

Meditations on Metaphysical Modality

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Overview

The dissertation begins with discussion of a stylised example of modal discourse. The focus then turns to modality in general. The close interrelationship between necessity, possibility and contingency is outlined and the familiar notion of possible worlds as a heuristic tool for understanding modality is presented. Some generic problems relating to the analysis and epistemology of modality are considered. The idea that there are different senses of modality is introduced and the alethic/non-alethic and absolute/relative distinctions for senses of modalities are highlighted. Finally, five prospective groundings for modality are surveyed: primitivism, modal realism, essentialism, conventionalism and deflationism; it is seen that all of these accounts have their problems.

With this preliminary discussion out of the way, attention turns to the specific subject of metaphysical possibility and necessity proper. It is argued that the notions have been beset with an unfortunate lack of clarity. Much of the confusion has stemmed from the fact that the term 'metaphysical modality' and its cognates are rarely defined clearly. Consequently, usage of this terminology has been inconsistent. Sometimes the term has been used interchangeably with logical modality; at other times, authors have been keen to distinguish between them. Distinctions are drawn between strictly, narrowly and broadly logical modalities. Only the latter may be identified with metaphysical modality. Complaints made by Quine about the incoherence of modal talk can be challenged by appealing to the distinction between narrowly and broadly logical modalities. The significance of alternative logics for metaphysical modality is briefly discussed.

Another point of contention has been the relationship between metaphysical and what might be called 'scientific' modality, the modality of fundamental science. As the subsequent discussion shows, the name can be considered a blanket term, which covers a group of similar modalities: physical, nomic or nomological, causal and natural. Having distinguished these, I turn to consider the vexed question of whether and to what extent they coincide with metaphysical modality. The focus of this debate has centred on whether laws of nature should be considered metaphysically necessary or contingent. Even if the key tenets of scientific essentialism are granted, then the crux of the debate turns to the existence, or otherwise, of alien properties. The division here is seen to hinge on whether *a posteriori* or *a priori* methods are most appropriate when engaging with modality.

In order to make sense of this, the relationship between conceptual and metaphysical possibility is examined. The deficiencies of the human imagination in assessing possibility are summarised before a contrast is made between *prima facie* and ideal conceivability. It is suggested that the

latter entails metaphysical possibility. Finally, the traditional Kripkean separation of conceptual possibility within the one-dimensionalist modal framework is compared with the innovations of two-dimensionalism.

I conclude with the observation that although terminology has been inconsistent there are reasonable grounds to identify metaphysical modality with that sense of modality which is alethic, absolute and all-encompassing in its subject matter. However, the precise extent of metaphysical modality remains controversial. Whether it is judged to extend beyond scientific modality will depend on preferences for *a priori* as opposed to *a posteriori* methods in philosophy.

1 Introduction

“A boy is about to go on his first date, and is nervous about what to talk about. He asks his father for advice. The father replies: ‘My son, there are three subjects that always work. These are food, family, and philosophy.’

The boy picks up his date and they go to a soda fountain. Ice cream sodas in front of them, they stare at each other for a long time, as the boy's nervousness builds. He remembers his father's advice, and chooses the first topic. He asks the girl: ‘Do you like potato pancakes?’ She says ‘No,’ and the silence returns.

After a few more uncomfortable minutes, the boy thinks of his father's suggestion and turns to the second item on the list. He asks, ‘Do you have a brother?’ Again, the girl says ‘No’ and there is silence once again.

The boy then plays his last card. He thinks of his father's advice and asks the girl the following question: ‘If you had a brother, would he like potato pancakes?’” (Sober, 1992)

Jokes such as this depend for their success on a well-worn cliché of philosophy as being entirely uninterested with the ‘real world’, with things ‘as they actually are’. It is a conception of absent-minded philosophers concerned with hypothetical and futile thoughts which dates back at least to antiquity: Socrates, for example, was parodied as a man with his head in the clouds, utterly oblivious to the ordinary events of the world around him (Aristophanes, 2002). As with any stereotype, there is a grain of truth contained within it. Philosophers do indeed have a penchant for generality. Unfortunately, this inclination towards abstraction sometimes leads to confusion, rather than clarity. Arguably, this tendency has manifested itself in philosophical discussions involving metaphysical modality. Now, such a sad state of affairs would not be so regrettable were it not for the fact that, to judge by the ubiquity of this heady phrase and its variations in the literature, the notion clearly plays a vital role in several areas of philosophy. The aim of this dissertation is to get to grips with this notion of metaphysical modality.

Although the notion at hand is supposed to be quite intuitive, neither the word ‘metaphysical’ nor ‘modality’ is used very often in ordinary conversation. Therefore, uninitiated readers will be forgiven for finding themselves uncertain of what the phrase might mean. A good place to start is by considering the boy's counterfactual question, ‘If you had a brother, would he like potato pancakes?’ It is a question which asks what might have been, rather than what is actually the case. It therefore departs from purely “categorical” (Melia, 2003, p. 1) talk about the world and arrives at so-called ‘modal’ discourse. Accordingly, statements are neither simply true nor simply false. Instead, it seems some statements must be true while others merely might be.

Thus, there are ‘modes’ of truth, or ways in which statements are true or false. (Sider, 2003, p. 180) ‘Modality’, then, is the general term used by philosophers and logicians to cover possibility, impossibility, necessity and contingency, and, perhaps, other cognates such as essence and accident (Garrett, 2011, p. 38). Looking back to our example, in asking his counterfactual question during the date, the boy presumably thinks that, although the girl does not actually have a brother, there is some reasonable sense in which it is possible for the girl to have had a brother (and for that brother to have liked potato pancakes).

At first sight, departure from categorical discourse is apt to seem frivolous. (Indeed, part of the situational humour derives from the apparent absurdity of the boy’s query.) Furthermore, it might well be wondered how there could be any sort of sane, sensible way for the girl to have replied to such a silly enquiry. The question is, surely, a conversation-stopper. On second thoughts, however, it seems there is at least one way in which she could make a stab at a serious answer. Her own taste in food, she reasons, is the result of a complex interaction between her genes and environment. To the extent that siblings typically resemble each other in these respects, their tastes will be similar. Since she does not like potato pancakes, neither will her hypothetical brother. So the girl says ‘No,’ yet again. The poor boy’s date is going nowhere fast!

Of course, the girl’s reasoning here is superficial and her conclusion rather too quick. Marmite, famously, is a foodstuff which strongly divides opinion within families: you either love it or hate it, or so its marketing would have us believe. Siblings, though similar, are by no means identical and the relation between someone’s genes, environment and sense of taste is terrifically complicated. Even if the particular egg and sperm originating the fictitious brother were specified, current scientific understanding has not yet developed sufficiently to predict definitively the specific tastes that he would have. Given this, perhaps the best answer the girl could give is ‘I don’t know’. However, the significant point which remains nevertheless is that, perhaps contrary to initial appearances, the question is intelligible.¹

In any case, less esoteric and complex questions about ways things might and must be are very far from idle. Indeed, along with counterfactuals, modal notions seem to have an important role to play in issues ranging from logical consequence to laws of nature, causation and supervenience. (Hale & Hoffmann, 2010, p. 1)

¹ The intelligibility of modal discourse is not entirely uncontested, however, as discussion of Quine in §4.1.4 shows.

2 Modality

2.1 Necessity, contingency and possibility

An important feature of modal notions is that most can be defined in terms of one another.

Where φ represents a proposition:

“symbolizing ‘It is necessary that φ ’ as ‘ $\Box \varphi$ ’, one can define the other modalities thus:

it is possible that φ : $\sim \Box \sim \varphi$

it is contingently true that φ : $\varphi \ \& \ \sim \Box \varphi$

it is contingently false that φ : $\sim \varphi \ \& \ \sim \Box \sim \varphi$

it is impossible that φ : $\Box \sim \varphi$

it is contingent whether φ : $\sim \Box \varphi \ \& \ \sim \Box \sim \varphi$ (Sider, 2003, p. 184)

Indeed, in the formal languages of the normal modal logics, it is axiomatic that the necessity operator (‘ \Box ’) and possibility operator (‘ \Diamond ’) are logical duals. However, the basic thought which underlies these formal apparatus can be appreciated at an intuitive level: it is surely just analytic that, for example, any necessary proposition is such that it is not possible for it to be false.²

A happy consequence of these equivalences is that our ideological taxonomy can be reduced. We may talk of modality overall without worrying about whether what is being said applies only to cases of possibility and not to instances of necessity, or *vice versa*.³

2.2 Possible worlds

Although possible worlds are not the only way to elucidate the subject of modality, they are certainly the most popular.⁴ Early precursors of this approach can be found in Carnap’s use of

² Although it is acknowledged that “the orthodox view in modal logic, and the philosophy of modality, is that [...] *must* and [...] *could* are interdefinable and interintelligible” (Loftson, 2001, p. 87), the principle is not entirely uncontroversial. For example, Loftson (2001, pp. 87, 93) aligns himself with A. J. Prior in refusing to countenance this principle. Unfortunately, I cannot afford to enter into the intricacies of this debate in the space available here.

³ However, this fact notwithstanding, it remains “a good question whether, and if so in what sense or senses, possibility is prior to necessity or vice versa. It is also a good question in epistemology whether, and if so in what sense or senses, knowledge of possibility is prior to knowledge of necessity, or vice versa.” (Garrett, 2011, p. 51 n. 1) Some arguments for the view that knowledge of necessity comes first are given by Hale (2002a). Again, I shall not be able to argue about these niceties here.

⁴ The most prominent alternative is referred to as ‘modalism’. On this approach, instead of quantifying over possible worlds or objects, the modal operators are taken to be primitive terms. For an overview and discussion of some of the expressive limitations and intuitive failures and other difficulties of this approach, see Melia (2003, pp. 81-98).

'state descriptions' and "Hintikka's *model sets*, or sets of consistent sentences" (Girle, 2003, p. 4) but the idea really began to take hold later with the publication of writings by Adams, Kripke, Lewis, Plantinga and Stalnaker, amongst others.⁵

A classic statement of, and notorious argument for, the position is given by Lewis (1973, p. 84):

"I believe that there are possible worlds other than the one we happen to inhabit. If an argument is wanted, it is this. It is uncontroversially true that things might be otherwise than they are. I believe, and so do you, that things could have been different in countless ways. But what does this mean? Ordinary language permits the paraphrase: there are many ways things could have been besides the way they actually are. On the face of it, this sentence is an existential quantification. It says that there exist many entities of a certain description, to wit 'ways things could have been'. I believe that things could have been different in countless ways; I believe permissible paraphrases of what I believe; taking the paraphrase at its face value, I therefore believe in the existence of entities that might be called 'ways things could have been'. I prefer to call them 'possible worlds'."

Considerable disagreement persists about whether possible worlds are real or fictional, abstract or concrete.⁶ Fortunately, although some of these issues will be considered while introducing the traditional views of metaphysical modality of Kripke and Lewis, reaching a conclusion on these matters is tangential to the main concerns of the dissertation. Instead, possible worlds will simply be exploited as an intuitive, heuristic tool for explicating modality.

2.3 Epistemological difficulties with modality

An immediate difficulty for those committed to using modal language is epistemological. While everything that actually is the case or that actually happens is experienced more or less directly, the process of understanding and knowing what might or must happen appears to be far more indirect. (Although it is perhaps worth noting that our means of knowledge about *concreta* are different to ways of knowing about *abstracta*; usually, the former is supposed to be the result of some spatiotemporal, causal process of perception; the latter is sometimes thought to be the outcome of an analogical process of intuition.)

Some modal claims can be ruled in or out purely on the basis of observations of actual objects and events. If p is actually the case, then it follows that p is possible. Similarly, if $\sim p$ is actually

⁵ See Loux (1979), which collects together many of these important early papers and provides a useful introduction to the development of theories of possible worlds as a means of interpreting and systematising modal logics.

⁶ Divers (2002) offers both a general survey of the various positions and a book length treatment of the debate between what he calls genuine realism (GR) and actualist realism (AR).

the case, then it follows that p is not necessary. Unfortunately, definitional modal deductions such as these are trivial and uninteresting. Philosophers and ordinary individuals are typically concerned with more substantive modal claims: with what is necessary or with what is 'merely' possible (not actual, but possible nevertheless).

The process of discovering what must be (or what is not but might be) seems to share certain similarities with noticing causality or morality. The philosophical literature provides us with a standard example for each of these phenomena: a billiard ball rolls along a table top, connects with another ball and stops, the other ball begins to roll in the same direction as that in which the initial ball rolled; a woman with knife in hand continues to stab at random a man who is clearly in great pain. If presented with these putative instances of causation and immorality, the oddness of responding 'Where is the causation?' or 'Where is the wrongness?' in each respective case is of a very different kind to the incongruity of asking 'Where are the billiard balls?' or 'Where are the people?' While asking the latter questions seems to betray delusion or linguistic incompetence, the former responses are deemed intelligible – although it is perhaps a sure sign that the respondent in question is a philosopher.

Famously, causation and morality were understood by Hume to be nothing more than projections of our subjective sentiments onto the world rather than objective features of reality. It is no coincidence that an expressivist theory of modality was proposed by someone who considers himself to be an intellectual heir to Hume. (Blackburn, 1986, pp. 122-123)

The more general insight, however, should certainly be acknowledged and preserved. If it is to be successful, a theory of modality will have to be able to account for the common-sense platitude that many modal claims are known. A plausible metaphysical theory of modality should be able to integrate a plausible epistemological story about how modal statements are known: "the two accounts must [...] dovetail" (Peacocke, 1997, p. 522).

2.4 Analytical difficulties with modality

Any theorist who aims to explain or reduce modality in more familiar terms seems to face an insuperable predicament which is essentially a customised version of the famous Euthyphro dilemma (Blackburn, 1986, pp. 120-121). It is easiest to illustrate this argument by focussing on the example of necessity. Either the necessity will be explained by another necessity or it will be explained by a non-necessity. Taking the first horn, it is clear that the source of some necessity or other can flow from that of another; but it is also clear that the source of necessity *simpliciter* cannot ever be explained in this way. Taking the second horn, if the ground of necessity is reduced to something which is contingent, then the original mark of necessity threatens to disintegrate and disappear. Either way, it looks like necessity cannot be analysed.

Although this argument seems to be a more fundamental problem than the epistemological concerns, it has received short shrift from philosophers who have argued against it quite convincingly (Cameron, 2010a). Constructing a plausible theory of modal epistemology, however, has proved more demanding and this matter is far from settled.

2.5 Senses of modality

I hope the modal part of our present subject has at least been clarified a little and it is somewhat clearer why it has been thought problematic. Until now, the metaphysical part has not yet been touched upon. In the discussion above, it was assumed that the boy thought it was ‘in some sense possible’ for the girl to have had a brother. However, it was not specified precisely quite what the sense of possibility in play was. A popular suggestion is that there are several different senses of possibility and necessity and that these can be disambiguated by context. A fanciful aeronautical example will serve to illustrate the basic idea:

“you might well want to say that ‘it is impossible for me to fly’ is true or false depending upon the context you are in. For instance, if I tried to leap from a rooftop, confident that I would fly like an eagle and land safely on the ground, you would (I hope!) try and dissuade me on the grounds that I cannot fly – that it is *impossible* for me to do so. However, in other contexts the sentence does not seem to be true. For instance, we might engage in a theological debate over what an omnipotent being could, or could not, bring about. There we might agree that such a being could endow me with the ability to fly. In that context, then, the sentence seems to be false – I *could* fly under those circumstances: it is not impossible at all.” (Beebe, Effingham, & Goff, 2011, p. 168)

The two senses of modality present in this example can be identified more directly by using adjectives. Thus, flying is a logical possibility for me but not a nomological possibility. Very roughly, this is because my flying is compatible with the laws of logic (since it contains no overt contradiction) but not with the laws of nature (because my constitution prevents me overcoming the force of gravity). Which kind of modality is in play and hence which laws are relevant will depend upon the interests of the participants in a given conversational situation. Following this pattern, it seems appropriate to describe metaphysical possibility as that which is compatible with the laws of metaphysics. Such a sense of possibility will be pertinent when metaphysics, that paragon of philosophy, is discussed. However, this leaves unanswered the awkward question of exactly what metaphysics consists in and what its laws are supposed to be. On its own, then, this suggestion is not very informative.

As was mentioned above, there seem to be many senses of possibility and necessity:

“Philosophers commonly talk at least about metaphysical, conceptual, epistemic, logical,

physical, mathematical, biological, technological, normative and natural modality” (Tahko, p. 2). In fact, a trawl through some of the literature reveals that philosophers also talk about: “broadly deontic modalities [...]not only the moral modalities but legal modalities and other modalities of permission and obligation” (Divers, 2002, p. 7), “doxastic modalities. The ‘might’ of a doxastic modality [...] is what the belief system (of an individual, at a time) does not rule out” (Divers, 2002, p. 7); bouletic or connative modalities: “bouletic possibility [is] what is compatible with a person’s desires” (Swanson, 2008, p. 1195), “a connatively possible world is one that conforms to my actual desires by making them come true” (Divers, 2002, p. 7); temporal modalities: “historical necessity, that form of necessity for which the past is ‘closed’ yet the future may be ‘open’” (Fine, 2002, p. 255) and “tense-logical modalities” (Fine, 2002, p. 255); “causal modalities: some events are causally necessary – or determined” (Tooley, 1999, p. vii); “analytical modalities: it is analytically necessary that bachelors are single” (Tooley, 1999, p. vii). There are bound to be others mentioned elsewhere. And it is easy to think of further examples: although it was previously a subject of considerable controversy, it is now known to be humanly possible to run a four-minute mile.

With so many different senses of modality apparently present, it is worth asking how many of them are genuinely distinct and how they are interrelated. However, consideration of all of the senses above is well beyond the scope of this dissertation. Consequently, I refrain from discussing those varieties of modality which no philosopher has ever thought to confuse with metaphysical modality. Nevertheless, it is worth mentioning two devices which can help to provide some sort of structure to this proliferation of modalities.

2.5.1 Alethic and non-alethic modalities

The first useful distinction among modalities is between the alethic and non-alethic. Where ‘M’ stands for a particular sense of modality:

“The alethic modalities are those kinds of modality for which the actual world is always one of the M-possible worlds that it generates: the constraints generated from the actual world are always satisfied by the actual world. All other kinds of modality are non-alethic.” (Divers, 2002, p. 6)

All parties are agreed that metaphysical modality is alethic. The trivial modal truths discussed in the section on epistemological difficulties with modality are illustrative. There it was argued that it follows from the fact that *p* is actually the case, that it is possible. Strictly speaking, this sort of result only holds when the modality in question is alethic. In contrast, non-alethic modalities do not have this consequence. The archetypal example of this is normative or deontic modality: if *p* is actual, it does not follow that *p* is permissible.

2.5.2 Absolute and relative modalities

Within the realm of alethic modality, another important distinction is between absolute and relative modalities. An absolute necessity is such that there is no genuine sense in which it is possible for it to be false. A relative necessity is such that there is a sense in which it is possible for it to be false. It has been traditional to hold that metaphysical necessity is absolute although its claims to being so have been challenged by some (Hale, 1996).

The aeronautical example above should help to make the contrast between absolute and relative modalities clearer. It was suggested that flying is logically possible but nomologically impossible. If this suggestion is correct, nomological modality is relative. Although it is nomologically necessary that I cannot fly, there is a (logical) sense in which it is possible for me to do so. The same point can be expressed in terms of strength and weakness. Logical necessity is stronger than physical necessity because logical necessity entails physical necessity but not *vice versa*. Corresponding to the fact that necessity and possibility are logical duals, logical possibility is also weaker than physical possibility since physical possibility entails logical possibility and not *vice versa*. Expressed in terms of possible worlds, the set of nomologically possible worlds with the same laws of nature comprise a proper subset of the set of all the logically possible worlds with the same laws of logic. Nomological possibility seems to be restricted, whereas logical possibility seems unrestricted.

Of course, this understanding of the logically and nomologically possible worlds has been highly simplified here for the sake of discussion. As we shall see in our comparisons of metaphysical modality with these modalities, the notion that there might be possible worlds with laws of nature at variance to our own, for example, has been contested.

2.6 Grounds of modality

In light of the apparent epistemological and analytical difficulties mentioned above, many different accounts of what grounds modals claims have emerged. To orientate the reader, it should be helpful to summarise the most prominent proposals: modal primitivism, modal realism, essentialism, conventionalism and deflationism.⁷

The first approach is to take modal talk as more or less primitive. On this account, the distinction between claims about what might be or must be the case from what is actually the case is incapable of being explained in more primitive vocabulary. To adopt this position is to accept that “Explanations come to an end somewhere” (Wittgenstein, 2009, p. 6: §1). The obvious worry from a theoretical perspective is that this endpoint is premature: “After all, it’s

⁷ I am indebted to Cameron (2010b) in setting out these particular options.

easy to just take the distinction as primitive, and there's not that much to say about such a view other than that it is preferable to give an account of something if you can" (Cameron, 2010b, p. 349).

A second approach is to ground modality in the literal existence of causally isolated concrete possible worlds which represent every possibility. The costs and benefits of modal realism (Lewis, 1986) are pretty well rehearsed. Although it seems to reduce modality to more primitive vocabulary, it does so at the cost of exploding our common-sense ontology. And it also causes problems for modal epistemology since it is unclear how we come to know about the nature and events of other concrete possible worlds in any sort of naturalistic fashion. Having said this, Lewis is right to argue that this problem affects abstractionist accounts of possible worlds as well and that it is a quite general problem for any realistic interpretation of modality.

Recognising contingencies seems to be a very different process to knowing necessary truths.

Another option is to ground modal talk in essentialist notions. Although it has been traditional to explain facts about the essential and accidental features of objects by reference to possible worlds, Fine (1994) has argued that essentialism is prior to modality since possible worlds cannot properly distinguish essential properties. For example, it is plausible that in every possible world in which he exists, Socrates is human and the sole member of the set containing Socrates. On a possible worlds account, both these properties are essential to Socrates. "But, intuitively, this is not so. It is no part of the essence of Socrates to belong to the singleton." (Fine, 1994, pp. 4-5) However, it is not clear that going in the other direction and reducing modality to essence is very useful either since the vocabulary of essentialism seems to be just as much in need of explanation as does the vocabulary of modality.

Faced with the epistemological difficulties which seem to beset alternative accounts, conventionalists about modality have argued that facts about necessity and possibility merely reflect our linguistic commitments. On this account, necessary propositions "do not make any assertion about the empirical world. They simply record our determination to use words in a certain fashion. We cannot deny them without infringing the conventions which are presupposed by our very denial, and so falling in to self-contradiction." (Ayer, 2001, p. 80) The story is typically supplemented with additional detail to account for the necessary *a posteriori* (Sidelle, 1989). The view is attractive since it seems to remove the mystery of necessity. However, the trouble with this approach is that it is susceptible to a problem raised by Quine (1966b). All that linguistic convention can do is to translate one truth into another; it does not explain the truth or necessity of any statement at all: "It's because of how the world is that all unmarried men are unmarried, and all the unmarried men would be unmarried no matter what

linguistic conventions we adopted when choosing how to describe the world” (Cameron, 2010b, p. 354).

A final deflationary, or neo-conventionalist, alternative is to adopt the “convention to call logical, analytic and mathematical truths necessary [...] ‘Necessary’ would be a word used for truths of certain kinds.” (Sider, 2003, p. 204) On this account “there is *nothing* special about the necessary truths as opposed to the contingent ones: there is no deep metaphysical division to be drawn between those truths that could have been otherwise and those that couldn’t” (Cameron, 2010b, p. 355). The difficulty with this approach is that it effectively commits us to an error theory on the subject of modality. Somehow we have all been mistaken in thinking that there is some real significance to necessity and possibility. This consequence is arguably too radical.

None of the options surveyed here are entirely without cost which explains why there is such a divergence of opinion. While a complete analysis would graph the consequences of these general positions for metaphysical modality in particular, reasons of space prohibit this. As it is, the discussion of metaphysical modality will largely float free of these matters.

3 Metaphysical modality

It was mentioned earlier that grasping the sense of metaphysical modality is far from easy. The problem is widely acknowledged in the literature:

“Unfortunately, there are many different notions of possibility (and necessity) [...] we are only concerned with one of them, a perfectly ordinary notion that we will call ‘metaphysical’ possibility (and necessity). Despite its ordinary status, it isn’t easy to characterize metaphysical possibility directly, without appealing to less familiar notions.” (Jubien, 1997, p. 130)

“Exactly what is metaphysically impossible beyond logical and analytic contradictions is unclear; this unclarity is what makes the analysis of metaphysical possibility and necessity so difficult. But it is metaphysical possibility and necessity that most concerns philosophers.” (Sider, 2003, p. 182)

“Thus it is controversial whether the collection of all (and only) the genuinely possible worlds can be identified with the logically possible worlds, or with the analytically possible worlds, or with the metaphysically possible worlds, etc.” (Divers, 2002, p. 5)

An obvious way to proceed would be to clarify the meaning of ‘metaphysical’. There are at least three ways this might be done: the etymological approach, the big-picture approach, and the definition-by-example approach. (Carroll & Markosian, 2010, p. 4) Unfortunately, it is accepted

that none of these are particularly enlightening. The etymological approach which identifies metaphysics with the topics which happened to be published in a book by Aristotle does not explain what unites the disparate topics, the big-picture appeal to the ultimate nature of reality is inherently vague and the definition-by-example somewhat arbitrary.⁸

Perhaps these remarks serve to explain why “the notion of metaphysical possibility [...] is standardly taken to be primitive.” (Gendler & Hawthorne, 2002, p. 4) Whether metaphysical modality turns out to be irreducible, however, the process of establishing that clearly should help to enlighten the subject. At the very least, it should help to explain its relationship with other, apparently similar modalities of logic and physics with which it is apt to be compared or conflated.

The notion of metaphysical modality arguably originated in the work of Kripke and Lewis. At least, it is these authors with which the notion has been most closely associated. When the topic arises, it is not unusual for philosophers to reference them explicitly: Leeds writes that “the notion of necessity I am calling ‘metaphysical’ [is] that of, e.g. Kripke and Lewis” (Leeds, 2007, p. 282 n. 2). Given the differences between these authors on modal matters, however, it is curious that the notion of metaphysical modality is so often gestured at in this way. It is surely better to set out how and why their conceptions differ than to point to some rough amalgam of their views.

3.1 Kripke on metaphysical modality

In *Naming and Necessity* (1980), Kripke introduced metaphysical modality by drawing a contrast between epistemological and metaphysical matters. Previously, modal and epistemic notions had been so closely intertwined that philosophers often failed to distinguish them. It was so widely supposed that all necessary truths are *a priori* and all contingent truths *a posteriori*, that the fact that the first and second pairs of terms were often used interchangeably hardly seemed to matter. Kripke broke the chains linking analyticity, apriority and necessity and untied the ropes yoking together the synthetic, the *a posteriori* and contingent. He demonstrated that the metaphysical categories of necessity and contingency can be mixed and matched with the epistemological categories of apriority and aposteriority. Consequently, statements could be classified in the following ways:

⁸ Lowe (2001, p. 2) emphasises the extent to which conceptions of the subject matter of metaphysics would vary depending on the textbook one happened to pick up. (Perhaps what is therefore needed is a more thorough literature survey. This sounds like good, honest naturalised epistemology of which Quine would approve – though Lowe has his arguments against scientism and semanticism. Wittgenstein would no doubt be unsurprised that the ‘family resemblance’ of such a subject would be so disparate and accidental given it is an archetypal example of language going on holiday.)

Necessary *a priori*: 'Hesperus is Hesperus', 'all bachelors are unmarried men'

Necessary *a posteriori*: 'Hesperus is Phosphorus', 'water is H₂O', 'cats are animals'

Contingent *a posteriori*: 'a cat is on a mat', 'Aristotle was a student of Plato'

Contingent *a priori*: 'the standard metre bar is one metre long', 'I am here'

The upshot of Kripke's discussion was revolutionary: logical positivism, already in decline, gave up the ghost and in its place the viability of metaphysics was resurrected. The existence of *a posteriori* necessities had a particularly dramatic effect. Previously, it had been widely supposed that all that philosophers could achieve was an appreciation of various nominal essences which are nothing more than artefacts of our use of language. Subsequently, our capacity to make genuine discoveries about real essences and to 'carve nature at the joints' became broadly accepted.⁹

The Kripkean distinction between the epistemological and the metaphysical has important consequences. Although it might be epistemically possible that something is the case, it does not follow that it is metaphysically possible. For example, given that the Goldbach conjecture has not yet been proved, "we can say [...] right now, as far as we know, the question can come out either way" (Kripke, 1980, p. 37). But this epistemic possibility has no bearing whatsoever on whether "there is an even number, n , greater than 2, such that for no primes p_1 and p_2 , both $< n$, does $n = p_1 + p_2$ " (Kripke, 1980, p. 36) because the latter is a metaphysical matter. If there is such a number, then the Goldbach conjecture is false and necessarily so on an ordinary understanding of the nature of mathematics.

Kripke was rarely explicit about using 'metaphysical' as a qualifier of modality. At one point he does write that "In fact, any animal looking just like a tiger is a tiger – as far as I know – though it is (metaphysically) *possible* that there should have been animals that resembled tigers but were not tigers" (Kripke, 1980, pp. 137-138) but his other claims of sortal, constitution, origin and kind essentialisms were really interpreted as archetypal examples of metaphysical necessities. They are now standardly introduced as such in the most elementary textbooks (Garrett, 2011, p. 41). It is not clear whether Kripke intended these case studies to constitute a natural grouping of metaphysical modality and he did not consider his various examples to be exhaustive of any such notion. Nevertheless, the notion of metaphysical modality stuck; regardless of its unnaturalness.¹⁰ It is also worth mentioning, finally, that the arguments Kripke put forward

⁹ Of course there are dissenters. Sidelle (1989, pp. 1-24) contrasts this realist interpretation with his own conventionalist account of the necessary *a posteriori*.

¹⁰ See Lewis (1983) for an explication of the importance of naturalness.

both in his *magnum opus* and an earlier paper (Kripke, 1971) were intended to establish the essential and accidental properties of objects as perfectly objective.

3.2 Lewis on metaphysical modality

The notion of metaphysical modality Lewis developed is in many ways quite different. Kripke maintained a focus on the actual world and considered alternative, abstract metaphysical possibilities from that perspective. Lewis, due to his commitment to a plurality of concrete possible worlds, adopted a more generalised perspective on metaphysical modality. Lewis appreciated that in everyday modal reasoning, use is rarely made of the entirety of logical space:

“All hands agree that very often our modalities are quantifications restricted to ‘accessible’ worlds – we tacitly ignore worlds where the past differs, where the actual laws of nature are violated, where there are alien natural properties, or what have you” (Lewis, 1986, p. 240).

Significantly, however, the realm of metaphysical modality is determined in exactly the same way. For Lewis, that which is metaphysically possible is determined by those accessibility relations between possible worlds with which metaphysicians are typically concerned. In other words, metaphysical modality is constrained by the laws of metaphysics as stated by metaphysicians. Facts about the essential and accidental properties of objects are similarly determined since it is up to us which counterpart relations between *possibilia* we choose to pay attention to. Thus, considered as a human being I will have a certain set of counterparts (individuals in other possible worlds that resemble me in this respect) that are possibilities for me. Considered as a wearer of T-shirts, the possibilities for me are quite different. Of course, some counterpart relations will be more natural than others but the view is nevertheless quite different from the essentialism of Kripke.

A final contrast between Lewis and Kripke can be found in their different conceptions of the nature of the relationship between epistemic and metaphysical modality. For Lewis, “Metaphysical and (for instance) epistemic possibilities [...] are not things of two different sorts. They are *possibilia* out of the same plurality of worlds. The difference is in the accessibility” (Lewis, 1986, p. 234).

3.3 On the need for further theory

These brief outlines of the Kripkean and Lewisian approaches to understanding metaphysical modality serve as no more than an introduction. In particular, the precise relationship between metaphysical modality and such apparently very similar modalities as logical modality and physical modality is in need of development. Much of the obscurity is due to the elusive quality

of asides made by Kripke himself. His work is often more suggestive than conclusive and raises as many questions as it answers. At various points Kripke contrasts logical with physical modality, and the latter with modality *tout court* without making any definite commitments on these matters. The relationship between metaphysical possibility and conceptual possibility is also in need of clarification. It would be good to know whether metaphysical modality is synonymous or coextensive with any of these other notions. Furthermore, the contrast between the absolute sounding nature of Kripkean metaphysical modality, of modality *tout court*, with the more relative sounding Lewisian notion deserves further exploration.

Before concluding this section, it is worth mentioning that Kripke did have a reason for hedging his bets on these and other topics. The reason, a pronounced scepticism toward philosophical theorising in general, can be found in his comment on the cluster concept theory of names:

“It really is a nice theory. The only defect I think it has is probably common to all philosophical theories. It's wrong. You may suspect me of proposing another theory in its place; but I hope not, because I'm sure it's wrong too if it is a theory.” (Kripke, 1980, p. 64)

For Kripke, the key to successful philosophical inquiry is to paint pictures rather than to construct detailed theories. It is unlikely he would have been at all put out if the admonishment “This theory is boldly sketched rather than precisely stated” (Grice & Strawson, 1956, p. 154) aimed at Quine, were directed at him. Other philosophers have been more scathing of this sort of approach which paints in broad brushstrokes and tends to depend on philosophical instinct as much as philosophical reason. As one detractor argues, “it is hard to understand why *Naming and Necessity* made such a difference, since it [...] relies far more on intuition than on argument to support its claims” (Gutting, 2009, p. 50).

Such strong criticism of the broad brushstrokes approach to philosophy is surely unwarranted but for the philosophical optimist, the pessimism exuded by Kripke is no less unjustified. Since it is plausibly the job of philosophy to systematise our ordinary thought and talk about the world, bringing theory and everyday practice into some form of reflective equilibrium (Rawls, 1971), “an abstinence from theorizing” (Lewis, 1973, p. 85) will not do. Proceeding in the hope that more can be done to enlighten metaphysical possibility than has already been said, it will be helpful to compare it with logical, physical and conceptual possibility more thoroughly.

4 Distinguishing metaphysical modality: a reader's guide

In a survey of the topic of modal epistemology, it has been noted that:

“there is a confusing range of terms, such as ‘epistemic’, ‘conceptual’, and ‘logical’, that are used to qualify possibility by different authors to mean different things in different contexts. [...] For some views, these distinctions are important, for some they are not.

[...] The moral is: *caveat lector!*” (Evnine, 2008, p. 683 n. 17)

No doubt this is always a good rule to follow but of rather limited utility to the novice student of metaphysical modality. What is really needed here is a sort of reader's guide that will help the neophyte to distinguish metaphysical modality from some very similar notions in the philosophical literature on modality, avoid potential misunderstandings and highlight any significant points of interest along the way. Such a lexical examination, if it is to be at all worthwhile, must predominantly be concerned with genuine discovery rather than arbitrary stipulation. However, if it is to be at all helpful, the inquiry must also legislate on any disputes that can plausibly be resolved. It is intended that the discussion contained within this section will go some way towards filling this gap in the market. It is hoped that the interpretation which results will be worth the wait of the scholar.

4.1 Logical modality

Metaphysical modality is most likely to be conflated with logical modality. Various writers have either decried any apparent distinction as nothing more than “a transatlantic squabble [due to] a stronger tendency in America to restrict the word ‘logical’ to a narrower range than it is restricted to by many English philosophers” (Reinhardt, 1978, p. 218 n. 1)¹¹ or at least declared they “shall not distinguish logical impossibility from metaphysical impossibility” (Slote, 1974, p. 1 n. 2). Such a debacle is perhaps forgivable given that there is indeed a sense of logical modality according to which it is fairly interchangeable with metaphysical modality.

However, logical modality is a far from univocal notion and it is worthwhile spelling out just how the many distinct notions of logical modality differ from each other for several reasons. Firstly, doing so eliminates the chance of mistaking metaphysical modality for those notions of logical modality with which it is certainly not to be identified. Secondly, it suggests that complaints, such as those made by Quine, about the incoherence of modality in general can

¹¹ Although I have not done an empirical study, the claim that the discrepancy is transatlantic seems far from generally the case given that Lewis, who was both American and furthermore a student of Quine, regularly employed the terminology ‘logical’ in that sense according to which it is equivalent to the ‘metaphysical’.

largely be seen as a result of failing to properly separate logical and metaphysical modality. Thirdly, appreciating how notions of logical modality are affected by the prevalence of alternative logics holds significant lessons for understanding metaphysical modality. The ensuing discussion proceeds in accordance with this script.

4.1.1 Strictly logical modality

Any detailed characterisation of the nature of logic is bound to be contentious. Historically, it has been traditional to understand it as disclosing the structure of right reason and, for those of a Rationalist persuasion, of reality. In modern times, the subject has become more of a technical enterprise with its advanced topics sharing an affinity with mathematics. More recently, it has become customary to see things in a way which incorporates both perspectives: as a subject which is concerned with the formalisation of arguments. Symbols and rules for their manipulation are introduced with the aim of extracting what is essential in complex arguments of ordinary language. Through this process of simplification and systematisation, by abstracting from extraneous information, the strength of arguments is able to be assessed more easily. At least, this is the ambition. Careful interpretation is required to ensure that the logic which results accurately represents the original arguments, that no meaning pertinent to the effectiveness of the original arguments is lost and the truth or falsity of the original premises are preserved in translation. In this vein, then, "*a logic is an artificial language with a semantics*" (Girle, 2003, p. 5).

By far the most standard and widespread logic, which results from the work of Frege, Russell and Whitehead (Girle, 2003, p. 195 n. 5), is classical first-order predicate logic. It provides rules and symbols for negation, conjunction, disjunction, material implication, material equivalence, quantification, and it is often supplemented with notation to represent identity. Whenever a choice of logic is not explicitly specified, it is fair to assume that it is this logic which is in play. Strictly logical modality can be understood as compatibility or consistency with the laws of this logic alone. Consequently, all tautologies within this logical system will be strictly logically necessary, all contradictions will be strictly logically impossible and everything else will be strictly logically contingent. A few examples, involving only propositional logic for the sake of simplicity, should make this clear. 'If it is raining, then it is raining' is strictly logically necessary since it has the form of the tautology $\lceil p \supset p \rceil$. 'It is raining and it is not raining' is strictly logically impossible since it has the form of the contradiction $\lceil p \& \sim p \rceil$. 'It is raining' is strictly logically contingent since it has the form $\lceil p \rceil$.

The requirements for strict logical necessity are exigent, only logical truths count.

Corresponding to this, the notion of possibility which results from this account is incredibly permissive. As a consequence, many statements which are intuitively necessary are not strictly

logically necessary and many which are intuitively contradictory are nevertheless classified as strictly logically possible. For instance, there “is no strict formal contradiction involved in a supposition to the effect that bachelors may be married. The meanings of noun phrases are irrelevant to strictly logical modalities.” (McLeod, 2001, p. 155) In other words, strictly logical modality is concerned only with purely logical syntax and the effect of the logical constants. ‘There are married bachelors’ has the form $\ulcorner (\exists x)(Bx \ \& \ Mx) \urcorner$ which, in the absence of suitable definitions to the effect that $\ulcorner (\forall x)(Bx \supset \sim Mx) \urcorner$, is strictly logically possible.

Results such as these have led many philosophers to question whether strictly logical modality should be considered as a genuine variety of modality at all.¹² On this account, some qualifiers of modality are akin to *alienans* adjectives. To adapt a famous example, we cannot safely predicate of a logical possibility what we predicate of a possibility “any more than we can predicate of a forged banknote or a putative father what we predicate of a banknote or a father” (Geach, 1956, p. 55).

4.1.2 Narrowly logical modality

What was lacking from strictly logical modality was the recognition that the meanings of ordinary words have a role to play in addition to that of the logical constants in determining whether or not a statement is possible or necessary. Narrowly logical modality fulfils this role. To give an example,

“It is not the case both that Ferdy is a female fox and that Ferdy is not a female fox’ is *strictly* logically necessary, because it is an instance of [the law of non-contradiction]. By contrast, ‘It is not the case both that Ferdy is a vixen and that Ferdy is not a female fox’ is only *narrowly* logically necessary [...] because it can only be turned into an instance of that law by drawing on the definition of ‘vixen’, which is a non-logical term.” (Lowe, 2001, pp. 14-15)

A decision needs to be taken here between understanding narrowly logical modality as an extension of, or as distinct from, strictly logical modality. In other words, a choice needs to be made between restricting narrowly logical modality to examples which involve the implicit or explicit definition of ordinary words and synonymy in some shape or form, and allowing narrowly logical modality to encompass strictly logical modality as well. Adopting the latter convention has two benefits. It means narrowly logical necessity can be identified both with the traditional notion of “an analytic truth, being true solely in virtue of its meaning” (Haack, 1978,

¹² In particular, Rinaldi (1967) and Seddon (1972) spring to mind.

p. 172) and with “the ‘conceptually’ necessary [as] that which is true solely in virtue of concepts together with the laws of logic” (Lowe, 2001, p. 14).¹³

Unfortunately, use of this terminology is very far from universal. Many philosophers elide this distinction between strict and narrow logical modality, preferring to use the name of the latter to describe the former and perhaps to use some other adjective to describe the latter. Two random samples should serve to illustrate this phenomenon: “narrowly logical consistency or narrowly logical implication [...] is consistency under some reinterpretation or other of all but the logical vocabulary, or implication that is invariant under all such reinterpretations” (Lewis, 1986, pp. 152-153) and “logical necessity in the narrow sense [...] is the sense in which it is necessary that anything red is red, though not necessary that nothing red is green or that I am a person” (Fine, 2002, p. 254). But for the confusion that alternative jargons generate for newcomers and the increased risk of mistaking arguments which are merely semantic for substantive ones, this situation should not be considered too disastrous. Things are different if it leads philosophers to entirely rule out the notion of broadly logical modality or to confound it with the aforementioned notions.

4.1.3 Broadly logical modality

The notion of broadly logical modality was first introduced in a passage which, for purposes of exegesis, is worth quoting in full:

“But the sense of necessity in question – call it ‘broadly logical necessity’ is wider than this. Truths of set theory, arithmetic and mathematics generally are necessary in this sense, as are a host of homelier items such as

No one is taller than himself

Red is a colour

If a thing is red, then it is coloured

No numbers are human beings

and

No prime minister is a prime number.

And of course there are many propositions debate about whose status has played an important role in philosophical discussion – for example

¹³ For the sake of completeness, the notion of analyticity involved here is broad, as opposed to narrow, analyticity: what “is reducible to a logical truth by substitution of synonyms for synonyms [is] *narrowly analytic*; [...] broad analyticity [...] is logical truth plus narrow analyticity.” (Haack, 1978, p. 173)

Every person is conscious at some time or other

Every human person has a body

No one has a private language

There never was a time when there was space but no material objects

and

There exists a being than which it is not possible that there be a greater.

So the sense of necessity in question is wider than that captured in first order logic.”

(Plantinga, 1974, p. 2)

It should be evident from these suggested cases of broadly logical modality that the notion is far richer and more complex than the preceding, thinner notions of logical modality. While it is fairly straightforward to classify statements into strictly logical and narrowly logical categories, the boundaries of broadly logical modality are highly contentious. The basic explanation for this is that broadly logical modality involves consideration of the natures of things and our knowledge and understanding of exactly what many such objects and events as gods, persons, consciousness, time and space are is very far from perfect. As a result, broadly logical modality patently strays from the previous two notions. While the latter notions emanate from purely formal and definitional concerns, the former stems from matters of substance. The transition from narrowly to broadly logical modality signals a shift from the analytic to the synthetic.

Just like before, there is a question about whether broadly logical modality should be considered as an extension of narrowly logical modality or as distinct from it. Selecting the former option once again means that, despite the stark contrast noted above, strictly, narrowly and broadly logical modalities remain interconnected: strictly logical necessity entails narrowly logical necessity, which entails broadly logical necessity; moreover, strictly logical possibility is entailed by narrowly logical possibility, which is entailed by broadly logical possibility.

There are two vital points to appreciate about broadly logical modality. Firstly, it is this notion which is required for a proper understanding of possible worlds, which governs “logical space, the totality of the worlds in all their glory” (Lewis, 1986, p. 73). Secondly, it is not implausible to suggest that broadly logical modality is equivalent to metaphysical modality. Hence,

“logical necessity in the broad sense [...] is sometimes called ‘metaphysical’ necessity [...] the sense of necessity that obtains in virtue of the identity of things (broadly conceived) [...] in this sense it is necessary not only that anything red is red or that nothing is both red and green, but also that I am [a] person or that 2 is a number.” (Fine, 2002, p. 254)

Since, in addition, such archetypal examples of metaphysical necessity as ‘Water is H₂O’, ‘Hesperus is Phosphorus’ and ‘This pain is mine’ are considered specimens of broadly logical necessity (Lowe, 2001, p. 15), this equation seems wholly appropriate. Nevertheless, it is arguable whether metaphysical necessity should embrace the strictly and narrowly logical necessities. Omitting them does serve to emphasise a considerable epistemological divergence – between the *a priori* quality of conceptual necessity and the often *a posteriori* character of metaphysical necessity – but “respect for the usage of other philosophers [demands] the first option” (Lowe, 2001, p. 16). This identity of broadly logical and metaphysical is not entirely uncontroversial given the arguments of Hale (1996). However, an important consequence of this move would be to dissolve his worries about the status of metaphysical modality. Indeed, “in later work Hale (2002b) seems much more sympathetic” (Tahko, p. 15) to this sort of interpretation.

4.1.4 Quinean doubts about modality

Granted that suspicions about the intelligibility or coherence of modality in general will carry over to specific varieties of modality including metaphysical modality in particular, it would be valuable if such doubts could be assuaged. Perhaps the most significant consequence of separating out the aforementioned varieties of logical modality is to show that this can indeed be done. Quine has been the most vociferous critic of modality but by distinguishing strict and narrow logical modalities from broadly logical or metaphysical modality many of his worries can be mitigated.

Quine had several reasons to be sceptical of modality. Underlying many of them were doubts about the viability of any distinction between analytic and synthetic statements (Quine, 1961b) which it would take us too far afield to consider here. However, there were also more specific concerns about modality. The solution to these perplexities is to recognise that the complaints afflict only the strict and narrow logical modalities. The first problem concerned quantification into intensional contexts and the claim that modal operators created such contexts. As Quine writes,

“According to the strict sense of ‘necessarily’ and ‘possibly’, these statements would be regarded as true:

(15) 9 is necessarily greater than 7,

(16) Necessarily if there is life on the Evening Star then there is life on the Evening Star,

(17) The number of planets is possibly less than 7,

and these as false:

(18) The number of planets is necessarily greater than 7,

(19) Necessarily if there is life on the Evening Star then there is life on the Morning Star,

(20) 9 is possibly less than 7.

The general idea of strict modalities is based on the putative notion of *analyticity* as follows: a statement of the form ‘Necessarily...’ is true if and only if the component statement which ‘necessarily’ governs is analytic, and a statement of the form ‘Possibly...’ is false if and only if the negation of the component statement which ‘possibly’ governs is analytic.” (Quine, 1961a, p. 143)

The significant point to note in this passage is that the modal operators ‘Necessarily...’ and ‘Possibly...’ invoked here are understood as involving what Quine calls ‘strict modalities’ which is equivalent to the notion of narrowly logical modality introduced above which are based only on formal definitions and logical relationships. Consequently, Quine is quite explicit in claiming that “Being necessarily or possibly thus and so is in general not a trait of the object concerned, but depends on the manner of referring to the object” (Quine, 1961a, p. 148). Although the argument holds true when the modality involved is narrowly logical, it does not if broadly logical modality is taken up. However, to reject the latter out of hand because “it leads us back into the metaphysical jungle of Aristotelian essentialism” (Quine, 1966a, p. 174) is simply to beg the question against those who take themselves to have an intuitive grasp of a notion of metaphysical modality based on the identities and natures of objects.

Of course, Quine did recognise that his criticisms related “only to strict modality. For other sorts, for example, physical necessity and possibility, the first problem would be to formulate the notions clearly and exactly.” (Quine, 1961a, p. 158) However, Quine regarded such other modalities as dispensable, predicting that when science is complete it will make do without them. Given the current state of science his prediction is yet to be decided either way. But given the many uses of modality set out in the introduction, it seems unlikely to come true. Burgess provides a pithy summary of these conclusions:

“For modal logic, the first lesson from Quine is that strict or (as many have called it) ‘logical’ modality and subjunctive or (as we now call it) ‘metaphysical’ modality are distinct. A further lesson is that quantification into contexts of strict modality is difficult or impossible to make sense of. A yet further lesson is that quantification into contexts of subjunctive modality is virtually indispensable.” (Burgess, 1997, p. 54)

4.1.5 Alternative logics

Before ending this discussion of the logical modalities, one important feature of the discussion so far is worth drawing out. From the start, the logical modalities have been based upon the

principles of classical logic. This situation is unsurprising given the preference of philosophers for the laws of identity, non-contradiction and excluded middle. Indeed, “almost everyone agrees that contradictions are metaphysically impossible” (Sider, 2003, p. 181). As a consequence of this basis for broadly logical modality and hence metaphysical modality, there are no possible worlds in which contradictions hold true.

Nevertheless, classical logic is by no means the only logic which philosophers have paid attention to. Paraconsistent logics allow for contradictions without generating patent absurdities. And if dialetheism is true, then it follows that not only are there possible worlds where contradictions hold but that the actual world is one of them. On the traditional understanding of possible worlds this would entail that the actual world is impossible. This counterintuitive implication for our ordinary understandings of possibility and impossibility is just another example of the radical consequences of dialetheism.

Setting aside dialetheism, however, consideration of the existence of non-classical logics does seem to suggest that there might be worlds possessed of alternative logics. Indeed, it has been argued that logical possibility is itself a parochial notion and that logical impossibility does useful work in making sense of contradictory beliefs. On this account, logically possible worlds have the same logical laws as the actual world. Logically impossible worlds are distinguished by the extent to which their logical laws differ from our own (Yagisawa, 1988). Assessing all the implications of these developments, however, is beyond the scope of this essay.

4.2 Scientific modality

Another group of notions with which metaphysical modality has frequently been compared is that of scientific modality. Happily, understanding the connections between these notions is somewhat less problematic than comprehending the relationship between metaphysical and logical modality. The main reason for this is that advocates of the view that metaphysical modality should be identified with some form of scientific modality recognise that the proposal is contentious. Furthermore, there is greater awareness of where the various bones of contention are located. The crux of the debate ultimately turns on arguments about the character of laws of nature and the existence of so-called alien properties. But to begin with, scientific modality must be introduced and its assorted varieties delineated.

One origin of this approach to pinpointing metaphysical modality can be found in a remark made by Kripke in *Naming and Necessity*:

“characteristic theoretical identifications like ‘Heat is the motion of molecules’, are not contingent truths but necessary truths, and here of course I don’t mean just physically necessary, but necessary in the highest degree – whatever that means. (Physical

necessity, *might* turn out to be necessity in the highest degree. But that's a question which I don't wish to prejudge. At least for this sort of example, it might be that when something's physically necessary, it always is necessary *tout court*.)" (Kripke, 1980, p. 99)

On the not unreasonable assumption that what is 'necessary in the highest degree' or 'necessary *tout court*' is metaphysically necessary, the cautious suggestion here is that physical necessity might turn out to be identical to metaphysical necessity. In a postscript to the lectures, Kripke went on to say that "The question how far this can be pushed is one I leave for further work" (Kripke, 1980, p. 164). Unfortunately, this further work is yet to be published.

Nonetheless, many philosophers took the hint and several expounded the view that metaphysical modality just is physical modality, or at least something like it. Taking into account the remarks above, it seems quite fair to describe this as an evolutionary, rather than a revolutionary, approach to metaphysical modality. However, it should also be noted that many such supporters pushed the matter farther than Kripke himself would have done: Shoemaker (1998, p. 76 n. 11), Edgington (2004, pp. 16-18) and Leeds (2007, pp. 460-461) notably reject the Kripkean argument for mind-body dualism.

If it should turn out that metaphysical modality is identical to physical modality or something of that ilk and that the latter can be understood more adequately than the former, this would be extremely beneficial. Certainly, if metaphysical modality is reducible in this way, then much of the mystery and obscurity which has plagued the notion would be removed. And this outcome would be very valuable considering how hard it is for the novice "to understand the philosopher's favourite sense [of modality], according to which e.g. 'It is possible that the Conservative Party won the last election' is true, and 'It is possible that a man lives for years unaided under water' is true" (Edgington, 2004, p. 5). It would be welcome if something akin to physics could explain what unites these disparate phenomena.

None of this talk of physical modality has been entirely unqualified so far. The justification for this is that there are at least three other modalities to which physical modality is very similar and it would be wrong to dismiss their respective claims to metaphysical modality out of hand. The close alternatives to physical modality are causal modality, nomic or nomological modality, and natural modality. It is worth spending some time to consider each of these four notions in turn. Doing so should bring out any parallels and disparities that exist between them and help evaluate which, if any, notion is to be preferred in accounting for metaphysical modality.

It would be difficult if the results of this investigation suggested that there really exist four quite separate and genuine modalities, with each modality possessing its own unique modal strength.

If faced with the choice of identifying metaphysical modality with one of four genuine modalities, each with apparently equal claim to the title, it might be preferable to retain the obscurity of the original notion rather than select one arbitrarily. Thankfully, this particular outcome will be avoided because there are reasons to believe that the various notions are deeply interrelated and capable of integration, and to hope that on-going scientific endeavour will ultimately decide which adjective is the best moniker to capture metaphysical modality. In fact, because the issues about whether metaphysical modality should be identified with any of these four modalities at all are quite general, it will be seen that utilising scientific modality as a blanket term to assimilate the aforementioned modalities does no harm at all when in pursuit of the correct understanding of metaphysical modality.

Before discussing these matters further, an essential caveat should be noted: to wit, that on the whole it is not the business of philosophy to prescribe rules for the conduct of science. Therefore, the ruminations which follow should not be seen as dictating where science currently is and where it should be going. Rather, the discussion should merely be seen as an executive summary of the terminological options for what can be broadly labelled scientific modality. Indeed, it is not unlikely that science will be the ultimate arbiter of the issues raised here about causation, laws of nature, and the statuses of physics and the special sciences.

4.2.1 Physical modality

Equating metaphysical modality with physical modality has been a standard version of the sort of approach to understanding metaphysical modality outlined above. Motivation for this view has derived from the quite evident fact that, from the dawn of the Scientific Revolution onward, fundamental physics has been at the forefront of attempts to understand the structure and workings of the world. Its huge range of predictive and explanatory successes has lent support to the thesis of physicalism, according to which everything is, or supervenes on, the physical. The latter comprises all those concrete, spatiotemporal objects and events, and mathematical structures postulated by physics including such entities fields, forces, particles, tensors and vectors. At least this is approximately correct; more accurately, what is physical refers to everything which remains part of physical theory as and when it is finally completed.

Those who argue that metaphysical modality reduces to physical modality therefore claim that the equations of physics arbitrate what is metaphysically possible or necessary. On this account, assuming for the sake of argument that something like Einstein's special theory of relativity is literally true physical theory, it is metaphysically impossible for a massive object to travel at speeds faster than the speed of light in a vacuum. Proponents of this view are aware that this conflicts with the traditional understanding of metaphysical modality according to which the

laws of physics are metaphysically contingent for their underlying premise is that the traditional notion is in desperate need of reform.

Despite its illustrious pedigree, though, there are at least two reasons to spurn the label 'physical' for the type of reduction of metaphysical modality envisaged here. The first one concerns the fate of the special sciences. Since it remains controversial what their status is, it is plausible that "a theory of modality should not prejudge the question whether all laws of nature are reducible to laws of physics" (Edgington, 2004, p. 2). The second has to do with the nature of mathematics. If it should turn out that physics requires a Platonic realm of mathematical entities, then "there will be real necessities there which may not be epistemically necessary" (Edgington, 2004, p. 2). In other words, there might be mathematical truths which the laws of physics do not specify that are nevertheless metaphysically necessary.¹⁴

4.2.2 Causal modality

Another version of this general approach to understanding metaphysical modality has been to identify it with causal modality. The notion of causal necessity, according to which an event of a given sort must follow that of another, is of longer standing than physical necessity since it extends back at least as far as Hume. Indeed, it has been alleged that, before Quine and Kripke entered the scene, "There was a time [...] when it was widely accepted that there are just two kinds of necessity. There was logical necessity [...] And there was causal necessity" (Shoemaker, 1998, p. 59). Ironically, this notion of causal necessity was something of a misnomer. At the time, the predominant way of thinking about causality was more or less Humean. According to this view, causation consists in nothing more than the fact that events of one sort are constantly conjoined with events of another sort. The idea of necessary connection between events was nothing more than a mistaken projection of the mind onto the world, the result of a psychological constitution which expects the future to resemble the past.

However, the notion of causal modality which is claimed to resemble metaphysical modality is quite different and its origins are far more recent. According to this view,

"properties are individuated by their causal features – by what contribution they make to the causal powers of the things that have them, and also by how their instantiation can be caused. Collectively, causal features of this sort constitute the essence of a

¹⁴ Bricker (2008, p. 132 n. 18) makes the novel terminological suggestion that metaphysical modality should be restricted to the concrete realm. On this account, mathematical necessities involving abstract Platonic entities should not be considered metaphysically necessary. However, Bricker has a more traditional Lewisian understanding of metaphysical modality according to which the laws of physics are metaphysically contingent.

property. So insofar as causal laws can be construed as describing the causal features of properties, they are necessary truths.” (Shoemaker, 1998, p. 61)

Plainly, the notion of causation on display here is quite unlike the Humean notion. Firstly, the commitment to causal powers is staunchly realist. Secondly, any residue of contingency in causation is completely removed by the suggestion that properties should be identified by their causal relationships. For example, a characteristic property of salt is solubility in water under standard conditions. Granting the proposition that causal features such as this are metaphysically essential to being salt, it follows that it is metaphysically impossible for salt not to dissolve in water within those same environmental contexts. Yet again, protagonists of this viewpoint accept the result is counterintuitive for those still wedded to the metaphysical contingency of causation. Once more, it is urged that such people should seek a divorce.

Nevertheless, there is a worry which should give backers of the reduction of metaphysical to causal modality pause for thought. Ultimately, it might turn out that causal powers have no theoretical role to play in science. Instead, there might only be certain correlations and functional relationships defined by mathematical equations. In which case, it would be right to declare that “causality [...] like much that passes muster among philosophers, is a relic of a bygone age” (Russell, 1912-1913, p. 1).

4.2.3 Nomic or nomological modality

The notion of nomological or nomic modality has advantages over the previous two notions since its emphasis on laws or rules (from the Greek *nomos*) abstracts from concerns about whether it is appropriate to describe laws of nature as physical or causal. However, even this term has its problems. There is a risk that the origins of the term carry over certain legalistic undertones which are not congenial. The idea that the laws of nature are somehow legislated in some sense or other is not a feature which most advocates of this sort of position intend. There is a danger that “the notion of lawhood in use is a direct descendant of the theological views of Descartes, Newton, and Leibniz, who viewed laws as divine decrees concerning the clockwork of the world” (Schaffer, 2008, p. 95).

4.2.4 Natural modality

Some theorists have turned to a broader notion of natural necessity. It has been argued that “natural necessity [...] will be a paradigm of metaphysical necessity” (Edgington, 2004, p. 2) because “several features of natural laws [...] are best explained by the view that laws involve properties, that this involvement takes the form of a genuine relation between properties, and, finally, that the relation is a metaphysically necessary one” (Swoyer, 1982, p. 203). The virtue of this terminology is that it more effectively captures the essence of this proposal for

understanding metaphysical modality. The mystique of metaphysical modality is supposed to subside when it is considered that it merely reflects the basic contours of the natural world.

There are nevertheless two difficulties with this expression. The first worry is that talk about which possibilities are natural and unnatural (and which features of objects and systems are essential and which accidental) will be no more explanatory than appeals to the identity and nature of objects with which metaphysical modality began. Secondly, it is not unreasonable to be anxious about whether the notion of natural necessity retains residual connotations with pseudoscientific or Aristotelian conceptions of nature. Interpreting the proposal envisaged here in such a way would be thoroughly misleading.

4.2.5 Scientific essentialism

Overall, each of the four terminological options above has its deficiencies. However, what is constant between the various proposals is an appeal to scientific method and empirical research in determining what the extent and shape of metaphysical modality is. Indeed, at one time, there was something of a tradition of contrasting a down-to-earth and “common sense” (Rinaldi, 1967, p. 81) notion of empirical possibility with a rather useless notion of logical possibility, “a debilitating term because it blurs the distinction between science and pseudoscience, one variant of science fiction” (Seddon, 1972, p. 481). However, as the latter author notes, even this terminology is not completely ideal because it too narrowly constricts the realm of possibilities to the current state of human understanding instead of capturing the key motivation of constraining metaphysical modality to the possibilities and necessities dictated by a completed science.

Some term will have to be plumped for that characterises the general sort of approach to understanding modality that the various philosophers cited above would agree to. Given that the guiding commitment has been to scientific enquiry, it might as well be called ‘scientific modality’.¹⁵ This can be used as a neutral term to refer to that variety of modality which science will come to decide is most appropriate. It is also highly suggestive of a prominent theory in this area, scientific essentialism, which commits itself to the view that the properties of, and relationships between, natural entities are essential to them and that laws of nature are therefore metaphysically necessary (Ellis, 2002, pp. 4-5).

4.2.6 Scientific and metaphysical modality

Having settled on terminology, the question of whether metaphysical modality can be reduced to scientific modality still needs to be assessed. If it should turn out to be plausible that there are

¹⁵ I owe the choice of this terminology to the suggestive title of a book by Bigelow & Pargetter (1990).

metaphysical possibilities which are not scientifically possible, then this would undermine the proposal to understand metaphysical modality in this fashion. The central topic in this debate concerns whether laws of nature are metaphysically necessary. According to the approach to metaphysical modality outlined here, the actual laws of nature dictate what is metaphysically possible just as much as they dictate what is scientifically possible. In other words, the metaphysical contingency of laws of nature is ruled out.

The traditional Humean account of laws of nature considers them to be contingent. A more updated and sophisticated version of this sort of account is “known as the Mill-Ramsay-Lewis (MRL) approach” (Psillos, 2002, p. 148). According to this approach “a contingent generalisation is a law if and only if it appears as a theorem (or axiom) in each of the deductive systems that achieves a best combination of simplicity and strength” (Lewis, 1973, p. 73). In accordance with this ‘contingentist’ outlook, Lewis writes:

“I believe that there are worlds where physics is different from the physics of our world, but none where logic and arithmetic are different from the logic and arithmetic of our world. This is nothing but the systematic expression of my naïve, prephilosophical opinion that physics could be different, but not logic or arithmetic. I do not know of any noncircular argument that I could give in favour of that opinion; but so long as that *is* my firm opinion nevertheless, I must make a place for it when I do metaphysics.” (Lewis, 1973, p. 88)

This view of laws of nature is not the only one available. On a realist view, such as the Armstrong-Dretske-Tooley (ADT) approach to laws of nature, “It is a law that all *F*s are *G*s if and only if there is a relation of nomic necessitation $N(F, G)$ between the properties (universals) *F*-ness and *G*-ness such that all *F*s are *G*s” (Psillos, 2002, p. 163). Combined with the scientific essentialist premise that the causal properties of objects are essential to them, it follows that laws of nature could not be otherwise.

An example should help to illuminate the debate. Assuming for the sake of simplicity that Newtonian theory correctly describes this world, the gravitational force, *F*, between any two massive objects, *m* and *m'*, is equal to the inverse square of the distance between them, *r*, such that $F = Gmm'/r^2$. According to the contingentist, this fact could have been otherwise. Gravity could have been governed by an inverse cube law instead, such that $F = Gmm'/r^3$. According to the ‘necessitarian’ this is not so. On their account, the inverse square law is an essential feature of mass and of gravity. Even if such scientific essentialist premises are granted it seems that this is not sufficient to establish the identity of metaphysical and scientific modality. For although it follows that bodies with masses cannot but be attracted to each other according to the inverse square law, it does not preclude the existence of alien kinds and properties such as schbodies

with schmass which are attracted to each other in accordance with an inverse cube law. (Fine, 2002, pp. 257-259)

The truth or otherwise of scientific essentialism and the nature of natural laws remains highly controversial. But it seems that regardless of the outcome of this debate, there is still good reason to suppose that metaphysical possibility is more extensive than scientific possibility. Granting scientific essentialism does appear to change the nature of the discussion considerably, though. By definition, alien kinds and properties are those which are not actualised. If the decision as to whether or not metaphysical modality is coextensive with scientific modality is based solely on the existence or otherwise of alien kinds and properties, then it is plausible that those who claim that metaphysical possibility is more extensive than scientific possibility seem to be in a dialectically weaker position than they otherwise were. Some intuitions about modality are stronger than others: that I could have been a contender or that I could have had another sibling are possibilities close to my heart. It is less clear what intuition has to say about more exotic possibilities far removed from everyday human experience. Whether there might have been more or fewer fundamental sorts of fundamental things and whether alien properties and kinds exist are perhaps good examples of this. Indeed, Skyrms (1981) was prepared to “just bite the bullet [and] deny the modal intuition for alien properties” (Melia, 2008, p. 138).

It is not clear how this sort of chasm can be spanned:

“There seems to be a fundamental rift – unbridgeable by argument – between ontologically conservative philosophers who have, what Bertrand Russell called, ‘a robust sense of reality,’ and ontologically liberal philosophers who respond, echoing Hamlet: ‘there is more on heaven and earth than is dreamt of in your philosophy.’” (Bricker, 2008, p. 131)

Equally, there is a stark divide in the preferred methodologies of different metaphysicians which profoundly affects their conception of metaphysical modality. While such philosophers as Bird (2005) and Skyrms (1979) make cases for the greater role of science and *a posteriori* discovery in metaphysics, modal thinking tends to feel more like an *a priori* activity than anything else, bound up with the philosophical imagination. Adjudicating this conflict ultimately depends on understanding the relationship between conceptual and metaphysical modality.

4.3 Conceptual modality

The final modality with which metaphysical modality is frequently contrasted is conceptual. Some aspects of this notion have already been touched upon in discussion of narrowly logical modality. A key feature was an *a priori* quality of access which is not shared by all broadly logical or metaphysical modalities. In light of this, the gap between conceptual and metaphysical

modality is likely to seem unbridgeable. However, there are different ways of conceiving possibilities and not all are hopeless. Although it is uncontroversial that the imagination is a fairly limited means of gauging possibilities, the notion of ideal conceivability in the limit, informed by *a posteriori* discoveries, seems closely tied to the limits of metaphysical possibility. Whether these two ultimately coincide will depend on preferences for a one- or two-dimensionalist modal framework.

4.3.1 Imagination

Although human imagination has generally not been regarded as the most reliable modal indicator, it has been a popular means of entertaining possibilities. Although the notion can be extended to incorporate the other senses as well, it is traditionally limited to visual images and arguably it is therefore limited by the human constitution. For example, we find it difficult to imagine additional primary colours (Blackburn, 1986, p. 136) even though their metaphysical possibility is quite plausible. Indeed, there is some reason to think that other species possess this ability. We also know from drawings of impossible objects such as those of Maurits Cornelis Escher that visual representation can mislead.¹⁶

4.3.2 Conceivability

Conceivability goes beyond mere pictures and instead concerns the limits of what is intelligible. We are simply not able to make any sense of or to ‘do anything with’ notions of round squares or alternative arithmetics (Blackburn, 1986, p. 128). These examples are quite clearly different in kind from the example of our imaginative limits above; they are more nuanced and intellectual.

Our conceptual faculties need not be deemed an infallible guide to possibility. Intuitions can be subject to further revision just as much as empirical discoveries can. But it is important to distinguish between *prima facie* and ideal conceivability: while the former is apt to be mistaken, the latter arguably entails metaphysical modality. Ultimately, modal theorising seems to be an inherently rational activity. It is this quality which links ideal conceivability and metaphysical possibility together: modal notions clearly include “rational notions, such as consistency and rational entailment, [...] breaking the link between conceivability and possibility breaks the link between rationality and modality” (Chalmers, 1999, pp. 489-490).

4.3.3 One-dimensionalism

Kripke’s basic idea was founded on the notion of a rigid designator, a term which refers to one and the same object in all possible worlds in which the object exists. Kripke argued that proper

¹⁶ See Sorensen (2002) for examples of these pictures and further discussion.

names are rigid designators. Descriptions, however, are non-rigid and so may refer to different objects in different possible worlds. Furthermore, Kripke argued, natural kind terms behave in a way analogous to proper names in that they refer to the same sort of thing or stuff in all possible worlds. On this analysis, any identity statement involving rigid designators will be necessary.

Strictly speaking, this will only be true when the object to which the rigid designator refers is a necessary existent. In this case, the designator is said to be strongly rigid. If the object is a contingent existent then its designator is weakly rigid. Planets, for example, are not typically considered necessary existents. Thus, the necessity of Hesperus is Phosphorus is formulated as: \Box (if Hesperus exists, then Hesperus = Phosphorus) rather than simply \Box (Hesperus = Phosphorus) (Fitch, 2004, pp. 95-96).

Kripke's derivation of the necessary *a posteriori* consists of the combination of an empirical discovery in this – the actual – world and an *a priori* principle regarding the necessity of identity or the essence of natural kinds. For example, the *a posteriori* necessity that water is H₂O is comprised of the empirical discovery that water is comprised of H₂O together with the *a priori* principle that chemical structure captures the essence of water. For Kripke, although it is conceivable that water has a different atomic formula, XYZ say (since its being H₂O is not analytic or part of the concept of water), it is not possible. Given that water *is* H₂O it is not possible for it to have been something else because being H₂O is essential to its nature. The overall method is to examine our actual world and having done so to consider a counterfactual world in which certain things are different and to assess what we, in our language, would say about such a world. For instance, it is argued, in a counterfactual world in which the colourless, tasteless, potable liquid which we drink is XYZ, such a liquid would not be water even if the inhabitants of that world called it 'water' in their language. On this account, there appear to be more conceptually possible worlds than metaphysically possible worlds.

4.3.4 Two-dimensionalism

The reader will notice that the counterfactual assessment takes place from the perspective of our actual world. For an actualist about possible worlds such as Kripke, this way of proceeding is completely unsurprising. According to this view, our world is ontologically privileged: it is the only concretely existing world there is. Alternative possible worlds are merely stipulated, heuristic entities used instrumentally to test hypotheses about the nature of the real (actual) world. This interpretation, one-dimensional Kripkean model semantics, of modal systems is a natural one, but importantly it is not the only way to interpret modal frameworks.

Two-dimensionalists argue that Kripke's method can be seen as a special case of a more general model according to which the world which is to count as actual can be varied. On this account, other worlds can also be considered actual and counterfactual assessments can be made from

the perspective of those worlds. The adoption of this framework has an important consequence for understanding the difference between metaphysical and conceptual possibility. On this account, the space of metaphysically possible worlds is coextensive with the space of conceptually possible worlds so the difference between metaphysical possibility and conceptual possibility is not a difference in kind. Instead, metaphysical *a posteriori* necessities emerge as a result of epistemic perspective based on whichever world happens to be the actual one.

5 Conclusion

If nothing else, it should be evident from the preceding discussion that there are several different interpretations of metaphysical modality to be found within the philosophical literature. The ambiguity this generates is rarely confessed. By way of conclusion, then, it will be helpful to summarise just what these conflicting accounts are. Although the upshot is a somewhat disjointed picture of metaphysical modality, some key contours can be identified nonetheless. The main issues relate to whether metaphysical modality expresses what is ultimate in alethic modality and differing intuitions about whether empirical or speculative methods are most appropriate when engaging in philosophy.

As far as can be ascertained, it is agreed by everyone that metaphysical modality is an alethic variety of modality. Beyond this, however, characterisations of the notion differ markedly. In particular, three sources of disagreement can be seen. Firstly, there is disagreement over whether the sense of modality in question is absolute or relative. Secondly, there is disagreement over whether the subject matter of the metaphysical is universal and all-encompassing or restricted to a particular domain. Finally, there is disagreement as to whether metaphysical modality is to be distinguished according to the methods by which it is known or not. These disagreements are deeply interwoven but each will be considered in turn.

Firstly, there is metaphysical modality understood as an absolute modality. This seems to be closest to the Kripkean (1980) notion of metaphysical necessity as truth in all possible worlds. The lack of a qualifier here is instructive because it is also the notion of modality whose subject matter is unrestricted and given by the nature and identity of all things (Fine, 1994). On this conception, metaphysical necessity is to be identified with broadly logical necessity. This includes necessities of all kinds including mathematical truths and the particular Kripkean examples of *a priori* and *a posteriori* necessities. One consequence of this point of view which is rarely commented upon is that the qualifier 'metaphysical' becomes in some ways misleading. It suggests the locution 'compatible with the laws of metaphysics' which is suggestive of a relative rather than an absolute modality. The notion involved here, though, is rather one of unqualified possibility, of possibility *simpliciter*. Accordingly, van Inwagen writes:

“What I have called possibility without qualification, some have called ‘absolute’ or ‘intrinsic’ or ‘ontological’ or ‘metaphysical’ possibility. The first two seem good enough names. I don’t find ‘ontological’ or ‘metaphysical’ particularly appropriate tags, however. [...] An analogy is perhaps provided by ‘truth without qualification’ (as opposed, for example, to scientific, metaphorical, approximate or contingent truth). One *might* call ‘truth without qualification’ ontological or metaphysical truth, but these wouldn’t be particularly appropriate tags.” (Inwagen, 2001, p. 249 n. 9)

The generality of the Lewisian (1986) modal framework, on the other hand, according to which metaphysical possibilities are specified by means of accessibility relations between worlds, seems to allow the laws of metaphysics of any given world either to range over the entire space of possible worlds or to be restricted to a particular locale. On the latter interpretation, metaphysical modality is relative. It has been argued that the former is the ‘Standard Conception’ of metaphysical modality while the latter is the ‘Non-Standard Conception’ (Rosen, 2006). It is therefore inappropriate to suggest Lewis was committed to the latter conception. However, that his framework permits it is not entirely insignificant since it suggests that

“our discourse about necessity is shot through with ambiguity. The ambiguity only matters when we are discussing the modal status of metaphysical propositions – or perhaps the modal status of certain laws of nature. But when it does matter, we ignore it at our peril. We are inclined to believe that questions about the modal status of the claims of mathematics and metaphysics are unambiguous. But if I’m right, that is not so.” (Rosen, 2006, p. 38)

Arguably one reason this ambiguity is seldom appreciated, though, is because metaphysicians do typically consider laws of metaphysics and metaphysical modality to be ultimate and fundamental.

Secondly, there is metaphysical modality understood as being a species of modality defined by concern with a particular subject matter. In contrast to the approach just noted, the subject matter of metaphysical modality has sometimes been confined to concrete entities only in contrast with mathematical modality, which concerns abstract entities, and logical modality, which involves both (Bricker, 2008). However, it is unclear that this heterodox understanding of metaphysical modality offers any theoretical advantages over the traditional account which takes metaphysical modality to incorporate everything.

Thirdly, there is metaphysical modality understood as being a species of modality which is defined by the way in which it is known. In this regard, a contrast between logical and metaphysical modality has been founded upon the idea that the former is known *a priori*

whereas the latter is known *a posteriori*. (Psillos, 2002, p. 173). Conversely, physical and metaphysical modalities have been distinguished by the former being known *a posteriori* and the latter being associated with statements known *a priori*. (Leeds, 2007, p. 459) Once again, though, these proposals for reform have not proved especially popular.

Consequently, there are reasons to conclude that metaphysical modality is alethic, absolute and all-encompassing in its subject matter. Judging exactly how far out metaphysical possibility extends, however, is far more controversial. It was seen early on that many of the options for grounding modality suffered from an inability to give a satisfactory account of modal epistemology. This general problem is no less acute for metaphysical modality in particular. Put simply, intuitions about the role of *a priori* and *a posteriori* methods in philosophy are starkly divided. Those who prefer the latter will limit the realm of possibility to the scientific.

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