reserved the translation of "individuality" for *Individualität*, and have been translating *Einzelheit* as "singularity." *Individualität* is strongly thematized in the "Physics" section of the *Philosophy of Nature*, such that the three main subsections are on universal, particular, and total individuality, respectively. Whereas *Einzelheit* is consistently used to refer to one of the three moments of conceptuality (universal and particular being the other two), *Individualität* seems to refer more to determinations of essence and form. Hegel writes that "matter has individuality [*Individualität*], insofar as it has being-for-self in itself. This being-for-self develops in matter and matter is thereby determined within itself. In this way, matter wrests itself from gravity, and manifests itself as implicitly determining itself" (§272; GW 20: 276/EN II: 9).

and subjectivity.⁴ These structures describe how nature necessarily exists, as resulting from nature's being the idea in the form of externality. Consequently, these necessary structures of externality should be indifferent to any new discoveries by empirical sciences.

3.1. Abstract and Immediate Externality: Space and Time

In Chapter 2, I explained how the dialectic of nature worked at the systematic or global level of Hegel's philosophy of nature. The primary focus of that argument was to draw out the consequences of the externality of the object from the concept, which I have argued is the form of the idea unique to nature. Part of that explanation, however, introduced a secondary mode of externality in nature, namely, that between the objective determinations of nature to each other. Whereas Hegel uses the term $\ddot{A}u\beta erlichkeit$ for externality as nature's form of the idea, he begins to use $Au\beta ereinander$ for externality between the objects themselves. This determination of $Au\beta ereinander$, or what I have chosen to translate as the "being-outside-one-another" of nature becomes the content for the starting point of the philosophy's examination of the concepts of nature itself. Specifically, Hegel regards the determination of being-outside-one-another, or of infinite singularization [*Vereinzelung*], to be characteristic of the first of the three general spheres of the philosophy of nature: *mechanics* (§252; GW 20: 241-2/EN I: 217).

My argument in this section is that Hegel's analysis of space, time, place and motion as the immediate determinations of being-outside-another have as their ground the externalized form of the idea. This is important because, first, it means that nature's being external in the global, systematic, and ontological sense has as its immediate consequence that nature is

⁴ Neuser, "Das Anderssein der Idee, das Außereinandersein der Natur und der Begriff der Natur," in *Logik, Mathematik und Naturphilosophie im objektiven Idealismus: Festschrift für Dieter Wandschneider*, ed. Wolfgang Neuser & Vittorio Hösle (Würzburg: Königshausen & Neumann, 2004), 44.

spatiotemporal. Thus, space and time are not contingently necessary aspects of reality or of our cognition of it, in the sense that for Kant space and time are the *a priori* forms of human sensible intuition alone, leaving the possibility for some other form of intuition.⁵ Rather, space and time are absolutely necessary forms of nature's being. Second, it therefore follows that space and time as forms of nature are not constituted independently from the nature's being an idea, i.e. a subject-object, but are rather the forms of nature insofar as there are conceptual determinations of space and time, the content of which expresses the objective being-outside-one-another of nature. Because space and time are conceptual determinations for Hegel, rather than the forms of intuition as they are for Kant, the concepts can and do exhibit contradictions that form the basis for a dialectical development, in which matter and motion emerge as the immediate resolutions of space and time. If space and time were forms independent of conceptual determination, then, as Kant argues, they would function much more as limitations to the conceptual development of natural forms, rather than as moments of a more extensive and pervasive dialectic.

3.1.1. Space

Hegel introduces the Mechanics section of the *Philosophy of Nature* with the determination of the abstract universality of the self-externality [*Außersichseins*] of nature (§254;

⁵ "The pure concepts of the understanding ... extend to objects of intuition in general, whether the latter be similar to our own or not, as long as it is sensible and not intellectual. But this further extension of concepts beyond *our* sensible intuition does not get us anywhere. For they are then merely empty concepts of objects, through which we cannot even judge whether the latter are possible or not – mere forms of thought without objective reality – since we have available no intuition to which synthetic unity of apperception, which they alone contain, could be applied, and that could thus determine an object. *Our* sensible and empirical intuition alone can provide them with sense and significance" (B148-149). Thus, while Kant disregards the significance of other forms of intuition for his own project of demonstrating the validity of the pure concepts of the understanding to objects of experience, space and time are nevertheless conceded as belonging to human sensibility alone, even when they are therefore necessary for all objects of our experience. Related arguments on this point are provided by John McDowell, "Hegel's Idealism as Radicalization of Kant," *Having the World in View: Essays on Kant, Hegel and Sellars* (Cambridge: Harvard University Press, 2009); Sebastian Rödl, "Eliminating Externality," *International Yearbook of German Idealism* 5, (2008): 176-188.

GW 20: 243/EN I: 223). As in the *Phenomenology of Spirit* and the *Science of Logic*, Hegel begins the *Philosophy of Nature* with the most immediate or abstract determination belonging to its domain. Beginning with the immediate determination ensures that argument presupposes nothing regarding the object or content of the philosophical investigation. In the *Logic* in particular, this approach demanded that no content at all is presupposed, leaving only pure being itself as the moment from which philosophy begins. However, in the *Philosophy of Nature*, we have already advanced beyond the *Science of Logic* and can therefore specify the starting point. This was shown in Chapters 1 and 2, where nature is determined to be the idea in the form of otherness, or as having the form of externality. Consequently, we begin by considering this externality as a determination prior to any differentiation or further determination.⁶

Hegel then argues that this abstract universality of nature's self-externality is space. Identifying space with this starting point for the philosophy of nature is achieved through comparing the "sensuous intuition of space" with the "thought of pure self-externality" (§254Z; GW 24: 1199/EN I: 224). Thus, as was mentioned in Chapter 1, space is a concept drawn from the natural sciences, in this case geometry, which is then shown to fit or correspond to the determination established through the philosophical argumentation. Space is defined as the form of externality, then, insofar as space exhibits the characteristics belonging to this conceptual determination. These include the complete continuity of space, insofar as immediate selfexternality is "devoid of any determinate difference" (§254; GW 20: 243/EN I: 223). Space, at least in its initial formulation as the abstract form of externality and distinct from the concept of

⁶ Here I agree with Richard Dien Winfield's argument in "Space, Time and Matter: Conceiving Nature Without Foundation," in *Hegel and the Philosophy of Nature*, ed. Stephen Houlgate (Albany: SUNY Press, 1998), 51-70. Winfield claims that "if Hegel's project, the project of a fully self-responsible, non-arbitrary philosophy, is to be fulfilled, then the philosophy of nature must treat its starting point, the self-externality of logical determinacy, as simply the most elementary component of all further dimensions of nature, presupposed by every one without itself incorporating anything else of nature" (53).

determinate space, place, is not composed of points, since points, as is shown in the following, are negations and determinations of space, whereas space itself is only "the possibility, but not the positedness of the being-outside-of-one-another and of the negative" (§254A; GW 20: 244/EN I: 223). Insofar as it is this continuous self-externality without any difference or negation, space is consequently infinite, and Hegel suggests that it corresponds to the notion of absolute space, which is prior to the development of relative space or place.

Hegel distinguishes his concept of space from the accounts of space provided by Leibniz, Newton and Kant. Unlike Kant, who claims that space is the form of outer sense, and thus pertains to the cognitive faculty of a (human) subject, Hegel argues that such a notion is rectified by removing the subjective idealism from the theory, leaving space as the form of externality as such (§254A; GW 20: 243-4/EN I: 223).⁷ Space is not something that pertains only to subjective representations of objects, but not to things-in-themselves. Through rejecting the standpoint of the finite transcendental subject and proceeding from an absolute idealism, space is therefore defined just as the form of externality itself. This externality, as the first determination of nature, was shown to be a necessary determination of being issuing from the absolute idea. Unlike Kant's view, where space (and time) are only contingent features of human cognition, for Hegel space is a necessary feature of being to the extent that being is regarded as nature.

Nevertheless, like Kant, Hegel considers space to be ideal, rather than real. By real, Hegel means "a property of things," or to be "incompatible with something else," whereby 'real' space would have to "resemble a box, which, even if there is nothing in it, is still something subsisting with itself" (§254Z; GW 24: 1200/EN I: 225). Hegel does suggest that his notion of space is comparable to the Newtonian account of absolute space, which is "without reference to

⁷ Immanuel Kant, *Critique of Pure Reason*, trans. Paul Guyer and Allen Wood (Cambridge: Cambridge University Press, 1998), A26/B42

anything external, always remains homogeneous and immovable," and in which absolute motion can be defined as the change of absolute place.⁸ However, Hegel argues that space is not real, insofar as it is "absolutely yielding and devoid of opposition," and that "one cannot point to a part of space which is space *for itself*, for space is always filled" (§254Z; GW 24: 1200/EN I: 225).⁹ At the same time, Hegel rejects the Leibnizian account of space, where space is ideal and defined as being relative through its being the "order of the existence of things."¹⁰ Against this claim, Hegel says that "if one removes the things which fill space, the spatial relationship between them still persist independently" (§254Z; GW 24: 1200/EN I: 225). Thus, Hegel can be seen to adopt Kant's argument for space with respect to the Newtonian and Leibnizian claims, where space is transcendentally ideal and empirically real.¹¹ Rather than adopting the subjective idealist model, however, Hegel reframes this position by arguing that space is ideal and absolute insofar as the concept of space, with which the philosophy of nature begins, is abstract space, and is therefore only the form of externality itself.¹²

Hegel exhibits the conceptual development of space by drawing from its being a determination of nature as an idea, and thus its being implicitly a conceptual determination. This proceeds through two general moves. The first is to argue that due to its implicit conceptuality, space has three dimensions following the three moments of conceptual determination:

⁸ Isaac Newton, *The Principia: Mathematical Principles of Natural Philosophy*, trans. I. Bernard Cohen & Anne Whitman (Berkeley: University of California Press, 1999), 408.

⁹ The relation of space to spatial things is systematically developed only with the introduction of the concept of matter.

¹⁰ G. W. Leibniz, "Letters to Clarke" in *Philosophical Essays* (Indianapolis: Hackett, 1989), 334.

¹¹ Kant, Critique of Pure Reason, A28/B44.

¹² Vittorio Hösle argues that a notion of relative space is perhaps a better concept for what space actually is in nature given the subsequent development of the concepts of matter and motion. However, unlike Leibniz, Hegel does not want to *begin* with these latter concepts for deriving the concept of space, but rather wants to begin with the abstraction itself as the concept that provides the foundation for matter and motion. See Hösle, "Raum, Zeit, Bewegung," in *Hegel und die Naturwissenschaften.* ed. Michael John Petry (Stuttgart-Bad Cannstatt: Frommann-Holzboog, 1987), 283.

universality, particularity, singularity. However, because abstract space is still devoid of any determination as such, these differences are not present in space as actual differentiating determinations of it. Instead, space's dimensions are only a "merely superficial and completely empty differences" (§255A; GW 20: 245/EN I: 225). Hegel is suggesting that although space is three dimensional, and has the features of height, breadth, and length, nothing distinguishes one dimension from the others. Any such distinction between above and below, left and right, presupposes some determinate space or center and orientation with respect to which the height can be determined in contrast to length or breadth. Instead, space's self-externality is only meant to exhibit the characteristic of three-dimensionality by virtue of its being abstract externality which is "founded upon the nature of the concept" (§255A; GW 20: 245/EN I: 225).

The second, more concrete development of space through its inner conceptuality is the generation of the concepts of point, line, and plane. The conceptual differences which were only implicit in space as its dimensions are then made explicit in these concepts of geometry. Hegel writes that

Spatial difference is however essentially determinate and qualitative. As such it is (1) at first the *negation* of space itself, because this is the immediate, undifferentiated self-externality [*Außersichsein*], i.e. the point. (2) The negation is however negation *of space*, i.e. it is itself spatial; the point as essentially this relation, i.e. as self-sublating, is the *line*, the first otherness, or *spatiality* of the point; (3) the truth of the otherness is however the negation of the negation. The line therefore transitions into the *plane*, which on the one hand is a determinateness in contrast to the line and point, and so surface in general, and on the other hand however it is the sublated negation of space, and is therefore the reconstitution of spatial totality, which no longer has the negative moment in it. It is therefore the enclosing surface, which isolates a singular, complete space. (§256; GW 20: 245/EN I: 226)

The development of the categories beginning with the point is possible because although space is an immediate concept, it is nevertheless determined as immediate, namely insofar as it is inherently conceptual.¹³ Consequently, the first determination that emerges is the negation of the self-externality of space, i.e. the point. As a zero-dimensional unity, the point is the complete negation of space, while still constituting a determination *of* space. That the point is nevertheless a determination of space will distinguish its negative relation to space from that of time, which is the negativity of self-externality posited for itself (§257; GW 20: 247/EN I: 229). Consequently, because the point is both the complete negation of space, while still presupposing that it is a determination *of* space, this implicit relation to space is made explicit in the line, which is the first *spatiality* of the point. The one-dimensionality of the line can be understood then as this otherness or spatiality of the point, whereby the negation of space is nevertheless made explicitly spatial.

The final transition is made by exhibiting the truth of the point and the line, where their determinations as negations also give rise to self-relating negativity, or the negation of the negation. Despite the line being a development of the point by making explicit the relation of negation to space, it remains a negative determination: the line is the spatialized negation of space. Consequently, even though it exhibits a relation to space in a way that the point does not, because the line remains a negation of space, its conceptual content is still in relation to space, and not adequate to itself. The transition from the point to the line constitutes the line as the

¹³ The emphasis on the conceptual articulation of space, or we might say on how space is "in thought," distinguishes it from the interpretation Jay Lampert provides of this section. Lampert's description of the "spatial extension, [which] beginning from a given spatial point, is an ontological movement that reproduces that point in a successor, traces points into a line, shifts lines into planes, and inflates planes into volumes" (85), seems to locate the dialectical development in the reality of space. I adopt the approach of locating the dialectic in the concept or ideality or space, in order to remain consistent with Hegel's claim that the dialectic of nature pertains only to the inner conceptuality of nature, and not to its external reality. In other words, I am arguing that dialectical contradiction pertains to the concept of space, and not necessarily to space itself, while also granting that the concept of space is not only something exclusive to the knowledge of a thinking subject, but is also something ontologically internal to nature. As already mentioned in Chapter 2, however, there is ambiguity in Hegel's account of space and time that supports both interpretations. See Lampert, *Simultaneity and Delay: A Dialectical Theory of Staggered Time* (London: Continuum, 2012), 82-93.

moment of difference and reference to other, in contrast to the point, which functioned as immediate, undifferentiated moment of negativity. Both line and point are negations of abstract space, but such that neither is adequate for presenting space as determined. Consequently, the truth of the line is the plane, which is first, the two-dimensional figure and determinateness that succeeds the point and line. Second, however, the plane functions as the actual sublated negation and determination of space. The plane reconstitutes space through transitioning from the negative determination to the self-relating negation, or the negation of the negation, which becomes a positive determination. The plane is the reconstitution [*Wiederherstellung*] of space, insofar as it presents bounded space in the two-dimensional figuration and exhibits the way in which the plane is the truth of space through being its determinate negation. Consequently, the plane as being an adequate determination of space as bounded or determined space, can function as an enclosing surface, and therefore as principle for the construction of a three-dimensional figure. It is important to notice here that the plane contains two determinations. First, plane is surface in general, or a two-dimensional figure, as opposed to the point and line. Unlike these determinations of space, however, the plane is the *sublated* negation of space and so is determinate or bounded space. As a result of the plane's determinateness as bounded space, it is further capable of being the principle for the construction of three-dimensional figures, or as that which encloses space.¹⁴

The main issue with Hegel's dialectical presentation of space involves the necessity of its three-dimensional structure. Using mathematical methods, it is possible to construct geometrical

¹⁴ The difficulty of this passage and its argumentation is addressed below, but I am here attempting to distinguish the plane as two-dimensional (bounded space) and its significance for also reconstituting three-dimensional space (enclosed space).

spaces with *n*-dimensions, even when our experience of nature is restricted to three dimensions.¹⁵ Hegel however rejects mathematical methods for constructing or demonstrating the necessary structure of space, insofar as geometry must presuppose a concept of space, on which it operates. By this, we should think that whereas it is possible to axiomatically construct a model of space with four or more dimensions, such a model, for Hegel, presupposes the dialectical, conceptual approach for articulating the conceptual content of space as the form of self-externality. Nevertheless, Hegel's assertion that the three dimensions of space simply follow from the concept's three moments of differentiation, is not a sufficient argument on its own, because there is no obvious reason why the triadic form of conceptuality in general entails that space has three dimensions.

Justification for this assertion can instead be located in the conceptual unfolding of the determinations of space in the point, line, and plane. What was only implicit and undifferentiated in the abstract concept of space as its three dimensions, become explicit determinations of space in the development of the zero-, one-, and two-dimensional figures. This argument, however, carries its own problems, since this developmental sequence ends with the plane, and not with the three-dimensional solid. While the plane is said to also function as the principle for the reconstitution of spatial totality, we may ask, first, why the plane's capacity for enclosing space as a surface could not have been valid for the point with respect to the line, or the line with respect to the plane. In other words, what about the plane enables it to positively determine the dimension above it, such that the point and the line could not do the same? Second, we may ask

¹⁵ Einstein's argument for the relativity of simultaneity claims to challenge the assumption of the separation of space as a three-dimensional structure and time as an independent one-dimensional structure, and instead proceeds with spacetime as a four-dimensional structure. This is just one example of the use of a model of space with more than three dimensions for a physical theory. See Albert Einstein, *Relativity: The Special and General Theory*, trans. Robert Lawson (London: Penguin, 2006), 52-53.

if we can only speak about the successful reconstitution of space by the plane insofar as we already presuppose that space has three dimensions, which Hegel seems to do. In other words, if instead of Hegel we do not initially accept that space must have three dimensions as a consequence of the triadic structure of the concept, but presuppose instead that space has four or more dimensions, then can we really say that space has been successfully reconstituted once the determination of the plane has been deduced?

The most convincing response to these issues requires that we consider these geometric figures less in terms of their objective presentation (i.e. how they appear) and more in terms of their conceptual intentional adequacy (i.e. how they are thought). Dieter Wandschneider suggests that Hegel's dialectical argument responds to both of the problems mentioned above. In response to the second problem, the plane completes the conceptual development initiated in the concept of space as form of self-externality, insofar as "the surface isolates a dimensionally structured spatial element, which is to say that the spatial element is determined through the modes of spatial limitation."¹⁶ The two-dimensional plane thus successfully determines space in a way that the point and the line ought to have, but were unable to. However, because the point and line contained moments of immediate negativity, they dialectically only functioned as a principle for their immediate successor: the point is a limiting principle for the line, and the line for the plane. With the plane, however, the point and line both subsist as the extremes of the figure, and consequently, the plane is the completion of the development. As a result of the conceptual development, whereby the plane has sublated the negation internal to it, it can adequately determine and limit space.

¹⁶ Dieter Wandschneider, *Raum, Zeit, Relativität: Grundbestimmungen der Physik in der Perspektive der Hegelschen Naturphilosophie* (Frankfurt am Main: Vittorio Klostermann, 1982), 62. Translations of the text provided by me.

Second, Wandschneider argues that this dialectic shows the necessity of space to develop to the moment of plane, but does not necessitate that there be *only* three dimensions.

The development of what was seen in the point concludes in the concept of the plane. In order to be clear, though, that does not mean that the development *couldn't* continue: three- or higher-dimensional manifolds are also isotropic forms, which equally rank with the plane in this perspective. However, the plane possesses the *fewest* dimensions in the series of such coordinated alternatives: this is what distinguishes it from other possibilities... With this distinguishing characteristic of two-dimensional manifolds, the argument is in fact found that the plane is the *principle* for three-dimensional space.¹⁷

His argument is that Hegel's dialectic only shows the necessity that space has no fewer than three dimensions, because any fewer dimensions are only possible as moments of the plane (which is the limiting principle for three-dimensional space). We can of course talk about the characteristics of zero-, one-, and two-dimensional figures, but these are conceptually coherent only as limitations of space that must be presupposed to have at least three dimensions. By examining each determination of space with respect to their conceptual content, and as occupying a particular place in the conceptual development from the starting point of abstract externality, we arrive at a complete account of space only with the plane as limiting principle for three-dimensional space. Models of space with more than three dimensions, Wandschneider argues, are not impossible, but they can only be constructed with additional axioms or presuppositions beyond what Hegel provides. This is because the argumentation of the *Philosophy of Nature* deliberately begins with the minimal determinacy of external being, which has now been shown to be three-dimensional space.

3.1.2. Time

¹⁷ Ibid., 58-59.

The shift to an examination of time is made by reconsidering the moment of negativity in the conceptual development of space. Following Hegel, we observed that the point as the first moment of negativity in the conceptual development of the philosophy of nature remained a negative moment in relation to space. This relation served as the basis for the emergence of the line as the explicitly dialectical moment of the spatialized negation of space. However, Hegel adds that this moment of negativity can be considered as posited *for itself*, and even suggests that the movement through negativity that developed the determinations of space is this same negativity posited for itself, which he identifies with time.¹⁸ While time emerges from the dialectical relations of space, and is even in a certain sense the negativity found within space, the stage of time is nevertheless to be articulated independently of any reference to space. This is because, time is this negativity considered for itself, and not in relation to space, and so think them together in the concepts of place and motion.

Hegel defines time as having emerged through this conceptual process as the "negative unity of self-externality [*die negative Einheit des Außersichseins*]" (§258; GW 20: 247/EN I: 229). As this negative moment existing for itself, time exhibits the contradictory form of becoming: "it is the being that insofar as it is, it is not, and insofar as it is not, it is" (§258; GW 20: 247/EN I: 229-23). Time's modes, namely the past present, and future, are variations of this same identity of being and non-being, where either being is taken as either logically prior, posterior, or equiprimordial with non-being (§259; GW 20: 249/EN I: 233). The past takes being as its foundation and posits the non-being as subsequent, such that the past is the *transition* from

¹⁸ "Since space is therefore only this inner negation of itself, the self-sublating of its moments is thus its truth; time is then the existence of this continual self-subsisting, and in time the point has actuality. [...] The truth of space is time, such that space becomes time. We do not subjectively make this transition to time, but rather space itself makes the transition" (§257Z; GW 24: 1202/EN I: 229).

being to non-being. With the future, it is the reverse, where non-being is prior, being is secondary, and the future is the transition from non-being to being. The present is the singularity of the now-moment, which is continuous with the past and the future, and is with equal priority the passing of being into non-being and non-being into being.

In a certain respect, the present is the only mode that really *is*, whereas the past and the future *are not*. Hegel even claims that in nature only the now is, whereas the future and the past can only be in hope, fear, and memory (§259A; GW 20: 249/EN I: 233). This way of thinking the modes of time regards each as a state of time, where only the present is, whereas the future and past are not. Better stated, though, the past is that which *is* no longer, and the future is that which *is* not yet, such that both can be regarded as states that remain unities of being and nonbeing. In truth, however, because all three are modes of the same negative unity, the present's positive being is such that it is nothing other than "the result of the past, and is pregnant with the future" (§259Z; GW 24: 1205/EN I: 235). In this sense, then, the present is just as much a unity of being and non-being as the past and the future, whereby on the one had, the positive being of the present is only the result of the passing away of the past, and is so the negation of the past, or the negation of what is not. On the other hand, the present is this unity of being and non-being is the future coming into being.

What distinguishes this account of time from a similar account of the logic of becoming in the *Science of Logic* is the definition of time in terms of externality, where the modes of time are external to one another as particular states of the being, non-being, and their unity.¹⁹ Hegel

¹⁹ Here I disagree with Edward Halper, who argues that space and time correlate to being and becoming in the logic insofar as they are nothing other than a complex of being and becoming, respectively, with the absolute idea. Rather, we are making this analogy only because space and time are the presentation of *externality* in its most abstract and immediate form, just as being and becoming are presentations of pure being in its most abstract and immediate form. See Halper, "The Idealism of Hegel's System," *The Owl of Minerva*, 34, no. 1 (Fall/Winter 2002-03): 39.

calls time "intuited becoming" (§258; GW 20: 247/EN I: 230), where being "intuited" refers to the way in which nature as a whole is the "intuiting idea" (§244; GW 20: 231/EL 303), and thus is fully external to thought, as discussed in Chapter 2. Thus, to say that time is intuited becoming is to say that it is becoming as presented fully externalized. Although describing time as "intuited becoming" may resemble Kant's account of time as the "form of inner sense, i.e., of the intuition of our self and our inner state" (A33/B49), Hegel rejects the interpretation of time as pertaining solely to the subjective faculty of cognition.²⁰ The way in which time and nature as a whole are "intuited" for Hegel is still within the framework, whereby "the difference of objectivity and a subjective consciousness opposed to it does not concern time" (§258A; GW 20: 247/EN I: 230). Although Hegel suggests that if there were to be a distinction, then space would correlate to objectivity, and time to subjectivity. However, by this he only means that time is the same principle as subjectivity, namely negativity posited for-itself, but which as time is posited both in its abstraction and in its total externality. Once again, we return to time as defined only in terms of being the form of externality, and thus as a structure of nature itself, rather than a feature of subjective cognition.

This account however does not do away with a relation to subjectivity altogether, insofar as we must distinguish between the concept of time, which is both internal to nature and is that which grasped by the thinking, on the one hand, and the reality of time itself on the other. As discussed in my Chapter 2, and as discussed above in the case of space, the distinction of concept

²⁰ In this respect, I think it is incorrect to say, as Jennifer Ann Bates does, that "these [space and time] and all concepts of nature both *are in* and *are the nature of* human cognition. Nature is infinite in each of us, not *qua* individual, but *qua* individual of a species that *involutionarily* recollects itself as spirit," in Bates, "Hegel and the Concept of Extinction," *Philosophy Compass* 9, no. 4 (2014): 244. In attempting to avoid a one-sided ontological reading of Hegel by locating the concepts of nature in human cognition, without also showing that these concepts are in nature itself as I have argued in Chapter 2, I think this reading ends up producing a one-sided epistemological reading, which Bates describes as a "post-Kantian Hegelianism, [which] shows that if humans go extinct, the whole disappears with us" (244). My alternative position is defended in the following.

and reality is used to locate the dialectical development exclusively in the concept and not in the reality. Were this not the case then each stage of nature would itself be negated and preserved in the following through the dialectical development. By distinguishing concept from reality, and locating dialectical development in the concept alone, we can maintain that the transition from space to time preserves the coherent existence of space in itself and time in itself, while also ultimately showing that their truth as the posited identity of time and space is place. In other words, temporal becoming is different from the conceptual development from space to time, and from time to space. It is only when time is being thought, and thus we consider it conceptually, that we see it develop dialectically into place. Time itself, however, does no such dialectical development. Finally, it is by virtue of maintaining this distinction between concept and reality that subjectivity plays a role for Hegel's account of time, insofar as subjectivity bears a relationship to the conceptuality of time.

However, in introducing a relationship between time and subjectivity by means of the conceptuality of time, we are not saying that a thinking subject must actually exist for time to be what it is. As we argued in Chapter 2, it is true that, on the one hand, a thinking subject is necessary for the philosophical reflection on time. This enables time to be grasped in its truth, such that subjectivity is a necessary condition for knowledge about time. Moreover, thinking subjectivity is necessary for the dialectical transition from space to time, and time back into space, when we are philosophically comprehending these concepts.²¹ On the other hand, the thought of time grasps only what time already is in itself. Our argument in Chapter 2 about the independence of nature from the *existence* of thinking, must now have the consequence of claiming that time (as the form of externality) is likewise independent from the existence of

²¹ "Philosophy calls this 'also' [between space and time] in question" (§257Z; GW 24: 1202/EN I: 229).

thinking. Space and time are the forms of being that is outside of thought.²² Thus, while we are claiming that the dialectical transition of development pertains only to the concept of time, and so requires a thinking, philosophizing subject in the manner just mentioned, Hegel claims that the transition is not made subjectively, but rather space itself makes the transition (§257Z; GW 24: 1202/EN I: 229). Conceptual content belongs to space and time itself, insofar as these have the determinacy of being external to thought, and is not something imposed on being by subjectivity. In other words, insofar as we are thinking about time or things in time, it is of course necessary that the "being- thought" of time presupposes the existence of we who are thinking it. However, when we turn away from the "being-thought" of time, and instead consider time itself as a form of externality, we see that time has the determinacy of existing outside of thought. Consequently, our philosophical comprehension of time reveals that time itself can and does exist independently of the existence of our thinking it.

Returning now to the issue of time as intuited or externalized becoming, a reference to Schelling's account of time in *The Ages of the World* can be of further assistance here. In this text, Schelling develops an account of time out of the fundamental claim of idealism, that there is a contradiction at the core of being, which for Schelling is the identity and nonidentity of Being [*das Seyn*] and being [*das Seyende*].²³ This contradiction can be made actual only as a relation of

²² Here I disagree with the Jennifer Ann Bates, who argues that "Space becomes time reflectively, and that first tiny step of subjectivity, while not the more complex movement of a synapse, is implicit in a synapse; but also, without synaptic activity or its equivalent, there would be no time or space" (260n65) While I agree that "even if we can think [time and space] separately and as ontological moments, they are always already also, epistemological moments even as we think them ontologically," I do not think it therefore follows that the existence of thinking is necessary for time itself. Rather, as Bates acknowledges, it is only a necessary condition for *thinking about* or *knowing* time. In other words, I agree with Bates's claim that it is necessary to hold together both the ontological and epistemological sides of a determination, however, I disagree with drawing ontological conclusions exclusively from the epistemological side, such as the necessary existence of a thinking subject for there to be space and time at all. See Bates, "Hegel and the Concept of Extinction," 245.

²³ F. W. J. Schelling, *The Abyss of Freedom/Ages of the World (1813)*, trans. Judith Norman (Ann Arbor: University of Michigan Press, 1997), 123-124.

grounding, and consequently as time, such that both terms of the contradiction can be actual, just not *at the same time*, but rather at different times, or as he claims more precisely "different moments of the same time."²⁴ Schelling thus argues that this results in there being an eternal past, which functions necessarily as the ground for being. The past cannot be a present simultaneous with the present, which would be a contradiction. Nor is the past a past present, because the past present is just a different moment with its own past (the past of the past present), and so simply puts off the problem. In order to say that the past is the past of the present, or is simply *the past*, Schelling claims that it exists simultaneously with the present but not as the present, but rather *as the ground of the present*, and thus as something that was but is not now present.²⁵ Similar to this argument in Schelling, Hegel's idea of time externalizes the moments of becoming, such that the past, present and future are placed outside one another as different configurations of being, non-being, and their unity.

As this externalized form of becoming, Hegel rejects the notion that time is the container, in which things become. Like space, this notion of time is an abstraction, and so of an ideal nature, while simultaneously being the form of externalized becoming itself. He writes that "everything does not however emerge and vanish *in* time, but rather time itself is this *becoming*, emerging, and vanishing, the *existing* abstracting [*das seiende Abstrahieren*], and is the *Chronos* that gives birth to everything and that destroys that to which it gives birth" (§258A; GW 20: 248/EN I: 230). The notion of time is still an abstraction and an ideality insofar as we have not

²⁴ Ibid., 173-174. "The phrase 'at the same time' would be inappropriate, since what exists at different times still exists 'at the same time.' Only different moments of the same time can be considered successive; or [put another way,] different moments of the same time regarded as such, cannot be simultaneous. But regarded as different times, they can be 'at the same time.'"

²⁵ Ibid., 174.

yet arrived at a concept of a determinate thing, just as in the *Logic*, becoming preceded the concept of *Dasein* as the first instance of determinate being.

By virtue of being an abstraction from real, material things, space and time have been presented in their pure immediate forms. Hegel is methodologically commited to explaining more concrete and complex phenomena only as they emerge in the conceptual unfolding that begins with abstract and simple concepts. Consequently, the account of the motion of matter as the becoming of a determinately real thing in nature, which is distinct from this account of time, is explained by beginning with a concept of time in its abstract form. The concept of matter presupposes the concepts of space and time, where space and time are considered in their pure forms. This is why Hegel regards them as abstractions with objective validity. In this way, the concepts of space and time with which we must begin the philosophy of nature cannot be construed as subordinate to matter, but instead emerge from an examination of the concept of externality in its immediacy. All that remains is to show how the concept of matter, as that which is first real in nature, emerges from the concepts of space and time Hegel.

3.1.3. From Ideality to Reality: Place, Motion, and Matter

We saw how the transition to the form of time resulted from the movement of negativity in the conceptual development of space came to be considered as posited for itself. Time emerges in this particular place in the development of Hegel's philosophy because of its being this movement of negativity, or becoming, as externalized. As a result, when Hegel claims that time is the "existence of the continual self-sublating" of space, he adds that "in time the point has actuality" (§257Z; GW 24: 1202/EN I: 229). This means that in space, the point as the moment of immediate negativity just as immediately transitions into the line. Consequently, Hegel claims that "space is this contradiction to have negation implicitly, but such that this negation decomposes into indifferent subsistence" (§257Z; GW 24: 1202/EN I: 229). Thus, the negations of space never existed as negation for itself, and as soon as they are posited become only the indifferently subsisting determinations of spatial self-externality. Time, on the other hand, is this negativity posited for itself, and so exhibits what the spatial point was supposed to be.²⁶ Whereas the negation implicit in space is "paralyzed" and exists only as an indifference, negation as time exists as complete unrest [*Unruhe*] (§258Z; GW 24: 1203/EN I: 231). We can therefore see how the transitions within the determinations of space become time itself. Next, we must see how the determinations of time come to reconstitute space.

In order to explain how Hegel argues for the transition of time back to space, we must first examine his concept of duration [*Dauer*]. Hegel defines duration as "the universal of this now [*Jetzt*] and that now, the sublatedness of this process of things, which do not endure [*dauern*]" (§258Z; GW 20: 1203/EN I: 231). Duration is the passing of time that results from the negative and contradictory structure of time itself, and with specific emphasis on the now. Hegel claims that the now "is tremendously justified [*hat ein ungeheueres Recht*] – it *is* nothing other than the singular now; but this expelling in the spreading apart of the now is dissolved, melted and vaporized [*aufgelöst, zerflossen, zerstäubt*], by me expressing it" (§258Z; GW 24: 1203/EN I: 231). The excluding singularity of the now is identified with the present [*Gegenwart*] and must therefore be defined in terms of the unity of being and nonbeing. For this reason, as soon as the now is, it no longer is (since time "is insofar as it is not, and is not insofar as it is"), and has

²⁶ Lampert's description of the relation of the point of space to the point of time is helpful here: "It is because space breaks up indifferently that points in space can be traversed over time. It is in this sense that the 'negativity' of space is time (s. 257). [...] A point does not actually move over into the next point. But points are relay junctions on a field in which it makes a difference where each point is. This difference that makes a difference is the temporal character of space. Time is the negative character of space, that character of the point that negates the spatial continuum in favour of a particular location that makes a difference." *Simultaneity and Delay*, 85-86.

become the past. Through this passing, however, a new now takes its place, which again passes. Each now being the unity of being and non-being passes away as soon as it is to give rise to a new now. Duration is therefore the sublation of this self-negating process, as the sustained presence of time.²⁷

In his assessment of Hegel's account of time, Stephen Houlgate responds to Heidegger's criticism that Hegel's time privileges the now and presence. While Houlgate agrees with Heidegger's observation, he argues that, *pace* Heidegger, Hegel does not presuppose this account of presence, but rather genetically deduces it from the self-relating negativity of time.²⁸ Heidegger characterizes Hegel's account of time as the vulgar or ordinary sense of time because it privileges the now (rather than the future), and even suggests that the account may as well have been "drawn *directly* from the 'physics' of Aristotle."²⁹ Against this claim, Houlgate argues that the idea that the now negates itself and thereby gives equiprimordiality to all modes of time (i.e., past, present, and future) is unique to Hegel, and thus sufficiently distinguishes his account from Aristotle. Moreover, by arriving at this self-negating aspect of time through a sufficiently presuppositionless argument beginning with space, Houlgate argues that this account (and not the ecstatic temporality of Dasein in Heidegger's account) is the truly primordial form of time.³⁰

²⁷ Hegel gives a similar account of time in "Sense-Certainty: Or the 'This' and 'Meaning'," in *Phenomenology of Spirit:* "Pointing out is thus itself the movement that declares what the Now in truth is, namely, a result, or a plurality of Nows taken together; and pointing out is the experience that the Now is a *universal*" (GW 9:68/PS 65). These accounts differ in that the *Phenomenology* is aimed at attaining adequate knowledge through tracing the shapes of experience of spirit, whereas the *Philosophy of Nature* is produced on the basis of this adequate form of knowing ("absolute knowing"). These accounts both highlight the immediacy and the intuitedness of space and time, but given their different aims and approaches, the *Phenomenology* transitions to a more comprehensive form of consciousness and knowing, i.e. perception, whereas the *Philosophy of Nature* remains in this domain of "intuitedness" of the absolute idea, and proceeds to a stage in nature itself that comprehends space and time, i.e. place.

 ²⁸ Stephen Houlgate, "Time for Hegel," *Bulletin for the Hegel Society of Great Britain* 53-54 (2006): 127.
 ²⁹ Martin Heidegger, *Being and Time*, trans. John Macquarrie & Edward Robinson (Oxford: Blackwell, 1962), 479-

^{484, 500.}

³⁰ Houlgate, "Time for Hegel," 131.

Hegel moreover distinguishes duration from eternity, where the former is the merely relative sublating of time, and the latter the infinite and absolute sublation of time. Eternity is the absolute timelessness, or that which is without natural time (§258Z; GW 24: 1203/EN I: 231). Eternity has no past or present, and so will not be nor was it, but it simply is. In this sense, eternity is the absolute negation of time, and is "duration reflected in itself" (), there is no passing away in eternity. Duration, on the other hand, is the relative sublation of time, insofar as it involves the passing away of things. Even when finite things are said to not change and endure, this sense of the endurance of temporal things is meaningful only in reference to the change and passing away of other things. Finally, Hegel claims that "time itself is eternal in its concept" (§258Z; GW 24: 1203/EN I: 231). Whereas time is the becoming, the generation and corruption, of finite things, time itself is eternal. This is not to say that time is eternity, which we have shown above, but rather that because the form of time was established through its conceptual determination as the negative unity of self-externality, the movement of time has for its ground the eternal being of its concept.³¹ Time does not itself become, but *is* rather the becoming of things.

Insofar, then, as duration is the sublation of time, and is the universal now or persisting present, it has reproduced a determination of being. Duration is the sublation of the self-negating

³¹ The relationship between the eternity of the concept to the movement of time can also be located in "Absolute Knowing" in Hegel's *Phenomenology of Spirit:* "Consequently, spirit necessarily appears in time, and it appears in time as long as it does not grasp its pure concept, which is to say, as long as it does not erase time. Time is the pre self *externally* intuited but not grasped by the self; it is only the intuited concept. As this concept grasps itself, it sublates its temporal form, conceptually comprehends the intuiting, and is conceptually comprehended and conceptually comprehending intuiting" (GW 9:429/PS 461-2). Spirit erases and sublates its time-form through comprehending the conceptual movement which is itself this very self-comprehending. The erasure of time in absolute knowing, which serves as the transition from the *Phenomenology* to Science, is to see how the contradictions in the temporal experiences of consciousness with its object are all actually articulations of conceptual movement. This latter conceptual movement, can then be exhibited on its own, independently of time, and thus as eternal. The account of the *Philosophy of Nature* is thus demonstrating the necessity of that time form as having developed from the absolute idea. This time form will also play a formative role in the shapes of spirit in the *Philosophy of Spirit*, even though spirit will have sublated the externality of nature.

now, i.e. of time as becoming, and so was the universal present. Hegel writes that the opposed moments of time "held together in unity, immediately sublate themselves," such that time "is the immediate collapse into indifference, into the undifferentiated being-outside-of-one-another [*ununterschiedene Außereinander*], or space" (§260; GW 20: 251/EN I: 236). Because duration is the universal now or subsisting present, it contains the differentiated moments of time in itself as sublated. However, the moments of time, and time itself, had been nothing other than the differentiation and externalization of the moments of space, where spatial determinations subsisted indifferently [*gleichgültig*] alongside each other. Thus, the collapse of time and its sublation in duration results in the reconstitution of space. However, as so reconstituted through time, this form of space will be distinct from space in its pure immediacy. What remains is to understand this unity of time and space, insofar as it has been shown that each dialectically transition into the other.

Hegel identifies place as the result of the dialectic of space and time, and defines it as their posited identity. Place is thus a spatially determined time, and a temporally determined space; it is a spatial now or a temporal here.³² We had seen that the dialectic of space had already generated the possibility of determining space in order to limit it. However, in order to be able to talk about what such a determinate space was, we first had to understand the nature of what limits space, i.e. what negates it. This limitation and negation of space considered for itself was therefore time. It is therefore only insofar as time collapses and is sublated into the universal now that space is both reconstituted and presented in its determinate form as place. Thus, space is

³² Lampert nicely explains this dialectic by observing that "if there are different spaces, it must be possible to move through them, so a multiplicity of space implies time; conversely, movement during the passage of time implies that space persists as long as movement does. The parts of space are not only laid out simultaneously; in addition, spatial extension is where temporal succession occurs. This kind of 'concrete point', equally spatial and temporal, has a traditional philosophical name: 'place' (s. 260)," *Simultaneity and Delay*, 87-88.

determined as place by time. So understood, the dialectical development does not stop with place, but rather continues insofar as place too contains the contradictions of time in it. Ultimately, then, "the *vanishing* and *self-regeneration* of space in time and of time in space, that time is posited spatially as place, but this indifferent spatiality is just as much posited *temporally*, is *movement.* – This becoming is however itself just as much the collapse into itself of its contradiction, the *immediately identical existing* unity of both, namely *matter*" (§261; GW 20: 252/EN I: 237). Whereas place is simply the spatial now, its temporal becoming is necessarily expressed as change of place, or motion. Matter is then that which remains identical through the change of place, i.e. that which moves, by virtue of the fact that motion is the identity of two different places in the form of the becoming of one from the other. The moment of motion's identity posited for itself is therefore matter.

3.1.4. Conclusion

Having examined Hegel's dialectical account of space, time, and place, we can draw some conclusions about the significance of the concept of externality for an account of nature. First, Hegel begins the *Philosophy of Nature* by examining the concept of externality in its immediacy and abstractness, on the basis of which he concludes that this concept must correspond to space. We start with externality in its immediacy because this is the fundamental determination of nature, and thus the only conceptual content that we have conclusively proven nature to have. Rather than begin with matter or even a concept of space that relies on matter, Hegel's concept of space must be examined in its own form, as abstract externality, before any subsequent concepts of nature were developed. Only on the basis of this concept of space, and the successor concept of time, can the concept of matter be developed.

Second, we are able to see how the method for generating these concepts relies on the dialectical method, articulated in Chapters 1 and 2. Here, we must examine closely the way in which each determination of space, time, and place emerged from and related to the prior concepts. In Chapter 2, we discussed Alison Stone's claim regarding the drive of concepts to transform themselves into their successor concepts, and noticed that her evidence was largely drawn from the account of space, time, and matter, which we have here described. Specifically, Hegel's claim that the transitions from point to line,³³ from line to plane,³⁴ from space to time,³⁵ and from time to place and motion³⁶ are all described as transitions explicitly between the determinations, rather than as epistemological shifts of the subject thinking these terms. One suggestion that was made was that the kind of development Hegel explicitly rejects is that of an existing development (with the exception of that of organisms). We have now been able to show that space and time, their unity in the determination of place and the contradiction contained in place, motion, are all considered to be merely ideal determinations, in contrast to which matter emerges as the first moment of reality.³⁷ Thus, only with matter do we introduce the full distinction between the ideal and the real of nature, which we could only reach by passing through the abstract and ideal determinations of externality that matter presupposes. Following Hegel's claim that "space is not adequate to its concept; it is therefore the concept of space itself, which in the concept of matter obtains existence," we can say that the dialectical transitions leading up to the concept of matter are somewhat irregular in comparison to our general

³³ "The point as essentially this relation, i.e. as sublating itself, is the *line*" (§256; GW 20: 245/EN I: 226).

³⁴ "The line transitions therefore into the *plane*" (§256; GW 20: 245/EN I: 226).

³⁵ "The truth of space is time, therefore space becomes time; we do not subjectively make this transition, but rather space itself transitions. In representation, space and time are far apart from one another, since we have space and then *also* time; philosophy opposes this 'also'" (§257Z; GW 24: 1202/EN I: 229).

³⁶ "The vanishing and self-regeneration of space into time and of time into space [...] is motion" (§261; GW 20: 252/EN I: 236).

³⁷ "The transition from ideality to reality, from the abstraction to the concrete existence, here from space and time to the reality, which appears as *matter*" (§261A; GW 20: 252/EN I: 236).

depiction of nature's dialectic in my Chapter 2. Specifically, because Hegel takes matter to be the first true instance of the reality, which we argued is that which is external to the concept in nature, it is possible to argue that space and time do *not* have the same ideal-real external distinction, and so the conceptual dialectic *also* is evident in space and time themselves. By contrast, we argued that when the ideal-real external distinction does hold, the dialectical development is located in the ideal conceptuality alone. Such a distinction is at the very least valid beginning with the concept of matter.

Nevertheless, a distinction between the concept and reality remains useful even prior to the concept of matter as articulating discrete stages of nature's externality, such that the development through these stages that results in the concept of matter still required careful argumentative claims. In other words, even if claiming that nature's ideal-real distinction is introduced with matter and no earlier, it is important to view space, time, place and motion as all having distinct conceptual contents, each of which emerge on the basis of the dialectic of the antecedent concept. Although space becomes time through the conceptual and dialectical movement of its determinations, and time consequently returns into space, the determinations that posit space and time in their unity and in their transitioning, place and motion, respectively, are distinct from the initial concepts of space and time. In other words, although place and motion are the *truths* of space and time, they are nevertheless distinct from them. This is important because this supports Hegel's claim that each concept and stage of nature remains to a certain extent indifferent to the other stages. Even in this case, where these initial movements are intertwined so strongly to generate the simple concept of matter, I think it possible to distinguish each step and each concept, and regard them as having limited independence. Thus, although Hegel claims that philosophy challenges the "also" of the claim that "we have space and then

also time," this challenge does not therefore eliminate any conceptual distinction between them. Rather, the challenge to the complete independence of space and time through the dialectical method shows that space cannot be space without being determined by time, time without space, and so on.

3.2. Finite and Total Process: The Emergence of Subjectivity from Chemistry

Having shown how the ontological determination of nature enters into the conceptual content of its stages, we now show that the dialectical development of these stages continues to be determined by the more fundamental ontological determinacies. Just as space was shown to correspond to the abstract and immediacy of nature's externality, we argue that all stages of nature correspond to some more fundamental conceptual determination issuing from this understanding of nature as an idea. Specifically, we argue here that the dialectical contradictions in Hegel's account of chemistry are framed by its underlying ontological structure, namely that chemistry presents the transition from the physics with its structure of individuality to organics with its the structure of subjectivity.³⁸ Although a closer examination of subjectivity is shown in Chapter 4, the goal of this chapter is to reveal the basic structure of natural chemical processes, which remain distinct from the names of kinds of processes in the empirical science of chemistry. The latter function only as the empirically observable instances that Hegel believed corresponded to the ontological structures. Nevertheless, I argue that by distinguishing the empirical from the ontological, we can open up possibilities for recent scientific discoveries and advances to replace the obsolete claims of Hegel's original publication. At the same time, I acknowledge the limitations of such an account, namely that theories offered by the empirical

³⁸ A similar argument can be made that gravity presented the transition from the mechanics and the structure of being-outside-one another to the physics.

sciences must be constrained by the ontological structures of Hegel's conceptual dialectic, which in their necessary exhibition may be insufficient for an adequate understanding of nature. I take this constraint to be a necessary consequence of Hegel's absolute idealism in the sphere of the philosophy of nature.

3.2.1. Division of Kinds of Chemical Processes

To show how Hegel's engagement with the concepts of empirical science develops dialectically due to the underlying ontological and formal structures, I first present an exegesis of Hegel's account of chemical processes, and second an argumentation against alternative interpretations of these sections and of Hegel's general approach towards the empirical sciences. The purpose of the exegesis is to highlight the moments of the analysis, which indicate the way Hegel's ontology is framing the development within chemical process and, more importantly, the development from chemical process to organic physics. As mentioned at the start of this chapter, this exegesis does not give validity to the chemical theory Hegel adopts. Rather, by highlighting the more fundamental role of the ontological movement, which chemical process exhibits and instantiates, we argue that the appropriation of the scientific position is subject to revision, provided that some science corresponds to the necessary, ontological structures of nature.³⁹ For this exegesis, the issue of whether the conceptual structures of chemical process in fact follow as necessary structures in a Hegelian philosophy of nature is also bracketed. Instead I examine only Hegel's own approach to incorporating a theory of an empirical science and demonstrate the

³⁹ When discussing the elements, Hegel makes the claim that the conceptual development demands that a certain empirical position be adopted, even when he acknowledges that no scientists would defend that position: "No educated person, and certainly no physicist or chemist is now permitted, under any circumstances, to mention the four elements. The search for the sort of simple and universal existence present-day chemists have in mind is a matter only for chemistry... However, these aspects [of chemistry] are not universal elements and original principles" (§281Z; GW 24: 1259/EN II: 234).

epistemological role played by the *a priori* conceptual structures. One consequence of this, however, is that even if a Hegelian philosophy of nature is entitled to dismissing the "empirical" aspects of nineteenth-century chemical theory, it may be committed to those ontological structures, to which that chemical theory corresponded, so long as those ontological structures do in fact follow from the dialectical method.

Chemical process belongs to the stage of physics of total individuality. This stage, and specifically the moment of chemical process, concludes Hegel's discussion of physics, which in the scope of the philosophy of nature dealt with the relationship of conceptual form (i.e. individuality [Individualität] and the matter. Hegel's physics is distinct from the mechanics insofar as it involved qualitative form determinations, which were introduced by the determination of gravitation at the end of the mechanics as the sublation of the merely quantitative determinations of matter. The form determinations of the physics are noticeably divided into four moments, a characteristic unique to nature's self-externality.⁴⁰ The first stage of physics presents these moments of form in general (physics of universal individuality), and the second stage presented the moments of form as determining matter in opposition to its gravity (physics of *particular* individuality). Total individuality is therefore a presentation of conceptual form, where "the center of gravity is no longer a subjectivity sought by matter, but is immanent within it as the ideality of these form-determinations" (§308; GW 20: 305/EN II: 94). The form of matter no longer determines it as having a moment which resists it (i.e. gravity), but rather where the moments of form are immediately the determination of matter.

⁴⁰ Hegel also occasionally frames the quadruplicity as comprised of universality, two moments of particularity, and singularity. Jeffrey Reid traces the origin of the quadruple structure in the dialectical unfolding in nature to the stage of universal gravitation, and locates the quadruplicity in the division of the moment of particularity into the moments of the for-itself (moons) and the for-another (comets). See Reid, "Comets and Moons: The For-Another in Hegel's *Philosophy of Nature*," *The Owl of Minerva* 45, no. 1-2 (2013-14): 1-11.

Chemical process completes the physics and introduces the stage of organics because it subordinates the individual body to the processes of division [*Scheidung*] and unification [*Vereinigung*], which constitute that body. The chemical process is the fulfillment of the previous stages of total individuality, where the common structure is positing and sublation of difference. In the first moment of shape and magnetism, differentiation is expressed within the individual body in the form of the three-dimensional construction of its shape. In the second moment of electricity, difference is expressed now in the individual body's relationship to other bodies, but is sustained as a tension of opposition, and not as constitutive of the body. The difference of the bodies gives way to the individuality of those bodies in the cancellation of the electrical relation, presented as light and discharge. In the chemical process, however, a chemical body is essentially in a differential relation to another chemical body, and it is the process as a whole that establishes what kind of chemical bodies are present (e.g. a chemical is considered an acid because of its relation to a base, which in combination form water and a salt).⁴¹

The significance of this stage of the philosophy of nature is that in the process, it appears as though the product of the process (i.e. what is posited) is identical with the reactant (i.e. what is presupposed). Considered simply or abstractly, the process presupposes and posits chemical

⁴¹ Thus, Hegel's consideration of chemistry departs from the modern atomic theory, which was beginning to be formulated by John Dalton in the early nineteenth century. In the most basic articulation, modern chemistry understands chemical properties to be a function of the composition of atoms out of subatomic particles (e.g. protons, neutrons, electrons). Regarding Dalton, Hegel writes that he "was the first to investigate this [stoichiometry], but he enveloped his determinations in the worst form of atomistic metaphysics by regarding the primary elements of the first simple aggregation as an atom, and then attributing weight and weight-ratios to these atoms, which also supposed to be spherical, and to be partly surrounded by a more or less dense atmosphere of caloric" (§333Z; GW 24: 1414/EN II: 213). For Hegel, such a reductive and compositional approach to chemistry would on its own be insufficient for explaining the chemical properties. Thus, we could find evidence of what Hegel finds to be irreducible to the determination of *chemistry* in the categorizing of elements into groups. These groups (e.g. alkali metals, halogens, noble gases) are represented as columns in the periodic table of elements, where elements with similar electron configurations exhibit similar chemical properties. Thus, while identifying similarities in the microscopic, atomic structure contributes to our knowledge of the elements and of chemistry, Hegel is interested in the content of the macroscopic properties of the relations and reactions between various chemicals, adopting instead the elective affinity model of chemistry proposed first by Jeremias Benjamin Richter and later disseminated more widely by Claude Louis Berthollet.

substance, precisely insofar as "abstractly, the process is the identity of the judging [*Urteilens*] and the unification [*Ineinssetzens*] of the differences posited by this judgment [*Urteil*]" (§329; GW 20: 329/EN II: 188). What appears at this stage is not simply given, but is understood therefore to be the result of a productive process. However, the chemical process is also only a finite mode of this process, the true and infinite mode of which will be life. According to Hegel, "its *finitude* is that corporeal independence also belongs to its moments; it conveys therefore that the process has *immediate* corporealities as a presupposition, which nevertheless are just as much its products. Because that immediacy, these corporealities appear as subsisting outside [*auβerhalb*] the process, and the process as coming to them" (§329; GW 20: 329/EN II: 188). Thus, although reactants and products are both chemical substances, it is equally essential to the chemical process that these substances have corporeal independence and subsist outside the process itself. Therefore, the characteristic of being *chemical* for Hegel is for a substance to have a differential relation to some other substance, with which it enters into a specific, determinate reaction, and at the same time to be capable of subsisting outside of the reaction.

Moreover, because the chemical process is not absolute, and its finitude entails the externality of bodies from the process that reconstitutes them, it also follows that the process itself divides itself into several moments. Hegel claims that "what is more, the *moments of the course* of the process itself fall apart into their immediacy and diversity. The course as the real totality becomes a circle of particular processes, each of which have the other as a presupposition, but which for itself takes its starting point from without and terminates in its particular product" (§329; GW 20: 329/EN II: 188). Because the chemical substances are not fully immanent to the process itself, but subsist outside the process, a distinction is made between the reactants and the products of a reaction. Despite the chemical process presupposing

and producing chemical substance, there remains a qualitative difference between the chemical characteristics of reactants and products. Consequently, the process is not a single, unified process, but instead as Hegel says a circle of particular processes. Once this circle is posited as a whole in its own stage, it will be regarded as the absolute process, in which a true identity exists between what is posited and what is presupposed; this absolute process is in turn the basis of subjectivity and the focal point for Hegel's "organics." As chemical process, however, its finitude divides up the particular moments into distinct processes, each with their own characteristic reactant and product. We can understand what kind of chemical substance something is for Hegel only by understanding the kinds of processes the substance belongs to as a moment.

The kinds of reaction chemical process include (1) galvanism, (2) combustion, (3) acidbase neutralization, and (4) elective affinity.⁴² Hegel describes the order of this sequence as advancing "(1) from the undifferentiated [*indifferenten*] body, through its activation, to neutrality, and (2) from this union back to the separation into undifferentiated bodies" (§329; GW 20: 330/EN II: 188). Each of the kinds of process constitutes a moment of this cycle. The first process is *galvanism*, which is the oxidation of a metal through setting up an electrical circuit (§330; GW 20: 330-1/EN II: 191-2).⁴³ Formally, galvanism exhibits the development

⁴² I begin with the moments of the real process, rather than with the formal process, because real process is the first true chemical process, insofar as "the whole concrete totality of the body enters into the process (§325). – The bodies, which enter into the real process, are mediated in a third term, which is different from them. This third term is the *abstract* and only at first *implicitly* existing unity of the extremes, which is posited by the process into existence" (§328; GW 20: 328/EN II: 184-5). The formal process did not introduce a truly new product through the mediation of the differences between the reactants, but instead was described as a kind of mixing or aggregating of the components. The real process, on the other hand, posits a third term which is the dialectical unity of the two reactants. Unlike in electricity, where this unity is posited as undifferentiated light, the real chemical process here produces a "third term composed merely of elements, and these elements contain difference" (§328; GW 20: 328/EN II: 185). The real chemical process thereby constructs one chemical substance out of the other chemical substances, where the former expresses the dialectical unity of the latter.

⁴³ In the 1817 edition of the *Encyclopedia*, Hegel had placed the phenomenon of galvanism in the account of electricity, rather than in the chemical process. It is now generally accepted that an 1826 publication of Georg Friedrich Pohl, "The Process of the Galvanic Circuit," which Hegel references in the Remark to §330 beginning

from the undifferentiated bodies (metals) into differentiated bodies (metal oxides).

Undifferentiated and differentiated in this context means that as undifferentiated, metals are relatively stable, and do not readily enter into reactions, whereas a differentiated substance is one that exists in a differential, or negative, relation to another substance, with which it readily enters into a reaction to form the unity implicit in their differentiated identities. The course of the chemical process begins, however, only with the development of differentiation of the substance out of the implicit difference of undifferentiated substances.

The second process is *combustion*, or the "fire process" [*Feuerprozesβ*]. It emerges through making explicit what was only implicit in the first process, namely, the activity of differentiation. Whereas in galvanism, we begin with two undifferentiated bodies (i.e. the metals), the difference of which is set into motion to form a differentiated body (i.e. metal oxide), in combustion Hegel identifies this difference as one of the existing moments of the process, namely as fire.⁴⁴ The process of combustion differs from galvanism, insofar as the combustible substances are not essentially indifferent in the same way as metals were, but only "modally" or accidentally indifferent.⁴⁵ This difference signifies that in galvanism, the reaction could only take place through the sustenance of the medium between the two metals, whereas in

with the 1827 edition of the *Encyclopedia*, was largely responsible for the Hegel's decision to change his account of galvanism. This article argued for the active role in water in the galvanic process, which implies that a chemical reaction is occurring between the water and the metals in the circuit. This was in opposition to alternative theories that claimed that the water is merely a passive medium, through which the activity between the metals in the circuit is of an entirely electrical nature. What should be of interest to us is Hegel's acceptance of empirical research for changing the dialectical development and presentation of the philosophy of nature. This problem is addressed directly later in this chapter.

⁴⁴ "Through fire the implicitly combustible (like sulfur), or the third kind of corporeality, is set into flames. Through fire that which is generally still in an indifferent and dulled state is activated into the chemical opposition of acid and (caustic) base" (§331; GW 20: 336/EN II: 205).

⁴⁵ "That which is combustible has two shapes, because this being-for-itself of the negative, insofar as it enters into difference, posits itself into its own difference. One form is that which is ordinarily combustible, sulfur, phosphorus, etc.; the other form of combustibles is something neutral. In both forms, the stable subsistence is only a mode of its existence, not its nature, while with metals in the galvanic process indifference constitutes their nature" (§331Z; GW 24: 1408/EN II: 206).

combustion, the combustible body which is initially and only accidentally nonreactive, needs no medium to sustain its own combustion.⁴⁶ Consequently, they can enter into a chemical process with fire, whereby what is indifferent is activated by the existing differentiation or negative and transformed into an inherently differentiated substance, an acid.⁴⁷

The third process is *acid-base neutralization*, or the "water process" [*Wasserproze* β]. Here, we have two differentiated substances that are in opposition to each other. Hegel claims that these substances are qualitatively determined, such that they "are essentially only in their relation to this other. Its corporeality in its independent, separate existence is therefore only a forced [gewaltsamer] state" (§332; GW 20: 337/EN II: 208). Whereas metals were undifferentiated and therefore chemically stable by their nature, and combustible substances were so only as a mode of their existence, acids and bases are here defined as essentially differentiated, where their corporeal independence is a state, which must be maintained by external force or violence [Gewalt]. Such substances therefore posit as product the identity, which is initially only presupposed in their differential relation to their other. This identical product formed from the differentiated substances is a salt. The neutrality of the salt is different from the undifferentiated metal, insofar as while both are relatively chemically stable, the salt as neutral is the result of the sublation of difference. This is important for the final stage of "elective affinity," as the chemical reaction between neutral bodies. The undifferentiated is on the other hand prior to differentiation, and so requires external factors in order for it to enter into a

⁴⁶ The possible exception to this is air, which is perhaps better regarded as a reactant than as the medium, insofar as the oxygen is reacting.

⁴⁷ Although Hegel takes combustion as immediately productive of an acid, with sulfur and phosphorus as his examples, he also points out the need for water, without which we obtain oxides (and not acids) of the reactants (e.g. sulfur dioxide or phosphorous pentoxide). "That which stands in conflict in the combustion process come together externally, as the finitude of the chemical process conditions this. The elements, namely air and water, join in as mediating principles. For example, in order that an acid is generated from sulfur, one uses walls dampened with water and air" (§331Z; GW 24: 1409/EN II: 207).

chemical reaction. For this reason, we can also see how each successive stage of the chemical process has made the determinacy of its corporeal substances less independent from the process itself. Or, what is the same, the process gradually constitutes more of the corporeality's determinacy.

The fourth and final stage of the process is *elective affinity* [Wahlverwandtschaft]. Specifically, elective affinity is the chemical reaction of two salts in a solution that exchange their components, i.e. their acids and bases, to form two new salts (§333; GW 20: 337/EN II: 210). Formally, this process is the formation of neutral substances out of neutral substances. Because the reactants and products are formally identical, but at the same time have different content, Hegel considers this process the "particularization of universal neutrality" (§333; GW 20: 337/EN II: 210). In themselves, neutral substances are inactive, but as indicated above, their stability is a sublation of chemical opposition. Consequently, when two neutral substances are brought into a relation to each other mediated by a solvent, the difference or particularity of these substances is exhibited through the dissolution and recombination of components in the formation of new products. Elective affinity is considered the process in its totality because although as a finite chemical process, difference is exhibited between reactants and products, the formal reproduction of neutrality out of itself brings chemical process to its completion. The dissolution of salt in the final stage of the uniting real chemical process is at the same time the introduction of real process's division [Scheidung]. Whereas each process exhibited the development of chemical complexity from undifferentiatedness through difference to neutrality, the reaction of neutral substances therefore begins to exhibit the regression of these stages. However, Hegel does not therefore introduce new a set of characteristic divisive processes. Instead, he indicates that "every division is inseparably connected with a unification; likewise,

the processes, which were stated as associated with the course of unification, at the same time immediately contain the other moment of division" (EN §334; GW 20: 339/EN II: 214). Division is only most visible in the elective affinity process due to the developed nature of the neutral substance itself. However, because every chemical process involves the negation and sublation of the reactant bodies as presuppositions for the production of the product bodies, division is a necessary moment of every chemical process.

The transition from chemistry to organics is finally made by examining the complete course of the chemical process. Chemical process emerged on the conceptual basis of the electric relation, in which light exhibited the identity formed from the differential relation of two bodies. In each of its moments, the chemical process showed how this differential relation is constitutive of the body in its totality. However, it does so not by actively constituting the differentiated bodies which it begins with (i.e. the reactants), but instead by constituting a new body (i.e. a product). Each step of the chemical process nevertheless negated more of the body's independence, and incorporated its determinacy into the process itself. Finally, it is shown in elective affinity that the totality of a body is nothing more than a moment of a process of division and unification. Hegel writes that "what is therefore *posited* in the chemical process in general, is the *relativity* of the immediate substances and characteristics. The indifferently subsisting corporeality is thereby posited as a *moment* of individuality, and the concept is posited in the reality corresponding to it" (§336; GW 20: 343/EN II: 220). Whereas elective affinity exhibited this truth most directly, as a chemical process, it still maintained a distinction between reactant and product. At the same time, elective affinity introduced division as an explicit moment of the process, which enabled the chemical process to wrap itself into a closed circuit, rather than to continue to develop new levels of complexity.

The closed circle of chemical process, when no longer divided among several moments, but instead presented as a true, existing process is the organism as living being. The total process that dialectically results from the chemical process, and which is examined more closely in Chapter 4, exhibits the shape of subjectivity in nature. Hegel defines this total process as when "individuality determines itself into particularity or finitude, which it then negates and returns into itself by reestablishing itself at the end of the process as the beginning" (§337; GW 20: 344/EN III: 9). The determination of negation and negation of the negation, which thereby restores itself as a positive determination, is the structure of subjectivity, and has its first appearance in the organism. In the transition from the chemical process to organism, Hegel claims that the ideality of nature becomes "fulfilled and, as a self-relating negative unity, essentially self-centered and subjective" (§337; GW 20: 344/EN II: 188; GW 20: 329/EN III: 9). Prior to organics, as we have seen in the chemical process specifically, there remained a partial independence of the body from the form-determination. Beginning with organics, then, the determinations of nature will involve relations of self that result through the complete subjection of body to determinations of form and conceptuality. As embedded in the externality of nature, however, this structure of subjectivity will be presented through the constitution of the body as a self in relationship first to its own body, then to its environment, and finally to other members of its species.

3.2.2. Unifying Philosophy and Science

The main interpretative question regarding Hegel's use of empirical science for his philosophy of nature is the direction of dependency between the two disciplines. Do experience and empirical science provide all of the conceptual content for philosophy, which then organizes

that content into a unified system? Or can philosophy establish its own conceptual content regarding nature, for which science is then tasked with providing empirical confirmation? These two approaches, which I will call the *a posteriori* and the *a priori* interpretations, serve as the primary alternatives not only for understanding Hegel's own approach in researching and constructing the philosophy of nature, but also for revitalizing this project with respect to contemporary developments in science. In the remainder of the chapter, I address the relative strengths and weaknesses of both approaches, specifically as they have applied to the interpretation of Hegel's account of chemical process, although the interpretations are by their nature significant for the project as a whole. I ultimately defend the *a priori* interpretation as being more consistent with Hegel's philosophical commitments.⁴⁸

John Burbidge has provided the strongest defense of the *a posteriori* interpretation of the *Philosophy of Nature* through his comparison of the chemism in the *Logic* with chemical process in the *Philosophy of Nature*. To repeat the claim briefly, his position maintains that the philosophy of nature requires and depends on the empirical scientific research for its conceptual content, since nature is regarded as external to thought and thus beyond the scope of *a priori* demonstration. As discussed in Chapter 1, Burbidge argues that the specific content of the four kinds of chemical processes must come from experience and does not come from *a priori* argumentation. He writes that

The logic of itself cannot justify the introduction of the reference to water or air, to galvanism or combustion, nor even to the fact that separation relies on the various processes of combination and is not itself a separate process. [...] Natural phenomena are introduced as instances of a structure that thought has articulated; then in the end thought reflects on the total picture and incorporates both the original general considerations and the specific details of experimental evidence and discerns there a new conceptual pattern.⁴⁹

⁴⁸ As discussed in Chapter 1, the *a posteriori* interpretation is more consistent with Schelling's position, as developed from certain criticisms of Hegel's position.

⁴⁹ John W. Burbidge, "Chemism and Chemistry," *The Owl of Minerva* 31, no. 1 (Fall/Winter 2002-03), 13.

According to Burbidge, the chemical process can be *a priori* ascertained to be combination and division, but beyond this, experience is needed to refer to the specific processes.

The advantage of this position is that it is less committed to any of the empirical concepts and can easily be revised following developments in the natural sciences. For example, according to a slightly different *a posteriori* position offered by M. J. Petry, the *Encyclopedia* presents the empirical or scientific discoveries in a sequence of increasing complexity, such that the principles operating at each stage justify the transition to the next stage.⁵⁰ This position prioritizes the investigation into the subject matter of the sciences over their arrangement, thus providing the *Encyclopedia* with room for revision. A contemporary Hegelian philosophy of nature could therefore be a systematic organization of the concepts of such sciences as quantum physics, big bang cosmology, general relativity, and evolutionary biology. This is because, according to Petry, Hegelian philosophy of nature takes for its material the standpoints provided by science. However, as Alison Stone has argued, Hegel does not always passively accept the knowledge of the empirical sciences as is, and in some cases criticizes and modifies it as was dictated by the structures of the conceptual development.⁵¹

Burbidge's position is admittedly less empirical than Petry's, insofar as Burbidge does recognize that *a priori* determinations form a starting point for the development of the stages of nature. There is then an argumentative step beyond these determinations that draws exclusively from experience and empirical science for its content. In the case of chemical process for example, while there is a general necessary structure that serves as the criterion for that, for which we search in our experience, there is no necessity that this criterion yield four different

⁵⁰ Petry, "Introduction," in *Hegel's Philosophy of Nature* (London: George Allen and Unwin Ltd, 1970), 11-177, esp. 97-98

⁵¹ Stone, Petrified Intelligence: Nature in Hegel's Philosophy (Albany: SUNY Press, 2005), 15-16

kinds of chemical processes. For example, the relocation of galvanism from an electric to a chemical phenomenon lends support to the thesis that the dialectic of nature really is dependent on contemporary developments in empirical science. Perhaps after further research and experimentation, we realize that combustion and galvanism are more similar than Hegel had initially thought in 1830; it would therefore be possible following Burbidge's interpretation to claim that there are only three kinds of processes. More broadly, this means that all content specific to nature, which differentiates it from logic, arises out of experience and is contingent, such that empirical science is always able to provide new content to the account of nature.

One problem with this interpretation, however, is identifying the ground for the distinct content of the philosophy of nature. As discussed in Chapter 2, we saw how this *a posteriori* interpretation uses the impotence of nature to explain how the structures in nature can be distinct from those of the logic. The problem with this explanation is that impotence precisely means nature's *inability* to meet the standards of certain kinds, whereas they interpret it to be a genuine *potency* for creating new ways in which things can be. Whereas we interpreted this impotence of nature to apply to the level of singular things in their inability to perfectly instantiate a universal, where that universal is nevertheless a kind specific to nature, the *a posteriori* interpretation claims that the impotence is the ground for new universals. As claimed in Chapter 2, this interpretation ends up closer to Schelling's later position, which takes a critical distance from Hegel's position.

In contrast to these *a posteriori* approaches are *a priori* approaches, according to which the conceptual structure of each stage is determined independently from experience. In this approach, philosophy of nature does not draw material from experience, but rather, as was already mentioned in Chapter 2, the concepts that are produced through empirical science and

the concepts of the philosophy of nature must be shown to correspond to each other. One *a priori* interpretation of Hegel's philosophy of nature is offered by Alison Stone. Following Stone's own characterization, we shall call hers an *a priori* phenomenological interpretation, which she argues is the best defense of an *a priori* interpretation of Hegel's philosophy of nature. "The rationalist metaphysics of nature is most adequate because, uniquely, it allows the possibility of elaborating a theory of the natural world that remains continuous with the basic way in which we experience nature."⁵² By citing Hegel's analysis of the elements (i.e. air, water, fire, earth), Stone argues that sensibility functions to present the non-conceptual content of experience, which the *a priori* development of concepts must "neither abandon nor immediately express ... but [rather] articulate in conceptual form."53 In other words, according to Stone's phenomenological interpretation, Hegel's philosophy of nature as a priori draws its explanatory strength from its ability to conceptualize what is present in sensible experience. While Hegel's proclivity to reject supersensible entities in favor of articulating the structures of sensible phenomena lends support to Stone's interpretation, our interpretation has suggested that reference to an experiencing, thinking subject has been suspended when methodologically generating the concepts of nature. Even to the extent that philosophy of nature must bear some dialectical relation to the activity of thinking by a subject, we have argued that this relation is due to the conceptuality internal to nature. Consequently, sensibility seems most of all to be that aspect of human experience that is set aside by the philosophical, comprehending activity.

We shall instead take up Stephen Houlgate's alternative *a priori* approach, which instead of phenomenological, we shall describe as conceptual.⁵⁴ Houlgate's interpretation places less

⁵² Ibid., 107.

⁵³ Ibid., 108.

⁵⁴ Houlgate, "Logic and Nature in Hegel's Philosophy: A Response to John W. Burbidge," *The Owl of Minerva* 31, no. 1 (Fall/Winter 2002-03): 107-125.

emphasis on the sensible content of natural concepts, and instead on the formal structures of those concepts, such that any reference to sensible experience must presuppose a conceptual structure generated *a priori.*⁵⁵ It is internal conceptual adequacy, and not sensibility, that determines the course of the conceptual development and establishes the validity of those concepts. Houlgate therefore argues that even the four kinds of chemical processes have specific content deduced *a priori*. While acknowledging that specific references to water, air, etc., have their origin in experience, he claims that these empirical phenomena must correspond to *a priori* conceptual determinations.⁵⁶ Moreover, the conceptual determinations of nature that underlie the empirical references are necessarily distinct from those of the logic.⁵⁷ We have identified those conceptual determinations in the chemical process to be the presence and absence of differentiation of the bodies, which also reflects the relative immanence or externality of the bodies to the chemical process itself.

Specifically, there are two ways in which the four kinds of chemical processes exhibit that they are not merely contingent but rather necessary structures of nature. First, Houlgate claims that "it is the moment of externality that explains why each chemical process is separate and finite."⁵⁸ This is a general characteristic of all of nature, which we observed in chapter 2, namely that all of the conceptual determinations have an indifferent subsistence and can therefore appear alongside each other. In the chemical process, this means that each moment of the conceptual development of the chemical process will exist independently from and alongside

⁵⁵ We are reading Houlgate's *a priori* conceptual approach as similar to Wandschneider's objective-idealistic approach, insofar as both argue for an *a priori* exhibition of the concepts of nature which remains independent of any reference to subjectivity or experience. See Wandschneider, "Nature and the Dialectic of Nature in Hegel's Objective Idealism," *Bulletin of the Hegel Society of Great Britain* 26 (Autumn/Winter 1992): 30-51. ⁵⁶ Houlgate, "Logic and Nature in Hegel's Philosophy," 118.

⁵⁷ Ibid., 114.

⁵⁸ Ibid., 122.

the other moments. This, however, presupposes the second reason for the necessity of the diversity of chemical processes, namely, the presupposition of

objects [that] are wholly *external* and *indifferent* to one another. [...] We begin with bodies that are indifferent to, and only implicitly active in relation to, one another, and we then proceed logically, via the process of combustion, to bodies that are explicitly active in relation to one another (in the third process).⁵⁹

In other words, the stage of chemical process in the *Philosophy of Nature* differs from the stage of chemism in the logic, insofar as the former is the result of the conceptual developments involving qualitatively individuated, spatiotemporal bodies. Our argumentation earlier this chapter has moreover shown that, in agreement with Houlgate, the determinations of space, time, corporeality, and the qualitative determinations of a body, all follow necessarily from the dialectic of the concept of nature as an idea. Once this process reaches the stage of chemical process, the determination of bodies which both subsist independently and enter into a process to divide and recombine in the formation of a resultant body has been demonstrated through the necessity of the concept. The remaining moments of the chemical process then become independently existing chemical process as exhibited in the dialectical argumentation addressed above, and as a result of the externality underlying the entire logic of nature.

It is possible to add one caveat to this interpretation, namely that empirical research can reveal errors in the *execution* of an *a priori* argument and presentation of a philosophy of nature. Taking the example of galvanism's ambiguous location during Hegel's lifetime, it is possible to argue that if galvanism is in fact a chemical process, then Hegel's 1817 *Encyclopedia* simply committed an error in describing it as an electrical phenomenon. Regarding such a caveat, Houlgate claims that

it is possible, therefore, that further developments in empirical science could highlight further developments with Hegel's articulation of the logic of nature (unless, of course, it

⁵⁹ Ibid., 122.

is proven definitively that the logic is properly articulated already). Even if this were to occur, however, it would not make a revised systematic, logical structure of Hegel's philosophy as *dependent* on the deliverances of science, as Burbidge, implies. That logical structure would still be determined by the immanent, *a priori* logic of nature, now correctly articulated.⁶⁰

As mentioned above, what is at stake is the issue of the ground and the necessity of the conceptual content of nature's determinations. It is possible for empirical science to provide philosophy with content, of which it neither was nor could have been aware. However, the *a priori* interpretation regards this content not as changing the structure of nature, but as revealing errors in previous accounts by showing what nature must necessarily be. Whereas the *a posteriori* position regards all universal structures of nature to be in fact contingently necessary, the *a priori* interpretation traces these same universal structures to the dialectical unfolding of the idea, and thus grounds them absolutely.⁶¹

It therefore follows from our *a priori* interpretation of Hegel's *Philosophy of Nature* that nature exists in specific necessary structures, and that these are precisely what is provided for us by the dialectical method. Moreover, even when some of the concepts in the *Philosophy of Nature* arise from experience (e.g. water, air, galvanism), these do not provide determinative content beyond what can be arrived at through the dialectical method. Rather, the role of experience and empirical science is to provide the empirical content in nature that correspond to

⁶⁰ Ibid., 117.

⁶¹ While I cannot provide a full argument for this claim here, I take the radical *a priori* approach of Hegel's philosophy of nature to be a consequence of his absolute idealistic and radical interpretation of Kant's transcendental philosophy, specifically Kant's demonstration that the manifold of empirical intuition is necessarily always already structured and formed by the transcendental unity of apperception. As a result of the radicalized reading of Kant, however, Hegel does away with any need for induction as inferring universals from contingently given singulars. Rather, for Hegel to be a singular is already to be a moment of the self-determination of a universal. Consequently, when seeking the universals, or laws, of nature, we need not experiment with the contingencies of nature, but rather only examine the logical necessities entailed by nature's external being. Hegel's philosophy of science, which has instead abandoned the attempt of deriving content regarding nature, but instead reflects on the various epistemological practices of science (whether experimental or theoretical).

the conceptual structures derived a priori. Unlike the a posteriori interpretation, this means that Hegel's position is committed to certain structures of nature, which had corresponding empirical articulations in 1830, but which in the nearly two hundred years since the publication of the *Philosophy of Nature* we may struggle to find. However, against the *a posteriori* position, the very reason why nature takes on these necessary features is because these follow directly from nature's externality. Just as we argued in Chapter 2, regarding contingency and necessity in nature, we also can claim here regarding the conceptual determinations of physics and mechanics, that they all are direct, necessary consequences of nature's being the idea in the form of otherness. For example, whereas we argued space and time are absolutely necessary insofar as they exhibited the immediate form of nature's externality, we are now arguing that determinations such as chemical processes are also absolutely necessary, insofar as their conceptual structures emerged dialectically from the concepts of space and time, and thus from the initial principle that nature is the idea in the form of otherness. This in turn was shown to be a direct consequence of the arguments of the logic, as argued in Chapter 1. Therefore, while Hegel's *Philosophy of Nature* commits him to saying that nature must necessarily be determined in ways that corresponded to empirical scientific accounts we may no longer accept, we can nevertheless see that these structures are the necessary consequences to Hegel's dialectical understanding of nature as the idea in the form of otherness. We therefore agree with Wandschneider's assessment of Hegel's philosophy of nature that

this idea of being able to derive natural laws *a priori* in principle seems to me not only not implausible but, within the objective-idealistic framework, even irrefutable. If idealism has philosophical legitimacy [...] then the real structures of natural being must basically be precipitated through a dialectic of natural categories.⁶²

⁶² Wandschneider, "Nature and the Dialectic of Nature in Hegel's Objective Idealism," 43.

Chapter 4: The Mutability of Species in Hegel's Philosophy of Biology

In this chapter, I bring Hegel's philosophy of biology and contemporary evolutionary theory together in order to show that despite Hegel's ignorance of evolutionary processes, his theory is consistent with a rejection of species fixism, implying that species for Hegel are capable of evolving. The relationship between Hegel and evolutionary theory has always been a problem for Hegel scholarship.¹ This problem is best captured by J. N. Findlay's declaration that "had the Darwinian and later data been available, [Hegel] would almost certainly have acknowledged the historical trends in Nature that he admits in the realm of Spirit: if any philosopher is a philosopher of evolution, that philosopher is Hegel."² Namely, given Hegel's writings on the historicity and development of spirit, it seems odd that Hegel adamantly rejects the theories of his time that advocated for species transformism. This chapter presents an interpretation of Hegel's philosophy of biology as containing elements of a theory that resemble Darwinian evolutionary theory, while also consistently rejecting those pre-Darwinian theories of species transformism.

The interpretation advanced in this chapter involves two basic arguments. The first argument contextualizes Hegel's rejection of the "metamorphosis" of species by understanding it as presupposing Hegel's concept of development [*Entwicklung*]. This concept plays several significant roles in Hegel's philosophy, including being the shape of both the methodological unfolding of the system and spirit's history. This is because development has a fundamental

¹ See Brian Van Dyke, "Hegel and Evolution: A Reappraisal," *Contemporary Philosophy* 17, no. 6 (1996): 14-21; Olaf Breidbach, "Hegels Evolutionskritik," *Hegel-Studien* 22 (1987): 165-172; Martin Drees, "Evolution and Emanation of Spirit in Hegel's *Philosophy of Nature*," *Bulletin of the Hegel Society of Great Britain* 26 (Autumn-Winter 1992): 52-61; Errol E. Harris, "How Final is Hegel's Rejection of Evolution?" in *Hegel and the Philosophy of Nature*, ed. Stephen Houlgate (Albany: SUNY Press, 1998), 189-208; Dieter Wandschneider, "Hegel und die Evolution," in *Hegel und die Lebenswissenschaften*, ed. Olaf Breidbach & Dietrich von Engelhardt (Berlin: Verlag für Wissenschaft und Bildung, 2000), 225-240; Jennifer Ann Bates, "Hegel and the Concept of Extinction," *Philosophy Compass* 9, no. 4 (2014): 238-252.

² Findlay, *Hegel: A Re-Examination* (Aldershot: Routledge, 1993), 272

connection to the concept of subjectivity in Hegel's philosophy. Interestingly, Hegel does make the argument that organisms as embodied life forms do exhibit a form of subjectivity. As a result, there is a kind of development that pertains to organisms. However, and this is the decisive point, the development applies only to individual organisms (not species), and is ultimately substantially different from the methodological or historical development. By showing that the pre-Darwinian theories of species transformism correspond to a model of development more appropriate to that of spirit, I argue that Hegel's rejection of these theories and his alternative understanding of biological development actually bring him closer to Darwinian evolutionary theory. I conclude this section by suggesting that Hegel's account of biological development is consistent with a rejection of species fixism.

Second, I turn to Hegel's species concept and argue that it can be understood as a reproductive lineage, rather than an essence, type, or class; a claim that is again shared by evolutionary biology. I arrive at this claim by examining the relationship between sexual relation and species within Hegel's philosophy of biology. As a matter of fact, Hegel offers different accounts of this relationship by switching the order of species and sex between the 1827 and 1830 editions of the *Encyclopedia*. I argue that the 1827 edition, which situates sex prior to species, is more appropriate to Hegel's general systematic concerns. This account is shown to entail that species are reproductive lineages, which is consistent with the rejection of species fixism.

Before we continue, it is important to qualify the scope of these arguments. Nowhere does Hegel make the claim that species evolve one from another, and in fact he is emphatic that they do not. Moreover, in our attempt to read some of Hegel's arguments as more compatible with evolutionary theory than he may have thought, there is not enough in these arguments to

reconstruct the actual evolutionary processes (e.g. natural selection, genetic drift) responsible for engendering species. It is these insights that we correctly attribute Darwin as first discovering and articulating, even while the issues of the fixity or mutability of the species were ongoing during Hegel's period. For example, Hegel refers to both Georges Cuvier, whose theory emphasized the specificity of anatomical structures common to various kinds of organisms, indicating that species could not evolve, or were "fixed"; and Jean-Baptiste Lamarck, whose theory emphasized the role of habit and adaptability in organisms, which combined with the diverse environments in which organisms live, cause organisms to gradually develop and transform from simple kinds to more complex. Both of these theories are therefore important for situating Hegel's pre-Darwinian biology, and we refer to them in clarifying Hegel's own position on biological development. Consequently, our arguments do not intend to claim that Hegel anticipates or is even fully consistent with evolutionary theory, insofar as these processes essential to evolutionary explanation are wholly absent from Hegel's theory. We aim only to show that Hegel's account of biology can be interpreted as rejecting a fixist model of species, and instead that species are entities that are mutable or able to evolve.

4.1. The Development of Life

In this section, I address Hegel's explicit rejection of species transformism by interpreting it as a rejection of a particular understanding of development as an existing process in nature. In order to justify this claim, I first provide an account of what subjectivity is in Hegel's philosophy, and specifically how the subjectivity pertaining to organisms differs from other forms. Second, I show how the concept of development is grounded in the structure of subjectivity, where both are particular forms of self-determination and self-constitution. By

showing how there are different kinds of development in Hegel's philosophy as pertaining to the different kinds of subjectivity, I argue that understanding species transformism as a form of development is problematic on both Hegelian and Darwinian grounds. I then argue that the model of development that Hegel does attribute to the subjectivity of organisms leaves open the possibility that species are mutable. Ultimately, Hegel's rejection of species transformism causes his own theory to be closer and more consistent with Darwinian evolutionary theory.

4.1.1. Nature, Subjectivity, and Animals

In this section, we identify the essential characteristics of subjectivity in general and the distinguishing characteristics of the subjectivity of life (as distinct from spirit). Subjectivity is defined as an "infinite process in which individuality determines itself as the particularity or finitude which it also negates, and returns into itself by reestablishing itself at the end of the process as the beginning" (§337; GW 20: 344/EN III: 9). Subjectivity is an activity and structure of self-determination or self-(re)production, where that which emerges at the end of the determining activity is at the same time what had initiated it. This process nevertheless can be distinguished into the two stages of generating a difference, particularity or finitude, and then the negation of that difference. Sebastian Rand summarizes this movement by claiming that

any subject must act in a way that determines itself, must regard this determined self as different from itself *qua* determining, and must take its determined self to be identical to its determining self. To act in this self-determining, self-distinguishing, self-identifying way is just what it means to be a subject, and anything that acts in such a way is a subject.³

³ Sebastian Rand, "Animal Subjectivity and the Nervous System in Hegel's *Philosophy of Nature*," 5, unpublished translation of "Subjetividade animal e o sistema nervoso na *Filosofia da Natureza* de Hegel," *Revista Eletrônica Estudos Hegelianos* 7, no. 12 (2010): 32-51.

It is therefore the process of first creating the distinction between determined self and determining self, while at the same time negating that difference by identifying the determined self with the determining self that characterizes subjectivity. However, it is equally important to point out that it is only insofar as the second move of identifying the sides of the difference, or by negating the difference that was made, that we can recognize what results from the process as that which initiated it. It is this circularity which (re)establishes the self through its differentiation that distinguishes subjectivity from objective structures.

In the *Science of Logic*, subjectivity emerges from the dialectical relations of the doctrine of essence, specifically those of causality and reciprocity. Although in my Chapter 1, we briefly discussed the relation between subjectivity, or conceptuality, and essence with respect to their position to the conclusion and the methodological structure of the logic, it is important to repeat some of the points here. The various determinations of essence or reflection share a similar structure characterized as being a first negation of being. Appearing prior to the concept, but after the determinations of being, the determinations of essence are all regarded as being the results of negation of being as immediate. However, at the same time, since this immediate being is negated, it is only presentable as the result of that negation. Hegel writes that

Its movement consists in positing negation or determination in being, thereby giving itself *existence* and becoming as infinite being-for-itself what it is in itself. [...] But the existence which essence gives to itself is not yet existence as it is in and for itself but as essence *gives* to itself or as *posited*, and hence still distinct from the existence of the concept. (GW 11: 243/SL 339)

The negated immediacy in the determinations of essence (e.g. the shine of essence) is never adequate to itself, since that determination is always in the asymmetrical position as that which has been posited as negated.

The dialectic of the determinations of essence continues to develop, however, so as to mitigate the asymmetry between essence and its positedness. The doctrine of essence concludes with the determination of causality and reciprocity, where the sides of cause and effect are rendered fully identical: the effect is just as much the cause, and the cause is just as much the effect. With this dialectical result, the concept emerges as that which is self-referring and selfdetermining precisely through differentiating itself and negating its own differentiation. As a result, the concept, or subjectivity as it figures in the *Science of Logic*, is the "absolute unity of being and reflection whereby being-in-and-for-itself only is by being equally reflection or positedness, and positedness only is by being equally in-and-for-itself' (GW 12: 12/SL 509). Whereas in essence, the moment of immediacy was situated precariously as both that which is negated resulting in the determination of essence (immediacy precedes mediation), and that which essence itself posits as that which was negated (mediation precedes immediacy), in the concept the starting and ending points of the logical movement are identical. In the concept, the moment of immediacy (being-in-and-for-itself), which is negated and yields the moment of mediation (positedness), is nothing other than the moment of mediation itself. Likewise, the moment of mediation posits as its negated immediacy this moment of immediacy, but which turns out to be identical to itself. In this respect, what is negated turns out to be identical to what emerges from the negation, and simultaneously, what emerges is that which negates the prior term, which is identical to itself. Thus, through the double movement of negativity, a return has been made in order to constitute a self-referential, self-determination structure.

As we claimed in Chapter 3, the structure of individuality in the *Philosophy of Nature* resembles that of essence in the *Logic*, and as a result, it is possible to trace a similar trajectory of the emergence of subjectivity in the philosophy of nature as in the logic. We showed in Chapter

3 that individuality exhibits the qualitative distinctions of matter once it has been shown that the simple determinations of matter's spatiotemporal are all negated in the concept of gravity, whereby matter is regarded as self-moving. In the sphere of physics, gravity comes to function in a similar manner to the moment in essence of negated immediacy, wherein the qualitative determinations of physical individuality, beginning with the different kinds of bodies in a solar system but more explicitly in the concept of light, are the way in which "matter breaks away from gravity and manifests itself as implicitly self-determining" (§272; GW 20:276/EN II: 9). In the three stages of the physics, the negated gravitational determination of matter is regarded, first, as independent, whereby the qualities are considered immediate and free. Second, individuality is regarded in its relation to gravity, where form determines the material spatiality as something other than the form. Third, individuality contains the spatial determinations of matter as immanent to the determinations of form. This last stage was seen in the chemical process, where the body in its totality was constituted through the formal determination of a differentiating process.

Thus, just as in the doctrine of essence, where the negated moment of immediacy began in a radically asymmetrical position to the moment of essence or mediation, and gradually developed content to the point of becoming identical with the latter moment, so also in the physics, the moment of gravitation and spatial determinacy is at first negated and independent to the formal determinations, but subsequently develops content until the starting point and ending point of the movement of formal determination are identical. This was seen in the case of elective affinity, where the process of dissolution and reconstitution begins and ends with formally identical substances (i.e. neutral salts). This process nevertheless retained a distinction between the reactants and products, and so does not actually complete a circular moment of self-

determination, just as the determinations of causality and reciprocity did. Rather, it is by grasping the self-relation implicit in this process, that enables the shift to the true self-related structure in nature: life.

The structure of subjectivity in Hegel's organic physics bears certain resemblances to natural ends in Kant's Critique of the Power of Judgment. Kant's definition of a natural end is a thing that is cause and effect of itself (i.e. a self-generating thing) and provides these three cases as exemplifying this structure (AK 5: 371). A tree generating another tree is considered selfgeneration, insofar as a species endures through the generation of members of the same kind in a continuous fashion. A tree also generates itself through the activity of growth. In this case, the tree takes in material from its environment and converts it into its own form, whereby the activity of the tree on its environment works to (re)produce itself. Finally, the tree generates itself in the form of its own bodily organization. Each part of the organism acquires its ability or function from the center or principle of organization, and so the organs can be regarded as effects of the organism. At the same time, however, these organs function for the sake of preserving the organism as a whole, and so the whole is equally an effect of the parts. Of course, both the members considered in their multiplicity and the organism considered as a unity are really just different aspects of the same thing, and so it is possible to regard either the members or the organism as self-generating by means of sustaining the other aspect of itself.

Due to their self-causation and self-relatedness in these cases, Hegel regards these as different expressions of a kind of subjectivity unique to life and organic processes, beginning with the shape or bodily organization, and developing into the interaction with the environment and the reproduction of the species. Already in the descriptions of each form of the organism's self-generation must pass through a moment of a difference which is both created and negated in

the life-process. The development of these three stages ultimately corresponds to the determinacy of this moment of difference, and consequently the broader process in which that moment figures. The first stage of shape and bodily organization contains the organisms own body, or what Hegel calls the "inorganic nature within [the individual]" (§342Z; GW 24: 1452/EN III: 41) as this sublated moment of difference.⁴ Hegel describes this stage of organic being as a kind of syllogism, in which "the organic divides itself into two universal extremes, the inorganic nature and the genus, whose middle term it is (U–S–P) und with each of which it is here still immediately one with, itself genus and inorganic nature" (§342Z; GW 24: 1452/EN III: 41). The reciprocal dependency is established, whereby the organic self cannot exist without the functioning of its organs, but at the same time the organs must derive their functionality from the self. In other words, the body begins as inorganic and describable only as diverse set of chemicals and chemical reactions. These are integrated by the soul, which negates the independence of the inorganic body and endows it with the functions that in turn organize the body into the unified entity. The self is both cause and effect of its organic body.

Whereas in shape, the inorganic nature or the body of the organism is immediately one with it, in the next sphere of the assimilative process, the organism relates to itself through relating to inorganic nature that is truly other to it, i.e. the environment. Hegel defines assimilation as the stage in which the organism is considered "as Idea which relates itself to its other, its inorganic nature, and posits this inorganic nature in an ideal manner within itself," in contrast to shape, where the organism was considered as "the individual idea, which in its process relates only to itself and unites with itself inside itself" (§352; GW 20: 353/EN III: 107).

⁴ A more extensive account of the subjectivity of the animal at the level of shape, with particular emphasis on the role of the nervous system, can be found in Rand, "Animal Subjectivity and the Nervous System in Hegel's *Philosophy of Nature*."

Thus, the otherness, through which subjectivity constitutes itself, is now posited as having its own existence in assimilation.

Like cognition in the case of self-conscious subjectivity, this assimilative process is divided into a theoretical and practical interplay between the organism and the environment. In that the assimilative process is the process whereby "the organism posits external being (the environment) in a subjective manner, to appropriate it, and to identify with it," this process is theoretical when the identification of the organism with the externality it relates to is of an "ideal" nature, and practical when the process is "real" (§357Z; GW 24: 1548/EN III: 136). By this, Hegel means that in sensation, the organism is affected by the environment but maintains itself through this affection by appropriating it as that which opposes the organism. The organism sublates the externality of the world opposed to it, but as theoretical this sublation emphasizes the reality of the world in contrast to the ideality of the self of the organism which is preserved through the opposition. By contrast, the practical process, exemplified in instinct, respiration, consumption, and digestion, actively imposes the self-hood of the organism on external being through its real appropriation of it.

Finally, the genus process is the organism's relationship to itself as another, in the form of the reproduction and continuation of the species. Hegel defines the genus process as the organism as "the idea relating to another, which is itself a living individual, and thereby relating to itself in the other" (§352; GW 20: 353/EN III: 109). A more extensive treatment of this stage of organic being is provided below, but very briefly, it is possible to describe this stage as the unity of the previous two stages. Insofar as we understood subjectivity to be a self-generative process that must operate by positing a difference and then to negate that difference, the genus process is regarded as the highest stage of the organism, insofar as it makes explicit this very

process. It does this by showing how the individual organic subject, which has shown to engage in its own self-related processes of shape and assimilation, must itself be generated through the relation between itself and other. Because this subjective process is still submerged in nature, each of the "selves" of the genus-process is actually a different individual of a single kind. Individual A relates to what is other to it, but which is also the same as it, Individual B, and in this relation generates itself, but once again this generated self is a further Individual C. The process is a self-reproduction of the species insofar as A, B, and C are members of the same kind, but this process is natural insofar as they are all different individuals. The significance of this stage lies in Individual C, which it is now shown to be explicitly as living individual the cause and effect in self-generating process. Such a consideration already points to the structure of spirit, in which there exists an identity and adequacy of the universal and the particular. The differentiation of the genus process into different individuals and different generations indicates, rather, the inadequacy of the particular to the universal, which we argued in Chapter 2 is a fundamental characteristic of nature.

While a more detailed comparison between the subjectivity of spirit and that of nature is found in Chapter 5, let it suffice here to say that in nature, organisms as subjects lack the full form of freedom and self-determination that characterizes the subjectivity of spirit. On the one hand, the freedom, which Hegel claims to be the essence of spirit (§382; GW 20: 382/ES 15), is exhibited through the structure of spirit, whereby the universal, or ideality, is rendered identical with the particular, or reality. This identity is most apparent in the structure of selfconsciousness, which has being only through its own activity of thinking and being thought. Hegel's claim that spirit is the "'I' that is 'we,' and 'we' that is 'I'" comes to exhibit how the particular (the I) is what it is through also being universal (a we) (GW 9: 108/PS 108). As a

result, all of the more complex social formations of spirit (e.g. religion, state, etc.) emerge from this same basic foundation of freedom and the explicit identity of universality and particularity.

In nature, on the other hand, even at the stage of life and subjectivity, this identity of universal and particular has not been established. Although the organism's assimilative process resembles spirit's cognition, it lacks the form of self-consciousness which presupposes this identity. Instead, animals only exhibit what Hegel calls self-feeling (*Selbstgefühl*). The difference between this natural self-feeling and the spiritual self-consciousness is that the self-relation of animals only ever succeeds in realizing itself as a particular, whereas in spirit the reality of the particular is equally also that of the universal. The universal, i.e. the genus, of the animal as in the rest of nature, remains only internal to it, and the existing animals never exist in a manner adequate to it.

Hegel goes on to say that animal subjectivity, unlike spiritual subjectivity, lacks the relation of being explicitly for itself. Animal subjectivity

is not yet for itself, as pure, universal subjectivity; it intuits itself and feels itself, but does not think itself. That means, it is reflected in itself only in the singular, which, reduced to a simple determinateness, is posited ideally. Subjectivity is objective to itself only in a determinate, particular state. It is the negation of each such determinateness, but nothing beyond this. (§350Z; GW 24: 1516/EN III: 103)

Despite a close proximity of the universal and the singular in the case of animals, where singular animals are subjects exhibiting the same movement conceptual movement as the universal concepts that determine it, there remains a gap between these two moments which prevents the animal from adequately existing for itself. Although we have seen that the subjectivity of life is defined by its self-referential structure, the self that emerges stands apart from and is primarily a product of the more fundamental structure, the genus as universal concept. As a result, although the organism is self-constituting, it does not constitute itself as self-constituting, but is rather constituted to be so.

Our claim is that life's unique form of subjectivity is a consequence of its position in nature, where the particular is external to the universal. In shape, for example, it was possible to distinguish the moments of the process into the abstract universal (which Hegel alternately calls genus (§342Z; GW 24: 1452/EN III: 41) and soul (§350Z; GW 24: 1516/EN III: 103)), the body, and the organic individual as animated body. While the soul should not be regarded as something that exists independently of the body, Hegel regards it as a conceptually distinct moment of the organic process.⁵ Specifically, the soul is the self-actualizing universal that posits the inorganic body and negates its inorganicity, yielding the living, embodied, individual.⁶ While it is true that this process is a kind of *self*-actualization, which presupposes an identity of cause and effect, by passing through a moment of difference, this process also establishes a nonidentity within this circular movement between the soul as universal and the organic individual. In particular, although the soul is actualized in the individual, it is not actualized *as* a universal (which the soul is in itself), but rather only as individualized.

That the universal is made to exist only as a particular explains, first, why the organic subject is not *for* itself as universal, but only as particular, since this requires that the moment of difference within the movement of subjectivity is *explicitly* both identical and different from the subject. Such a structure would require the medium of thought or spirit, in which alone universality and conceptuality *exists*. For example, in the cognition of an object (e.g., a coat

⁵ "The unity which is produced has being for the implicit unity of the animal. This implicity unity is the soul or concept, which is present in the body insofar as the body constitutes the process of idealization" (§350Z). ⁶ "The universal has to actualize itself within itself, and it is precisely through this movement, by which it becomes for itself, that it assumes sentience. As this organic genus, organic being is turned against itself as this immediate universal. This is its process of individualization; it inters into an opposition to itself which corresponds to its subsequent opposition to that external to it" (§342Z).

rack), the structure and activity of consciousness is one where the subject relates to an object which is both other than it, and is simultaneously identical with it. The subject-object relation of cognition turns out to be difference within self-consciousness, where the self-consciousness remains what it is in its differentiation between object and subject. This is because, for Hegel, the status of this moment of objectivity in the cognition of the coat rack is ultimately a difference within the conceptual medium of thought, and thus ultimately one that the subject has posited for itself as a presupposition. Consequently, to take the coat rack as an object for consciousness already presupposes that it is a determination of and by the subject of consciousness, rather than something radically other (as is the case in biological relations), with which consciousness could have no relation. While the concept's differentiation into subject and object also retains a moment of difference, in the form of the object's appearance as other than the concept, this results from a conceptual presupposition, in contrast to an explicit positing of the determination. This presupposition of the otherness of the object is at the same time entirely contained within the universal conceptuality of self-consciousness. This relation to otherness as a relation to self is present not only in the cognition, but characterizes more broadly the general structure of spirit, as opposed to nature, in Hegel's system.

In life, on the other hand, the differentiation of the universal into the particular is also an externalization, and thus is the moment of difference actually exceeds the conceptual determination of the universal conceptuality. Consequently, the negation of the independence of the difference reestablishes the identity of it with the starting point, completing the process of self-actualization, constitutes the self-relation only as an individual (and not as universal).⁷ For example the universal concept of the animal genus, or more particularly of the species concept of

⁷ For assimilation, the moment of difference is the externally existing inorganic nature (e.g. oxygen, food, shelter), and for the genus-process it is other organisms.

duck actualizes itself in the form of particular ducks. However, through this particularization, the species duck does not itself become actualized as universal, but only ever as those particulars. The genus process among these particulars approaches the generation of the species as a whole, insofar as it "preserves" the species, but this preservation is only in the form of the particulars. The point here is not to say that all other animals except for humans are incapable of conceptual recognition, for example of recognizing other animals as members of their own species. Rather, the point is to say that qua animal, qua biological, or qua natural, the structure of subjectivity only every actualizes the identity of universal and particular implicitly, but can explicitly only generate particulars. The sexual reproduction of humans exhibits the preservation of the species as a natural, biological structure, just as much as the possibility of conceptual recognition in higher-order primates may exhibit the structures of spirit. While the subjectivity of life is possible only insofar as some identity between the genus and the body is actualized, it is nevertheless the case that because this does not occur within thought as the medium of universality, but rather in nature, where universality remains only implicit, so too is this identity actualized only implicitly, but not explicitly.

As Hegel addresses at the end of the *Philosophy of Nature*, disease is that which comes to express this inadequacy and finitude of the individual organism with respect to its genus. Pushed to the extreme, this inadequacy marks the mortality of the organism. Biological death is a negativity that marks the gap between the universal and the particular within organisms, and so is not an internal differentiation of the concept in nature. In fact, the sublation of death by life is precisely what marks the transition from nature to spirit in the form of habit. Nevertheless, this death or mortality functions as the negativity internal to the movement of life itself, namely as the moment of inorganic being in and through which life actualizes itself. Such an account can

be read as a dialectical appropriation of the vitalist thesis of Marie François Xavier Bichat, who defined life as the "the sum of functions, by which death is resisted."⁸ Hegel's position does not posit life as a positive, self-sufficient principle, but instead sees it as the dialectical consequence of the determinations within nature.⁹ Death is resisted by life insofar as life constitutes itself through the negation of mere inorganic nature.¹⁰

The externality in nature of the universal from the particular, and consequently that of the particular from itself, prevents the organic subjectivity in its actual individuality from being fundamentally self-determining in the sense of radical freedom. Because the circuit of organic subjectivity's self-reference is inscribed in the externality of nature and apart from the universality of thought, it follows that the subjectivity in life is truncated and limited in its capacities and range of determinations. While it is possible to claim that the organism has itself for its own ground of determination, the self of the ground (genus) and the self of the grounded (individual organism) are only implicitly identical. It is perhaps better to claim, then, that while the individual organism is self-determining, as an individual it does not determine itself to be self-determining, but is rather externally determined to be so. In other words, while organisms are not freely self-determining, the movement is nevertheless a self-relating determinacy, to which organisms are subject as in the form of instincts. This will prove significant in what follows, because this means that, unlike spirit, whose self-determination is an unconditioned freedom and thus the form of conceptual development serves as the basis for its self-actualization

⁸ Xavier Bichat, *Physiological Researches on Life and Death*, trans. F. Gold (New York: Arno Press, 1977), 10.

⁹ Cinzia Ferrini likewise reads Hegel as rejecting both the mechanical-reductionist and the vitalist-antireductionist accounts of life. See Ferrini, "The Transition to Organics: Hegel's Idea of Life," in *A Companion to Hegel*, ed. Stephen Houlgate & Michael Baur (Malden: Blackwell, 2011); "From Geological to Animal Nature in Hegel's Idea of Life," *Hegel-Studien* 44 (2009): 45-93.

¹⁰ See also Foucault's account of nineteenth century pathology in *The Birth of the Clinic: An Archaeology of Medical Perception*, trans. A. M. Sheridan Smith (New York: Vintage, 1994). For example, "The analysis of the disease can be carried out only from the point of view of death – of the death which life, by definition, resists" (144).

through history, nature lacks such a freedom and thus also the specific structure of development attributable to it. Instead, organisms remain relatively conditioned to their circumstances.

4.1.2. Subjectivity and Development

The next step towards understanding Hegel's claims regarding evolution is articulating the relationship between development and conceptuality or subjectivity. Following the interpretation provided in Chapter 2, my contention is that Hegel's rejection of evolution found in §249 is actually the rejection of a specific understanding of development which he otherwise attributes to subjectivity. Moreover, while we have argued that animals are also subjects in Hegel's understanding, it will be the case that the specific structure of subjectivity that animals exhibit, namely "natural" subjectivity, lacks this robust form of development. This is however an appropriate position to maintain, since the model of Darwinian evolution is likewise very different from the conception of development which Hegel is considering. Moreover, the model of subjectivity that animals *do* exhibit (i.e. a non-developmental subjectivity) provides certain theoretical advantages for attempting to reconcile Hegel's biology with contemporary evolutionary theory. In the following, I articulate three different instances of development in Hegel's system, each of which relates to a specific sense of subjectivity, in order to show why Hegel's claim in §249 denies development to animals.

The first form of development we shall call *methodological*, insofar as it characterizes the dialectical movement of concepts that underlies Hegel's entire system. This methodological development was the object of discussion of my Chapter 1 and has its basis in the arguments of the *Science of Logic*, namely that the concepts are the medium through which every determination of being are grasped, negated, and sublated. Hegel's argument was, first, that a

philosophical approach to grasping the determinations of logic, nature and spirit must examine these determinations with respect to their conceptual form and content. However, this necessarily meant that by simply defining being, essence, space, gravity, etc., we are logically forced to consider other concepts implicit in the content of our starting point. Second, by examining the concepts in the second step, first as negations of the first step, and then as having determinacy in their own respect, we are once again logically forced to consider another concept as succeeding the second. This methodological movement ends up exhibiting the same structure as subjectivity, where the starting point and the ending point coincide with one another (the negation of the negation returns us to where we started). Nevertheless, even as this final concept is seen as retrospectively the starting point of the movement, we nevertheless also acknowledge that there has been an actual development. We further argued in Chapter 1 that this development made sense only if we grasp these determinations in their conceptuality, which we have now identified with the movement of subjectivity.¹¹ Moreover, we argued in Chapter 2 that while the philosophy of nature involves this structure of development, it remains internal to the nature, and not as actually existing. As a result, we can now claim that to the extent that Hegel's entire system relies on this conceptual movement, a methodological development is identifiable in it.

The second form of development we shall call historical, insofar as it characterizes the self-actualization of spirit in time.¹² This sort of development we identify most explicitly with the stages of spirit, the "gallery of images," in the Phenomenology of Spirit. This series of spirit's stages were exhibited as developing in just the same way as described by the methodological

¹¹ Ferrini depicts the methodological development as the logical transition, when she writes, "This transition [from the sphere of the inorganic to that of the organic], as Hegel conceives it, is a *logical* one that hinges on conceptual inner necessity, not a *natural* one in which chemical processes actually give rise to living organisms at specific points in time." In "The Transitions to Organics: Hegel's Idea of Life," 203. ¹² For a similar account, see Dieter Wandschneider & Vittorio Hösle, "Die Entäusserung der Idee zur Natur und Ihre

Zeitliche Entfaltung bei Hegel," Hegel-Studien 18 (1983): 173-199.

sense of development. On the one hand, the mechanism by which the *Phenomenology of Spirit* as the "science of experience" exhibits the relationship between one stage and its successor, and thus the unity of all stages in a single movement, was the same conceptual movement which is regarded in its own form in the *Science of Logic*. On the other hand, spirit has the additional sense of development, namely that of its history, insofar as there corresponds a specific lived experience to each stage of spirit. This is because, as Hegel says, spirit is "the concept [...] posited as having reality that corresponds to it, which is to say, has a concept as its existence" (§376; GW 20: 375/EN III: 211). Because spirit is that which reestablishes the identity of concept and reality, its methodological or conceptual development is simultaneously an existing development. Moreover, because spirit emerges out of the conceptual structures of nature, spirit is necessarily spatiotemporal, such that its existential form of development must take place in and through space and time. For this reason, we consider this development to be spirit's history.

Although we are claiming that spirit's historical developmental form has the conceptualmethodological development for its basis, it is also important to draw distinctions between them. Perhaps most significantly, spirit may not advance through its history with the same necessity as does its conceptual form. Thus, we can distinguish the scientific conceptual comprehension of spirit's stages, which requires that spirit "erases time," from the way spirit experiences each stage of this development as occurring in time (GW 9: 429/PS 462). Both of these senses involve spirit's being a free, self-determining subject, and in fact it is the conceptual structures articulated by the science of spirit that comprehend the ways in which spirit is so selfdetermining while also being temporally divided from and within itself. However, it is only at the conclusion of the *Phenomenology of Spirit* in Absolute Knowing, that we can claim that prior to that achievement, spirit never adequately grasped itself as self-determining, but that we can

retroactively see how spirit had always been (GW 9: 428/PS 460). That spirit is and had always been fundamentally free and self-determining, even when it does not comprehend its own freedom and actualize it accordingly, accounts for the absence of direction in spirit's self-actualizing activity, and thus differentiates the course of history from the course of its scientific and philosophical reconstruction. Whereas we claimed that life is to be externally determined to be self-determining, spirit's history of non-actualized freedom can be described as determining itself (implicitly) to be externally determined; spirit's external determination is always already a kind of self-determination.¹³

Finally, Hegel suggests that there is a third kind of development, which we shall call *biological* insofar as it pertains to a "living individual" (§249; GW 20: 239/EN I: 212). The section where this biological development is mentioned is the same where "metamorphosis" is denied to the rest of nature insofar as

Metamorphosis belongs only to the concept as such, since its change is alone development. However, the concept is in nature only in part as something internal, and in part existing only as a living individual; *existing* metamorphosis is therefore limited to this alone [the living individual -MK]. (§249; GW 20: 239/EN I: 212)

In qualifying this position by allowing that living individuals exhibit metamorphosis, Hegel has in mind the growth of an individual through the diversification of its organs. One such example Hegel mentions explicitly is the "metamorphosis of an insect, in which the caterpillar, the chrysalis and the butterfly are one and the same individual" (§249Z; GW 24: 1194/EN I: 214).

¹³ An alternative interpretation could be drawn from the *Philosophy of History*, whereby history is understood teleologically, with freedom and self-determination as the end and goal, towards which the events of history have been working. This interpretation might place greater emphasis on a kind of necessity of the forward progress towards this goal in history. I do not here wish to engage with the various interpretations of this position, but rather suggest the plausible understanding that insofar as spirit is fundamentally self-determining, the particular form it takes need not follow the same necessary course as the structural development articulated on the basis of its philosophical and scientific comprehension.

Another example is Goethe's account of plant growth in *Metamorphosis of Plants*, which Hegel takes to show that

all these different parts of the plant [root, stem, branches, leaves, blossom and fruit] are a simple, self-contained, and enduring basic life [*Grundleben*], and all its forms remain only external transformations of one and the same identical basic entity [*Grundwesen*], not only in the idea, but also in existence. (§345Z; GW 24: 1469/EN III 58-9)

The biological development or metamorphosis expressed in these two examples refers to the growth of an individual through the generation of differentiated members and forms. Thus, what appears to be a qualitative change from one stage to another is in fact just the self-related activity of the same individual.

While the existent nature of biological development distinguishes it sufficiently from methodological development, we must also see how it is distinct from historical development. Here, we can draw from the account above regarding the distinctions between natural and spiritual subjectivity and develop it further. We said that whereas spiritual subjectivity is primarily characterized by its self-conscious structure, natural subjectivity is characterized by self-feeling. And whereas spirit is the existence of the concept, specifically in its universality, natural subjectivity only succeeds at realizing itself as an individual. The most significant consequence was that the self-determining activity of the individual organism as subject was not in fact complete and fundamental. Since the self as ground (i.e. genus) remained implicit and non-actual, the self as grounded (i.e. the individual) was still embedded and relatively conditioned by the external relations of nature. As a result, we proposed the interpretation that because organisms do not determine themselves as self-determining, but are instead externally determined to be so, it is then inadequate to ascribe freedom to this form of subjectivity. This marks the first difference between biological and historical development, namely that the latter is grounded in freedom, whereas the former is not.

To claim that the self-determination of organisms is not the same as freedom because it is rather an effect of something other than individual self of the organism leads to a different model for development. Namely, in the cases of biological development cited (e.g. the metamorphosis of plants and insects), we can say that the organism remains self-identical through the complete transformations it undergoes, and so exhibits a form of self-determination. The individual organism seems to be what it is independent of its particular bodily form, but where this independence is the result of its existence in and through the body. Moreover, these transformations of an organism seem to be only more radical examples of the growth and bodily organization of the individual organism. If it follows that by biological development and metamorphosis, Hegel is referring to those stages describing the determinations of an organism in the *Philosophy of Nature*, then, as we have argued, these forms of development are not activities the individual organism does to itself, but instead they are consequences of the genus implicit in organism. Thus, biological development, while actual and temporal in the case of individual organisms, is nevertheless something the individuals passively undergo, rather than something they actively initiate.¹⁴

Finally, we can characterize the directionality of the development pertaining to the subjectivity of life, as distinct from that of methodological conceptuality and that of spiritual history. First, the methodological development resists any sense of direction, to the extent that the conceptual unfolding is a movement outside of time. Hegel claims that

what is to be considered as method here is only the movement of the *concept* itself. We already know the nature of this movement, but it now has, *first*, the added significance that the *concept is all*, and that its movement is the *universal absolute activity*, the self-determining and self-realizing movement. (GW 12: 238/SL 737)

¹⁴ As a corollary, this interpretation suggests that biological laws, according to Hegel, remain heteronomous in structure, rather than autonomous; the activities of organisms remain governed by laws external to their activities. This is in spite of the fact that the content of these laws involves normatively structured objects. The contrasting forms of normativity pertaining to health and disease of nature and of spirit are addressed in Chapter 5.

Because this movement occurs outside of time, however, the movement itself is just the activity of the absolute idea being what it is, and thus the absolute idea itself neither advances or regresses. Second, spirit's development involves a progressive sense of self-actualization that aims at making actual its own implicit freedom. As we said, this does not mean that spirit cannot also regress into less free actualizations of itself, precisely because spirit is implicitly free and so is always already determining itself in its own direction. Nevertheless, to the extent that this implicit freedom exhibits itself through spirit's self-actualization, it is possible to order spirit's various formations in terms of greater or lesser adequation to this ultimate aim. Finally, since the accounts of biological development do not include the progressive sense of self-actualization as is found in spirit, but instead only involve a sort of self-maintenance, we can conclude by saying that biological development is a dynamic process that *goes* nowhere. The externality of nature that serves as the moment of difference for life's subjective self-determination ultimately prevents any form of progress in that development, and instead limits organisms to the activity of self-preservation against all of the vicissitudes of their milieu.

4.1.3. Development and Evolution of Organisms

On the basis of this analysis, we are now in a position to assess some of Hegel's claims regarding evolution. First, we can draw a distinction between Hegel's understanding of evolution, which he associates with the notion of development, and contemporary theories of evolution. While this claim should be obvious, insofar as Hegel is writing before Darwin's publication of *The Origin of Species* (1859), the examination of development provided above should explain not only why he rejects it and its associated model of evolution as existing in nature (with the exception of organic individuals); but it also explains why he was correct in

doing so, since contemporary accounts of evolution are also inconsistent with such an account of development. When Hegel speaks of evolution in §249, he treats it as one of two possible ways of understanding his own model of development. In contrast to the emanation, which posits a "series of degradation, which begins from the completeness, the absolute totality, of God," evolution "begins from the incompleteness and formlessness, such as humidity and aquatic formations, then from this water plants, polyps, mollusks, and fish emerge, and then land animals; finally, humans arise out of animals" (§249Z; GW 24: 1193/EN I: 213). Hegel ultimately takes both emanation and evolution to be one-sided conceptions of development, and he therefore rejects the position that either is an existing process observable in nature. We have shown that existing development in the fullest sense would seem to refer to the history of spirit, wherein spirit gives itself several different forms in the course of its free self-actualization. Nature, on the other hand, is external to itself, and therefore precludes the possibility of this kind of freedom and self-determination. Instead, the methodological development in nature is exclusively internal to nature as only the conceptual movement, which explains how the otherwise diverse stages of nature are in fact unified.

The rejection of evolution when understood as development is shared by Hegel and Darwinian theory and is probably taking as its target the model of species transformism advanced by Jean-Baptiste Lamarck.¹⁵ According to Lamarck, all species of animals can be

¹⁵ See especially Lamarck, *Zoological Philosophy*, trans. Hugh Elliot (London: Macmillan and Co., 1914), Part I, Chapters VI-VIII.

That Lamarck's evolutionary theory is articulated on the model of a continuous chain of species that comprehends the full range of possible forms of life prompted Michel Foucault to argue that Lamarck belongs in a different *episteme* than Darwin. In fact, Foucault argues that Cuvier's comparative anatomy, which rejects species transformism, is nevertheless structurally more similar to Darwin's evolutionary theory, insofar as the fundamental types of anatomical structures are so radically different from each other so as to introduce discontinuity into the classification of organisms, and thus into nature and being itself. Such discontinuity, Foucault argues, is structurally necessary for articulating the historicity of nature in life. See Foucault, *The Order of Things*, trans. Alan Sheridan (New York: Vintage, 1994), 263-279, especially 274-275. See also Peter J. Bowler, *Evolution: The History of an Idea, Third Edition* (Berkeley: University of California Press, 2003), 49-50.

arranged to form a single chain proceeding most complex and perfect to least. Each organism in the course of its existence undergoes modification through the use and disuse of its organs, as is demanded of it by the environment. Continual use of an organ causes it develop, grow, and increase its function, just as continual disuse causes an organ to shrink and ultimately disappear. These characteristics caused by the experience of an organism are then reproduced in offspring, "provided that the acquired modifications are common to both sexes, or at least to the individuals which produce the young."¹⁶ As a result, there exists a tendency of organisms to develop from least developed to most, but which is conditioned by environmental circumstances. Finally, in order to explain the diversity of biological species of various degrees of complexity and perfection, this progressive model of transformism requires the assumption that nature continually produces organisms of the simplest kind. It then follows that the simplest existing organisms were created more recently than the more complex organisms, which have existed longer and have been able to develop in that time.

Lamarckism as a model of evolution emphasizing the inheritance of acquired characteristics, became popular following and as an alternative to the model advanced in Darwin's *The Origin of Species*, but was later rejected. In contrast, Darwinian models of evolution instead explain the diversity and origination of species through the mechanism of the struggle for existence between organisms. As opposed to the Lamarckian model, where organisms develop and become more perfect through an intrinsic characteristic to life and the direct influence by the environment, the Darwinian mechanisms of selection act on organisms externally, wherein the struggle between organisms causes those populations with advantageous

¹⁶ Lamarck, Zoological Philosophy, 113.

characteristics to survive and their competitors to go extinct.¹⁷ Moreover, the variation, on which natural selection acts, results from the combinations of a vast gene pool and the contingent mutations of those genes. We can also see how Lamarckism as a developmental tendency towards greater perfection *intrinsic* to organisms would have appeared to Hegel as approximating an existing process of development as the self-determination of life, a position that Hegel ultimately rejects. However, because the Darwinian model of evolution is an *external* mechanism that acts on organisms, it is opposed both to Lamarckism and Hegel's notion of development with their presuppositions of internal self-determination and self-actualization.¹⁸ In other words, while both Hegel and Darwin reject the Lamarckian theory of evolution as a kind of development, they draw different conclusions about the nature of evolution. Whereas Hegel concludes that therefore there is no evolution of species, and instead only argues for the limited notion of development, which we've called the biological sense of development, Darwin concludes that there is an evolution of species, but one that differs in structure from the developmental model.

Second, while Hegel concludes that from the rejection of a Lamarckian model of transformism no model of evolution of species is possible, his account of life provides an ontological basis that can be productive for understanding his theory in light of twenty-first century theories of evolution. Specifically, by understanding life as, on the one hand, a dynamic

¹⁷ Charles Darwin, *On the Origin of Species* (London: Penguin, 2009). For example: "Owing to this struggle, any variation, however slight and from whatever cause proceeding, if it be in any degree profitable to an individual of any species, in its infinitely complex relations to other organic beings and to the external nature, will tend to the preservation of that individual, and will generally be inherited by its offspring. The offspring, also, will thus have a better chance of surviving, for, of the many individuals of any species which are periodically born, but a small number can survive. I have called this principle, by which each slight variation, if useful, is preserved, by the term of Natural Selection" (64).

¹⁸ Dieter Wandschneider makes a similar observation regarding Hegel's idea of development and its relation to evolution (both Hegel's assumption regarding early 19th century theories of transformism and our contemporary theory). See Wandschneider, "Hegel und die Evolution," in *Hegel und die Lebenswissenschaften*, ed. Olaf Breidbach & Dietrich von Engelhardt (Berlin: Verlag für Wissenschaft und Bildung, 2000), 225-240.

process of self-preservation, we see how any relatively stable characteristics or features of organisms are the exhibition of the "self" that is preserved. At the same time, that life is, on the other hand, this self-related process that is necessarily embedded in and conditioned by the externality of nature shows how even these relatively stable characteristics of organisms can be interrupted and undergo modification through the interaction between environmental factors and the organic processes that constitute the organism. While such an interpretation does not go nearly far enough to capture all of the actual processes of selection, evolution, and speciation, it does present a plausible reading of Hegel as denying an absolute fixity to species.

At this point, it is necessary to add the qualification that Hegel does recognize substantial differences between simple organisms, plants, animals and humans. Such a position also leads Hegel to claim that

If the earth was ever in the state, where it was devoid of any living thing, and possessed only chemical processes and so on, as soon as the bolt of living being struck matter, right away it would be a determinate, complete form, like Minerva jumping out of Jupiter's head fully armed. ... The human did not evolve [*sich herausgebildet*] from the animal, nor the animal from the plant; each is at once entirely what it is. There are also evolutions of such individuals; as initially born, though it is not yet complete, it is already the real possibility of everything it should become. (§339Z; GW 24: 1432/EN III: 22-3)

According to this claim, Hegel is denying the existence of evolution, insofar as there are fundamental, qualitative differences between humans, animals, and plants, that cannot result from continuous transformations. Instead, these fundamental characteristics have to be fully present, either explicitly or implicitly, as soon as a being of that kind exists. In other words, Hegel is denying the existence of intermediate stages between these three kinds, insofar as the qualitative difference introduces discontinuity into the organic transformation (as is suggested by Lamarck). Consequently, even though some of the specific transformations mentioned by Hegel do not characterize the actual manner in which species evolve, we must nevertheless address the question of whether substantially different kinds of life can be understood as having evolved from each other. While our interpretation has drawn exclusively from the account of animal organisms, these have a fundamentally different structure from plants, simple life-forms, and human existence. Consequently, Hegel's claim is that it is impossible to articulate a continuous transformation of any one of these into another, insofar as the transformation must involve some substantial, qualitative change. It is for this reason that he remarks that a human must already be everything that it is and cannot be on a transformist continuum with animals.¹⁹

Even granting these claims, it is possible to offer a compromise between Hegel's biology and evolutionary theory. First, insofar as all of the kinds of life exhibit the same basic structure of natural subjectivity, they all include the same fundamental mutability. Thus, while there are different kinds of life-forms, based on the account provided above regarding organic subjectivity, the characteristics of all organisms are subject to external pressures and may change. Second, while the transitions Hegel is describing between the fundamentally different forms of organic life do not exactly correspond to the way species typically evolve through a much slower process of selecting characteristics among the variations within a species, these transitions do resemble other kinds of transitions within the evolutionary history of life. Specifically, radical changes such as that from prokaryotes to eukaryotes, from single-celled to multi-celled organisms, and from asexual to sexual organisms do involve fundamental changes in the structures of biological existence of the sort Hegel is interested in.²⁰ Unlike the evolution of species, which requires a much greater time-frame (even in the "punctuated equilibrium" model of evolution), these

¹⁹ Though, in spite of this claim, Hegel does claim that humans are the most perfect animals (§370Z: GW 24: 1582/EN III: 181). One possible interpretation would be that the determinations unique to human existence as spirit are substantially different from animals, while humans are nevertheless also describable in terms of their animality. Chapter 5 addresses precisely this question of the naturalness of spirit.

²⁰ See John Maynard Smith & Eörs Szathmáry, *The Origins of Life: From the Birth of Life to the Origins of Language* (Oxford: Oxford University Press, 1999).

transitions would happen "like Minerva jumping out of Jupiter's head fully armed." However, even such transitions as these do not indicate the transition of one species to another but are rather just new structural possibilities that emerge within the variations of a species, and ultimately take time for such possibilities to become distributed among a population, and to stabilize into a species as an actual unit of evolution. Thus, Hegel's divisions of life-form that signify fundamentally different structures of organic being can be reinterpreted as structural possiblities organisms can access at different stages in their evolutionary history, rather than different species between which no evolution is possible.

Finally, the systematic account of Hegel's philosophy of nature shows how the subjectivity of life is a necessary characteristic of nature's structure. We can explain this by showing how the biological development as exhibited in organisms is the first expression of the methodological development implicit in nature. In other words, if Hegel's ontology of nature, whereby nature ought to be conceived as an idea in the dialectical sense, is adequate and, following the account of Chapters 2 and 3, it succeeds in explaining the structures of inorganic events, then Hegel is here showing how that same ontology entails the stage of life, which embodies that same structure of immanent, conceptual development. However, the methodological or ontological development implicit throughout all of nature, when exhibited in life, takes on a specific biological form, which we have argued contains a kind of mutability compatible with evolution. This account makes sense of Hegel's claims that "nature is in itself a living whole; the movement through its course of stages [*Stufengang*] is rather that the idea *posits* itself as what it is *in itself*, or, what is the same, that it goes into itself out from its immediacy and externality, which is death, in order first to be a living being" (§251; GW 20: 241/EN I: 216). The dialectical, or methodological development internal to the totality of nature

posits this same movement to exist externally as life.²¹ Or, life is nothing other than the existing form of the subjectivity of nature's totality.

4.2. The Species Problem in Hegel's Philosophy of Nature

Having dealt with the problem of evolution in its relation to Hegel's understanding of development and subjectivity, we are nevertheless left with a separate problem pertaining to the relationship between Hegel's philosophy of biology and contemporary evolutionary theory. Namely, we must examine the impact Darwin's theory had on the concept of species, and its compatibility with Hegel's own species concept. Such a concern has been absent from nearly all treatments of Hegel's philosophy of biology.²² For example, while Olaf Breidbach rightly argues that the temporalized mode of explanation in evolutionary theory remains unimportant to Hegel's concern for universal concepts, such an account ignores the role evolutionary theory has had precisely on the ontological structure of species for biology.²³ In this section, I examine Hegel's concept of species and certain resemblances between it and the species concept of contemporary evolutionary biology.

²¹ For this reason, I reject the claims made by Errol E. Harris that brings together Hegel's geology and biology as being a "premonition of the very recent Gaia Hypothesis ... which shows reason to consider the earth as a single, highly complex, living being" (200). This is because the truth of the geological organism as exhibited in the plant and animal organisms are fully external to the earth. There is in fact no moment that brings together the entirety of nature, inorganic and organic, as a single organized being, insofar nature is the idea in the form of *otherness*, and so is everywhere external and different from itself. It's unity, as ideal, is ultimately only *implicit* to nature, insofar as we can see each determination of nature as belonging to a single developmental process. However, this developmental process, we have also argued, is sufficiently different from the Darwinian model of an evolutionary process.

²² One exception to this is an interpretation given by David Stamos. Stamos situates Hegel as a precursor to Darwin in the history of accounts of the ontological status of species as individuals. However, Stamos's account is based exclusively on a reading of the concrete universal and Hegel, and thus also observes that "there is apparently nothing in Hegel's conception of species to differentiate them from other (nonbiological) universals" (185). To this extent, we consider our account to be unique in its drawing from Hegel's writings on biology, rather than his writings on logic. See Stamos, *The Species Problem: Biological Species, Ontology, and the Metaphysics of Biology* (Lanham: Lexington Books, 2003).

²³ Breidbach, "Hegels Evolutionskritik."

By focusing on the concept of species in the Hegel's Encyclopedia of the Philosophical Sciences in Outline, one finds that depending on the edition, species appears in a different place in the sequence of stages. Between 1827 and 1830, Hegel switches the order and priority of species [Gattung und Arten] with respect to the sexual relation [Geschlechtsverhältnis] within the sphere of the genus process [Gattungsprozess] in the "Organic Physics." In the 1817 and 1827 editions of the *Encyclopedia*, the sexual relation is the first moment of the genus process, followed by the species concept and disease. In the 1830 edition, however, the species concept is the first moment, followed by the sexual relation and disease. This raises several questions. First, how should antecedence and subsequence be understood regarding the stages of determination in the *Philosophy of Nature*, and regarding sex and species in particular? Second, according to the logic of Hegel's argumentation, which ordering of species and sex is more adequate to Hegel's systematicity? Third, which ordering of species and sex is more compatible with contemporary evolutionary biology? This last question is of importance, insofar as part of the effect Darwin's theory has had on the concept of species is to reject the idea of species as being any sort of essence, and instead to suggest that the significant characteristic between organisms for evolutionary explanations is the inheritance of advantageous characteristics, i.e. the reproductive relationship of organisms. It follows, then, that Hegel's conflicted account of the priority of species and reproduction bears precisely on the point of the ontology of species, which Darwin's theory would later address.

Our argument proceeds in the following manner. First, we examine the arguments of the genus process in the 1827 and 1830 editions of the *Encyclopedia*. Here, we offer an account of the significance of prioritizing one concept over another by placing them in different orders of development. Second, we argue that sex ought to precede species in the order of conceptual

unfolding (i.e. the presentation in the 1827 edition) according to Hegel's systematic concerns. This claim is justified by examining the sequence of the conceptual unfolding between species and sexual relation with respect to the assimilative process, which immediately precedes the genus process. Through this explication, we show that sex is the concept that must follow after the assimilative process. It therefore follows that Hegel's concept of species has the characteristics of being a reproductive lineage. Finally, we argue that the concept of species contemporary evolutionary biology is also more compatible with the 1827 presentation, where sex precedes species. While there is still no consensus of identifying the criteria for species in evolutionary biology, we adopt the comprehensive definition of species advanced by Kevin de Queiroz, according to which species are "separately evolving metapopulation lineages."²⁴ With certain qualifications, then, Hegel's 1827 concept of species is shown to resemble the species concept of evolutionary biology.

4.2.1. Sex and Species

The first task is to demonstrate the consequences for the concept of species when it is placed prior to sexual relation (as in the 1830 *Encyclopedia*), and subsequent to it (as in the 1817 & 1827 *Encyclopedia*). One of the difficulties with giving such an account is that with few exceptions, Hegel preserves a great deal of the original presentation of the material in the final edition, where he switches the order. While the exceptions are significant insofar as they offer explanations of the order of the stages by claiming why one stage necessarily follows another, the remaining consistency between the editions leads to a different problem. This other problem has to do with the role of dialectic progression between stages, where what is antecedent is more

²⁴ de Queiroz, "Species Concepts and Species Delimitation," Systematic Biology 56, no. 6 (Dec., 2007): 880.

abstract, and what is subsequent comprehends the antecedent and is therefore more concrete.²⁵ However, when Hegel modifies the order of the passages in question without substantially changing the content of the stages, there will not be any textual evidence to distinguish how, for example, the species stage must be more abstract when it is presented first, and more concrete when it is presented second. In other words, there would be nothing to indicate that what it means to be a species is in fact the truth and comprehension of a dialectical contradiction in sexual relation.²⁶

One possible explanation would be that no additional changes were made to the passages because one presentation of the sequence is simply mistaken. We could suppose that Hegel changed the order alone, without changing the content of the stages, because he had mistakenly placed sexual relation prior to species, when in fact sexual relation is intrinsically more concrete than species. Placing it subsequent to species would therefore be the objectively correct order of the presentation. The problem with this approach, however, is that it presupposes, rather than explains, the order of the stages. That is, while it may explain why Hegel decided not to make any further changes to the text, it does not prove that he was right in doing so. In addition, this approach relies on a rather strong account of intrinsic content of the stages as independent from the extrinsic determination of the order of the stages. In fact, however, it should be the case that by changing the order of the stages, one actually changes the conceptual structure and content of each stage. In a certain sense, the same words acquire different meanings based on their location in the dialectical progression of concepts.

²⁵ More will need to be said about the relations between antecedent and subsequent stages in a dialectical relationship, but let this suffice for now.

²⁶ By contrast, when Hegel moved the galvanism from a stage in electricity to a stage in chemical process, this revision also changed the content of the passages precisely through the reconceptualization of galvanism. Compare §250A [1817] with §330 [1827] and §330 [1830].

Instead, the approach taken in this chapter assumes the plausibility of both sequences (species then sex, sex then species). This approach involves creating conceptual distinctions where there exists little to no textual evidence for doing so, on the grounds that a subsequent stage must be understood as the truth and comprehension of its antecedent stage, and thus is more concrete than it. In other words, we provide, on the one hand, an account of what species must be when it resolves a contradiction in sexual relation, and, on the other hand, an account of when species itself involves a contradiction resolved by sexual relation. Only after this examination will we then address the issue of which sequence is appropriate to Hegel's system, and which to evolutionary biology.

We shall first present a brief, preliminary summary of the content of each of these stages. The sexual relation was described above as exemplifying the form of subjectivity exhibited by the genus process, distinct from that of formation or assimilation, but it bears repeating here. In the sexual relationship, the individual organism unites with itself as another organism, and through this process brings about another organism identical to the first two (§369; GW 20: 369-70/EN III: 175-6).²⁷ In other words, the sexual relationship in the biological sense is essentially the reproductive relation, where one individual is not capable of reproducing on its own, and requires another individual, with which it enters into a relation to produce another individual. Despite the identity between the three organisms, through which the genus is the product of the

²⁷ The sex-relationship concept is drawn from the discussion of animals, and so describes the difference between male and female. Hegel presents an account of the generic process of plants as one that does not form a difference between male and female individuals, but only as between male and female parts of individuals (§348; GW 20: 351/ EN III: 91-2). This has the result that, while Hegel does refer to variety of species of plants (and even rocks), these are always capable of reproducing with each other. The sexual relationship in animals is therefore a consequence of the greater internal differentiation and development of animals such that not only does sex become a difference between individuals, but species differences become determined as reproductive barriers. While this does suggest a limitation when taking the specifics of Hegel's biology into account, we shall take Hegel's account of animal sexual difference and species as paradigmatic for his account of biology, noting that the "reproductive species concept" of post-Darwinian biology, discussed below, has similar limitations.

process, the organisms are also each inadequate to the genus. It is this inadequacy, which is expressed as a deficiency and a need in an individual organism, that drives it to enter into a relation and union with another organism, with the goal of being complete. However, even though this activity of unification yields a new organism as its product, the new organism is no more adequate to the genus than those that began the process. The genus as a product of the process is therefore only an implicit product and never fully actualized (§370; GW 20: 370/EN III: 177). It is nevertheless significant that subjectivity is here seen as actively producing itself, even if the producing and the produced subjects are not numerically identical, rather than being merely present. This new determinacy is indicative of life's approaching the possibility of overcoming the limitations of its form of subjectivity and thus becoming spirit. At this stage, however, the generation of a new organic subject only yields a spurious infinite, where the "genus preserves itself only through the perishing of the individual, which fulfill their determination in the process of generation" (§370; GW 20: 370/EN III: 177).

Next, the division of the organic life into species is captured by the classificatory systems of zoology and comparative anatomy. These sciences involve the "discovery of simple and certain features of classes, orders, etc.," where Hegel cites the "division of plants into monocotyledons and dicotyledons" on the basis of the number of embryonic leaves attached to the seed, "and discovery of the decisive difference in the animal world made by the absence or presence of vertebrae" (§368A; GW 20: 368/EN III: 178). Hegel also refers to Georges Cuvier's successes in comparative anatomy, which both "recognized the significance in the mixture of organs and functions" and

recognized how nature forms and adapts this organism to the particular element, in which the organism is placed, namely to the climate, to the cycle of nutrition, and more generally to the world, in which the organism is involved (this can also be a single plant genus or another animal genus). (§368A; GW 20: 368/EN III: 178)

Cuvier had the reputation of being able to determine the species of an organism when provided only a single bone, because he understood every organ of an organism to reflect the specificity of the organism as a whole. At the same time, each organ and the organism as a whole had to be refined in order to function adequately in its environment. Given the extreme degree of specialization and integrity of an organism, Cuvier rejected theories of species transformism. The structure and functions of organisms were too refined and unified to endure change at that fundamental level common to species.²⁸

Hegel's presentation of species concept exhibits two characteristics which are of interest to our discussion. First, every species of organism is said to have the "universal type, determined by the concept" for its basis, such that each species is therefore a particular and therefore different expression of this same universal type (§368; GW 20: 367/EN III: 177). Cuvier's comparative anatomy is thus cast as "pursuing the universal type of the animal through the diverse, incomplete and disparately appearing forms," and "lifting the universality out from the particularity" (§368A; GW 20: 368/EN III: 178). Second, the reason for the diversity of species, namely the external conditions affecting the organisms, seems also to affect the consistency of members within a single species. Hegel writes that "the weakness of the concept in nature in general subjects not only the formation of individuals to external contingencies – the developed animal (and the human being most of all) is susceptible to monstrosities – but also the genera to the changes of the external, universal life of nature" (§368A; GW 20: 369/EN III: 179). In a passage that was removed in the 1830 edition, Hegel acknowledges the error in assuming that

²⁸ Cuvier, "Preliminary Discourse," *Researches on Fossil Bones*, in Martin J. S. Rudwick, *Georges Cuvier, Fossil Bones, and Geological Catastrophes: New Translations and Interpretations of the Primary Texts* (Chicago: University of Chicago Press, 2014). For example, "In animals, then, there are characters that resist all influences, whether natural or human; and nothing suggests that in regard to them time has any more effect than climate" (228).

membership in a species must involve the existence of certain characteristics, and cites the example of an encephalous human beings to show how lacking an essential organ does not entail that one is not a member of a species (§370 [1827]; GW 19: 278/EN III 177). This observation is significant, because it is the same claim that Darwin uses in his argument for the evolution of species.²⁹ Generally, this position is taken to be a rejection of an essentialist model of species that asserts that species are defined in terms of a characteristic that all and only members of the species have. However, by observing organisms, Darwin, like Hegel, finds this to be empirically false. Most interesting of all is how it was this observation that led Darwin to problematize the distinction between varieties (of a species) and species. An essentialist response might explain exceptional cases (e.g. the anencephalous human beings) through accidental or contingent explanations, which deviate from the otherwise adequate explanation based in a common internal form. However, it is interesting that for Hegel externality is the basis for explaining both monstrous individuals and the multiplicity of species. For Hegel, the division of life into multiple species is the result of the internal differences of the genus appearing externally as various expressions of the single universal type. Thus, not only are black bears and polar bears different species of the Linnaean family bear, but they together with species of fish and birds are all particular expressions of the single universal animal type.³⁰ Thus the universal type, or genus, is the common form of all species, which fail to perfectly instantiate the genus in the same way as individual organisms fail to be perfectly instantiate the species. Nevertheless, it must be said that

²⁹ For example, "no clear line of demarcation has as yet been drawn between species and sub-species – that is, the forms which in the opinion of some naturalists come very near to, but do not quite arrive at the rank of species; or, again, between sub-species and well-marked varieties, or between lesser varieties and individual differences. These differences blend into each other in an insensible series; and a series impresses the mind with the idea of an actual passage" in Darwin, *On the Origin of Species*, 55.

³⁰ The species concept only appears in Hegel's discussion of animals, and not that of plants or simple life-forms. Setting aside the differences between these three kinds of organisms, we could take the species concept even further to be a claim about each species in the diversity of life gives expression the single, common form of life, which we have shown to be a form of subjectivity.

in the case of species, externality determines the conceptual, transcendental, or universal structure, whereas in the case of variations within the species, externality functions at the empirical level on singulars.

4.2.2. Species then Sex, or Sex then Species

Given these accounts of sex and species, we can now begin to address the significance of possible relations of priority between them. First, we shall examine the 1830 sequence, which places the species concept prior to the sex relationship. In this particular edition, Hegel provides us with some explanation for the transition from species to sex:

The initial diremption of the genus into species and its further determination towards the immediate excluding being-for-itself of singularity is only a negative and antagonistic relating opposite others. However, the genus is just as much essentially an affirmative self-reference of singularity within the genus, such that the singularity, in that it is, as excluding, an individual opposite another individual, continues itself into this other, and senses itself within this other. (§369; GW 20: 369/EN III: 172)

This passage suggests, first, that whereas both sex and species are the concepts that describe a relation between one organism and another, the species concept emphasizes a negative (i.e. hostile and antagonistic) relationship between the various kinds of organisms, which does not contribute to the positive engendering of the universal genus. The sex-relationship, on the other hand, does succeed in taking up this positive function. While both species and sex express a differentiation of the genus, only sex includes a positive relation between moments, and thus a reunification through difference. The biological difference between cats and dogs is a negative relation of antagonism that Hegel suggests only leads to death (§370; GW 20: 370/EN III 177), whereas the difference between male and female admits of the reproductive relationship which

exists in the form of offspring.³¹ On the one hand, insofar as this captures the general shapes of species and the sexual relationship, this observation is valid regardless of whether species is prior to sex or not. On the other hand, when we take species as *preceding* sex in the order, it seems therefore to follow that the sex-relationship functions as a resolution to the contradiction of the species concept. That is, the difference and particularization of the genus into species initially fails to reconstitute the universal genus; only with the sex-relationship does this intrinsic difference in the organic genus then function implicitly to regenerate the genus.

Insofar as the 1830 sequence depicts this sequence such that the sex-relationship resolves a contradiction within the species concept, however, I argue that we must interpret the sexrelationship as necessarily confined by species boundaries. If the relation between the diverse species is necessarily a negative, antagonistic relationship, then a positive relationship is possible only between members of the same species. Difference is nevertheless present as sexual difference between organisms, but this difference seems to be confined by the boundaries of species membership. Because sexual difference is framed as exhibiting a positive relationship across the difference between singular organisms, this positive sexual relationship would not be possible as a sexual difference between members of different species. For this reason, the sexual relation cannot be the simple generic difference of male and female organisms (a biological

³¹ While some species have been able to breed with other species, the resultant hybrid offspring are often sterile (e.g. mules). Such an offspring is not able to continue sexually reproducing and is therefore not a true continuation of the species. However, some hybrids, especially certain plants, have been able to reproduce with each other. This presents an example of the problems for the species concept (specifically the phyletic species concept). Setting these cases aside, the relation between different species is negative for Hegel insofar as literally nothing (i.e. annihilation or death) emerges from the interaction between different species. Hegel himself seems to acknowledge such hybridization tendencies in plants: "A noteworthy feature of this kind of artificial propagation is that if the branches or eyes (gemmae) are made into fresh plants by setting, grafting or bud grafting, or in any other way, the plant from which they were taken reproduces itself not (only), as a species, but also as a sub-variety" (§345Z; GW 24: 1467/EN III: 57). Thus, as was mentioned in note 28, Hegel does seem to recognize different kinds of species and sexual relations. However, his account of plants ultimately leads him to underdetermine plant species as only a taxonomical difference based on "the course of leaf-development" (§345Z; GW 24: 1471/EN III: 60). Hegel does not regard species as an essential category of plants as he does for animals, perhaps for this reason, and so we shall take his account there as of greater significance, noting the limitations this imposes on its ultimate validity.

classification that operates across species), because this would imply that sexual difference has meaning independently of taking place between members of the same species. This is because Hegel is casting the positivity of the sexual-relationship against the negativity and antagonism of the division of species, so that sexual relationship *only* occurs between members of the same species. Describing sexual relationship as a general concept independent of species limitation (as is the case in the 1827 Encyclopedia) neither affirms nor denies whether reproduction occurs across species. However, because we've already established that different species are already differentiations of the genus without relation (e.g. cats and dogs), the sexual relation can be positive only by presupposing that male and female are not male (e.g. male cat and female dog), but are rather male and female of the same species (e.g. male cat and female cat). For these reasons, we argue that this species concept is closer to being an essence-based class. This is because reproductive compatibility between male and female presuppose the logically prior commonality of species membership, where species membership is empirically established by morphological features that are the object of comparative anatomy. In other words, in order to understand reproduction, we must already have an idea of a species based on some nonreproductive criterion. Therefore, if species difference is articulated prior to sexual difference, we argue that a species concept must be a kind of essential form or type, to which all members of a species more or less refer.

The 1827 sequence, on the other hand, posits the sexual relationship first, and consequently as just this abstract relation of different singulars, which enter into a unified relation for the sake of reproduction and thereby implicitly regenerate the genus. Species, which follows after the sexual relationship, is therefore not the presupposition, but rather the consequence of the sexual relationship. By exhibiting sexual difference, rather than species, as

the initial differentiation of the genus, this sexual-relation concept therefore articulates the difference between male and female as independent of any claim about the species of the male and female individuals. As the abstract difference constitutive of the genus, sexual difference then generates species, in the manner of the abstract difference passing over into externality and therefore "losing" the unifying structure of the sex-relation. While the unifying relatedness characteristic of sex is no longer present between the different species, which are now negatively related to one another, the species unit itself becomes that which is constituted by the sexual relation. Thus, rather than a negative relation of opposition resolving into a positive relation, with this sequence we transition from the positive relation to the negative relation. In other words, whereas in the 1830 sequence, the emphasis is on overcoming difference through unity, in the 1827 edition the externalization of unified difference simply produces more difference. Finally, we can claim that, on this model, the species concept can be interpreted as reproductive lineages constituted by sexual difference, where the identity and commonality of a species is the consequence, not the ground, of sexual reproduction. Because the difference and negative relation between species is understood on the basis of the positive relation between the sexes (and not vice versa), we can understand a single species as organized by the sexual compatibility of males and females, as against the incompatibility other organisms. Sexual compatibility, rather than morphological similarity, becomes that which actually constitutes the unity of a species.

This account, however, becomes more complicated when we recall that dialectical development in Hegel's system is both progressive and regressive. This means that every subsequent stage must be more concrete (i.e. is more developed and contains more determinacy) and is only intelligible on the basis of what has been already explained (the antecedent explains

the subsequent). However, it also means that the subsequent stage resolves the contradictions of the antecedent, such that the antecedent is only possible on the basis of the subsequent (the subsequent explains the antecedent). This latter, regressive movement is the basis for claiming that a subsequent stage is the "truth" of the antecedent stage. When keeping both movements in mind, we can interpret the 1830 sequence to claim that the sexual relationship, which resolves the contradiction in species, is therefore the ground of species, insofar as the species would not be possible were it not for the sexual relationship. This claim therefore appears to be similar to what we had proposed was the account of the 1827 sequence. Similarly, the 1827 account (sex, then species) would now claim that, because species resolves the contradiction in sexual relationship, species likewise becomes the ground for sexual relationship, and so appears similar to our initial account of the 1830 sequence. Thus, the problem that has arisen is that the retroactive reading of the dialectic of sex and species appears to claim the opposite of our initial account, which followed a progressive reading.

In order to maintain our initial account of the significance of prioritizing sex before species, and species before sex, we must clarify the account of the retroactive nature of the dialectic. Thus, while the reversal of the interpretations based on the retroactive, regressive reading of the dialectic exhibits certain necessary consequences given the systematic functioning of dialectic, it does not change the initial interpretation we had advanced. This is because of what is meant by claiming that a subsequent stage retroactively grounds an antecedent stage. Specifically, the subsequent stage grounds the antecedent stage insofar as the antecedent is an abstraction that is only possible with respect to the more concrete determination. For example, species, when understood as the antecedent stage and as the initial particularization and differentiation of the genus, is only possible if through differentiation, a unity can be

reconstructed, i.e. through the sexual relationship. At the same time, however, and this was the reasoning behind our initial interpretation, the sexual relationship (i.e. subsequent stage), can only be established given the content of the species concept (i.e. the antecedent stage). Thus, while sexual relation (as the subsequent stage) provides the grounds for the possibility of species, this is only insofar as sexual relation is to be conceptualized by means of the contradiction of the species concept. In other words, in the 1830 edition, it is true that the sexual relation (i.e. the subsequent stage) retroactively provides the ground for the possibility of species (i.e. the antecedent stage), but only insofar as the sexual relation is already articulated as functioning within members of a single species. Sexual difference provides us with enough new conceptual content to provide the retroactive ground for the preceding stage, but is still conceptually bound to that preceding stage, so as to be limited by it. Likewise, in the 1827 edition, we can claim that it is true both that species retroactively grounds sexual difference by exhibiting differentiation of the genus more concretely through its externalization, and that species must nevertheless be conceptualized through the understanding of sexual processes of reproduction. Our initial presentation of the significance of the priority of sex to species and species to sex has been preserved.

4.2.3. Hegelian Systematics and the Species Concept

Now that we have given an account of how the two models of the species concept differ, we can now begin to address the question of which account is more adequate to the Hegelian system. In other words, given that Hegel offers both accounts as moments in the unfolding of the concept in nature, which sequence, and therefore which species concept, is actually the one that belongs in Hegel's system? In order to answer this question, we must examine the stage from

which the genus process emerges, the assimilative process in its practical form. This stage ultimately provides independent evidence that sex, and not species is more adequate to being the immediate successor of the assimilative process, and thus the antecedent stage in the development of the genus process. Consequently, we argue that in Hegel's system, the species concept must be that of a reproductive lineage.

The practical mode of assimilation exhibits the activity of an organism to overcome the limitations set for it by the external world (§359; GW 20: 358/EN III: 141). The practical mode is distinguished from the theoretical mode through the former's involving the real negation of the external world and transformation of it into the organic being (e.g. digestion), whereas the theoretical mode only negated the external world ideally (e.g. sensation). Practical assimilation therefore involves activity of an organism to maintain itself through transforming and appropriating inorganic nature which is external to it. Whereas the instinctual nature of an organism (§360; GW 20: 361/EN III: 145), the mechanical seizure (§363; GW 20: 362/EN III: 151), and the consumption and digestion of inorganic nature are all examples of this process in increasing concreteness (§364; GW 20: 363/EN III: 152-3), the final moment of practical assimilation is the appropriation of an external, inorganic being which has already been transformed by the organism, or, what is the same, the preparatory transformation of an object for the organism's use and consumption (§365; GW 20: 363/EN III: 153). Hegel is here referring to the "formative drive" (nisus formativus or Bildungstrieb) advanced by Johann Friedrich Blumenbach, which aims to conceptualize instances such as a beaver preparing a dam, or a bird preparing a nest. In such cases, we see an organism transform nature into an "extension" of its organic being. Unlike simple consumption, the external object is not completely opposed to or other than the organism. Rather,

This involvement [with external being] itself actually constitutes the object and the negative opposite the subjectivity of the organism... It has double determination. On the one hand, the organism expels from itself its activity, which was posited as in a conflict with the externality of the object. On the other hand, the organism has become for itself as being immediately identical with this activity, and has reproduced itself in this medium. (§365; GW 20: 363/EN III: 153)

Because the organism now enters into a relationship with an inorganic extension of itself as

external to the organism, Hegel concludes the assimilative process and introduces the genus

process, where organisms relate to themselves as both organic and external to themselves.

At this point, Hegel describes the transition into the genus process. Once again, the account of this transition underwent change between 1827 and 1830. In the 1827 edition, Hegel is explicit that the conclusion of the sexual difference is the category that emerges through the sublation of assimilative process:

This production [by the organism of itself as object] is not only self-preservation or reproduction, but subjectivity has also become a product, and has at the same time been sublated as an immediacy... The disjunction of the self-finding singularity in the genus is sexual difference, the relation of the subject to an object, which itself is just such a subject. (§367 [1827]; GW 19: 277/EN III:169-70).

In this reading, assimilation as the relation between the organism and an external, inorganic extension of itself, transitions to the sexual difference as the relation between the organism and itself as another organism external to itself. This is not to say that sexual difference is a "natural" development of assimilation, but rather that the conceptual form of assimilation and particularly of the formative drive, already involves the production and reproduction of subjectivity by itself as another.³² A beaver's building a dam is the production of itself not simply as inorganic, but also as a sort of prosthetic belonging to the beaver itself. This form of production is limited to the generation of "prosthetics" due to its being a relation between the beaver and something that is

³² This distinction relies on the account of the dialectic of nature pertaining to the conceptual form, rather than to its content, as argued in my Chapter 2.

not another beaver. When the latter does occur, the beaver is able produce neither itself as inorganic other, nor as a prosthetic, but actually as itself as organic other.

In the 1830 edition, however, Hegel instead emphasizes how the transition brings about the genus-process in general, described abstractly as the "concrete universal that enters into a process and relationship with the singularity of subjectivity" (§366; GW 20: 366/EN III: 169-70). The genus-process is the abstract category that includes as its moments the sex-relation, species, and disease. Consequently, the genus-process does not appear as its own stage independently from these three forms. After a paragraph exclusive to the 1830 edition that provides more abstract exposition of the genus process (§367; GW 20: 366/EN III 170-1), Hegel instead introduces species as that into which "the genus in its implicitly existing universality initially particularizes itself" (§368; GW 20: 366/EN III: 177). Whereas the 1827 edition presents sexual difference as the immediate successor to assimilation, the 1830 edition inserts a description of the genus concept in general, on the basis of which the species becomes the initial and immediate presentation. In other words, whereas sexual difference had the intrinsic form to appear as the successor to assimilation, Hegel revised this position by taking the genus as the general result of assimilation. From this, then, there begins a new development of the moments of the genus, the first of which is the species concept.

Given these presentations, I argue that the 1827 presentation is more consistent within Hegel's systematic presentation.³³ This is because the logical development and transition from assimilation to sexual difference involves less structural change to the concept than the transition to species. We observed above that the species concept presented only a negative and

³³ In Michelet's edited volume of the *Encyclopedia*, where he chooses to present the 1830 text in the 1827 order (sexual relation precedes species), he adds a note justifying this decision, claiming that "the original order would seem to be more logical." See EN III: 170.

antagonistic and relation to the externalized self, whereas the sexual difference involved a positive relation. This fact alone, however, does not prove that species is the more immediate moment and must therefore precede the sexual relation. Instead, the assimilative process in its final moments involves a positive, rather than a negative, self-relation in the formation of inorganic nature as an extension of the organic self. In other words, because the characteristics that best serve as distinguishing the stages of development in biology is that which *is* the result of the productive processes of life, and not the failure of such processes, emphasizing species as a proliferation of difference as a consequence of sexual reproduction, rather than the failure of a relation that produces only death, is a more persuasive sequence for Hegel's biology.³⁴ In addition, we can observe that in the account of life in Hegel's *Science of Logic*, the genus process bears far greater resemblance to the sexual reproduction than to the species concept, and so much like the four kinds of chemical processes discussed in my Chapter 3, species may be a

³⁴ For example, Jay Lampert draws attention to the various ways in which the negativity of death is an essential characteristic of the various productive process of life, going so far as to say that "it is not only in general that sex is death. In particular, death is the surplus effect of sexual reproduction" (149). However, I think by emphasizing the role of death as an outcome of these processes, specifically between a single species and different species, he encounters difficulties in properly distinguishing these categories. For example, he claims that

the way in which other species are in organic is, of course, relative. This is a kind of inorganicity that only an organic being can confer. But because of this, there is only a fine line between dying when parts of ourselves become inorganic from within, and dying when something we constitute as inorganic infiltrates from without. But in that case, *other* beings are by definition the inorganic aspect of ourselves. The other animal's claw is our own death, whether it scratches our own skin or not. For the other *is* our inorganic other. It remains outside of us, but *its* inorganic nature *is our* death. (150)

The shift from claiming that the other is our inorganic other, to saying that it is not the other as such but the other's inorganic nature reveals the problem of focusing on death as the failure of life. Moreover, I do not think that there are different kinds of death which function as the criterion for differentiating the various categories in Hegel's biology. Instead, biology examines the different ways in which organisms ward off death, which has only one form. Of course there are multiple causes of death (e.g. claw, noose, disease), and even different aspects within the explanation of a single death (e.g. claw causes death by exsanguination; noose causes death by suffocation; sepsis causes death by shock and multi-organ failure), but death in each of these cases must meet a single common criterion. Defining the criterion for death is of course a bioethical problem, particularly in cases of brain injuries. Consequently, rather than constituting the other as inorganic and a cause of death, it makes more sense to regard the other as organic and the effect of the proliferation of life, since this account also enables us to distinguish more clearly between the various structures of life. Lampert acknowledges these aspects also, and I think has this in mind when saying that "death is the overflow of sex, and life is the overflow of that overflow." See Lampert, "Speed, Impact and Fluidity at the Barrier Between Life and Death: Hegel's *Philosophy of Nature*," *Angelaki: Journal of the Theoretical Humanities* 10, no. 3 (December 2005): 145-156.

determination of life particular its externalized form in nature.³⁵ Because of this, it is more reasonable that sexual difference considered abstractly is the next stage in the conceptual development. It therefore follows that the reproductive lineage model of the species concept is more consistent with Hegel's philosophical system.

4.2.4. Species Concepts and Evolutionary Systematics

With the accounts of the species concept in various presentations of Hegel's *Philosophy of Nature*, and with an interpretation that selects one account as being proper to Hegel's systematic concerns, we are now able to assess Hegel's species concept with respect to contemporary evolutionary biology. The following section therefore presents a brief outline of the various positions in biology regarding the species concept, in order to situate Hegel's species concept with respect to them.

It is by no means easy to establish a consensus position within biology on what the species concept is, if it exists at all. This is because organic life is so diverse that, insofar as species are to function as units within evolutionary explanations, multiple criteria are not only adequate but in fact necessary for identifying such units. For example, three broad approaches to the species concept include a biological concept, an ecological concept, and a phylogenetic concept (and within each of these approaches one can find further differentiation).

The Biological Species Concept defines a species taxon as a group of organisms that can successfully interbreed and produce fertile offspring... The Ecological Species Concept defines a species taxon as a lineage of organisms maintained and segmented by

³⁵ The "Doctrine of the Concept," in which Hegel discusses life, was written in 1816, and so would not have indicated a shift to conceiving of genus as primarily differentiated into species rather than sex. Nevertheless, because we argued that the revision in the 1830 *Encyclopedia* still emphasizes the negative relation between species against the affirmative relation of sex, and the logical account of life likewise emphasizes an affirmative account of the genus-process, it is unlikely that the logical account would have been similarly revised.

ecological forces... The Phylogenetic Species Concept (which has multiple versions) defines a species taxon as a basal monophyletic lineage.³⁶

The disagreement between these definitions is based in the failure of each to identify certain populations as species. For example, the biological species concept is unable to identify populations of asexually reproducing organisms (e.g. paramecia) as species. Consequently, some authors have even argued for the abolition of the "species" concept altogether, insofar as there is not one thing in common to the various existing taxa.³⁷ Because of the disagreement and diversity of species concepts, a disjunctive definition has even been suggested in place of an essential definition.³⁸ Nevertheless, other authors have detected similarities between the various kinds of species-concepts, leading to proposals for defining a unified species concept.

We will use Kevin de Queiroz's proposal for a unified species concept, according to

which species are

separately evolving metapopulation lineages [...] To clarify, here the term *lineage* refers to an ancestor-descendant series (Simpson, 1961; Hull, 1980) in this case of metapopulations or simply a metapopulation extended through time (cf. Simpson, 1951) [...] The term *metapopulation* refers to an inclusive population made up of connected subpopulations (Levins, 1970; Hanski and Gaggiotti, 2004).³⁹

This definition is advanced as a way of addressing the species problem by breaking it down into different questions. Whereas this definition is taken to identify the common element between all species, it is not in itself sufficient for the methodological task of "inferring the boundaries and numbers of species (species delimitation)."⁴⁰ In other words, when attempting to identify some

³⁶ Marc Ereshefsky, "Species, Taxonomy, and Systematics," in *Handbook of the Philosophy of Science: Philosophy of Biology*, ed. Mohan Matthen & Christopher Stephens (Amsterdam: North-Holland, 2007), 412.

³⁷ Marc Ereshefsky, "Species Pluralism and Anti-Realism," *Philosophy of Science* 65, no. 1 (Mar., 1998): 103-120. For example, "Species' has outlived its usefulness in biology, and when it is used it is ambiguous. Why not replace it with terms that explicitly distinguish the various types of lineages we now call 'species'?" (117).

³⁸ David L. Hull, "The Effect of Essentialism on Taxonomy – Two Thousand Years of Stasis," *The British Journal for the Philosophy of Science* 15 (1965): 314-326; 16 (1966): 1-18.

³⁹ de Queiroz, "Species Concepts and Species Delimitation," 880-881.

⁴⁰ Ibid., 883.

existing population of organisms as a species, biologists are required to use different kinds of characteristics (e.g. reproductive isolation, exclusive genealogical lineage, or ecological niche) as evidence.⁴¹ No one of these characteristics applies to all instances of species, and so they are regarded as secondary, contingent properties, as opposed to the primary and necessary property of being a separately evolving metapopulation lineage.

While we have already claimed that the characteristic of being "separately evolving" poses a difficulty for our assessment of Hegel's species concept, the characteristic of being a lineage already contains an important conceptual shift in the history of biology. This shift is expressed by the proposal that rather than conceiving of species as classes or universals, they should really be conceived as individuals. David Hull describes this distinction, where "by 'individuals' I mean spatiotemporally localized cohesive and continuous entities (historical entities). By 'classes' I intend spatiotemporal unrestricted classes, the sorts of things which can function in traditionally-defined laws of nature."⁴² Evolutionary theory is the rejection of species as essences, and thus as being classes of organisms, identifiable by the presence of some necessary characteristic. Darwin's original argument in *On the Origin of Species* to this end was to show that taxonomists struggle and must ultimately fail to find characteristics which all and only members of a single species have. Nevertheless, species do exist as those units that undergo evolution. Consequently, rather than existing as spatiotemporally unrestricted classes, they exist as spatiotemporally restricted individuals.

The spatiotemporal restriction that determine species as individuals are the processes of replication and reproduction, through which genetic information is passed on from one organism

⁴¹ Ibid., 884. These three criteria correspond to the definitions of the Biological, Phylogenetic, and Ecological Species Concepts, respectively. In other words, populations can be identified as individual, distinct species on the basis of the presence or absence of interbreeding between members, or having a common, unique ancestral origin. ⁴² Hull, "A Matter of Individuality," *Philosophy of Science* 45, no. 3 (Sept., 1978): 336.

to another. These processes require continuity in space and time, and so construct lineages out of the sequences of organisms. Over time, the information transmitted from one organism to undergoes change from a number of possible of factors, leading to the gradual evolution of a species. This conclusion leads Michael Ghiselin to claim that "if species were not individuals, they could not evolve. Indeed, they could not do anything whatsoever. Classes are immutable, only their constituent individuals can change."⁴³ The thesis of species as individuals was thus developed in order to establish the metaphysical status of species as they function in evolutionary explanations. For our purposes, this is significant and relates to our use of de Queiroz's definition of species, insofar as reproductive processes are responsible for the form of individuality of a species. As Hull writes, "if species are interpreted as historical entities, then particular organisms belong in a particular species because they are part of that genealogical nexus, not because they possess any essential traits."⁴⁴

With this evolutionary concept of species in hand, we can now see certain similarities between it and Hegel's 1827 species concept. In our discussion of Hegel's species concept, we deliberately characterized the 1827 presentation as being akin to a reproductive lineage insofar as species were seen to be grounded in the sexual-relation and reproductive process. Consequently, while Hegel does express interest in the taxonomical efforts of comparative anatomy, we can frame this practice of identifying species as presupposing real processes which construct species as lineages. The common characteristics among members of a species are, as we mentioned above, the consequence, and not the ground, of reproductive processes.⁴⁵ This was in contrast to the 1830 presentation, which we argued would entail that reproduction is essentially constrained

⁴³ Ghiselin, "Species Concepts, Individuality, and Objectivity," *Biology and Philosophy* 2 (1987): 129.

⁴⁴ Hull, "A Matter of Individuality," 358.

⁴⁵ Strictly speaking, if species are individuals, then their subunits (i.e. organisms) are not "members" (which implies belonging to a class), but instead are parts. See Ghiselin, "Species Concepts, Individuality, and Objectivity," 128.

by species membership, which itself is established through observable similarities. This alternative account is more similar to the theories that evolutionary theory explicitly rejects. However, insofar as we also established that Hegel's 1827 presentation of species as reproductive lineages is the more appropriate presentation to his own systematic constraints, we can now claim that his theory of species places him in closer proximity with evolutionary theory than has been previously established.

4.3. Conclusion

By presenting interpretations of Hegel's species concept and biological development, I have argued that Hegel's biological theory can be read consistently as rejecting species fixism. Consequently, I have argued that his theory is in fact closer in content to contemporary evolutionary theory than is indicated by his overt rejections of species transformism. While Hegel's theory is still devoid of content that might be read as actual evolutionary processes (e.g. natural selection, genetic drift), I have argued that species in a Hegelian philosophy of nature are at the very least entities that are mutable and capable of evolving.

Chapter 5: The Nature of Spirit - Physical and Mental Disease in Hegel's Philosophy

In this chapter I argue that the nature of spirit as exhibited by Hegel's "Anthropology" is different from the nature of nature, as exhibited in the *Philosophy of Nature*. Indeed, the "Anthropology" already anticipates the structures of freedom and autonomy proper to the more developed stages of spirit, even as it presents spirit in its natural stage, prior to its freedom. Many interpreters of Hegel have suggested that the determinations of the "Anthropology" do not distinguish humans from animals when examining both in their natural form.¹ This interpretation has been substantial for naturalistic interpretations of Hegel, which trace the normative structures of consciousness and social formations back to the formation of habit as the molding of nature into second nature. In contrast to this interpretation, I argue that Hegel's anthropology already includes a conceptual advance beyond merely organic structures, which are more clearly articulated in the *Philosophy of Nature*.² Specifically, Hegel's philosophical anthropology expresses the natural determinations of that which contains the capacity for, or even the actuality of, freedom and rationality. As is shown in the following, by capacity for freedom and rationality, I am referring to a being which in other respects is already free and rational to the

¹ See Angelica Nuzzo, "Anthropology, *Geist*, and the Soul-Body Relation: The Systematic Beginning of Hegel's *Philosophy of Spirit*," in *Essays on Hegel's* Philosophy of Subjective Spirit, ed. David S. Stern (Albany: SUNY Press, 2013), 1-17; Italo Testa, "Hegel's Naturalism or Soul and Body in the *Encyclopedia*," in *Essays on Hegel's* Philosophy of Subjective Spirit, ed. David S. Stern (Albany: SUNY Press, 2013), 1-17; Italo Testa, "Hegel's Naturalism or Soul and Body in the *Encyclopedia*," in *Essays on Hegel's* Philosophy of Subjective Spirit, ed. David S. Stern (Albany: SUNY Press, 2013), 19-35.

E.g., Nuzzo claims that the "topic of the 'Anthropology' is the *animal* soul or spirit, and not distinctively the human soul or spirit" (2). Testa likewise claims that "while systematically located in the 'Anthropology,' the first two forms [natural soul & feeling soul] taken into consideration are not specifically human – again, a reference to Aristotle – but are proper more in general to living and animal nature" (26).

By comparison, see Nicholas Mowad, "Awakening to Madness and Habituation to Death in Hegel's 'Anthropology'," in *Essays on Hegel's* Philosophy of Subjective Spirit, ed. David S. Stern (Albany: SUNY Press, 2013), 87-105; Heikki Ikäheimo, "Nature in Spirit: A New Direction for Hegel-studies and Hegelian Philosophy," *Critical Horizons* 13, no. 2 (2012): 149-153; Catherine Malabou, *The Future of Hegel: Plasticity, Temporality, and*

Dialectic, trans. Lisabeth During (London: Routledge, 2005). E.g. Ikäheimo claims that "sections in the Philosophy of Subjective Spirit on the 'anthropological' determinations, determinations which humans, on the one hand, partly share with non-human animals, and that in them, on the other hand, are intermingled with spiritual or not-merely-animal functions" (150-151). Likewise, this chapter's analysis of disease is comparable to Malabou's analysis of habit, which by distinguishing between animal habit and human habit, leads her to claim that "Human 'nature' is, for Hegel, always and already 'second nature'" (66).

² See my Chapter 4 for an account of Hegel's biology and theory of organic development.

extent that it is conscious, but with respect to its natural capacities is only *implicitly* and therefore only *potentially* free.³

To argue for this interpretation of Hegel's anthropology, I present an analysis and comparison of physical and mental disease [*Krankheit*] as found in Hegel's philosophy of nature and philosophy of spirit, respectively.⁴ I show that disease is in both cases a separation of the individual from the universal. This separation is an abnormality and is possible through the finitude and externality of nature.⁵ In this analysis, I invoke more recent work in the philosophy of medicine to characterize Hegel's theory of health and disease as naturalistic, rather than normative, concepts. In characterizing Hegel's theory as naturalistic, I shall also point out various objections to such theories, most importantly that even in its most robust articulation, naturalistic theories are not without certain normative assumptions, and so fail to meet the criteria they set out for themselves. In raising these objections, I therefore highlight limitations to Hegel's theory which are based in his assumptions about biology.

Following the interpretation of Hegel's theory of health as naturalistic, I show that physical disease is nevertheless distinct from mental disease, insofar as the latter has a direct effect on the rationality of the developed consciousness, and the former does not. Thus, while Hegel does not argue that mental disease affects the mind separately from the body, I argue that

³ Such a concept of capacity or potentiality is therefore closer to Aristotle's first actuality (second potentiality) account of the soul (*De Anima* 412a27). Consequently, a being that when awake is conscious, but when sleeping is not, always has the capacity or potential for consciousness and so is different from a being that does not have a capacity for consciousness, but may develop such a capacity (e.g. a human zygote). The latter only has the potential for the potential of consciousness. In other words, there is a difference between beings with an actualized potential for consciousness.

⁴ Throughout this chapter, I use health and disease interchangeably with the terms normal and pathological. Such usage is debatable insofar as not all pathological states are diseases (e.g. broken bones), and not all concepts of health may be characterized as normal (e.g. Olympic athletes may be considered as healthier than a typical person). Nevertheless, as we shall show, the concepts of disease offered by Hegel and Christopher Boorse, whose theory we shall use to assess Hegel's, presuppose such an equivalency.

⁵ Additionally, both accounts of disease are followed by an account of habit: the account of physical disease transitions to habit, which concludes the philosophy of nature and introduces the philosophy of spirit. See Note 1.

mental disease is nevertheless distinct from physical disease in Hegel's system because mental disease affects the natural basis for human freedom, namely the rationality of their consciousness.

By differentiating physical disease from mental disease, I argue that a sharper distinction of nature and spirit is present within Hegel's system than is suggested by naturalistic interpretations of Hegel. In making this distinction, I am not proposing that Hegel's ontology is thereby dualistic: the world being divided between natural being and spiritual being. This is because, first, such an account would neglect the significance of the conceptuality of all being as that which both unifies it systematically and differentiates it into the distinct forms of nature and spirit. Second, it is the task of this argument to show that the determinations of anthropology belong neither to nature proper, nor to spirit proper (understood as the domain structured by freedom and norms). Rather, anthropology is precisely the domain of spirit's natural being, or of the natural presuppositions and conditions of that which is free. Hegel is led to introduce new conceptual determinations of the various organic functions which we have in common with animals, but which are conceptually more developed due to the presupposition of the intellectual consciousness unique to human beings or spirit, and which are most apparent in cases of mental disease.

The argument of this chapter contains six sections. The first section presents Hegel's account of mental disease and introduces the problem of distinguishing social abnormality or deviance from mental disease. The second section provides Hegel's account of physical disease, as found in Hegel's *Philosophy of Nature*, as his general model for disease. The third section introduces the different approaches in contemporary philosophy of medicine, for theorizing health and disease, as well as highlighting the advantages and disadvantages of each approach.

The fourth section shows that Hegel's theory of health is best characterized as adopting a naturalistic approach, although such an approach relies on a biological theory that has since been challenged by genetics and evolutionary theory. I also argue that Hegel's theory of mental disease is not strictly speaking grounded in a biological approach. This raises the problem of finding the criteria by which mental diseases may be described as afflicting natural processes, rather than autonomous actions. The fifth section answers this question by explaining in what way the soul as the naturalness of spirit distinct from both nature proper and spirit proper. As a result, both mental and physical diseases relate to some natural aspect of that which is diseased, even though there is a fundamental difference between the nature of an organism and the nature of spirit. The final section then examines the consequences of this interpretation of the anthropology for Hegel's system in general.

5.1. Spirit and Mental Disease

While Hegel first mentions mental disease [*Krankheit der Seele*] in the *Philosophy of Nature* as one type of disease (§371Z; GW 24: 1600/EN III: 198), the analysis of mental disease does not appear until the section of the "Feeling Soul" in the "Anthropology" of the *Philosophy of Spirit* (§§403-410). There, Hegel characterizes two different phenomena pertaining to the feeling soul as diseased states: magnetic somnambulism (§406; GW 20: 406/ES 95) and madness (§408; GW 20: 412/ES 114-5).⁶ Both of these phenomena correspond to specific stages of an otherwise normally functioning soul: life of feeling [*Gefühlsleben*] or genius (§405; GW 20: 403/ES 89), and self-feeling (§407; GW 20: 411-2/ES 114). Hegel explains the necessity of this

⁶ While these diagnostic categories are no longer used today, my interpretative approach is to examine these as the specific kinds of phenomena which are characterized more broadly as psychopathologies. As in the case of the chemical processes in my Chapter 3, I focus on the conceptual forms, to which these diagnostic categories are taken to be corresponding.

double-sided presentation of the feeling soul, insofar as the stages of the feeling soul correspond to pre- or unconscious determinations of spirit, which otherwise presents itself through conscious activities and determinations. Consequently, "in this sphere, we must consider, first, the abstract formations of the soul for itself, and then again these same formations as disease-states of spirit, because the former is to be understood from the latter" (§404A; GW 20: 403/ES 89). In this section I present an exposition of the phenomena that Hegel characterizes as mental disease.

To briefly situate Hegel's discussion of mental disease in the context of his system, the "Feeling Soul" is the middle stage of the "Anthropology." The "feeling soul" follows the discussion of the "natural soul," and precedes the "actual soul." The "Anthropology" as a whole presents Hegel's doctrine of the soul as spirit in its natural determinacy. Exactly what it means for spirit to have a natural dimension is the point under consideration and is addressed more directly in Section 5 of this chapter. However, Hegel's general claims about the soul is that it is only implicitly or immediately spirit, but not yet spirit for itself (§387; GW 20: 386/ES 25). That the soul is only spirit's being-in-itself is characterized as "spirit's sleep," the "passive nous," and the "substance and absolute foundation of every particularization and singularization of spirit" (§389; GW 20: 388/ES 29). Thus, as the soul, the spirit is not explicitly for itself, and because the self-determining structure is the fundamental characteristic of spirit, the soul is not yet truly spirit, but only that which is potentially spirit. As was shown in my previous chapter, and as is shown in the following, the way in which the soul is potentially spirit is closer to Aristotle's second potentiality/first actuality account of the soul, than to first potentiality. This is to say that the soul is only that aspect of actualized spirit which is not explicitly, but only implicitly, spirit. The passage and transition of soul to spirit is therefore not an evolutionary development from beings that lack consciousness to those that have it, but rather a conceptual, dialectical

development from the natural-psychological activities of spirit to the normative-subjective activities of the same.

The "Feeling Soul" stage exhibits the soul's first determination as individual and as interiorized (§403; GW 20: 401/ES 87). Hegel claims that feeling [*fühlen*] is the sublation and development of sensation [*empfinden*], insofar as sensation is merely passive and is thus the "immediacy of the determinateness in the activity of feeling; feeling concerns more the selfishness involved in it" (§402A; GW 20: 400/ES 84). The soul in its determination of feeling is individual because it is the unified substance of particularized sensations. Hegel describes the feeling soul as a monad in the sense that it is the individual that is constituted by the particular sensations which belong to it (§405; GW 20: 403/ES 89). This means that, on the one hand, the difference between the soul as the individual and its sensations has not been fully established, as it will be in the difference of consciousness and its object. In the latter case, consciousness fully differentiates itself from its object, such that the I of consciousness emerges as the objectification of that moment of consciousness which remains differentiated from its object. The feeling soul has not fully established this difference, and in fact it is this nondifference which can exhibit itself as madness in a subject with the capacity for consciousness and reason. In its normal state, however, the soul's life of feeling presents itself as genius.⁷ On the other hand, that feeling soul is only implicitly different from its sensations, as their unity, is nevertheless a development

⁷ The concept of genius here has a history in Kant's *Critique of the Power of Judgment* and Schelling's *System of Transcendental Idealism.* In both cases, genius is defined as the coincidence of unconscious, or natural, and conscious activity which produces artistic objects.

Kant defines genius as the "inborn predisposition of the mind through which nature gives the rule to art" (AK 5: 307).

Schelling defines genius as "that incomprehensible, agency which supplies objectivity to the conscious, without the cooperation of freedom, and to some extent in opposition to freedom (wherein is eternally dispersed what in this production is united)" (222).

For a closer analysis of Hegel's concept of genius, see Jennifer Ann Bates, *Hegel and Shakespeare on Moral Imagination* (Albany: SUNY Press, 2010), 85-111.

beyond the soul as merely sensing, which was a purely passive determinacy. Consequently, the dialectic of the feeling soul is therefore the result of the immediate relation between the individuality of the soul and the differentiation and particularization of its sensations.

Before we examine the pathological state of the life of feeling (i.e. magnetic somnambulism, or hypnotic states), let us first discuss the "normal" development of the feeling soul into the stage of self-feeling [*Selbstgefühl*].⁸ Whereas the life of feeling was only the immediate unity of the multiplicity of particular feelings as constituting the soul, self-feeling is exhibited as the internal distinguishing between the self, as a subject of feeling, and its feelings (§407; GW 20: 411-2/ES 114). Once again, however, this distinguishing is not yet the differentiation of consciousness and its object, insofar as here, the self distinguishes itself from its feelings only by virtue of identifying itself as a particular feeling. In other words, among the

⁸ Two points are worth mentioning here. The first is that Hegel makes the claim that even the pathological states of magnetic somnambulism and madness present necessary stages of the development of spirit, not in the sense that every individual human must be at some point mad, but rather that these present necessary preconditions for the development of a rational, conscious subjectivity, and as such remains a possible state situated at the limits of reason. Second, self-feeling was also a characteristic that had emerged in our discussion of organisms when discussing Hegel's philosophical biology in Chapter 4. There, we had noted that organisms remain confined to self-feeling as a way of being for themselves in a limited, particularized manner. This was distinct from self-consciousness, where the self appears to itself as a universal. Nevertheless, as has been mentioned, self-feeling is a natural determination of spirit and so constitutes a precondition for its more developed state as self-consciousness.

I will also mention that whereas magnetic somnambulism and madness are the main categories of mental disease that Hegel mentions, he mentions as specific examples, "sleep-walking, catalepsy, the period of development in girls, the state of pregnancy, St. Vitus's dance," (§406Z; GW 25: 1016/ES 99) "natural imbecility, absent-mindedness, desipience," "foolishness proper," and "madness [Tollheit] or insanity" (§408Z; GW 25: 1045-9/ES 122-6). Whereas these states set spirit completely outside of itself and preclude any further conscious activity, Jennifer Ann Bates interprets the various stages of the *Phenomenology of Spirit* to be instances of spiritual disease. She writes that "The self at the beginning of the Phenomenology is implicitly spiritually sick because it has no comprehension of dialectic. Its self-infection and actual disease begin with alienation in language in Culture (a symptom of which is wit); the infection then invades spirit universally during the permeation of Pure Insight in the Enlightenment. The high point of the illness is the Terror-a kind of spiritual fever. Spirit's cure begins with that fever, but only ends when Spirit has fully inoculated itself by digesting its self-illnesses. This is the cure of the individual self as concrete universal "I" in Absolute Knowing," Hegel and Shakespeare on Moral Imagination, 279. The presentation of disease in this chapter is therefore to be distinguished from any account based in the Phenomenology of Spirit, insofar as Hegel's primary discussion of disease, including mental or "spiritual" disease pertains to phenomena prior to the stage of consciousness. Ultimately, I argue that disease for Hegel must have some natural basis, which sets it apart from the errors made by spirit's comprehension of itself and its circumstances. Spirit's free activity also has a natural foundation which disposes to distortions and malfunctions in its capacity to reason, but which must be differentiated from its own misuse of it, as exhibited in the stages of the Phenomenology of Spirit. This distinction is based in a natural-normative distinction, which is more clearly delineated below.

feelings of the soul, one of them is identified as the feeling of the self, which is the subject of all of the other feelings. While this introduces the distinction between self and its feelings, it does so only within the same domain of the feelings themselves. This imperfect distinction is thus what presents itself as madness when it occurs in a rational, conscious subject.

Let us now turn to the pathological presentation of both of these stages of the feeling soul. The mental disease that corresponds to the normal state of the life of feeling and genius, Hegel calls magnetic somnambulism. Hegel defines this as the

state of self-conscious, educated, sober human being ... in which the individual relates in an unmediated way to the concrete content of its own self, and has its sober consciousness of itself and of the intelligible [*verständigen*] world-connections as a state distinct from it [the life of feeling -MK]. (§406; GW 20: 406/ES 5)

In a normal, conscious subject, this inner world of interconnected feelings is mediated with the externally existing, objective world, such that the actuality of the individual is neither this interior life of feeling, nor simply the external presentation of the individual, but rather the "threads" which connect the two (§406A; GW 20: 407/ES 96). As such, the inner life of feeling is normally not exhibited in an immediate manner, and thus strictly speaking is not exhibited at all. However, this inner world emerges in an unmediated manner when

the fulfilment of consciousness, the external world of consciousness, and the relationship between them are covered, and the soul is thereby sunk into sleep. [...] The immanent actuality of the individual thus remains the same substantial totality as a life of feeling, which is inwardly seeing and knowing. (§406A; GW 20: 408/ES 96)

Thus, when the intentional cognitive activity of consciousness is subdued, the inner life of feeling is exhibited for itself. Examples of this include hypnotic states or dream states, where the inner life of feeling exhibits its own determinacy independent from its mediation by consciousness with the external world.⁹

⁹ While dreaming is a normal mental activity for a person asleep, the same dissociation of inner mental life from consciousness is a pathological state for a person who is awake.

The second mental disease state is that of madness. Whereas magnetic somnambulism is the exhibition of the mere substantial inner life of feeling as independent or detached from consciousness, madness is the exhibition of self-feeling in a similar manner. Hegel defines madness as the disease in which the subject "remains fixed in a particularity of its self-feeling, which it is incapable of overcoming and processing into ideality" (§408; GW 20: 412/ES 114). Madness is moreover the state in which

remaining caught in a particular determinacy, the subject does not allocate such content to the intelligible place and the subordinate position, which belongs to that content in the individual world-system, which the subject is. In this manner, the subject finds itself in a contradiction between its systematic totality in consciousness and the particular determinacy in that totality, which is not fluid, categorized, or subordinated. (§408; GW 20: 412/ES 114-5)

Unlike magnetic somnambulism, which exhibited only the detachment and freely acting inner life of feeling apart from consciousness, madness presents itself as a contradiction between the particular feeling of the self and the remaining system of inner feelings. A normal conscious subject overcomes this contradiction by further detaching itself from a particular content and raising itself to the level of "universality that distinguishes itself from particularity, the universality that is for itself" (§409; GW 20: 414-5/ES 130). This is accomplished in the form of habit. Madness, by contrast, involves the inability to detach itself from its life of feeling, insofar as the self identifies itself as a part of that system. Consequently, the distinction between external world and inner world of feeling becomes obscured, and presents itself in the pathological symptoms of hallucinations, i.e. the inability to distinguish outer reality from inner mental life.

In characterizing madness and magnetic somnambulism as diseased states, Hegel has introduced the caveat that these states are pathological only when they explicitly present themselves 'in a rational, conscious subject.' This caveat has two significant consequences for our discussion of disease in Hegel's philosophy. First, these states (i.e. feeling and self-feeling)

are not pathological when they are present in subjects without the capacity for reason or consciousness. We have already seen this to be the case in non-conscious organisms, as discussed in Chapter 4, in which feeling and self-feeling were normal activities. Second, these stages are not pathological when in rational, conscious subjects they are not explicitly present. Here, Hegel is suggesting that in spiritual beings, such as human beings, the natural activities of the soul are normal to the extent that they do not present themselves, but are rather only the internal conditions for rational activity. In other words, unlike non-conscious organisms, spirit involves additional, more developed cognitive activity, which, when this activity lapses into the merely natural activities of feeling and self-feeling, is characterized as pathological. The activity of feeling and self-feeling as pertaining to the soul are merely foundational activities for conscious activity, and so they are in themselves normal. However, it is when these activities present themselves in an organism whose normal psychical activity involves rational, conscious cognitive activity, that they are to be considered pathological.

At this point, however, it is necessary to ask the question, is mental disease on Hegel's account truly a disease? How might madness be different from social deviance or erroneous judgment? An initial answer, which Hegel seems to offer, is that diseases are based in the naturalness of that which is diseased. However, how is the naturalness of spirit to be understood, such that spirit or the soul in particular is susceptible to disease? We turn now to addressing these questions.

5.2. Nature and Physical Disease

In order to examine mental disease in Hegel's philosophy, we must first examine his broader analysis of disease as a biological concept. Disease appears in the *Philosophy of Nature*

as the third moment of the genus process, following the sex-relationship and species, which were examined in Chapter 4.¹⁰ As already mentioned, it exhibits the final stage of the organic being, and of nature as a whole, prior to the stage of habit and its transition into spirit. In this section I provide an exposition of Hegel's concept of disease and its absence, health.

Hegel defines disease as the state of an organism in which

one of its systems or organs is stimulated into conflict with the inorganic potency of the organism, establishes itself in isolation, persists in its particular activity against the activity of the whole, and obstructs the fluidity of the whole and the process which permeates through every moment of the whole. (§371; GW 20: 371/EN III: 193)

This concept of disease has its basis in Hegel's understanding of organic being and of natural being in general. Regarding organic being, organisms are constituted through the negation of the independency of the parts of the body, by determining their functions as having the purpose of sustaining the organic whole. Organisms are necessarily embodied and thus constituted by a multiplicity of organs that function for the sake of the whole. While each organ does have its own function separate from the rest (e.g. the heart pumps blood, the lungs process the oxygen in breathing), that function is determined by its belonging to the organic whole. Insofar as organisms are also natural, however, there remains a conceptual and ontological difference between the universal soul, or genus, and the inorganic body. While this difference is then resolved into the individual organism, there nevertheless remained a difference between the universal genus and the individual organism, according to which the latter is never fully adequate to the former. While individual organisms together with themselves as other

¹⁰ The following exposition of Hegel's understanding of illness is largely consistent with that found in Dietrich von Engelhardt, "Hegel's Philosophical Understanding of Illness," in *Hegel and the Sciences*, ed. R. S. Cohen and M. W. Wartofsky (Dordrecht: Reidel, 1984), 123-141. While von Engelhardt also mentions Hegel's inclusion of mental disease in his discussion, he does not address the systematic significance of the difference between diseases of organisms and diseases of spirit.

organisms are capable of constituting the genus, individually they remain inadequate. As a result, Hegel defines disease as the concrete exhibition of the relation of inadequacy between genus and the individual. This inadequacy is in fact the expression of the foundational externality between the universal and the particular in nature. However, this inadequacy only appears as a concrete stage in natural beings that bear negativity within themselves: organisms.¹¹ Through this internalization of negativity, it is possible for the organism to exhibit both the universal and the particular, and, in the case of disease, the conflict between them.

While species and sexual relationship both gave partial representation to this same truth of the individual's relation to the genus, disease presents it more concretely insofar as this relationship takes place explicitly within the individual. In other words, there emerges a conflict between the individual as an expression of its universal type (the genus, or as we shall begin to call it now its species-type) and as different from that type due to the individual's external embodiment. This occurs when one of the organism's systems or organs begins functioning independently of the whole, rather than as subordinate to the whole. To the extent that a diseased organ functions independently from the whole, this independence is only a relative independence, insofar as its function is still determined by the organic whole. In this respect, disease is unique among the categories to the extent that it alone exhibits the conflict and contradiction between the universal and the particular, the organic whole and the organ. When the organ exhibits this relative independent functioning, it disrupts the functioning of the whole, because the latter is nothing more than the complete harmony of all of the parts with each other with the single aim of sustaining the whole.

¹¹ Following our assertion in Chapter 2, there are no such things as monstrous magnetic processes, or as Hegel explicitly says: "the stone cannot become sick, because it perishes in the negative, is chemically dissolved, does not preserve its form, and is not the negative of itself, that encroaches its opposite, like in illness and self-feeling" (§371Z; GW 24: 1596/EN III: 194).

On the basis of Hegel's concept of disease, we can also define health as the adequation of the individual to the genus. In the absence of disease, all organs are adequately subordinated to the activity of the whole, which is described as a kind of "fluidity."¹² Hegel defines health as "the proportion of the organic self to its existence, that every organ is fluid in the universal. Health consists in the uniform relationship of the organic to the inorganic, so that the inorganic does not exist as something which the organism cannot overcome" (§371Z; GW 24: 1595/EN III: 194). Health is the harmonization or proportionality of all organs to each other in their cooperative functioning towards the constitution of the organic whole. Health is a "fluidity," in that the differentiation of the organism into its systems and parts does not explicitly present itself, but instead the contribution of each part's function coincides with the goals of the organism as a whole. Health is the silent, and unnoticed activity of an organ insofar as that activity enables the organism to act as it normally does.

Because these parts of the organism's body are external from the genus, which organizes the parts and determines their function, the individual is always susceptible to disease. Hegel eventually regards disease as only an expression of the same inadequacy that constitutes an organism's mortality: "the original disease of the animal, and the inborn germ of death is the animal's inadequacy to universality" (§375; GW 20: 374-5/EN III: 209). Such inadequacy, as we have mentioned above, is a consequence of the organism's naturalness: "In general, the overcoming and the passing of the singular inadequacy does not sublate the universal inadequacy, which the individual has, in that its idea is the immediate idea, standing as an animal

¹² For further discussion of the conceiving health, disease, healing and death along the model of fluidity, see Jay Lampert, "Speed, Impact, and Fluidity at the Barrier Between Life and Death: Hegel's *Philosophy of Nature*," *Angelaki: Journal of the Theoretical Humanities* 10, no. 3 (December 2005): 145-156.

within nature and whose subjectivity is not for itself, but only in itself the concept" (§374; GW 20: 374/EN III: 208).

5.3. Health: Natural or Normative?

In assessing Hegel's concept of health, it is necessary to draw out the nature of its naturalistic and normative assumptions.¹³ To do this, I provide a brief summary of the dominant approaches in theorizing health: naturalistic, normativist, hybrid, and eliminativist. Due to its comprehensiveness and its place of primacy in the literature in the philosophy of medicine, I begin with a more detailed presentation of Christopher Boorse's biostatistical concept of health.¹⁴ Because Boorse's theory is also the most compatible with Hegel's among the various alternatives, examining Boorse's theory in detail shall be important when assessing the legitimacy of Hegel's own theory as a naturalistic approach. However, such an account also contains problems, which I shall also raise at the end of this section. While in my own

¹³ Sebastian Rand, for example, omits a discussion of health and sickness when discussing animal defects. This leads Rand to argue that because animals are natural and necessarily fail to meet the standards of the species, evaluative judgments such as "something is wrong with Rex [the three-legged dog]" are not justified, as they are for spiritual affairs. For example, "Defect, on Hegel's view, is thus not a marker of wrongness or malfunction but of the normal, healthy, successful activity of life. Far from being a sign that the animal is failing to exhibit the unity of its life-form, such defect is rather a constitutive 'moment' in its characteristic unity; the animal can only be what it is by means of defect" (77). Such a claim misses the distinction Hegel makes between the lack felt in appetite, and the defect of disease: "Appetite, which is awareness of a deficiency, is also self-relating in constituting its own opposite, for it is both itself and its state of deficiency. In this case however, the deficiency is something external, so that the self is not opposed to its shape as such, while in the case of disease, the negative thing is the shape itself" (§371Z). The task of this chapter is to be able to say that, for Hegel, there *is* something abnormal about Rex, but that the ideas of normality and aberration implicit in health have a different structure than the normativity of conscious, intentional actions. See Rand, "What's Wrong with Rex? Hegel on Animal Defect and Individuality," *European Journal of Philosophy* 23, no. 1 (2013): 68-86.

¹⁴ Boorse's theory is cited as the paradigm of a naturalistic theory of health by Lennart Nordenfelt, *On the Nature of Health: An Action-Theoretic Approach* (Dordrecht: Kluwer, 1995); H. Tristram Engelhardt, Jr., "Ideology and Aetiology," *The Journal of Medicine and Philosophy* 1, no. 3 (1976): 256-268; Jerome Wakefield, "The Concept of Mental Disorder: On the Boundary Between Biological Facts and Social Values," *American Psychologist* 47, no. 3 (March 1992): 373-388; Marc Ereshefsky, "Defining 'Health' and 'Disease'," *Studies in History and Philosophy of Biological and Biomedical Sciences* 40 (2009): 221-227; Havi Carel, "Can I Be III and Happy?" *Philosophia* 35 (2007): 95-110; Rachel Cooper, "Disease," *Studies in History and Philosophy of Biological and Biomedical Sciences* 33 (2002): 263-282.

estimation, an eliminativist approach to the concept of health is the most promising, I argue that a naturalistic approach contains several advantages over the other alternatives, and Hegel's theory of health can be defended on these terms.

Boorse's theory contains four essential premises for a concept of health and disease:

1. The *reference class* is a natural class of organisms of uniform functional design; specifically an age group of a sex of a species.

2. A *normal function* of a part or process within members of the reference class is a statistically typical contribution by it to their individual survival and reproduction.¹⁵

3. A *disease* is a type of internal state which is either an impairment of normal functional ability, i.e., a reduction of one or more functional abilities below typical efficiency, or a limitation on functional ability caused by environmental agents.

4. *Health* is the absence of disease.¹⁶

The primary contribution of this theory is in its definition of health and disease through a non-

normative account of "normal function."¹⁷ First, drawing from theories of function in biological

theory, Boorse defines function as "a contribution to a goal," and organisms are goal-directed in

the sense that "they are disposed to adjust their behavior to environmental change in ways

appropriate to a constant result, the goal."¹⁸ While the goals of an organism and its parts can vary

¹⁵ Boorse, "Health as a Theoretical Concept," *Philosophy of Science* 44, no. 4 (Dec., 1977): 562.

¹⁶ Ibid., 567.

¹⁷ Boorse has suggested that while the use of the terms normal and pathological imply a form of normativity, the norms of health are "non-normative norms," as opposed to "normative norms." See Boorse, "On the Distinction between Disease and Illness," *Philosophy & Public Affairs* 5, no. 1 (Autumn, 1975): 54.

¹⁸ Boorse, "Health as a Theoretical Concept," 555-556. See also Boorse, "Wright on Functions," *The Philosophical Review* 85, no. 1 (Jan., 1976): 70-86. In this article, Boorse challenges the etiological account of function developed by Larry Wright, according to which, "to attribute a function to a trait is to say something about its etiology, or causal history.... Respiration is the function of the gills because it is that effect of their presence by which their presence may be causally explained" (70). Wright's account of function is meant to capture both artificial and biological functions. In the case of the latter, a functional account is meant to be compatible with evolutionary history, in the sense that the function of some organ is that activity performed by the organ, which explains why the organ exists (i.e. was selected and continues to exist in members of a species). Specifically, organs can develop contingently or accidentally through mutation. These organs can then function in various ways. *The* function of an organ will be that activity, which explains why the organ (or the organism(s)) with that unique organ) continued to exist. Boorse's account of function differs from Wright's by abandoning the etiological element, and instead allowing for different functions to be a function of a thing, each of which will be relative to some "goal-directed system" (82). For example, on Wright's account the appendix has a function since the appendix performed some

according to the scope of the system, in which the organism is said to belong (e.g. "individual survival, individual reproductive competence, survival of the species, survival of the genes, ecological equilibrium"), for the concept of the health, the goals of functions are defined by the discipline of physiology as survival of the individual and its reproduction.¹⁹ For example, the function of a heart when considering its health or sickness is to pump blood, rather than making a noise, even though the sound of a heartbeat can be useful as a diagnostic device. Choosing reproduction as a biological goal towards which organisms are oriented presents certain controversies which are addressed below. However, the basis for selecting reproduction as an aim is to identify the function of reproductive organs, which from an evolutionary biological standpoint exist for the sake of reproduction of the species, and not the survival of the individual. In other words, it is not the case that the function of every organ must contribute to the goal of the reproduction of the species, but rather that the function of some organs, systems, or parts of an organism do so. Thus, it might be better to say either the survival of the organism or reproduction of the species (or possibly, but not necessarily both) are the goals, to which functions of specific organs contribute.²⁰

The second part of this premise is defining a certain functional capacity as "normal." This characterization requires two components. First, what is measured in a function is its efficiency. Too much or too little activity of an organ may interfere equally with contributing to the goal of the organism (e.g. the thyroid gland causes health problems when producing too much or too little thyroid hormones), since what is necessary is the right amount of activity. However, organs

action which explains why we have appendices; on Boorse's account, the appendix has no function, since it no longer contributes to any goal.

¹⁹ Boorse, "Health as a Theoretical Concept," 556.

²⁰ Selecting the biological criterion for the health-related function of organs remains one of the most controversial aspects of the naturalistic theory, specifically when assessing the health and disease states of humans, which are primarily socio-cultural beings. These challenges are addressed after the theory has been presented in full.

can perform their activity with greater efficiency without any interference to the activity of the organism, whereas performing below a certain degree of efficiency may become a problem. Second, the criteria for evaluating efficiency as normal or pathological is based on an ideal model, or what Boorse calls a "species design."²¹ This ideal model is not established by any value such as a good, happy, or beautiful human being, but is rather determined empirically in terms of the statistical range and distribution of functional efficiency. Thus, rather than use an established value to determine an ideal specimen of a species, and rather than compare individuals with respect to some essential form of the species, the ideal of health is determined by examining the concentration and distribution of functional capacity with respect to all members of the species. This biostatistical approach to normality and to health and disease enables Boorse to define his theory as both non-normative and consistent with evolutionary biology, i.e., non-essentialist. As a result, disease or pathological state is the malfunctioning of an organ or system, where the specific function that we are examining contributes to the goal of individual survival, and where dysfunctionality or abnormality takes for its standard the typical efficiency for a member of that species.

The last qualifications of the Boorse's concept of health are the notion of "reference class" and the problem of common or universal diseases. In describing the concept normal functioning, we referred to the notion of species design as the statistical distribution of functional capacity for a member of a species. In this sense, the species is the reference class, in order that normality is defined within the parameters that are suited for determinations of health (e.g. a healthy heart makes sense only when compared to members of the same species, and not different species). However, members of species and their functional capacities contain further

²¹ Ibid., 557.

divisions such as age and sex, that make more sense as reference classes for judgments about health (e.g. the health of the testicles should not include female members as part of the reference class). Thus, the ideal of health is based on the statistical ideal of an age group of a sex of a species.²² Finally, because disease is regarded as an atypical functional state of an organ, but some diseases (e.g. tooth decay) are universal in the sense of statistically common, Boorse adds a clause to the definition of disease to include impairments to functional capacities caused by environmental agents.

Before introducing the alternative theories of health and disease, I shall draw attention to the significance of Boorse's theory for accounts of *mental* health and disease. Boorse takes it to be a strength of his account of health and disease that it can be applied univocally to mental and physical functions. Specifically, Boorse argues that mental health is a consistent concept as long as there are mental functions, and this holds if two conditions are satisfied: "First, some mental processes must play a causal role in action. [...] The second condition required for mental health is that mental processes contribute to action in a sufficiently species-uniform way to have natural functions."²³ While Boorse grants that discovering such natural functions of the mind requires further empirical study, he suggests that psychoanalytic theory provides a model for an account of the normal functions of mental processes and of the diseases that emerge when one process (e.g. ego, superego or id) is not functioning normally. Unlike making an error in a judgment,

²² This aspect of Boorse's theory has been criticized for selecting characteristics of the reference class that presuppose an understanding of health and sickness. In other words, one must presuppose what health and disease are in order to select the correct or adequate reference class criteria for judging health, among several possible criteria. For example, Anne Fausto-Sterling's arguments regarding the morphological diversity of humans as exhibited five sexes rather than two would support Butler's critique, mentioned below, that the "natural" division of reference classes for health judgments by sex already presupposes normative assumptions. See Elselijn Kingma, "What Is It to Be Healthy?" *Analysis* 67, no. 2 (Apr., 2007): 128-133; Anne Fausto-Sterling, "The Five Sexes," *The Sciences* 33, no. 2 (March/April 1993): 20-24; Anne-Fausto-Sterling, "The Five Sexes, Revisited," *The Sciences* 4, no. 4 (July/August 2000): 18-23.

²³ Boorse, "What a Theory of Mental Health Should Be," *Journal for the Theory of Social Behavior* 6, no. 1 (April 1976): 63-64.

mental diseases reflect a more consistent disruption of cognitive activity attributable to a dysfunctional process.²⁴

Boorse's naturalistic approach therefore rejects the anti-psychiatric position of Thomas Szasz, who argues that mental diseases per se do not exist, because the norms by which mental behavior is evaluated are psychosocial or ethical, and not physiological or medical.²⁵ Szasz's own theory of health can ultimately be characterized as a naturalistic approach, much like Boorse's. However, unlike Boorse, Szasz does not think that the actions or behavior performed by the mind can be evaluated on a naturalistic basis. For this reason, Szasz is critical of the fields of psychiatry for treating abnormal or deviant behaviors as pathologies or diseases, when in fact the judgment of abnormality and deviancy derives from ethical, social, or normative assumptions. As is discussed next, what Szasz takes to be the mistake of psychopathological diagnoses in contrast to genuine physical diseases, namely that such diseases presuppose some value claim based in social norms, the normativist theory ultimately takes to be true for all diseases. By contrast, when Boorse claims that there are certain functions of the mind that have a natural basis, he is thereby establishing a basis for a naturalistic theory of mental health that is univocal with physical health. As a result, Boorse contends that only certain diagnostic categories (e.g. psychosis and possibly neurosis) are cases of disease, according to his model, whereas others (e.g. drapetomania, masturbation, homosexuality, and gender identity disorder) have no biological basis and are therefore not diseases; rather, he agrees with Szasz that these latter diagnostic categories reflect only unscientific and socially mediated value judgments.

²⁴ See Ibid., 77. "If my cognitive functions are disrupted to a highly unusual degree by my wishes, it seems safe to call my condition an unnatural dysfunction, i.e. disease."

²⁵ Szasz, "The Myth of Mental Illness," *The American Psychologist* 15, no. 2 (1960) 114.

Next, I introduce the main alternative theory to the naturalistic account of health: the normativist theory. While most authors agree that health and disease are assessments of an individual with respect to some norm or standard, the question is whether or not this standard is determined by some value judgment or not. In contrast to Boorse's naturalistic or descriptivist approach, the normativitist approach identifies disease as deviation from some norm which is not proper to nature, but which instead reflects the values of the society at the time. This approach typically starts from a definition of harm, suffering, or some undesireable state, and traces it back to some natural etiology.²⁶ By starting from concepts, which are rooted in the perspective of the experience of an individual, such as harm or suffering, the concepts of health and disease are imbued with value judgments based on the circumstances and social milieu of that individual. For example, H. Tristram Engelhardt, Jr., who adopts this approach, claims that

Disease does not reflect a natural standard or norm, because nature does nothing – nature does not care for excellence, nor is it concerned for the fate of individuals qua individuals. Health, insofar as it is to indicate anything more than the usual functions or abilities of the members of the species, must involve judgments as to what members of that species should be able to do – that is, must involve our esteeming a particular function.²⁷

Because the values that form the basis for judgments of the correspondence of an individual to the ideal norm can change, so also do the kinds of diagnostic categories called diseases. For example, through an examination of the eighteenth and nineteenth-century "disease" of masturbation, Engelhardt concludes that "medicine turns to what has been judged to be naturally ugly or deviant, and then develops etiological accounts in order to explain and treat in a coherent fashion a manifold of displeasing signs and symptoms."²⁸ The normativist account of disease

²⁶ See also Nordenfelt, On the Nature of Health: An Action-Theoretic Approach.

²⁷ Engelhardt, "Ideology and Aetiology," 266.

²⁸ Engelhardt, "The Disease of Masturbation: Values and the Concept of Disease," *Bulletin of the History of Medicine* 48, no. 2 (Summer 1974): 248.

thus aims to explain how such phenomena as masturbation, drapetomania (the "disorder" that afflicted slaves who ran away from their masters), and more recently homosexuality and gender identity disorder were at one point, but are no longer, regarded as disease, due to the change in values which eliminated their presumed undesirability. In other words, they claim that nothing natural, biological, or physiological changed, which can explain how these were once diseases, but are no longer. What *can* explain that latter shift is a change in the values, which no longer regard those states to be undesirable.

The normativist position is thus critical of Boorse's naturalistic theory of health insofar as the latter attributes certain idealized types to nature, rather than recognizing that all ideals are the result of evaluative judgments made by humans, which are subject to cultural and historical change. For example, in response to Boorse's claim that individual survival and reproduction are biological and physiological criteria for considering the function of an organ and its health or disease, we can question whether the functional capacity of organs suited to these goals in fact reflect the aims of the organism. Specifically, in the case of humans, whose physiology developed from natural selection, but who now live relatively free from that mechanism, infertility may no longer be regarded as a disease in every woman. Because some women desire neither to have children nor to endure the stress of pregnancy, infertility would not appear to be regarded as a dysfunction.²⁹ However, insofar as Boorse regards the normal function of an organ as its activity that contributes to the goal of reproduction and/or survival, infertility must be regarded as pathological.³⁰

²⁹ For example, Rachel Cooper argues that the same physiological state may or may not be a disease depending on the individual's goals and values. See Cooper, "Disease," 274.

³⁰ Boorse ultimately defends this position, insofar as it represents a dysfunction of some organ, the function of which is for reproduction, regardless of the desires of the individual. See Boorse, "On the Distinction between Disease and Illness," 53.

A similar challenge to naturalistic theories regarding homosexuality in particular has been made most prominently by Judith Butler.³¹ Her general argument in *Gender Trouble* and elsewhere has sought to undermine the notion of the naturalness or givenness of not only gender identities, but also sex identifications.³² In claiming that "gender is not to culture as sex is to nature; gender is also the discursive/cultural means by which 'sexed nature' or 'a natural sex' is produced and established as 'prediscursive,' prior to culture, a politically neutral surface on which culture acts," Butler is arguing that the sex/gender distinction, which establishes a distinction between natural and cultural conditions, is in its entirety already normatively determined.³³ The body on this account is no longer the natural dimension of human existence in contrast to the cultural presentation of gender. Instead, Butler proposes a "notion of matter, not as a site or surface, but as a process of materialization that stabilizes over time to produce the effect of boundary, fixity, and surface we call matter."³⁴ We might understand this to mean that whatever is conceptualized as natural is only the most congealed and rigid normative layer that functions only as if natural, but which is nevertheless *fundamentally* normative. Consequently, Butler's theory would appear to resemble the normativist approach to concepts of theory and health, insofar as for her even naturalistic claims are grounded in values and norms.³⁵ Regarding

³¹ For similar arguments regarding the cultural and normative foundation for sexuality and of heterosexuality in particular, see Adrienne Rich, "Compulsory Heterosexuality and Lesbian Existence," *Signs* 5, no. 4, Women: Sex and Sexuality (Summer, 1980): 631-660; Gayle Rubin, "The Traffic in Women: Notes on the 'Political Economy' of Sex," in *Toward an Anthropology of Women*, ed. Rayna R. Reiter (New York: Monthly Review Press, 1975), 157-210.

³² Later in "Undiagnosing Gender," *Undoing Gender* (London: Routledge, 2004), Butler takes up the question of the diagnosis of "gender identity disorder" as a disease. However, her argumentative approach there is more politically oriented to the question of the advantages and disadvantages to members of the GLBQTI community, than ontologically oriented to the question of the adequacy of the diagnostic category. This is however perfectly consistent with her normativist theory.

³³ Butler, Gender Trouble: Feminism and the Subversion of Identity (London: Routledge, 1999), 10.

³⁴ Butler, *Bodies that Matter* (London: Routledge, 2001), xviii.

³⁵ There is nevertheless a tension in Butler's account regarding the question, was homosexuality (gender identity disorder, drapetomania, etc.) a disease? As a Foucaultian she might be inclined to answer yes, insofar as it coherently belonged to the episteme, shaped by the explanatory assumptions and cultural norms, etc. As a Derridean, on the other hand, she would be inclined to answer no, insofar as disease (both the defunct examples

homosexuality in particular, then, Butler argues that it is not an "unnatural" sexual desire as opposed to natural or normal desires, because the naturalness of heterosexuality is actually the result of culturally regulated gender norms, which aim to enforce the categories of masculinity and femininity as desiring the other.

A third approach to define health and disease, which attempts to mediate between the normative and naturalistic theories, has been appropriately called a "hybrid" approach. Jerome Wakefield has developed such a hybrid approach by arguing that abnormal function is not a sufficient criterion for disorder, and must be supplemented by the value concept of harmfulness or deprivation of benefit.³⁶ He argues that to have a dysfunction of one kidney does not necessarily make a person diseased, since the second kidney can supply the necessary function for an organism. In order to say that an organism is diseased, the assumption must be that the dysfunction causes the organism harm in some way. However, the degree to which a functional impairment causes harm depends on the social environment in which one lives and acts. Due to the social circumstances of human beings, then, disease or disorders would appear to presuppose both some sort of organic dysfunction, and some sort of socially or culturally mediated (and thus normatively defined) suffering caused by the dysfunction. Thus, Wakefield wishes to avoid the extreme relativism of the normativist approach by having some naturalistic foundation, but at the same time wants to retain some evaluative component to reflect the specific circumstances, in which humans actually live and act.

Before introducing the eliminativist theory as the fourth approach to theorizing health, it is useful to mention here the naturalistic theory's response to these criticisms. Specifically, both

previously mentioned, and the currently accepted diagnostic categories) involves some naturalistic assumptions which are shown to be illegitimate to the extent that they are ultimately normatively generated. Butler would presumably adopt the latter approach, as stated above.

³⁶ Wakefield, "The Concept of Mental Disorders," 373.

the hybrid and the normativist theory claim that health and disease judgments presuppose some sort of value judgment, which demonstrates that a particular state is not simply dysfunctional, but is ultimately also undesireable. Boorse's response to this challenge is to acknowledge the role that values play in medicine, but to distinguish the value-laden concept of health used in medical practice from the naturalistic concept of health used in pathology. Specifically, rather than including the normative or value claim within the concept of health and disease, Boorse instead introduces "grades of health," including further distinctions such as diagnostic abnormality (i.e. a clinically apparent pathological state) and therapeutic abnormality (i.e. a diagnostic abnormality meriting treatment).³⁷ These new categories contain the values that he had omitted in his account of disease and health, but do not eliminate the initial concepts. It follows then that a person can be diseased without being diagnostically abnormal, and can be diagnostically abnormal without requiring treatment. An example of this is precisely the example used by Wakefield: a single damaged kidney. While a person can function normally without the use of one kidney, and so does not necessarily need treatment for this condition, it is nevertheless the case that a damaged kidney is not healthy. As a result, the value-based normative claims affect medical practice but are distinct from the naturalistic descriptions of health and disease, normal and pathological.

In addition, Boorse acknowledges that medicine does not always involve treatment for pathological states, as in the cases of abortion, euthanasia, contraception, and cosmetic surgery.³⁸ Boorse therefore distinguishes the judgments regarding treatment, which do presuppose values based in cultural and historical circumstances, from judgments of pathology, which are independent from cultural norms and involve only the observation and description of individuals

³⁷ Boorse, "A Rebuttal on Health," in *What is Disease*, ed. James M. Humber & Robert F. Almeder (Totowa: Humana Press, 1997), 12.

³⁸ Ibid., 13.

with respect to their reference class. In other words, describing something as a disease or as pathological does not entail that treatment is obligatory or desirable. Finally, in contrast to the normativist approach, which maintains that masturbation, homosexuality, etc., *were* diseases, when they reflected natural teleological explanations for undesirable states, but are now no longer considered as such, Boorse claims that these defunct diagnostic categories were never diseases because they never exhibited a dysfunctional state of an organ.

The last approach to theorizing health and disease is the eliminativist approach. Marc Ereshefsky argues that because neither the naturalistic, normativist, nor hybrid definitions of health succeed in providing us with a concept of health that is adequate for all our uses, we ought instead to eliminate the concept altogether, and replace it with the concepts of "*state descriptions* (descriptions of physiological or physiological states) and *normative claims* (claims about what states we value or disvalue)."³⁹ Ultimately, the argument is that the concept of health is already compromised from within, which explains why there are disagreements in the interpretations and accounts of its meaning. Rather than debate over this issue, then, Ereshefsky proposes to abandon the concept in favor of others that are better equipped for our purposes.

The problem with a naturalistic theory is that, while it can attempt to develop a concept of health and disease which is independent from its use in medical practice, and thus can strive for a concept free of values, such a concept, Ereshefsky argues, has no basis in any natural science such as biology. Ereshefsky challenges, first, the idea of normality in the context of biology. Because species are evolving, historical units, there are no traits which are common to a species. While Boorse concedes this point, and adopts a framework that considers a species within certain temporal parameters, in which traits *are* distributed throughout a species

³⁹ Ereshefsky, "Defining 'health' and 'disease'," 221.

population to greater or lesser degrees, a stronger challenge to Boorse's theory addresses the assumption that this distribution is thereby natural. This is because the development of a phenotypical trait in an organism is now understood to be the result of a developmental interaction between a particular genotype and a particular environment. Thus, in order to claim that certain phenotypical traits are natural, one must argue that certain environments are natural, but this latter assumption does not seem to be true.⁴⁰ More importantly, what biology tells us is "normal" is neither the traits, the environment, nor even the genes, but only that there be an interaction between them.

The concept of normality encounters problems not only in the context of biological traits, but also in the context of functions and aims. Boorse argued that health and disease apply to those functions of a system, organ, or component of an organism, which contributes to the goal of the survival and reproduction. While these goals do have a basis in biological explanation, Ereshefsky observes that there are also other goals that are equally naturalistic and biological: "There is eating for eating's sake. There is non-reproductive sex. There is the release of endorphins."⁴¹ Thus, while claiming that survival and reproduction are goals of an organism is biologically grounded, claiming that these are the *only* biologically relevant goals of an organism is not. Such a claim, Ereshefsky argues, is not naturalistic.

The normativist approach does not fare much better in Ereshefsky's because of its inability to capture the ways in which there is disagreement about whether a certain condition is a disease or not. Ereshefsky acknowledges that unlike naturalistic theories, which aim at providing an idealized and scientific concept of health by purifying it of its usage in medical

⁴⁰ See also Ronald Amundson, "Against Normal Function," *Studies in the History and Philosophy of Biological & Biomedical Sciences* 31, no. 1 (2000): 33-53.

⁴¹ Ereshefsky, "Defining 'health' and 'disease'," 223.

practice, normativist theories attempt to characterize how health and disease are in fact used. It is for this reason that normativist theories include nineteenth century diagnoses of masturbation and drapetomania as instances of disease in the same sense as cancer and diabetes in modern contexts: both are/were disvalued states which are/were given physiological or psychological etiologies. However, even this latter component is subject to ideological conditions, as we explained above. That the medical explanations of drapetomania and masturbation were false (according to our current standards of scientific explanation) does not prevent the normativist from identifying these as diseases during that period, precisely because the standards for explanation are just as relative to a given historical and cultural situation. By contrast, Ereshefsky contends that our use of the concepts "health" and "disease" typically *do* involve more than defining a particular physiological or psychological state as undesirable. We *do* think that drapetomania and masturbation are not and were never diseases, and a normativist theory does not reflect this understanding.

Moreover, for similar reasons, the normativist theory has no way capturing the debates regarding whether a specific undesirable state is a disease or not. For example, normativism would struggle to explain why it is that there are recent debates regarding the disease status of addiction or alcoholism, insofar as both are generally regarded as undesirable states with a physiological or psychological basis. Thus, just as naturalism fails on its own terms at being naturalistic, normativism fails in *its* own terms at capturing the normative usage of the concepts of health and disease.

Finally, the hybrid theories fail for many of the same reasons as its "pure" counterparts fail. In attempting to bolster the normativist position of disease as an undesirable state with the naturalistic explanation of biological and organic function, hybrid theories struggle to be

genuinely naturalistic and consistent with biology in all of the same ways as naturalistic theories do. At the same time, by *adding* the criterion of undesirability or suffering to the naturalistic theory, the hybrid approach also regards too many conditions or states as healthy to the extent that only those states which are both undesirable and exhibit a natural dysfunction are considered diseased. Such specification, however, seems to be too restrictive for capturing the usage of the concepts of health and disease.

Ereshefsky's conclusion is ultimately to "eliminate" the concepts of health and disease and to replace them with the concepts of "state descriptions" and "normative claims." "*State descriptions* are descriptions of physiological or psychological states.... *Normative claims* are explicit value judgments concerning whether we value or disvalue a physiological or psychological state."⁴² The purpose of this substitution is similar to Boorse's distinguishing between disease, clinical abnormality, and therapeutic abnormality, namely that we should more clearly delineate between a value-free concept regarding the state of an organism, and valueladen concept regarding the desirability of that state and whether intervention is called for. However, unlike Boorse's disease concept, Ereshefsky's "state description" concept strives to remove all references to normality. This is because, as he had argued, such a concept is external to biology and is normatively loaded. Rather than invoke normality in a naturalistic concept of health and disease, Ereshefsky shifts all evaluative content into a separate concept of "normative claims." Here, we are concerned with whether a particular physiological or psychological state is desirable or not, which can determine what sort of practical approach is warranted.

It is beneficial now to assess the advantages and disadvantages of the various concepts. Such an assessment may be strange, insofar as we shall consider not necessarily what the

⁴² Ibid., 225.

concepts of health in fact are or are not, but rather what we want these concepts to be. In other words, which approach to the concepts of health and disease are adequate to all of the criteria we think are appropriate to the concept? First, in my estimation, the normativist approach is the least adequate because of its indifference to having a well-founded naturalistic basis. While it may be true that historically our concepts of health are totally specific to the historical and cultural situation, both with respect to its values and with respect to its scientific justification, I agree with Ereshefsky that such an account is not strong enough to explain why certain diagnostic categories may be incorrect or even contested.

A second problem that applies both to the hybrid and to the normative approach is that it does not seem necessary for a particular state to be undesirable in order for it to be a disease. Boorse's examples of a single failing kidney or a single dead neuron are persuasive in demonstrating cases that are unequivocally pathological, even if and when they cause no suffering. For this reason, the naturalistic concepts of health and disease seem promising, precisely because they can show that a person can have a disease and still live a happy, desirable life. By contrast, the hybrid and normativist approaches claim that all disease diagnoses already assume that that state is undesirable. The consequence of this distinction is that all diseases for normativism and hybrid approaches would, whenever possible, call for treatment, to the extent that we would desire not to be in an undesirable state. The naturalistic approach, on the other hand, recognizes that the decision for medical intervention has different assumptions than whether a person has a disease. This was exemplified by those cases where a person has no disease and desires intervention (e.g. contraception), or where a person has a disease and desires no intervention (e.g. single failing kidney).

However, Ereshefsky's argument that there are implicit normative assumptions of any concept of health and disease does present a problem for a naturalistic approach. This is for two reasons. First, as we observed, according to our current knowledge of genetics and evolutionary biology, applying any concept of normality to an organism lacks biological justification. While Boorse's concept of health can find corresponding conceptual content in evolutionary biology, and so is not wholly inconsistent, his selection of certain features of biological explanation at the expense of others, and identifying these as the criteria for normal, is what is at issue. To the extent, however, that health and disease are fundamentally normative concepts, and the point of contention is whether the criterion or standard is value-laden or not, it seems that no health concept can ever be exclusively natural.

Second, to the extent that Boorse desires a naturalistic concept of health as a scientifically justified check on the practice of medicine, it is clear that even a naturalistic concept of health and disease must be examined for their practical effects. Specifically, while Boorse aims to develop a concept of health that is independent of value or desirability, he nevertheless thinks that such a naturalistic concept should play an important role in challenging the misplaced value judgments of medical practice. For example, in response to the Engelhardt's normativist assessment of the "disease" of masturbation, Boorse writes that

If the masturbation example shows anything, it shows the BST's [Biostatistical Theory's] value as a bulwark against just such eruptions of malignant moralistic claptrap of medicine. At least, if disease language had been unavailable against masturbators, doctors might have had to ask themselves what right they had to mutilate helpless people to stamp out sexual sin.⁴³

⁴³ Boorse, "A Rebuttal on Health," 78.

Thus, Boorse is clear that our claims about what is a disease *does* and even *ought to* have an effect in the therapeutic setting, even when such a concept is supposed to be independent of evaluative content.

While I agree with the sentiment that the values of medical practice should have some sort of check, the fact that the concepts of health and disease do carry normative content presents a serious challenge to their appropriate and ethical use in a therapeutic setting. One example of this is the role that the concept of health and disease play in the context of establishing a right to health care. Norman Daniels, for example, argues that to the extent that there is a moral right to health care, there would not necessarily be an obligation to provide services for conditions that are not diseases (e.g. abortion, contraception, etc.).⁴⁴ Such an approach is grounded on a therapyenhancement distinction, which has its own ethical implications in the context of genetic treatment.⁴⁵ In other words, certain issues in bioethics rely on the concepts of health and disease, however it may be constructed, such that it is not so easy to dissociate the evaluative component of a concept of health from the scientific. Moreover, because health and disease are fundamentally normative concepts, and the question is only what kind of norm is the criterion of health, these norms have immediate consequences in these bioethical issues. Thus, if the purpose of having a naturalistic concept of health is for ethical reasons, and if a naturalistic concept fails at achieving those purposes, then we ought to reject such a concept. Finally, because no concept of normality is fully natural in the ways that seem to be required for a concept of health, there are ethical reasons to avoid using the concepts of normality, health, and disease altogether in the context of medical decision-making.

⁴⁴ Daniels, "Is There a Right to Health Care and, If So, What Does It Encompass?" in *A Companion to Bioethics, Second Edition*, ed. Helga Kuhse and Peter Singer (Chichester: Wiley-Blackwell, 2009), 368.

⁴⁵ David B. Resnik, "The Moral Significance of the Therapy-Enhancement Distinction in Human Genetics," *Cambridge Quarterly of Health Care Ethics* 9, no. 3 (Summer 2000): 365-377.

To summarize this section, and to anticipate the discussion of Hegel's concept of health, I argue that a naturalistic concept of health has certain theoretical and ethical advantages to the normativistic and hybrid concepts of health. By developing a theory of normality independent of the values of medical practice, the functional state of the systems and organs of an organism can be ascertained through a comparison to the statistical distribution of members of that organism's reference class. Such an account is more inclusive in its determination of conditions as being pathological, while at the same time distinguishing this determination from the normative evaluation as to whether that condition is desirable or not. Moreover, by separating such a concept of health from the values and desires regarding the state of an organism, it becomes possible to criticize the medicalization and pathologization of various undesirable conditions on the grounds that they are not actual diseases. Because the hybrid and the normativist approaches to the concepts of health and disease presuppose a criterion of harm, suffering, or undesirability, it not only follows that certain conditions would be considered healthy, which we would otherwise expect to be pathological. It also follows that because all diseases are regarded as undesirable, that medical interventions are, whenever possible, warranted.⁴⁶ However, the naturalistic concept of health and disease contains its own conceptual problems, namely that it relies on a concept of normality that is absent from biological theory. We also showed that even a naturalistic concept will have direct and undesirable ethical implications. Thus, while a naturalistic concept of health is more advantageous than the alternative approaches, it may be even more advantageous to go without a concept of health altogether.

⁴⁶ Of course, if a medical intervention for a disease would cause more harm than good, then it would not be desirable. But in general, there are no diseases, which a person can prefer, or to which a person can be indifferent.

5.4. Evaluating Hegel's Health Concept

We are now able to return to Hegel's concept of health and disease to assess some of its claims. We shall argue that Hegel invokes a naturalistic approach to theorizing health. As a result, we aim to show that Hegel's theory of health is defensible in at least the ways in which naturalistic theories offered advantages for conceptualizing health. At the same time, we acknowledge the various limitations of any concept of health, including and in particular the naturalistic theory. Such limitations are shown to be based in the inadequacies of Hegel's biology, and more fundamentally his account of the relation of the universal and the particular as articulated in biology.

Like the theories of health above, Hegel understands health and disease as being a comparison of the organic state of an individual with respect to some idealized standard: for Hegel, this is articulated as a comparison of the individual to the universal or genus. We saw that for Hegel, disease occurs when a system or organ of an organism functions independently from the rest of the organism. It is now possible to represent this as that organ deviating from the normal range of functional capacity as determined by the typical organic functioning. In other words, for Hegel health as the harmony or proportion of all organic activity, or its "fluidity in the universal," can be understood as the normal functioning as determined by the genus.

However, the important characteristic in need of assessment is Hegel's notion of the universal, or the genus, and its relation to the normative criterion for health. The question is, is Hegel's genus concept a value-based standard as suggested by the normativist approach, or is it a value-free, and natural as suggested by the naturalistic approach? It would appear that Hegel's concept of the universal genus of an organism is not value-laden, as the normativist theories of health would have it. As we discussed earlier in Chapter 4, the subjective structure of life is

primarily an activity of self-preservation, in that the organism constitutes itself through negating its intrinsic inorganicity (i.e. the independence of its bodily organs as merely inorganic parts). This activity also extends to include sexual-reproduction, where the individual organism can only preserve itself beyond its limited lifespan through the reproduction of itself as another member of its species. Moreover, this activity was described as being non-intentional, in that we claimed that the self-directed structure of organic processes is an external determination of the individual organism. As a result, Hegel's concept of the universal as operative in the concepts of health and disease in the *Philosophy of Nature* are theoretical concepts of biology that precede any value assumptions and are therefore applicable to all organisms. Even the concept of healing [*Heilung*] only involves a description of the reintegration of the dysfunctional organism into the structure of the whole, exemplified by the immunological response of a fever. It does not invoke any assumption that health is *per se* desirable. This basic agreement between Boorse and Hegel is unsurprising in that Boorse finds precedent for his naturalistic theory in the tradition of Aristotle and Galen.⁴⁷

Here we can already respond to the normativist criticisms, including Butler's. The normativist criticism of naturalism is to claim that all norms and standards used in evaluating health must presuppose values belonging to society and culture, because nature is completely devoid of such value. Butler's position is even stronger, insofar as she argues that the body itself is the result of constructivist activities which are subject to modifications. In opposition to these claims, Hegel's account of nature provided throughout this dissertation has conceded that nature must be conceptualized, but that the structure of Hegel's concept and his idealism in general necessarily entails nature as being structured by laws in contrast to spirit which is structured

⁴⁷ Boorse, "Health as a Theoretical Concept," 554.

normatively. In other words, Hegel argues that the freedom and autonomy that ground the normative structures of spirit in fact presuppose the necessity and contingency of the laws of nature. Moreover, because Hegel takes nature to involve both ideality in the concept and reality, disease can function as an entirely natural concept of the concrete inadequacy between the concept (universal) and the reality (particular) within an organism. This naturalistic concept of health can therefore function as a criterion to evaluate which diagnostic categories used in medicine have natural foundations and are therefore genuinely diseases, and, more importantly, which are not.

Second, however, Hegel's notion of the universal genus as the standard for judgments of health and sickness must be assessed with respect to its relation to essentialism. Hegel's account bears no reference to the biostatistical methodology for establishing an empirically defined species-design. To add to the complication, there are various options within Hegel's philosophy of nature as to what the genus could be when considering a concrete instance of a disease. For example, Hegel considers the universal type of animal as a genus with respect to the particularization of the genus into species of animals. Our argument in Chapter 4 also suggests that we could even regard species as sub-genera, to the extent that they are units which are produced by the genus-process, and which exclude those organisms that are not part of the organs with respect to the whole suggests that the universal could even extend no further than the individual organism itself, and all instances of disease only reflect the conflict between the individual as individual and itself as actualized universal.⁴⁸

⁴⁸ We discussed the way in which the organism is an individual as an actualized universal in Chapter 4.

I argue that in concrete situations, the species is the best candidate for Hegel's the universal ideal operative in the health and disease concepts. When articulating the concept of disease, Hegel juxtaposes it as the failure to correspond to the genus with the organism's capacity to "maintain itself by returning into its genus" (§371; GW 20: 371/EN III: 193). The way in which the organism returns into its genus and in fact constitutes the genus is through the sex-relationship. The continual reproduction of organisms through their relating to themselves in others generates an enduring universal. However, as we argued in Chapter 4, the externality of organic subjectivity in the context of the genus process also entails that organisms can also fail to reproduce with one another. This difference figured in the differentiation of animal being into species, where a species is a particular genus constituted by organisms that reproduce with one another. This distinct from other organisms that do not.

The next step is to show that the genus which is engendered through the sex-relationship is also operative within an individual organism itself. Hegel says as much in the *Zusatz*: "In the sex-relationship the individual has externally surrendered its essential determinateness, insofar as the determinateness is in the relation; now the individual has the same relation within itself, copulating with itself as it were [*mit sich selbst begattend*]" (§371Z; GW 24: 1597/EN III: 195). In other words, the genus is not only that which is generated by a population of organisms and encompasses them all, but it is also that which is internal to an individual organism. In so doing, Hegel seems to bring together the account of shape and assimilation as the internal organization and externally oriented activity of an organism, respectively, and the genus as the actualized universal of the reproduction of organisms. As a result, Hegel suggests that there is a relation between the species, or the specific genus which an organism belongs to by virtue of its

reproductive lineage, and the specific morphology and functional capacities it performs.⁴⁹ Such an account is precisely what we saw above as the species-design concept as the reference class operative in the naturalistic concept of health.⁵⁰ Moreover, to the extent that both our account of Hegel's species-concept in Chapter 4, and our account of Boorse's species-design concept above, avoid a straightforward essentialist position, so also does Hegel's health concept avoid such a formulation.⁵¹ Thus, the ideal with respect to which health and disease are determined is not a moral or aesthetical ideal, but simply the concept of the genus or species of the organism as such. Consequently, the account Hegel gives of health as grounded in his organicist model of life resembles a naturalist, non-normative conception of health.

With the species concept in hand as the operative universal in a concept of health, we can now return to the initial question about relating Hegel's concept of the universal with the naturalistic concept of the idealized type representing the statistical distribution of functional capacity for a specific reference class. We can observe that the universal for Hegel is not a quantitative measurement of all of the individuals in a reference class, but a rather as an ideality that both is active in the determination and formation of an individual, and is simultaneously

⁴⁹ In saying this, we need to be clear about avoiding what may have initially appeared to be a claim that an organism is healthy only to the extent that it reproduces. By showing that the adequation of the individual to the genus as specifically internal to an individual, Hegel reintroduces the role of the genus as determining the shape and function of an individual organism. The genus-process and sex-relationship concepts only contribute to explaining the determination of the actual genus which the organism comes to constitute. Thus, we are able to see how, for Hegel, the species as a reproductive lineage also plays a role in the formation and determination of an individual morphology and functional capacities.

⁵⁰ Hegel's account noticeably does not include the age and sex distinctions which Boorse notes. We shall address this issue below.

⁵¹ Of course, as we shall see, to the extent that Hegel still assumes that the species provides some sort of normative role in the formation of the function and morphology of an individual, which we pointed out are not actually parts of our current understanding of biology, Hegel's theory here reveals itself as empirically unjustified. At the same time, the interpretation of biological development as limited to an individual could offer resources to the role of the species not as providing an idealized morphology and functional range, but rather as providing an idealized developmental pattern that in responding to the various external stimuli generates the actual morphology and functional range of the individual. Such an account, while promising, seems to be ignored in Hegel's actual discussion of health and disease.

constituted by the reproductive activities of individuals. Hegel's concept of a universal is that which remains identical to itself even through its particularization in the singulars. Thus, the universal contains within itself the differences of its particularization but is at the same time the self-identical structure that envelops those differences (GW 12: 36/SL 533). This has interesting consequences for discussing Hegel's concept of health with respect to Boorse's. On the one hand, that Hegel understands the ideality of the species in this ontological way means that its employment in the concepts of health and disease is not arbitrary or external to his own biological account as the reference class concept has been challenged in Boorse's theory of health. However, since we saw that the discoveries in evolutionary theory and genetics have actually challenged such criteria of normality, that Hegel includes this feature not only at the epistemological level, but even at the ontological level reveals a weakness in his philosophy of nature and philosophy of biology.⁵²

On the other hand, while Boorse's concepts were criticized for being normatively loaded, dividing the species by age and sex into more specific classes was meant to capture actual differences within species which is significant for a concept of health. While Hegel's concept of species includes an account of sexual differentiation, the genus concept itself is not itself differentiated by sex or any other characteristic. Thus, it is a bit paradoxical to say that there can be any adequation to a genus of an individual, given the fact that the genus has no existence outside the reproduction of its members, which are necessarily sexually differentiated (in the case of animals). Moreover, except for sex, the differences of individual members of a genus or species is generally depicted as the result of the deficiency of the universal in nature, and thus of the determination by external factors of individuals, rather than the actual genetic potential of the

⁵² See note 51 for an alternative interpretative approach.

species. Consequently, Hegel's concept of health is not relative to specific age groups or sexes, as was Boorse's.⁵³

The peculiarity of Hegel's concept of health is how it dialectically situates the universal with respect to the individual, such that it is both that which shapes the individual, and that which is generated by the individual.⁵⁴ Unlike the species-design concept in Boorse's naturalistic concept of health, Hegel's species concept is not simply an abstraction derived from the statistical analysis of the members of the reference class. Rather, Hegel's species and genus concept plays a role in the formation of an individual organism. As a result, it is difficult to allocate priority to either the universal as species and the universal as formation of the individual. This is what caused the issue of deciding whether the health concept is relative to the universal in the individual or the universal as exhibited by the species itself. However, to the extent that health and disease appear in the genus-process section of Hegel's biology, we should assume that when considering the health or disease of an individual, we compare its functional state to that of its species, which we have argued is the most developed and thus the most operative concept of the genus in Hegel's biology.

Finally, one other area of possible disagreement between Hegel's and Boorse's concepts of health is the degree to which a pathological state must affect the activity of the organism as a whole. Because of Hegel's strong organicist model for life, the dysfunction of a single organ, regardless of how insignificant, would seem to entail a corresponding dysfunction of the organism as a whole. Boorse, on the other hand, sees no problem in identifying a single dead

 ⁵³ Hegel does say that "the cause of disease lies partly in the organism itself, such as age, mortality, and congenital factors, and partly in the susceptibility of the existing organism to external influences" (§371Z; GW 24: 1596/EN III: 194). Thus, there is not a specific kind of health in aging, but rather age is a specific cause of disease.
 ⁵⁴ It is precisely this reciprocal relation which becomes explicit in the freedom and self-actualization of spirit, which we sought to characterize in Chapter 4.

neuron as pathological and therefore unhealthy, even when such a "disease" has no impact on the organism as a whole.⁵⁵ He justifies this by distinguishing pathological state from clinical significance, as was indicated above. A similar position can be drawn from Hegel's account. Insofar as Hegel's account of disease is that of a system or organ that sets itself apart from the integrated functioning of the whole, it follows that any part that both belongs to the organism and is not performing the function adequate to the subsistence of the organic whole can be regarded as diseased. However, it may be the case that while a specific organ is diseased to the extent that it dis-integrates itself from the whole, the actual contribution of that organ to the functioning of the whole is not performing kidney, when it is typical of the species to have two, the organism as whole is not completely compromised as may be the case in other more severe diseases. Thus, while in some trivial way, even a disease at the microscopic level of a single cell would have an effect on the functional capacity at the macroscopic level of the organic whole, such an effect need not register as clinically or therapeutically significant.

It also follows that for both Boorse and Hegel, "it is certain in any case that to the pathologist no one is normal."⁵⁶ By this is meant that at some level of analysis, a physiological state is present which is dysfunctional with respect to the norm. To the extent that for Hegel, disease is the presentation of the discrepancy of the individual with the universal, pathological states are in essence unavoidable. As Hegel goes on to say, the gap between the individual and the universal in nature is the mark of an organism's mortality, wherein mortality is the "original disease of the animal" (§375; GW 20: 375/EN III: 209). However, we can still establish certain conceptual distinctions in order to preserve a defensible and practical account of disease.

⁵⁵ Boorse, "A Rebuttal on Health," 51.

⁵⁶ Ibid., 50.

Primarily, this constitutive "disease" of mortality can be distinguished from the localized diseases, which are at least theoretically curable. While mortality cannot be cured, and it is precisely insofar as organisms are mortal that they can suffer from diseases, disease is nevertheless a kind of death that is experienced by the organism while living. More importantly, disease presupposes the integration and maintenance of the organism as a whole, against which a single organ sets itself. Consequently, health remains a consistent concept as the organism's relative adequation to the universal, even as this adequation is understood to be limited by the mortality of individuals. We saw such adequation exhibited first in the sex-relationship, and second in the genus's role in the formation of the individual. Unlike an ideal constructed using a statistical representation of a typical member of the species, Hegel's genus concept is operative in the integration of an individual. This has the consequence that a complete pathologization of an individual is possible only if such an individual undergoes a complete dis-integration, namely in death. On the other hand, it may be the case that if no individual can be perfectly adequate to the universal, then no individual is perfectly healthy. Rather, Hegel's ontology of life and organisms entails that the health of an individual organism is always somewhere between perfect (i.e. being immune from all disease, including death) and completely absent (i.e. death).

5.5. Is mental disease a disease?

Having now presented a model for a unified naturalistic theory of physical and mental disease, and how Hegel's concept of physical disease is sufficiently consistent with this model, we now return to Hegel's examination of mental disease. We show that while Hegel's account of disease is consistent across mental and physical registers, the function and aims of mental activity present a problem when evaluating mental health using Boorse's theory.

Based on the theories of health and disease offered by Hegel and Boorse, there must be two characteristics of Hegel's concept of the soul and mind, which make the concept of mental disease possible. Specifically, we must identify, first, the individual psychical processes and their normal, essential functions, and second, we must identify the "organic" whole, with respect to which the individual processes form a part. This is because, according to our examination of Hegel's account of disease, mental disease must be some deviation of the function of a part with respect to its normal function as determined by the whole. Hegel claims that

just as bodily disease consists in the fixation of an organ or system against the universal harmony of the individual life, and such obstruction and separation advances so far, that the particular activity of a system makes itself into a rampant growth or a center, which concentrates into itself the remaining activity of the organism; so also does disease take place in the life of the soul, when the mere psyche [*Seelenhafte*]⁵⁷ of the organism, becoming independent from the power of the mental consciousness, usurps the function of the latter, and in losing command over the psyche belonging to it, the mind [*Geist*] does not remain control over itself, but rather descends into the form of the psyche and thereby surrenders the relationship to the actual world, which is essential to the healthy mind and is objective by being mediated through the sublation of what is externally posited. (§406Z; GW 25: 1015-6/ES 98)

In this passage, Hegel identifies both the whole and the part, the disharmony of which constitutes disease.⁵⁸ The part that becomes detached in mental disease is the soulful part of the mind, and the whole from which it is detached is consciousness. Hegel describes mental disease as the state in which consciousness loses control over the life of feeling or of self-feeling, and these activities exhibit themselves concretely in place of the activity of consciousness. It is important to notice that disease in this case requires not only the capacity for consciousness, but even the very

⁵⁷ In the Wallace & Miller translation, revised by Inwood, *Seelenhafte* is translated as "the soulful side" or simply as "the soulful." Petry translates the same word as "what is soul-like." For reasons of readability, I have decided to translate this as the "psyche," while noting that *Seelenhafte* is the "soul-part" of spirit, or the mind in general, rather than either an animal soul, or the mind as a whole. "Psyche" therefore seems like a favorable option to convey the reference to both soul and mind. The only caveat would be to distinguish this usage of "psyche," from the determinations of the "Psychology" [*Psychologie*] (§440-482), which is an examination of the forms of the mind, [*Geist*] as opposed to those of the soul or consciousness.

⁵⁸ See Daniel Berthold-Bond, *Hegel's Theory of Madness* (Albany: SUNY Press, 1995), 30.

presence of its activity, albeit such that it has descended into mere sensation in the diseased state. In other words, disease occurs when consciousness functions only as the soul, and thereby does not distinguish itself fully from the external world.

One challenge of reconciling Hegel's theory with a naturalistic proposal for mental disease is that, for Hegel, consciousness is both the whole but is also functionally responsible for controlling the soul's activity. This aspect of Hegel's theory reflects his rejection of the "fragmentation of the mind into different faculties, forces, or, what comes to the same thing, activities, represented as independent of each other" (§379; GW 20: 380/ES 6). Rather, Hegel construes all aspects of mental activity as a living unity, where the "determinations and stages of spirit are essentially only as moments, states, determinations in the higher stages of development" (§380; GW 20: 381/ES 8).

Given this complicated relation between the stages of spirit, it is important to clarify some of the terms being used. We have already introduced the four significant terms in our analysis thus far: psyche [*Seelenhafte*], consciousness [*Bewusstsein*], mind [*Geist*], and spirit [*Geist*]. The first distinction that must be made is between mind and spirit, given that they refer to the same term. Specifically, by mind I refer in general to spirit as instantiated in a single individual, and broadly equivalent to what is covered in the "Subjective Spirit" section of the *Encyclopedia*. Spirit, by contrast, is used as the overarching term alongside nature and logic, which subsumes subjective, objective, and absolute spirit. The inclusion of intersubjective determinations when speaking about spirit is an advance beyond what is included in the concept of mind. While this division may appear a bit arbitrary in the context of Hegel's philosophy, that there *is* a distinction between subjective, objective, and absolute spirit should provide enough justification for using an alternative translation of *Geist* as mind insofar as mental disease

appears before any account of the intersubjective nature of spirit. Next, consciousness is a subordinate stage of the mind, which Hegel claims "constitutes the stage of the mind's reflection or relationship to itself as mind" (§413; GW 20: 331/ES 144). Finally, the psyche is another stage of mind, subordinate to not only it but also to consciousness, and represents that activity of the soul from the point of view of the mind as a whole. By subordinate, we mean that such a stage is sublated in that, to which it is subordinate (e.g. the soul is sublated in consciousness, consciousness in the mind). However, our argument will show that these sublated aspects of the mind must continue to function in order for the more developed stages to be active in their own capacities.

We can now return to the comparison of mental and physical disease. In the case of mental disease, then, Hegel explains that "the possibility of the psyche becoming self-sufficient against the mind and even seizes its function lies in the fact that the psyche is as much different from the mind as it is implicitly identical with it" (§406Z; GW 25: 1016/ES 98-9). This presents us with a difference between mental and physical disease even while both are consistently identified as disease. In the case of physical disease, the particular organic system presented itself as inadequate to the universal, or the organism as the normal unified whole, but where that universal does not have an explicit presence, but is only an implicit standard that operates in the individual organism. In mental disease, however, the universal is said to exist, namely as spirit, which is both identical to and different from all of its particular functions (e.g. feeling, self-feeling, consciousness). Therefore, the structure of the mind which Hegel presents offers a somewhat different presentation of disease from that of the body due to the relationship between the particular functions and activities with respect to the whole. At the same time, his definition of disease holds for both mental and physical structures.

A further difference between mental and physical disease involves their distinct functional aims. While Boorse argues that the concept of health and disease take for their objects those functions that aim at the individual's survival asnd reproduction, and we suggested that these were consistent with Hegel's understanding of life, the same cannot be said for the mind. For Boorse, it is important to presuppose these goals because every physical part or mental process can be said to have multiple functions, some more essential than others, and it is only when those functions necessary for survival are not capable of normal efficiency that we consider them pathological. This avoids claiming that, for example, the nose is dysfunctional because it does not support glasses as well as it should.⁵⁹ The physiological function of the nose is not to support glasses, and so its pathology should not be an assessment of this function. However, when assessing the functions of other aspects of a human being, the direct relation to survival and reproduction becomes less obvious. Specifically, Boorse's theory appears to argue that for the mind to function normally, its processes must contribute to the goal of either survival or reproduction. Boorse ultimately suggests that the tripartite division of the mind in psychoanalytic theory (or other equally basic psychological theories) offers the kind of functional claims regarding mental processes, though such an endorsement was tentative and open to revision.⁶⁰ As a result only the most serious psychiatric diagnoses (e.g. psychosis or neurosis) emerge as pathological, whereas other kinds of behavior (e.g. homosexual desire) are not.

⁵⁹ Boorse, "Health as a Theoretical Concept," 554. Wakefield uses this specific example in "The Concept of Mental Disorder," 381.

⁶⁰ "On this view the id might emerge as a reservoir of motivation, the ego as an instrument of rational integration and cognitive competence, and the superego as a device for socialization." Boorse, "What a Theory of Mental Health Should Be," 78.

For Hegel, on the other hand, while the concepts of life and organism are defined by their self-preserving activity, to the extent that the mind's or spirit's activity has a goal, it might be described as self-actualization. By self-actualization, we have in mind the account provided in Chapter 4, where spirit is always already free, and thus its existence is always the result of its own determination. However, spirit is not always conscious of its freedom, and so its selfdetermined forms also dialectically subject spirit to limitations of its freedom. Spirit's ultimate historical aim is therefore fully realizing its freedom, or actually becoming what it implicitly already is. This initially appears as a departure from Boorse's account, which ascertains the natural mental processes and functions on the basis of the goal of survival and reproduction. In other words, Boorse's assumption is that by "normal" or "natural" function of the mind or mental process, we must examine it "biologically." For this reason, he maintains some distance from a psychoanalytic theoretical approach, in which "the function of a mental process is the gratification of the id. From the biological standpoint, the function of a mental process is its contribution, not to our pleasure, but to our behavior."61 Such a position might be critical of a Hegelian understanding of the mind as aiming at self-actualization for similar reasons. At the same time, Boorse offers a slightly different account in saying that,

there is such a thing as mental health if there are mental functions. For this, two conditions must be satisfied. First, some mental processes must play a causal role in action.... The second condition required for mental health is that mental processes contribute to action in a sufficiently species-uniform way to have natural functions⁶²

Thus, the ultimate question is how to discover the normal or natural functions of the mind. Whereas Boorse's approach takes survival as both the relevant aim in questions of health, and therefore as a starting point for discovering the normal processes of the mind, Hegel's dialectical

⁶¹ Ibid., 78.

⁶² Ibid., 63-64.

method provides us with an *a priori* account of the essential functions of mental processes. So on the one hand, while Hegel does not provide a complete catalog of every organic function of a human being, his claim that the general biological goal is self-preservation solves the problem of identifying the unique biological functions of organs. His theory of mind, on the other hand, does provide us with the fundamental, and therefore normal functions belonging to the mind, even though those functions do not aim at self-preservation, but rather self-actualization.

Pointing out the difference between mental and physical disease, has now brought us to a problem that threatens the initial commonality between them. Specifically, we must now deal with the question, which abnormalities of spirit are diseases and which are social deviances? If spirit aims at self-actualization, and moreover this is because spirit is implicitly already free, then is there a difference between the spiritual contradiction of madness, and the contradictions and conflicts in the *Phenomenology of Spirit* such as that between the master and slave, Antigone and Creon, or Enlightenment and superstition. This question is at the heart of Szasz's criticism of the mental disease concept, insofar as he argues that the medical evaluation of mental activity seems to presuppose social and ethical norms and values, which leads to the pathologizing of freely chosen, "abnormal" behavior.⁶³ For Hegel's theory, the question must be framed as the question regarding the possibility of distinguishing between two kinds of mental or spiritual activities that deviate from some normal state: disease and error. Insofar as we have posited that the implicit

⁶³ Writing in 1976, Boorse claims that "when judgments of deviance are made, the usual reference class is society at large. By this standard homosexuals, drug addicts, women's liberationists, Vietnam protesters, and fornicators are among the paradigm American deviants. But it is notorious that these and other non-conformists can flourish within non-conforming subcultures. As long as a person's behavior is consistent with adjustment to *some* social group, one cannot call it unhealthy on the grounds that man is a social animal. As ordinarily understood, then, behavioural deviance seems too wide to be a sufficient condition for mental disorder [...] Deviance from every conceivable standard is not a necessary condition for mental disorder [...] There is in the end so little evidence for any general connection between social deviance and biological dysfunction that one is tempted to class the 'behavioural disorder' view as one more affirmation of values on the part of some conservative clinicians." Boorse, "What a Theory of Mental Health Should Be," 73-74.

goal of mental functions is self-actualization, we have already eliminated one possible explanation for this distinction, namely to evaluate the mind "biologically." Ultimately, we are forced to ask once again, is mental disease truly a disease?

5.6. The Nature of Spirit

The solution to this problem is understanding in what way spirit involves a natural dimension. We have already introduced Hegel's basic understanding of the soul as the natural stage of spirit, where the soul is only implicitly, but not explicitly, spirit. The soul is not yet present itself as it is to itself, and in fact the self-feeling provided us with the closest instance of the soul's self-relating, albeit skewed by the particularity of its objective presentation. As we discussed in Chapter 4, self-consciousness presents the truth of spirit wherein spirit presents itself to itself as what it is in itself, namely as universal, but this exhibits a development beyond the stage of the soul. Consequently, the soul does not yet exhibit the intentional structures belonging to spirit proper, and instead exhibits only the natural functions of feeling and sensation.

This naturalness of spirit is captured by the starting point of the anthropology as the opposition of soul and the body.⁶⁴ Spirit must appear as this oppositional state because the immediate determination of spirit as emerging from nature is simply that it is the "truth of nature" (§388; GW 20: 387/ES 29). This starting point of spirit appears as the soul, which is the "universal immateriality of nature, its simple ideal life," but such that the soul opposes itself to the materiality of nature (§389; GW 20: 388/ES 29). Because the soul is "no longer the universal that exists outside itself in bodily [*leiblicher*] singularity, but is rather the simple universal in its

⁶⁴ For an argument that the shape of this stage follows necessarily from its being the systematic beginning of the *Philosophy of Spirit*, see Nuzzo, "Anthropology, *Geist*, and the Soul-Body Relation."

concretion and totality," the nature which the soul opposes is not simply external to it, but is the body of the soul (§388; GW 20: 387/ES 29). As a result, the soul is not opposed yet to itself but still to the body, even as the body sublates itself and yields the soul as its truth. In other words, the soul is only spirit as the result of nature, and not yet as resulting from its own determination, through its own differentiation. While all determinations of the anthropology are determinations of the spirit as soul, insofar as the soul is this sublation of the self-externality of nature, it is nevertheless only the immediate stage of spirit, and so has not developed its determinations for itself. In other words, the determinations of the body have shown themselves to exhibit a conceptual inadequacy, and have been sublated into determinations of the soul. So while the body is now dialectically identical with the soul, this identity is only an immediate identity, and not one that the soul has posited for itself. The sublation of the opposition between the soul and the body is the theoretical task of the "Anthropology," wherein the spirit relates only to itself as its own negation, or rather is precisely what it is through relating to itself as its own negation.

Hegel's account of the relationship between the soul and the body leads him to claim that "madness is a psychical [*Psychischen*] disease, inseparably mental and bodily" (§408A; GW 20: 413/ES 115). He goes on to claim that

The diseases of the soul, which emerge through this separation [of the psyche from the mind], is however not merely to be compared with bodily [*leiblicher*] disease, but instead is more or less connected with it, because when the psyche tears itself away from the mind, the bodiliness [*Leiblichkeit*] necessary for the existence of the psyche and the mind divides itself into these two separate sides, and consequently becomes diseased as something divided in itself. (§406Z; GW 25: 1016/ES 99)

While we have been comparing mental and physical diseases as contrasting concepts, the difference between them does not reflect a substance dualism of mind and body. Such a dualism, especially given Hegel's differentiation between the lawfulness of nature and the freedom of spirit would then be susceptible to Szasz's critique that only the body can be sick, whereas the

mind is subject only to ethical norms. Rather, Hegel is clear that mental diseases are just as bodily as physical diseases, insofar as both the soul is what it is through being identical with its body, and consciousness is the result of the resolution of opposition of mind and body through the stage of habit. While Freud's notion of the conversion process in hysteria may offer an example of a bodily symptom of a mental disease, Hegel's point seems more simply to be that the determinations of the soul is the truth of the body, and so the disease of the mind simultaneously and necessarily affects the activity of the body.⁶⁵ By this is meant that soul is identical with the body, as its truth and its sublation, while simultaneously being differentiated from it, as the dialectical *result* of the body's determination. It therefore follows that while the determinations of the soul will be exhibited in a reflected form in the determinations of the body, the undeveloped nature of this relation bears the possibility of a conflict between the soul and its corporeality. This conflict is exhibited in disease.

Finally, drawing from the initial insight that the mental disease is possible due to the simultaneous identity and difference of the mind and the soul, we can now add that what makes the abnormal activity of the mind disease as opposed to error or deviance is the fact that the soul is the natural stage of spirit. In other words, while the soul is on the one hand identical with the mind and spirit, it is, on the other hand, different precisely because the soul does not yet exhibit the intentional, normative structures of consciousness and later stages of spirit. The soul functions simultaneously in its natural capacity as a self-preserving capacity (i.e. the sensible, integrative organizing of the self in opposition to the external world), but also in its spiritual capacity as being the a monadic substance of feelings that becomes that, on which consciousness operates (§405; GW 20: 403/ES 89). The function of the soul is therefore necessary for the free,

⁶⁵ Sigmund Freud, "The Neuro-Psychoses of Defense," in *The Standard Edition of the Complete Psychological Works of Sigmund Freud, Volume III*, trans. James Strachey (London: Vintage, 2001), 49.

self-determining, normatively structured activity of spirit, but is not yet such an activity. The soul's activity is therefore a natural function, which is not to be evaluated according to social norms, insofar as those are appropriate only for activities based in freedom. Moreover, because the stage of the soul is both a necessary stage of spirit's development and exhibits a natural determinacy that sets it apart from all other stages of spirit, the soul functions with respect to the mind similar to the way in which organs function for the body. Namely, just as the organism has to negate the independence of its inorganic body in order that the result is a unified, organized body, each part of which functions for the sake of the whole, so also must consciousness negate the independence of the activity of the soul, in order that the soul's function is subordinate to, and results in a unified mind. In both of these relations, however, the distinction between the component function and the whole constitutes the possibility for that component function to acquire independence from the regulation of the whole. The resultant phenomenon in both cases is disease. In the case of mental disease, now, this means that when the soul "usurps" the function of consciousness, and does not properly establish a distinction between internal world of thoughts and external world, the mind loses its ability to act freely. The natural functions of the soul overrun the autonomous dimensions of spirit, and thus revert spirit back to a natural state.

It has now been made clear that the contradictions or abnormal states in which spirit gets entangled are to be differentiated into two categories: diseases and errors. The majority of these contradictions should be understood as errors, by which we mean contradictions which result from spirit's free self-determination (e.g. the conflict between master and slave, Antigone and Creon, Enlightenment and superstition, etc.). This is not to diminish the significance of these instances, or the difficulty in resolving them, but rather only to show a fundamental difference between an abnormal condition that results from spirit's freedom, and one that results from

spirit's nature. Only those cases where the human mind is dissociated from itself and is prevented from entering into normative relations, such as in the cases of madness and hypnotic states, would we describe as mental diseases. In contrast to readings that interpret the stages of the *Phenomenology of Spirit* as diseases or pathological, my approach has been to limit the concept of disease to those conditions which yields a real dissociation within spirit, causing it to revert back to its natural state.⁶⁶ While this natural precarity of spirit to be subject to disease may also contribute to the explanation of the kinds of conflict it finds itself in its free, self-determining activity, those conflicts presuppose spirit as functioning normally in its natural capacity and so are categorically different from what we are calling mental diseases.

At the same time, however, it is important to note the distinction between the naturalness of spirit, in the form of the soul, and the naturalness of life, organisms, and nature as a whole. Up until this point, all of the claims regarding the soul, the mind, and mental disease are consistent with naturalistic interpretations of Hegel's anthropology, which emphasize the bodiliness and naturalness that form the basis for conscious and social activities. In other words, we agree with the assessment that there is a natural dimension of spirit, that reflects its relation to the body, and have argued that it is this that constitutes its susceptibility to disease. However, we have also observed that whereas the soul of animals develops no further than the stage of self-feeling, the human soul is only the foundation and the potential for spirit's actuality as self-consciousness. Thus, the stage of the human soul in itself cannot merely be identified with animal activity, and

⁶⁶ See note 8. The Frankfurt School has also introduced the tradition of reading Hegel through Marxist social theory and Freudian psychoanalysis in order to interpret Hegel's analysis of social formations and relations in pathological terms. Contemporary inheritors of the tradition include Slavoj Žižek and Axel Honneth. E.g. Slavoj Žižek, *The Sublime Object of Ideology* (London: Verso, 1989); Axel Honneth, *Pathologies of Individual Freedom: Hegel's Social Theory*, trans. Ladislaus Löb (Princeton: Princeton University Press, 2010).

the naturalness of spirit is not the same as the nature of animals, to the extent that the human soul presupposes its further development as consciousness.

Perhaps the most obvious instance of this fact is that the activity of self-feeling without the regulatory function of consciousness is pathological for humans but normal for organisms that lack consciousness. At the same time, we are not arguing that the actual function of sensibility and feeling are somehow organically different between conscious and non-conscious organisms. Rather, we are claiming that there is an essential conceptual difference between the activity and functional role of feeling and self-feeling (i.e. the natural functions of the soul) for organisms that are conscious and those that are not. This conceptual difference is ultimately based in the fact that the human soul is different from the animal soul, insofar as the human soul is only a moment of the mind. For this reason, the concepts of Hegel's "Anthropology" do not and cannot directly apply to non-conscious organisms, but rather already anticipates the more developed structures of consciousness and spiritual freedom.⁶⁷

5.7. Conclusion & Consequences

Let us now summarize the results of our analysis of Hegel's account of physical and mental disease. First, both involve the same definition of disease as inadequacy or disharmony of a part with respect to the whole. For physical diseases, this was an organ or system which develops an independence from the organic whole, and for mental disease it was the natural functions of the soul that separate themselves from the mind. Second, both accounts of disease are naturalistic and non-normative. Whereas physical disease was conceptualized as an inadequacy to the universal, which we claimed was the genus and not some value-based norm,

⁶⁷ See note 1 for the range of interpretations on this point.

we encountered a difficulty in applying this straightforwardly to the mind. This is because the activities of organs and organism as biological objects are essentially self-preserving, whereas mental functions seem to be fundamentally self-actualizing. However, we resolved this difficulty by showing how the functions of the soul are not yet the self-actualizing functions of the mind and are in fact the natural basis for those higher-order mental functions. This resolution thus lent further evidence for claiming that mental diseases are diseases, insofar as they are based in the non-intentional mental functions.

However, mental disease is *different* from physical disease for Hegel insofar as only beings with the capacity for consciousness can be mentally diseased.⁶⁸ This however is not because the mind is a separate substance from the body. The premise requiring a natural dimension for disease entailed that even though mental disease requires the capacity for consciousness, its presentation is both mental and corporeal. However, it is the additional mental capacities and functions of consciousness that ultimately require a new account of the normal and pathological functions of feeling, which is otherwise an activity shared by conscious and non-conscious animals.

Additionally, it seems fair to say that whereas mental disease presents itself both corporeally and mentally, physical diseases do not necessarily affect the functions of the mind. In some sense, this claim is justified simply by noting that physical disease is a biological concept pertaining to the organic functions aimed at self-preservation, whereas mental disease is an anthropological concept pertaining to the psychical functions. However, we should be equally entitled to say that humans can break bones, catch a cold, or develop lung cancer, none of which

⁶⁸ One question that may be raised is whether emotional or affective health is to be characterized as a mental disease or a physical disease. For example, it is believed some animals may suffer from depression, which causes them to engage in suicidal behavior (e.g. the penguin observed in Werner Herzog's documentary film, *Encounters at the End of the World* (2007)).

directly entails mental disease. This claim must then be explained by examining the human being not in its intersubjective, social capacities, nor in its subjective, conscious capacities, nor even in its natural-psychological capacities, but simply in its biological capacities. While we have argued that the conceptual structures of the functions of the human soul must be distinguished from those of non-conscious organisms, the function of human hearts and other corporeal organs is the same as those of other organisms.

In assessing the differences between spirit and nature through the lens of physical and mental disease, we can conclude that while Hegel rejects a substance dualism of mind and body, or of spirit and nature, he does maintain conceptual differences between not only the mind and body, spirit and nature, but a third domain of the nature of the spirit. It is precisely because the differences belong to conceptuality that nature and spirit can be mediated in the nature of spirit. The nature of spirit, as exhibited by the soul in Hegel's "Anthropology," is neither fully belonging to nature, nor fully belonging to spirit, but is the natural basis of and for spirit. In other words, while the "Anthropology" addresses the natural stage of spirit, including its ability to suffer from disease, this stage already advanced beyond the domain of nature itself, to the extent that the natural state of spirit anticipates its later developments. We have argued that, on the one hand, because the soul was characterized as the truth of nature and the sublation of nature's selfexternality, its domain requires the presupposition of later stages of spirit and it therefore properly belongs to the spiritual domain. On the other hand, these normative subjective and intersubjective structures of spirit are possible only by means of a natural foundation. Finally, it is this foundation that makes possible, and exhibits itself in, the phenomenon of mental disease. In the presentation of disease, then, the freedom and rationality of spirit is compromised, not

through its own autonomous agency, but rather through the dysfunction and dis-integration of its natural psychical processes.

Conclusion: The Future of Hegelian Philosophy of Nature

With this reconstruction and representation of Hegel's philosophy of nature at hand, we are now in a position to assess whether Hegel's theory is still tenable. In this conclusion, I summarize the main points of Hegel's philosophy of nature which I have articulated, and indicate the strengths and weaknesses of its theoretical position. I show that the strength of the theory draws from the strength of Hegel's logic and idealistic philosophy, which advances an epistemology that examines the conceptual determinations of objects, while still maintaining a metaphysical realism about the objects of nature. This philosophy claims to articulate the structures and determinations of being through a rigorous, critical, and dialectical method by admitting of no unproven assumptions. That this method also extends to the determinations of natural being then means that we can have a rigorously developed account of nature. Such an account is then true by virtue of exhibiting only those structures which have been proven on the basis of a concept of nature in general, which Hegel defines as the idea in its externality or the idea in the form of otherness. The weakness of Hegel's philosophy of nature, however, is located in the adequacy of the specific concepts, which he claims to derive through this very method. That some of the concepts of nature, which Hegel claims to derive *a priori*, no longer correspond to our current scientific knowledge puts the philosophy of nature in a difficult position. I conclude, first, by offering two alternatives for understanding the significance of a Hegelian philosophy of nature for the present, and second, by highlighting aspects of Hegel's philosophy that should be examined and reconsidered for developing a stronger philosophical theory of nature.

I first examine the strength of Hegel's philosophy of nature as an epistemology and ontology grounded in his dialectical way of thinking. In my Chapter 1, I argued that Hegel's

approach to theorizing nature is a direct consequence of the concluding arguments of the Science of Logic. In those arguments, Hegel concludes that to give a true and adequate account of being, one must examine those determinations that belong to being by virtue of its concept. The absolute idea, with which the Science of Logic completes itself, is just this relationship of identity between the conceptual determinations of being and its objective content. Moreover, the absolute idea exhibits the method by which a conceptual grasp of the conceptual determination of being presents the true objective determinations of a thing. Finally, in this approach to expositing being, dialectical contradictions intrinsic to the content of each concept emerge, the resolution of which engenders a development of a new concept with new determinations. Such a method thereby comprehends not only a single object and concept in its truth, but rather the totality of all concepts which emerge in this dialectical unfolding. This method was then shown not only to apply to the determinations of being, essence, and the concept, as articulated in the Science of Logic; it also applies to the determinations of nature. As a result, the strength of Hegel's method extends to the philosophy of nature, which provides us with the conceptual determinations of all structures and objects of nature, as that which is external to thought and external to itself. In other words, Hegel's philosophy of nature presents a true and adequate account of the objects of nature, because it alone examines these objects through the way in which they are presented in thought.

One concern that might arise from applying this method to nature is that it claims that what nature is in itself is how it is determined for thought. This conclusion can then be construed as claiming that nature can only exist for thought, and not independently of thought. It would therefore follow that thinking must exist for nature to exist, a claim which would be challenged by scientific claims regarding the origin of organisms that can think, of life itself, and so on.

However, in Chapter 2 I presented an interpretation of Hegel's philosophy of nature that can avoid these consequences by examining what Hegel takes the idea of nature to be: that, the being of which is external to and other than thought. While I showed that this claim bears all sorts of consequences, for the current problem it meant that the being of nature stands apart from thought, and so can exist independently of the existence or non-existence of thought. All of this is possible, even when Hegel at the same time insists that to know what nature is, we must examine nature as an object for thought. Indeed, it is precisely the concept of nature that contains the very determination of the externality of its being from thought. Thus, it is possible to say that the philosophy of nature presents the truth about nature by examining how it is determined conceptually, and at the same time that nature is conceptually determined to be that which stands apart from its concept. It is in this way that Hegel's absolute idealism is at the same time a metaphysical realism about nature.

I argued that this externality which forms the basis for the metaphysical realism of nature also plays a role in the systematic particularity of nature as opposed to logic or spirit. By insisting that Hegel's understanding of nature is of that, which is opposed to and independent from spirit, the dialectical exposition of nature also demonstrates the way in which spirit emerges from nature as its truth. In Chapter 5, I showed how spirit's autonomy and self-determination requires the healthy functioning of natural, psychological processes, without which spirit is deprived of its freedom and collapses back into its natural state. That humans are susceptible not only to physical diseases but also mental diseases is a result of the dialectical relation between spirit and nature, such that the self-determining structures of spirit are only possible through a sublation that preserves as well as negates the naturalness of spirit. It could even be said that it is the dialectical relation of spirit and nature that predisposes spirit to be affected by disease,

whether the cause of the disease be physical (e.g. infection) or psychological (e.g. traumatic event). Hegel's rich speculative accounts of the sociality of spirit are therefore shown to be fully consistent with a commitment to the lawfulness of nature, where the validity of the latter is independent of the existence of spirit. Rather, Hegel's system as a whole situates the laws of nature and the norms of spirit as two opposing sides of the expression of the relation of universals to particulars. It is ultimately the dialectical tendency of Hegel's system to exhibit otherness and negativity, as well as its subsequent sublation, that engenders nature as the moment of the idea's otherness, prior to the sublation of this otherness in the shape of spirit.

A second concern that arises regarding the role of the dialectical method in the presentation of nature is the absolute necessity it ascribes to its determinations. This is of particular concern for Hegel's philosophy of nature, since it exhibited the necessity of determinations like Empedocles's four elements, a Goethean theory of color, and a concept of health fixed in a pre-Darwinian biological theory. I responded to this challenge in Chapters 2 and 3 by showing how the dialectical method only demonstrates the necessity of certain conceptual forms. The philosopher of nature must then take the extra step of showing which concepts drawn from the natural sciences correspond to these absolutely necessary conceptual forms. Such a distinction therefore enables Hegel's method to present a system of conceptual forms, which can be engendered with absolute necessity through the resolutions of the inherent contradictions in each concept. These conceptual forms were moreover identified as being the particular determinations of externality itself, beginning with the concepts of space and time, and developing into the concepts of matter, motion, and so on. At the same time, such a method does not provide us with the specific empirical content, which corresponds to these concepts, leaving open the possibility of a revised philosophy of nature that includes content and concepts drawn

from the contemporary sciences. In other words, while Hegel's philosophy of nature is committed to the absolute necessity of the concepts or laws of nature, insofar as they emerge *a priori* from the dialectical method that started without presuppositions in the logic, discovering what those laws actually are is an empirical procedure.

It is precisely this issue of deciding which laws of nature are absolutely necessary within a Hegelian framework that presents us with the problematic aspects of the philosophy of nature and exposes its weakness. While in Chapters 3, 4, and 5, I attempted to show ways in which the concepts of Hegel's philosophy of nature, and in particular of his mechanics, chemistry, biology, and pathology, can be interpreted charitably as approximating or resembling various concepts in contemporary science, I nevertheless encountered certain limitations in this approach. Specifically, in presenting Hegel's philosophy of biology and pathology, I attempted to show how Hegel's account of life was not as inconsistent with evolutionary biology as would be thought given Hegel's explicit rejection of the pre-Darwinian theories of evolution being advanced in Hegel's time. However, as I showed in Chapter 5, Hegel's concept of health attempted and failed to find justification from modern biological theory. Because Hegel takes the genus, or, as I specified, the species, as a norm by which the determination of an individual organism can be measured, and because we saw that contemporary biology does not support any concept of normality, this particular moment in Hegel's philosophy of nature could not be successfully reconciled with modern science. Moreover, this was even the case when we suspended the assumptions of what kinds of disease Hegel actually accepted, and instead examined only the form of the concept. In other words, while in some cases, we can more easily dismiss the empirical content while preserving the conceptual form, in the case of health and biology it seems that even the conceptual form is a problem.

Given the specific limitation we encountered in examining Hegel's philosophy of nature, I propose two alternatives for interpreting its significance for the present. One approach, which I shall call a conservationist approach, would preserve the general dialectical approach to nature, and posit that the specific conceptual forms presented by Hegel are invalidly demonstrated. Such an approach would ultimately be committed to generating its own set of natural concepts through dialectical reasoning, while admitting that Hegel's own attempt committed errors, perhaps by admitting presuppositions regarding natural objects that have since been disproven.¹ Conservationism could even go so far as to give empirical science a bigger role than Hegel suggests, to the extent that natural scientific methods can be effective at generating knowledge about nature, whereas deriving the same knowledge *a priori* is, while necessarily possible, in practice quite difficult.

The conservationist approach would still maintain Hegel's ontological commitments regarding nature, even if it does not maintain the specific claims about the stages in nature. For example, it would maintain that, whatever the laws of nature are determined to be, they must be absolutely necessary. This distinguishes Hegel's philosophy of nature from Schelling's, as well as various interpretations of Hegel's philosophy of nature, which maintain that the laws or concepts of nature are only contingently necessary. As a result, it is not the case that given a set of scientific concepts, Hegel's philosophy of nature would assemble them into a systematic arrangement, within which those concepts exhibit necessary dialectical relations to each other. Such an interpretation would have to admit that the laws of nature themselves change, every time further evidence would produce a new concept and thus a new systematically arranged totality.

¹ For example, Dieter Wandschneider considers his book, *Raum, Zeit, Bewegung,* to be an attempt at a reconstructed Hegelian philosophy of nature. See Wandschneider, "Nature and the Dialectic of Nature in Hegel's Objective Idealism," *Bulletin of the Hegel Society of Great Britain* 26 (Autumn/Winter 1992): 43.

While Hegel may have done this in practice (e.g. the reorganization of various concepts between editions of the *Encyclopedia* when presented new scientific evidence and theories), the theoretical assumptions of his philosophy of nature entail that the laws of nature do not change, insofar as they are necessary consequences of nature's ideal determination as external being.

In addition to the absolute necessity of its laws, conserving Hegelian philosophy of nature would also require the systematic and dialectical relationship between the concepts, where each stage (which we might understand as each specific science) exhibits only a specific set of determinations of nature, but which do not exhaustively explain nature. In other words, Hegel's philosophy of nature remains ontologically committed to a non-reductive theory of the laws of nature. Moreover, the dialectical ontology establishes a framework for understanding not only the relations between the stages within nature, but also the systematic relations between nature and spirit. This is unsurprising, since from the systematic point of view, Hegel's theory of nature is based in an understanding of the absolute idea, which exhibits itself not only as nature but also as spirit. While ultimately the absolute idea is exhibited in a real and adequate form of spirit philosophically comprehending its own activity, a comprehension of that form is possible only by first understanding what spirit in its relation to nature, as the truth of nature.

The other alternative, which I shall call an eliminativist approach, is to accept the commitments of a Hegelian philosophy of nature to specific structures of nature, which are inconsistent with contemporary science. In particular, Hegel's concepts of health and life are unlike other specific scientific concepts in his philosophy of nature, due to their fundamental role in Hegel's system and ontology in general. There is good reason to think that Hegel's idea of life in particular is a pivotal and fundamental concept for his system, as seen in its articulations in the *Phenomenology of Spirit*, the *Science of Logic*, and the *Philosophy of Nature*. The concepts of

health and disease also figure not only as consequences of Hegel's particular understanding of life, but more importantly as moments in systematically significant dialectical transitions. Specifically, in both the *Philosophy of Nature*, and the "Anthropology," the concept of disease is sublated in the concept of habit, which is the transitional point to spirit in general and consciousness, respectively. That Hegel's concepts of life, health, and disease are both fundamental to his dialectical ontology and *prima facie* inconsistent with evolutionary biology presents a significant obstacle for the project of revitalizing Hegel's philosophy of nature.²

While such an interpretation might lead us to want to dismiss not only Hegel's philosophy of nature as a whole, but possibly also more of his system, it is important to understand why Hegel's dialectical approach to nature encounters such challenges. In conclusion, then, I shall point to various aspects of Hegel's ontology and philosophy of nature, which should be examined and reconsidered when developing a philosophical approach to nature. The first is the status of contingency and necessity. I argued that while Hegel does not eliminate contingency in nature, he does subordinate it to a moment within absolute necessity's own unfolding. As a result, while the concepts of nature must be understood as reflecting themselves into and out from the contingent particulars, this account ultimately privileges the necessity of the conceptual universals to the contingent particulars. The determinations of the particulars are inscribed within the necessary conceptual structures of nature, even when the contingency of particulars entailed that no universal completely or adequately determines the particular. An alternative theory could give greater epistemic significance to the contingency of

² I say *prima facie* inconsistent, because it may still be possible to reinterpret Hegel's concept of health to no longer signify a normal-pathological relation, but rather simply just a relation of the genus to the individual. See Chapter 5, note 51.

the particulars in determining the content of the universals, and thus would ultimately alter the modality of the laws of nature from being absolutely necessary to being contingently necessary.

Directly related to this issue is the matter of induction and empiricism within Hegel's philosophy of nature. Because contingency was subordinated to the necessity of the concept, so also was empirical science subordinated to the *a priori* derivation of concepts through the dialectical method. I showed that Hegel's philosophy of nature ultimately relegated empirical science to the task of providing philosophy with empirical instances that would correspond to its *a priori* demonstrated system of concepts. Giving contingency and particulars a greater ontological status in determining the content of universals would also give induction a greater role within the epistemological component of a theory of nature. We had acknowledged that while Hegel's dialectical theory offers various advantages in approaching objects of thought, it ultimately committed itself to specific kinds of objects as consequences of its own dialectical method. Induction, by contrast, develops theoretical accounts of objects based only on what is contingently given to thought. While for Hegel, an empirical-inductive approach would not provide any universals that would not already be demonstrable *a priori*, an alternative approach would develop on ontological and epistemological framework, in which induction and empiricism plays a more significant role on account of its ability to provide new evidence and new material for scientific knowledge, rather than restricting that knowledge to what is considered always and necessarily to be the case.

Finally, each of these above issues could be linked to Hegel's particular way of thinking dialectically. By this I mean that Hegel's approach to dialectical thinking is simultaneously an approach to thinking systematically, where the connecting thread is a specific understanding of the role of negativity in thought and being. For example, the way in which contingency begins as

an external presupposition of real necessity, and then is sublated as a moment of absolute necessity's own unfolding, was shown to be the work of Hegel's dialectical method. Likewise, as I argued in Chapter 4, all of the self-related structures of subjectivity, including the concept, life, and spirit, acquire their significance through the negativity that folds back on itself, such that that which is determined is simultaneously that which determines. In remaining identical through its differentiation, the self-relatedness of subjectivity establishes a specific account of life, which we ultimately found inconsistent with evolutionary biology. As Christopher Boorse states, referencing Elliot Sober's account of evolutionary biology:

evolutionary biology ... reverses Aristotle by taking variation as a natural state disturbed by selection. What [Sober] believes contemporary biology has decisively rejected is essentialism, which he describes as a 'doctrine about causal mechanisms.' That is, 'essences are necessary properties that play a certain causal (and hence explanatory) role.³

In other words, the ontology appropriate to evolutionary biology assumes variation and difference to be natural or normal, which is then externally operated on by selection procedures. Identity is therefore only an effect, and not a cause in this model, whereas Hegel's account of subjectivity saw the concept to be what it is through its own differentiation, such that it is both effect and cause. A shift away from the self-relatedness that is a direct consequence of Hegel's commitment to negativity could also offer possible advantages for a philosophical theory of nature.

In highlighting these aspects of Hegel's theory and possible alternatives to it, I do not mean to suggest that Hegel's theory does not acknowledge these aspects or that he doesn't have arguments for the positions he adopts. The issues of contingency, givenness, induction,

³ Elliot Sober, *The Nature of Selection* (Cambridge: MIT Press, 1984), 164, 165, quoted in Christopher Boorse, "A Rebuttal on Health," in *What is Disease*? ed. James M. Humber & Robert F. Almeder (Totowa: Humana Press, 1997), 38.

empiricism, and negativity are all directly examined by Hegel. Indeed, these aspects, in one way or another, either by rejecting, modifying, or adopting some version of these concepts, form the foundation for Hegel's system. Specifically, I showed that these aspects, foundational as they are for Hegel's ontology and epistemology, are also adopted in a particular way within the dialectic of nature, due to the specificity of nature as self-external. Consequently, to formulate an alternative interpretation that modifies the significance and role of these aspects is not without its own theoretical obstacles.

In this dissertation, I showed that Hegel's philosophy of nature offered persuasive arguments for an epistemological and ontological position that comprehends how we think about nature. This argument maintained that if we understand nature to be that which does not think, which is other than thought, and thus exists in opposition to and external to thought, then we are also committed to a particular understanding regarding the lawfulness of nature, as well as what those laws are. Nature's externality established not only a reality to nature outside of thought, but also an understanding of the relationship of the singular things in nature to the multiplicity of laws that determine those things. It moreover established that the content of the laws, or concepts, of nature are themselves distinct from those of the logic or spirit, in that they begin with and continually presuppose the externality of its object. Thus, in thinking of nature as selfexternal, we at first only understand nature to be spatiotemporally extended. Yet, even this minimal assumption, Hegel argues, ultimately also commits us to a theory of matter, motion, and even takes us into electromagnetism, chemistry, and biology. In other words, I have argued that Hegel's philosophy of nature was shown to be a necessary consequence of his dialectical and systematic approach to thinking and an understanding of nature to be itself a direct consequence of his dialectic, such that nature is defined as self-external being. Consequently, to find that it

may in the end be inadequate should not imply that it should be simply dismissed. Rather, it remains necessary to thoroughly examine the theory in order to see the consequences that follow from assumptions and arguments that are initially plausible and convincing. In order to develop an alternative to Hegel's philosophy of nature, because it may not adequately comprehend the recently discovered objects in nature, and thus in order to go beyond Hegel's thought, we must first think through it.

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