S.I.: NEW DIRECTIONS IN THE EPISTEMOLOGY OF MODALITY

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Knowing how things might have been

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Abstract
I know that I could have been where you are right now and that you could have been where I am right now, but that neither of us could have been turnips or natural numbers. This knowledge of metaphysical modality stands in need of explanation. I will offer an account based on our knowledge of the natures, or essences, of things. I will argue that essences need not be viewed as metaphysically bizarre entities; that we can conceptualise and refer to essences; and that we can gain knowledge of them. We can know about which properties are, and which properties are not, essential to a given entity. This knowledge of essence offers a route to knowledge of the ways those entities must be or could be.

Keywords Essence · Nature · Modality · Knowledge · Modal epistemology · Kit Fine · Essential bundle theory

1 Introduction

Metaphysical necessity is supposed to lie somewhere between those necessities generated by scientific law (the 'nomic' necessities) and those generated by logic and conceptual relations alone. 'Nothing can travel faster than light' and 'all red things are coloured' are necessary truths belonging to the nomic and conceptual camps, respectively. A number of metaphysicians, including Kripke (1980) and Lewis (1986), hold that there is, in addition, a class of metaphysically necessary truths. They claim that true statements like 'James Osterburg is Iggy Pop' and 'Curium has atomic number 96' are necessarily true, but not in virtue of scientific fact, logic, or our concepts.

How could we ever know that such truths are necessarily true? Their being *metaphysical* necessities seems to make no difference to our science, our logic, or our

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concepts. Their being metaphysically necessary, rather than contingent, seems to make no difference to our experienced world. This would seem to make knowledge of those truths hard, perhaps impossible, to come by.

Yet we seem to have knowledge of metaphysical modality. I know that I could have been where you are right now and that you could have been where I am right now, but that neither of us could have been turnips, or natural numbers. That knowledge (or seeming knowledge) needs to be explained. Moreover, if we are to talk of metaphysical modality at all, we should know what we are talking about. Knowledge, or something like it, is a reasonable requirement for assertion, even when we are philosophising. If we cannot have knowledge of metaphysical modality, then theorising about it is a disreputable enterprise from the outset.

I will offer an explanation of how we come by knowledge of metaphysical modality: of truths of the form 'it is necessary that A', 'it is possible that A', and 'it is contingent whether A'. From now on, I'll use 'modality' exclusively to denote its metaphysical sense. The terms 'necessary', 'possible', 'contingent', and their cognates should all be understood in their metaphysical senses. I won't claim that the explanation I give applies to all cases of our modal knowledge. Perhaps it does. It seems to apply to a large enough range of examples to be useful. Knowledge of necessity and possibility is perplexing. Explaining how we can come by it at all is progress, even if that explanation does not cover all cases.

That said, some cases of modal knowledge are very easy to come by. I know that I'm writing, so I infer that it's possible that I'm writing and hence that it's necessary that it's possible that I'm writing. I thereby come to know, through a simple deduction, both a possible truth and a necessary truth! But of course, this is not the difficult kind of case we had in mind. Inferring $\Diamond A$ ('it is possible that A') and then $\Box \Diamond A$ ('it is necessarily possible that A') from a known truth A relies only on the logical principles governing our modal concepts. Although the conclusions are genuine truths of metaphysical modality, and are known, they are inferred logically from a known contingent truth. The cases we are concerned with cannot be inferred in this way. They may concern knowledge of non-actual possibilities (that I could have been where you are right now). Or they may concern strengthening a known truth to knowledge of its necessity, or the impossibility of its falsity (that I could not have been a turnip).

Here is the picture I will try to develop. We know how particular things must be because we know the natures or essences of those things. (I'll use 'nature' and 'essence' as synonyms.) And we know how things might have been because we know that those things have natures which, in combination, don't rule out their being those ways. On this view, the metaphysics and epistemology of modality have a common source, in the natures of things.

The metaphysical part of this picture (Sect. 3) consists of an analysis of metaphysical modality (necessity, possibility, and contingency) in terms of essence, due to Fine (1994, 1995c). We then add an understanding of essence on which the essence of a thing is accessible to us (Sect. 4). Knowledge requires belief to be suitably related to the truth. So much of the explanatory burden falls on showing how our true beliefs about essence may constitute knowledge, by showing that those beliefs are suitably related to the truth. (Sect. 5).

The epistemological story then takes up the task of explaining how we get from knowledge of essence to knowledge of metaphysical modality (Sect. 6). Again, the challenge is to show that modal beliefs are suitably related to the truth. I discuss two consequences of this approach in Sect. 7. My overall aim is to sketch a positive account of how we can gain modal knowledge. Most of the paper is devoted to doing that, rather than discussing other accounts. But to set the scene, I will begin, in Sect. 2, by briefly considering the leading current accounts of modal epistemology: the conceivability and counterfactual accounts.

2 Conceivability and counterfactual knowledge

Perhaps our leading account of modal epistemology comes from Hume, who says that

> 'Tis an establish'd maxim in metaphysics, that whatever the mind clearly conceives includes the idea of possible existence, or in other words, that nothing we imagine is absolutely impossible. (Hume 1739/1978, I, ii, 2)

We know that something is possible on the basis of imagining, or conceiving, it. Chalmers (2002, 2006, 2012) develops this approach in detail.

To gain modal knowledge through conceiving other ways things could be, the modal belief-forming process must be reliable. So it must be that conceivability implies possibility, or at least, that it is a reliable enough guide to the modal facts. If it is, and if an agent forms a modal belief on the basis of her imagination, then that belief may well be reliable enough to count as knowledge. The conceivability–possibility link is contentious and has been discussed extensively elsewhere (Gendler and Hawthorne 2002).

I reject the link. I think we have no trouble imagining situations which are impossible, even if we restrict ourselves to logically consistent imaginings (Jago 2014a). I might imagine that I am someone else: perhaps I imagine that I'm you, or that I'm Sherlock Holmes. That is logically consistent, but impossible. Or I might imagine that I'm a turnip. I might be watching a kids' TV show, in which one of the characters is a talking turnip. I fall into thinking about the life of this turnip character; I consider its merits; and soon, I'm imagining myself in their shoes. I'm explicitly considering what it would be like to be that turnip. (A fictional, personified turnip, to be sure; but a turnip nevertheless.) But I could not possibly have been a turnip.

Contemporary theories of the imagination from cognitive science support these conclusions. Fodor (1975) argues that pictorial mental representation has a role in cognition only insofar as it works as 'imagery under description', that is, insofar as the imagery comes endowed with linguistic labels: linguistic mental representations pinning down what the image is about. According to Siegel (2006) and Siewert (1998), such labelling is needed whenever perceptual experience has a content that goes beyond mere shapes and colours.

Kung (2010) and Berto and Schoonen (2017) argue that this stipulative labelling component allows us to stipulate freely the identity of the imagined objects. Imagine Tim kissing John. The phenomenology of the mental imagery can be such that the represented figures are relevantly similar to Tim and John: hair colour, eyes, bodies.

But what makes the imagining count as a representation of a scenario in which *Tim* kisses *John* is that one takes one figure as representing *Tim* and the other as representing *John*. And just as one can imagine Tim kissing John (a possible scenario), so can one imagine oneself as a talking turnip (Berto and Jago forthcoming).

So I reject Hume's maxim, as do Berto and Schoonen (2017), Byrne (2007), Fiocco (2007), Kung (2010), Priest (2016), and many others. But I won't rest my overall case on this argument, which would take us too far afield to establish fully. For, even if we grant the implication from conceivability to possibility, the conceivability approach to modal epistemology remains problematic. To explain an agent's modal knowledge, an approach must first explain their modal beliefs. Defenders of the conceivability account have gone to great lengths to argue that conceivability is reliably connected to the facts of possibility. But they have said much less on whether we actually do form our modal beliefs that way (Strohminger and Yli-Vakkuri 2017, p. 826). If imagining that *A* underpins one's knowledge that *A* is possible, it must be because one formed the belief *that A is possible* on the basis of having imagined that *A*. And similarly, one's belief *that A is necessary* must be formed on the basis of one's recognition of their inability to imagine that ¬*A*.

Many modal beliefs will not be formed like this, however. Many agents question, or are unaware of, any implication from imagination to possibility. The clearest example of such agents are those philosophers who've explicitly considered the purported implication and rejected it. I'm one of them. I am disposed *not* to form the belief that *A* is possible on the basis of having imagined that *A* (although of course I might believe it for other reasons). That disposition is grounded in my philosophical conviction that accepting the inference would lead my beliefs astray. And yet my modal beliefs are no different for it. I have much the same modal beliefs as I did before I ever considered the matter (on everyday topics, at least). I wouldn't like to guess whether the typical agent is disposed to believe in accord with the inference, against it, or to have no overall disposition either way. But it seems there are enough clear cases of agents in my position to show that conceivability cannot be a general explanation for our modal knowledge.

The case against the conceivability explanation strengthens when we consider what properties conceivability must satisfy, if it is to entail metaphysical possibility. One is that it must be logically consistent. It must be impossible genuinely to conceive that *A* if *A* contains any contradiction. This notion is sometimes called *ideal conceivability* (Chalmers 2002). It is much more plausible that this notion (as compared to the regular notion of conceivability) entails possibility. But it is proportionally less plausible that we form modal beliefs on the basis of ideal conceivability, as compared to non-ideal conceivability. Often, we can't tell whether some set of suppositions are consistent or not. So we can't tell, on the basis of the experience, whether an act of conceiving that *A* is an ideal or a non-ideal act of conceiving. If we form modal beliefs regardless, they will be unreliable. My belief-formation method will not be sensitive to whether my conceiving is ideal or not and so is not guaranteed to be sensitive to the modal truths.

Let us turn to the second leading account of modal epistemology. Williamson (2007, chapter 5) argues that our knowledge of metaphysical possibilities and necessities derives from *counterfactual knowledge*: knowledge of what would have been the

case, were something else the case. His strategy is in two parts. He first sketches an epistemology for counterfactuals (which I won't discuss here). Then, he shows how to understand possibility and necessity in terms of counterfactual conditionals, thereby (he supposes) reducing the problem of knowing facts about the former to knowing facts about the latter.

Williamson's analysis of modality in terms of counterfactuals ($A \; \Box\!\!\rightarrow B$) is standard: $\Box A$ can be defined as $\neg A \; \Box\!\!\rightarrow \bot$ and $\Diamond A$ as $\neg(A \; \Box\!\!\rightarrow \bot)$, where $\bot$ is some contradiction. Those definitions can be derived simply, so long as any counterfactual $A \; \Box\!\!\rightarrow B$ (i) entails that B is possible if A is; and (ii) is entailed by the corresponding strict conditional, $\Box(A \rightarrow B)$.

I'm going to raise three problems for Williamson's proposal. First, the analysis of modality is incorrect. To see this, let's fix $\bot$ as 'snow is white and snow is not white'. It's necessary that Fermat's Last Theorem is true. But even if it wasn't true, it still wouldn't be the case that snow both is and isn't white. So $\Box$FLT is true, but $\neg$FLT $\Box\!\!\rightarrow \bot$ is false, contrary to Williamson's analysis.

The conditional $\neg$FLT $\Box\!\!\rightarrow \bot$ is a *counterpossible*, for it has an impossible antecedent, $\neg$FLT. Williamson's argument presumes that all counterpossible conditionals are trivially true (as they must be if implied by the corresponding strict conditional). But there are many false counterpossibles. Here are three (the first from Nolan 1997, the remaining two from Berto and Jago forthcoming):

(1) If Hobbes had (secretly) squared the circle, sick children in the mountains of South America at the time would have cared.
(2) If there hadn't been any sets, Anna wouldn't have existed.
(3) If intuitionist logic were correct, excluded middle ($A \vee \neg A$) would be valid.

To my mind, these are all clearly false. Those sick children didn't care about what Hobbes did or didn't do and so wouldn't have cared even if he had squared the circle. Anna doesn't depend for her existence or identity on abstract mathematical entities and so would still have existed even if there were no sets. Rejection of excluded middle is essential to intuitionist logic and so the latter wouldn't be valid were the former true. Williamson says that 'such examples are quite unpersuasive' and 'tend to fall apart when thought through' (2007, chapter 5). They persuade me (and I've thought them through somewhat). You'll have to make your own mind up. Bernstein (2016), Berto and Jago (forthcoming), Brogaard and Salerno (2008), Nolan (1997), and Priest (2008) all provide accounts on which counterpossibles may be false. Berto et al. (2017) respond to Williamson in detail.

Second, it won't help Williamson's case *even if* all counterpossibles are trivially true. I know that Fermat's Last Theorem is necessary, but I believe the corresponding counterfactual $\neg$FLT $\Box\!\!\rightarrow \bot$ to be false. Since I don't believe that $\neg$FLT $\Box\!\!\rightarrow \bot$, I don't know it. And since I don't know it, it's presumed equivalence with $\Box$FLT can't be what explains my knowing that Fermat's Last Theorem is necessary.

Third, even if we set all counterpossible cases to one side, the view still doesn't have the right explanatory power. It takes the form: one knows that A; A is equivalent to B; therefore, one knows that B. But that's not valid reasoning. Someone who knows that A, but doesn't know the equivalence, may fail to know that B. She may be in a position to come to know that B, on the basis of A. But if she in fact knows that B,

but is unaware that it's implied by A, then it isn't her knowledge of A that underpins her knowledge of B.

It isn't plausible to claim that agents automatically or typically know the implication from counterfactuals to metaphysical necessity. For most agents encountering its derivation, the implication is surprising and informative. Most folk—perhaps even most philosophers—would not have a clear sense of whether the implication holds. Yet they have plenty of modal and counterfactual knowledge. Knowledge of metaphysical necessity isn't typically counterfactual knowledge.

3 Modal reduction to essence

The account of metaphysical modality which seems to me to offer the best chance of explaining our modal knowledge is the Finean essentialist account (Fine 1994, 1995b, c). This approach analyses, reduces, or grounds facts about metaphysical necessity in facts about the essences of things, either taken individually or all together.

Here is a rough outline of the idea. If something is necessarily such that A, then something or some things are essentially such that A. That necessity obtains *because* those things are essentially such that A. As Hale (2013, chapter 5) says, essence is the *source* or *basis* of necessity. The simplest case is when an object is necessarily F because it itself is essentially F. It is necessary that I am human because *being human* is part of my essence. But not all cases are like this. I am necessarily such that $5 + 7 = 12$, but it is no part of my essence that $5 + 7 = 12$. However, it is part of the essences of 5, 7, and 12 (and perhaps of addition too), taken together, that $5 + 7 = 12$. For it is of the essence of 12 that it is the successor of the successor of the successor of the successor of the successor of 7 and it is of the essence of addition that the mth successor of n is $n + m$. So it is necessary that $5 + 7 = 12$ and hence I am necessarily such that $5 + 7 = 12$.

The notion of essence used in such accounts is *broadly* the one Aristotle and Locke used. Locke spoke of 'the very being of any thing, whereby it is what it is' (Locke 1690/1997, III, §15). (Locke himself considered *real essences* to be unknowable to us. I disagree: Sect. 5.) More recently, Fine (1994, 1995b, c) and Lowe (2006, 2008, 2012a) have given accounts of essence along Aristotelian, Lockean lines. For Fine, an entity's essence is (or is specified as) 'the collection of propositions that are true in virtue of its identity' (Fine 1995b, p. 275). Fine outlines a number of interrelated concepts of essence, but we needn't go into the distinctions between them. We shall work with what Fine calls 'constitutive immediate essence' (Fine 1995c). This, according to Teitel (2017, fn 3), is the one 'which most closely corresponds to the pre-theoretical notion' and so works very well for our epistemological purposes.

On Fine's view, each entity x's essence is given in terms of a collection of propositions, each specifying some property essential to x. For Obama, these propositions may include *that Obama is human*, *that Obama is self-identical*, and *that Obama is a material object*. Fine also considers the essences of pluralities of objects. The pair of Obama and me has an essence, including *that Obama and I are distinct* and *that we are both human*. The latter follows from the fact that each of us is essentially human, but the former does not follow from any fact about Obama's or my essence, taken

individually. For what Obama is has nothing to do with what I am and vice versa; and so Obama's essence does not mention me, nor mine him. The proposition *that Obama and I are distinct* belonging to the essence of the pair of us is strictly in addition to our essences, taken individually. Fine requires that each entity and each plurality of essences has an essence.

Each proposition specified by an essence is necessarily true. And, Fine says, each necessarily true proposition belongs to the essence of some thing or things. For Fine, if proposition p is included in the essence of some entity or plurality of entities xx, and xx are included in some plurality yy, then p is included in the essence of yy. Given this monotonicity principle, an equivalent way to state the reduction is this: a proposition is necessary iff it is included in the essence of all things, taken together. This 'all things' is to be understood as the maximal plurality yy, such that any thing or plurality xx is included in it.

Teitel (2017) calls this the 'canonical reduction' of modality to essence. Correia (2006, 2012), Dasgupta (2016), Lowe (2008, 2012b), and Rosen (2006) accept and develop the general idea, and Cameron (2010) regards it as one of the three most promising reductions of modality. (Hale (2013) accepts some aspects of the view but rejects its reductive ambitions.) This basic approach can be finessed in a variety of ways. Fine himself offers refinements of the view (1995a, 2000). I'm going to ignore these complications here.

Wildman (2018) objects to the inference from essence to necessity, on the grounds that there are possible entities with contradictory essences. He considers tossing a coin, with incompatible outcomes *heads* and *tails*. Plausibly, these events essentially involve the coin landing heads and tails, respectively; but it cannot be that the coin lands both. If essence does not imply truth, then it cannot imply necessary truth, says Wildman (2018, §2). Contradictory essences are a distraction here. I'm essentially human, but it's not necessary that a human exists. My essence implies only that it is necessary that I am human if I exist. The essences of contingent entities, such as me, imply *de dicto* necessities conditional on existence. Wildman worries that this approach restricts our analysis to necessities that are conditional on existence; but not so. The claim is that any necessity has its source in the essence of some entities. If the necessity is not conditional on existence, then it must have its source in essences of non-contingent entities. Essences provide a ground for metaphysical modality. That is not to offer a simple one-size-fits-all translation from essence-talk to necessity-talk.

I'm going to diverge from Fine's approach and talk about essential properties. This talk easily translates into Fine's approach, for when I say that x is essentially F, Fine has the proposition *that x is F* as belonging to x's essence. Here is the account of essence I prefer. Essences are *constitutive* of material objects. Located properties 'bundle' together to form a material object; and each property in the bundle is essential to the material object thereby constituted. Each material object is numerically identical to a located bundle of its essential properties. This is *essential bundle theory* (Barker and Jago 2017). We might understand 'located property' as something like a trope (understood as an entity not dependent on its possessor for its existence or identity); or as a complex consisting of a Platonic universal and a spacetime region. The details (in Barker and Jago 2017) aren't important here.

There certainly are issues raised by this way of thinking about material objects and their essences. One concerns the conditions under which properties form bundles. In Barker and Jago (2017), I argue that any plurality of located properties forms a bundle whenever it is *grounding closed*: if the plurality grounds F, then F is in the plurality. (This guarantees that things that are essentially scarlet are thereby essentially red, for example, without implying that everything is essentially such that $A \vee \neg A$.) For the details and replies to objections, see Barker and Jago (2017). Another issue concerns the analysis of accidental properties (which can't be accounted for in terms of bundle-membership). Coincident entities typically share some but not all of their accidental properties: my body and I have the same shape and mass, but I am married whereas it is not. I give an analysis in Barker and Jago (2017).

On this picture, essences are not exotic metaphysical entities at all. In particular, and unlike Hale (2013, p. 132), I do not insist that a thing's essence 'distinguishes it from every other thing'. Nor do I assume that essences involve haecceitistic properties of *being that very thing*. Essences are composed of regular qualitative properties. This being so makes some progress in explaining how we can know about essences. If it can be shown that this approach provides a route to modal knowledge, that is one further reason to accept the theory. My strategy is then to explain our modal knowledge by way of our (implicit or explicit) knowledge of the essences of things. Hale (2013) and Lowe (2008, 2012b) adopt a broadly similar approach and Tahko (2018) reports that Fine supports a view along these lines. At the very least, the approach is worth investigating in more detail.

4 Access to essences

Any attempt to explain modal knowledge in terms of essence faces the following challenge. Even if there are such things as essences, they seem very hard things to know about. In general, we have no direct way of finding out whether a property F possessed by some object is essential or accidental to it. Oderberg (2007) argues that, although empirical science often tracks the essences of material entities, there is no direct empirical test for discovering them. If so, then there seems to be no prospect, in general, for explaining our modal knowledge in terms of knowledge of essential properties.

The worry may be brought out by considering some material entity that has causal powers in virtue of being an F. We then ask: what causal powers would be added if it were, in addition, essentially F? It seems the answer is: none. It is the possession of a causally efficacious property, and not the fact that it is possessed essentially (or accidentally), that grants an object the relevant causal powers. But if so, and if our knowledge of an object relies ultimately on our causal interactions with it, then it seems we cannot know whether a property possessed by an object is accidental or essential to it.

Lowe (2012b, p. 935) argues that we can avoid this kind of worry by understanding an entity's essence in terms of *real definition*: what it is to be that thing (or what it would be to be that thing, were it to exist). He then argues that

at least in the case of *some* entities, we must be able to know *what they are*, because otherwise it would be hard to see how we could know anything at all about them. How, for example, could I know that a certain ellipse had a certain eccentricity, if I did not know what an ellipse *is*? In order to *think* comprehendingly about something, I surely need to know *what it is* that I am thinking about. (Lowe 2012b, p. 944)

I agree with much of Lowe's analysis here. But knowledge of a thing's essence is neither necessary nor sufficient for being able to think about it. It isn't necessary because my true beliefs about what a given thing is may be enough for me to single it out in thought, even if those beliefs fall short of knowledge. I may successfully single out a person in thought *as* a person, even in a room full of realistic androids where my true but unreliable belief that they're a person fails to count as knowledge. That undermines Lowe's argument that we must be able to *know* essences on the grounds that we can think about things. Knowledge of a thing's essence is not sufficient for thinking about that thing because what I know of a thing's essence might not be enough to distinguish it from other things. As I look up from writing, I notice the couple opposite me arguing. Their essential properties I know about—being people, being human, being conscious—do not allow me fully to distinguish one from the other. I need to distinguish them in terms of their inessential properties. I might think in terms of *the person to my left*, or *the person to my right*.

Even setting these worries to one side, it is desirable to have an account of *how* we come to know of a thing's essential properties (and *that* they are essential to it). To begin to respond to the challenge, I will consider a related problem: the case of distinct but coincident entities and how we manage to refer to just one of them. The pairs of entities in question may be permanently coincident, as the statue and the lump of clay are in Judith Jarvis Thompson's famous example (Jarvis Thomson 1998), but they need not be. In fact, it's better to focus on more mundane cases, such as a person and their body, or a table and the mass of material which makes it up. Most philosophers agree that these colocated entities are distinct, for one of each pair typically predates or will outlive the other.

It's more controversial whether permanent coincidence implies identity. I think not (Barker and Jago 2014), as do Doepke (1982), Fine (2003), Lowe (1983), Jarvis Thomson (1997), and Wiggins (1980). The statue, but not the lump of clay, is artistically beautiful, highly valuable, and unable to survive radical reshaping (Fine 2003). Each case seems to reflect a genuine difference in properties between the statue and the clay, which implies their distinctness. (Moreover, any substantial approach to essence seems committed to their distinctness, since the statue and the clay have distinct essences.) At any rate, distinct but temporarily coincident entities will be sufficient to make my case.

The problem of reference in these cases is this. Coincident entities are microphysically indistinguishable. They share all their microphysical parts. And plausibly, a material object's causal powers supervene on its microphysical parts. This implies that the statue and the clay share all their causal properties. (In the case of temporarily coincidence, we may focus on two entities which are microphysically indistinguishable at the relevant times. Consider two entities which have always been coincident,

but which will diverge in the distant future. It's hardly plausible that any causal difference now derives from microphysical differences in the distant future.) Reference is a causal process. We secure reference to a material object, ultimately, by exploiting its causal properties in a way that distinguishes it from other entities. But then, if there are no causal properties which distinguish between two coincident entities, it follows that we cannot refer to one of them without thereby referring to the other. And yet, it seems, we do refer to one without thereby referring to the other. So there must be something wrong with this form of sceptical argument.

If we can refer to one of a pair of causally identical objects but not the other, then perhaps we can know some distinguishing information about them; and perhaps this distinguishing information pertains to their essence. That is the line I will suggest below. At the least, the sceptical argument about knowing essences is cast into doubt, for it has the same form as the sceptical argument about reference we've just rejected. This undermines our reason for thinking that we cannot know about the essences of material objects. What we now need is a positive account of how we can know about essential properties.

To begin, I will consider the case of reference in more detail. We visit MOMA, head to the 5th floor, and edge our way through the huddle to see what everyone's come to see (or are using as the background to their selfies). 'There it is!' Somehow we manage to refer, not to a mere painted canvas, or to the collected molecules which make it up, or to the coincident region of space, but to Van Gogh's *Starry Night*. Given the multiplicity of coincident entities in the painting's region, we do not secure reference to it merely by indicating its location (although specifying the location is undoubtedly part of the story). Having indicated the location, we then need to single out which of the coincident entities we intend. We may do this explicitly, by specifying *the painting*, or using its name, 'Starry Night'; but more often, contextual salience will do the job for us. We're all here to see (or have selfies in front of) artworks.

What secured reference, in this case, is a location plus a specification which distinguishes between the coincident objects in that location. And in this case, the specified property *being a painting* is essential to the referent. This is often the case. We single out our referent by specifying our interest in *the artwork*, or in *the person*, or whatever. We specify the kind of thing we're interested in, where that kind is a property the object has essentially.

This picture generalises. For any material object, many properties will be found within the spacetime region coincident with it. Some of these will be essential to a; some inessential to a; and some will not be possessed by a at all. (The lump of clay is not artistically valuable and is not as financially valuable as the statue, for example.) There is no particular problem in referring to the spatiotemporal region or to the properties we find there. (Or at least, the usual problems—including how to specify a precise location—are not problems specifically for modal knowledge and so need not detain us here.)

We may then specify a particular bundle of properties by specifying a location and enumerating the properties thereby bundled. Now recall that I am identifying material objects with bundles of located properties (Sect. 3). A partial enumeration of properties may be enough to single out a unique bundle. There is just one artwork in the exact region of Starry Night and so we single it out, uniquely, using 'the artwork' or 'the

painting'. If a partial specification does not succeed in singling out a unique bundle, then it is indeterminate to which bundle we refer (out of the colocated candidates).

(Perhaps this means we refer to one bundle, but not determinately; perhaps not. Perhaps we refer to a vague object, if there are such things. Or perhaps all we can say is that our reference is indeterminate, so that we say something true in ascribing some property F only when each precisification is F. None of what follows turns on which option we accept.)

This is the basic story of how we can refer to coincident material objects. We don't always refer in this way. We often use a proper name. But a proper name needs an initial anchor: a naming event, which links subsequent uses of the name to that object (Kripke 1980; see Dickie (2011) for discussion). A name is anchored to a specific material object—a property bundle—by specifying a location and some of the properties found there. If the naming event succeeds, that name can then be passed down a causal chain and can be used by speakers with little knowledge of how that name came to have its bearer.

The point I take from this picture of reference is this. We secure reference to a material object in this way by singling out some of the properties in the property bundle that metaphysically constitutes that object. If we're successful in referring to anything, it cannot fail to be a bundle containing those properties. And, by definition, the properties in the bundle are essential to the material object they constitute.

In the next section, armed with this account of reference to material objects, I will argue that we can, and often do, have knowledge of the essences of material objects.

5 Knowing essences

When we refer to a material object, we typically conceptualise it in terms of some property essential to it, or which conceptually implies a property essential to it, and which distinguishes it from other colocated entities. Most users of the name 'Barak Obama' conceptualise its bearer as a *person*; most users of 'Starry Night' conceptualise the bearer as an *artwork*. I don't claim that one must conceptualise an object under some kind in order to think about it, but only that in the typical case, we do.

(This account is intended to be compatible with accounts on which we can refer to something without knowing the kinds it falls under, so long as such cases are rare. Breckenridge and Magidor's account of *arbitrary reference* (2012) is one such account. I needn't take a stand on their proposal here, for uses of sortal-free arbitrary reference terms, such as 'the arbitrary object', are rare.)

We may, in using a proper name, defer to someone else's way of conceptualising it. It seems one can successfully refer using a proper name whilst in a high degree of ignorance of the properties under which the referent falls. But such cases are rare. We typically conceptualise the intended referent under some kind, or essential property or other. (Dickie (2011) argues that information about the referent's kind must be preserved along the causal chain involved in reference.)

When we conceptualise an object under some kind F, it is natural to think of it as being essentially F. People are essentially people. Artworks are essentially artworks. Material entities are essentially material. (Mackie (2006) is a dissenting voice.) So

there is a tendency linking (i) reference to a material object, (ii) our conceptualising that object under some kind F, and (iii) our belief that that object is essentially F. These links may have exceptions. I claim only that they are fairly typical tendencies, embedded in the way we typically think about objects.

When one has a referent a in mind and conceptualises it under some kind F, and thereby believes it to be essentially F, that belief will often constitute knowledge that a is essentially F. That is what I shall now argue. For a true belief to constitute knowledge, it must have an appropriate connection to reality: one that is reliable and which renders the belief safe from nearby error. We have already established that the link in question cannot be a simple causal one, caused by those properties being essential to the object in question. For a property has the same causal profile whether it is possessed essentially or accidentally.

Instead, the reliable connection to reality arises due, in part, to the beliefs one forms about the kind of object one is thinking about. In conceptualising *Starry Night* as an artwork, I single out in thought a property bundle containing *being an artwork*. (And if all else goes right in singling out the object of my thought, that bundle is none other than *Starry Night*.) So the object I single out in this way is guaranteed to be essentially an artwork. This establishes a robust connection between my belief that *Starry Night* is essentially an artwork and the fact that it is.

I am not claiming that my belief in any way constitutes the fact that *Starry Night* is essentially an artwork. Facts about essence are fully mind independent. Perhaps our attitudes and reactions help to fix properties like *being an artwork* (see the discussion of response-dependence in Wright (1992)). But if they do, they do no further work in making *being an artwork* essential to Starry Night. In the case of fully mind independent facts, like an electron's being essentially negatively charged, our beliefs play no role whatsoever.

The reliable link I'm describing between belief and fact is of the right form to render the belief *safe*, in the technical sense. A safe belief is one which could not easily have been false. One way to capture the idea is counterfactually (Sosa 1999, p. 146):

(SAFETY) Agent a's belief that A is safe iff, were a to believe that A, A would be true.

However, for this kind of analysis to be meaningful in our current setting, we need the ability to distinguish the safe from the unsafe beliefs in necessary truths. We need to consider situations—or impossible worlds—in which necessities fail (Berto and Jago forthcoming; Jago 2014a; Nolan 1997). In our present setting, we need to consider situations in which Starry Night isn't essentially an artwork. We then ask whether it is in the closest situation where the agent believes it to be so.

With all of this in place, the argument goes through much as before. Were I to believe (in circumstances different from the actual ones) that Starry Night is essentially an artwork, Starry Night would indeed be essentially an artwork. For in those circumstances, given my belief, I would conceptualise Starry Night as an artwork and would thereby single out a bundle containing *being an artwork*. Holding fixed the theory of essential properties (which identifies them as those found in the relevant bundle), this implies that that bundle—Starry Night—is essentially an artwork, just as required.

We need to consider not only our knowledge of which properties are essential, but also of which properties are inessential, to given material objects. This will be important when we consider knowledge of the possibilities afforded to a particular object (Sect. 6). The argument above does not extend to the properties we consider a bundle to be lacking, for the simple reason that we rarely conceptualise a material object in terms of the kinds it does *not* fall under.

Nevertheless, we often do know which of a thing's properties are inessential to it. I know that much about my current situation—my location, my state of health, the fact that I am typing—is utterly inessential to who I am. You know this too about me and I know similar facts about you. The best explanation for this *knowledge of inessentiality* is that it is embedded in our concepts. It is built into the concept of being a certain kind of thing—a person, a human being, an artefact, a material entity—that certain other properties are inessential to things of those kinds.

On this approach, it is part of our concept of being a person that, although a person must be located somewhere, their exact location is not part of what makes them the person they are. Roughly the same goes for our concept of artefacts. This gives rise to knowledge of inessentiality.

Just how far this kind of conceptual knowledge takes us is open to debate. It might be part of our concept of an ordinary material object in general that exact locations are not part of their essence, for example. But I do not want to rule out the possible existence of material entities which are essentially 'stuck' where they are. Hirsch (1976, §2) gives the example of *incars*, 'extraordinary' objects, colocated with ordinary cars when they are in garages, but which exist only inside those garages. Such entities, if there are any, exhibit very strange behaviour:

> As you begin to back out, the incar (if such a thing exists) shrinks and comes to be colocated with the part of the car that is still inside the garage. When you have finished pulling out, the incar has ceased to exist altogether. (Korman 2011, §1.3)

Such entities are denizens of *permissivist* ontologies, which accept more than just the 'ordinary' objects (roughly: the kinds of things non-philosophers believe to exist). For all I know, such entities are possible. So I certainly don't claim to *know* that no material object has precise location-properties as part of its essence. But all such examples of extraordinary objects have an air of absurdity on first encounter with the concept, precisely because they conflict with the ordinary concept of a material object. Philosophy teaches that we know little about what is essential to being a material entity in full generality. Much more could be said on the topic, but as it is somewhat tangential to our main concerns, I shall move on.

There is a further source of our knowledge of inessentiality, which rests on an *independence principle*. It says that a relational property is essential to some entity x only when x depends for its identity on the relata of that property. This principle rules out the fact that I married Anna last year as being essential to me. Anna and I depend upon one another practically, but not metaphysically, and so any relation we bear to each other is inessential to each of us (Fine 1994). But the principle allows that some things may stand in some relation essentially: it is essential to the number 2 that it is the successor of 1, for example.

We do not always know which things depend on which. Sometimes we're completely in the dark. But there are many, many clear cases. I don't metaphysically depend on you, nor you on me; and neither of us metaphysically depend on the Eiffel Tower, on sets containing us, or on what we each had for breakfast earlier today. So I can easily infer that your existence, that of the Eiffel tower, membership of my singleton, or what I had for breakfast, are not essential to me.

6 From knowing essences to modal knowledge

The final stage of the story takes us from knowledge of essences to modal knowledge. We'll approach this in two stages: knowing how things must or must not be and knowing how things might or might not have been.

Our central metaphysical premise in this story is the Finean reduction of modality to essence (Sect. 3). But our story needs more than just these metaphysical principles. We may know that some entity is essentially F; and its being so implies that it is necessarily F. But it does not follow that we know that it is necessarily F. (Horvath (2014) argues that Lowe's (2008, 2012b) account of modal knowledge fails on these grounds.) We may be unaware of the link between essence and necessity; or we may believe it, but without sufficiently reliable grounds for it to count as knowledge; or we may genuinely know the link, but without ever combining it with our essence-knowledge to draw a conclusion about necessity.

The last case is one in which we know both some implication $A \rightarrow B$ and its antecedent A, but we do not know its consequent, B. Such cases are perfectly possible: knowledge is not automatically closed under known implication (Jago 2014a, b). But these cases need not concern us here. Our concern is with how we have modal knowledge when we have it at all. And whenever one knows some $A \rightarrow B$ and A, one is thereby in a position to come to know that B, on the basis of deduction from one's prior knowledge. (Hawthorne (2005, p. 29) and Williamson (2000, p. 117) discuss and endorse similar epistemic closure principles.)

The problematic case is the one in which one does not know that being essentially F implies being necessarily F. (This problem is analogous to the one raised against conceivability and counterfactual accounts in Sect. 2. In general, A's implying B helps explain one's knowledge of B only if one grasps the implication.) I can hardly claim that ordinary knowers are aware of Fine's reduction of modality to essence (and many philosophers aware of Fine's theory don't believe it). Any metaphysical reduction of necessity to essence will be far too theoretical to act as the epistemological link between knowledge of essence and modal knowledge. Instead, the link between knowledge of essence and modal knowledge is a conceptual one. It is a conceptual truth that whatever is essentially F is necessarily F. It is part of our concepts of essence and of necessity that whoever possesses those concepts and knows that x is essentially F thereby knows, or is in a position to come to know by reflection, that it is necessary that x is F.

I say *our* concepts are like this; but what if yours are not? Then you have concepts that differ from mine (and I take it, from most people's) in a significant way. You are in the situation of someone who wonders, coherently within their conceptual scheme,

whether knowledge is factive, or whether truth satisfies the T-scheme. Perhaps, as a result of this conceptual deviation, you miss out on modal knowledge. You may still have robust modal beliefs and believe yourself to have roughly the same modal knowledge as others. But in fact you don't. That is just as we should expect, just as someone with a non-standard conception of knowledge or of truth will miss out on some knowledge about knowledge or truth. Note that by talking about 'standard' concepts, I don't mean to imply that there is some unique concept that all standard agents exactly share. Rather, I mean that there are certain principles governing our use of concepts like *essence*, *necessity*, *knowledge*, and *truth* (such as the factivity of each concept), such that any deviation from those principles suffices for a concept to be classed as non-standard.

In this way, knowledge of essences underpins modal knowledge of propositions of the form *that x is necessarily F*. It also underpins knowledge of the related propositions *that it is necessary that x is F* and, for any *y*, *that y is necessarily such that x is F*. That this latter pair of propositions is implied by the former proposition is also embedded in our concept of necessity.

I claim that the concept of necessity is linked to the concept of essence. There is evidence for the link in everyday usage. For example, having been asked why electrons are negatively charged, or why bachelors are always men, one may reply:

(4) Electrons have to be negatively charged. That's *just what it is* to be an electron.
(5) Bachelors have to be men. That's part of the nature of being a bachelor.

These are fairly natural, non-technical ways of responding to the question. The phrases 'what it is' and 'part of the nature' single out essential properties and are used to justify claims about necessity. That the explanations are natural suggests the link from essence to necessity is embedded in everyday conceptual schemes.

Now we turn to knowledge of possibilities. I know that I could have been where you are right now and you here. My belief is based on my understanding of the kinds of things that you and I (and here and there) are. You and I are both human beings, for whom each specific location is inessential. My front room is a very ordinary room in an ordinary location. In particular, nothing about what makes it the place it is excludes your being here. I know all that. So I know that nothing in the essences of those entities excludes your being here. I may then infer that you could have been here. If I do, the inference will preserve knowledge and so I will come to know that you could have been here.

In general, the possibilities for an entity *x* do not depend on *x*'s essence alone. The possibilities for *x* are those facts not excluded by any essence (Sect. 3). But that reductive principle is no practical help in coming to know about possibility, for we cannot hope to know about all essences. Fortunately, we have the following heuristic principle: in evaluating whether whether *A* is possible, we need to consider only those entities which *A* is about. Although it is hard to spell out exactly this notion of what a sentence is about, we have a good enough intuitive handle on the notion for the heuristic to be practically effective. (Fine (2015), Yablo (2014), and Jago (2018) offer technical accounts of *aboutness*.)

To evaluate whether

(6) The Eiffel Tower could have been closer to the Seine

is true, we first note that (6) is about the Eiffel Tower, the Seine river, and (implicitly) the layout of Paris. We then interrogate their essences and find that none of the properties found there rule out the Eiffel Tower's being 1mm closer to the Seine. So, using the heuristic principle, it is relatively easy to come to know that (6) is true. That same principle directs us to the essences of 5, 7, and 13 when asked whether

(7) The Eiffel Tower could have been such that $5 + 7 = 13$

is true. We then quickly recognise that (7) is false. In this way, the heuristic helps deliver knowledge of possibility from our knowledge of essence.

7 Evaluating the essence approach

The essence approach to modal knowledge makes two predictions which set it apart from other accounts (and, in particular, from the conceivability approach). First, it predicts that knowledge of necessity is more immediate than knowledge of mere possibility. Second, it predicts that there are a good number of simple modal facts about which it would be very difficult to come to know.

Knowledge of necessity arises, without any cognitive intermediary, from knowledge of essence. Having discovered of something that it is essentially such that A, the inference to A being necessary is immediate. Knowledge of the mere possibility that A, by contrast, is acquired through knowledge that there are no things whose combined essence rules out that A. This is a more demanding cognitive task. One must first reason which things are relevant to the claim that A and interrogate one's concept of the kinds they fall under, searching for information that $\neg A$. It is only when none is found that one may form a safe belief that it is possible that A. So in general, knowledge of necessity is easier to come by than new knowledge of mere possibility.

This prediction is in contrast to that of the conceivability view (Sect. 2), which deals primarily in our knowledge of possibility. On that view, we imagine that A and on that basis come to know that A is possible. Knowledge of necessity is then based on knowledge of what we cannot imagine.

There is some evidence that the essence-based approach is correct on this score. When I ask my first year class whether I could have been somewhere else (and explain the target sense of 'could'), they nearly all reply, after very little thought, that I could. They have little trouble finding sense in the question. But when I ask them whether I could have been a turnip, they find the question nonsensical. It is so clear to them that it is necessary that I am a human being that they assume I'm asking a trick question, or that I mean something else. This seems to me to be some evidence—albeit hardly conclusive—for taking knowledge of necessities to be primary and knowledge of mere possibilities to be derivative.

The second prediction of the account is that many modal facts are hard (and perhaps practically impossible) to discover, for our knowledge of necessities can go only as far as our knowledge of the essences of things. And in many cases, our knowledge of essences doesn't go very far. We know the kinds under which a thing falls and the properties implied by those kinds. This gives us knowledge of essential properties. And we know, in general, that location properties and relations involving things on

which the entity in question doesn't depend are inessential to it. But then our epistemic access to a thing's essence may well give out. We do not know (through these epistemic routes) whether it is essential to *Shadowplay* that it was written by Joy Division; or whether it is essential to Guernica that it is titled 'Guernica'; or whether a certain level and type of bodily continuity is essential to diachronic personal identity. And so we do not know whether the corresponding facts hold necessarily or contingently.

That explains a lot. It explains why we ask these kinds of questions in philosophy. We don't know the answers, but we'd like to. It explains why we ask these kinds of questions in *philosophy*. The answers are not empirically accessible; nor are they inferable (merely) from linguistic, historical, or sociological data. Moreover, we are interested in those modal questions, primarily, because we are interested in the natures of things: what it is to be a musical work or artwork and in what it is to be the same person over time.

Contrast this with the picture that arises from the conceivability account of modal knowledge (Sect. 2). I can imagine a situation in which in turns out that *Shadowplay* was written by Joy Division's engineer, Martin Hannett. I can imagine Picasso having named Guernica 'Abstract #50'. I can imagine my body changing radically from one moment to the next, whilst I remain the person I am. I can even imagine being an immaterial substance, but still feeling pain.

Imagination—at least in the minimal, detail-poor way that's supposed to be relevant to our modal knowledge—is easy. And herein lies a dilemma for the conceivability account. If modal knowledge follows easily from our imaginings, then modal knowledge is easy too. The kinds of modal questions just mooted are then easily settled, for we can easily come to know their answers (all in favour of the mooted non-actual possibilities). But, I suggest, we have no such knowledge. If modal knowledge does not in general follow from our imaginings, on the other hand, then the conceivability account will be unable to explain the modal knowledge we do in fact have.

8 Conclusion

Essences need not be metaphysically bizarre entities: they may simply be bundles of located properties (Sect. 3). We can single out these bundles, in thought or language, by conceptualising them under kinds (Sect. 4). This gives us a source of knowledge of essence (Sect. 5). This knowledge leads to knowledge of necessity and possibility (Sect. 6). Some consequences of the approach are unusual and may speak in its favour (Sect. 7).

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