

Chapter 2: What is Formal Ontology?

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1. *Ontology and Its Name*

‘Ontology’ is a neologism coined in early modern times from Greek roots. Its meaning is easy to grasp; *on* is the present participle of the Greek *einai*, which means ‘to be’, and *logos* derives from *legein*, ‘to talk about’ or ‘to give an account of’ something. Accordingly, ontology is 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’ (*Meta.* Γ1, 1003a21-2).³

In a sense, every philosophical or scientific discipline studies things that exist. Yet, the term ‘ontology’ does not apply to every discipline that studies that which is. Although sciences do deal with features of existing things, they do not deal with them insofar as they exist. Special sciences study only certain kinds of things that exist, and only insofar as these things exhibit certain special features. Two different kinds of restrictions are involved in circumscribing what a special science is. A special science either studies only a limited range of things, or it studies a limited aspect of the things it studies. Physics, for instance, studies the physical properties of everything that has such properties. Biology only studies living beings and only insofar as they are alive, not insofar as they are sheer physical objects. Differential psychology studies human beings insofar as they differ from other human beings in ways that are psychologically measurable. Further, 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, while the latter their chemical properties.

Ontology differs from such sciences as physics and differential psychology, but not because it considers another special range of things. Every object studied by ontology is also studied by some other discipline. However, 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 the aspect relevant to ontology. Hence, ontology will be possible only if there are features that each existing thing has only

³ All translations are the author’s unless otherwise specified.

because, and insofar as, it exists. Momentarily, we will ask 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 name.

Although Aristotle's *Metaphysics* already deals with questions of ontology, the word 'ontology' 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.⁴ However, he does not explain the term further. The book does not contain much more than a set of tree diagrams with the root node of one of them labelled, *metaphysica seu ontologia*. 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 (Wolff, 1736). 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, truth and falsehood, and the several kinds of causes distinguished in Aristotelian physics (material, efficient, formal, and final). This choice of topics certainly derives from Aristotle's *Metaphysics* and such works as the *Metaphysical Disputations* (1597) 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* (1613) by Rudolph Goclenius. A foray into his use of 'ontological' will provide insight into how the term came to be used as it today; 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

⁴ The second edition appeared in 1613 under the title *Theatrum Philosophicum*.

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 ignore 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. They are only interested in one sample, rather than another, when the samples differ with respect to their general properties. In studying a particular diamond, for instance, scientists ignore its particularity and consider only those 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 some matter or other remains a factor in their account. This is what Goclenius calls *physical* abstraction.

Second, we may ignore all matter whatsoever, in such a way that no matter at all figures in our account of the subject under investigation. 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’ (Goclenius, 1613, 16). We 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, only God and the so-called divine Intelligences are capable.

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. Later, we will explore what these more general features might be. What is important here is that ontological abstraction goes farther than mere physical abstraction. The physicist is not interested in particular samples but, rather, in material things insofar as they are material. According to Goclenius, ontology is not interested in matter at all; 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 discussed by Aristotle; *goodness* and *truth* are introduced by later authors (Aertsen *et al.*, 1998). 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 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 entire world. For instance, Dionysius writes that the ‘name being extends to all beings which are; and it is beyond them’ (Pseudo-Dionysius, *The Divine Names*, 5, 816B). 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 of everything that exists 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, and 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. Thus, ontology is 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 (Smith and Mulligan, 1983, 73). 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 we 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 by virtue of being material and particular. Second, at least in the tradition of analytic philosophy, ontology does not include a treatment of such transcendental attributes as goodness and truth. Instead, these topics are dealt with in ethics and epistemology. Third, as we have seen, the opposition of real and ontological abstraction appears odd from a modern perspective.

We will see, however, that there is also some continuity between Goclenius' and contemporary uses of 'ontology'; ontology is still considered an abstract discipline in the sense that it avoids dependence on particular references. Further, the idea that there are at least two transcendental attributes which surpass the categorial boundaries – namely, oneness and being – is still upheld. Finally, many contemporary thinkers certainly would contrast ontological features and happenings with *transnatural* ones, that is, features and happenings that surpass the realm of nature.

2. *Some Things that are not Formal Ontology*

So far, we have introduced a rough notion of ontology as the study of features that things have insofar as they exist, and not insofar as they are concrete objects consisting of this rather than that matter. Since ontology, conceived in this way, abstracts from matter in the same way in which mathematics abstracts from matter, ontology would seem to be *formal ontology*.

What is formal ontology? Edmund Husserl, who introduced this term into philosophy, describes it as the 'eidetic science of the object as such' (Husserl, *Husserliana*, 3/1, 26-27). *Eidetic* derives from the Greek *eidos*, which means *form*. Therefore, we will approach Husserl's formula by

means of a brief discussion of the general distinction between matter and form. This will lead to a discussion of experience and its objects, thus enabling us to understand the second part of Husserl's description of the object as such.

Husserl deliberately uses the term 'eidetic' instead of 'formal', because he wants to avoid misleading connotations (Husserl, *Husserliana*, 3/1, 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 means of formal symbolism or even only a shorthand notation, as when one writes ' $\forall x: \text{MAN}(x) \rightarrow \text{MORTAL}(x)$ ' instead of 'all men are mortal'. Shorthand notations, however, are merely short, and sometimes not even that. There is no particular reason for calling them formal. Logic and mathematics are indeed formal disciplines, and they 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* or *material* ontology, and both labels – 'formal' and 'material' – were introduced by Husserl (Husserl, *Ideen*, §9). 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' (Smith and Smith, 1995, 28). 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 example, 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.

Admittedly, it is difficult to say what it means for a discipline or judgment to be *about* or *apply to* something. For instance, it is not clear whether ‘beavers are rodents’ is about beavers, about rodents, or about the whole world. For in some sense, all judgments are about and apply to the entire world and everything in it. It holds true of the world that, in it, beavers are rodents. We will make the simplistic assumption that judgments apply to the things that are explicitly mentioned in them. On this basis, formal disciplines explicitly mention everything that exists by using very general and abstract descriptions, whereas regional and material disciplines mention only some of existing things, but presumably in more detail. Thus, whether a discipline is formal or not depends on the entities to which its claims refer, and on the way in which it refers to them.

However, there are two quite different ways in which a judgment may be said to explicitly mention or refer to particular objects.

(1) Judgments like ‘Marlene Dietrich was beautiful’ or ‘that child over there is intelligent’ are *particular* judgments.⁵ Particular *objects* are concrete, discrete, and they exist only once. Particular *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 particular things to which they refer.

(2) The other way in which a judgment refers to specific things in the world consists in its being *specific*. Specific judgments hold true only of a limited range of entities, such as the judgment ‘some actresses are beautiful’. This judgment holds true only of actresses, and not of other persons or things. Although the truth of specific judgments still depends on the state of particular things, they do not refer to these things by using a demonstrative or name. They are, as it were, about *anonymous* particular objects. Specific judgments do not apply to everything in general; but they refer to their objects by means of a general form which may single out an unspecified number of particular objects.

This distinction between particular and specific judgments is important because it will turn out that a formal ontological theory may only advance specific judgments, but not particular ones. Thus, the point is not that formal ontology applies to all objects alike, but rather that it applies to certain ranges of objects that may be referred to by means of general terms. Whereas formal ontology must not refer to *particular* beings like Marlene

⁵ The distinction is also drawn by Kant, *Critique of Pure Reason*, B95. However, translations usually use ‘singular’ where we use ‘particular’, and ‘particular’ where we use ‘specific’.

Dietrich or that child over there, it can still refer to *specific* kinds of beings like organisms in general or anonymous children and actresses. Hence, formal ontology may indeed advance judgments about the specific entities within a limited domain of knowledge, as long as none of these judgments are *particular* ones. Ontology is formal as long as it picks out and applies to particular entities solely by referring to general aspects of them; in other words, to some aspect of their *forms*.

Thus, formal ontology is not the same as general ontology (which would deal only with features that all things share) and, hence, it is not opposed to material or regional ontology. Rather, an ontological theory may be 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 particular judgments, it can still deal with them in a general way. For instance, the (regional) ontology of occurrents found in Basic Formal Ontology (see Chapter 1) studies only a limited range of entities, namely those that occur or unfold in time, but it does not study specific events or processes in particular, such as the death of Socrates or the Great Depression.

But there are still several sciences, such as physics and chemistry, which study specific 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 kind of thing, but that does not mean that it studies particular and concrete instances of these kinds. What does this mean? In order to distinguish formal from material ontology, we will now consider the distinction between matter and form. There are at least two different traditional conceptions of the difference between matter and form, which are attributable to Aristotle and Immanuel Kant respectively. This section discusses two ways of drawing the distinction which we will call Aristotelian. We will turn to Kant in the next section.

Aristotle develops the distinction between form and matter in his treatment of movement and 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 might 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 the organism, not its matter, is the persisting subject of change. Hence, not everything that underlies and persists during a change can be matter. Presumably, what Aristotle meant is 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, thereby, matter. The result, then, is that he does not provide a complete account of what matter is.

Within the later Aristotelian tradition, matter is often identified with the *principle of individuation* of material things.⁶ 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 can differ from each other merely by being made up of different parcels of matter. This brings us back to the above remarks on particularity. Concrete things are particular in virtue of the fact that they are made of matter. To be particular is to exist only once, at some unique location in time and space, and this is why we can refer to particular things in their particularity by using demonstrative expressions like ‘here’ and ‘now’. Therefore, to be material can, in most cases, be taken to be coextensive with being subject to possible reference by demonstratives.⁷ 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. Accordingly, we may 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 advance judgments that contain demonstrative expressions (Cf. Husserl, *Ideen*, §7, *Husserliana* 3/1, 21).

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

⁶ See, for instance, Aquinas’ commentary on Boethius’ *De Trinitate*, II, q. 4, a. 1-2, *Opera* (editio Leonina) vol. 50. Cf. Charlton, 1972.

⁷ This only holds in most cases. Points in space are particular without being material, and there may be immaterial, but particular, things. Aristotle sometimes speaks of intelligible matter in such cases (e.g., *Metaphysics* Z 10).

ontology that applies to real objects should 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 here), another one is ‘over there’. On the face of it, then, the second Aristotelian conception, according to which matter is the principle of individuation of concrete things, is also of no help when it comes to circumscribing formal ontology. It seems that formal ontology must employ demonstrative expressions after all.

However, we will see that this is not the case. Formal ontology must not refer to objects by means of judgments containing demonstrative expressions. But how is this possible, given that formal ontology must include references to space and time? In what follows, we will see that there is a difference between an ontology that *uses* demonstrative reference in order to identify its objects, and an ontology that *reflects upon the use* of demonstratives, but without using them. This distinction is attributable to Kant. We will now explain it in more detail by turning to Kant’s conception of the contrast between matter and form, which differs from the Aristotelian one in several important respects.

4. *Kant on Formal Content*

We are still looking for an understanding of ‘form’ that enables us to grasp the distinction between formal and material ontology. Kant writes that the concepts of matter and form are ‘concepts of reflection’. This means that they are properly used in reflective judgments. In Kant’s own terms, reflective judgments express the ‘consciousness of the relation of given representations to the different sources or faculties of cognition’ (Kant, 1781, B316). 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 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 Kant calls *intuition*, which is the capacity or act of representing concrete particular objects, whether real or imaginary, to the mind. But intuition alone does not suffice for cognition. ‘Thoughts without content are void’, Kant claims,

and ‘intuitions without concepts are blind’ (Kant, 1781, B75). Hence, intuition must be supplemented by what Kant calls *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. For example, a mere sequence of visual experiences is brought under the concept of causation; it turns into an experience of a causal process. Kant claims that all cognition of empirical objects must work in this manner; thus, he is 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 two sorts of content that an experience may have, namely, the *material content* and the *formal content*. The distinction between the two sources of cognition, i.e., intuition and understanding, does not straightforwardly map onto this distinction. Put differently, material content is not quite the same as what Kant calls *empirical* content. The *empirical* content of experience is supplied by sense perception or other kinds of intuition and, thus, consists in the representation of particular concrete objects. However it is important to see that, according to Kant, the *formal* content of experience is not, in turn, exclusively supplied by our understanding (which means that not all empirical content is material). Rather, when intuition provides us with the representations of concrete things and locations in space and time, it has already introduced its own forms. According to Kant, the pure forms of intuition are space and time.

Kant’s distinction between the formal and material content 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 relate to it by means of some of its properties, by looking at it, 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 depend upon certain characteristic features of beavers in order to identify them as such. As a consequence, then, the fact that they have these properties cannot be something that we discover. For, when we identify an object by means of one of its properties, we cannot possibly *find out* that it has that property – or even that it does not have this property. We can discover that beavers fell trees, but not that beavers are beavers.

The most basic way of identifying physical objects is by virtue of their position in space and time, for instance as *this item 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 it exists, occupies this position.

This peculiar feature of empirical objects, that they are necessarily located at some certain position in space and time, is not something that we can learn from experience. Rather, according to Kant, we know this before we ever experience any such object since we must know it in order to experience any empirical object whatsoever. 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’ (Kant, 1781, B34). 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 an experience of an empirical thing, then, is its *a priori* content in the sense specified above; it arises from the forms by virtue of which we identify an object before being able to investigate and describe it. When we refer to 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 claim to know *a posteriori* that it has this specific color or weight. That the object is located somewhere in space and time follows from the way in which we must necessarily refer to it and, thus, belongs to the formal content of our experience. The material content of our experience of 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 an experience may appear to be entirely relative to the way in which we come to identify a given thing. We may identify something as a rodent and find out that it is also 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 *a priori* as an item that is located at the North Pole and find out that it is white, or refer to it *a priori* as a 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 are *a priori*, that is, what characteristic we use in order

to single out the object, and which bits of information we then gather *a posteriori*, on the basis of observation.

If this is true, it would seem that we may turn the formal content of any experience into the material content of another experience and vice versa. But although this is possible for *some* kinds of experience, such as the beaver/rodent one, it is not always possible, since there are features that we must presuppose in order to identify any object. For instance, since the most general and basic way of identifying physical objects is by means of their spatiotemporal position, space and time are forms of objects about which we may have *a priori* knowledge at the most general level. We cannot really refer to a thing as a white item without knowing, at least, where it is or was located 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. In any case, we have already identified the object by means of *one* of its spatiotemporal positions; thus, we need to understand space and time in general before being able to identify any spatiotemporal object.

Yet, 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 *through* experience. In order to find out anything about a physical object, we first need to locate it somewhere in space and time. Thus 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.

Besides the forms of intuition (space and time), Kant claims that there are also *a priori* forms that our understanding introduces. For instance, whenever we unite two representations in a judgment, we must unite them in one of three ways: either one of them is a feature or attribute of the other; or one of them is a cause of the other; or both are independently and simultaneously existing entities. In any case, we apply a concept *a priori* to the representations that we combine in order to identify what they represent as real objects in the world.

Note that when we unite two representations – for instance, as cause and effect – we may be mistaken. That we apply the concept of cause and effect before being able to refer to a real object does not mean that there necessarily is such an object to which we refer. It may well be that we unite two representations under this concept in order to refer to an object, but that there is no such object. In such a case we will have applied a concept *a priori*, but in vain.

That all our experience is shaped by certain general forms which all possible objects of experience must have does *not* mean that we *construct* reality; this is a popular misconception about Kant's philosophy. 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. We use the forms of intuition and understanding in order to capture what is there, in such a way that whatever gets captured will necessarily have certain properties; namely, the properties by virtue of which we captured it. But we did not cause it to have these properties, and there might have been nothing that has these properties. In this sense, space and time and the *a priori* concepts 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 should be taken to 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. Its subject matter, then, will not be concrete objects, but the forms by virtue of which any experience may relate to an object. These forms will be the forms that all things have insofar as they exist. Kant claims that we can 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. Kant does not use the epithet 'ontology' to designate the study of the most general features by means of which we identify objects. Rather, he dismisses traditional ontology, identifying it with a futile attempt to say something about things that no finite rational being could possibly experience. Even to say that there may be such things, and to call them 'things,' is too much. He suggests that we should focus, instead, on our experience and on objects insofar as finite rational beings are able to experience them.

Modern ontologists, who certainly do not want to talk about objects that no finite being could possibly experience, may react to Kant's dismissal in two ways. One way is to argue, against Kant, that we do not 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 by reflecting on our cognitive capacities, has led to the popular misunderstanding that Kant holds the world to be merely a construction of concepts. This

(patently bizarre) thesis is often mistakenly labelled as ‘Kantian,’ both by its adherents and opponents. This misunderstanding of Kant is by no means benign, and has yielded some potentially disastrous results in modern fields, such as information science, which seek to apply methods of formal ontology to improve the way in which information is collected, stored, and disseminated.

The other possible response to Kant’s philosophy is the one adopted by Husserl, the founder of formal ontology. Roughly, Husserl continues the Kantian enterprise of investigating the basic structures of the world as it is experienced by us, but abandons his idea that there might be a reason for even speaking about anything other than the phenomenal world. Kant seems to suppose that there is a way in which the things that we experience are *in themselves*, that is, apart from all our possible experience. At the same time, however, he claims that we should not ask how things are in themselves. Husserl continues this line of thought. Since we cannot know anything about things that can in no way be experienced, we do not know whether there are such things. We do not know whether they are indeed *things*, but we also do not know whether the opposite of any of this is true. We should not try to say anything about what we cannot possibly know. But it also makes no sense to say that there are things that we do not know, or that we have no access to reality. To say that something is a thing and that it is real is already a positive claim. We cannot use the concepts ‘thing’, ‘object’, ‘reality’, and ‘world’ for the radically unknown. Rather, the world is precisely what we experience, and in this world there are real things and objects.

Insofar as ontology studies the most general features of *this* world, it is not subject to Kant’s critique. That is, when Kant reflects on the phenomenal world that we experience, he already deals with the only real world that there is. For this reason, he believes that the results of our reflection on perception and experience are able to tell us what the real world is like. When seen in this light, his so-called transcendental philosophy is, in fact, the same as formal ontology. The most general structures of the world as we experience it are also the structures of the world as it really is.

This second strategy of dealing with Kant is admittedly revisionist in that it turns Kant into an ontologist, in spite of his own dismissal of traditional ontology. But the difference is, in fact, only verbal and can be traced back to two different uses of the word ‘world’. According to Kant, traditional ontologists study the features of an allegedly external world that

is inherently unknowable. Since we cannot, by assumption, know anything about such a world, Kant argues, it is already too much to assume that it deserves the title ‘world’. For Kant, the real world is the realm of objects that we may directly experience, and it is shaped by the general forms of space, time, causality, and so forth. Hence, when Kant declared his antipathy to ontology, he was referring to a discipline that advanced judgments about a world which is inherently unknowable, not the world as he understood it, consisting in the phenomena experienced by cognitive agents. For Husserl, ontology is concerned with the real world in Kant’s sense. Kant was by no means an ontologist as he understood the term, but he was as Husserl did, and as we do.

Formal ontology studies the most general features of real objects by reflecting on the forms by virtue of which we identify them. Now, it is important to note that although formal ontology in the specified sense proceeds by reflecting on our experience, it is *not* a theory of our experience. In particular, 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 or epistemology, and it is certainly not the study of how a particular language or science conceptualizes a given domain. Any inquiry of this sort would have to rely on empirical knowledge about particular states of affairs; but we have already pointed out that ontology is not another special science. By the same token, it is not the study of such a special object as our experience of the world. Formal ontology is not directly concerned with particular objects of experience, nor does it have experience as its object. It is concerned with the forms that all possible objects of experience must have, and it proceeds by reflecting on experience. But to reflect on experience is not simply to form a judgment that has an experience as its object. Rather, it is to form a judgment that reflects on the way in which the experience relates, in turn, to *its* object. Thus, the object of a reflection on experience is more precisely the *relation* of experience to its object. Formal ontology is the study of how we must relate to objects before being able to investigate or describe them. It is about what it means for an experience to have a real object and what it means for a thing to be the object of an experience (see Stekeler-Weithofer, 2000, 78).

We may distinguish three kinds of inquiry. First, there are special sciences, such as biology, which study empirical things and employ concepts like ‘thing’, ‘beaver’, or ‘cause’ in order to describe them. Second, there are psychological or epistemological sciences, which

describe and study concepts themselves by means of other concepts of a different nature such as ‘concept’, ‘desire’, or ‘truth’. Finally, there is formal ontology, which studies the relation between concepts of either kind and that to which these concepts refer. This relation is itself neither a thing nor a concept; hence, ontology does not study things or concepts directly; it studies them only indirectly, by addressing the relation that holds between them and that to which they apply. As a slogan, formal ontology does not study objects, but only the objectivity of objects.

6. *Conclusions*

The results of the preceding section lead us right back to the medieval doctrine of the transcendental attributes. We have said that formal ontology does not study objective features (or features of objects in the world) directly, but only their objectivity in and of itself. If this contrast is a genuine one, objectivity cannot be another feature of an object. And, in fact, this is what the doctrine of transcendental attributes claims. Being an object is, first, something that applies to everything that is. Everything that exists is also objective, that is, it is a possible *object of experience*. 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 an experience. This means that we can study the objectivity of objects not by studying objects and their features, but only by reflecting on the relation of our experience to its objects.

We can now return to the question concerning the sense in which it is possible for formal ontology to avoid employing 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, particular features – into discourse, whence it seems that there could be no purely formal ontology of space and time. What we can see more clearly, now, is the sense in which formal ontology need not depend on the *use* of demonstrative expressions in order to refer to any particular 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 particular object; but, in fact, it does not refer to any such object. To reflect on an experience is to advance

a judgment that relates the content of the experience to its source. When we reflect on a judgment of experience that uses a demonstrative expression, we need to understand how such an expression works, but we need not repeat its use. A formal ontological judgment, thus, may indirectly presuppose an understanding of how demonstratives work, but it need not depend on particular or empirical facts about the things to which such expressions refer.

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 particular, empirical, claims 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 experience (Husserl, *Formale und Transzendente Logik* §38, *Husserliana* 17, 112). 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 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. Further, by speaking of the object as such, Husserl does not mean either 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 studies objects insofar as they are objects. ‘Object’, however, is a relative term, as something is the object of something else. Formal ontology is about objects of possible experience insofar as they are objects of possible experience.