

Hartmann's Nonreductive Materialism, Superimposition, and Supervenience

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Nicolai Hartmann's approach to philosophy was both aporetic and systematic. He stressed that philosophy contains genuine but probably insoluble problems at the same time as he was working on an ontological system.ⁱⁱ Also, he meant that philosophical-ontological systems always have to take the knowledge progress of science into account. In philosophy, this has been, and still is, an unusual combination of views. Hartmann might seem to be completely at odds with a lot of different philosophical traditions; analytic philosophy being one of them. However, today, that is not really the case. In relation to analytic metaphysics there are several overlapping problem areas. This paper is concerned with one such area, the mind-body problem. In particular, I will relate Hartmann's view that mind is *superimposed* on matter to the view of some analytic philosophers that mind is *supervenient* on matter. Both sides, and many other philosophers interested in the mind-body problem, have something to learn from such a confrontation.

1. A sketch of Hartmann's level ontology

According to Hartmann, reality is stratified. A lot of categories that structure the world are related to each other by means of a relation of one-sided existential dependence. The categories of an upper level are for their instantiation dependent upon the instantiation of the categories of the lower levels, but not vice versa. Such a dependence, said Hartmann, can be of two kinds, superinformation ("Überformung") and superimposition ("Überbauung"):

There are clearly two types of dependence of the higher mode of being on the lower. The one has the function of providing matter and takes shape in superinformation. The other type consists in the relationship of supporting and being supported, embracing also superimposition. Its function is to provide a basis.ⁱⁱⁱ

Superinformation, one might say, is the old Aristotelian form-matter relationship, whereas superimposition might be called a founding (but not constituting) existential dependence or a borne-bearer relationship.^{iv} In superimposition, the lower level is not formed by that which rests upon it; it is the bearer of the upper level anyhow. The world, according to Hartmann, contains as a contingent matter of fact only four levels that are related to the relation of superimposition; in what follows I will call only these four levels "strata". Consequently, the relation of superimposition appears in three different kinds of circumstances; it bridges three different "cuts" ("Einschnitte") in the world.^v One of these, the cut between psychic being and organic being, i.e., the mind-body divide, is very special because it separates what is only temporal from what is spatiotemporal. Purely temporal entities are regarded as one-sidedly existentially dependent on spatiotemporal entities. Hartmann's ontology contains a nonreductive materialism. In outline, Hartmann's four-strata ontology is most easily presented from top to bottom as follows:^{vi}

4th stratum (third superimposition): **Spiritual being** ("geistiges Sein")^{vii}.
 specific categories: thought, knowledge, will, freedom, evaluation, personality,
 language, law, morality,
 (temporality, non-spatiality).

----- 3rd cut.

3rd stratum (second superimposition): **Psychic being** ("seeliges Sein").
 specific categories: act-content, consciousness-unconsciousness, pleasure-displeasure,
 (temporality, non-spatiality).

----- 2nd cut.

second stratum (first superimposition): **Organic being** ("organisches Sein").
 specific categories: metabolism, assimilation, automatic regulation, self-reproduction,
 adaptation, purposiveness,
 (spatiotemporality).

----- 1st cut.

1st stratum (no superimposition): **Inorganic being** ("anorganisches Sein").
 specific categories: matter, substantiality, causality, causal reciprocity,
 (spatiotemporality).

The distinction between spiritual and psychic being, which I will not discuss, is akin to more well-known distinctions such as those between intersubjective and subjective phenomena, collective and individual intentionality, public and private language, social (cultural) and psychological facts, etc. In Hartmann, the distinction between psychic being and organic being contains the fundamental mind-body divide or mental-material divide; and that is the superimposition this paper focuses on.

The distinction between organic and inorganic being is in a way akin to the distinction made in analytical metaphysics between functional and non-functional properties.

In my opinion, Hartmann's stratification schema contains a kernel of truth, even though I think that the development of science has made several of its details obsolete; ^{viii} a state of affairs that, by the way, he would probably have welcomed. For instance, science has shown that DNA-molecules are self-reproducing entities, i.e., it has shown that there are inorganic beings that instantiate categories from the second stratum. Such a fact is not allowed by Hartmann's schema. Of course, one can take this as a sign indicating that science has falsified Hartmann's whole stratification schema, but that is by no means necessary. Another option is to let the first two strata coalesce into one, i.e., transform Hartmann's four-strata ontology into a three-strata ontology. Some of his commentators seem to be driving along this route, and it can even find occasional support in Hartmann's own writings. ^{ix} However, there is also a third option; one that I favour. According to this position, science has merely made the names of the first two strata inadequate. Since some inorganic entities belong to the first stratum and some to the second one, these strata cannot be called inorganic and organic, respectively. But, in my opinion, it is still true that self-reproduction and other functional properties cannot be reduced to ordinary causality. ^x Let it be said, however, that the choice between the last two alternatives is of minor importance for the general mind-body problem.

Hartmann's stratification schema is primarily a stratification of categories. It is only indirectly a stratification of different kinds of entities in the world. He said: "It is, moreover, characteristic of these four main strata of reality that they not only do not coincide with the levels of actual structures (inanimate object, organism, man, and so forth) but rather cut across them."^{xi} Many such entities contain categories from several strata. Stones contain categories only from the first stratum, but persons contain categories from all four.

According to Hartmann, there are at least four "laws of dependence" that apply to categories that are related by superinformation and/or superimposition. I will quote them in full length:

(1) Categorical dependence is dependence only of the higher categories upon the lower, not conversely. Hence, the lower categories, measured by their determinative power, are the stronger ones. Strength and height in the order of strata stand in an inverse relationship.

(2) Although the categories of a lower stratum afford the basis for the being of the higher, they are indifferent in regard to them. They admit of superinformation or superimposition without requiring them. The higher ontological stratum cannot exist without the lower, but the lower can exist without the higher.

(3) The lower categories determine the higher ontological stratum either as matter or as a basis for its being. So they only limit the scope of the higher categories but do not determine their higher form or peculiarity.

(4) The novelty of the higher categorial stratum in relation to the lower stratum. Despite all its dependence, it asserts its autonomy. The superior structure of the higher stratum has no scope "inside" the lower stratum, but "above" it.^{xii}

In the first law, Hartmann talks about a determinative power on part of the lower strata, but in the other laws his stress is on the nonreducibility of the higher strata. Crucial to the whole of Hartmann's systematic enterprise is the kind of dependence relation that is spelt out in the last sentence of the second law: "The higher ontological stratum cannot exist without the lower, but the lower can exist without the higher." This is the relation that I have already started to call one-sided existential dependence. Categories from stratum number $n+1$ can be instantiated in a particular only if categories from stratum number n are coinstantiated in the same particular, whereas the categories from stratum n , in principle, can be instantiated even if no categories from stratum $n+1$ are instantiated.

The idea of one-sided existential dependence is easy to formulate, but that does not imply that its essence is thereby visible and free from problems. I find it a bit astonishing that Hartmann, to my knowledge, never tried to analyse this relation in more detail; especially in view of his writings on modality.^{xiii} Perhaps he relied on other philosophers like Franz Brentano, Edmund Husserl, and Roman Ingarden, but then he could have said so. In Brentano's terminology, a Hartmannian higher stratum is a *non-separable part* of a complex entity that contains the lower strata as well. Using Husserl, one can say that there is a *law of essence* to the effect that higher strata cannot exist without the lower ones. These ideas of the founding fathers of phenomenology were later on elaborated into more general concepts of both mutual and one-sided existential dependence.^{xiv} It has been said that Ingarden was of the opinion that Hartmann had got his idea of one-sided dependence from him, but that question I leave to the historians of philosophy to decide.

Now, after having complained about Hartmann's neglect of a more detailed analysis of the relation of one-sided existential dependence, I have to admit that in this paper I will behave the same way and rely on the intuitive notion.^{xv} I will, though, present what I take to be the most obvious example of such a relation: Phenomenal colour is one-sidedly existentially dependent on phenomenal (= perceived) extension. In a broad sense of 'logical', it seems to be logically necessary that when a phenomenal colour is instantiated, it is instantiated in something that has a spatial extension; but it is quite possible to perceive extension without

perceiving any colour in this very distance. In fact, we do perceive such extension every time we perceive an empty and colourless distance between us and the things we perceive.

Let me summarise. According to Hartmann, mind, mental properties, and mental events are *superimposed* on matter. Every kind of mind-entity is one-sidedly existentially dependent upon some kind of matter. Such matter is bearer, and only bearer, of mind-phenomena. There is no form-matter relationship between mind and body. Hartmann's view implies that a description of a lower stratum cannot possibly entail a description of a higher stratum.

2. A sketch of the history of the concept of supervenience

The concept of supervenience was made famous in analytic philosophy by the moral philosopher Richard M. Hare. In a book published 1952, *The Language of Morals*, he claimed that if there are two persons that are exactly alike and are acting in the same way in exactly the same kind of situations, then for some kind of *logical reasons* it is impossible to claim that one of them is good and the other is not.^{xvi} However, according to Hare, this logical impossibility is not of such a nature that a description of a person's character traits and actions entail that the person is morally good. Moral goodness is not entailed by the natural properties that function as good-making characteristics. But, he said, moral goodness supervenes on such characteristics. Central to Hare's concept of supervenience, apart from *the non-entailment requirement*,^{xvii} is the view that two persons that are indiscernible with respect to natural properties are necessarily indiscernible with respect to moral goodness, too; it could be called *the indiscernibility requirement*. Implicitly, as I will try to show in section six, he also had a third requirement. Applied to properties, it says that a supervenient property is for its mere existence dependent on the existence of natural properties. I call it *the existential dependence requirement*.

In two papers in the early seventies, Donald Davidson began to speak of psychophysical supervenience. His view, he said, allows for "the possibility that not all events are mental, while insisting that all events are material", and that this "view is consistent with the view that mental characteristics are in some sense dependent, or *supervenient*, on physical characteristics. Such supervenience might be taken to mean that there cannot be two events alike in all physical respects but differing in some mental respect".^{xviii} According to Davidson's idea, it is impossible for two persons to be in exactly the same bodily (physico-neural) states but differ in mental states, i.e., two persons that are indiscernible with respect to bodily states are necessarily indiscernible with respect to mental states, too. Like Hare, Davidson thinks that a description of the base (bodily) properties in question does not entail a description of any supervenient (mental) property.

For the purposes of this paper, I have introduced Hare's and Davidson's ideas as if both of them directly talk of properties. However, this is not quite accurate. Hare did not regard moral goodness as a real property. He was merely interested in supervenience as a relationship between evaluative and purely descriptive concepts. But George E. Moore – who, without using the term, proposed the idea of moral supervenience long before Hare – regarded moral goodness as a real but non-natural property.^{xix} When Davidson began to talk about supervenience, as in the quotations above, he referred to material and mental events in a quite straightforward way, but later on he said that his notion of supervenience "is best thought of as a relation between a predicate and a set of predicates".^{xx}

Here, one may very well ask whether it is true that the relations that Hare and Davidson gave the same name really are identical, i.e., whether or not the relations only differ with respect to relata. Of course, even quite apart from this particular question, one may try to find out if there are more than one kind of supervenience relation. Whatever the impetus was, there

arose in the late seventies a specific philosophical problem area that might be called the philosophy of supervenience. A lot of different supervenience concepts (e.g. strong, weak, global), as well as different kinds of relata (e.g. properties, relations, predicates, theories), were proposed and discussed. If one specific philosopher should be made the symbol of this epoch, it ought to be Jaegwon Kim.^{xxi} Below, I have sampled the most prominent general characterisations of the relation of supervenience; the relata are called supervenient properties and base properties, respectively.^{xxii}

Group I:

1. Supervenient properties are determined by their base properties.
2. Supervenient properties are dependent on their base properties.
3. An entity has supervenient properties in virtue of its having base properties.
4. Base properties underlie supervenient properties.
5. Base properties realise supervenient properties.
6. Descriptions of base properties do not entail descriptions of supervenient properties.
7. Supervenient properties cannot possibly exist without being connected to base properties.

Group II:

8. A supervenient property may have different base properties.
9. If two entities have the same base properties, then necessarily they have the same supervenient property; or, base property indiscernibility entails supervenient property indiscernibility.
10. If two entities have different supervenient properties, then necessarily they have different base properties; or, supervenient property difference entails base property difference.

In the philosophy of supervenience, the focus has been on the second group. All the desiderata in that group are concerned with some kind of covariance between supervenient properties and base properties. Although not equivalent in ordinary language, the last two desiderata are logically equivalent. Both of them entail that there cannot possibly be a many-to-one relation between a supervenient property and the corresponding base properties. A one-to-many relation is allowed by desiderata nine and ten, and it is made into a requirement by desideratum eight. This requirement represents the so-called multiple realisability of supervenient properties. With respect to mind-body supervenience, it says that the same kind mental property can be borne by different kinds of neural properties.^{xxiii} However, often when in overviews it is spoken of "the core idea of supervenience",^{xxiv} the requirement of multiple realisability is neglected; one concentrates then wholly on the covariation that says that base property indiscernibility entails supervenient property indiscernibility (the indiscernibility requirement).

3. Mind-body superimposition and covariance between strata

Many of the ideas that are part and parcel of Hartmann's concepts of superinformation and superimposition are to be found in the supervenience desiderata of group I. In fact, it seems to me as if Hartmann's concept of superimposition fits all these desiderata with the possible exception of number five. I am somewhat unsure whether Hartmann would have been prepared to say that a superimposed property "is realised" by its existential foundation. However, I am sure that he would have said that a superinformed property is so realised. But, be that as it may. The interesting and important point is the fact that Hartmann never tried to connect his concepts of superinformation and superimposition to the kind of ideas expressed

by the supervenience desiderata in group II. This general neglect on Hartmann's part cannot be defended, as is easily shown by an example.

According to Hartmann, cells contain categories from both the second and the first stratum, whereas molecules contain categories only from the first stratum. In other words, cells contain properties that are superimposed on molecules. However, if two cells consist of the same kind of molecules, then, necessarily, they belong to the same kind of cells. Also, if two cells are different kinds of cells, then, necessarily, they must differ in molecular structure. No doubt, had he thought of it, Hartmann would have accepted that relationship. But what about the superimposition of mind on the body?

Would Hartmann have been prepared to say, contrary to supervenience desideratum nine, that two wholly different kinds of mental states could be borne by and superimposed on exactly the same kind of bodily state? I think not. It seems to me as if Hartmann did simply not note the intuitions that have given rise to the philosophy of supervenience. In the first of his laws of dependence (quoted in section one), Hartmann talks of a determinative power of the underlying substratum. There is here a basis in his system for incorporating an idea of covariance between properties belonging to different strata, but he never exploited it.

One possible reason behind Hartmann's inattentive attitude in this respect might be a specific feature of supervenience covariation. It has a formal character. Hare did not claim that for logical reasons a certain kind of person must be regarded as a morally good person. He only claimed that *if* a certain kind of person is good, then, for logical reasons, all persons that are exactly like him must be morally good, too. I will return to this feature of supervenience in the concluding section.

4. Single-modal and double-modal mind-body supervenience

David Chalmers is one of several analytic philosophers that, lately, have used a concept of supervenience in order to structure his treatment of the mind-body problem. In his widely read *The Conscious Mind* (1996), he starts from what he calls a "template for the definition of supervenience". It corresponds to the core idea of supervenience, the indiscernibility requirement (see section two), and it looks as follows:

S-properties *supervene* on B-properties if no two possible situations are identical with respect to their B-properties while differing in their S-properties.^{xxv}

The term 'situations' is a variable that can take on values such as individual things and persons (= local supervenience) as well as whole worlds (= global supervenience).^{xxvi} Since I will make a comparison with Hartmann, I am only interested in local supervenience. Another variable is the modal term 'possible'. Requirements with respect to spatial and temporal locations are left out of account, and it is taken for granted that the sets of properties mentioned are disjoint and non-empty. The following reformulation of Chalmers' template is convenient for my purposes:

:

Single-modal supervenience: A set of properties S supervenes on a set of properties B, if and only if,
it is necessary that: any two individuals x_1 and x_2 that have the same properties in B have the same property in S.

The domain of the variable x is the set of all actual and possible individuals/particulars. With respect to the modal variable, i.e., the necessity operator, I will like Chalmers only

consider two values, 'nomological necessity' and 'logical necessity'. This logical necessity, however, is broader than that of formal-logical necessity, i.e., it involves more than de dicto necessities based on the function of logical constants and other syncategorematic terms, but Chalmers gives no clear delineation of it.^{xxvii} It would have been nice to bring in Hartmann's analysis of modality here, but since I have not studied it carefully, I will not do that. I will rest content with Chalmers' somewhat intuitive broad concept of logical necessity. Important insights can be gained nonetheless.

What now about the question "Is there a relation of single-necessity supervenience between mind phenomena and bodily phenomena?" Chalmers claims that neither nomological necessity nor logical necessity can give what nonreductive materialism requires. And I think that he is quite right. Let me explain.

Claims of mind-body supervenience have been philosophers' claims. As I tried to make clear in section two, the original relation of supervenience was regarded as a kind of logical relationship. Therefore, and for no other reason, nomological necessity can be said to be too weak a relation. The concept of nomological mind-body supervenience is in itself coherent, and its application may well give rise to true statements.^{xxviii}

In the case of logical necessity, Chalmers thinks that a thought experiment shows that the mind cannot logically supervene on the body; in this sense logical supervenience can be said to be too strong a relation. The thought experiment in question can be divided into four steps. First, imagine a person, x_1 , that is in certain state of phenomenal pain; second, investigate all the bodily characteristics of this person; third, imagine another person, x_2 , that have exactly the same bodily characteristics but who lacks phenomenal pain and phenomenal consciousness. Since the third step is quite possible, it is not logically necessary that two individuals x_1 and x_2 that have the same bodily properties have the same mental property; even more, x_2 lacks a mental property altogether. Chalmers calls x_2 a zombie and says, that since we can conceive of zombies, it is impossible that phenomenal phenomena (mind) can supervene logically on human bodies.^{xxix}

In my opinion, the concept of single-modal supervenience should never under the name of supervenience have been allowed to enter the mind-body problem. The reason is that this concept does not at all take the non-entailment requirement on supervenience (desideratum six) into account, and the importance of this desideratum was made very clear by Hare himself in the 1980s.^{xxx} Applied to the mind-body problem, this requirement says that descriptions of bodily properties should not in themselves entail descriptions of mental properties. Therefore, let us leave single-modal supervenience behind and consider a more complex explication of the supervenience concept, one that is much closer to the intuitions of Hare and Davidson. I will call it double-modal supervenience, and it is the kind of formulation that Kim mostly uses; Chalmers comments on it only in a footnote.^{xxxi} In the definition, S_j and B_i are variables for the properties in S and B, respectively.

Double-modal supervenience: A set of properties S supervenes on a set of properties B, if and only if,

it is necessary that: (for any S_j , if x_n has S_j , then there exists
a base property B_i such that x_n has B_i , and *it is necessary that:*
(any x that has B_i has S_j)).

In this template, the fact that the modal operator is a variable takes on a new significance. Since it appears twice, the distinction between nomological and logical necessity gives rise to four different combinations and, perhaps, four possible kinds of mind-body supervenience. I will investigate them one by one.

(a) **nomological-nomological supervenience:** A set of properties S supervenes on a set of properties B, if and only if,

it is nomologically necessary that: (for any S_j , if x_n has S_j , then there exists a base property B_i such that x_n has B_i , and *it is nomologically necessary that:* (any x that has B_i has S_j)).

This kind of supervenience relation is too weak for the same reason as single-necessity supervenience is too weak. We are looking for something stronger than nomological necessity. But by adding one nomological necessity to another one, we do not surpass the realm of natural laws.

(b) **logical-logical supervenience:** A set of properties S supervenes on a set of properties B, if and only if,

it is logically necessary that: (for any S_j , if x_n has S_j , then there exists a base property B_i such that x_n has B_i , and *it is logically necessary that:* (any x that has B_i has S_j)).

This relation cannot be a mind-body relation for about the same reason as single-logical supervenience cannot, even though the entailment from B to S is now made dependent upon a hypothetical clause. On the true assumption that there are conscious human beings, the existence of corresponding zombies is wrongly made logically impossible.

(c) **nomological-logical supervenience:** A set of properties S supervenes on a set of properties B, if and only if,

it is nomologically necessary that: (for any S_j , if x_n has S_j , then there exists a base property B_i such that x_n has B_i , and *it is logically necessary that:* (any x that has B_i has S_j)).

The difficulty from (b) remains. As soon as there is one conscious human being, the corresponding zombies are wrongly claimed to be logically impossible. The fact that the first modal operator has been weakened from logical to nomological necessity does not alter the peculiarity of the second clause.

(d) **logical-nomological supervenience:** A set of properties S supervenes on a set of properties B, if and only if,

it is logically necessary that: (for any S_j , if x_n has S_j , then there exists a base property B_i such that x_n has B_i , and *it is nomologically necessary that:* (any x that has B_i has S_j)).

This is the really interesting version of double-modal supervenience. The "zombie problem" has disappeared since, here, it is only a nomological necessity that forbids the existence of such beings. Even though logically possible, zombies can of course be nomologically impossible. Now, in contradistinction to the case of logical-logical supervenience, we have to take a close look at the logical necessity represented by the first modal operator.

If isolated from the second clause, which it in fact ranges over, the first clause becomes only: *it is logically necessary that* if x_n has S_j then there exists a property B_i such that x_n has B_i . This comes very close to Hartmann's relation of one-sided existential dependence. All that has to be added is the phrase saying "but not vice versa". The dependence direction is now the

opposite of that in single-modal supervenience; it goes from the mental to the material, not from the material to the mental. What does Chalmers say about this relation?

Chalmers accepts without reservations this concept of logical necessity as being a coherent idea that can be applied to the mind-body problem. He simply claims that mind cannot be logically dependent on matter. He regards it as an obvious truth that it is possible to conceive "angels, ectoplasm, and ghosts" as existing without any matter.^{xxxii} His "zombie argument", which made single-modal supervenience impossible as a mind-body relation, is here complemented by a "ghost argument" that makes double-modal supervenience impossible, too. Consequently, Chalmers rejects nonreductive materialism and regards dualism and reductive materialism as the two most reasonable stances in relation to the mind-body problem.

I think that Chalmers moves much too fast, but I think that with the help of his expressions a neat formula for the essential content of nonreductive materialism can be concocted. If nonreductive materialism is true, then *zombies are possible but ghosts are impossible*.

In my opinion, which ought to be Hartmann's as well, ghosts are impossible, and Chalmers must have committed some kind of mistake. Since Chalmers thinks that his ghost argument is self-evident, it is not easy to pinpoint exactly where he seems to go wrong. Therefore, I will list and explain three possible fallacies.

Fallacy number one: From the fact that one can think and talk of ghosts without thinking and talking about any kind of matter, one draws – wrongly – the conclusion that ghosts can exist without matter. When there is a one-sided existential dependence between supervenient properties and base properties, the epistemological situation is similar to that which obtains in relation to an axiom system. Just as one can think and talk about the axioms without being explicitly thinking and talking about the theorems, so one can think and talk about supervenient properties without being explicitly thinking and talking about their base properties. Applied to my illustration of one-sided dependence, this means that we can think and talk about phenomenal colours without being thinking and talking about spatial extension. We can analyse such colours, order them in relation to each other, discover different aspects like hue, intensity, and saturation without having any thoughts about spatial extension. Nonetheless, phenomenal colours are for their existence dependent on spatial extension. Probably, Chalmers has not fallen prey to this fallacy; he is using the term 'conceivable', not 'thinkable'.

Fallacy number two: From the fact that it is possible both to imagine ghosts "in the mind's eye" and to paint pictures of ghosts, one draws – wrongly – the conclusion that ghosts can exist without matter. What is, in this sense, imagined and painted under the name of 'ghosts' is always something spatially extended. Such spatially extended ghosts are then assumed to have properties that material bodies cannot have. In particular, such ghosts are assumed to be able to exist at exactly the same place where material things are. Tacitly, it seems to be assumed that when one imagines such an entity one cannot be imagining a material entity. However, this old assumption can no longer be held on to. If the concept of electromagnetic waves can, as I think, be given a realist interpretation, then such waves have to be regarded as material entities that can coexist at one and the same place without losing their identity. Every bit of space around the Earth is nowadays filled with a plurality of coexisting electromagnetic waves. Before any conclusions can be drawn from Chalmers' thought experiment about ghosts and material things, the categories of being a ghost and being a material entity has to be specified a bit more carefully. Hartmann's view that mental phenomena only have temporal extension is not an idiosyncrasy of his. That is Descartes' classical view. Chalmers' mere statement that ghosts are logically possible apart from matter needs more backing before it can be regarded as true. If mind-phenomena in themselves are non-spatial entities, they cannot in a literal sense be imagined.

As I have already mentioned, Chalmers is using the term ‘conceivable’. Perhaps there is a sense of ‘conceivable’ in which it is distinct both from my use of ‘thinkable’ in the first fallacy and from my use of ‘imaginable’ in the second fallacy. However, even such a sense of ‘conceivable’ is taken into account in the remark below.

Fallacy number three: If it is possible to conceive of *one* (purely temporal) ghost without matter, then one draws – wrongly – the conclusion that ghosts can exist without matter. In my opinion, there is a stronger requirement that has to be met, but cannot be met, in order for the conclusion to follow. It should be possible to conceive of *two exactly similar* ghosts without matter. Why? With respect to ghosts (and to ordinary material things, too), I think, firstly, that it belongs to the common sense conception that two numerically distinct such entities can be qualitatively identical. Secondly, I think that such a conception can be backed by a philosophy that argues that qualitatively identical particulars can be individuated by their different positions in space and/or time. Therefore, if ghosts are at all possible, it should be possible to conceive of two qualitatively identical ghosts that exist at the same point of time. However, a single time point cannot possibly differentiate between two qualitatively identical purely temporal entities. Two qualitatively identical material entities, on the other hand, can exist in one point of time because of their different spatial positions. If ghosts shall meet the requirement introduced, they have to be regarded as being necessarily connected with material entities. But then, of course, they are no longer ghosts, i.e., ghosts are impossible.

Now, let it be said, I lay no claim on having in the last single paragraph proved that ghosts are impossible, and that, therefore, Hartmann is right, mind is one-sidedly existentially dependent on matter and nonreductive materialism is true. My remarks on the third fallacy relies on a complete denial of Leibniz’s principle of the identity of indiscernibles; and, of course, that denial can be questioned. However, I think that my remarks show that the discussion of nonreductive materialism within present-day analytic metaphysics has been incomplete. There is much left to discuss that has not been touched upon yet. In this perspective, there is reason to reconsider even the double-modal definition of supervenience. I will in the next and concluding section propose a new and even more complex explication of Hare’s original idea of supervenience as applied to properties. It has some interesting features that have not been noted in the philosophy of supervenience so far.

Even though Hartmann’s idea of one-sided existential dependence becomes part of the explication that follows, I am explicating supervenience, not superimposition. As I have said, Hartmann had no idea that corresponds to the covariation component of supervenience. However, nothing prevents still living ontologists from combining the ideas of supervenience and ontological strata.

6. Triple-modal mind-body supervenience

Very explicitly, Hare put forward both the indiscernibility requirement and the non-entailment requirement on supervenience (see section two), but he never put forward a single all-embracing formulation of his supervenience concept. My explication proposal below, in the form of a triple-modal concept of supervenience, is meant to supply this. At first, my proposal may seem trivial since it simply combines a double-modal indiscernibility requirement with an explicit non-entailment requirement. This conjunction, however, has interesting consequences.

In section five, I presented four kinds of double-modal supervenience. Hare would, I think, have said the following. Nomological-nomological supervenience is too weak, whereas both logical-logical and nomological-logical supervenience are too strong. The first concept is too weak since every supervenience relation should essentially contain some kind of logical

relationship, and the latter are too strong because the covariation that is spoken of (any x that has B_i has S_j) should not in itself be this logical relationship.^{xxxiii} Logical-nomological supervenience is in a sense acceptable, but two comments are needed. First, it is weaker than a categorical non-entailment requirement. Secondly, ‘nomological’ has to be understood in a sense that is wider than that of the concept of natural laws; connections between values and value-making characteristics have to be included, too.

In my explication, Hare’s “comments” are of course taken care of. The explication contains a categorical non-entailment requirement reformulated to fit property supervenience, i.e. statement (i), and ‘being a nomologically necessary relation’ means only, in general, being a relation that is weaker than logical necessity but stronger than mere universal covariation. Inevitably, a triple-modal definition of supervenience contains three modal operators, but, here, they are of different kinds. The first one is a logical-possibility operator, the second one is a logical-necessity operator, and the third one is a nomological-necessity operator. Here comes the definition with its conjunctive requirement on supervenience:^{xxxiv}

Triple-modal supervenience: A set of properties S supervenes on a set of properties B , if and only if,

- (i) for any B_i , *it is logically possible that*: there exists an x such that B_ix and, for all S_j , $\neg S_jx$,
and
- (ii) *it is logically necessary that*: (for any S_j , if x_n has S_j , then there exists a base property B_i such that x_n has B_i , and *it is nomologically necessary that*: (any x that has B_i has S_j)).

When the first requirement is applied to Hare’s prime example, the property of being good, we get: “for any presumed natural good-making characteristic B_i , *it is logically possible that*: there exist a person x such that B_ix and x lacks goodness”. Hare himself writes: “it is not the case that there is any conjunction C of descriptive characteristics such that to say that a man has C entails that he is morally good”.^{xxxv}

When the second requirement is applied to the property of being good we get: “It is logically necessary that: (if the man x_n is good, then there are good-making characteristics B_i such that x_n has them, and it is axiologically-nomologically necessary that: (any man x that has B_i is good))”. Hare himself writes: “Suppose that we say ‘St. Francis was a good man’ It is logically impossible to say this and to maintain at the same time that there might have been another man placed in precisely the same circumstances as St. Francis, and who behaved in them in exactly the same way, but who differed from St. Francis in this respect only, that he was not a good man”.^{xxxvi} Note that in the explication, for grammatical reasons, Hare’s term ‘logically impossible’ has been exchanged for ‘logically necessary’.

Hare says that there is a similarity between a supervenience claim and claims on behalf of the covering law model of causal explanations.^{xxxvii} This similarity holds true for my explication, too. Let us take a look.

When the covering law model takes on its most simplified form, as when one event is regarded as explainable by means of only one law, it looks as follows:

Natural law (universal conditional statement):	$(\forall x)(Gx \rightarrow Fx)$
Initial condition (singular statement):	Ga
Explanandum (singular statement):	<hr style="width: 50%; margin: 0 auto;"/> Fa

The explanation of the event described by Fa is said to consist in the fact that Fa is entailed by descriptions of a natural law and a matter of fact (initial condition). Let us assume that we

believe in this model. Then we claim that Fa can be causally explained by Ga only if there is some natural law such that the conjunction of it and Ga entails Fa . Similarly, according to Hare, S can supervene on B only if there is some nomological connection ('any x that has B_i has S_j ') such that the conjunction of it and B_i entails S_j .^{xxxviii}

Philosophers of science who claim that the covering law schema represents the true structure of causal explanations regard it, in effect, as a formal requirement on every substantial causal explanation. In a similar way, to claim that one kind of property, S , supervenes on another kind of property, B , is to lay down a formal requirement on the link between S and B . In order to have a substantial link, one has to know the values of the variables B_i and S_j ; in the explication, note, there are merely the variables.

Now and then it said that "asserting supervenience is a maximally cautious way to assert dependence."^{xxxix} The truth behind this statement is the fact that the asserted dependence has a formal character. This fact is also the reason why it seems to be possible to find supervenience relations by mere philosophical reflections.^{xl}

I will now take it for granted that my triple-modal definition of supervenience is an explication of Hare's conception. In order to see the connection between this concept of supervenience and Hartmann's ideas, one has to make the following three observations. First, the kind of indiscernibility requirement used, i.e. statement (ii), entails statement (iia): '*it is logically necessary that: (for any S_j , if x_n has S_j , then there exists a base property B_i)*'. This sub-requirement is an existential dependence requirement. It says that every supervenient property is for its instantiation dependent on the instantiation of some other property, a base property (cf. desideratum seven). Secondly, the non-entailment requirement, i.e. statement (i), can equally well be called an existential independence requirement; it says that it is possible for the base properties to be instantiated independently of the supervenient properties. Thirdly, the conjunction of the requirements (i) and (iia) represents a demand for one-sided existential dependence. All in all, and put more simply: Triple-modal property supervenience entails one-sided existential dependence, i.e., the essence of Hartmannian superimposition.

With respect to mind-body supervenience, the first requirement in the explication states that zombies are possible, and the second requirement entails that ghosts are impossible. A claim to the effect that mental properties supervene (in the sense under discussion) on properties of matter entails a claim that nonreductive materialism is true. In my opinion, whether or not it is true, such a claim is at least both well-formed and meaningful.

Even the concept of triple-modal supervenience contains of course, beside the idea of a one-sided existential dependence, the idea of a specific covariation. To claim that mental properties supervene on properties of matter is to claim both that mental properties in general are one-sidedly existentially dependent on properties of matter, and that there has to be some nomological inter-strata law that connects determinate mental properties to determinate properties of matter. In triple-modal property supervenience, the elements in the sets S and B belong to different ontological levels, and the covariation component represents a requirement that there is also a more determinate inter-strata connection between them. Such an inter-strata law, however, is not allowed to posit a one-to-many relation between base properties and supervenient properties; that is forbidden by the form of the nomological law, i.e., any x that has B_i has S_j . If desideratum eight (the requirement of multiple realisability) is added, it has to be possible for the inter-strata laws to posit many-to-one relations.

In spite of the fact that Hartmann stressed science and its knowledge progress, he had, as I remarked in section three, no keen eye for determinate inter-strata laws. Sometimes, he even writes as if each stratum is explanatory closed within itself, and that there can be no inter-strata laws apart from his very general "laws of dependence". Obviously, such a claim has to be rejected. Brain surgery refutes it every day. However, science seems to require a

modification of triple-modal supervenience, too. Even philosophy of supervenience has to take the stochastic revolution in science into account.

Today, it is hard to find a claim of nomological and deterministic mind-body supervenience compelling. There is no philosophical reason not to allow the mind-body covariation to be a probability variation. With respect to mind-body supervenience, but not with respect to moral supervenience, the nomological covariation ‘any x that has B_i has S_j ’ ought to be given a stochastic form. It ought to be stated as ‘any x that has B_i has with some probability S_j ’.

7. Conclusion

When thinking about what a true level ontology should look like, one should take into account both Hartmann’s idea of one-sided existential dependence and the indiscernibility idea of analytic philosophy of supervenience. Hartmann’s second law of dependence should be modified in such a way that nomological (deterministic or stochastic) inter-strata laws become part of the dependence structure, too. The concept of triple-modal supervenience combines the ideas in one single formula.

NOTES

ⁱ Nicolai Hartmann is not, to put it mildly, well known in Swedish philosophy. He is, though, mentioned in a very influential introductory book to modern philosophy, but only once and only in passing. The author is the Swedish-speaking Finnish philosopher G.H. von Wright; the (translated) title is *Logic, Philosophy, and Language* (Bonniers, Stockholm, 1965). Hartmann (and S. Alexander) were, von Wright says, “Isolated thinkers of impressing stature but, in my opinion, without really being engaged in the philosophical process of their time” (p. 24). In another introductory book, Hartmann gets a seven-page presentation under the general heading “Phenomenology and Hermeneutics in Germany”; see P. Lübcke (ed.), *Vår tids filosofi* (Forum, Stockholm, 1987, pp. 102-109; translated from Danish). It is a fair presentation, except for one thing: Nothing at all is said about what is central to this paper, Hartmann’s level ontology.

ⁱⁱ In overviews, mostly, the realist-systematic aspect is stressed; see W.H. Werkmeister, *Nicolai Hartmann’s New Ontology* (Florida State University Press, Tallahassee, 1990) and O. Samuel, *A Foundation of Ontology* (Philosophical Library, New York, 1953). For stress on the aporetic aspect, see A. Siitonen, *Problems of Aporetics*, (Suomalainen Tiedakatemia, Helsinki, 1989). But Siitonen also writes: “Hartmann does not wholeheartedly subscribe to the idea that philosophy is a thoroughly aporetic discipline. His stress on theories and his own large-scale theories surpass the limits of an aporetic discipline” (ibid. p. 122).

ⁱⁱⁱ Hartmann, *New Ways of Ontology* (Greenwood Press, Westport, Connecticut, 1952), p. 86.

^{iv} Hartmann’s distinction is very similar to, if not identical with, the distinction between “constitution” and “foundation” that P. Simons makes in an analysis of Husserl’s relations of existential dependence. See Simons, “The Formalisation of Husserl’s Theory of Wholes and Parts” §3, in Smith, B. (ed.), *Parts and Moments. Studies in Logic and Formal Ontology* (Philosophia Verlag, München, 1982), pp. 121-33. The “borne-bearer” terminology is used by R. Poli in his presentation of Hartmann in Poli, *ALWIS: Ontology for knowledge engineers* (Zeno Institute of Philosophy, Utrecht University, 2001), chapter 8.

^v He is not quite consistent, though. Once he says that the first cut is a case of pure superinformation; *New Ways of Ontology*, p. 82.

^{vi} The “specific categories” listed can be found in Hartmann’s *New Ways of Ontology* (Greenwood Press, Westport, Connecticut, 1952), pp. 47, 64, and 75. It should be noted that Hartmann’s terms have been given other translations, too. Werkmeister, *Nicolai Hartmann’s New Ontology*, does not translate “Überbauung” with superimposition but with “building-above”, and Poli, *ALWIS: Ontology for knowledge engineers*, adopts the same translation.

^{vii} Much can be said about this translation of “geistiges Sein”, but it is used in *New Ways of Ontology* as well as in Werkmeister’s *Nicolai Hartmann’s New Ontology* and in Samuel’s *A Foundation of Ontology*.

^{viii} In fact, I think that P. Feyerabend was right when he claimed that even from the start some aspects of Hartmann’s level ontology were in conflict with science. Hartmann seems not to have had a firm grasp of

relativity theory and quantum mechanics. See, Feyerabend, "Professor Hartmann's Philosophy of Nature", *Ratio* 5 (1963), pp. 91-106.

^{ix} At least Poli seems to be of the opinion that the assumed two lowest strata are in fact only one stratum.

Between them there is then no superimposition ("Überbauung") and cut but only superinformation ("Überformung"). In his, *ALWIS: Ontology for knowledge engineers* (Zeno Institute of Philosophy, Utrecht University, 2001), Poli writes a couple of times that there are *at least* three ontological strata in the real world, the material, the psychological and the social (see pp. 123-132). As I said in footnote 5, not even Hartmann himself is quite consistent on this point.

^x See my *Ontological Investigations* (Routledge, London, 1989), chapter 5, "Actions and Functions".

^{xi} *New Ways of Ontology*, p. 48.

^{xii} *New Ways of Ontology*, pp. 87-88.

^{xiii} See Hartmann (1938), *Möglichkeit und Wirklichkeit* (Walter de Gruyter, Berlin, 1996); for overview and discussion see R. Hüntelmann, *Möglich ist nur das Wirkliche. Nicolai Hartmanns Modalontologie des realen Seins*, (Verlag J.H. Röll, Dettelbach, 2000).

^{xiv} The history of this development is described by B. Smith and K. Mulligan in "Pieces of a Theory" (1982); an early overview was published in Polish 1931 by E. Ginsberg, "On the Concepts of Existential Dependence and Independence". Both these papers are part of Smith, B. (ed.), *Parts and Moments. Studies in Logic and Formal Ontology* (Philosophia Verlag, München, 1982); the first paper makes up pp. 15-109, and the second, with an introduction by P. Simons, make up pp. 261-287.

^{xv} However, I have tried to analyse it; see my *Ontological Investigations*, chapter 9, "Existential Dependence".

^{xvi} Hare, *The Language of Morals* (Oxford University Press, London, 1969), p. 145.

^{xvii} I am using 'entail' in a wide sense. With respect only to properties realistically conceived, 'the non-entailment requirement' can equally well be called 'the existential independence requirement' since it requires that it shall be possible for the base properties to be instantiated independently of the supervenient property.

^{xviii} "Mental Events" 1970 and "The Material Mind" 1973, both can be found in his collection *Essays on Actions and Events* (Clarendon Press, Oxford, 1980). The quotations are from p. 214.

^{xix} Moore, "The Conception of Intrinsic Value", in *Philosophical Studies* (Routledge & Kegan Paul, London, 1922), pp. 253-275.

^{xx} Davidson, "Replies to Essays X-XII", in Vermazen, B. and M.B. Hintikka (eds.), *Essays on Davidson: Actions and Events* (Clarendon Press, Oxford 1985), p. 242. For a more detailed exposition of all these views of Hare and Davidson, see T. Horgan, "From Supervenience to Superdupervenience: Meeting the Demands of a Material World", *Mind* 102 (1993), pp. 555-86; especially pp. 560-68.

^{xxi} For an early exposition of the distinctions between weak, strong, and global supervenience, see Kim's classic paper "Concepts of Supervenience" (1984) and his improvements in "'Strong' and 'Global' Supervenience" (1987); both are reprinted in Kim, *Supervenience and Mind* (Cambridge University Press, Cambridge, 1993), pp. 53-91). D. Bonevac, in particular, has argued that theories are the most proper relata of the supervenience relation; from this position he has claimed that model-theoretic analyses are required ("Supervenience and Ontology", *American Philosophical Quarterly* 25, 1988, pp. 37-47) and that supervenience should be regarded as an epistemological notion ("Reduction in the Mind of God", in Savellos, E.E. and Ü.D. Yalçin (eds.), *Supervenience. New Essays* (Cambridge University Press, Cambridge, 1995), pp. 124-139). These positions are not discussed in this paper.

^{xxii} The first five characterisations are collected in D. Drai, *Supervenience and Realism* (Ashgate, Aldershot, 1999), p. 16, but all ten are common in the literature on supervenience.

^{xxiii} This means that the covariance spoken of is an asymmetric covariation.

^{xxiv} See Kim, "Supervenience", in H. Burkhardt and B. Smith (eds.), *Handbook of Metaphysics and Ontology* (Philosophia Verlag, München, 1991), p. 877, and B.P. McLaughlin, "Varieties of Supervenience", in Savellos, E.E. and Ü.D. Yalçin (eds.), *Supervenience. New Essays* (Cambridge University Press, Cambridge, 1995), pp. 16-59.

^{xxv} Chalmers, *The Conscious Mind* (Oxford University Press, Oxford, 1996), p. 33. I have substituted S(upervenient)-properties for B-properties and B(ase)-properties for A-properties in order to get better associations.

^{xxvi} Chalmers, *The Conscious Mind*, pp. 32-38.

^{xxvii} Chalmers, *The Conscious Mind*, p. 35.

^{xxviii} J. Searle is one of very few philosophers that rest content with a purely causal account of mind-body supervenience. See Searle, *The Rediscovery of the Mind* (The MIT Press, Cambridge Mass., 1992), pp. 124-126.

^{xxix} In what follows I will accept this argument, but it has of course been questioned. See e.g. S. Yablo, "Concepts and Consciousness" and Chalmers' reply "Materialism and the Metaphysics of Modality" (part 3.2) in *Philosophy and Phenomenological Research* LIX, 1999, pp. 455-463 and 473-496, respectively.

^{xxx} Hare, "Supervenience", *Aristotelian Society Supp.* vol. 58 (1984), pp. 1-16; especially p. 2.

^{xxx} See for instance Kim, *Mind in a Physical World* (The MIT Press, Cambridge Mass., 1998), p. 9; Chalmers footnote is in *The Conscious Mind*, pp. 364-365, footnote 16.

^{xxxii} Chalmers, *The Conscious Mind*, p. 39 and footnote 16 p. 363f.

^{xxxiii} Hare, "Supervenience", pp. 9-11.

^{xxxiv} The requirement of multiple realisability (desideratum eight) can easily be built into the explication as a third requirement, but I have left it out of account in the definition for two reasons. Hare does not pay it any special attention, and it is left out of account in the ordinary formulations of both single-modal supervenience and double-modal supervenience.

^{xxxv} Hare, *The Language of Morals* (Oxford University Press, London, 1969), p. 145.

^{xxxvi} Hare, *The Language of Morals* (Oxford University Press, London, 1969), p. 145.

^{xxxvii} Hare, "Supervenience", *Aristotelian Society* Supp. vol. 58 (1984), pp. 4 and 8.

^{xxxviii} Hare, *The Language of Morals*, pp. 145-46, and "Supervenience", pp. 8-9. Likewise, he has claimed similarity between supervenience and the universalizability thesis in ethics, but I will leave that out of account; see Hare, "Supervenience", p. 3. I do, though, agree with that comparison of his, too.

^{xxxix} T. Sider, "Global Supervenience and Identity across Times and Worlds", *Philosophy and Phenomenological Research* LIX, 1999, p. 913.

^{xl} It also explains the similarity between supervenience relations and the causal principle "same cause, same effect"; see W. Rabinowicz, *Universalizability* (Reidel, Dordrecht, 1979), pp. 36-37.