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THE PHILOSOPHY OF NICOLAI HARTMANN

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Chapter 6:
Nicolai Hartmann's Definition of Biological Species

Frederic Tremblay

6.1 Introduction

Before the Darwinian revolution, species were thought to be universals. Since then, numerous attempts have been made to propose new definitions. A widely held view is that species are individuals. Another is that they are populations or groups of populations. Others have proposed that species are lineages or temporal relations between speciation events. Others, including Darwin, have even suggested that the term 'species' is arbitrary and that we might have to give it up altogether. These are only a few examples. Nicolai Hartmann has defined 'species' as a unitary system of processes or a process of life of a higher-order. To give a clear understanding of Hartmann's conception, I present his method of definition, his concept of "organism," and his correlated concept of "species." I end the paper by pointing out two possible systematic inconsistencies.

Hartmann was already well acquainted with biology through the medical education he received prior to beginning his studies in philosophy. He elaborates his philosophy of biology in *Philosophische Grundfragen der Biologie* (1912a) and *Philosophie der Natur* (1950). *Philosophische Grundfragen der Biologie* belongs to the writings of the early period of his career, which do not represent Hartmann's mature thought. In *Philosophie der Natur* he recuperates topics from the earlier treatise and improves their treatment by integrating them into a systematic framework. Since the section of *Philosophie der Natur* devoted to the organological categories represents Hartmann's mature philosophy of biology (thirty-eight years have passed since the first text), I set aside the text of the early period to focus on *Philosophie der Natur.*

6.2 Hartmann's method of definition

By 'definition' philosophers normally mean the Aristotelian kind of definition, nowadays known as the "analytical definition," according to which we ought to provide the genus proximum of the definiendum and its differentia specifica. But Hartmann rejects the Aristotelian method of concept formation. He thinks that the genus-differentia kind of definition cannot alone account for the complexity of things. As he says in "Systematische Methode," "we should not hope to discover a genus proximum" (Hartmann 1912b, 145).[1] Instead, Hartmann espouses a view closer to Plato's hypothesis of the *koinonia* of categories as exposed in *The Sophist*, according to which something is a combination of many categories (Hartmann 1912b, 143 & 158; 1940, 226). Hartmann developed a method of concept formation that he calls "dialectical concept formation" (*dialektische Begriffsbildung*), which accounts not only for the genus and differentia relations, but also for a variety of other kinds of intercategorial relations (Hartmann 1940, 601).

This method produces a "relational-definition" (*Beziehungsdefinition*) (Hartmann 1912b, 145; 1940, 601). The *Beziehungsdefinition* takes account of a multiplicity of relations (*Beziehungsmannigfaltigkeit*) that the category stands into with other categories (Hartmann 1912b, 145; 1940, 601). This kind of definition should aim at capturing the system of the category's characteristics (*System seiner Merkmale*) and the system of its determinations (*System seiner Bestimmungen*) (Hartmann 1940, 602). An ideal *Beziehungsdefinition* would capture the totality of the relations that the content of a concept stands in. The number of relations that this kind of definition could capture is so great that it would actually be impossible to produce such a concept, admits Hartmann. Our finite understanding cannot grasp the totality of relations. He thus acknowledges that the process of *Begriffsbildung* is a virtually incompletable task. Categorial concepts are never completed, but continually remain in a process of formation; they always remain approximate with regards to their contents and must continuously remain disposed to being altered (Hartmann 1912b, 145–146; 1940, 601).

Most important are the relations that a category stands in with regards to the fundamental categories. For Hartmann, the fundamental categories come in pairs of oppositions. In *Der Aufbau*, Hartmann obtains a table containing twelve fundamental pairs of opposite categories:

1 Otherwise indicated, all translations are mine.

principle-concretum, structure-mode, form-matter, inner-outer, determination-dependence, quality-quantity, unity-multiplicity, concord-discord, contrariety-dimension, discretion-continuity, substratum-relation, and element-system (Hartmann 1940, 230–231). In addition to the fundamental categories, the special categories belonging to the sphere of reality include space-time, process-state, and causality-substance. So, whatever a species is, its categorial concept must account for the intercategorial relations that it bears with these more general categories.

Furthermore, every stratum of reality has its own group of categories. The organic stratum contains the group of organological categories, among which are categories such as the organic system, the life of the species, ontogenesis, phylogenesis, speciation, variation, etc. (Hartmann 1964, 52). With Hartmann, the thesis that the categories of a same stratum must be coherent with each other becomes a principle of concept formation – the principle of *Schichtenkohärenz* (Hartmann 1940, 596). As R. Gamp comments, with Hartmann "categorial coherence is assigned the role of a methodological principle" (Gamp 1973, 256). The coherence of categorial concepts is essential, for "[c]oherence connects anything with everything within a stratum of categories" (Hartmann 1940, 595). Coherence is the trademark of systematic philosophy and, according to Hartmann, concept-formation and system-building have to be done in tandem. As he says, "[t]he development of a system and the definition of its basic concepts is one and the same" (Hartmann 1912b, 148).

But here Hartmann's methodology faces adversity, for already in his time there was a prevalent prejudice against the construction of systems. Systems evoke impressions, among other things, of life-less fixity, artificiality, and the absence of the possibility of progression (Hartmann 1912b, 121). Hartmann replies to this prejudicial tendency stating that although the system is a goal for philosophical knowledge, "[t]his goal is never actual, never achieved, for philosophical knowledge is never complete. The system is the ideal totality of this knowledge" (Hartmann 1912b, 122). Hartmann's idea is not to build "an actual definite system, but only to tend toward the construction of an actual system" (Hartmann 1912b, 122). He insists that it is unhealthy for each special science to develop its own philosophy without connecting its results to a more general framework. This framework should be supplied, according to Hartmann, by the theory of categories (Hartmann 1950, vii).

Let us now turn to Hartmann's concept of "organism," with which it is essential to be acquainted in order to understand his concept of "species."

6.3 The organism

Essential to Hartmann's *Beziehungsdefinition* of organism is that it is a system (*Gefüge*).[2] A system is a stable processual structure of elements that can be an element for a higher-order system. Vice-versa, an element can be a system for a lower-order element. Like every pair from Hartmann's table of categories, system and element are relative contrary termini; neither exists without the other. In *Der Aufbau*, Hartmann uses the example of electrons, protons, and neutrons, which are elements for a higher-order system: the atom. In turn, atoms are elements for a higher-order system: the molecule. He also gives the example of the earth, which is a system in itself, but is also an element for a higher-order sys-

2 The translation of the word *Gefüge* is problematic. In his translation of *Neue Wege der Ontologie*, R. C. Kuhn has opted for 'structure' (Hartmann 1952). W. H. Werkmeister adopted Kuhn's translation (Werkmeister 1990, 40). This translation, however, is double-crossing the table of oppositions given in *Der Aufbau*, where Hartmann has already opposed *Gefüge* to *Element* and reserved the word *Struktur* for a different category paired with the category of *Modus* (see the table of oppositions in 1940, pp. 230–231). This alone is a sufficiently good reason for rejecting 'structure'. The word 'system' appears to be a better option. In fact, in the early biological treatise *Philosophische Grundfragen der Biologie*, Hartmann uses the word *System* instead of *Gefüge*. In *Philosophie der Natur*, however, Hartmann says that "[t]he expression *Gefüge* replaces the worn-out term *System*. The latter too easily evokes something static; the word is used to mean nothing else than *"Zusammenstand."* The image evoked by *'Gefüges'* is plastic" (Hartmann 1950, 445). The reason he mentions his objection to the word *System* is because it is the word that is closest to *Gefüge* with respect to meaning. The word 'complex' is another possible translation. But 'complex' already translates the German word *Komplex*, which Hartmann uses in many places in a sense that is not synonymous with *Gefüge*. Hartmann also says of *Gefüge* that they are processual (*prozesshaft*) (Hartmann 1950, 445) and dynamic (*dynamisch*) (Hartmann 1950, 445). And the English word 'system' is more susceptible to evoke a "processual" character than the English word 'complex'. We use the English word 'system' to speak of processual structures such as in the expression 'solar system', whereas we typically use the English word 'complex' to speak of static structures, as in the expression 'complex of buildings'. Therefore, I judge that 'system' is preferable to both 'structure' and 'complex'.

tem: the solar system. In contrast, water puddles and mountains are neither elements nor systems, but only bits and pieces of systems, for they have no stable processual structures of their own. They are somehow caught in between elements and systems.

Hartmann distinguishes between "dynamic system" and "organic system."[3] A dynamic system is a system that is merely inorganic, for instance, the solar system. An organic system is a system that is alive, such as a cell, a plant, or an animal. Following this distinction, the inorganic stratum of being contains merely dynamic systems. The organic stratum is made up of organic systems, which in addition to "taking in" dynamic systems include the novelty of the process of life. Because organic systems "take in" dynamic systems as their elements, the maintenance of the existence of the former depends on that of the latter. But dynamic systems, on the other hand, remain absolutely independent of organic ones; the cell "takes in" molecules as its elements, but the existence of the molecule is independent from that of the cell (Hartmann 1940, Chap. 33).

This being said, for Hartmann the organism is the unitary organic system of forms, functions, and processes. It is not identical with the matter from which the organism is constituted. This matter is only a substratum for the forms, functions, and processes. The matter from which the organism is constituted is, properly speaking, nothing else than what is already to be found at the inorganic stratum. It is constantly gained and lost, while what enjoys stability and is novel to the organic stratum is this system of forms, functions, and processes keeping together what would otherwise be inorganic matter. The organism is their unity and mutual interdependence (Hartmann 1950, 517).

Another essential feature of the organism is that it has temporal boundaries; it has a beginning and an end, it comes to be and dies. Its coming-into-being is the coming-into-being of the auto-maintaining stable system of forms, functions, and processes, and its death is the collapse of this system.

The coming-into-being of the auto-maintaining system of forms, functions, and processes coincides with the completion of the ontogenetic process. The ontogenesis of the embryo is directed toward a final form, and the process is not over until the complete form is at-

3 There are also different kinds of systems for the higher strata of being. For instance, nations and states are systems belonging to the stratum of the objective spirit (*objektiven Geistes*) which "take in" people as their elements.

tained. If we look at such processes as the ontogenesis of multicellular organisms, we see that a formation process is directed toward a specific goal over a whole set of stages. This goal is an immanent end contained in the anlage system. An anlage system is an embryonic area capable of forming a structure: the germ or bud, i.e., the initial clustering of embryonic cells from which a part or an organ develops. The ontogenesis is the unfolding of the anlage system (Hartmann 1950, 626). Hartmann thus rejects preformationism, for the final form is present in the embryo only in potentiality, and the development of the living being is over when the form becomes actual. The embryo is not a preformed miniature animal, but an anlage system developing toward the form. Thus, there is gradual epigenesis of the final form.[4]

As to the passing away of the organism, Hartmann defines it as "the collapse of the system of interconnected functions, its disorganization, the cessation of the processes" (Hartmann 1950, 518). From the absence of any of the three categories involved ensues death, because "the form cannot be maintained without the process; the process is its permanent renovation. From the beginning it does not exist without the bearing function and without it, it must collapse" (Hartmann 1950, 518). The functions support the processes, and the processes the forms.

6.4 The species

Organisms exist in space. We know this because they are concrete, and we know that they are concrete because they are tangible (Hartmann 1950, 562). In contrast, species are not spatial. We know this because they are not concrete, and we know that they are not concrete because they are not tangible. We now need to bring in another premise: for Hartmann, an entity extended in space must necessarily also be in time, whereas the contrary does not hold. In other words, time is more pervading than space (Hartmann 1950, 216–217). From the premise that no species are spatial, and the premise that some entities exist in time but not in space, Hartmann infers that the mode of exis-

4 This implies that the Hartmannian criterion for the coming-into-being of the organism is the completion of its form. This point is crucial for my exposition of the second systematic inconsistency in section 6.5.2.

tence of species is only temporal. Species exist only on the temporal dimension.[5]

We have seen that Hartmann reduces the organism to the organic system of three kinds of entities (form, function, process). Forms require concrete substrata as their bearer, and because species are not concrete, they cannot have forms. Furthermore, functions exist for the sake of a goal. Whereas the organs of the organism have the functions of maintaining the life of the organism, and the organism has the function of perpetuating the life of the species, the species itself has no goal because it is not the element of a higher-order system for the sake of which it would fulfill a function. Thus, the species cannot have any functions of its own. So, a species has neither forms nor functions.

It follows from this that a species has to be a process.[6] More specifically, it is a process of life that encompasses all the individual processes of life of all the organisms of the same species. Hartmann uses the expression 'species-life' (*Artleben*), rather than 'species' alone to reflect the fact that the mode of being of species is processual only. Since the life of the species is a process that is a unity constituted of a multiplicity of process-elements, namely particular life-processes, and given the other premise that the existence of elements is correlative to that of systems, Hartmann infers that a species is also a system of processes. Thus, the organological category "life of the species" is a combination of the real category of "process" and of the fundamental categories of "system" and "unity." He also describes it as a process of a higher-order of mag-

5 A connoisseur of Hartmann's philosophy could interpret this feature of the Hartmannian species-concept as inconsistent with the system. Indeed, one could object that since species belong to the organic stratum, and that space goes through the organic stratum, species must be extended in space. But this conclusion does not follow by necessity because although Hartmann says that space penetrates the organic stratum, he does not say that *all* entities of the organic stratum must be extended in space. He leaves open the possibility that *some* entities of the inorganic and organic strata *are not* extended in space.

6 It might not be futile to specify that Hartmann uses the concept of "process" in its most abstract sense. A process is only the activity, the change or the motion, subtracted from the substance or substratum or matter undergoing the activity, change or motion. A process, properly speaking, occurs only in the temporal dimension and, although it is necessarily inherent in spatially extended substances, the process itself is extended only in time. It has no separate reality; it is real only insofar as it is inherent in individual organisms extended in space and time, but as such and in the strict sense it exists only in time.

nitude and a process on a larger scale (larger than the scale to which the organism belongs). Textual evidence abounds:

- The species is a "process of life on a greater scale (*Lebensprozeß größeren Stils*)" (Hartmann 1950, 560).
- It is "a process of another order of magnitude (*ein Prozeß anderer Größenordnung*)" (Hartmann 1950, 560).
- "It is only a life of another order of magnitude (*Es ist nur ein Leben anderer Größenordnung*)" (Hartmann 1950, 563).
- It is "a system of a higher-order (*ein Gefüge höherer Ordnung*)" (Hartmann 1950, 565).
- "It is […] a system of processes (*Es ist* […] *ein Prozeßgefüge*)" (Hartmann 1950, 565).
- "The life of the species is the living whole of a higher-order (*Das Leben der Art ist das lebendige Ganze höherer Ordnung*)" (Hartmann 1950, 566).
- "The life of the species proves to be in every respect a system of a higher-order (*Das Leben der Art erweist sich in jeder Beziehung als Gefüge höherer Ordnung*)" (Hartmann 1950, 567).

The relation between organism and species is an element-system relation, rather than an individual-universal relation, as in pre-Darwinian definitions of 'species'. Elements and systems are relative to each other, as we have seen, but in the case of the life of the species, the system enjoys a relative independence from its elements. It might seem that animals have a greater independence than the species because of their free mobility, but for Hartmann this is only an illusion. In fact, the species is more independent than the organism, for the organism is bound to the species by the conditions that the species imposes upon it, as well as by the functions that it has to fulfill throughout its life for sake of the life of the species, such as reproducing (Hartmann 1950, 566–567). As he says, "the life of the species […] determines a manifold of continuously superordinated lives of individuals. It encompasses the individual as its element, and disposes of it like if it were a replaceable part" (Hartmann 1950, 567).

However close fitting the parallel between organism and species may appear, a species is not, for that matter, itself an organism (e.g., an invisible organism of a higher-order). Hartmann insists that the life of the species is not a life "over" or "beyond" that of the organisms, but that it can exist only "in" them. They are its bearers. Neither is it an occult living-substance, or a merely general entity – nominalistically

understood – that has no reality. The life of the species runs only through the individuals. And, respectively, from the moment they come-into-being the lives of the organisms are process-parts of the life of the species (Hartmann 1950, 561). The organism "is born within this whole and its life takes part to it for a while; it belongs to it through the hereditary characters of the species, receives it from other individuals and gives it forward to others" (Hartmann 1950, 567).

We have seen that for Hartmann, the organism has the function of maintaining the species, but that the species itself has no such function. To perpetuate the species, the ontogenesis of the organism is directed toward a definite form. The phylogenesis of the species, in contrast, has no definite end: "All the other processes of formation are merely reproductive. Only the phylogenetic process is pure production, productive morphogenesis; not a process of formation led by a form, but a process finding its own form for the first time" (Hartmann 1950, 615). Phylogenesis is productive of new forms, whereas ontogenesis is only reproductive of forms already shaped through phylogenesis. For this reason, phylogenesis is not exactly an ontogenesis on a larger scale, like Haeckel wanted to have it, but rather "a morphogenesis on a great scale (*großen Stils*)" (Hartmann 1950, 615).[7]

Like organisms, species have their own temporal origins (*Entstehung*) (Hartmann 1950, 613). This temporal emergence occurs through speciation (*Abartung*).[8] In the same way that ontogenesis is the coming-into-being of the organism, speciation is the coming-into-being or passing away of the species. Hartmann describes speciation as "the change of the type of species (*Die Abartung* […] *ist Veränderung des Arttypus*)" (Hartmann 1950, 613). Mutability and, in the case of sexually reproducing species, the capacity for selection constitute the potential basis for speciation. For Hartmann, speciation is analogical to the truncation of the branches of a tree: life clings to the trunk and the main branches, and those that are normally truncated are the highest and most sophisticated ones, as when dinosaurs disappeared, for instance, the surviving

7 E. Haeckel is famous for claiming in 1866 that "[o]ntogenesis is a brief and rapid recapitulation of phylogenesis" ("*Die Ontogenesis ist die kurze und schnelle Recapitulation der Phylogenesis"*) (Haeckel 1866, 300).

8 I translate *Abartung* by 'speciation'. R. C. Kuhn translated *Abartung* by 'variation' (Hartmann 1952, 64), but this is incorrect. Kuhn must have been unaware of the distinction Hartmann makes in *Philosophie der Natur* between *Abartung* and *Variation* ("Abartung ist nicht dasselbe wie Variation." Hartmann 1950, 613).

forms of life were the less highly organized and less complexly adapted species (Hartmann 1950, 613).

Hartmann says that we distinguish speciation from variation simply from the fact that speciation is the production of a new kind of species, whereas variation is only a qualitative change within a species. Variation is only a qualitative "diversification" (*Streuung*) of the type of the species. This variability only expresses the lability of the species and does not yet constitute a change in the species. Mere alteration of superficial characteristics, like a modification of colors, is different from speciation, which is a more pervasive kind of modification (*ist ein tiefer greifende Form der Umbildung*) that affects the organization of the organism (Hartmann 1950, 614). It consists in the acquisition of new organic traits, not only the mere alteration of adhering properties. It is characterized by the increase in difference, formation, function, and disposition, throughout the organization. It is no longer only an alteration, but a new formation (Hartmann 1950, 614).

6.5 Systematic inconsistencies

We have seen that, for Hartmann, the systematic coherence of the categories belonging to a same stratum is a principle of concept-formation. It is thus essential that the system of the organological categories (organism, species, ontogenesis, phylogenesis, speciation, variation, etc.) be internally consistent. Assuming that Hartmann's analysis- and description-based premises are true, and assuming that the dialectical arguments leading to the conclusion that species are processes or systems of processes are valid, i.e., assuming that the reasoning leading to the definition of 'species' as process is sound, I can see two potential inconsistencies within the system of organological categories. The inconsistencies are as follows.

6.5.1 No processes are the bearers of change

The first inconsistency arises from the conflict between Hartmann's thesis that species are processes and his thesis that the process of life cannot be a bearer of change. It is a widely accepted traditional philosophical tenet that processes cannot be the bearers of change, at least within the Aristotelian tradition broadly construed. Change occurs in substrata, but not in

change. As Aristotle has shown, a process cannot be the subject of another process: "there cannot be motion of motion or becoming of becoming or in general change of change" (*Physics* V, 225b15). Only matter, substance, and perhaps form, quality, and quantity can be subjects of change. Accepting that processes can be bearers of processes would lead to an infinite regress, and is thus rejected by *reductio ad absurdum*.

Hartmann expresses his agreement with this Aristotelian tenet, at least with regards to the "process of life," in Chapter 62 of *Philosophie der Natur*, where he examines *"Der Lebensprozeß."* Old theories, he says, have substantialized life. They made it, as it were, a substratum (*Substrat*), a bearer (*Träger*) of specific qualifications, forms, powers, and fates. Life was then understood as a higher-order matter, out of which was formed individual organisms. This philosophy spans from the old Milesian hylozoism to Bruno and Schelling (Hartmann 1950, 676). This speculative concept of "life," says Hartmann, must first and foremost be dismantled, for "[r]eal lifeness (*Lebendigkeit*) does not have the categorial form of a substratum, but of a process" (Hartmann 1950, 676).

Hartmann does not explicitly say that the process of life cannot itself be the bearer of processes, but we would be justified to expect that "specific qualifications" (*besonderer Bestimmungen*) include processes (Hartmann 1950, 676). We can present the aporia as follows: if it were the case that species are processes and that processes cannot be the bearers of change, then species would not be able to undergo change (such as speciation or evolution). But this is absurd, because it is known that species undergo change. The conjunction of the theses "that species are processes" *and* "that processes of life cannot be the bearers of change" is thus reduced to the absurd. Therefore, either "it is not the case that species are processes" or "it is not the case that processes cannot be the bearers of change." It thus seems that the Hartmannian system contains an inconsistency.

Objection. The solution could be proposed that it is the organisms constituting the species that are the bearers of the speciation and evolution processes; that it is the particular living beings that undergo mutations or that are selected in such a way that they, as a whole, become a group distinct from the one they originate from.

Reply to the objection. To this proposed solution could be objected that the change is now predicated of the organisms and not of the species qua process. What underwent the changes in the proposed solution is not the process of life that runs through all of the individual organisms that bear it, but the organisms themselves. So, the change is no more predicated of

the species, and the life of the species itself merely took a "new direction," so to say, but even this is only a metaphor.

6.5.2 The speciation event is a vague temporal boundary

The second inconsistency arises from Hartmann's thesis that speciation is a "more pervasive kind of modification (*tiefer greifende Form der Umbildung*)" (Hartmann 1950, 614). If a kind of entity exists only on the temporal dimension, then its criterion of individuation can only be temporal. Temporal individuation can only be achieved through temporal boundaries. Since species, according to Hartmann, are temporally extended entities, we can only differentiate between them if they have clear temporal boundaries (i.e., events) because we cannot have recourse to any other criteria such as phenotype or geographical repartition.[9] What seems to distinguish Hartmannian species, however, is only a difference in degrees of pervasiveness of alteration. But there is no neat boundary between the more and the less pervasive. So the event of speciation appears to be a fuzzy boundary. As a result, species appear to be fiat entities.

The aporia gets clearer if we compare the events of coming-into-being and passing away of the organism with those of the species. We have seen that for Hartmann the organism comes-into-being at the end of the ontogenetic process when its form is completed through an epigenetic process. In contrast, the process of the life of the species has no form of its own. Therefore, unlike the organism, it cannot come-into-being through the acquisition of a form.

Objection 1. It could be objected that species can come-into-being through the emergence of new forms in the organisms that constitute them. For instance, a new species would come-into-being when a single embryo, the anlage system of which contains 140 new mutations, completes its form (some biologists believe that 140 mutations are sufficient to jump the species-barrier).

First reply to objection 1. This objection could be replied to using a *reductio ad absurdum* based on a sorites argument.[10] Let us assume that 140 mutations are sufficient to jump the species barrier. Proceeding by subtraction, if 140 mutations were sufficient to jump the species-bar-

9 Because we can predicate neither qualitative nor spatial attributes of processes.

10 By 'sorites argument' I mean the paradoxical form, not the multi-premise kind of syllogism.

rier, so would be 139. If 139 mutations were sufficient, so would be 138. And so on, until only one mutation would be sufficient to jump the species-barrier. But this is absurd. So it seems like drawing a line on such a joint-less continuum could only be a mere decision and not a faithful representation of reality. Thus, there seems to be no objective way of determining how many mutations it should take to jump the species-barrier.

Second reply to objection 1. It could also be replied that, logically speaking, the new form cannot be predicated of the species, because qua processes species do not have forms; only concrete substrata can bear forms.[11] While it is obvious that the organism has a clear-cut beginning, it is not so obvious that the species does. The event of speciation will never be as clearly identifiable as the embryo's attainment of its form. The newly attained form of the organism is not an element of the life of the species, it is only an element of the organism's system.

Objection 2. The defender of Hartmann's conception could also object that in requiring that a definite event be identifiable to mark the temporal limits of species, Hartmann's critic is committing the line-drawing fallacy, which consists in insisting that a line must be drawn at some precise point when in fact it is unnecessary that such a precise line be drawn.

Reply to objection 2. To the line-drawing fallacy objection, it could be replied that there is a clear difference between the event marking the end of the ontogenetic process and the event of speciation and that the difference is such that *if* only one of them had to qualify as "coming-into-being," *then* it would have to be the first. And *if* it were the case that there can be only one kind of coming-into-being, *then* the second would not, properly speaking, be a "coming-into-being."

We can see that the aporia is hard to overcome. A possible solution would be to drop the thesis that species come-into-being. We could then admit that Hartmann's definition of 'species' as process is correct. If so, then his analysis of speciation would be incorrect and life on earth would be one more or less continuous stream of life process hardly divisible into different species-lives. This solution has been tagged 'species nihilism'. Another solution would be to find a way to argue that there

11 As we have seen in the discussion of the first inconsistency, Hartmann thinks that the process of life cannot be the bearer of forms (*Formen*) (Hartmann, 1950, 676).

are two kinds of coming-into-being, and that species indeed come-into-being, however vague the speciation event may seem to us.

The present paper is historical, so I leave these philosophical problems open-ended, my only aim here being to point out some aporetic moments surrounding Hartmann's concept of "species." However, the fact that Hartmann's system of organological categories contains aporias should not be regarded as a flaw of the Hartmannian system. For, as we have seen, Hartmann thinks that, whereas the goal of ontology is to represent reality as faithfully as possible, we should not hope to complete the system of categories. What we should do is to continually tend toward the completion of the system. In this sense, we may conceive the inconsistencies exposed above as moments toward the completion of the system and as aporias that have a heuristic, theory-generating function.[12]

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12 On the various functions of aporias in N. Hartmann, see (Schlittmaier, 2011).

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