

# On Origins and Species: Hegel on the Genus-Process

Daniel Lindquist

## Abstract

There is a broad consensus in the literature that in the section on ‘The Genus’ in the *Science of Logic*, Hegel argues that any living being must exist among other instances of its kind, with which it reproduces to create future generations, and out of which it was itself produced. This view is not only hard to motivate philosophically, it also seems to contradict many things Hegel says elsewhere in his system about the details of living nature, especially concerning the reality of spontaneous generation. After an examination of the secondary literature on ‘The Genus’, I offer an alternative view of this section, which I call ‘the Modal Reading’. The Modal Reading sees the language of pluralities in ‘The Genus’ as really Hegel’s peculiar way of articulating certain modal features of thoughts about the living: to grasp a living individual as living, we need to distinguish not only between this individual and its environment, but also between the things this individual actually does and other possibilities which it does not actualize. The Modal Reading has a logical motivation insofar as it articulates what is needed to think of a living being as living, but it also avoids saddling Hegel with the problematic entailments he is usually read as taking on in this section. A further upshot of the Modal Reading is that approaching Hegel in this way provides us with a way to see Hegel as defending a non-nominalistic alternative to essentialist accounts of living kinds. Finding a way to read ‘The Genus’ which coheres with Hegel’s views elsewhere in his system thus shows Hegel to have been an especially subtle and penetrating thinker, with continuing relevance for the philosophy of biology.

## I. Introduction

There is a broad consensus in the literature that the first two parts of the section on ‘Life’ in Hegel’s *Science of Logic* are about the organic structure of living beings and the organism-environment relationship, respectively.<sup>1</sup> Readings of the third part of this section, which Hegel calls ‘The Genus’<sup>2</sup> or ‘The Genus-Process’, tend to claim that Hegel argues that any living being must exist among others of its kind, with which it reproduces to create future generations, and out of which it was itself

produced. This view is not only hard to motivate philosophically, but it seems to also contradict many things Hegel says elsewhere about living nature, especially about the reality of spontaneous generation.

After an examination of the secondary literature on ‘The Genus’, I offer an alternative approach to this section, which sees the curious language in ‘The Genus’ as really Hegel’s way of articulating certain modal features of thoughts about the living: to grasp a living individual as living, we need to distinguish not only between this individual and its environment, but also between the things this individual actually does and other possibilities for the kind of being it is. Grasping the mere identity of a living being at all requires what Michael Thompson (2008) calls ‘generic thoughts’: true non-quantified generalizations such as ‘Saguaros bloom annually’ or ‘Komodo dragons use their tongues to smell’. These ‘generic thoughts’ do not merely describe actual living individuals, but articulate the modal space these individuals inhabit. ‘Generic thoughts’ say what a certain sort of living individual *needs* to do, what is *necessary* for it to be what it is.

My reading is novel in the literature for holding that this section does not imply anything about the multiplicity of living beings across either time or space. Though the most striking way in which we ordinarily encounter the genus-process in experience is in the form of animals which reproduce sexually across generations, I argue that there is nothing in the merely *logical* features of thoughts about the living that necessitate this particular manifestation of it, and that Hegel’s texts are more coherently understood without such an implication.

The structure of this essay is as follows. I will first distinguish the two readings of ‘The Genus-Process’ in the literature, and offer my own alternative. I will then argue against the existing readings, dealing with James Kreines’s reading in particular detail. I will close by elaborating further on my own reading, and how it applies to the question of species in Hegel’s *Philosophy of Nature*.

## II. The consensus reading

On what I will call the ‘Consensus Reading’, the genus-process is at work only across multiple living beings, numerically distinct from one another. ‘The Genus’ is said to be about reproduction (often, explicitly sexually) across generations.

Here is a sampling of expressions of this view: ‘In Genus, Life particularizes itself, implying other Lives’ (Carlson 2007: 570); ‘The living teleological system is, in the third place ... a genus of mutually external instances’ (Findlay 1984: 90); ‘A “*Gattung*” is therefore a genus or kind that is a natural mating kind’ (Maybee 2009: 517); ‘the genus is reflected into itself (i.e., via the interaction of two living things,

each of which is an instance of the genus) and obtains actuality’ (Rosen 2013: 468–69); ‘In doing this he becomes substantial universal, what Hegel calls “Gattung” (genus). This means that he undergoes another kind of sundering, now into two individuals. This is the dialectical derivation of sexual differentiation’ (Taylor 1977: 333).

As representative of the Consensus Reading, I will look in detail at Stephen Houlgate’s account:

The species to which an animal belongs constitutes the “substance” of that individual: it defines the kind of creature the animal is. The species, however, is not limited to one individual (unless, of course, the animal is on the brink of extinction). It extends across several individuals and so is something *universal*. (Houlgate 2005: 170)

On this reading, it is *because* the genus-process ‘extends across several individuals’ that it is something ‘*universal*’; as his parenthetical remark makes clear, Houlgate views the sense in which the genus-process could be at work in a solitary individual as a limiting case, where there *had* previously been multiple individuals of a species. Houlgate goes on to say that living beings ‘bear witness to a *feeling* of belonging to a single species in mating’ (Houlgate 2005: 170).

The Consensus Reading is clearly attempting to make sense of passages like these (my emphases marked in bold): ‘This its diremption [...] is the duplication of the individual—a presupposing of an objectivity that is identical with it, and a relationship of the living being to itself as to **another** living being’ (*WL*: 773/190).<sup>3</sup> ‘[T]hough the individual is indeed *in itself* genus, it is not *explicitly* or *for itself* the genus; what is *for* it is as yet only **another** living individual’ (ibid.); ‘[T]he process of the genus, in which the single **individuals** sublimate in one another their indifferent immediate existence and in their negative unity expire. [...] In the genus process, the separated **individualities** of individual life perish.... In **copulation** (*Begattung*)<sup>4</sup> the immediacy of the living individual perishes’ (*WL*: 774/191).

It is easy to understand why Houlgate and others have taken these texts to say that the genus-process involves (sexual) reproduction across generations. On the Consensus Reading, as in Aristophanes’ speech in Plato’s *Symposium*, living individuals are inherently ‘partial’, split into different sexes which temporarily attempt to re-join with one another before perishing. It is only in this kind of interaction between different individuals that we see what they have in common with each other, their species, come into play; like Aristophanes’s two-faced hermaphrodites, the Hegelian *Gattung* is treated as a thought-entity which combines what in nature is separated, and which provides us with a way to make this separation intelligible to ourselves. Hegel does not explicitly say this is what is at work in the genus-process,

but it's a reading that accounts for the odd encounters between sexed animals in the text.

It is worth noting that 'The Genus' is very brief, even by the often-hurried standards of the *Logic*; the whole section runs for about three pages. The corresponding section in the Lesser Logic runs for only a few hundred words, and is no less obscure. So there is a real burden placed on the interpreter in making sense of Hegel's rather telegraphic pronouncements on the genus-process. It is partly for this reason that I think it important to look forward, to the *Philosophy of Nature*, to see how Hegel applies this particular logical form in the *Realphilosophie*. A key motivation for my reading is the need to find an account that is philosophically well-motivated, coherent with Hegel's other views, and which can explain why the text has the puzzling features it does.

### III. The change reading

Though it is by far the most common and best-developed, the Consensus Reading is not the only reading of the genus-process offered in the literature. Robert Wallace and John Burbidge both treat 'The Genus' as primarily answering the question of what makes an individual living being the same across time. These authors have provided 'The Genus' with a clear *raison d'être*, but I think their accounts are problematic on three points. The first is that they are simply underdeveloped, being mentioned only briefly. The second is that it is unclear why the question of individuation only comes up *across* time, diachronically rather than synchronically. The third is that, perhaps due to how briefly stated and underdeveloped their views are, both authors fail to see their views as alternatives to the Consensus Reading, rather than as supplements to it.

Wallace introduces the genus-process by noting that

if there is a standard by which we identify the sameness or identity in a living thing across space and time—or by imposing which, the living thing *makes* itself the same or identical ([maintains] itself)—that standard isn't on the same logical level as the components of the living thing. It is superior to them in the way that "universality" is superior to "particularity". [...] To belong to [a species] is to have the standard of one's sameness or identity across space and time, and thus what constitutes one's [self-maintenance], specified by a sort of authority. (Wallace 2011: 251)

This is an intelligible reason for Hegel to introduce *Gattung*-talk: the self-maintenance of the living individual as a system of members that maintains itself through assimilating its environment to itself is unthinkable unless we can think of

the individual as an individual *of some sort*, some kind that is to be maintained through the changes of self-maintenance. Like Wallace, Burbidge holds that ‘what unites the before and after [of a living being that assimilates its environment to itself] is something called “generic life”’ (Burbidge 2007: 122).

Wallace and Burbidge can be seen as putting forward an alternative to the Consensus Reading: the genus-process concerns not relations among individuals of a kind, but between different stages of a single individual. The ‘genus’ is what provides a standard of identity for such an individual. I will call this the ‘Change Reading’. But it is puzzling why, if the Change Reading affirms that we need to implicitly refer to the kind a living being realizes in order to keep track of it throughout changes, this issue does not also arise without change. We do not have two different ways of identifying a living being, one at an instant and one across a period of change: so why bring change into the picture, rather than speaking simply of identity-conditions? Wallace and Burbidge do not answer this question, and this may be related to the fact that they do not recognize their accounts as alternatives to the Consensus Reading.

Wallace gives what I have labelled the ‘Change Reading’ less than one page of development before he asserts that

The other important feature of genus membership, which Hegel turns to immediately, is that it creates a relationship between the individual and other members of the same genus. Hegel refers to this result, figuratively, as a “doubling of the individual”. (Wallace 2011: 252)

This ‘other important feature’ receives no justification in Wallace’s text, and assimilates his view to the Consensus Reading. Burbidge is similarly explicit that a genus ‘is not unique to this individual; and the latter can be alien not just to non-living objects, but also to other living individuals of its own genus. What is generic persists as self-identical through a number of these individuals’ (Burbidge 2007: 122). Burbidge here slides from saying that a living individual *can* be alien to other living individuals of its own ‘genus’ (i.e., its own species) to saying that in fact it *is* so alien: this shift is not acknowledged in the text. Burbidge goes so far as to claim that the reality of sex-differences is derived in the *Logic*: ‘The differences that particularize [several individuals], making them contraries within the generic category, can only be thought as kinds or genders’ (Burbidge 2007: 122). Wallace and Burbidge actually defend views that have all of the problems of the Consensus Reading. The Change Reading thus does not have any adherents in the literature who oppose it to the Consensus Reading, but I distinguish them for analytical purposes.

I think one possible explanation for these readings of Hegel is that he has been too closely assimilated to Aristotle.<sup>5</sup> Robert Stern (2002: 108) claims that defending the need for ‘a properly Aristotelian understanding of universals as

natural kinds' is one of the main purposes of the 'Observing Reason' chapter in the *Phenomenology of Spirit*, which is the chapter most concerned with the life sciences. Kreines (2015: 37ff.) also reads Hegel in terms of recent defences of 'natural kinds' of a broadly Aristotelian sort. But I find these uses of Aristotle to illuminate Hegel problematic. Aristotelian 'natural kinds' take the form of dichotomous divisions of each higher genus into lower species, but Hegel's taxonomic categories explicitly *overlap*. Hegel's view of 'kinds' in nature does not honour what Thomas Kuhn (2000: 92) called the 'no-overlap principle', which Kuhn held to be a minimal requirement on scientific taxa. Although Hegel divides animals, following Moses and Lamarck, between birds of the air, fish of the sea, and beasts of the land, he delights in examples such as when 'the Bird becomes aquatic, until in the case of the Duck-billed platypus (*Ornithorhynchus*), it passes over into a Land animal' (PN: §370Z, III: 189).

### IV: The modal reading

I will now articulate my own novel account of the genus-process, which I will call 'the Modal Reading'. I begin from the fact that we can recognize an organism only when we can see it within its environment.<sup>6</sup> Something else which must be in view here is more obscure: the fact that this organism does not *exhaust* the sort of thing it is by what it in fact does. This is a necessary condition on our being able to think of a living being as inhabiting an environment which affords it ways to act. If we cannot think of a living being as acting otherwise, then we can make no sense of thoughts like 'the cat is failing to catch the mouse' or 'the root is extending towards the more nutrient-rich patch of soil'; to think these thoughts, we must be able to also think of the cat *successfully* catching the mouse or the root (unfortunately) extending toward a *less nutritious* patch of soil. An organism is not required to live exactly how it lives; it could have behaved other than it in fact did while remaining the kind of life-form that it is.

Thoughts of a living being's behaviour show it instantiating *general* sorts of activity, general at least in that these activities include both actual and merely possible cases. In a broad sense of the term, we must be able to think of a living being as instantiating a general 'species', or way of life, to grasp the ways a living being distinguishes itself from its environment. Living beings are agents, and so are not unfree in the way non-living nature is, but they are not yet free spirit; their freedom is not pure self-determination, but is a reciprocal determination of the individual and the general kind to which it belongs.

It is not only against the background of a particular local environment that an organism becomes intelligible, but against the general background of a sort of species that lives in this sort of environment, of which this living individual is only a

singular instance. On my reading, this process by which living individuals come to be against a specially organized general background is what Hegel calls ‘the genus-process’. Contra the Consensus Reading, these general backgrounds are the sorts of things which *could* serve as backgrounds for viewing multiple numerically distinct living individuals, but they do not *have to* in order to be what they are.<sup>7</sup>

## V. Problems with the consensus reading

I will now show ways in which my account is more coherent than the Consensus Reading. As a preliminary objection, it is hard to see how Hegel can be justified in suddenly introducing multiple individuals falling under a common species at this point in the *Logic*. In the next section, ‘Knowledge’, Hegel discusses the work of knowledge in a single theoretically/practically reasoning thinker. In the earlier parts of the ‘Life’ section we also find only a single being, as a totality of members which are organically united (in opposition to a particular sort of environment). The sudden appearance of a *second* living individual, let alone one of a different sex than the one we had in view previously (whose sex had not been mentioned), is jarring. It is thus an advantage for the Modal Reading, on grounds of interpretive charity, to make sense of these passages without such a curious posit.<sup>8</sup>

The Consensus Reading tries to take Hegel’s language in ‘The Genus’ at face value. This leads some (e.g., Taylor, Houlgate and Burbidge) to claim that the *Logic* shows the necessity of sexual difference in living nature. But this is problematic, because Hegel (unlike Schelling<sup>9</sup>) does not take sexual differentiation to be fundamental to organic nature as such. In the *Philosophy of Nature*, Hegel discusses at length a number of disputes about sexual difference and reproduction in plants. His eventual conclusion is that ‘As the *sexual-parts* of the plant are not an integral part of its individuality, but form a closed and distinct sphere, the plant is sexless’ (PN: §348Z, III: 94). Hegel treats the question of sexual difference in plants as requiring empirical research, which is itself a strike against any reading of the genus-process on which sexual reproduction is a requirement of the logic of life itself: but it is a greater problem if one of the main kingdoms of life fails to meet a requirement that Hegel is said to have put on living beings *qua* living.

But this is a problem only for those readers who claim life as such is sexed. A more important test-case for the Consensus Reading is Hegel’s discussion of infusoria, as it goes to the heart of the issue. While discussing the composition of the sea, Hegel provides an extended discussion of these creatures:

The sea is full of an infinite multitude of vegetable points, threads, and surfaces; [...] In each fermentation there is already an immediate appearance of animalcula. Finally however, the sea

also progresses into determinate formations, into infusorial animalcula, and other tiny transparent organisms. [...] Here many have a single life, like the polyps, and then come together again in a single individual. [...] This animal world is unable to hold its light within it as inner selfhood, so that it is transient, and merely breaks out of itself as a physical light; the millions of living beings deliquesce rapidly into their element again. (PN: §341Z, III: 37)

Hegel here discusses many life-forms which were very poorly understood before the development of cell theory; what is significant for my purposes is that Hegel is aware of these simple life-forms, and he does not hesitate to call these ‘vegetable points’ and ‘animalcula’ living organisms. After almost two centuries of further research, we now know that most of these ‘lower’ organisms reproduce asexually. Though ignorant of this, Hegel should, on the Consensus Reading, at least be able to assert that these animalculae are produced by other animalculae. They are living organisms, and so (on the Consensus Reading) must descend from other living organisms with which they share a common universal kind. But Hegel does not assert this. Following the evidence he sees before him, Hegel affirms what Michael Petry in his commentary calls ‘the spontaneous generation of the sea’ (PN: III: 248). On Hegel’s view, the sea, while not itself alive, is ‘a living process which is always on the point of breaking out into life’ (PN: §341Z, III: 36). The sea has within it what is needed for various living beings to periodically emerge from it, without their needing to have come from anything other than the sea.

Hegel views the opinion which the Consensus Reading would force upon him, that animalculae must all come from other (unobserved) animalculae, as unscientific:

‘Omnia vivum ex Ovo’ [all life comes from an egg] used to be accepted as a proposition, and if the origin of certain animalcula was not known, recourse was had to fabrications. There are organisms that produce themselves immediately, however, and procreate no further; infusorial animalcula agglomerate and become another formation, so that they serve only as a transition. (PN: §341Z, III: 36–37)

As an empirical issue, Hegel believed that life could emerge from non-living matter (at least in the case of very simple life-forms), and in fact regularly did so.<sup>10</sup> So any reading of ‘The Genus’ which commits Hegel to the requirement that living beings logically must emerge only from other living beings is inconsistent with the account of living nature Hegel goes on to give when he concerns himself with the empirical details of nature. There are living beings which violate this requirement, and Hegel



says nothing against them. The Modal Reading avoids attributing this requirement to Hegel's account of life, as it would be a merely external standard by which to 'rank' forms of life.

## VI. Kreines on spontaneous generation

Kreines raises the issue of spontaneous generation, in what he calls a 'Kantian objection' to the Consensus Reading. The objection is reminiscent of Donald Davidson's notorious (and regrettable) 'Swampman'<sup>11</sup> thought experiment, but with a simpler case; I will call it 'Swamp Thing':

Imagine that some heap of matter were, by incredible coincidence (perhaps literally involving a lightning strike), to rearrange itself into a simple one-celled organism [which I will call 'Swamp Thing']. This would not be a teleological system, no matter how effectively its parts might benefit the whole; ex hypothesi, the parts are present not because of an end or purpose but merely by coincidence. So if this organism reproduces [itself] and assimilates, then it would satisfy [Kreines's account] without being a truly teleological system. Such a thought experiment is entirely alien to Hegel's procedure. But if a contemporary Kantian were to insist on the experiment, then a contemporary Hegelian could respond: An individual of a future generation is a teleological system. For it exists on account of the general species or 'concept' it shares with previous generations. Or, it exists only insofar as its parts are 'members'—insofar as these kinds of parts are a benefit in relation to this kind of whole. (Kreines 2008: 370)

Kreines's reading, as a version of the Consensus Reading, claims that the universal—the general species or "concept", as Kreines puts it—is a result of the existence of multiple individuals reproducing across generations. Idiosyncratically, Kreines infers that the first 'ancestor' of living individuals to arise in nature was not itself a living individual: for it had no ancestors with which to share its 'concept'. Thus life can arise from non-life only by a sort of limiting case, for Kreines: except for its causal history, the non-living 'ancestor' might be indistinguishable from its 'descendants'.

Kreines says that considering a thought experiment, such as 'Swamp Thing', is 'entirely alien to Hegel's procedure'. But this is not so. As we have already seen, Hegel believed that simple organisms empirically did come into being in seawater (perhaps they could even have done so in swamps). Hegel in the *Philosophy of Nature*

also entertained what he considered a bit of scientific speculative fiction, the possibility that ‘the Earth was once devoid of living being, and limited to the chemical process etc.’, and said of this scenario that ‘even *if* this were true at one point in the past, that ‘as soon as the flash<sup>12</sup> of living being strikes into matter, a determinate and complete formation is present, and emerges fully armed, like Minerva from the brow of Zeus. [...] Such an individual certainly evolves<sup>13</sup> in various ways, but although it is not yet complete at birth, it is already the real possibility of everything it will become’ (PN: §339Z, III: 22–23). The first earthly life, which emerges in a flash in Hegel’s story, is already able to maintain itself against its environment, and to ‘evolve’ and ‘complete’ itself in many ways, because it ‘emerges fully armed, like Minerva’: it comes into being as something that maintains itself against an other, its environment, by metaphorical weaponry. It has certain ways in which it continues to keep itself alive, though its environment may present it with danger. It is thus a system of functional *members*, not of mere parts, though its origin is due to a (science fiction) miracle.

Kreines has his ‘contemporary Hegelian’ concede to the ‘contemporary Kantian’ that this first ‘Swamp Thing’ creature is not internally purposive, and retreats to the weaker claim (which is all that Kreines thinks is supportable) that the future generations after it will be internally purposive, because their parts satisfy the ‘Kantian’ requirement of having been efficiently caused by wholes of a relevant sort. But by Kreines’s own lights, Hegel’s version of Kant’s account of the parts of a ‘natural end’ holds only that the *members* of a natural end exist because of their relation to the whole.<sup>14</sup> This standard is met by ‘Swamp Thing’ in their first moment (against the Change Reading), as they begin to maintain themselves in their new mossy environment: before this point, there were no ‘Swamp Thing’ members, and now there are. These members are needed to make them ‘fully armed, like Minerva’, and so capable of self-maintenance. As these members are functionally individuated, they depend on the whole ‘Swamp Thing’ for their identity; they do not need to also be efficiently caused by an earlier ‘Swamp Thing’, as Kreines thinks. While Kreines defends the Consensus Reading by treating spontaneous generation as not really producing life, Hegel shows how to see such life as all that it needs to be.

## VII. Genus and modalities

A large question for my reading remains unanswered: Why did Hegel use the strange sort of language I highlighted in section II, writing of a plurality of ‘individuals’ etc., in ‘The Genus’, if he did not intend the Consensus Reading? I forthrightly admit I think Hegel is obscure on this point; the text simply does not have a reading which smoothly fits it without saddling Hegel with philosophical absurdities.

But I do have a suggestion to make: I take Hegel to be trying to motivate the need to distinguish between the actual way a living being lives and merely possible ways it could have lived, without *assuming* from the outset that these modal notions must be in play when we think of living beings.<sup>15</sup>

In ‘The Genus’, Hegel introduces a problem, a ‘contradiction’ in the view of living beings developed up through the end of the discussion of the assimilation-process: to resolve it, we need to posit an additional sort of thought-determination to make sense of how a living being confronts its environment, beyond just the bare thoughts of this individual and its immediate environment, though the individual and its surrounding environment seem to jointly exhaust what is there. Because we know the living individual faces a wealth of affordances, we have the presentiment that this actual individual is not all it could be. The living being is as it were shadowed by unactualized possibilities, other individuals which seem to be just as possible as the actual living individual, since the environment affords ways of living other than how it actually lives.<sup>16</sup> These other ways of living are ways of living by which the living individual does not live—this contradiction, of ways of living which are not ways in which living occurs, is what motivates ‘The Genus’.

This confusion is cleared up, the ‘contradiction’ resolved, by ‘sublating the single individualities’ (*WL*: 773/190), both possible and actual, into a common universal genus<sup>17</sup> through which we can understand living beings as partially *actualizing* the *possibilities* of their kind. Because this kind can only be actualized partially, some of these ‘merely possible’ alternative ways of living will inevitably be *not* possible, ruled out by what is actually the case. These possibilities are thus ‘real’ only as moments of an *abstract* genus, and the living individual is properly distinguished from such abstractions—we can now see that ‘actually existing’ is not a mere index of *which* possibility we have in view. Making sense of living individuals as developing themselves through converting their environments into a means for their own existence thus requires thinking of general kinds which these living beings instantiate—kinds which exist abstractly, as general ways of living that individual living beings perpetuate without being aware of them.

Before ‘The Genus’, the genus as a universal is not in view, nor are any of the modal facts I have mentioned; we have in view only the living individual, its environment, the other ways of living this environment affords, and the awareness that this living individual is far from exhausting its options for being just the living individual it in fact is. It is this lack of having the universal in view which explains the ‘contradiction’ which ‘The Genus’ develops, and which makes it seem that there is more than one ‘individual’ in view, rather than just non-actualized potentialities for the individual living being. This is all resolved by getting the universal in view, letting us see these unactualized potentialities as ways that *this kind of thing* can live, even if a given individual living *thing of this kind* does not in fact live in this-or-that particular way. Grasping the living individual as a member of a species allows us to see what to do with the

troublesome (merely possible) ‘other individual’ (*WL*: 773/190) which confronts the (actual) living being; it, and all of the other possible ways it can live, must be grasped as really just abstract ways in which this particular *kind of living being* can be instantiated.

For the living individual, as distinguished from a knowing subject (the next stage in the *Logic*), all that is ever in view is the immediate ways in which it might live at the moment; it never adopts a synoptic view of itself or the kind of life it lives, but merely in fact lives that kind of life, unreflectively. This is why Hegel says this form of the Idea is ‘immediate’ and ‘actual in an individual shape’ (*ibid.*): it is a shape which is not a product of reason or governed by reflection, but is *merely* the kind of life it is, functioning as a steady background for the living individual to work within, produced by the contingency of nature. For the living individual, this kind of life is only present to it implicitly, in the form of opportunities to act in various ways: the living individual only has its genus present to it in the form of ‘another living individual’ (*ibid.*), in the form of a different way of living than it is in fact living at the moment being equally a way that it *could* be the living individual it is.<sup>18</sup> As Hegel says, in a sense these two ‘individualities’ (*ibid.*) are identical—what is *merely possible* is just what is merely possible *for this actual living individual*, and this actual living individual is only the actualization of some of these possible ways of living; the possible and actual cannot be or be conceived without each other. But, so long as we do not have the higher genus in view, as the living individual itself does not, this belonging-together of the living individual and the merely possible living individuals, ‘the individual’s universality’ (*ibid.*) as what unites the living individual and its possible opportunities, is ‘as yet *internal* or *subjective*’ (*ibid.*)—it is something we know *should* be the case somehow, but we cannot make out *how* that might work, any more than the individual living brute can.

Thinking of the genus as a universal is what lets us grasp actuality and possibilities both as moments of our thinking of the kind of living thing at issue. Coming to see that the living individual and its unactualized possibilities for action are both intelligible only against a general background, which is more general than anything the living individual itself ever has in view, is to recognize the necessity of the genus-process as a moment of the Idea of life, and to grasp a particular existing species as itself an ‘actual Idea’ (*WL*: 774/190), a concrete universal. This is the logical treatment I want to give to the language which the Consensus Reading tries to handle literally, as do Wallace and Burbidge: it is Hegel’s peculiar way of introducing the special modal features at work in a concrete universal.

### VIII. Nature’s weakness

Because of the special nature of species as *concrete* universals, Ideas, they need to be inseparably linked to what the individual instances of these kinds in fact do. This is

the truth in Kreines's desire to give *content* to species only through the history of their bearers. On the Modal Reading, because an individual bears its kind even at an instant, and can even be generated spontaneously, it can be puzzling where this content can come from: for before a living being has lived out its life, shouldn't its kind be a sort of sheer possibility? My general answer to this is that the content of the kind is shown in the possible ways for the living individual to act. These are present even from the first moment of a spontaneously generated being, as a living being must be active from the start. But this might seem to leave its kind very much lacking in determinacy—for aren't these possibilities I am appealing to equally thin until the living being has filled them with content by living out its life?

I think this puzzle is dissolved by reading Hegel as committed to the kinds of living individuals being genuinely *indeterminate*.<sup>19</sup> This is an instance of what Hegel calls the 'inability [*Ohnmacht*] of nature to hold fast to the realization of the concept' (*PN*: §250Z, I: 216). This surprising view becomes more plausible if Hegel is looked at in his historical context, which was less friendly to 'natural kinds' than philosophy is at present.<sup>20</sup>

In Hegel's day there were live controversies about taxonomy; the system of Linnaeus suggested a unified view of animals, but his system of plants was plainly a guide for field identification rather than a proper taxonomy (his first twelve classes simply divide flowers up by how many stamens they have). This led to a great flourishing of taxonomies, which naturally brought about great disagreements over which system showed how nature was *really* organized. In his widely-read *Histoire naturelle*, the Comte de Buffon compares these efforts to alchemy: 'in failing to find a philosopher's stone, we found an infinity of useful things' (Buffon 1829: 59).<sup>21</sup> That the search for a 'real system', like the alchemists' quest, was doomed to failure is for Buffon explained by a 'metaphysical error' (1829: 63), for 'genera, orders, and classes exist only in our imagination' (1829: 79). Buffon was thus a nominalist about taxonomies: our taxonomic schemes are artificial devices we use to conveniently organize living beings, which really exist independently of all taxonomies.<sup>22</sup>

Hegel is openly sympathetic to this outlook in the *Philosophy of Nature*, writing that 'the infinity of forms exhibited by animal being is not to be pedantically regarded as conforming absolutely to the necessary principle of order' (*PN*: §370Z, III: 180) and that 'The forms of nature cannot be brought into an absolute system, therefore, and it is because of this that the animal species are exposed to contingency' (*PN*: §370Z, III: 180–81). Owing to his closeness to Goethe, Hegel is keenly aware of the failures of taxonomic systems, especially in botany, to give us unique grasps of *The System of Nature* (as Linnaeus titled his book). But nominalism about living kinds is not an option for him, as he is committed to the necessity of thoughts of general living kinds, not on grounds of convenience but of logic. Hegel is able to avoid Buffon's nominalism about kinds, on my

reading, by instead opting for *indeterminism* about them: because of the ‘weakness [*Ohnmacht*] of nature’, there is no uniquely correct way to classify living beings, and any particular system we in fact settle on will only be what we find convenient for our purposes: I thus think Hegel is properly thought of as a sort of ‘species-constructivist’.<sup>23</sup>

On this view, we have to construct our systems of nature because nature herself is too weak to do so. Hegel writes that

The difficulty, and in many cases the impossibility of finding clear distinctions of classes and orders on the basis of empirical observation, has its root in the inability of nature [*der Ohnmacht der Natur*] to hold fast to the realization of the Concept. Nature never fails to blur essential limits with intermediate and defective formations, and so to provide instances which qualify every firm distinction. Even within a specific genus [*bestimmter Gattungen*] such as mankind, monsters occur, which have to be included within the genus, although they lack some of the characteristic determinations which would have been regarded as essential to it. (PN: §250Z, I: 216, translation modified)

On my reading, the impossibility ‘in many cases’ of finding ‘clear distinctions of classes and orders’ in nature goes deeper than Hegel lets on in this remark from the Introduction to the *Philosophy of Nature*: the sorts of distinctions that can be drawn in nature are not limited to generally valid dichotomies which are problematized by borderline cases, but are always-already problematic, with the *inevitability* of borderline cases and ‘monsters’ as only a sign of the fact that nature has no determinate rational forms to uncover.

Hegel’s goal in the *Philosophy of Nature* is to provide a synoptic view of the ‘nature’ disclosed by the empirical sciences, and so the plurality of biological taxonomies is *prima facie* a problem for him—it seems a possible threat to the possibility of a synoptic account of nature, for we might worry about which of these accounts of natural order is the one to side with. Hegel dissolves this difficulty by denying there is such an order to get uniquely correct, as though our taxonomies may or may not correspond to one hidden in nature herself (perhaps as an echo of the words God spoke in the Days of Creation). Without this assumption, Hegel happily discusses animal kinds in §370Z of the *Philosophy of Nature* by combining all of the accounts he finds useful to think with.

My provocatively labelling Hegel a ‘constructivist’ about living kinds may seem obviously, even egregiously, mistaken, for Hegel denies that we can construct taxonomies however we please, grouping any sorts of resemblances with any others; this would just be nominalism. As Hegel says, ‘if the difference [between animals] is to be a true one however, it has to belong to the animal itself, and should

not be a distinguishing feature which is merely selected by us [*so darf es nicht unsere Unterscheidung durch Merkmale*] (PN: §370Z, III: 191/192). But, as this line of thinking goes, if we cannot select resemblances as we please, then Hegel must be a realist about living kinds: the differences between animals cannot be features *we* select as differentiating them, but must ‘belong to the animal itself’ as true moments of the rational order present in nature. But this opposition does not capture the distinction in the quoted passage; Hegel is not making a claim about how we should *evaluate* taxonomies, but a practical one about how to *construct* them. Hegel’s point is that we must not simply select any ‘mark’ (*Merkmal*) by which we might specify a class of animals (such as ‘spotted’, ‘large’, ‘belonging to the emperor’), but must pay attention to how the animal *acts*, how it *lives*, if we are to really think in terms that grasp living beings *as living*. Hegel’s contrast is not between differences which are ‘really in nature’, carving it at the joints, versus differences we introduce into nature; it is a contrast between differences which matter to the animal versus differences which are irrelevant to the fact that it is alive. By means of their teeth and claws animals ‘distinguish themselves from one another’ (PN: §370Z, III: 191); nature red in tooth and claw shows which animals are predators and which are prey, which hunt and which graze. But to recognize that variations among teeth show that some animals graze on plants and some tear flesh (and some do both, as we do) is not to say that ‘carnivore, herbivore, omnivore’ mark out ‘natural kinds’. It is just to say that we can classify animals by means of their vital activities through looking at their teeth, as Cuvier did—we have learned that even their fossilized bones can tell us about the activities that make animals animals.

This view has many implications for how to think about nature alongside Hegel. One striking consequence is that the individuation of living individuals can vary depending on choice of a taxonomic system. This is because different taxonomies will have different types of species, and different types of species means different criteria for individuation of living individuals. Thus there need not be a unique answer to questions like ‘How many individuals are in a clonal colony?’<sup>24</sup> Living individuals, simply as living, are not neatly individuated, contra the Change Reading, and they do not have norms which apply to them unproblematically; this is the ‘impotence’ (*Ohnmacht*) of nature that spirit is supposed to improve on by historically erecting norms for itself that clearly settle the question for us of who we are and what we are to do.

## IX. Conclusion

I have distinguished my Modal Reading from two approaches in the literature, the Consensus Reading and the Change Reading, and showed how it avoids

interpretative and philosophical problems faced by each of these accounts. Hegel's belief in spontaneous generation was especially problematic for the Consensus Reading, but my Modal Reading takes it in stride. I also showed how my Modal Reading connects to the text of the *Science of Logic*, and concluded by discussing the broader issue of species in Hegel, tying it to an indeterminacy owed to the 'weakness' (*Ohnmacht*) of nature.

That living nature is not carved up in the way Plato or Aristotle might have thought was necessary for science to be possible shows only that philosophers have often assumed too much about the structure of possible sciences; these assumptions have served as roadblocks on the path of inquiry. The Consensus Reading assumes that all life must reproduce across generations, like our familiar cellular forms;<sup>25</sup> an advantage of going back to Hegel is to free our thinking from this sort of contemporary prejudice. The Change Reading assumes that living beings are neatly individuated, which is problematic empirically; the Modal Reading, which claims that Hegel is an indeterminist about species, is uniquely suited to accommodate this fact, as it attributes to Hegel remarkably thin commitments while still articulating the special structure of our thoughts about living nature. Finding a reading of 'The Genus' that is coherent with Hegel's *Philosophy of Nature* and philosophically well-motivated thus shows Hegel's continuing relevance for thinking about these deep questions in the philosophy of biology.

**Daniel Lindquist**  
Indiana University, Bloomington, USA  
[danlindq@indiana.edu](mailto:danlindq@indiana.edu)

### Notes

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<sup>1</sup> I provide novel arguments in defence of this in Lindquist 2018.

<sup>2</sup> Hegel's German term is *Gattung*, which has a broad sense; like the English 'genus' it is used for what in logic is above a 'species', but it is also used for living kinds, for Plato's εἶδος, for grammatical genders, etc. I will generally use the word 'species' or 'kind' where Hegel would say '*Gattung*' when discussing lifeforms, as these are the normal English words to use in such contexts; I use 'genus' only when specifically following the conventions that have been used in translating Hegel into English, as in the stock phrase 'the genus-process' for the third moment of the Idea of life. Commentators have varied in whether they speak of 'genus' or 'species' or 'kind' when explicating the same thoughts from Hegel here; nothing hangs on which word is used, and they can be treated as generally synonymous.

<sup>3</sup> Abbreviations used:



EL = Hegel, *The Encyclopaedia Logic*, trans. T. F. Geraets, W. A. Suchting and H. S. Harris (Indianapolis: Hackett, 1991)/*Enzyklopädie der philosophischen Wissenschaften im Grundrisse Erster Teil* (Frankfurt: Suhrkamp 1970).

PN = Hegel, *Philosophy of Nature*, trans. M. J. Petry (New York: Routledge, 1970)/*Enzyklopädie der philosophischen Wissenschaften im Grundrisse Zweiter Teil* (Frankfurt: Suhrkamp, 1970).

WL = Hegel, *Hegel's Science of Logic*, trans. A. V. Miller (New York: Humanity Books, 1969)/*Wissenschaft der Logik Zweiter Band* (Hamburg: Meiner, 1981).

<sup>4</sup> This pun, *Gattung/Begattung* may partially explain why Hegel so often uses this imagery. Thanks to Clark Wolf for suggesting I look at cognates in Hegel's German.

<sup>5</sup> An anonymous reviewer for the journal suggests another reason for distancing Hegel from Aristotle: their very different accounts of the logical moments of singular/particular/universal. The reviewer notes that while all three are included in Hegel's account of the syllogism, including singularity in logic was an innovation of medieval nominalism, and is non-Aristotelian. This interesting suggestion is beyond the scope of this paper, but is intriguing, especially given that Aristotelian science considers only universals, while Hegelian science cannot be abstract in this way.

<sup>6</sup> I argue for this in Lindquist 2018. The basic idea is that there is a reciprocal relationship between what an organism's environment is like and what its organs are like, and so identifying either individual or environment involves being able to distinguish them from each other. An organism and its environment are not merely set side by side in nature; the organism is what uses this environment as its means of existence, and recognizing the sort of vital agency that constitutes life involves seeing how a living individual makes use of particular means.

<sup>7</sup> They do each need to apply to at least one individual, on roughly Aristotelian grounds about the priority of actuality to possibility; Hegel is on the side of Aristotle against Plato on this general topic: "The animal" does not exist' (EL: §24Z, 56). If there have never been any living beings of a particular 'kind', then it is not really a *kind* of living being, but only an imagined one. Kinds, for Hegel, have a beginning in time, and can have an end in time (as with Steller's sea cow); they are not eternal.

<sup>8</sup> My reading of the genus-process is in this way akin to John McDowell's reading of the 'Lordship and Bondage' passages in McDowell 2009.

<sup>9</sup> 'Throughout the whole of Nature absolute sexlessness is nowhere demonstrable, and an *a priori* regulative principle requires that sexual difference be taken as point of departure everywhere in organic nature' (Schelling 2004: 36).

<sup>10</sup> It is worth noting that 'abiogenesis' is still a live scientific view, and not a historical curiosity.

<sup>11</sup> Davidson 1987. There is a literature relating 'Swampman' to contemporary debates about teleology; Neander 2012 has a relevant bibliography. Thompson (2008: 60) uses brief Swampman-style considerations to bolster his account of thoughts about living beings, drawing very different conclusions than I will draw from my discussion of 'Swamp Thing'.

<sup>12</sup> The German here is *Blitz*, literally a flash of lightning.

<sup>13</sup> It is important not to be misled by Hegel's choice of vocabulary; the word 'evolve' here means merely 'develop'.

<sup>14</sup> See Lindquist 2018 for extended discussion.

<sup>15</sup> For a detailed discussion of modalities in the *Logic* that shows how penetrating and subtle Hegel is, underneath what can at first seem similarly opaque and irrelevant prose, see Burbidge 2007: 16–47.

<sup>16</sup> Compare these problematic 'other individuals' to the 'possible fat man' and the 'possible bald man' in Wyman's doorway, in Quine's 'On What There Is' (Quine 1953: 4). In both cases, thinking of merely possible beings as possible in the same way as actual ones, except for the fact that they *happen* to lack the property of existence, leads to puzzlement about *what* this happens to be, and how exactly all of these equally-possible individuals are related to one another.

<sup>17</sup> I use the word 'genus' in this section, rather than 'species', both to connect my exposition more closely to Hegel's text and because the image of a 'higher universal' is important for seeing Hegel's point here. To talk only of 'species' would risk being misleading, since in English we use this both for the general kinds of living things and for what is 'specific' rather than general. The importance of seeing that *Gattungen* are 'higher' than what falls under them (because more general) is presumably why Hegel used this language rather than *Art* or *Spezies*, when the German biological context would allow him to have used any of these terms in this section.

<sup>18</sup> Hegel is fond of the image of the living individual grasping its mate as a final illustration of the genus-process. I think this example is just a special case of the visceral presentation of an alternative way of life to a living individual, as Adam understood his difference from the animals when he beheld 'flesh of his flesh'.

<sup>19</sup> As an analogy, I find it helpful to compare this view of species to how Davidsonians think about meaning: see especially Davidson 2001.

<sup>20</sup> I found Knappik 2016 valuable in providing this historical context, though my reading of Hegel is essentially the opposite of his: Knappik thinks that Hegel agrees 'with Linné and his followers in the scientific debate, that genera are objectively existing universals which provide an *objective* ordering of reality' (Knappik 2016: 763). Knappik, I think, reaches this conclusion too hastily from seeing that Hegel is not a nominalist; he misses the subtle alternative Hegel, on my reading, articulates. See Wolf 2018 for criticism of 'essentialist' readings such as Knappik's, and for arguments against Kreines's project.

<sup>21</sup> Thanks to Colin Street for assistance in translating Buffon's French.

<sup>22</sup> Ernst Mayr praises Buffon for this in Mayr 1982, in contrast to the 'essentialism' of Linnaeus.

<sup>23</sup> I call this a form of 'constructivism' instead of 'conventionalism' because I think conventionalist views, like Buffon's nominalism, are committed to a dualism of a conventional 'scheme' and a non-conventional 'Given'. Importantly, for my 'species-constructivist' there are no facts about living beings which are not 'constructed' in the ongoing process of inquiry; any attempt to call some aspects 'conventional' as opposed to others would thus fail to find purchase.

<sup>24</sup> Against this, Englert 2017 argues that ensuring this sort of question is answered for all objects is the entire point of Hegel's 'Idea of Life'. But Englert is also forced to regard all objects so

individuated as having internal purposiveness, including mere artifacts, which I regard as a *reductio* of his view. A pragmatic approach to the question of what should be called ‘organisms’ is defended in Libby et al. 2016.

<sup>25</sup> Carol Cleland’s work shows the problems with such assumptions, for instance in astrobiology; see Cleland 2013.

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