

1 Introduction

The notion of ‘substance’ has an illustrious and tangled history (see, e.g., Simons 1998; Robinson 2021). Rather than attempt to encompass this vast field, I have chosen to limit the scope of this Element in two respects. First, I shall be concerned primarily with substance as a specific *ontological category*. It is difficult to provide a brief informative gloss of ontological categories. A minimal characterisation is that they are general *kinds of entity*, ‘the most general kinds under which things can be classified’ (Loux 2006, 11). Other ontological categories, with which I shall contrast substances, include universal properties, tropes, events, and states of affairs.¹ In a *substance ontology*, the category of substance is one of the *fundamental categories*. That is, it is not the case that substances can ultimately be reduced to entities belonging to other categories (Loux 2006, 15; Lowe 2006, 58). The intuitive idea is that substances are among the fundamental entities, the ‘basic building blocks’ of reality. As we shall see, this idea can be spelled out in a various ways.

It is worth briefly contrasting this notion of substance with two others. First, I shall set aside the notion of ‘substance’ as designating *stuffs* of various kinds (e.g., gold or water). On the notion of ‘substance’ as it is used in substance ontologies, substances are typically taken to be discrete particular entities rather than kinds of stuff. Second, the term ‘substance’ is sometimes used simply to designate any of a range of familiar concrete objects, such as trees, tables, or persons (Denby 2007, 473; Weir 2021, 268). This is not how I shall employ the term in what follows. This is not to say that none of these familiar objects count as substances. The point is that such entities count as substances in the sense that is relevant to this Element only insofar as they have certain characteristics or play certain theoretical roles. So while the term ‘substance’ as I shall use it may turn out to designate some or all of these entities, its meaning is different to the use of this term to mean any such entity. The use of the term ‘substance’ as meaning any such familiar concrete object is very close to what Kathrin Koslicki (2018, 164) terms the *taxonomic* use of the notion of substance, to pick out certain entities without committing oneself to their being metaphysically privileged. Koslicki contrasts this with a *non-taxonomic* use, on which the notion indicates that certain entities ‘deserve to be assigned a special place relative to the ontology in question’ (164). My use of the term ‘substance’ is non-taxonomic. Specifically, the special place substances occupy is that, if there are any, they are all fundamental or metaphysically basic entities (e.g., Loux

¹ On ontological categories, see Hoffman and Rosenkrantz 1994, 5–22; Westerhoff 2005; Lowe 2006.

1978, 165; Lowe 2006, 109; Robb 2009, 256; Heil 2012, 4; Jaworski 2016, 27; Inman 2018, 94).²

A corollary of this is that I shall by and large not engage with conceptions of familiar concrete objects as either bundles of properties or as combinations of properties and substrata (though see Section 6.1). I regard these conceptions as in effect claiming that familiar concrete objects are not substances as I intend to use this term (on these conceptions and on a conception of familiar concrete objects as substances in my preferred sense, see Loux 2006, 84–117).

The aim of this Element is to provide a systematic overview of substance as discussed in contemporary metaphysics (roughly, since the 1990s).³ This indicates the second limitation on the scope of this Element. For the most part I shall not address the history of the notion of substance. Nor shall I consider contemporary work focusing primarily on historical exegesis (or if a work discusses both historical and contemporary themes I shall set aside those portions that focus on the former).

That said, it is worth briefly sketching some key points in the history of the notion of substance (for a more detailed overview, see Robinson 2021, section 2). One of the earliest appearances of this notion is in Aristotle's *Categories*. The opening pages of this work sketch an ontological system with four categories. Exactly how these should be understood is a matter of debate, but one common interpretation is as follows: first, accidental universals; second, essential universals (which Aristotle terms *secondary substances*); third, accidental particulars; and fourth, non-accidental particulars, which Aristotle calls *primary substances* (Studtmann 2021, section 1). An example of an accidental or non-substantial particular would be the whiteness of a particular sheet of paper, as opposed to the whiteness of any other sheet. An example of an accidental universal would be the universal property whiteness shared by all white objects. An example of an essential universal or secondary substance would be the universal human, under which each individual human falls. Examples of primary substances include individual humans and horses (Aristotle 1984a, 2a15). Primary substances are particular entities that bear or instantiate both essential and accidental universals and in which accidental particulars inhere; they are not themselves

² Note that it does not follow that all fundamental entities are substances.

³ This is not to suggest that there had not been significant work on substance in prior decades (e.g., Anscombe 1964; Loux 1978; Wiggins 1980). But the 1990s saw the publication of three volumes (Hoffman & Rosenkrantz 1994, 1997; Lowe 1998), which together have led to a resurgence in discussions of substance in mainstream metaphysics. This has coincided with and contributed to a revival in neo-Aristotelian metaphysics (e.g., Schaffer 2009a; Tahko 2012; Novotný & Novák 2014).

instantiated by any other entities, and nor do they inhere in any other entities. In contrast, members of each of the other three categories are either instantiated by or inhere in other entities.

The notion of primary substance is a key source for subsequent work. That said, many later substance ontologies departed in various ways from the system just outlined. One of the first such departures was arguably undertaken by Aristotle himself in his *Metaphysics*. In this later work, Aristotle seems to conceive of the entities that in the *Categories* he had termed primary substances as being compounds of *matter* (very roughly, what each such entity is composed of) and *form* (the way matter is organised so as to make up each individual) (1984b, 1029a1–5). So, for instance, a particular bronze sphere is a compound of some matter (bronze) and a form (sphericity): ‘we bring the form into this particular matter, and the result is a bronze sphere’ (1033b9–10). This view is generally termed *hylomorphism*. On an influential reading, in Aristotle’s hylomorphic system the genuine substances (or, at any rate, the most substantial or primary entities) are not entities such as an individual horse (a particular compound of matter and form) but forms, such as the form of the horse. The hylomorphic view of substance was extremely influential in medieval philosophy (see Pasnau 2011).

Substance was also a central category for the great early modern metaphysicians Descartes, Spinoza, and Leibniz. Broadly speaking, the early moderns did not develop accounts of substance by starting from paradigm examples (as Aristotle seems to do in the *Categories*).⁴ Rather, each of them worked with a more abstract conception of substance as whatever is ontologically fundamental. Each of them cashed out the notion of fundamentality in slightly different ways, and each defended different views as to which entities count as substances. Very roughly, Descartes held that there are two distinct kinds of substance, extended and non-extended (substances whose nature consists in thinking). Spinoza and Leibniz each held that there is only one kind of substance, but while Spinoza famously argued that there is only a single entity of this kind (the cosmos, which he identified with God and which is both extended and thinking), Leibniz held that there are a plurality of non-extended thinking substances, the monads. For a brief overview of early modern views on substance, see Robinson’s (n.d.) outline; for more detail, see Woolhouse’s (1993) study.

⁴ An exception to this might be God, which arguably each of these three rationalists regarded as a substance.

The present volume is structured around four questions about substance:

Q1 *roles*: which theoretical role or roles are substances posited to play?

Q2 *criteria*: what is it to be a substance?

Q3 *existence*: are there any substances?

Q4 *identification*: which entities, if any, are substances?

Adapted from Robb's (2009, 256) article, Q2–4 are more familiar from the recent literature than Q1. An answer to Q2 will at a minimum spell out informative necessary or sufficient conditions on an entity counting as a substance. More ambitiously, these conditions will tell us what it is for something to be a substance; they will explain why, for any given substance, it counts as a substance. An answer to Q3 will focus on arguments for thinking that there are (or must be) some substance or substances, or for thinking that there are (or must be) none. An answer to Q4 will consider entities we already take to exist, or which we at least think might exist, and ask which (if any) count as substances.

An answer to Q1 will specify the work which substances or the category of substance perform in different areas of philosophy. The role or roles played by substances provide the basis for arguments that there must be substances (i.e., answering Q3), and for attempts to identify which entities are substances (i.e., answering Q4). The different roles substances have been asked to play also suggest different criteria of substancehood (i.e., different answers to Q2). Therefore, the question of which roles substances might play, though less familiar than the other questions, is intimately related to them all.

I shall begin in Section 2 with a brief discussion of Q1. I shall then consider a number of different criteria of substancehood (Sections 3–5). In Sections 6 and 7, I shall consider Q3 and Q4, respectively.

2 Roles

2.1 Ontological Roles

The *role* of a category is the work that category is supposed to perform in a metaphysical system. (On different occasions I shall speak of categories or of their members as playing certain roles; I trust that the context will make clear what I mean.) One useful way to think of roles is in terms of solving problems that arise in metaphysical thinking (Oliver 1996, 11; Benovsky 2016, 66). The problem might be to *explain* a given phenomenon, and, as part of an explanation, certain entities are posited as bringing about the phenomenon in question. For instance, the truth of many propositions might be explained by positing states of

affairs that make them true (Armstrong 1997, 116–19); or the similarities we observe between numerically distinct entities might be explained by positing universals that are shared by the similar entities (Loux 2006, 18). Other problems might involve *explicating* given phenomena, in the sense of saying more clearly what certain entities are. For instance, the problem might involve saying what, ontologically speaking, an ordinary concrete object is, and possible answers include a bundle of properties or a combination of properties and a substratum.

In each case, we can distinguish between the role that we posit entities to play and the entities that are posited (Oliver 1996, 11–12). For instance, states of affairs are often thought to play the truth-making role, but this role is not defined by reference to states of affairs, and other entities, such as tropes (Mulligan et al. 1984), have been proposed to play it. Jonathan Schaffer (2004, 93) puts the point nicely: for any entity of a given category, we can distinguish its *qualifications* for playing certain roles (those features of the entity in virtue of which it is apt to play a role) from the *responsibilities* it has insofar as it plays that role.

As Schaffer's formulation suggests, qualifications and responsibilities are closely linked. For instance, universals are often defined as being such that a single universal can be simultaneously instantiated by distinct entities. It is this characteristic of universals that makes them apt to account for similarities between distinct entities (e.g., Loux 1978, 3–10). The qualifications entities must have in order to play their assigned roles will be among the criteria for belonging to their ontological category.

The distinction between roles and the entities that fill them has been challenged by Jiri Benovsky. More specifically, Benovsky challenges the idea that we can offer any characterisation of an ontological posit that goes beyond stating its theoretical role.⁵ The approach I take in this section is a version of what Benovsky (2016, 63) terms a *content view* of primitives, on which theoretical primitives have natures that are not exhausted by their playing certain roles. In contrast, Benovsky defends a *functional view* of theoretical primitives: 'primitives are individuated by what they do, what their functional role in a theory is, and, as a consequence, two primitives that do the same job just turn out to be equivalent for all theoretical purposes and metaphysically equivalent as well: they are just one and the same thing referred to in two different ways' (63). To claim that, in addition, primitives have non-functional content (and that different primitives have different non-functional contents) would be, Benovsky suggests, to postulate a difference that makes no difference to the theory itself (65).

⁵ Benovsky (2016, 65 n. 1) limits his claim to *primitives*, non-analysable theoretical postulates introduced to perform specific tasks. He accepts that it may be possible that other entities have natures beyond the roles they play. Since the category of substance is plausibly a theoretical primitive, I shall restrict myself in what follows to what Benovsky says about primitives.

I shall raise two issues concerning Benovsky's defence of the functional view. To start with, we need to distinguish two different senses in which a theoretical primitive might be said to be *individuated*. The first way is to pick it out as a subject matter (i.e., in a way that fixes the reference of our terms). In this sense, a theoretical primitive certainly is individuated by its theoretical role, in that it is introduced precisely to play this role. But it does not follow that the nature of this entity (what it is, metaphysically speaking) is exhausted by its playing this role. So in a sense of 'individuate' that is more closely tied to saying what, metaphysically speaking, a specific entity is, a theoretical primitive might not be individuated by the role it is introduced to play. By way of comparison, a detective examining a crime scene might pick out a person by means of a definite description such as 'whoever made this footprint in the flower bed'. This description, if it is satisfied at all, individuates someone in this first sense of 'individuate'. But plainly it does not go very far to individuate anyone in the second sense. Benovsky seems to be mistaken in moving from primitives being individuated (in the first sense) by their theoretical roles to concluding that two primitives that play the same role are identical. At the very least, this argument can work only if supplemented by independent reasons to deny that theoretical primitives have any natures other than the theoretical roles they play.

A second issue with Benovsky's argument concerns what is involved in positing an entity to play a theoretical role. We can understand this procedure in terms of a certain *direction of fit*. The role is held fixed (i.e., the relevant problems are assumed to be genuine, and something is required such that by appeal to it these problems can be solved), and the posited entity is characterised so that it will fit this role. However, it does not follow from an entity's fitting a certain theoretical role that it thereby exists. The majority of contemporary metaphysicians are *ontological realists*, accepting that 'there are facts of the matter about ontology, which are objective' in the sense of obtaining regardless of our activities or interests (Jenkins 2010, 881). That is, one can formulate a conception of entities of a certain category, the Cs, and one can posit Cs to play a certain role, but this does not determine whether or not there are any Cs. What determines this is whether or not one's description of the Cs succeeds in picking out entities that match this characterisation.⁶ So when we move beyond positing entities as playing a theoretical role to consider whether or not they exist, the direction of fit is different: the posited entity exists only if its characterisation

⁶ This is a simplification. In many cases, it may be possible to adjust one's conception of Cs while still positing them as entities of the same category. But there are limits to how far one can do this: at some point, one will in effect have changed the subject, moving from positing Cs to positing entities of a different category, Ds.

fits with something in the world, and it is this worldly entity that is fixed in the sense that (at least typically) it exists regardless of how (or whether) we chose to think about it.

This view of ontology is not mandatory. There are ontological anti-realists, and Benovsky (2016, 124–5) himself has sympathies with such a view: he suggests that metaphysical theories are not true or false, and that metaphysics does not consist in statements about how the world is. But the vast majority (perhaps all) of the philosophers who posit substances are ontological realists. That is, they regard statements to the effect that there are substances, or that such-and-such entities are substances, as truth-apt, and they regard them as true (or false) regardless of our activities or interests (unlike, for instance, the truth of statements about fashion trends or monetary policy).

I cannot address the general dispute between ontological realists and anti-realists in this Element. But insofar as there is reason to accept ontological realism (or at least no convincing reasons to reject it), one is entitled to distinguish the roles substances might play from their other characteristics, and in particular from different criteria of substancehood.

2.2 Roles Played by Substances

Let us now consider which roles the category of substance might be tasked with playing. One approach to this issue starts with a conception of reality as stratified into levels of entities that are more or less metaphysically fundamental. This conception is not strictly pre-theoretical, but nor is it wedded to any specific theory (compare with Koslicki 2018, 138–9). Rather, it takes different forms in different theoretical contexts. One manifestation was the medieval idea of the Great Chain of Being, on which God was the most metaphysically important entity, followed by angels, humans, organisms, and non-organic entities (Lovejoy 1964). (In the Great Chain of Being, God was often placed at the top of the hierarchy, whereas in other versions of the hierarchical picture the most metaphysically important entities are at the bottom. In what follows, I shall generally speak of the most important entities as being at the bottom of the hierarchy.) More recently, reality has been understood as structured in a way corresponding to a reductionist hierarchy within the sciences, on which in principle each science could be reduced to that beneath it, with physics (specifically micro-physics) at the bottom.

Hierarchical conceptions of reality give rise to various problems, one of which is the question of whether the hierarchy of levels goes down forever. This problem can be addressed in various ways (see Section 6.1). But those who wish to retain the hierarchical view and who cannot accept unending descent

must posit a lowest level, an entity or entities such that there is nothing more fundamental. This is a role, that of being the *foundation of being*, that substance is traditionally thought to play:

[T]he substances, in addition to being themselves ontologically independent, must also act as a sort of ‘ontological anchor’ for all the other entities that are included in the ontology under consideration ... everything which does *not* qualify as a substance (i.e., every entity, *y*, that is not ontologically independent and hence ontologically depends on some relevant, *z*, numerically distinct from *y*) ontologically depends on something which *does* qualify as a substance (i.e., on something that is ontologically independent).⁷ (Koslicki 2018, 168 n. 8)

This role is closely linked to a conception of substances as ontologically independent (see Section 3). Specifically, if one assumes a hierarchical conception of reality with a lowest level, then not only will one want to posit entities on which all else depends; one will also want these entities to not themselves depend (or at least not depend in the same way) on anything else. (If these entities were themselves dependent on other entities, then they would not together form the *lowest* level in the hierarchy, and indeed the structure would be more holistic or circular than hierarchical.)

That said, it is important to note that this role of foundation of being is not the same as the characteristic of being independent. To see this difference more clearly, consider a view of reality on which there are no hierarchies of ontological dependence: no entity depends, in any of the ways to be considered in the next section, on any other. In this ‘flatworld’ every entity would be ontologically independent, but no entity would play the theoretical role of standing at the bottom of the hierarchy of being.

As is the case with the other roles mentioned, there are multiple candidates to play this role. It has been held that the fundamental entities are universal properties, with other entities being constructed out of them (O’Leary-Hawthorne & Cover 1998). Or the fundamental entities might be tropes, particular properties out of which all other entities are constructed (Campbell 1990). Neither of these views is compatible with a substance ontology, given that substances cannot be identified with either universal properties or with tropes (see Section 6.3). That said, a substance ontology is compatible with there being other fundamental entities in addition to substances.

The role of foundation of being is arguably the most central role that the category of substance has been asked to play. However, substances have also

⁷ Note that Koslicki does not accept that substances play this role, or that they are ontologically independent. This role of foundation of being is arguably distinct from, though closely related to, the role of explaining why the other entities in the hierarchy exist (Robb 2009, 258). This other role suggests a grounding or explanatory criterion of substancehood (Section 4).

been pressed into service in response to other problems. As an example, consider a more localised metaphysical question: the nature of selves. By 'self' I simply mean a subject of experiences, an entity that has or can have conscious experiences.

In considering the nature of selves, we are faced with certain widely accepted pre-theoretical assumptions. For instance, it seems that anything that is a self will be capable of persisting through changes in its experiences (i.e., of having a painful experience at time $t1$ and different experiences, none of which are painful, at $t2$). Likewise, it should be possible for a self to not have had at least some of the experiences it actually has had; and it should be possible for a self to have had experiences other than those it actually had. For instance, suppose you had chosen a radically different course of work or study; in that case, you would very probably not be having the experiences you are currently having while reading these words, but would rather be having different experiences.

These assumptions can be understood as together carving out a theoretical role, that of categorising selves in such a way that they have these characteristics. And one way to categorise selves such that they have these characteristics is by classifying them as substances. As E. J. Lowe (1996, 195) put it, the self has 'the status of a substance vis-à-vis its thoughts and experiences – they are "adjectival" upon it (are "modes" of it, in an earlier terminology), rather than it being related to them rather as a set is to its members'. This way of thinking of selves and their experiences is closely linked to the Ultimate Subject criterion of substancehood (see Section 5.1).⁸ When one thinks of selves in this way, it is clear that the very same self could have existed without having the experiences it actually had, and that it can persist through changes in its experiences. That is, selves understood as substances can fill the role carved out by the assumptions outlined in the previous paragraph (see also Section 7.4).

Again, substances are not the only ontological category that can fill this role. For instance, bundles of capacities to produce experiences (Dainton 2008) could arguably do so as well. But in the present context all that is being claimed is that there is a distinctive role here, and that understanding selves as substances is one way to fill it.

In principle, a similar role can apply to other entities. It is commonplace to think that there are many other entities (e.g., organisms, planets, molecules) that can persist through changes in their intrinsic properties, that could have failed to have some of the properties they actually had, and that could have had properties other than those they actually had. So we can generalise the role just

⁸ The notion of 'subject' in the Ultimate Subject criterion is not restricted to subjects of experience; roughly speaking, it picks out anything that can bear properties. Entities that are not subjects of experience can be subjects, indeed ultimate subjects, in this broader sense.

described to apply to any such entities. And for any such entities, thinking of them as substances is one way to fulfil this role (i.e., of understanding them as able to persist through changes, etc.; e.g., Hoffman & Rosenkrantz 1994, 23; Simons 1998, 237–8).

So there are at least two distinct roles that substances have traditionally been tasked with playing. These roles do not obviously fit together; for instance, it is not obvious that selves as just described belong to the foundations of being. One response to this would be to conclude that there are distinct conceptions of 'substance', each earmarked to play one of these two roles. Indeed, one could go further. Perhaps there are distinct categories, each of which is confusingly labelled 'substance'. And it might be that the different criteria for substancehood outlined in the next three sections are in fact criteria for distinct categories of entity. A similar issue has cropped up in debates about properties: different property roles have been proposed and it has been suggested that there are different categories of entity that play different roles. For instance, David Lewis (1983) explores the idea that universals play some of the property roles and classes of possibilia play others.

But it might also be thought that the two roles complement each other and together indicate a richer notion of substance. Recall that in Section 1 I said I would focus on the notion of substance as used in substance ontologies. At least in many such ontologies, substances have been deployed to play both the roles I have outlined (see, e.g., Loux 2006, 108; Lowe 2006, 109; Schaffer 2009a, 378–9).

Combining the roles in this way also allows for a response to an issue raised by Koslicki. She points out that a number of philosophers (e.g., Lowe 1998, 159; Schnieder 2006, 396; Heil 2012, 93; Wiggins 2016, 1) stipulate that substances are particulars, but argues that this begs the question against those philosophers who maintain that the most fundamental entities are universals (Koslicki 2018, 138–9). In one sense, Koslicki is correct. If substances are understood simply as whichever entities are fundamental (e.g., as whatever plays the role of foundation of being), then it is question-begging to assume at the outset that they must be particulars. But many proponents of substance ontologies work with a richer notion of substance. On this richer notion, there are principled reasons to exclude universals from the category (for instance, universals seem ill-fitted to play the second role for substances outlined earlier). Nor does this beg the question against those who claim that the fundamental entities are universals. Rather, what we have here are two rival conceptions of the fundamental entities; as including substances understood as particulars, or as limited to universals (see also Robinson 2021, introduction).

Each of the roles I have outlined prompts the question of what substances must be like in order to be able to play it. This question takes us directly to possible *criteria of substancehood*, which will be discussed in the next three sections.