What is Formal Ontology?

Boris Hennig 2006

Abstract

After briefly addressing the origin of the word ontology, I will ask what formal ontology might be. I will first argue that formal ontology is not the same as *formalized* or *general* ontology. In order to understand the meaning of the epithet "formal," I will then look for a suitable way of distinguishing form from matter. Formal ontology will be shown to be formal insofar as it does not refer to concrete, singular entities. This implies that it cannot be the study of singular things, but also not the study of our knowledge of them. For in both cases, it would depend on empirical facts about concrete things. Rather, formal ontology is about the objectivity of objects, and in this sense, it is the study of the form that objects have only insofar as they are objects.

1. Ontology and its Title

"Ontology" is a Greek neologism coined in early modern times. It is not difficult to grasp its general meaning: "*on*" is the present participle of Greek "*einai*," which means "to be," and "*logos*" derives from *legein*, "to talk about" or "to give an account of" something. Ontology is accordingly the discourse that has being as its subject matter. This is what Aristotle describes as *first philosophy*: "a discipline which studies that which is insofar as it is, and those features that it has in its own right."[1]

But "ontology" cannot just refer to any discipline that studies being. Every philosophical or scientific discipline studies being, for each studies something that is. There are special sciences, such as physics or differential psychology, and special philosophical disciplines, such as ethics and logic. These sciences and disciplines study certain kinds of things that exist, insofar as these things exhibit certain *special* features. Two different kinds of restrictions are involved in circumscribing what a special science is. First, a special science may apply only to a limited

[1] *Metaphysics* Γ1, 1003a21–2.

range of things, and second, it need not study every single aspect of the things to which it applies. Physics, for instance, studies the physical properties of everything that has such properties. Biology only studies living beings, and this only insofar as they are alive, not insofar they are sheer physical objects. Differential psychology studies human beings only insofar as they differ from other human beings in ways that are psychologically measurable. Two different special sciences may very well have overlapping domains; that is, domains that include the same members. For example, the claims of physics and chemistry apply to the very same things, except that the former investigates their physical properties, the latter their chemical properties.

Ontology differs from such sciences as physics and differential psychology, but not by considering another special range of things. There are no objects studied by ontology that would not also be studied by at least one other discipline. Ontology studies a different *aspect* of those things. According to Aristotle, ontology is concerned with everything that exists only *insofar as it exists*. Existence itself is thus the aspect relevant to ontology. Hence, ontology will only be possible if there are features that every existing thing has only because and insofar as it exists. I will ask momentarily what sorts of features these may be. The objective of this section, however, is to give a preliminary impression of what ontology is by considering the history of the discipline and its title.

Aristotle's *Metaphysics* deals with questions of ontology. The title "ontology," however, is much younger than this work. As a title for a philosophical discipline, "*ontologia*" has been in use since about the seventeenth century. Jacob Lorhard, rector of a German secondary school, uses this term in his *Ogdoas Scholastica* (1606) as an alternative title for metaphysics as it was taught in his school.[2] However, he does not further explain the term. More prominently, the German philosopher Christian Wolff uses "*ontologia*" in 1736 as a name for the discipline introduced by Aristotle in the passage quoted above.[3] The list of topics that Wolff discusses under this heading resembles the one given by Lorhard. It includes the notion of being, the categories of quantity and quality, the possible and the impossible, necessity and contingency,

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[2] The second edition appeared 1613 under the title *Theatrum Philosophicum*.

[3] Christian Wolff, *Philosophia Prima sive Ontologia*, Leipzig 1736.

truth and falsehood, and the several kinds of causes distinguished in Aristotelian physics. This choice of topics certainly derives from Aristotle's *Metaphysics* and such works as the *Metaphysical Disputations* by Francisco Suárez.

We can gather some additional facts about the early use of the term "*ontologia*" by considering the first known appearance of the corresponding adjective in the *Lexicon Philosophicum* by Rudolph Goclenius (1613). A foray into his use of "ontological" will provide insight into how the term came to be used as it is, but as we will see, there are some important respects in which his usage differs from contemporary usage (and thus from the usage in this volume). Goclenius uses "ontological" in his entry on *abstraction*, where he discusses *abstraction of matter*. As everywhere else in his lexicon, he does not present a unified account of the phenomenon in question, but rather lists several definitions and other findings from the literature. In the present context we are not concerned with what Goclenius means by *abstraction* and *matter*, although the concept of matter will become important later in our discussion of formal ontology. Provisionally, matter can be taken to be the stuff out of which a thing is made. To abstract it from a thing simply means to take it away from that thing, in our imagination or in reality. For the time being, we are primarily interested in the sense in which Goclenius uses the epithet "ontological." In science, he says, there are three different ways of abstracting matter from given things.

First, one may think away the particular lump of matter out of which a given thing is made, but still conceive of the thing as being made up of some matter or other. According to Goclenius, this is what natural scientists do: they investigate particular samples, and they study their material nature. But they are not interested in one sample rather than another, unless the samples differ with respect to their general properties. In studying a particular diamond, for instance, scientists think away its particularity and consider only those of its features that any other diamond would have as well. Scientists abstract from a particular thing's matter in order to grasp those general features of a thing in virtue of which it falls under a certain category; but the fact that things of its type are made of matter remains a factor in their account. This is what Goclenius calls *physical* abstraction.

Second, we may think away all matter whatsoever from a given thing, in such a way that no matter at all will figure in our account of it. This kind of abstraction is practiced in geometry and

accordingly, Goclenius calls it *mathematical* abstraction. But he also calls it *ontological* abstraction, glossing the latter term as: "pertaining to the philosophy of being and of the transcendental attributes." I will explain this phrase in due course.

Finally, Goclenius continues, one may abstract matter from a given thing in reality as much as in thought. The result will be that the entity in question literally no longer possesses any matter. This Goclenius calls *transnatural* abstraction, of which he claims that only God and the so-called divine Intelligences are capable.[4]

There are at least three important things to note here. First, Goclenius identifies ontological abstraction with mathematical abstraction. He thereby implies that ontology in general, as much as mathematics, is concerned with abstract entities and formal structures. For instance, geometry is concerned with the properties that physical objects have only by virtue of their shape and location. Their other properties, such as color, weight, smell, etc. are irrelevant. In this sense, geometry abstracts from the matter that is shaped and focuses on the shapes themselves. Whether a triangle is made of iron or wood makes no geometrical difference. If formal ontology is abstract in the same sense, it should also abstract from certain properties of things and focus on their more general features. So far, we do not know what these more general features are that ontology is supposed to study. What is important here is that ontological abstraction goes farther than mere physical abstraction. The physicist is not interested in singular samples, but still in material things insofar as they are material. Ontology is not interested in matter at all. I will discuss later what that might mean. Here, however, we can already note that according to Goclenius, since concrete things are composed of matter, ontology is not concerned with concrete things at all, not even in a general way.

Second, Goclenius equates ontology with the philosophical doctrine of the transcendental attributes. These attributes include *being*, *oneness* (or *unity*), *goodness* and *truth*. *Being* and *oneness* are mentioned by Aristotle; *goodness* and *truth* are introduced by later authors.[5] These attributes are called "transcendental" because they apply to every existing thing, regardless of any categorial boundary. That is, they surpass (or transcend) the general categories which distinguish

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[4] Goclenius 1613:16 s.v. *abstractio*.

[5] *Metaphysics I*, 1053b; cf. Aertsen et al. 1998.

things of different kinds. According to neo-platonic authors like Pseudo-Dionysius the Areopagite, the transcendental notions not only surpass the categorial boundaries between things, but also the realm of the things to which they apply; that is, the world. For instance, Dionysius writes that "the name being extends to all beings which are; and it is beyond them."[6] In other words, the transcendental attributes are manifested by everything in the world, but they do not apply to themselves. The transcendental attribute "being" is not itself something that exists. In any case, if ontology studies the features that everything that exists has insofar as it exists, then it will also be concerned with the transcendental attributes.

Third, Goclenius does not use the epithet "ontological" in order to indicate something that *really or actually happens*. When we ontologically abstract matter from a thing, we do not really take away its matter. We do so only in thought. Real abstraction, by contrast, is what Goclenius calls "*transnatural* abstraction:" it occurs when God separates the human soul from its body. In this regard, Goclenius' use of "ontological" is directly opposed to some of the contemporary uses of this word. When contemporary writers call something ontological, they often mean to indicate that it really obtains, or at least that it has implications for what exists independently of our thoughts. Ontology is thus often opposed to epistemology. The former is often said to be about what there really is, whereas the latter is only about what we know. A common view, for instance, is that ontology is concerned with the "level of things" rather than the "level of truths." That is, ontology concerns objects in the world, not our thoughts as they are expressed in true propositions or true sentences.[7] Goclenius, however, does not distinguish between things and truths. For him, both *being* and *truth* are transcendental attributes that apply to everything that is, on every conceivable level. Accordingly, he has no reason to suppose that it makes a difference whether we study things or truths, and ontology may be the study of both.

In fact, Goclenius' use of the epithet "ontological" differs from the modern one in all three respects that I have emphasized. First, ontology is no longer considered to be as abstract as mathematics. It does not abstract from all matter whatsoever, since it must also discuss the general features that things possess when they are material and particular. Second, at least in the

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[6] Pseudo-Dionysius the Areopagite, *The Divine Names* 5, 816B.

[7] Smith and Mulligan 1983:73.

tradition of analytic philosophy, ontology does not include a treatment of such transcendental attributes as goodness and truth. These topics are dealt with instead within ethics and epistemology. Third, as we have seen, the opposition of real and ontological abstraction appears odd from a modern perspective.

However, we will see that there is also some continuity between Goclenius' and our uses of "ontology." We will see later that ontology is still an abstract discipline in the sense that it avoids dependence on singular references. Further, the idea is still upheld that there are at least two transcendental attributes which surpass the categorial boundaries: oneness and being. Finally, we certainly would oppose ontological features and happenings to the *transnatural* ones; that is, features and happenings that surpass the realm of nature.

2. Some things that are not formal ontology

So far I have introduced a rough notion of ontology, according to which it is the study of features that existing things have insofar as they exist, but not insofar as they are concrete objects consisting of this rather than that matter. Since ontology, conceived in this way, seems to abstract from matter in the same way in which mathematics abstracts from matter, all ontology seems to be formal ontology.

But what is formal ontology? Edmund Husserl, who introduced that term into philosophy, describes it as the "eidetic science of the object as such."[8] *Eidetic* derives from Greek *eidos*, which means *form*. I will therefore approach Husserl's formula by means of a (necessarily brief and sketchy) discussion of the general distinction between matter and form. This will lead to a discussion of judgments and their objects, thus enabling us to understand the second part of Husserl's description ("the object as such").

Husserl deliberately uses the term *eidetic* instead of *formal*, because he wants to avoid misleading connotations.[9] He is well advised in doing so, since there are at least two common – and mistaken – accounts of what it means for a discipline to be formal.

First, a discipline is sometimes called formal merely because its claims are expressed by

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[8] Edmund Husserl, Ideen zu einer reinen Phänomenologie §10, *Husserliana* 3/1: 26–7.

[9] Op. cit., Introduction, p. 9.

means of formal symbolism or even only a shorthand notation, as when one writes "∀x:MAN(x)→MORTAL(x)" instead of "all men are mortal." However, shorthand notations are merely short, and sometimes not even that. There is no particular reason for calling them formal. Logic and mathematics are indeed formal, and they also often use shorthand notations. But logic and mathematics are not formal *because* they use this kind of symbolism. For one thing, mathematical and logical truths can be expressed perfectly well in prose, although this would often take up more space. For another, any old body of knowledge can be expressed by short and rigorously defined symbols without thereby turning into a formal discipline. Logic and mathematics are properly called formal only because they are *about* formal structures and features, for instance those of shorthand symbolisms. Hence, formal ontology may indeed use symbolic shorthand notations as far as they are helpful. But it need not do so, and it will not be formal by virtue of doing so.

Second, formal ontology has sometimes been opposed to "regional ontology." Both labels, *formal* and *regional ontology*, were introduced by Husserl.[10] Roughly, a regional ontology is a cognitive partition of the world, much like a special science: it gives accounts of the nature of a given, limited range of entities. There are separate regional ontologies for the domains of physics, biology, differential psychology, and so forth.

It has been claimed that formal disciplines are "set apart from 'regional' or 'material' disciplines in that they apply to all domains of objects whatsoever, so that they are independent of the peculiarities of any given field of knowledge."[11] According to this view, formal ontologists should only advance judgments that hold true of all objects in general. This is not far from the truth, but some qualifications are in order. For it is not the case that every claim that is made within formal ontology applies to everything that exists. Formal ontology can also study the formal features of a limited range of entities, in the same way in which geometry can study the shapes of a limited range of entities. In order to show this, I consider two quite different ways in which judgments may refer to specific entities in the world.

(1) Judgments like "Marlene Dietrich was beautiful" or "that child over there is intelligent"

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[10] Husserl, Ideen ... §9, *Husserliana* 3/1:24.

[11] Smith & Smith 1995:28.

are *singular* judgments.[12] Singular things are concrete, discrete, and they exist only once. Singular judgments refer to such things by using proper names or demonstrative expressions like "Marlene," "this," or "over there." Further, their truth depends on the state of exactly those singular things to which they refer.

(2) The other way in which a judgment may depend on peculiarities consists in its being *particular*. Particular judgments hold true only of a limited range of entities, such as the judgment that some actresses are beautiful. This judgment holds true of actresses, and not of other persons or things. The truth of a particular judgments also depends on the state of individual and concrete things, but only of *anonymous* ones, as it were. Particular judgments do not refer to singular things by using a name or demonstrative. Although they do not apply to everything in general, they still refer to their objects by means of a form that can be specified in a general way.

The distinction between singular and particular judgments is important because it will turn out that formal ontology may rely on the use of particular judgments, but not on the use of singular judgments. The point is thus not that formal ontological insights apply to all objects alike, but rather that they apply to certain ranges of objects that may be specified in general terms. Whereas formal ontology must not refer to *singular* beings like Marlene Dietrich or that child over there, it can still refer to *particular* entities like organisms in general, or anonymous children and actresses. Hence, formal ontology need not be independent of the specific entities within a limited domain of knowledge, as long as it does not depend on *singular* judgments and references. Ontology is formal as long as it picks out and applies to particular entities solely by means of their general form.

Formal ontology is thus not the same as general ontology, and hence it is not opposed to regional ontology. Rather, ontology may be a formal and regional at the same time. A regional ontology deals with a limited range of entities, but as long as it does not advance any singular judgments, it can still deal with them in a sort of general way. For instance, the ontology of events studies only a limited range of entities, namely those that occur or unfold in time, but it does not study singular processes in particular, such as the death of Socrates or the great

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[12] We adopt the terminology used by Kant, *Kritik der reinen Vernunft*, B95.

depression.

But there are still several sciences, such as physics and chemistry, that study particular phenomena in a general way. We have not yet found a way of distinguishing them from formal ontology.

3. Matter and Form according to Aristotle

General is the opposite of *regional*, and *formal* is the opposite of *material*. Formal ontology, rather than being non-regional, is non-*material*. It may study a specific range of things, but that does not mean that it will study singular and concrete instances of these kinds. What does that mean? In order to distinguish formal from material ontology, I will now consider the distinction between matter and form in general. There are at least two different traditional conceptions of the difference between matter and form, which may be attributed to Aristotle and Kant respectively. This section will discuss two ways of drawing the distinction that may be called Aristotelian. I will turn to Kant in the next section.

Aristotle develops the distinction between form and matter in his treatment of movement and change. He seems to say that matter is what persists during a change. In his *Physics*, he characterizes matter as the primary underlying substrate from which a concrete thing comes into being and which persists in this thing (II, 3). This may be taken to mean that matter is the persisting subject of any kind of change. But this definition is not tenable, since an organism may change with regard to its matter; it may, for example, gain and lose parts, yet remain the same organism. In this case it seems that the organism, not the matter, is the persisting subject of change. Hence, not everything that underlies and persists during a change can be matter. Aristotle can only mean that it makes sense to speak of matter only in contexts where some change is possible. The unchanging does not consist of matter, but not everything that may change is therefore matter.

In the case of living beings that may remain the same when exchanging their matter, we should probably say that their material constitution is one of the attributes. When a cat grows, it absorbs matter, and when it dies, matter is left behind. But the cat was not a form or shape that this matter took on. Rather, the matter was something that the cat took in, as it were. The material constitution of living beings is thus one of their attributes, and in a broad sense of "form," it is

one of their forms. If this is correct, it this means that formal ontology should also be interested in the material constitution of things. I conclude from this that the distinction between form and matter so far introduced is not suitable for distinguishing between formal and material ontology.

Within the tradition that may still be called Aristotelian, matter is also often identified with the *principle of individuation* of material things.[13] This means that the matter of a thing is what makes it *this* rather than *that* thing. Even when things have the same properties and hence bear the exact same form, they may differ from each other merely by being made up of different parcels of matter. This connects neatly to the above remarks on singularity. Concrete things are singular by being material. To be singular is to exist only once, at some unique point in time and space, and this is why we can refer to singular things in their singularity by using demonstrative expressions like "here" and "now." Therefore, to be material can in most cases be taken to be the same as to be subject to reference by demonstratives.[14] When a concrete thing is referred to by means of a demonstrative, it is not specified in terms of its general *form*, but in terms of its matter. We may accordingly claim that demonstratives introduce elements into discourse that are non-formal, that is, material. That formal ontology must not refer to matter will then mean that it must not depend on demonstrative expressions.[15]

But why should formal ontology not employ demonstrative expressions? To be here rather than there, or to occur now rather than earlier, certainly is a formal feature of a thing that it can share with other things. Further, geometry is concerned with exactly such features that objects have by virtue of being here or there, or extending from here to there; and geometry is certainly a formal discipline. The things in our world are *in general* here, now, there, or then. Therefore, any useful formal ontology that applies to real objects must also include a treatment of space and time. But in order to point out the merely spatial difference between two locations, we must employ demonstrative expressions: one of them is *here* (or at this and that location relative to

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[13] See, for instance, Aquinas' commentary on Boethius' *De Trinitate*, II, q. 4, a. 1-2, *Opera* (editio Leonina) vol. 50. Cf. Charlton 1972.

[14] Only in most cases. Points in space are singular without being material, and there may be immaterial but singular things. Aristotle sometimes speaks of "intelligible matter" in such cases (e.g. *Metaphysics* Z 10).

[15] Cf. Husserl, Ideen ... §7, *Husserliana* 3/1:21.

here), another one is *over there*. Thus it seems that the second Aristotelian conception, according to which matter is the principle of individuation of concrete things, also is of no help when it comes to saying what formal ontology is. It seems that formal ontology must employ demonstrative expressions after all.

However, we will presently see that and in what sense this is not the case. Formal ontology must indeed not depend on the use of demonstrative expressions in order to refer to its object. This is possible because there is a difference between an ontology that depends upon demonstrative reference for identifying its objects, and an ontology that reflects upon the use of demonstratives without using them and depending upon them. I will now explain this in more detail by turning to Kant's conception of the contrast between matter and form. His conception differs from the Aristotelian one in several important respects.

4. Kant on Formal Content

Kant writes that the concepts of matter and form are "concepts of reflection." This means that they are properly used in "reflective" judgments. As a first approximation, we may say that a reflective judgment is a judgment about a judgment. In Kant's own terms, reflective judgments express the "consciousness of the relation of given representations to the different sources or faculties of cognition."[16] In more familiar terms, they state how sense impressions, perceptions, and cognitions relate to the faculties that make them possible. If *form* and *matter* are concepts of reflection, they are accordingly concepts that figure prominently or even exclusively in judgments about how our sense impressions, perceptions, and cognitions relate to the faculties that make them possible.

According to Kant, we may achieve knowledge about the world by combining two sources of cognition. The first of these sources, which Kant calls intuition, is the capacity or act of representing concrete particular objects to the mind, whether real or imaginary. This alone does not suffice for cognition. "Thoughts without content are void," Kant claims, and "intuitions without concepts are blind."[17] Hence, intuition must be supplemented by what Kant calls

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[16] Kant, *Kritik der reinen Vernunft*, B 316.

[17] B 75.

judgment, the act or capacity of uniting representations under concepts such as "existence," "unity," "substance," or "cause." By bringing representations under such concepts, understanding turns a subjective representation into an objective experience of a real object. Kant claims that all cognition of empirical objects must work in this way; he is thus not only talking about our human cognitive abilities, but about what it would take for any rational being to experience an empirical object.

We are interested in the way in which Kant draws the distinction between the material and the formal content of a judgment of experience. The distinction between two sources of cognition, intuition and understanding, does not straightforwardly map onto this distinction. The *empirical* content of such judgments depends on sense perception and other kinds of intuition, and thus on the representation of particular, concrete objects. However, it is important to see that according to Kant, the *formal* content of our judgments is not in turn exclusively supplied by our understanding. Rather, when intuition provides us with the representations of concrete things and locations in space and time, it has already introduced its own forms.

Kant's distinction between the formal and material content of a judgment of experience can be understood in the following way. In order to achieve knowledge about any given thing, we must first establish a relation to that thing. We need to identify it by means of some of its properties, by pointing to it, or by using its proper name. For instance, in order to find out how beavers live, what they eat, and how they look, we need to first locate beavers and observe them. In this case, we will identify them by virtue of certain characteristic properties of beavers. On this basis, that they in fact have these properties cannot be something that we discover. In general, when we identify an object by virtue of a property, we cannot possibly *find out* that it has that property. We know *a priori* that the object in question has this property, if it exists, since it is the property by means of which we refer to it.

The most general and basic way of identifying physical objects is by virtue of their position in space and time, for instance as "this thing here", or "the table that was here before." Again, everything that answers to the description "the table that was here before" will necessarily be the table that was here before. If we refer to an object by means of its position in space and time, we cannot possibly find out that it has or does not have this position. In this sense, we know *a priori*, before looking, that the thing in question, if there is any, occupies this position.

This peculiar feature, that empirical objects in general are located at some certain position in space and time, is not something that we learn from experience. Rather, we knew it before we could possibly experience any such object. In this sense, Kant writes that it is "the matter of all phenomena that is given to us a posteriori; the form must lie ready *a priori* for them in the mind, and consequently can be regarded separately from all sensation."[18] The forms of intuition are space and time, and since we do not learn by sense experience that empirical objects occupy spatiotemporal positions, there may be an entirely formal discipline that is concerned only with space and time.

The formal content of a judgment about an empirical thing is its *a priori* content in the specified sense: It arises from the way in which we identify an object before possibly describing it. When we address something as an empirical object and claim that it has a certain color or weight, we know *a priori* that we are talking about a thing in space and time, and *a posteriori* that it has this specific color or weight. That the object is located somewhere in space and time follows from the form in which we address it and thus belongs to the formal content of our judgment. The material content of a judgment about an empirical thing is the information that we gather by experience: that it has this specific color or weight.

So far, the distinction between the formal and the material content of a judgment may appear to be entirely relative. We may address something as a rodent and find out that it is a beaver, or we may identify something as a beaver and find out that it is a rodent. Likewise, it seems that we may refer to something as "item that is located at the North Pole" and find out that it is white, or refer to it *a priori* as "white item" and find out that it is located at the North Pole. It seems to depend entirely on us which of the bits of knowledge is *a priori*, that is, what characteristic we use in order to single out the object, and what information we then gather on the basis of observation.

Thus it seems that we may turn the formal content of any judgment into the material content of another judgment and vice versa. But this need not always be possible, since there may be features that we must presuppose in order to identify any object whatsoever. For instance, since the most general and basic way of identifying physical objects is by means of their

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[18] B 34.

spatiotemporal position, space and time are forms of objects about which we may have *a priori* knowledge on the most general level. We cannot really refer to a thing as "white item" without knowing in any sense where it is or at least was at some time. We may ask where the white item that was in Alaska is now, and answer that it is now to be found at the North Pole. But in any case we have already identified the object in terms of its spatiotemporal position. We need to understand space and time in general before being able to identify any spatiotemporal object. Although in some sense, we do experience that physical objects are in space and time, this is not something that we could ever find out about them by experience, since in order to find out anything about a physical object, we first need to locate it in space and time. We never find out by observation that a thing is in space and time. In this sense, all our experience is shaped by the forms of space and time, and space and time are *introduced* by us rather than *given* to us.

That all our experience is shaped by certain general forms that all possible objects of experience must have does *not* mean that we *construct* reality. We do not bring it about that objects are in space and time when we locate and identify them as being in space and time. In this sense, space and time are the forms by means of which we acquire experience.

5. Kantian Formal Ontology

According to the Kantian conception of the contrast between matter and form, formal ontology will be concerned with the pure forms of intuition and understanding; that is, with the way in which we must determine any object *a priori* before investigating or observing it. It will not be about concrete objects but rather about the forms by virtue of which any judgment may relate to an object. There are further general forms besides space and time by means of which we subject representations of spatiotemporal things under general laws and thereby relate them to real objects. These forms will be the forms that all things have insofar as they exist. Kant claims that we may study these forms by investigating the ways in which we identify objects.

When extracting such a notion of formal ontology from Kant's writings, some qualifications are in order. It is of course perfectly true that Kant does not *call* the study of the most general features by means of which we identify objects "ontology." Rather, Kant dismisses traditional ontology, since he identifies it with the futile attempt to say something about things that no finite rational being could possibly experience. He suggests that we focus on the possibility of

experience instead, and on objects insofar as finite rational beings may possibly experience them.

Modern ontologists, who certainly do not want to talk about objects that no finite being could possibly experience, may react to this in two ways. One of them is to argue against Kant that we do not in fact need to reflect on our cognitive capacities in order to identify the basic structures of the world. It is true that Kant's emphasis on our cognitive judgments and his claim that we can investigate the basic structure of the world only be reflecting on our cognitive capacities has led to the misunderstanding that the world is in fact a construction out of concepts. Such a thesis should be opposed, and it often labeled Kantian, by its adherents and opponents.

The other strategy is the one adopted by Husserl, the founder of formal ontology. Roughly, Husserl continues the Kantian enterprise of investigating the basic structures of the phenomenal world, but abandons his idea that there might even be a reason for speaking about anything else than the phenomenal world that we directly experience. When Kant reflects on the world insofar as we perceive and know it, he actually refers to the only real world there is. For this reason, the results of his reflection on perceptions and judgments can tell us what the real world is like, and his "transcendental philosophy" is in fact the same as formal ontology. The second strategy is admittedly revisionist in that it turns Kant into an ontologist, although Kant declared that he did not want to engage in ontology. But the difference is in fact only verbal, and can be traced down to two different uses of the word "world." According to Kant, ontologists study the features of an inherently unknowable world. Since we cannot know anything about such a world, Kant argues, it is already too much to assume that it deserves the title "world." What we should rather call "world" is the realm of objects that we may directly experience and that is shaped by the general forms of space, time, causality etc. For Husserl, ontology is concerned with the general structure of this real, experiencable world, not with the non-phenomenal whatever-it-is that goes beyond the real world.

In this context, it is important to see that although formal ontology in the specified sense proceeds by reflecting on our knowledge, it is *not* a theory *of* our knowledge. *Formal ontology is not about concepts*. By being formal according to the Kantian sense of "form," ontology does not turn into a kind of psychology, and it is certainly not the study of how a particular language or science conceptualizes a given domain. Every such study would have to rely on empirical knowledge about singular states of affairs. But I have already said in the beginning that ontology

is not another special science. By the same token, it is not the study of such a special object as our knowledge of the world. Formal ontology is not directly concerned with objects of knowledge and it does not have knowledge as its object. It is concerned with the forms that all possible objects of knowledge must have, and it proceeds by reflecting on knowledge. But a reflective judgment is not simply a judgment that has another judgment as its object. Rather, it reflects on the way in which the other judgment relates to its object. The object of a reflective judgment is thus, more precisely, the *relation* of the first judgment to its object. Formal ontology is the study of how we must relate to objects before possibly investigating or describing them. It is about what it means for a judgment to have an object and what it means for a thing to be the object of a judgment.[19]

There are three kinds of enquiry. First, there are special sciences that study empirical things and employ concepts in order to describe them. Second, there is a science of concepts that employs psychological or epistemological concepts in order to describe concepts. Finally, there is formal ontology, which studies the relation between concepts of things. This relation is neither a thing nor a concept, and hence, ontology does not directly study things or concepts. It studies them only indirectly, by addressing the relation that holds between them.

6. Conclusions

The results of the preceding section lead us right back to the medieval doctrine of the transcendental attributes. I have said that formal ontology does not directly study objective features (or features of objects in the world), but only their objectivity in and of itself. If this contrast is a genuine one, objectivity cannot be another feature of objects. And this is in fact what the doctrine of transcendental notions claims. Being an object is, first, something that applies to everything that is. Everything that is, is also objective, that is, it is a possible *object of a judgment*. Second, *being an object* is a transcendental attribute in the neo-platonic sense, as used by Pseudo-Dionysius: Objectivity surpasses not only the boundaries between the categories, but also the boundaries of reality itself. *Being an object* is not an objective feature that could be the direct object of a judgment. This means that we can study the objectivity of objects not by

[19] Cf. Stekeler-Weithofer 2000, p. 78.

studying objects and their features, but only by studying the relation of judgments to their objects.

We can now return to the question in what sense formal ontology may not deal with demonstrative expressions It should be clear that formal ontology must include a formal treatment of space and time. But space and time, it was argued, cannot be studied without employing demonstrative expressions. However, such expressions seem to introduce material, that is, singular features, into discourse. Hence it seemed that there could be no purely formal ontology of space and time. What we can see more clearly now is in what sense formal ontology need not depend on the *use* of demonstrative expressions in order to refer to any singular thing. Formal ontology proceeds by *reflecting on* the use of such expressions, *without using them*. It may study what it means to be or have a singular object, but it does not refer to any singular object. To reflect on a judgment is to advance another judgment that relates the former judgment's content to its source. When we put forward a judgment about a judgment, where the latter uses a demonstrative expression, we need to understand how such an expression works, but we need not repeat its use. A formal ontological judgment may, indirectly, involve and presuppose an understanding of how demonstratives work, but it need not therefore depend on singular or empirical facts about the things to which such expressions refer. Although formal ontology must not itself put forward *singular* judgments about individual, concrete things, it may reflect on them in order to establish *particular* judgments about the general form of particular types of things.

We can now also see what Husserl means when he describes formal ontology as the "eidetic science of the object as such." Formal ontology does not make singular, empirical judgments about concrete things. In this sense, it is a formal (= *eidetic*) discipline. Further, formal ontology is a reflective discipline about the form of objectivity; that is, about what it means for something to be the object of a possible judgment.[20] When Husserl says that formal ontology is the science of the object *as such*, he does not mean that it is about the object in itself *as it really is*, since *every* science should be about its object as it really is. Even a science of fake objects would be about these objects as they really are. Fake guns, for instance, really exist, and a science of fake

[20] Husserl, Formale und Transzendentale Logik §38, *Husserliana* 17:112.

guns should study them insofar as they really exist. So formal ontology is not special in that it studies objects insofar as they really are.

Second, by speaking of the object as such, Husserl also does not mean that ontology studies the object *apart from our knowledge of it*. We cannot study anything apart from our knowledge of it, because studying something is the process of getting to know it. Husserl instead uses the phrase "as such" in its most straightforward and original meaning. "X as such" simply means "*X insofar as it is X*." Formal ontology accordingly studies objects insofar as they are objects. *Object*, however, is a relative term: something is the object of something else. Formal ontology is about objects of possible judgments insofar as they are objects of possible judgments.

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