

The Epistemology of Essence

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ABSTRACT

Our epistemic access to essence is a topic which has received very little attention. This is partly due to the mystery surrounding the notion of essence itself, and partly due to the sheer difficulty of developing a plausible epistemology. The need for such an account is clear: if there are any essences, we better have some story about how we come to know them. The starting point of this paper is an Aristotelian conception of essence; familiar from the work of Kit Fine, E. J. Lowe, David S. Oderberg, and others, i.e., essence is ontologically prior to modality. I introduce four options regarding our epistemic access to essence. These fall in two groups: we could gain knowledge about essence either directly, or via modal knowledge. Furthermore, each of these routes to essence could be either *a priori* or *a posteriori* (or a combination of the two). The advantages and disadvantages of each approach will be analysed, and I will ultimately defend the view according to which our epistemic access to essence is via our *a priori* knowledge of metaphysical modality.

1. Introduction

The notion of essence is notoriously mysterious: philosophers seem to use it in a number of different senses, and even when they use it in the same sense, it is often not quite clear what that sense is. At the same time, essences are generally supposed to do a lot of explanatory work: natural kinds can be identified in terms of their essences, metaphysical modality can be reduced to essence,¹ the causal powers of objects can be explained with the help of essences, and so on. In general, at least some forms of metaphysical realism can be seen as dealing with essence, given an appropriate understanding of the notion and its role in metaphysics. In this first, introductory section I will first motivate the study of essence. I will then attempt to offer a working definition of ‘essence’ before a brief look into the historical background of ‘Aristotelian essentialism’. Finally, I will lay out the available options regarding the epistemology of essence. Following these introductory remarks, I will proceed to analyse each of the available options in sections two and three.

1.1 Motivation: scientific realism?

I could not hope to offer an exhaustive analysis of the notion of essence and its role, but I do wish to offer some motivation for the study of essence even to those who may be uneasy about the notion. I take it that one plausible assumption is the following: according to most popular forms of scientific realism, there are at least some *genuine*, mind-independent natural kinds, or a ‘mind-independent natural-kind structure’ (Psillos 1999: xix) of some sort. Of course, philosophers disagree about the extent to which our classificatory schemes track this natural-kind structure, and there are certainly good reasons to think that many of the natural kinds we postulate are, after all, conventional (cf. Dupré 1993, Chakravartty 2007). Indeed, typical examples of natural kinds – such as ‘water’ and ‘cat’ – may very well not be genuine kinds. To determine which kinds are genuine, we should strive to give some kind of an account of their identity and existence conditions, that is, we should attempt to *define* the natural kinds in question. Now, what I am interested in is the process of inquiring into the identity and existence conditions of natural kinds (among other things), and to this end it seems that something should be said about the *essence* or *nature* of these kinds. That there are at least some natural kind essences is a key tenet of *natural kind essentialism*. I should mention that although I am committed to the existence of a mind-independent natural-kind structure, I think it likely that this structure is relatively sparse. For instance, Dupré and others have made a convincing case against biological essentialism, although some (Devitt 2008) still attempt to uphold it. Chemical kinds are another difficult case (e.g. Needham 2011). I consider things like elementary particles to be among the best candidates for kind essences, but it is not my concern here to determine which kinds in fact are genuine, I only wish to examine the epistemological basis of essentialism. In any case it appears that the epistemology of essence ought to be a central theme in discussions of at least certain popular forms of (scientific) realism.

I am trying to be very cautious here, but in fact I think that the epistemology of essence should be at the very core of our philosophical inquiry. However, the notion of essence does have some unfortunate, mysterious connotations, and a great number of philosophers remain sceptical about the whole notion, despite the influential work of Saul Kripke and Hilary Putnam. It is not my goal to convince these philosophers here, but rather to explore the state of the research on the epistemology of essence given the central role that the notion of essence has had and continues to have in metaphysics. With this in mind, I will proceed to examine the notion.

1 Following Kit Fine (1994), more on this below.

1.2 Defining the notion of essence

Perhaps the closest thing to a definition of essence that we may have is the often quoted phrase from Locke: ‘the very being of any thing, whereby it is what it is’ (1975: III, III, §15). This is not very informative – what exactly is ‘the very being’ of a thing, and how is it that we come to know ‘the very being’ of things? Locke himself considered *real* essences (as opposed to merely *nominal* essences) to be unknowable to us, but in contemporary metaphysics, a modal interpretation of essence due to the work of Kripke and Putnam has been the standard.² In the tradition of ‘Kripke-Putnam essentialism’, essences are explained in terms of *de re* modality: an attribution of necessity to a proposition is *de dicto*, but when we attribute necessity to an object we are dealing with *de re* necessity, and hence essence.³ So, an initial understanding of ‘the very being’ of things might be in terms of their *de re* modal properties. Another feature of the Kripke-Putnam tradition is that it is commonly thought that science discovers essences; that is, essences are discovered (at least for the most part) *a posteriori*, empirically. The apparent problem with this approach is that ‘little, if anything, is known about how or why objects have their *de re* modal properties’, as L. A. Paul (2006: 335) puts it. Accordingly, the epistemic problem has been merely postponed. This is certainly a pressing problem at least for those who consider the possession of *de re* modal properties to be primitive.⁴

Before we proceed any further, it should be made clear that there is an alternative to Kripke-Putnam essentialism. The Kripke-Putnam approach is what we might call the ‘modalist’ view of essence: an object has a property essentially if and only if it has that property necessarily. But this view has faced strong criticisms especially from Kit Fine (1994, 1995a, 1995b) and E. J. Lowe (e.g. 2006, 2007, 2008a, 2011), who defend a more Aristotelian conception of essence. Other contemporary proponents of a broadly Aristotelian conception of essence include David S. Oderberg (2007, 2011) and Kathrin Koslicki (e.g. 2012).⁵ Perhaps it is also worth noting that what Quine (1966) called ‘Aristotelian essentialism’ is probably not what Aristotle himself had in mind, nor what I have in mind (cf. Koslicki 2012). What I will call the ‘Aristotelian’ view of essence – which I do not claim to be faithful to Aristotle – suggests that not all necessary truths about a given object *x* are essential truths about *x*, but all necessary truths are *grounded* in essential truths (about something or other). This implies that essential truths about *x* are a proper subset of the necessary truths about *x*, but even those necessary truths about *x* that are not essential truths *about x* are nevertheless essential truths about something. So, according to this view, essence is ontologically prior to modality in the sense that essential truths are more fundamental than modal truths. Moreover, according to the Aristotelian view of essence, we should *not* reduce essence to *de re* modal properties.⁶

2 See Lowe (2011) for an illuminating discussion of Locke’s views on essence, and for a comparison of Locke’s account with the Kripke-Putnam line.

3 I should note that by ‘Kripke-Putnam essentialism’ I refer mainly to the work of those philosophers, such as perhaps Scott Soames, who are broadly sympathetic to the idea that there are mind-independent (natural kind) essences and that they can be interpreted in terms of *de re* modal properties. My remarks should not be understood as exegetical; in fact, Putnam (1990) has distanced himself from this line of thought altogether, and it is not clear that Kripke himself would be unsympathetic to the Finean reduction of modality to essence. For further discussion of these issues, see Lowe (2011).

4 Paul (2004) develops an account of *de re* modal properties in terms of bundle theory, but if this means that essences are to be conceived as bundles of properties, then this view as well has its problems, as Oderberg (2007, 2011) has argued. These issues will be examined in detail in what follows.

5 Scott Shalkowski’s work (e.g. 1997, 2004) in defence of and developing on a Finean conception of essence and modality should be mentioned in this connection as well, as should Fabrice Correia’s (e.g. forthcoming). There are, of course, many others who have developed relevant accounts, such as Crawford Elder (e.g. 2004), but it is not possible to discuss all of them here.

6 As Shalkowski (2008: 51) puts it, ‘*de dicto* necessity is a species of *de re* necessity’, and hence the former is ‘not free from essentialist implications.’

I find the Aristotelian view of essence much more promising than the modalist view, but I do not have the space here to defend it in any detail; it is a background assumption of this paper that essence is ontologically prior to modality.⁷ Accordingly, I will not evaluate the numerous proposals of how essence could be analysed in terms of *de re* modality, even though there are interesting (and serious) issues concerning the epistemology of essence in this literature as well.⁸ In any case, it is well known that Kripke-Putnam essentialism struggles to maintain a link between our essentialist intuitions and modal facts (Paul 2006, Goswick 2010). My primary audience are those who are already sympathetic to the Aristotelian view of essence, but, like myself, are puzzled about the epistemology of essence in this tradition.

1.3 Aristotle’s essentialism

Aristotle seems to have thought that essence can be explicated via definition (e.g. *Metaphysics* 1031a12) – the idea is that we can give a ‘real definition’ of an object, or what it is, as opposed to a merely nominal or linguistic definition. This is perhaps the most important aspect of Aristotle’s essentialism for the purposes of the current paper, as it makes it evident that essences are not to be explicated in terms of modality. Although I am not concerned with Aristotle exegesis here, I wish to mention three further aspects of Aristotle’s essentialism that are especially relevant for our discussion.

Firstly, it is probable that Aristotle considered our epistemic access to essence to be fairly unproblematic (and *a posteriori*), at least in most cases (Lowe 2011).

Secondly, Aristotle seems to have held some version of the view that science discovers essences. This is an aspect of Aristotle’s essentialism that many contemporary essentialists have adopted and it will be discussed primarily in section 2.1.

Thirdly, Aristotle spends more time discussing *general* rather than *individual* essences, or, to put it another way, kind essences rather than particular essences. I wish to remain non-committal about this distinction, but I am more sceptical about the existence of individual essences, such as the essence of an individual cat, Tibbles, than the essence of the kind ‘cat’ – although, as I noted above, I am in fact sceptical about both. In any case, my focus will be on general or kind essences, since I consider them to be at least somewhat less controversial than individual essences. Indeed, in a classic paper, Brody (1973) considers it an advantage of ‘Aristotelian essentialism’ that it connects essentiality with what it is to be a natural kind. It follows that essences of artificial objects, such as tables and chairs, are also among the more controversial cases – I will largely omit discussion of them, although they will be referred to in some examples.

1.4 Laying out the options

We have four primary options regarding the epistemology of essence, illustrated in the following table. I am mainly interested in giving an overview of the different options that are available to us, but I will also evaluate each of these options, and defend one of them.

Essence is epistemically prior to modality	Modality is epistemically prior to essence
<i>a posteriori</i> access to essence	<i>a posteriori</i> access to modality

⁷ I will not discuss the recent criticisms of Fine’s arguments for the reducibility of metaphysical modality to essence, such as Hale (2002) and Zalta (2006); but see Shalkowski (1997, 2004), Koslicki (2012), and Correia (forthcoming) for further discussion.

⁸ See French *et al.* 1986 for a number of classic articles, but note that nearly all of the contributors to that volume conceive of essence in terms of (*de re*) modality, contrary to the approach that I am interested in here.

Essence is epistemically prior to modality	Modality is epistemically prior to essence
<i>a priori</i> access to essence	<i>a priori</i> access to modality

Even though the initial assumption of this paper is that essence is *ontologically* prior to modality, the direction of the epistemic link between essence and modality – which undoubtedly exists given the numerous attempts to explicate the former in terms of the latter – remains open. In what follows I will examine each of these four options in detail, eventually defending the option according to which modality is epistemically prior to essence, and that we have *a priori* access to modality. I should note that although this is my preferred option, I am presently more interested in mapping our options regarding the epistemology of essence rather than defending a particular position. Another preliminary point worth noting is that in my analysis I will assume that a unitary view of the epistemology of essence can be given, i.e. our epistemic access to essence is always the same. In principle I am open to the idea that we could come to know essences of different kinds of things via different epistemic routes, and we will see that there may be reasons to prefer this approach. However, for the sake of parsimony, a unitary account would be preferable, so I think that hybrid accounts should be considered only if all unitary accounts fail. In any case, the horizontal division, concerning the epistemic priority of essence/modality, is of greater importance than the vertical division. In fact, I consider the sharp *a priori/a posteriori* distinction somewhat artificial (Tahko 2008, 2011). I will return to this issue in section 3.2, but in what follows I will proceed as if there were a sharp *a priori/a posteriori* distinction in order to avoid unnecessary complications.

2. Essence is epistemically prior to modality

Given that essence is understood to be ontologically prior to modality, it may, at least initially, seem more promising to give an account of the epistemology of essence independently of the epistemology of modality. This would imply that the epistemology of modality is a special case of the epistemology of essence. Hence, if we could give a plausible account of the epistemology of essence, we would also have the beginnings of an account of the epistemology of modality. Although explicit defences of this approach in recent work on essentialism are rare, it seems that this is the more popular route for contemporary essentialists.⁹ However, there is certainly less agreement about whether our knowledge of essence is *a priori* or *a posteriori*. I will consider each option.

2.1 *A posteriori* access to essence

One of the supposed advantages of Kripke-Putnam essentialism is that our knowledge of essence, or essential properties, can be traced to scientific knowledge in a seemingly straightforward manner. Indeed, many contemporary essentialists continue to support this type of approach; it is especially familiar from the literature on so called ‘scientific essentialism’ (e.g. Ellis 2001, Bird 2007b). However, since the conception of essence taken for granted in much of this literature is that essence can be explained in terms of modality (rather than the other way around), it is not obvious that scientific essentialism is able to give us a sufficiently

⁹ Both Kit Fine and E. J. Lowe have indicated that this option is more attractive to them in discussion. Note however that nothing here entails *conceptual* reductionism about modality, i.e. the *concept* of modality is not analysable in terms of the concept of essence, even if the former does reduce to the latter on an ontological level, and even if essence is epistemically prior to modality. So, an understanding of the concept of modality is not available simply via an understanding of the concept of essence. This is something that Lowe has stressed in discussion.

fine-grained account of the epistemology of essence understood in the Aristotelian manner.¹⁰

A typical conviction of the scientific essentialist is that the laws of nature are metaphysically necessary, in which case our knowledge of the laws of nature is a direct route to substantial modal knowledge. So, if essence is conceived of in terms of modality and the laws of nature are metaphysically necessary, it seems that the laws of nature constitute essentialist knowledge, and hence the discovery of essences is mostly due to scientists. But while this conception may bear some resemblance to Aristotelian essentialism, it neglects a key feature of the Aristotelian ontology of essence, namely that essence is ontologically prior to modality.

Can we build on the work of scientific essentialists while adopting the Aristotelian ontology of essence? Oderberg's essentialism is perhaps the most interesting attempt at this. However, Oderberg (2007: 13) thinks that contrary to the Kripke-Putnam line and scientific essentialism, discovering essences is not just the work of scientists. He would nevertheless insist that essentialism is a fallibilist position, that is, our knowledge of essence is subject to revision (ibid., 48). Crucial to this line of thought is that although scientists play an important role in the discovery of essences, we cannot simply rely on experts to explain the epistemology of essence. Oderberg (ibid., 13) thinks, and I agree, that *everyone* can have knowledge of essences. It is first and foremost the metaphysician's task to explain essence, but scientific knowledge is indispensable for this task, and in many cases even the layman is able to grasp essences. So, Oderberg's essentialism is of the *a posteriori* kind – and probably the best example of this approach combined with an Aristotelian ontology of essence. I will devote the rest of section 2.1 to a discussion of Oderberg's account.

2.1.1 Oderberg's essentialism

Oderberg insists that no direct empirical test could enable us to discover essences, even though essences are tracked by the empirical sciences – hence the fallibilism. It also seems clear that Oderberg holds essence to be epistemically prior to modality. In particular, it is important for Oderberg that the essence of an object is not merely a bundle of the essential properties of that object. His main reason for resisting 'bundle theory' is what he calls 'the unity problem', namely, there should be something to hold a bundle of essential properties together in order to ensure that, say, the essential properties of a given kind are always featured in the members of that kind (Oderberg 2011: 90). The unity problem, sometimes also called 'the problem of complex essences' (Dumsday 2010), will turn out to be of great importance for the epistemology of essence. Here is a passage from Oderberg with a relevant example:

Having a capacity for humour is an essential property [...] of human beings, and in this sense we can say it flows *from the essence* of human beings to have a capacity for humour. But the *essence* of being human is to be a *rational animal*, and humans have a capacity for humour *only because* they are rational animals. (Oderberg 2007: 49.)

This seems correct insofar as we need to distinguish between the *essence* of an entity and what that essence may entail (ignoring any problems with this particular example). But the term 'flow' is unfortunate, as it sounds rather mysterious. It is a historical notion, used by Locke, which Oderberg adopts into contemporary discussion for want of a better notion. Does the notion of flow simply suggest that the essential properties of an entity are entailed by the essence of that entity? If this is the case, then a distinction that Fine (1995b: 56–58) draws

¹⁰ See Lowe (2006: ch. 9–10) for discussion and criticism of scientific essentialism. Since scientific essentialism is at odds with the Aristotelian ontology of essence to begin with, I will not discuss it here in any detail.

between *constitutive* and *consequential* essence may be relevant here: a property is a constitutive part of the essence of a given object if it is ‘directly definitive’ of the object, and merely consequential if it is had in virtue of being a (logical) consequence of some ‘more basic’ essential property of the object. However, the ‘basic’ essential properties of objects entail all sorts of things and not all of these seem like very plausible essential properties, e.g. the constitutive essential properties of humans entail any conjunction of an essential and a non-essential property of humans, such as humans having a capacity for humour *or* flying.¹¹ Oderberg is determined to settle this problem, but not in terms of entailment. Rather, he gives a more rigorous definition of ‘flow’: a set of properties of the objects belonging to a given kind with a particular essence are caused by and originate in the form of that kind (Oderberg 2011: 99–103). The idea is that *form* – a notion which is central to Aristotelian hylemorphic essentialism – provides the essence and hence the properties that ‘flow’ from it.

As I understand it, then, ‘flow’ concerns the dependence between a set of essential properties and the essence which they are a part of. A concern regarding this solution is that it will be impossible for us to distinguish, epistemically, between the essence itself and an essential property that ‘flows’ from the essence. For instance, if we are looking for the essence of water, we might be able to point out a number of essential properties of the H₂O molecule, perhaps including things like its molecular weight; but which essence, exactly, will these properties be related to? The essence of the natural kind ‘water’, if it indeed is a natural kind? Or the combination of the essences of hydrogen and oxygen atoms?

Oderberg is not silent about these issues. He thinks that we can use our reason and common sense to determine when a given property is genuine in the sense that it is caused by and originates in the essence. This is to be done by considering whether the thing in question, say, the kind ‘water’, would continue to display ‘the characteristic properties, functions, operations and behaviour’ that it normally does even if a certain quality of it were to be removed. If this is the case, then the quality in question is not a part of the essence of the thing, but if removing the quality would cause ‘a general disturbance or radical change’ in the said functions of the thing, then it is a part of the thing’s essence.¹² However, it appears that we have only our imagination to rely on to determine whether a given change is of the first or the second type. (Oderberg 2007: 50–51.)

These issues prompt Oderberg to recognize an epistemological caveat concerning essence. Essential properties, including the ones that ‘flow’ from the essence, are presumably open to empirical research (given sufficient technical resources etc.). But since essences are not mere bundles of essential properties, we need something that unifies these properties to get to the essence – this role is played by the Aristotelian notion of form. Here is where Oderberg as well needs *a priori* input, because he thinks that the existence of such a unifier can only be deduced by metaphysical *a priori* reasoning, even though determining what the unifier is will require empirical investigation. As Oderberg (2011: 97) puts it: ‘That gold must have a principle of unity is not within the remit of observation; that gold is a metal whose atomic constituents have atomic number 79 is’. This highlights the importance of the unity problem: *a priori* elements appear to be unavoidable in determining when a collection of essential properties constitutes an essence.

11 See Gorman (2005), Koslicki (2012), and Correia (forthcoming) for further discussion and some suggested solutions to the problems caused by the constitutive/consequential distinction.

12 Furthermore, it is not quite clear what counts as a general disturbance of the type that Oderberg has in mind. One might suggest that, say, in the case of water, these disturbances would include changes in the *microphysical* behaviour of water molecules. Yet, Needham (2011) and Lowe (2011) have argued that the *macrophysical* properties of water are more plausible defining characteristics.

2.1.2 Some critical remarks on Oderberg's essentialism

The problem that I envisage for Oderberg's account of the epistemology of essence is that we must already have grasped the essence we are looking for before we can identify the essential properties that 'flow' from it. It seems that our epistemic access to essence is often piecemeal: we wonder if a certain kind of entity, say, a certain subatomic particle, could possibly exist. We determine this by considering the essential properties that the particle would have, were it to exist: perhaps its mass etc. But, as we saw, it would appear that we can grasp an essence only *after* we have acquired sufficient knowledge about the essential properties associated with that essence. Or, to put it another way, we must have some prior conception of the essence of an object before we can recognize that it acts as a unifier for a given set of essential properties. This seems like a difficult problem to overcome without relying on some more or less mysterious cognitive faculty which enables a prior epistemic access to essences. If we need something like this in any case, then perhaps an account which takes us to have *a priori* access to essence would be better off to begin with it, at least if that *a priori* faculty can be demystified.

Oderberg's reply to this type of concern is that all we need to know *a priori* – at least in the case of natural kinds as opposed to abstract mathematical objects – is that a given kind, say, a subatomic particle, has an essence, not what that essence is.¹³ Further, we can know that a given property (such as mass, perhaps), is 'a good candidate' for an essential property of a given kind because of things like universality in the kind, the way it characterizes the kind, and the difficulty or impossibility of removing that property from random members of the kind.

It seems to me that these are indeed all good ways to identify properties that might be a part of some essence or other, but this does not remove the core of the difficulty. To know *which* kind a given essential property is associated with, some prior knowledge about the essence of that kind seems to be necessary. Consider the yet to be discovered Higgs boson, a theoretical elementary particle. Thanks to the data from the Large Hadron Collider at CERN, physicists have been able to rule out the existence of the Higgs boson at certain mass ranges. At the time of writing, there is a fairly narrow mass range where the Higgs boson is to be found, if it exists. Now, it seems that physicists have a pretty good idea about what kind of a thing the Higgs boson would be, even though they do not yet know its exact mass. But how do physicists know that the (yet to be) observed mass of the Higgs boson is truly part of the essence of *that* kind, rather than, say, an emergent feature of some yet to be discovered natural kind? If it turned out that what we observed was not the mass of the Higgs boson, but rather an emergent feature of some other kind of thing, it could even be that the feature is merely accidental to this further kind. Perhaps this is something that Oderberg could hope to address with the fallibilism of his account, but I am not entirely convinced by this strategy, for the *a priori* task of unifying the essential properties already presupposes an understanding of what kind of thing we are dealing with. It is only possible to engage in an analysis about what characterizes a given kind *after* we have at least a partial understanding of what that kind *is*, that is, of the essence of the kind. There is much more to be said about this, but I will postpone further discussion until section 3.2, where a different kind of solution to the problem of unification will be offered.

First, let us move on to explore if an account that postulates direct *a priori* access to essence is able to overcome this problem.

13 This was Oderberg's reply to the type of worry just raised in discussion.

2.2 A priori access to essence

The obvious challenge faced by any account of the epistemology of essence postulating direct *a priori* access to essence is that the cognitive faculty that enables this epistemic access calls for an explanation. There may be a temptation to take this epistemic access to be primitive. I do not consider this to be a good strategy, but there are very few attempts in the literature to provide a better explanation. However, the shortcomings of Kripke-Putnam essentialism have prompted some philosophers to move towards *a priori* essentialism despite the epistemic challenge. Perhaps a negative argument is the best argument we can have?

Lowe (e.g. 2007, 2008a, 2008b, forthcoming) in particular has argued to the effect that the typical inference-pattern associated with *a posteriori* essentialism is mistaken, and that *a priori* essentialism may be more promising. He is concerned about the inference-pattern employed by Kripke-Putnam essentialism. This pattern supposedly enables us to derive the *individual* essence of, say, water, from the combination of the *general* essentialist fact that it is part of the essence of chemical substances that they have the molecular composition that they actually have, and the empirical discovery that the molecular composition of water is H₂O.¹⁴ The point that Lowe hopes to make, I take it, is that in the Kripke-Putnam inference-pattern, two senses of essential truth are being conflated, e.g. (from Lowe 2008b: 346):

- (1) It is part of the essence of any man that he is the son of his actual father.
- (2) It is part of John's essence that he is the son of his actual father.

Both cases refer to 'his actual father', but this cannot be interpreted in the same way (i.e. the *de re* way) in both cases, because (1) is a general claim that does not refer to any particular object (and hence cannot be *de re*). So, we cannot derive (2) from (1) (with the help of *a posteriori* content), because 'his actual father' is *de re* in (2) but not in (1). Lowe's claim is that the Kripke-Putnam inference-pattern cannot play an effective role in 'enabling us to derive interesting a posteriori essentialist truths concerning particular entities from substantive a priori essentialist claims of a general character together with a posteriori information about the particular entities in question' (Lowe 2008b: 347).

This discussion serves to highlight why the role of general essentialist facts, which at least in the Kripke-Putnam story are considered to be known *a priori*, is often played down in the literature on *a posteriori* necessities.¹⁵ Lowe concludes – although does not fully commit himself – that since the inference-pattern used to deduce knowledge of individual essences is suspect, perhaps all essential truths are *a priori*. He is also suspicious of particular substances having individual essences at all.

2.2.1 Lowe's essentialism

I share many of Lowe's concerns regarding Kripke-Putnam style *a posteriori* essentialism, but

¹⁴ The example that Lowe (2007: 287–288) gives to highlight the problem is the following:

(1a) It is part of John's essence that he is the son of his actual father.

(2a) John's actual father is Fred.

Therefore,

(3a) it is part of John's essence that he is the son of Fred.

(1a) would seem to be true if it is considered a part of the general essence of men that they have their actual father, (3a) could be denied on the basis that it need not be a part of John's individual essence to be the son of Fred – this could lead to problems concerning identity-dependence. Lowe thinks that simply the fact that (3a) *can* be doubted would give us reasons to doubt the validity of the above inference, and hence the validity of the corresponding inference concerning water. See also Bird's (2008) discussion of Lowe's critique, and Lowe's (2008b) reply to Bird.

¹⁵ As Lowe (2007: 291) notes, with reference to Scott Soames. See also Salmon (2005) and Tahko (2009a).

more needs to be said if we hope to give a plausible characterization of *a priori* essentialism in Lowe's terms. Specifically, our supposed *a priori* access to general essentialist truths must be elucidated. Lowe's grounds for *a priori* essentialism rely on his more general metaphysical commitment according to which, in general, essence precedes existence both ontologically and epistemologically. On the epistemic side, the idea is that we can – indeed we must – generally know the essence of a thing before we can know whether that thing exists. In other words, we have to know that it is possible for a thing of a particular kind to exist before we can determine whether a thing of that kind actually exists. One example that would appear to support this idea is the case of transuranic elements: many of them were only synthesized after their *possible* existence was determined by non-empirical means. With the help of Mendeleev's periodic table, chemists have been able to predict the existence of a number of yet to be discovered elements and to give highly accurate estimates of their properties. Later on they were able to synthesize these elements and verify that they indeed had the predicted properties. The idea that Lowe proposes is that this process would not have been possible without a prior grasp of essences of transuranic elements. In fact, Lowe (2008a: 35) thinks that we cannot even 'talk or think comprehendingly' about things whose essences we do not know.

There is something appealing about this story, and I will develop on it in section 3.2, but there are also some problems that require further discussion. Perhaps the most pressing of these is Lowe's (2008a: 36) acknowledgement that we only need to know a *part* of a thing's essence to be able to talk or think about it. As Bird (2007a) has pointed out, this leaves the possibility of *a posteriori* essentialism open, since it could be that we come to know most of a thing's essence by *a posteriori* means even if we must know a part of it *a priori*. Indeed, it is plausible that to be able to distinguish different kinds of things, and especially things like natural kinds, a considerable amount of empirical information is needed in addition to knowledge of general essentialist facts (such as chemical substances having their actual molecular composition essentially). This suggests that the Kripke-Putnam story about how we can derive knowledge of metaphysical necessities from general essentialist (*a priori*) facts with the help of particular empirical facts may have something going for it after all. As we saw, Lowe wants to resist the inference-pattern associated with this strategy, and I am willing to grant him that. But what is left open by both strategies so far is our epistemic access to general essentialist facts.

According to Lowe, *essential dependence* has a key role in our epistemic access to essences:¹⁶

Consider the following thing, for instance: the set of planets whose orbits lie within that of Jupiter. What kind of thing is that? Well, of course, it is a set, and as such an abstract entity that depends essentially for its existence and identity on the things that are its members—namely, Mercury, Venus, Earth, and Mars. Part of what it is to be a set is to be something that depends in these ways upon certain other things—the things that are its members. Someone who did not grasp that fact would not understand what a set is. (Lowe 2008a: 37.)

So, Lowe thinks that in many cases knowing how a thing is related to other things is central to our knowledge of *what* a thing is. Even in the case of sets though Lowe is careful to specify that depending essentially for its existence and identity on its members is only a *part* of what it is to be a set. In general, he seems to think that knowing the *complete* essence of a thing is not a very simple affair – perhaps almost impossible – but knowing a part of a thing's essence

16 See Correia (2008) for an analysis of different kinds of ontological dependence, including essential dependence. Lowe himself defines essential dependence as follows: 'To say that X depends essentially on Y for its existence and identity is just to say that it is part of the essence of X that X exists only if Y exists and part of the essence of X that X stands in some unique relation to Y' (Lowe 2008a: 38).

is often sufficient for talking or thinking about it comprehendingly, and for being able to distinguish it from other things.

2.2.2 Building on Lowe's essentialism: the case of sets

Let us look at sets more closely, as they provide a fairly simple yet illuminating example. On the face of it, it would appear that one can work with sets without knowing very much, if anything, about their essence. Since set theories, like ZFC, are extensional, we can derive a number of theorems in them without going beyond extensionality. Extensionality guarantees that two sets are equivalent if and only if they share all their members, although this does not mean that the sets were formed in the same manner. Moreover, working with sets on a purely extensional level would not seem to require a deeper comprehension of what the nature of sets is, in Lowe's sense, so the idea that one must know the existence and identity conditions of sets before one can understand what a set is becomes less plausible. But we must be careful here, for it is one thing to prove set-theoretical theorems on a purely extensional level according to the rules of some formal system, and quite another to prove that these theorems express truths about sets. In order to establish truths *about* sets, we also need some independent reasons to think that the purely extensional system accurately models the behaviour of sets, and here it seems that some further insight into what constitutes a set may be required. Some such reasons may very well be available – plausibly this will involve the role of the axiom of extensionality in set theory. But once it is acknowledged that such reasons are needed to express truths about sets, it is once again possible to defend the idea that a previous grasp of the essence of sets may be needed before it is possible to express truths about sets (rather than about purely extensional formal systems).

A possible way to defend this idea is to build on the classic iterative conception of set (Boolos 1971). For instance, Linnebo (2010) has suggested that the set-theoretical hierarchy and the quantifiers used in set theory should be interpreted in modal terms, that is, as having an implicit modal character.¹⁷ If this is correct, then it seems that the iterative conception of set cannot be purely extensional, as the implicit modal character must be explained somehow. Linnebo develops one approach towards understanding the modality involved, but we do not need to go into the details here; all that is needed for the purposes of this example is a plausible case of going beyond extensionality.

One line of thought that would support the need for prior understanding of sets goes roughly as follows.¹⁸ Starting with the iterative conception of set we can determine a certain set-theoretical hierarchy, which has an implicit modal character. This conception captures the essence of sets, and it is only after one has this conception of set that one can recognize the theorems of ZFC, for instance, as expressing truths about sets, rather than just being elements of a purely extensional formal system. The most controversial part of this line of thought is perhaps the claim that the iterative conception captures the essence of sets. I will not attempt to support this claim here, but it is at least partly corroborated by the fact that many of the axioms of ZFC can be motivated by the iterative conception – this much is well documented in the literature (e.g. Boolos 1971, Parsons 1983, Yablo 2006, and Linnebo 2010).¹⁹

17 See also Parsons (1983) and Yablo (2006).

18 I would like to thank Ramiro Caso for suggesting this type of line of thought to me. See also Fine (2005) for a relevant analysis of sets.

19 In discussion, Oderberg has questioned the inference from our knowledge of the essence of sets to the belief that sets *exist*. I take it that in the case of abstract objects like sets, this inference is fairly straightforward: if it is part of the essence of a set that it has the very members that it has, then the *existence* of the set appears to be nothing over and above the existence of the members of that set. Of course, the strategy for establishing the existence of a given object depends on what the essence of the object is, but I consider the case of sets to be an easy one to settle. Things get trickier with material, concrete objects; they will be discussed in more

2.2.3 Lowe's essentialism and everyday objects

The examples that we have considered so far have been fairly theoretical, such as transuranic elements and sets – the latter being of course abstract objects. But one objection that might be raised against Lowe's idea that essence precedes existence stems from more familiar everyday objects.²⁰ Consider cats for instance. If Lowe is right, then we would have to know (a part of) essence of the kind 'cat' before we can talk or think about cats comprehendingly, or indeed to distinguish cats from other objects. Yet, it seems that we do not need to know very much at all about cats to be able to think about them, individuate them in thought, and refer to them quite comprehendingly.²¹ Even if one thinks that cats are robots or demons, it would still seem to be the case that when one sees a cat one is immediately capable of thinking about it (as a cat), and successfully referring to it in conversation.

While I think that there is much more to be said about the apparent difference between familiar everyday objects and abstract or theoretical objects, it may be that the apparent simplicity of thinking and talking about these objects is exactly due to them being so familiar to us. That is, I am not convinced that there is a genuine difference between familiar, concrete objects and more theoretical or abstract objects. The key here is how we interpret Lowe's requirement for talking or thinking about an object *comprehendingly*. Lowe does not go into much detail about this requirement, but it appears to be doing a lot of work in his account; it is also a possible escape route from the objection under consideration. By adopting a fairly strong reading of 'comprehendingly', it could be argued that one does indeed need to know a number of things about the essence of the kind 'cat' before it is possible to think or talk about cats comprehendingly.

According to Lowe (2008a: fn. 23), to be able to think or talk about cats comprehendingly, it may be sufficient to know that cats are animals or living organisms. This would at least rule out radical mistakes such as thinking that cats are robots. I take it that the underlying idea is as follows: someone who thinks that cats are robots or demons does not understand what it means to be a cat, that is, we would have to say that this person is not acquainted with cats (as an object of thought). Hence, such a person would not be able to pick out cats with any reliability, since they might for instance think that an actual robot is a cat. A crucial element of 'comprehension' would thus appear to be a sufficient grasp of the identity, existence, and persistence conditions of a given object. Of course, there is always room for error, so the requirement should not be understood as the absence of any possibility to mistake one kind of thing for another kind of thing. It is, at least arguably, enough that we are generally capable of forming thoughts about objects in such a way that there is a somewhat reliable link between the supposed essences and the essences of actually existing objects. Indeed, I take this to be a requirement for realism in general.

It is plausible that grasping the identity, existence, and persistence conditions of an object just *is* grasping the essence of an object. If we are committed to the idea that essences are not entities in their own right, which I believe to be absolutely crucial, then a natural

detail below.

20 At this point it may be useful to note that our epistemic access to the essences of different kinds of objects, and perhaps abstract vs. concrete objects in particular, could plausibly differ even radically. In fact, this may suggest that we must resort to some sort of a hybrid view after all (i.e. combining *a priori* and *a posteriori* elements), although this depends especially on our epistemic access to the essences of concrete objects. On the face of it, it is difficult to see how *a posteriori* essentialism could account for the essences of abstract objects (although perhaps there is a way to do this), so unless we can explain our epistemic access to the essences of concrete objects in terms of *a priori* essentialism as well, then a hybrid view looks unavoidable. However, my proposal, which I will put forward in section 3.2, is that we can indeed have a unitary account in terms of *a priori* essentialism.

21 The problem at hand does not concern our ability to *refer* to objects though; as Lowe (2008a: fn. 24) notes, he is not interested in semantic questions in his theory, but rather about our acquaintance with 'objects of thought.' Accordingly, I will also omit any discussion of semantic matters here.

understanding of essence is in terms of these very conditions. However, it does appear that there must be something more to essence than just the bundle of these conditions, for how are we supposed to know which object a given set of such conditions is associated with? Here we are once again faced with the problem of unification. As we saw in section 2.1.1, Oderberg introduces the notion of a unifying *a priori* principle in order to establish this link, but I had my doubts about this move. If each object is associated with a unique unifying principle, then the unifying principle itself is starting to look very much like the essence, and it is not at all clear to me that this helps in addressing the original epistemic problem.

One worry that might be raised at this point concerns children's ability to talk about and reliably pick out, say, animals, without any deeper comprehension about the essence of animals. Perhaps this is possible even without knowing that animals are living organisms. For instance, are young children capable of thinking and talking about cats comprehendingly if they lack this knowledge about animals? I think that Lowe should answer in the negative to this question. As a first attempt to settle the matter, we could subject a group of young children to a test to determine whether they have grasped the essence of cats to a sufficient degree to talk and think about them comprehendingly. If they are able to pick out the cat from a sample space including a cat, a cat-like robot, and a dog, then they have at least a partial grasp of the essence of cats. However, this would surely beg the question, for what guarantees that it is grasping the essence that is doing the work here? As Bird (2007a) remarks, just knowing that cats are animals is not sufficient to distinguish them from pigeons, for instance.

Lowe's requirements for grasping (a part of) an essence, it seems to me, are fairly modest. Everyone, even quite young children, is able to grasp partial essences. But something more needs to be said in support of the account to address the concern raised above. I venture to suggest that the most promising reply available to Lowe is to introduce context as a variable in cases of 'comprehension'. In a situation where cats are the only animals about, it is sufficient to know that cats are animals to be able to think and talk about them comprehendingly, and to distinguish them from other objects. However, if there are also pigeons about, then more detailed information about the essence of cats would be required, such as cats being feline. Similarly, we would need to know even more about cats to distinguish them from other felines. Eventually, we might encounter difficult situations where we may not know enough about the essences of a combination of objects to adequately distinguish them, and 'species' may very well be one such problematic case, but the core idea can be defended regardless. My suggested reading of Lowe's strategy is that *if and only if* we have grasped the essences of the objects under investigation (to a sufficient degree), then we are able to think and talk about them comprehendingly, and also distinguish them from each other. The details of this process of 'comprehension' remain open, but the underlying idea cannot be as easily refuted as Bird (2007a) suggests. This line of thought can also be extended to the case of children, as this type of piecemeal grasping of an essence provides a fairly plausible explanation as to why very young children may not have grasped the essence of a particular object to a sufficient degree to think and talk about it comprehendingly.

Perhaps one final example would be useful. Consider the classic case of a bronze statue and the lump of bronze that it is composed of. If the lump and the statue are indeed two different things, as Lowe (2008a: 46) thinks they are, then no amount of empirical information will help us to determine this. Empirically, the statue and the lump are indistinguishable. It is only because we know what kind of things bronze statues and lumps of bronze are – and specifically knowing what they essentially depend on for their existence and identity – that we can distinguish them. Here it may be helpful to recall Oderberg's idea that if a removal of a certain quality that a thing has would produce a radical change in the properties, functions etc. of that thing, then we are most likely dealing with a quality that is part of the thing's essence. We can for instance consider a change in the shape of the bronze

statue and the lump of bronze: the lump could survive such a change without any radical consequences for its key properties and functions, whereas the statue could not, and hence the shape of a bronze statue is plausible a part of its essence.

I am tempted to conclude that *a priori* knowledge of at least some essentialist facts would appear to be both possible and necessary. However, the case for *a priori* essentialism via direct knowledge of essence is far from conclusive, so it will be worthwhile to examine whether a more plausible picture can be developed by changing the epistemic order of explanation so that knowledge of modal facts is prior to knowledge of essentialist facts.

3. Modality is epistemically prior to essence

It is uncontroversial that all essential truths are necessary truths.²² Further, the preliminary assumption of this paper was that essence is *ontologically* prior to modality. But this does not imply that the epistemic explanation has to go in the same direction. An initial concern about changing the epistemic order is that if the Finean account of essence is correct, there will be modal truths concerning an object *x* that are not essentialist truths about *x*. To use Fine's (1994) original example, we would not want to say that it is part of the essence of Socrates to belong to singleton Socrates if he exists, even though it is necessary for him to do so. The problem that this poses for an account according to which modality is epistemically prior to essence is that we must have some means to determine which of the necessary truths concerning an object are essentialist truths about that object. Furthermore, the criteria that we use to determine this better not assume previous knowledge of essentialist facts.

Another complication for this conception of the epistemology of essence is that since we cannot use knowledge of essences to explain our knowledge of necessary truths, we will need a further story about modal epistemology. Perhaps this is not as serious a problem as the previous, since it is widely acknowledged that we do know many modal truths, regardless of whether modality reduces to essence or not. However, I think that the reason why epistemic access to modal truths is considered somewhat less problematic is because *conceivability* or *imaginability* is generally thought to be at least a *prima facie* guide to possibility (cf. Gendler and Hawthorne 2002). Certainly, if possibility is understood simply as an absence of contradictions in an imaginable scenario, then it is quite clear that we have an epistemic access to *some* kind of possibility. But the crucial question is, what kind of possibility is this, and does it have any bearing on *metaphysical* possibility? My view is that conceivability could at best serve as a guide to conceptual or logical possibility, rather than metaphysical possibility – exactly because it often conflicts with things that we consider to be metaphysically necessary and grounded in the essences of things, as the Aristotelian view would have it. It is beyond the scope of this paper to engage with this question in detail.²³ At any rate, I consider the challenge to be even more pressing because of this: if conceivability is an unreliable guide to *genuine* (i.e. metaphysical as opposed to conceptual or logical) modal knowledge, then we must explain our epistemic access to genuine modality. In this third section I will examine the prospects of putting forward such a story.

As with the account according to which essence is epistemically prior to modality, we have two options concerning our epistemic access to modality and further to essence. I will first consider the view which suggests that we have *a posteriori* access to metaphysical modality and further to essence, and then the view which takes the epistemology of metaphysical modality and hence our epistemic access to essence to be *a priori*.

22 In his classic article, Fine (1994) only challenges the converse of this, i.e. that all necessary truths about an object *x* are essential truths about *x*.

23 For some further discussion about conceivability, as well as a detailed discussion of Timothy Williamson's (e.g. 2007) counterfactual account of modal epistemology, see Tahko (2012b).

3.1 A posteriori access to modality

It may appear that the appeal of the view according to which epistemic access to essences is via our *a posteriori* knowledge of metaphysical modality is strong. After all, Kripke-Putnam essentialism suggests that, in many cases, *a posteriori* metaphysical necessities express or ‘contain’ essentialist facts. However, this is not quite correct, as *a posteriori* metaphysical necessities are commonly considered to consist of an *a priori* essentialist part in addition to an empirical part.²⁴ Indeed, it may be more accurate to describe Kripke-Putnam essentialism as a type of *a priori* fallibilist view about modal epistemology. Of course, what complicates the present analysis is that most philosophers who subscribe to this view do not accept the Aristotelian ontology of essence. Accordingly, it is not at all clear that the discussion concerning modal epistemology in the Kripke-Putnam tradition will be of much use here. In fact, I am not aware of *any* discussions of *a posteriori* access to essence via modality that would also accept the Aristotelian ontology of essence.

The reason why Kripke-Putnam essentialism will not help to explicate *a posteriori* access to modality is because the essentialist content of *a posteriori* necessities postulated in this approach is not sufficiently fine-grained. For instance, in the classic case of water and H₂O, the essentialist content amounts to stating that we know *a priori* that chemical substance A is identical with chemical substance B if and only if they share their molecular composition (cf. Soames 2007). However, there are good reasons to think that we should rather be interested in whether it can be known *a priori* that chemical substances have only one metaphysically possible instantiation which produces the chemical properties of that substance. I do not have the space to discuss this in detail, but the shortcomings of Kripke-Putnam essentialism in this regard should be well known (e.g. LaPorte 2004, Tahko 2009a, Needham 2011, and Lowe 2011).

Leaving Kripke-Putnam essentialism aside, there is only one promising strategy for *a posteriori* access to modality as far as I can see, but it requires a further commitment that calls for independent motivation. The strategy I have in mind is to argue that metaphysical necessity is physical or natural necessity, i.e. the strongest type of necessity. It is not implausible that our epistemic access to physical necessity is *a posteriori*, since we need to observe the actual causal laws of the physical world to determine what the physical necessities are. So, if physical necessity just is metaphysical necessity, it appears that our knowledge of metaphysical modality is thoroughly *a posteriori*.

The appeal of this strategy is that the first of the general problems for an account which takes modal knowledge to be prior to essentialist knowledge can be addressed in a fairly plausible manner. This is due to the much narrower ‘genuine’ modal space that the account implies. Specifically, problematic necessary truths such as Socrates belonging to singleton Socrates which do not appear to be essential to Socrates can be distinguished from the necessary truths that are essential to Socrates by appealing to the source of the necessity in question. That is, since it is not in virtue of the laws of nature that Socrates belongs to singleton Socrates, this will turn out to be irrelevant to the essence of Socrates. So, someone holding this view could argue that only the physical necessities give us epistemic access to essentialist truths, and indeed that the set of essentialist truths is simply the set of truths that are necessary in virtue of the laws of nature.

Since the strategy under investigation takes all the facts dictated by the laws of nature – such as the ability of water to dissolve sodium chloride – to be essentialist facts, it is of course at odds with the Humean conception of the laws of nature. Humeanism about laws, which has a rather strong foothold, would take such facts to be contingent and accordingly unable to serve as an epistemic guide to essentialist truths – necessity is a minimal requirement for

²⁴ See for instance Soames (2002, 2007) for an analysis of the Kripke-Putnam line concerning *a posteriori* necessity; see also Tahko (2009a) for a critical analysis of this traditional account.

essentiality even in the Aristotelian ontology of essence. The necessitarian conception of the laws of nature required by this strategy is hence a significant additional ontological commitment that would have to be defended before the strategy becomes viable.

But are there any good reasons to think that natural necessity is metaphysical necessity? Personally I am sceptical about this move. The position has been defended in the literature, but, with the exception of Oderberg (2007: 143–151), all the proponents of the view that I am aware of would presumably not be sympathetic to the Aristotelian ontology of essence.²⁵ Furthermore, Lowe (2006: ch. 9–10), who of course does accept this reduction, has argued in detail against the metaphysical necessity of (at least some of) the laws of nature. It should also be mentioned that Oderberg’s brief defence of necessitarianism does not proceed from the epistemic direction under investigation here, namely from our knowledge of laws to essences, but rather from our knowledge of essences to laws (2007: 145). He goes on to point out that if laws are considered to be just ‘truths about the properties of things (and the essences from which the properties emanate)’ (ibid.), then we in fact have a case of identity between laws and essences; therefore, any knowledge about laws will be knowledge about essences. But while Oderberg’s logic here is sound, this is not an epistemically satisfying explanation, as we still need an independent argument to establish the identity between laws and essences, and this argument cannot *begin* from the assumption that our knowledge of laws is always essentialist knowledge. In any case, any attempt to settle the modal status of the laws of nature would take us too far from the topic at hand, so I will omit a more detailed discussion of them.

I conclude that the epistemic route to essence presently under consideration is viable if and only if there are some independent reasons to consider the laws of nature to be metaphysically necessary. I wish to leave it open whether there are such reasons, but I am inclined to answer in the negative. Since the combination of the metaphysical necessity of the laws of nature and the epistemic access to essence via these necessary laws has not been defended in the literature in any detail, I will move on to the last of the four options concerning the epistemology of essence.

3.2 A priori access to modality

The view according to which our epistemic access to essence is via our *a priori* access to modality is what I consider to be the most appealing of the four options. I do however have some reservations about it. To begin with, something should be said about how our epistemic access to metaphysical modality could generally be *a priori*. As I noted above, one popular account of *a priori* modal epistemology is based on conceivability or imaginability. To put this idea very roughly, conceivability could be understood as *a priori* coherence, which implies possibility. This is admittedly a simplification, as it is possible to distinguish several types of conceivability, some of which may be more reliable as guides to metaphysical modality than others (cf. Yablo 1993, Chalmers 2002). However, we are also looking for a reliable link between metaphysical modality and essence, and as we have already observed, absence of contradictions is certainly much too weak for this. Accordingly, a modal epistemology based on this rough understanding of conceivability is not sufficient for our purposes. Moreover, Kripke’s work is generally considered to have severed the link between *apriority* and necessity altogether, so further motivation is certainly required if we hope to

²⁵ For further discussion about the status of laws, see Bird (2007b), Dumsday (2010), Ellis (2001), Oderberg (2007), Shoemaker (1998), and Swoyer (1982). See Drewery (2005) for some further objections against the combination of essentialism and necessitarianism; but note also Oderberg’s (2007: 143–151) replies to her concerns.

make a case for the epistemology of essence in terms of modal rationalism.²⁶

3.2.1 *Apriority, conceivability, and modal rationalism*

Kripke did indeed make an important point about *apriority* and necessity, but I think that there is a perfectly plausible way to maintain a link between *apriority* and metaphysical possibility (and not merely conceptual or logical possibility). The basis of this link is not conceivability *per se*, although it may be that conceivability could be understood in such a way that it fits the framework of modal epistemology that I would like to propose. This framework relies on our ability to construct scenarios that fit (at least most of) our empirical data and provide a *possible* explanation for observed phenomena. Consistency is an initial constraint of these scenarios, but on its own it is not sufficient, as otherwise the scenarios would amount to nothing more than guesswork. However, because I take it that *a priori* reasoning is often informed by *a posteriori* considerations, it may be that it is not entirely accurate to label the proposed account of modal epistemology as ‘modal rationalism.’

In fact, I think that a more general revision of our understanding of the relationship between the *a priori* and the *a posteriori* is in order, and that it is best to understand them as being in a ‘bootstrapping relationship’. Accordingly, as I noted already in the introduction, I consider a sharp distinction between *a priori* and *a posteriori* to be misguided. Still, I maintain that the distinction can be upheld, and the reason why I have chosen to include the distinction as one of the epistemic dimensions is because of its central role in understanding the correct order of explanation. Specifically, even though I consider *a posteriori* elements to be important for the epistemology of essence, our inquiry must nevertheless begin with some *a priori* elements. This is not the place to discuss the relationship between the *a priori* and the *a posteriori* in detail though. Rather, I will give an example which will hopefully serve to illustrate both my understanding of the relationship between the empirical *a posteriori* background and *a priori* reasoning as well as the epistemic route to metaphysical possibility that I claim to be available to us: a game of chess.²⁷

Someone with good knowledge of different chess openings can play several moves in a chess game with only his experience of these famous openings as a guide. She can simply counter her opponent’s every move with the corresponding move in the opening library, which is based on previous chess games. But when the opponent makes an unexpected move, or when enough moves have been played and the opening library is of no help, even the best chess player has to start thinking about her next move. She must consider different combinations of moves as deep as possible and decide on the best one. With each chess move, the setting of the board changes, and in this example the situation on the chess board is analogous to empirical *a posteriori* background information. So, a new background setting is introduced with each move. Now, each of the trillions and trillions of chess move combinations represents a different possibility, a different path that the game could take. It is by considering these different possibilities – scenarios – that we try to determine the path that leads to victory. In this example, the analysis of these possible move combinations is

26 One philosopher who has defended modal rationalism extensively is George Bealer (e.g. 1987, 2002, 2006), who coined the term ‘moderate rationalism’ for his view. While I am sympathetic to some of Bealer’s remarks against the Kripke-Putnam tradition and scientific essentialism in particular, it is quite clear that he has not adopted the Aristotelian ontology of essence. Bealer (2006: 38, fn37) refers to Fine’s argument for the priority of essence over modality and his approach does bear a certain similarity to the Aristotelian approach. However, Bealer nevertheless operates in a modalist framework rather than an essentialist one, which makes his ‘moderate rationalism’ inappropriate for our current purposes. See also Goswick (2010) for a critique of Bealer’s account.

27 I discuss the *a priori/a posteriori* distinction, *a priori* reasoning, and *a priori* access to metaphysical modality in much more detail in my (2008, 2011, and 2012a).

analogous to an *a priori* analysis of the scenarios that could possibly explain a given observed phenomenon.

The understanding of *a priori* reasoning proposed here is very weak: we engage in *a priori* analysis of possibilities all the time. A chess game, though, is hardly a challenge for our rational capabilities when compared to *a priori* reasoning concerning reality. A chess game is a closed system with strict rules and no exceptions. Compared to the number of different possible paths that reality might take, a chess game seems very simple. In a chess game, our reasoning is guided by the rules of the system, but the question that emerges is: are there analogous ‘rules’ in reality as well, that is, constraints for the different possible scenarios that could explain a given phenomenon? I do indeed think that there are such constraints, which is exactly why *a priori* reasoning is not mere guesswork. If realism is true, there *must* be some constraints like this, for otherwise extreme conventionalism threatens. This, it seems to me, is also the driving intuition behind the ‘no miracles’ argument (e.g. Putnam 1975: 73). Such constraints will of course be metaphysically necessary, but I consider it to be a rather difficult task to determine what they in fact are. Nevertheless, there are surely some plausible candidates, such as the law of non-contradiction (cf. Tahko 2009b), perhaps general ontological categories, and certain scientific principles.²⁸ Once again, I should perhaps distance myself from the label of ‘modal rationalism’, as what we have here is a type of foundational approach: the general ‘rules’ of reality, whatever they may be, will act as foundational principles that guide modal epistemology, but in other regards the account is thoroughly fallibilistic.

3.2.2 Fallibilism and modal epistemology

In the light of what I have suggested above, it might seem that I wish to be fallibilist about modal epistemology. It could always turn out that a scenario we judged to be possible is in fact not the correct one (or, analogously, a move combination in chess that one hoped to be victorious fails in the end). Indeed, there are several ways in which *a priori* access to modality and further to essence could be fallible. Firstly, due to simple human error in *a priori* reasoning. Secondly, an error could emerge regarding necessary versus essential properties, due to the Aristotelian ontology of essence, i.e. a necessary truth about a certain object may fail to be an *essential* truth about *that* object. Thirdly, there is a possibility of empirical defeasibility, namely, empirical evidence could falsify something that we considered to be a necessary truth (such as in the case of Euclidean geometry).

The first type of fallibilism is not serious, but the second and, to a lesser extent, the third are. In section 3.1 we considered a way to overcome the difficulty caused by the Aristotelian ontology of essence by identifying physical and metaphysical necessity. But since *a priori* access to physical necessity seems rather implausible, this type of solution is not available to the modal rationalist. In any case, I already expressed my scepticism about the necessity of the laws of nature. Perhaps something similar could be attempted though: we could postulate that necessary truths concerning a certain object are ‘genuinely’ necessary only insofar as they are essentialist truths about that object. Unfortunately, this type of move is surely *ad hoc*. There is also the obvious problem of determining which truths indeed are genuinely necessary – we cannot simply say that they are the ones which reduce to essence, as according to the current line of thought our epistemic access to essence is via modality. Hence, it is not immediately clear that e.g. the fact that Socrates belongs to singleton Socrates if he exists is *not* necessary in the required sense, since it is presumably metaphysically necessary (even if it is essential only for singleton Socrates).

To overcome these problems, I suggest that we should, after all, be infallibilists about our *a priori* access to modality, and specifically to metaphysical modality. Adopting infallibilism

²⁸ I have in mind the Pauli Exclusion Principle in particular.

brings with it the same concern that was raised about direct *a priori* access to essence: it appears mysterious. This time it is our story about modal epistemology that needs to be demystified. However, I believe that this can be done by developing on Lowe's idea that essence precedes existence, which was discussed in section 2.1. This idea also implies that *possibility precedes actuality*: if we can discover the essence of, say, a transuranic element before we know that it actually exists, then it appears that we can know that the element *could* exist before we can know that it *actually* exists. Further, if Lowe is right in insisting that we must know the essence of a thing before we can think or talk about it comprehendingly, then we *must* know that something could exist before we can know that it actually exists.

As we saw, for Lowe the epistemic order of explanation is different to the one proposed here, namely from essence to modality. I believe that this is a mistake. As illustrated above, I wish to suggest instead that we have *a priori* access to metaphysical possibility and it is via this modal knowledge that we access the essences of all possible kinds of entities, whether they exist in the actual world or not. Accordingly, the process is empirically indefeasible in the sense that it only concerns *possibilities*. It is an empirical question which ones of these possibilities correspond with the actual world. For instance, provided that Euclidean geometry is consistent, it is one possible scenario of what the actual geometry of the world could be like, among the other alternative geometries. There is still a modal fact at play here, and it must also be grounded in essence. Since the picture at hand accommodates the essences of non-existing things as well, there is nothing strange about there being essentialist facts that ground non-actual geometries.

This account of modal epistemology is based on constructing a scenario which is constrained by the existence, identity, and persistence conditions of the supposed entities that would explain observed phenomena. Typically, our *a posteriori* background information gives us access to some of these conditions, but constructing a complete scenario is an *a priori* matter. The postulation of undiscovered particles (such as transuranic elements or the Higgs boson) is a good example of this. I do not think that there is some kind of an automatic pairing or an *a priori* principle of unity – like the one proposed by Oderberg – which guarantees that the modal constraints imposed by the existence, identity, and persistence conditions link to a given essence. However, I think that we have the makings for a solution to the problem of unification here.

Since our epistemic access is to possible rather than actual essences, a key aspect of the epistemology is listing different possible combinations of (logically compatible) essential features which may or may not be unified into a genuine, actual kind. Ultimately, it is the task of empirical science to determine which of the possible kinds of essences that we conjecture are actual essences, that is, which combinations of essential features make up genuine kinds. Hence, the problem of unification will ultimately be addressed by empirical science. Importantly, this process is fallibilistic: we can only make an educated guess about which essences are genuine, based on the modal constraints that are accessible to us. Science determines whether we guessed correctly, but science is of course subject to revision as well. If further empirical information emerges, we can always revise the picture. So, according to this account, our epistemic access to essence is a piecemeal, complex matter, yet a necessary precursor of philosophical and scientific knowledge.

Admittedly, it may now appear that my preferred account of the epistemology of essence is not purely *a priori*, since *a posteriori* knowledge has a key role in solving the problem of unification. But this is as it should be: I only wish to insist that the starting point of the epistemology of essence is *a priori* inquiry. Even though *a priori* analysis of metaphysical possibilities is epistemically primary, this does not mean that *a priori* inquiry by itself gives us a full-blown epistemology of essence. This does not mean that the current account is a hybrid account – a hybrid account would state that in some cases the epistemic priority is on *a*

posteriori inquiry and in some cases on *a priori* inquiry.

How does this approach fare with the worry about necessary truths concerning an object that are not essentialist truths about that object? Here it is important to keep in mind that according to the Aristotelian ontology of essence, the ontological ground of metaphysical modality is essence, that is, as Lowe (2008a: 46) puts it: ‘all facts about what is necessary or possible, in the metaphysical sense, are grounded in facts concerning the essences of things—not only of existing things, but also of non-existing things’. Hence, if it is metaphysically necessary that Socrates belongs to singleton Socrates, then this fact about what is necessary is also grounded in the essences of things, even if it is not part of the essence of Socrates that he belongs to singleton Socrates. Presumably, the essentialist fact that grounds the case about singleton Socrates is that sets depend essentially on their members for their existence (cf. also Koslicki 2012).

3.2.3 Summary of a priori access to essence via modality

Essences may be considered to impose modal constraints on the structure of reality, as all the modal facts reduce to the essentialist facts. If all the modal facts are accessible to us via *a priori* inquiry (at least in principle), then so are all the essentialist facts that ground them. A difficulty remains though, because we should also be able to determine which essentialist fact(s) ground a given modal fact. In this regard I opt for fallibilism, but this fallibilism is similar to the fallibilism generally associated with empirical science. Furthermore, my proposal was that it *is* empirical science that determines which combinations of essential features make up genuine natural kinds – this was the proposed solution to the problem of unification.

The general pattern of inquiry is as follows. First we construct a scenario compatible with our empirical background information. We then complement the scenario with *a priori* considerations based on the modal constraints imposed by the existence, identity, and persistence conditions of the kinds of objects that would be compatible with the scenario. The idea is that these possible objects could explain some new empirical observations. In other words, we attempt to determine in virtue of which essentialist facts the postulated modal constraints could hold. This gives us a list of candidate essences that may or may not be *real* or *genuine* essences (i.e. essences of actual objects), but at the very least they are essences of *possible* objects. All this is crucial in our pursuit for scientific and philosophical knowledge, as without this type of delimitation of possibility, we would have no means to select the relevant scenarios from the infinity of possible explanations for a given observed phenomenon.

4. Conclusion

I have examined four different approaches to the epistemology of essence. Each approach has its caveats and there is a lot more work to be done to fully explicate them. I see some promise in developing the approaches which propose that *a priori* inquiry has epistemic priority. I am more confident that we can overcome the problems associated with the epistemology of essence if we adopt an infallibilist modal rationalist (or foundationalist) approach and develop the view according to which our epistemic access to essence is via our *a priori* access to metaphysical modality, although I do not wish to fully commit myself here. The main purpose of my analysis was to identify and explicate our options in terms of the epistemology of essence, and I hope to have achieved at least that.

References

- Aristotle (1984) *Metaphysics*, trans. W. D. Ross, revised by J. Barnes (Princeton, NJ: Princeton University Press).
- Bealer, G. (1987) 'The Philosophical Limits of Scientific Essentialism', *Philosophical Perspectives 1: Metaphysics*, (1987), pp. 289–365.
- Bealer, G. (2002) 'Modal Epistemology and the Rationalist Renaissance', in T. S. Gendler and J. Hawthorne (eds.), *Conceivability and Possibility* (Oxford: Oxford University Press), pp. 71–125.
- Bealer, G. (2006) 'A Definition of Necessity', *Philosophical Perspectives 20: Metaphysics*, pp. 17–39.
- Bird, A. (2007a) 'A Posteriori Knowledge of Natural Kind Essences', *Philosophical Topics 35* (1/2).
- Bird, A. (2007b) *Nature's Metaphysics* (Oxford: Clarendon Press).
- Bird, A. (2008) 'Lowe on A Posteriori Essentialism', *Analysis* 68: 336–44.
- Boolos, G. (1971) 'The Iterative Conception of Set', *Journal of Philosophy* 68 (8): 215–31.
- Brody, B. A. (1973) 'Why Settle for Anything Less than Good Old-Fashioned Aristotelian Essentialism', *Noûs* 7 (4): 351–65.
- Chakravartty, A. (2007) *A Metaphysics for Scientific Realism: Knowing the Unobservable* (Cambridge: Cambridge University Press).
- Chalmers, D. (2002) 'Does Conceivability Entail Possibility?', in T. S. Gendler and J. Hawthorne (eds.), *Conceivability and Possibility* (Oxford: Oxford University Press), pp. 145–200.
- Charles, D. (2000) *Aristotle on Meaning and Essence* (Oxford: Clarendon Press).
- Correia, F. (2008) 'Ontological Dependence', *Philosophy Compass* 3: 1013–32.
- Correia, F. (forthcoming) 'On the Reduction of Necessity to Essence', *Philosophy and Phenomenological Research*.
- Devitt, M. (2008) 'Resurrecting Biological Essentialism', *Philosophy of Science* 75: 344–82.
- Drewery, A. (2005) 'Essentialism and the Necessity of the Laws of Nature', *Synthese* 144 (3): 381–96.
- Dummsday, T. (2010) 'Natural Kinds and the Problem of Complex Essences', *Australasian Journal of Philosophy* 88 (4): 619–634.
- Dupré, J. (1993) *The Disorder of Things: Metaphysical Foundations of the Disunity of Science* (Cambridge, MA: Harvard University Press).
- Elder, C. (2004) *Real Natures and Familiar Objects* (Cambridge, MA: MIT Press/Bradford Books).
- Ellis, B. (2001) *Scientific Essentialism* (Cambridge: Cambridge University Press).
- Fine, K. (1994) 'Essence and Modality', J. E. Tomberlin (Ed.), *Philosophical Perspectives 8: Logic and Language* (Atascadero, CA: Ridgeview), pp. 1–16.
- Fine, K. (1995a) 'The Logic of Essence', *Journal of Philosophical Logic* 24 (3): 241–73.
- Fine, K. (1995b) 'Senses of Essence', W. Sinnott-Armstrong, D. Raffman & N. Asher (Eds.), *Modality, Morality and Belief: Essays in Honor of Ruth Barcan Marcus* (Cambridge: Cambridge University Press), pp. 53–73.
- Fine, K. (2005) 'Our Knowledge of Mathematical Objects', in T. S. Gendler and J. Hawthorne (eds.), *Oxford Studies in Epistemology* (New York: Oxford), pp. 89–109.
- French, P. A., Uehling, T. E., Jr., Wettstein, H. K. (Eds.) (1986) *Midwest Studies in Philosophy XI: Studies in Essentialism* (Minneapolis: University of Minnesota Press).
- Gendler, T. S. and Hawthorne, J. (eds.) (2002), *Conceivability and Possibility* (Oxford: Oxford University Press).
- Gorman, M. (2005) 'The Essential and the Accidental', *Ratio* 18: 276–289.

- Goswick, D. (2010) 'Bridging the Modal Gap', *Journal of Philosophy* 107 (8): 432–443.
- Hale, B. (2002) 'The Source of Necessity', J. E. Tomberlin (Ed.) *Philosophical Perspectives 16: Language and Mind* (Atascadero, CA: Ridgeview), pp. 299–319.
- Koslicki, K. (2012) 'Essence, Necessity and Explanation', in T. E. Tahko (ed.), *Contemporary Aristotelian Metaphysics* (Cambridge: Cambridge University Press).
- LaPorte, J. (2004) *Natural Kinds and Conceptual Change* (Cambridge: Cambridge University Press).
- Linnebo, Ø. (2010) 'Pluralities and Sets', *The Journal of Philosophy* 107 (3): 144–164.
- Locke, J. (1975) *An Essay Concerning Human Understanding*, ed. P. H. Nidditch (Oxford: Clarendon Press).
- Lowe, E. J. (2006) *The Four-Category Ontology: A Metaphysical Foundation for Natural Science* (Oxford: Oxford University Press).
- Lowe, E. J. (2007) 'A Problem for A Posteriori Essentialism Concerning Natural Kinds', *Analysis* 67: 286–92.
- Lowe, E. J. (2008a) 'Two Notions of Being: Entity and Essence', *Royal Institute of Philosophy Supplements* 83 (62): 23–48.
- Lowe, E. J. (2008b) 'Reply to Bird on a Posteriori Essentialism' *Analysis* 68: 345–347.
- Lowe, E. J. (2011) 'Locke on Real Essence and Water as a Natural Kind: A Qualified Defence', *Aristotelian Society Supplementary Volume* 85 (1): 1–19.
- Lowe, E. J. (forthcoming) 'Grasp of Essences versus Intuitions: An Unequal Contest', in T. Booth and D. Rowbottom (ed.), *Intuitions* (Oxford: Oxford University Press).
- Needham, P. (2011) 'Microessentialism: What is the Argument?', *Noûs* 45 (1): 1–21.
- Oderberg, D. (2007) *Real Essentialism* (London and New York: Routledge).
- Oderberg, D. (2011) 'Essence and Properties', *Erkenntnis* 75: 85–111.
- Parsons, C. (1983) 'What Is the Iterative Conception of Set?', reprinted in his *Mathematics in Philosophy* (Ithaca: Cornell), pp. 268–97.
- Paul, L. A. (2004) 'The Context of Essence', *Australasian Journal of Philosophy* 82: 170–84.
- Paul, L. A. (2006) 'In Defense of Essentialism', *Philosophical Perspectives 20: Metaphysics*, pp. 333–72.
- Psillos, S. (1999) *Scientific Realism: How Science Tracks Truth* (London: Routledge).
- Putnam, H. (1975) *Mathematics, Matter and Method* (Cambridge: Cambridge University Press).
- Putnam, H. (1990) 'Is Water Necessarily H₂O?', in J. Conant (ed.), *Realism with a Human Face* (Harvard University Press).
- Quine, W. V. O. (1966) 'Three Grades of Modal Involvement', *The Ways of Paradox* (New York: Random House, pp. 156–74.
- Salmon, N. U. (2005) *Reference and Essence*, 2nd ed. New York: Prometheus Books.
- Shalkowski, S. (1997) 'Essentialism and Absolute Necessity', *Acta Analytica* 12 (2): 41–56.
- Shalkowski, S. (2004) 'Logic and Absolute Necessity', *The Journal of Philosophy* 101 (2): 55–82.
- Shalkowski, S. (2008) 'Essence and Being', *Royal Institute of Philosophy Supplements* 83 (62): 49–63.
- Shoemaker, S. (1998) 'Causal and Metaphysical Necessity', *Pacific Philosophical Quarterly* 79: 59–77.
- Soames, S. (2002) *Beyond Rigidity: The Unfinished Semantic Agenda of Naming and Necessity* (Oxford: Oxford University Press).
- Soames, S. (2007) 'What are Natural Kinds?', *Philosophical Topics* 35 (1/2).
- Swoyer, C. (1982) 'The nature of natural laws', *Australasian Journal of Philosophy* 60 (3):

203–23.

- Tahko, T. E. (2008) ‘A New Definition of A Priori Knowledge: In Search of a Modal Basis’, *Metaphysica* 9 (2): 57–68.
- Tahko, T. E. (2009a) ‘On the Modal Content of A Posteriori Necessities’, *Theoria: A Swedish Journal of Philosophy* 75: 344–57.
- Tahko, T. E. (2009b) ‘The Law of Non-Contradiction as a Metaphysical Principle’, *The Australasian Journal of Logic* 7: 32–47.
- Tahko, T. E. (2011) ‘A Priori and the A Posteriori: A Bootstrapping Relationship’, *Metaphysica* 11 (2): 151–64.
- Tahko, T. E. (2012a) ‘In Defence of Aristotelian Metaphysics’, in Tahko, T. E. (ed.), *Contemporary Aristotelian Metaphysics* (Cambridge: Cambridge University Press).
- Tahko, T. E. (2012b) ‘Counterfactuals and Modal Epistemology’, *Grazer Philosophische Studien* 85.
- Williamson, T. (2007) *The Philosophy of Philosophy* (Oxford: Oxford University Press).
- Yablo, S. (1993) ‘Is Conceivability a Guide to Possibility?’, *Philosophy and Phenomenological Research*, 53: 1–42.
- Yablo, S. (2006) ‘Circularity and Paradox’, in T. Bolander *et al.* (eds.), *Self-Reference* (Stanford: CSLI).