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Three Attitudes Towards Nature

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Abstract

In his introductions to the encyclopaedic *Philosophy of Nature* and to the *Lectures on the Philosophy of Nature*, Hegel distinguishes between three ‘attitudes’ (*Verhaltensweisen, Einstellungen*) towards nature—the theoretical, the practical and the philosophical attitude. According to him there is a certain ‘contradiction’ or tension between our theoretical attitude towards nature, which makes it an object of scientific inquiry, and the practical attitude that we assume as living rational beings who intervene in nature and shape it according to our purposes. This article focuses on how exactly to pinpoint that tension and on how it is resolved in what Hegel calls the ‘philosophical’ or ‘comprehending’ attitude towards nature.

I. Hegel’s idea of a philosophy of nature and its historical background

Hegel’s philosophy of nature rests on the assumption that there is something to be known about nature that can only be known philosophically.¹ Notwithstanding the invaluable and indispensable contributions of science to a unified understanding of natural phenomena, ultimately, the *unity* of nature can only be brought into view by philosophy rather than science, on his account.² The concept of nature is accordingly a philosophical concept rather than a scientific one.³

In light of our well-established division of labour between science and philosophy of science, these assumptions of Hegel’s might seem highly dubious if not outrageous. From a contemporary vantage point it might seem that philosophy cannot reasonably purport to complement science by providing us with a kind of insight into nature that is inaccessible to it. When it comes to nature, philosophy must rather confine itself to logical clarification and epistemological reflection of natural science—or so it seems.

In any event, this worry in the face of Hegel’s idea of a distinctively philosophical approach to nature is not as new as it might appear. As a matter of fact, a worry of that sort was already prevalent in Hegel’s own day and it is one to which Hegel himself seeks to answer in devising his philosophy of nature:

The philosophy of nature finds itself in the disadvantageous situation that its actuality, its possibility are doubted. Other sciences are in a happier position. No one doubts the possibility of geometry, or jurisprudence. With regard to the philosophy of nature even the form of philosophical cognition is cast into doubt.⁴ (*GW* 24.1: 482)

The historical background of this doubt is of course the scientific revolution. In the early nineteenth century, when Hegel conceived his philosophy of nature, the emancipation of the natural sciences from philosophy that came with that revolution had to a large extent already been achieved.⁵

To be sure, Hegel was neither the first nor the only philosopher of his time who came up with the idea of a philosophical discipline that should provide us with a kind of insight into nature that would somehow complement natural science. But while Kant had paved the way with the attempt to provide critical metaphysical foundations for Newtonian science, the whole idea of a philosophy of nature had soon fallen into disrepute—partly due to the lofty speculations of Schelling and his followers. This was the context in which Hegel found himself when devising his own philosophy of nature.

His mature contribution to the field makes up the second part of the *Encyclopaedia of the Philosophical Sciences*. As an ‘outline for lectures’ the *Encyclopaedia* does not amount to a self-contained textbook. It was rather meant to be fleshed out in Hegel’s lecture courses that did not usually deal with the work as a whole but with a specific part of it—and thus with a particular branch of philosophy. Such courses were not exclusively addressed to an audience of philosophers, but designed to reach a wider public.⁶

Hegel thus found himself with two challenges when lecturing on the philosophy of nature. On the one hand he could not presuppose that all of his hearers possessed a thorough understanding of the *Science of Logic*, on which all other branches of philosophy were to be based.⁷ On the other hand, the fact that many amongst Hegel’s hearers were in fact scientists made it all the more pressing to address the worry that the attempt to complement natural science by a kind of *philosophical* investigation into nature was as such ill-founded.

Hegel found a way to tackle these two challenges in one go. He managed to introduce and motivate the idea of a philosophy of nature in a way that does not rely on previous knowledge of his logic.⁸ This ambition is explicit in his remark that directly beginning with the ‘idea of nature’ (*Idee der Natur*) (*GW* 24.1: 478), as resulting from the logic, might be ‘unclear’ (*undeutlich*) (*GW* 24.1: 478) to his audience. Instead he starts with our ‘ordinary stance’ (*gewöhnliche Verhalten*) (*V* 17: 5) towards nature that is ‘familiar’ (*bekannt*) (*GW* 24.1: 478; *GW* 24.2: 758) to us and with the ‘preliminary’ (*vorläufig*) (*V* 17: 4) knowledge of nature implicit in it. By proceeding

from our ordinary, non-philosophical ‘attitudes’ (*Verhaltensweisen*) towards nature—the ‘practical’ and the ‘theoretical attitude’ (of which the ‘scientific’ attitude is a refinement)⁹—and by ‘reflecting upon them’ (*Reflexionen anstellen*) (*GW* 24.2: 758) he seeks to show that these attitudes implicitly presuppose the possibility of a further attitude towards nature. Namely, a philosophical one to which he also refers as the ‘speculative’ or ‘comprehending’ (*begreifende*) (*EN*: §246; *V* 17: 16) attitude. To arrive at an understanding of this further, comprehending attitude and, hence, of the vantage point of the philosophy of nature, nothing further is required, on his account, than coming up with a unified account of what is already contained in our ordinary attitudes.¹⁰ In this vein, Hegel developed an argument for the conclusion that the philosophy of nature is indeed a viable discipline—an argument that deliberately abstains from appealing to his *Science of Logic*.¹¹

The passage at the beginning of Hegel’s encyclopaedic *Philosophy of Nature* in which that argument can be found appears to be somewhat neglected by Hegel scholars. It tends to be mentioned in passing, while rarely being investigated for its own sake.¹² Hegel’s systematic, albeit rather esoteric way of introducing the idea of a philosophy of nature by explicit recourse to his *Logic* seems to have received much more scholarly attention.¹³ However, as it seems to me, Hegel’s somewhat more exoteric claim that our usual, non-philosophical attitudes towards nature implicitly presuppose the possibility of a distinctively philosophical take on it, is based on a philosophical argument that is significant and revealing in its own right. Thanks to the recent publication of transcripts of *all* of Hegel’s lectures on the philosophy of nature we are now in a position to fully appreciate this argument and to assess its variants.¹⁴

The argument pertains to how science and philosophy might interact and complement each other. What seems particularly significant is that Hegel does not simply provide us with an argument for the conclusion that a further *theoretical* attitude towards nature beyond that of science must be possible. For the distinctively philosophical attitude towards nature that emerges in the course of his argument is not devised as a merely theoretical and contemplative one, but as one that might have a wider existential impact.¹⁵ It is supposed to address the pressing problem for us modern, self-conscious rational animals of how to integrate our various, apparently conflicting attitudes towards nature which might often seem to pull into different directions into a coherent and sustainable way of relating to nature.

In what follows I will seek to provide a clear-cut reconstruction of the argument used by Hegel to motivate his philosophy of nature—an argument that is supposed to lead from reflection on our ordinary, non-philosophical ‘attitudes’ (*Betrachtungsweisen*, *Verhalten*) towards nature to a distinctively philosophical take on it.

The structure of the article is as follows. In section two I will explain and discuss Hegel's characterization of the practical and the theoretical attitudes towards nature. In section three I will seek to motivate the need for a further attitude beyond these and distinguish between two modes of such an attitude—an inchoate aesthetic mode as well as an articulate philosophical mode. I will conclude, in section four, by pointing out how that philosophical attitude towards nature might indeed provide us with an insight into the unity of nature as such and by discussing its relation to the practical and the theoretical attitude.

II. Two ordinary attitudes towards nature on the part of us modern subjects: the practical and the theoretical attitude

Hegel's argument starts by reminding us of two divergent attitudes towards nature that we ordinarily take. These are, on the one hand, a practical attitude that intervenes in the realm of nature and seeks to manipulate it according to our own purposes, which are taken to be external to that realm¹⁶—for instance, the purpose to build a house which might require us to cut down trees. On the other hand, we find ourselves assuming a broadly theoretical attitude in which we set our own purposes aside and seek to address and meet nature on its own terms. That we ordinarily assume both of these attitudes is not something philosophically contentious, according to Hegel, that needs to be argued for, but something we would clearly admit upon reflection.¹⁷

Hegel conceives of both the theoretical and the practical relation to nature as *self-conscious, distinctively human* attitudes.¹⁸ Often he exhibits them as universal, non-historical stances, while in places ascribing to them a historical dimension and characterizing them in ways that seem distinctively modern, e.g., by referring to the theoretical attitude as a 'scientific' one.¹⁹ The solution to this apparent tension is that on his account the attitudes make up a *general* logical space of how self-conscious beings can relate to nature, while also involving an inherent historical dynamic that leads to *specific* modes of them. He stresses explicitly that both the theoretical and the practical attitude allow for *rudimentary* forms²⁰—pre-theoretical observation and desire-driven consumption of natural products—while also allowing for 'higher' (*böhere*),²¹ reflective modes that can be scientifically and technologically advanced.

That Hegel sometimes refers to a specifically modern mode of our attitudes towards nature rather than characterizing them on a purely general, non-historical level, does not affect his overall argument for the conclusion that the two attitudes in question need to be reconciled by a third but renders it clearer: the argument itself deals with the attitudes in general, while an argument of that sort can only be devised once the attitudes are self-reflectively taken.

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A distinctively modern trait of Hegel's characterization of our attitudes towards nature is that he presents them as attitudes towards nature *as a distinctive realm* that is *set apart* from another realm in which we self-consciously situate *ourselves*, namely the 'realm of spirit'.²² Taking an attitude *towards* nature as a realm 'out there' (*draußen*) (*GW* 24.1: 3) thus presupposes a clear-cut distinction between us who situate ourselves in a realm of spirit which is a space of reasons and the realm of nature that stands opposed to it and seems to be devoid of meaning and purpose.

It is only once we first and foremost approach the world from the self-reflective vantage point of ourselves as finite subjects rather than by recourse to a divine intellect that we find ourselves confronted with nature as a realm of which we do not take ourselves to be a part. In so far as we thus find ourselves confronted with nature as realm that seems 'alien' (*fremd*) (*V* 17: 8; *EN*: §246A) to us, we can then take various attitudes towards that realm which seek to appropriate it and make it less alien.

In so far as the challenge to appropriate nature which we self-conscious subjects set ourselves might be tackled according to the usual two 'directions of fit', from subject to nature and from nature to subject, the disjunction between the theoretical attitude that seeks to appropriate nature by cognizing it, and the practical attitude, that seeks to appropriate it through mastery and manipulation, might seem complete.

However, as Hegel seeks to bring out, none of these attitudes can stand on its own feet nor can they jointly count as self-sufficient. In so far as each attitude tends to undermine itself, we oscillate between the two;²³ and in so far as these attitudes prove to be incompatible unless complemented by a further one we cannot content ourselves with peacefully alternating between them. Far from being exhaustive, the distinction thus implicitly presupposes a third attitude, as we shall see, and it is only by reflectively embracing this further attitude that we might reconcile the others. What Hegel seeks to bring out, accordingly, is that a *philosophical* approach to nature is not only viable, but that it brings to reflective consciousness an implicit presupposition of our practical and theoretical ways with nature—an implicit presupposition that we ordinarily embrace when dealing with nature but tend to overlook upon reflection.

So much for a programmatic outline of Hegel's argument. Let us now envisage the practical and the theoretical attitude in turn in order to exhibit the intrinsic instability of each of them before pointing out why we cannot content ourselves with merely switching to and fro between the two.

In assuming the practical attitude we take ourselves to be intervening into nature and shaping it according to ends that we set ourselves while nature is envisaged as a mere means to their fulfilment. In manipulating nature according to our own ends we treat it as a sphere that does itself lack a purpose and we envisage

ourselves as its masters who are elevated above it in so far as it is us who are the source of unconditional ends imposed on it.²⁴

One might object that Hegel's portrait of the practical attitude towards nature is one-sided in so far as it presents that attitude as merely instrumental, while we might in fact seek to intervene into nature in a way that envisages it as a purposeful unity of which our own practical purposes are a part. Hegel's point, however, is that against the background of the modern distinction between the realm of nature and that of spirit we cannot directly 'act in line with nature' and comprehend our own purposes as internal rather than external to it. We might only coherently overcome the instrumentalism that besets our practical attitude towards nature by going beyond that attitude itself. For in so far as practical intervention into nature engages with particulars, in assuming the practical attitude we can neither engage with nature as a whole nor can we arrive at some kind of distinctively practical insight into its *unity*.²⁵ We rather manipulate and consume it on a *local* level. Accordingly, the practical attitude cannot bring the unity of nature into view. It does not, in other words, embrace nature *as such*.

To this it might be objected that the practical attitude does not aim at envisaging nature 'as a whole' or 'as such' and that assessing it with respect to that goal is thus measuring it by a criterion that is alien to it. However, since the practical attitude is *self-consciously* taken it is not *just* engaged with *particular things* that are manipulated according to specific purposes, but involves agents situating *themselves* with regard to the *realm* in which such things can be found.²⁶ It thus includes an inchoate, practical understanding of natural *kinds of thing* and of the realm in which such things are found, while that understanding remains circumstantial, fleeting, and fragmented. Accordingly, the practical attitude *itself* gives rise to the demand to *cognize nature*, while it cannot fully embrace that demand, for doing so would require one to abstract from one's particular desires and purposes and to take up the theoretical attitude instead.

The practical attitude can also be exhibited as *limited* with regard to the aims it pursues and thus does not amount to a *self-sufficient* way of appropriating nature. For the desires which we seek to fulfil by intervening into nature arise constantly anew, and instead of *once and for all* subjecting nature to our purposes, nature prevails and thus proves the *ultimate* futility and insignificance of our attempts to shape it according to our own aims.²⁷ Beyond its focus on particular objects and specific purposes the practical attitude thus involves an *indirect* and *indefinite* understanding of nature as a whole, namely as the given *background* of one's activities which *ultimately* thwarts human attempts to make their purposes hold sway. Embracing this background *as such* and thus turning it into the foreground would again amount to taking a theoretical stance towards it.

In so far as practical intervention does not engage with nature as a whole and reveals itself as *ultimately* futile in so far as nature prevails over the purposes which

we seek to impose upon it, the practical attitude points beyond itself towards an attitude that seeks to envisage nature by setting our own purposes aside and meeting it on its own terms—the theoretical attitude. It does not, accordingly, require an external decision to pass from the practical to the theoretical attitude, but the practical attitude disrupts itself, giving way to the theoretical.

While it is characteristic of the practical way of appropriating nature to subject nature to our own purposes, it is distinctive of the theoretical attitude to abstain from doing so, seeking to approach and seize nature as it is in itself.²⁸ The theoretical and the practical attitude are mutually exclusive to that extent that one cannot take up both *in one and the same act*.²⁹

In distinction to practical intervention the theoretical attitude does not engage with nature on the level of particulars, but is ‘oriented’ (*gerichtet*)³⁰ towards a general level in so far as it proceeds from sensible intuitions and representations to concepts, laws and theories.³¹ As such it does not amount to a self-sufficient way of appropriating nature either. From a subjective idealist vantage point it might *seem* to bypass nature itself altogether, leaving us with something else instead, namely universal thoughts and theories *about* nature.³² While this impression relies on a misguided picture of thought and nature as independent realms of their own, what is decisive for Hegel’s argument to go through is that the theoretical attitude cannot by its own means bring the unity of nature into view.³³

It cannot, because it is characteristic of the theoretical attitude to be based on disparate observations and to yield a manifold of concepts that pertain to various traits of nature while not being internally related to one another,³⁴ as I shall argue in the next section. To a certain extent, the unity of these concepts thus remains an additive one, which means that they are *externally* connected by means of logical concatenation. We might say, for instance, that nature is temporal *and* spatial *and* material *and* in movement or rest, etc., and we might then seek for dependencies between these traits. The connection between time, space, matter, and movement on the part of nature itself, however, cannot be an external one, for otherwise there would not even be *one* realm of nature. These global traits must rather amount to dependent *aspects* of nature that cannot, accordingly, be understood in isolation. In so far as our theoretical attitude towards nature relies—to a certain extent at least—on externally relating fundamental traits of nature, it has bypassed the unity of nature from the very beginning, even when it succeeds to bring quantitative dependencies between such traits into view and to establish an order between them.

In so far as it cannot provide us with insight into the original qualitative unity of nature and in so far as it seems to replace nature as a realm of particulars by something else, namely, concepts, laws and theories, the theoretical attitude cannot content itself with its own results but finds itself referred back to the practical attitude as one that does indeed embrace nature in its particularity.

We can conclude that neither the practical nor the theoretical attitude allows us to envisage nature *as such* and to satisfy the desire to appropriate it in a stable, self-sufficient manner.³⁵ These attitudes thus point beyond themselves towards a third one which they implicitly presuppose. For if they are indeed attitudes *towards nature*, while not on their own managing to bring nature's unity into view, that unity must be brought into view thanks to a further attitude that we already assume.

Against that conclusion it might be objected that nothing beyond a juxtaposition of the theoretical and the practical attitude is required to bring the unity of nature into view. For they seem to complement each other in such a way that their combination might provide us with a picture of nature as a whole. And even while one cannot take both attitudes in one and the same act, they do not seem to literally contradict each other. I might very well and consistently make apples in general the object of my botanical studies and also eat particular apples, even though I cannot do both in one and the same act. No contradiction here. The two attitudes rather seem to provide for complementary viewpoints on one and the same, viewpoints between which we tend to oscillate back and forth. Hegel captures this oscillation as follows:

We admire nature. Contemplating it leads us outwards to its immensity and to its innumerable formations, dead and alive, to its ubiquitous fertility, as well as inwards into the articulation of its organs which continue to be miraculous. Human deeds in contrast are completely superficial, and our power vanishes in contrast to this infinity. In nature we also admire its quietude, the unvarying actualization of its laws, its constancy, the inner peace in comparison to our haphazard ideas and intentions which manifest powerlessness, frailty and disquiet and which do never reach their ultimate aim.

On the other hand, man knows of its own infinity, the indomitability of its own will. He opposes his will to the whole of nature, annihilates it and derides all its forces with which it acts upon him. Confronting these, he fights them by recourse to means that he takes from nature and turns against nature itself. This is the cunning of reason that he lets nature work its own powers into the ground, while he stays in the background, untouched, and uses natural things for the sake of his most arbitrary ideas.

This constant oscillation between admiration and contempt is what our behaviour towards nature consists in. (*GW* 24.1: 4)

Why should alternating between admiration and contempt—between the theoretical and the practical attitude—not be the end of the matter, in so far as both complement rather than contradict each other?² Alternating between the two might thus seem viable in its own right, rather than implicitly presupposing and relying on a further attitude towards nature that is neither practical nor theoretical.

However, appearances to the contrary, conceiving of the theoretical and the practical attitude as complementing each other does indeed presuppose a further attitude rather than dispensing with the need to invoke one. For the theoretical and the practical attitude can only count as complementary attitudes towards *one and the same*—namely, nature—if there is a way of identifying their self-same point of reference.

However, there is no such way from the vantage point of the theoretical or the practical attitude. As we have seen, neither the former nor the latter provide us with a grip on nature *as such*, but only with a limited perspective upon it. Accordingly, the theoretical attitude cannot as such provide the practical attitude with its proper object. Science provides us with something that belongs to the order of thought—a theoretical account of nature—and that is not as such something practical intervention might get a grip on. The concept of the apple cannot be eaten. Neither does the practical attitude as such provide us with what might then equally count as the proper object of the theoretical attitude. For the practical attitude can only deal with a particular subsection of nature in a positive way, rather than with nature in general.³⁶

The two attitudes do accordingly bypass each other and neither can by its own means provide the other with its proper object. In order to see both as compatible and complementary perspectives upon *one and the same*—nature—that which they are perspectives on must already be brought into view in a way that is neither theoretical nor practical. Wherever we oscillate between the practical and the theoretical attitude towards nature there must accordingly already be a further attitude in play on which we implicitly rely.

III. A third attitude towards nature and its two modes: aesthetic and philosophical

In its inchoate, inarticulate and largely unacknowledged form the further attitude on which the practical and the theoretical attitudes rely is an aesthetic one.³⁷ As such it involves an imaginative and affective dimension.³⁸ That our *inchoate* way of bringing the unity of nature into view is said to be an aesthetic one is not surprising for the following reason: nature as a whole can neither be embraced by the senses, because it surpasses them, nor can it be brought into view by conceptual means alone, because these leave us with something that belongs only to the

general order of thought instead of putting us into touch with a realm of particulars. In so far as the imagination is both spontaneous and sensible, it can provide us with a ‘picture’ of nature as a whole. A paradigmatic way of imagining nature according to Hegel—albeit not the only one—is viewing it as a living unity, vibrant and pulsating. The aesthetic feeling that accompanies our so viewing it is one of awe and fascination:

Practical spirit [...] does not merely feel itself, but it has at the same time a sympathetic relation with that which belongs to nature. This is no longer the mere feeling of a limited desire. Spirit is beyond that. It conceives of nature as living and free. In this way spirit itself is free in and with nature, and the desire ceases, in so far as spirit intuits nature as life. [...] Man finds around himself this pulsation. He conceives of nature as an end in itself. In the form of feeling this is the basis of philosophy of nature. It seeks to cognize nature as living [...]. (*GW 24.1: 5–6*)

One might grant that we might sometimes picture the whole of nature as a living, awe-inspiring unity,³⁹ or that we at least picture it in some way, thereby relating to it aesthetically. But it would seem that this is nothing but a remnant of a prescientific, unenlightened attitude towards nature. Assuming such an attitude seems neither mandatory nor is that attitude of any significance when it comes to the question of what nature truly is.

An objection of that sort, however, seems a little premature. We can grant that viewing nature as a realm that is *literally* permeated by living forces would indeed amount to magical thinking. However, properly understood, the aesthetic attitude towards nature as an awe-inspiring living unity does not amount to a prescientific view about things *in nature*, but to a metaphorical way of bringing the distinctive *unity* of nature into view which is something neither the theoretical nor the practical attitude can achieve.

The unity *of* nature is of a completely different order than things *in* nature, and envisaging the latter in terms of the former would indeed be confused. But in so far as we can only take a practical or a theoretical attitude towards natural phenomena on the basis of an attitude that brings nature as such into view, the aesthetic attitude towards it is not something we might simply dispense with. And the picture of nature as living, if it is not taken literally, might indeed be seen as the manifestation of an insight. While we distinguish, in our theoretical approach to nature, between various global features of nature such as space, time, movement and rest, matter and force, nature as such cannot amount to a mere juxtaposition—an additive unity—of these features, as if space, for instance, were a container in which matter can be found. The global features of nature do not behave in the same way as things in space might do, namely as external to one another. These features of nature must

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rather be internally intertwined and their real unity cannot therefore be an additive one. If that is what the picture of nature as a living organism points to, it manifests an intuitive insight into the kind of unity pertaining to *nature as such* rather than being a remnant of a magical, prescientific attitude towards things *in nature*.

If the argument is sound, in assuming a practical or a theoretical attitude towards nature we implicitly rely on an aesthetic attitude, i.e. imagine nature *as such*, even while the ‘pictures’ of nature we come up with might seem accidental and dispensable upon reflection.⁴⁰

With respect to the practical attitude this general thought can be fleshed out as follows: picturing nature as a realm that is *susceptible* to our purposes rather than viewing it as a sphere that is utterly alien and indifferent to them will be a precondition of conceiving of our practical purposes as ones that can indeed be fulfilled. The underlying aesthetic attitude thus amounts to a kind of non-discursive awareness that there is no absolute gulf between our own ends and nature, and without some such awareness we could not ordinarily conceive of ourselves as agents who are capable of intervening into nature.

More importantly, the theoretical approach to nature equally relies on an aesthetic attitude towards it as an awe-inspiring unity. For the fascination with nature that gives rise to science—the fact that we find ourselves irresistibly driven towards an ever-deeper apprehension of nature—is not something that can be explained by recourse to what science itself teaches us about nature. The scientific view of natural phenomena does not itself exhibit nature in a way that might provide us with a motive for our striving for an ever deeper scientific apprehension of it. The theoretical—scientific—attitude must therefore be based on another attitude which is not a scientific one, namely the feeling that nature is not as alien to the intellect as it might appear. It is only against the background of an aesthetic fascination of that sort that pursuing the aim of cognizing nature, of approaching it by way of theorizing, makes sense. Science is accordingly driven by a picture of nature as a kind of riddle that waits to be resolved⁴¹ and by a corresponding striving of ours to find ourselves in nature by rendering it intelligible:

To appropriate that which is utterly alien to spirit appears as a most difficult or even as an unaccomplishable task. But that which is alien provokes spirit—in so far as it feels its own sublimity—to master exteriority, to prove itself in tackling what seems alien to it, such as to establish a spiritual, loving relationship with it. Spirit is led to nature by the consciousness of its own universality in order to find itself in it. (*V* 17: 3)

On Hegel’s account, science is not only driven by an aesthetic fascination with nature that often goes unacknowledged, but this attraction cannot ever be satisfied by means of science alone. In so far as we take a scientific attitude towards nature,

we find ourselves both irresistibly attracted and repelled—*attracted* because we do indeed thereby manage to find ourselves in nature, rendering it more and more intelligible by means of scientific theories—and *repelled*, because scientific inquiry into nature cannot provide us with an insight into the unity of nature as such, but only with an ever deeper understanding of the quantitative covariation of its fundamental traits. Natural science cannot, accordingly, provide us with the concept of nature:

We begin to observe and we collect data concerning the multifarious formations and laws of nature. This activity can be pursued for its own sake in endless detail and in all directions; and because we can see no end to this procedure, it leaves us unsatisfied.

What is more, despite all this wealth of knowledge, the question ‘What is nature?’ can always be asked and never completely answered. It remains a problem. When we see nature’s processes and transmutations, we want to grasp its simple essence, and force this Proteus to relinquish his transformations, to reveal himself to us, to speak out.⁴² (EN: 194)

In order to see that this diagnosis is neither an arbitrary assumption on Hegel’s part nor one that depreciates science, I shall now reconstruct his argument for the conclusion that *science*, while arriving at an ever-deeper comprehension of natural phenomena, cannot provide us with an understanding of nature *as such*, while such an understanding can indeed be provided by philosophy.

When Hegel discusses the limits of the scientific approach to nature which require this complementation, he does so with regard to physical science,⁴³ and I will follow him in this. A systematic reason for focusing on physics is that only physics deals with the natural universe as a whole, focusing on global traits such as space, time, matter, motion, and force, while biology deals with *local* traits of nature on an earth. For this reason, it follows from its distinctive topic that biology cannot provide us with a grip on nature as such.⁴⁴

According to Hegel the *specific* mode of theoretical attitude towards nature that arose in the course of the scientific revolution—i.e. the ‘scientific attitude’⁴⁵—is particularly efficient in that it incorporates the practical attitude as a means to the theoretical end of cognizing nature.⁴⁶ It incorporates the practical attitude in so far as it crucially relies on experiment.⁴⁷ It is equally characteristic of the scientific approach to nature that it is thoroughly mathematized in so far as it seeks to bring into view the functional covariance between quantities that can be assigned to variable magnitudes such as place, time, mass, motion, etc.

What is peculiar about the modern scientific approach to nature is that these two features—experiment and mathematization—are not merely juxtaposed but

intimately connected. Scientific experiments, on the one hand, are not just any observations of natural phenomena undertaken in a staged setting that is based on practical intervention. They are paradigmatically undertaken with the aim of bringing into view specific invariances and covariances of quantities that can be assigned to fundamental traits of nature. They are thus undertaken with an eye on subjecting the natural phenomena under observation to mathematical treatment. Mathematized theories of nature, on the other hand, even while they might unfold in a way that is largely independent of empirical input, nevertheless presuppose empirical observation, in so far as they rely on the observed *fact* that there are certain fundamental traits of nature that can be subjected to mathematical treatment. And it is crucial that some of these traits cannot ordinarily be observed but can only be brought into view in an experimental setting.

The starting point of Hegel's argument that the modern scientific approach to nature needs to be complemented by a philosophical account is the striving for conceptual (i.e. classificatory and nomological) unification that is inherent in modern science.⁴⁸

In so far as physical science is empirical and mathematized it starts with a *multiplicity* of *general* traits of nature relying on disparate observations and with functional dependencies between such traits. It does not, accordingly, *proceed from* a unified conception of nature, but it does not content itself with a sheer variety of observations, concepts, and thoughts about it either. It rather strives to find an order between its concepts, to articulate laws that govern quantitative covariances between fundamental traits of nature, to integrate such laws into theories, and to unify diverse theories where possible.⁴⁹

As Hegel argues, physics can indeed provide us with an ever deeper, deductively articulated understanding of the functional dependencies between variable traits of nature, i.e. of the ways in which the quantities that can be assigned to them by measurement vary with one another. However, in so far as it is empirical and mathematized, the striving for unification cannot find completion on the level of science itself. It cannot bring nature as such into view and cannot therefore provide us with the concept of nature:

There are various attitudes towards nature. Did we know what nature is, philosophy of nature would be superfluous. But these attitudes only amount to a certain acquaintance with nature. Before we envisage nature philosophically, we do not know what it is. (*V* 17: 4)

The reason for this is the following. Both in so far as physics does not proceed wholly a priori but involves empirical observations which are as such disparate, as well as in so far as it is mathematized and thus articulates functional covariances between a *given multiplicity* of variable magnitudes by means of equations, it

presupposes a *multiplicity* of fundamental traits of nature that are *given independently of each other* and to which variable quantities can be assigned whose covariances may be observed empirically and studied mathematically. In so far as they have a *global* character, however, these traits cannot pertain to independent *parts* or self-sufficient *regions* of nature, but must be internally intertwined on the level of nature itself.

Neither observation nor mathematical treatment can accordingly account for the real unity between those very general traits of nature which are assumed as fundamental. Physics cannot, therefore, provide us with the concept of nature, i.e. with insight into the internal, non-additive unity between fundamental traits of nature from which physical science proceeds.⁵⁰ As Hegel notes:

The inadequacy of the thought determinations used in physics may be traced to two very closely connected points. (a) The universal of physics is abstract or simply formal; its determination is not immanent within it and does not pass over into what is more specific. (b) This is precisely the reason why its determinate content is external to the universal and is therefore split up, dismembered, particularized, separated, and lacking in necessary connection within itself.⁵¹ (EN: §246A)

We might for instance take space, time, mass, and force as fundamental, and pursue the question, both by experiment as well as by devising a mathematized theory, of how the quantities that measure them depend on each other. Doing so will bring into view functional dependencies between the variable quantities assigned to these fundamental traits, but due to its characteristic *form of cognition* physics cannot in principle explain *why* there are these fundamental traits in the first place and cannot bring into view their non-additive unity on the part of nature. It cannot do so because it is constitutive of physical theory to *start* by positing a certain number of such fundamental traits of nature *as separate variables*, which can then be envisaged as dependent or independent.

In so far as it necessarily *starts* by taking *some* traits of nature (such as space, time, mass, or force) as elementary and proceeds by studying the covariance between quantities that measure them, physical science cannot by its own means give an exhaustive answer to the question of the original unity between these traits. Ultimately, it cannot therefore arrive at an understanding of the unity of nature as such. It is therefore no wonder that the concept of nature is not itself a scientific concept that would lend itself to mathematical treatment.

In so far as the fundamental traits of nature must indeed be internally connected on the part of nature itself, it must be possible to complement the scientific treatment of these traits by a non-empirical, non-mathematized account that brings their internal connections into view. Such a philosophical account would provide us

with a concrete grasp of the internal unity between these various traits and it would thus indeed provide us with the concept of nature.⁵² It would do so by showing that we cannot and need not content ourselves with stating that nature is, for instance, spatial *and* temporal *and* material, but it would start with a first trait, say space, and would seek to demonstrate that it is not a self-standingly, intelligible trait but one that points beyond itself towards further traits.

IV. The philosophical attitude towards nature and its relations to the practical and the theoretical attitude

It is characteristic of Hegel's philosophical account of nature to take up concepts that originate in science, while seeking to strip off their empirical character:

The philosophy of nature acknowledges the value, the glory and the greatness of physical laws, for it recognizes in them that which is universal. [...] Philosophy of nature takes up this material from the point to which physics has brought it, and it requires its formation by physics up to this point. [...] Philosophy of nature thus presupposes physics, it only produces a new way of knowing nature. (*GW* 24.1: 490)

This new way of knowing is the following. By thinking through the concept of one fundamental trait of nature, e.g., the concept of space, we arrive at the concept of a further trait of nature, e.g., the concept of time. In this way we develop a concrete understanding of the concept of nature.

What is meant by 'thinking through' one concept in such a way as to arrive at another might however seem both unclear and dubious. Obviously, what is at issue here, is neither analytic containment nor logical inference that proceeds from propositions involving one concept and arrives at propositions involving the other in a deductive manner.

In the context of the first steps of Hegel's philosophy of nature, 'thinking through' a concept rather means raising the question whether that concept might provide us with a *global* characterization of something that is ontologically self-sufficient and, hence, self-standingly intelligible.⁵³ That the concept of space points beyond itself would accordingly mean that by thinking it through we arrive at the insight that space is not ontologically self-sufficient and that nature must be characterized by further global traits beyond spatiality.

While it might indeed be difficult to spell out an argument of that sort in a transparent manner, there is good reason for assuming that it should indeed be possible to devise such arguments. For if nature is indeed characterized by various global traits (such as space, time, movement and force) as science assumes these

traits cannot be external to each other—as if each of them pertained to a world apart. They must rather amount to dependent aspects *of nature*, and it should therefore be possible to reveal them as such by thinking through the concept of one such trait, i.e. by concretely recognizing that it does not pertain to something that is ontologically self-sufficient but must rather be intertwined with further traits of nature.⁵⁴

The very first steps of Hegel's philosophy of nature as outlined in the so-called 'mechanics' proceed in this way. By thinking through what space is, he seeks to show that what is spatial must also be temporal.⁵⁵ Once we have shown that nature must be both spatial and temporal, we need to dispel with the impression that these are independent, juxtaposed traits of nature, and must therefore ask for that further, real trait of it in which they are united.⁵⁶ We might thus arrive at the insight that nature must also be marked by movement and rest, in so far as movement is the answer to the question for that trait of nature in which space and time hang together, given that movement involves a variation of spatial position or orientation with time.⁵⁷

By bringing into view the qualitative internal connections between fundamental traits of nature that might at first appear as external to each other, we do not just acquire philosophical insight into the unity of nature and thus arrive at an ever more concrete grasp of the concept of nature. We discover at the same time that the spontaneous self-determination that is characteristic of thinking is not as alien to nature as it might have appeared before:

If we ask for the essence of spirit and for what it seeks to find in nature, we must say, it seeks the universal as the universal which determines itself. [...] The desire of spirit is accordingly to find essence in nature, namely, to find self-determining universality. (*GW 24.1*: 201)

This desire is fulfilled by successively unfolding the concept of nature. It is thereby shown that this concept has a kind of unity that lends itself to an articulation by means of the self-determination of thinking in the course of which we arrive at an ever more determinate qualitative understanding of the unity of nature. The metaphorical picture of nature as a living organism is thus cashed in by means of a philosophical elucidation of the concept of nature that exhibits the concrete, non-additive unity of its traits.

It is thus a crucial aim of Hegel's philosophy of nature to concretely unfold or develop the concept of nature by means of non-empirical, non-mathematized thinking.⁵⁸ The philosophical development of the concept of nature that brings the internal unity between its various traits into view may not be confounded with some kind of real development in nature. Hegel's development of the concept of nature that proceeds from global traits of nature such as space and time via the concepts of natural kinds such as solar systems or chemical processes towards the concept of organic life does not as such imply a view of nature as evolving. The

question of real development and evolution in nature is to be left to empirical science, on Hegel's account.⁵⁹

Now that the outlook of the philosophical attitude towards nature has been brought into view a final question can be raised, namely: how should one conceive of the relations between the philosophical attitude towards nature and the other two attitudes, i.e. the practical and the theoretical? It would be absurd to assume that the philosophical attitude towards nature is meant to replace the theoretical and the practical attitude. It is rather meant to supplement these in so far as it seeks to bring into view something that the others tacitly presuppose while being unable to address it—namely nature as such, its unity.

Ordinarily, in taking the practical or the theoretical attitude, one does not self-consciously reckon with a third attitude which is in that case only present in the guise of concomitant and apparently insignificant aesthetic glimpses of nature.⁶⁰ In so far as the attitude which indeed provides us with insight into nature as a unity remains unacknowledged,⁶¹ one might be tempted to assign to the theoretical or the practical attitude tasks which they cannot reasonably fulfil.⁶² Approaching the theoretical and the practical attitude from the philosophical vantage point will thus neither amount to replacing them *nor* to leaving them simply as they are. It will rather amount to becoming aware of their proper scope and limits and to assigning them a proper place within the integrated whole of our various attitudes towards nature.

With regard to the practical attitude, philosophy does not preclude us from shaping nature according to our own particular purposes which can indeed be external to it. But it does also provide us with a concrete understanding of us who subject nature to such purposes as ourselves rooted in nature in so far as we are living beings. In so far as life cannot occur in any arbitrary part of the universe, but only on a planet on which matter circulates in ways that involve both an organic as well as an inorganic contribution,⁶³ we might then come to understand that there is a more fundamental purpose we might set ourselves, namely one that is not external to the natural surroundings in which we find ourselves, but consists in preserving the earth.

Obviously, it is not philosophy of nature but science that can tell us what to do in order to realize this aim most efficiently. Philosophy of nature might however help us to understand what kind of aim it is. For, from a distinctively practical vantage point, preserving the earth might only count as one more means to the end of human self-preservation. From that vantage point we still take our more global aims to be external to nature. The philosophical vantage point which allows us to see a certain complementarity between spirit and nature might instead allow us to wholeheartedly embrace the aim to preserve the earth as an ultimate one rather than a means to the ultimate goal of our own human self-preservation, narrowly conceived. For it might allow us to conceive of the earth as the 'shared body' of all life⁶⁴—rational and non-rational—without thereby falling back onto a pre-scientific view of nature.

I took the liberty to fill in the preceding remarks on how the philosophical attitude towards nature might perhaps contribute to an adjustment of our practical attitude towards it that seems to be called for, while Hegel himself does not really say much about how these two attitudes might complement each other.

In contrast, he indeed presents us with a complex view about the complementarity and possible cooperation between the scientific and the philosophical attitude. The philosophical approach to nature complements the scientific account in so far as it brings nature as such into view and provides us with the concept of nature. It thus results in a non-empirical, non-mathematized understanding of nature. However, the philosophy of nature is not supposed to proceed in splendid isolation from science.⁶⁵ It has to take up concepts provided by science and subject them to a conceptual investigation that brings into view their internal relations.⁶⁶ As such it cannot arrive at an insight into determinate quantitative dependencies between fundamental traits of nature. Even while it provides us with a global understanding of the unity of nature, its own vantage point is accordingly a limited one that points back to empirical, mathematized science which it cannot in the least replace but at best complement.

Even while the question of how much of Hegel's philosophy of nature might lend itself to rigorous argumentative reconstruction and might indeed count as a viable complement of science is a most difficult and still largely open one, his view that we can only come to terms with our relation to nature by reflecting on how our practical, our scientific and our philosophical attitude towards nature both differ and complement each other, seems still of vital importance.

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Notes

¹ Abbreviations used:

CPR = Kant, *Kritik der reinen Vernunft*, ed. R. Schmidt (Hamburg: Meiner, 1990).

EN = Hegel, *The Philosophy of Nature* (3 vols.), ed. and trans. M. J. Petry (London: Allen and Unwin, 1970).

GW 24.1 = Hegel, *Vorlesungen über die Philosophie der Natur 1. Nachschriften zu den Kollegien der Jahre 1819/20, 1821/22 und 1823/24* (Gesammelte Werke 24.1), ed. W. Bonsiepen (Hamburg: Meiner, 2012).

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GW 24.2 = Hegel, *Vorlesungen über die Philosophie der Natur 2. Nachschriften zu den Kollegien der Jahre 1825/26 und 1828* (Gesammelte Werke 24.2), ed. N. Hebing (Hamburg: Meiner, 2014).

LL = Kant, *Lectures on Logic*, ed. and trans. J. M. Young (Cambridge: Cambridge University Press, 1992).

TW = Hegel, *Werke* (Theorie-Werkausgabe), ed. E. Moldenhauer and M. Michel (Frankfurt: Suhrkamp, 1986).

V 17 = Hegel, *Vorlesung über die Philosophie der Natur: Berlin 1825/26. Nachgeschrieben von Heinrich Wilhelm Dove*, ed. K. Bal, G. Marmasse, T. S. Posch and K. Vieweg (Hamburg: Meiner, 2007).

² Cf. Hegel's claim that there is a distinctively 'philosophical cognition of nature' (*GW 24.1*: 482) that involves 'another way of knowing' (*GW 24.1*: 490) than that of natural science. This philosophical way of knowing is supposed to allow one to answer a question that cannot ultimately be answered by empirical science, on Hegel's account, namely the question 'What is nature?' (*EN*: 194).

³ Cf. *GW 24.1*: 501. While physics provides insight into natural phenomena, philosophy is supposed to answer the 'general question' 'what is nature?' and to spell out nature's 'essence' (*EN*: 194). It thus provides us with insight into nature *as such*, i.e. with the concept of nature.

⁴ All translations from German editions of Hegel's lectures on the philosophy of nature are my own.

⁵ Cf. *EN*: §246 and *TW*: 20:124, 153.

⁶ Cf. Vieweg 2019: 562–68.

⁷ Cf. e.g., *TW*: 7:12–13.

⁸ Cf. *EN*: §§245–46. At the beginning of each of the six lecture courses on the *Philosophy of Nature* that he taught between 1819 and 1830 Hegel presented a version of the argument sketched in these paragraphs, cf. *GW 24.1*: 1–2.

⁹ In most presentations of the argument Hegel relies on a threefold distinction between a theoretical, a practical, and a philosophical attitude. In his 1825–26 lectures on the *Philosophy of Nature*, however, he distinguishes between a 'natural attitude' (*natürliches Verhalten*) which is said to comprise both a practical as well as a theoretical mode, a 'scientific attitude' (*wissenschaftliches Verhalten*) and a 'philosophical' attitude (cf. *V 17*: 5; *GW 24.2*: 758). In my reconstruction I envisage the scientific attitude as a specific elaboration of the theoretical attitude, namely one that involves a distinctively practical aspect pertaining to the experimental dimension of science.

¹⁰ See *V 17*: 4, 5; *GW 24.1*: 4, 478; *GW 24.2*: 758.

¹¹ I am indebted to an anonymous referee for referring me to two passages that might speak against my contention that Hegel's argument for a distinctively philosophical attitude towards nature does not rely on his *Logic*.

In one passage (*GW* 24.1: 482) Hegel discusses a 'contradiction' that can beset our conception of knowledge of nature and that is due to the assumption of a 'gap' (*Kluft*) between subject and object. He goes on to claim that philosophy of nature is only viable, if that contradiction can be resolved, and that it has already been resolved in logic in so far as the latter deals with the 'nature of knowledge' (*Natur der Erkenntniß*). The passage at issue treats of a contradiction 'within' (*innerhalb*) the theoretical attitude (cf. *GW* 24.1: 481), one that pertains to the possibility of theoretical *knowledge in general*. Hegel's recourse to logic as resolving *that* contradiction does not imply that resolving the tension *between* the practical and the theoretical attitude *towards nature* equally requires recourse to the logic.

The second passage at issue (*GW* 24.2: 761) indeed discusses a contradiction between the theoretical and the practical attitude towards nature. According to Hegel this contradiction is resolved 'in thinking', which might seem to mean 'in logic'. Hegel, however, frequently refers to the philosophical attitude towards nature as a 'thinking' (*denkende*) attitude. Accordingly, the aforementioned recourse to 'thinking' does not necessarily refer to logic. That it does not, is confirmed by his claim that reflecting on our ordinary attitudes towards nature serves to provide an 'immediate' (*unmittelbar*) understanding of the idea of nature (see *GW* 24.1: 478). On my reading, the understanding he seeks to provide is 'immediate' in so far as it only relies on reflection on our ordinary attitudes towards nature.

¹² Cf. Ferrini 2004: 70–74; Fulda 2003: 135–39; Gies 1987: 71–73, Marmasse 2003: 216–18, Neuser 2000: 139–41, Stekeler-Weithofer 2001: 136–39, Wandschneider 2013: 107–9.

¹³ Cf. Burbidge 1996, Halper 1998, Horstmann 1986, Houlgate 2002, Stone 2005: 1–28, 98–106; Wandschneider 2004, Wandschneider 2016 and Martin 2021.

¹⁴ Cf. *GW* 24.1–2. All transcripts of Hegel's lectures on the philosophy of nature are quoted from *Gesammelte Werke* which is the most reliable edition, philologically. The only exception is the Nachschrift Dove (1825/26) which is not, as a whole, contained in *GW*, and which I therefore quote by recourse to the edition in Volume 17 of *Vorlesungen. Ausgewählte Nachschriften und Manuskripte*.

¹⁵ This follows from the fact that the philosophical attitude is supposed to resolve a 'tension' (*Zwist, Zwiespalt*) in our 'behaviour' (*Verhalten*) towards nature, cf. *GW* 24.1: 3.

¹⁶ Cf. *EN*: §245 and *GW* 24.1: 478–79.

¹⁷ This is explicit in Hegel's claim that he 'proceeds from our familiar relations to nature' (*GW* 24.2: 758), taking them up 'in the form in which they are familiar to us' (*GW* 24.1: 478).

¹⁸ For the *self-conscious* character of these attitudes cf. e.g., *GW* 24.1: 3, 5. This self-conscious character is also manifest in that Hegel often presents them in a first-personal plural manner, cf. e.g., *GW* 24.1: 202, 478; *GW* 24.2: 759. For their distinctively *human* character cf. e.g., *EN*: §245; *GW* 24.1: 479. While one might assume that the practical attitude is also taken by non-rational animals, this would be at odds with Hegel's stress on its self-conscious character. His occasional recourse to animals as consuming natural products without further ado (cf. *EN*:

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§246A) is not meant to ascribe to them a practical attitude towards nature. It is rather a polemical remark directed against a subjective idealist stance that reckons with a gap between subject and things as they are in themselves.

¹⁹ See *EN*: §246; *GW* 24.1: 479; *GW* 24.2: 758.

²⁰ Cf. his recourse to a 'natural attitude' (*natürliche Verhaltensweise*) where we do 'not yet ask what nature is' (*GW* 24.2: 758; *V* 17: 5).

²¹ Cf. *V* 17: 7.

²² Cf. 'The problem appears in that we are at first a self-consciousness, while nature is out there. This split [*Entzweiung*] is to be accepted as a starting point. It contradicts spirit which is a simple unity [...]' (*GW* 24.1: 3).

²³ See *GW* 24.1: 4.

²⁴ Cf. *GW* 24.1: 3, 4.

²⁵ Cf. e.g., *GW* 24.1: 499.

²⁶ Hegel stresses that the practical attitude towards nature deals first and foremost with 'particular things' (*GW* 24.1: 202–3, 478). He stresses at the same time, however, that 'nature in general' becomes present on the level of the practical attitude *in a negative way*, namely as that which resists being shaped according to our purposes (cf. *EN*: §245A; *GW* 24.1: 478). He also points out that the practical attitude involves an inarticulate, non-discursive understanding of nature as a whole in the mode of 'feeling' (*GW* 24.1: 5–6) and 'willing' (cf. *GW* 24.1: 4).

²⁷ Compared to nature's immensity 'the works of humans are wholly superficial and their power vanishes in contrast to this infinity'. Contrasted with nature's immutability and inner peace 'our ideas and intentions which never reach their aim display powerlessness, weakness and unrest' (*GW* 24.1: 4).

²⁸ Cf. *EN*: §246A.

²⁹ In taking a practical attitude towards nature one does not seek to relate to it as it is in itself, but subjects it to one's own purposes, while in taking the theoretical attitude one refrains from these so as to envisage nature for its own sake. In that respect both attitudes are clearly 'opposed' (*entgegengesetzt*) to each other and one cannot take both in one and the same breath (see *GW* 24.1: 3). However, as Hegel's remarks on Bacon show, he is well aware that modern science deepens our practical mastery of nature and that it often is not engaged in merely for its own sake but with an eye on its practical applicability (cf. *TW*: 20:77–78). I am grateful to an anonymous referee for pressing me on this point.

³⁰ *EN*: §246.

³¹ Cf. e.g., *GW* 24.1: 486; *GW* 24.2: 759–60.

³² See *GW* 24.2: 760–61; *V* 17: 7–8.

³³ I will argue in Section III that this also applies to the mode of the theoretical attitude that can be found in modern experimental and mathematized physics.

³⁴ Cf. *GW* 24.1: 477.

³⁵ Hegel calls each of these two attitudes 'one-sided', cf. *EN*: §246A; *GW* 24.1: 203.

³⁶ Cf. e.g., *GW* 24.1: 202–3.

³⁷ Cf. Hegel's remark that we 'intuit nature as life' (*GW* 24.1: 5), which can only refer to an imaginative and hence aesthetic stance rather than to an empirical intuition, because nature *as a whole* (*die Natur*) cannot be empirically intuited.

³⁸ Cf. *GW* 24.1: 5–6.

³⁹ On the philosophical task of envisaging nature as a living unity cf. also *GW* 24.1: 6–7; *EN*: §245A.

⁴⁰ The advantage of the aesthetic attitude over the practical and the theoretical attitude is that it focuses on nature *as a whole* and provides us with an imaginative representation of it. In so far as the aesthetic attitude is invoked in the course of Hegel's argument as that which provides the practical and the theoretical attitude with an inchoate grip on the original unity of *their* object, the question *whether* it has the same object as these does not arise. The aesthetic attitude is inchoate, however, in that it does not provide us with a clear-cut, conceptually articulate grip on nature as such and therefore requires to be complemented by another attitude that actually does so, i. e. the philosophical attitude.

⁴¹ Cf. e.g., *EN*: 194.

⁴² Translation modified.

⁴³ Cf. *EN*: §246, 196–97; 201–2 A.

⁴⁴ For Hegel's account of the methods of empirical biology (botany and zoology) in relation to his philosophical treatment of plant and animal life (cf. *EN*: §§343–76), see the relevant contributions to Cohen and Wartofsky 1984, Breidbach and Engelhardt 2002 as well as Chapter 3 of Spahn 2007. Cf. also fn. 59 below.

⁴⁵ Cf. *V* 17: 5; *GW* 24.2: 758.

⁴⁶ Cf. *GW* 24.2: 775, cf. also fn. 38 above.

⁴⁷ Cf. *TW*: 20:79, 84.

⁴⁸ Cf. *EN*: §246A; *GW* 24.2: 761.

⁴⁹ Cf. *EN*: §246.

⁵⁰ Hegel's philosophical assessment of biology differs in the following way from that of physics. On the one hand he distinguishes a *subjectivist* conception of biological classification that is at work in various strands of botany and zoology and strives for an 'artificial' (*künstlich*) order of biological phenomena based on easily recognizable traits (cf. *EN*: §370R). Hegel subjects this kind of procedure—of which he takes Linné to be representative (cf. *EN*: §280A, §346A)—to a philosophical critique that is analogous to the one I discuss in the main text with regard to physics, namely as presupposing a deeper unity of species in themselves and between each other. On the other hand Hegel grants certain botanists and zoologists of his time (e.g. Jussieu and Cuvier) with a holistic approach to biological classification that is based on an objective functional perspective and comes close to the comprehending attitude of speculative philosophy, restoring the essence of Aristotelian biology (cf. *EN*: §370R). However, this speculative turn of empirical biology does not make it coincide with the philosophical account of life Hegel advocates, nor can it provide us with the concept of nature as a whole.

⁵¹ Translation modified.

⁵² Cf. e.g., *GW* 24.2: 769, 769.

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⁵³ The qualification ‘global’ is crucial. While nothing real can be *exhaustively* characterized by means of qualitative and quantitative concepts in so far as it comprises an indefinite amount of *subordinate* traits, on Hegel’s account, it must indeed be possible to provide an exhaustive *global* characterization of it, i.e. one that brings into view the distinctive kind of unity it has as a whole.

⁵⁴ The internal relations between the concepts of such traits are not *analytic* for the following reason. According to Kant, analytic containment of one concept in another is an *asymmetrical* relation between a complex concept and another one, a so-called ‘mark’ (*Merkmal*) (cf. *CPR*: A8/B12), that is comprised in it as a proper part (cf. *CPR*: A6/B10–A7/B11). The unity of a complex concept that analytically contains others is thus treated as an external one (cf. *LL*: 607 and Kremer 2006: 165–68). As pointed out above, on Hegel’s account, the *concept of nature* cannot have an external unity. The relations between its moments must rather be *internal* and *symmetrical*. By thinking through what space is, it must for instance be possible to show that what is spatial must also have a temporal side to it *and vice versa*. This does not mean that the concept of time is a mark of the concept of space, nor that the property of being spatial includes the property of being temporal as a part.

⁵⁵ Cf. *EN*: §258A.

⁵⁶ Cf. *EN*: §260.

⁵⁷ Cf. *EN*: §261A.

⁵⁸ By characterizing the philosophical attitude towards nature in this way I align myself with what Alison Stone has called a ‘strong apriorist’ reading of Hegel’s philosophy of nature (Stone 2005: 1–28; cf. also Maker 1998: 17)—in distinction to Burbidge’s ‘strong aposteriorism’ (Burbidge 1996) and to readings that conceive of it as (exclusively) a kind of second-order reflection that seeks to reconstruct ‘basic paradigms at work in the practices of the sciences themselves’ (Pinkard 2004: 26; cf. Rand 2007: 395; Rand 2017: 391–92) and as at best involving a historized a priori. That bringing the internal unity of the concept of nature into view is a task that only philosophy can fulfil, as I argue in the main text, is a crucial systematic reason in favour of a strong apriorist reading beyond the ones adduced by Maker and Stone. I fully subscribe to her characterization of ‘the strong a priori method’ ‘according to which we must (1) work out rationally what forms nature contains, by tracing how they necessitate one another, then (2) incorporate ‘corresponding’ empirical claims into the resulting theory [...] which describe [...] forms in such terms that they can be provisionally interpreted as identical to the forms that have been deduced a priori’ (Stone 2005: 12). Since the main topic of the present article is the relation between the practical, the theoretical and the philosophical attitudes to nature, my account of what tracing how fundamental traits of nature necessitate each other amounts to has to remain sketchy. For a more full-blown account cf. Martin 2021.

⁵⁹ See *EN*: §249. For Hegel’s take on the topic of development in nature, cf. Wandschneider 2002, Houlgate 2005: 173–75 and Spahn 2015: 682–85 (with further references).

⁶⁰ On Hegel’s account, even the tension between the two ordinary attitudes towards nature we find ourselves with is usually an ‘unconscious’ one (*bewußloser Zwiespalt*), see *GW* 24.1: 4.

⁶¹ Cf. *V* 17: 4, 5.

⁶² Cf. *GW* 24.1: 3–4.

⁶³ Cf. Hegel's account of the 'geological organism' (*EN*: §§337–39).

⁶⁴ Cf. *EN*: §338.

⁶⁵ On the cooperation between philosophy of nature and empirical science, cf. Petry 1987, Posch 2011 and Westphal 2008.

⁶⁶ Cf. *EN*: §246.

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