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# Modal Naturalism

Science and the Modal Facts

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30 April 2024

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### 3. Modal naturalism

#### 3.1 The core view

Modal naturalism, as we use the term, is the view that science is central to the fulfilment of our epistemic aims (knowledge, justification, or whatever else they may be) with respect to the modal facts. This view does not presuppose any specific account of the metaphysics of modality: in principle, one can combine modal naturalism with views of the nature of modality as different as Lewisian modal realism, Stalnakerian actualism, or Siderian conventionalism. Some of these accounts of modal metaphysics may themselves be more or less naturalistic; see section 3.4 and Wilson (forthcoming) for discussion. But for present purposes, modal naturalism is purely a thesis about the role of science in the epistemology of modality. It says that science has a key role in the achievement of our epistemic aims *via-à-vis* the modal facts, by providing evidence which bears on them.

We set aside modal eliminativism (the view that modal discourse is incoherent or otherwise vacuous), fatalism (the view that only the actual is possible) and conventionalism (the view that the distinction between the possible and the impossible is wholly conventional) for the purposes of this discussion; our argument is directed at philosophers who take modality seriously but who are unsure how modal facts can be evidentially grounded in the deliverances of science. We take it that any metaphysical framework that gives a substantial role to modality (which, in practice, includes almost every metaphysical framework that is taken seriously today) requires supplementation by at least a minimal story about the epistemology of modality.<sup>1</sup> Specific theories of the nature of modality, then, will only play a role in our discussion insofar as they constrain possible accounts of the epistemology of modality.

Although there are various types of modal claims one could focus on, we simplify here by focusing on the epistemology of questions about what is and is not possible. From a realist point of view and adopting for simplicity a possible-worlds framing, this reduces our domain to questions about the extension of modal reality: what are the possibilities? We will adopt this worlds-based framing in what follows, and accordingly we will talk of different theories concerning the modal facts as different hypotheses concerning which possible worlds there are. However, we think that our argument can be straightforwardly adapted to theories which assign no central role to possible worlds: even anti-realists about possible worlds will need to capture the difference between more and less inclusive conceptions of what can happen.

A core tenet of modal naturalism is that science bears evidentially on modal matters. Here we operate with a broad sense of ‘evidence’, such that any information which bears on rational degree of belief counts

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<sup>1</sup> An adequate framework should, in our view, also address the question of the function of modal judgement (Divers 2009), but we will not focus on that here.

as evidence. In Bayesian terms, for science to evidentially bear on modal claims is simply for the rational posterior probability of the modal claim, conditional on some scientific evidence, to be different from the unconditional probability of the modal claim.<sup>2</sup> This formulation immediately runs into complications, though, given the usual idealisation of Bayesian epistemology that non-contingent propositions all have rational probability 1 or 0.<sup>3</sup> We mention the Bayesian formulation mainly to give a sense of how direct an epistemic connection between scientific evidence and modal judgement we have in mind.

The most obvious way for science to bear on modal matters (since the actual is possible) is for our conception of the range of objective possibilities to be expanded by learning from scientific evidence that a scenario not previously justifiably regarded as an objective possibility is in fact actual. This has, we think, happened numerous times in the history of science. But our conception of the range of possibilities can, we think, be expanded by science in other ways, too, and we will discuss some such cases in chapter 8. At any rate, the idea that science bears on modal inquiry by expanding our view of the range of possibilities is just one among several conceptions of what science can do for us in modal theorising – conceptions we will explore further in section 3.4.

Modal naturalism, put in terms of knowledge, says that our primary and best evidence for modal claims is to be found in the body of knowledge obtained through our best science. This formulation of the thesis is congenial to a view of science such as that of Bird (2022), according to which science consists in the accumulation of scientific knowledge. However, versions of the modal naturalist thesis can readily be formulated in the context of other accounts of scientific epistemology which focus instead on more internalist forms of justification.

Our ‘first-order’ modal naturalism, a view about how we know the modal facts, leaves open a second-order question about how we know modal naturalism itself: is the evidence taken to support first-order modal naturalism *itself* scientific (giving us second-order naturalism) or a priori (giving us second-order non-naturalism)? A potential regress lurks in the background here. We remain neutral on the second-order question for the most part<sup>4</sup>; our focus will be on defending first-order modal naturalism. However, it is worth noting that, since we will motivate modal naturalism using concrete scientific examples, our argumentative approach will be at least partly second-order naturalistic.

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<sup>2</sup> We will assume that there are some objective constraints on rational priors, but subjectivist approaches can instead regard the different brands of naturalism as associated with different choices of priors.

<sup>3</sup> Generalising Bayesian epistemology to non-contingent subject matters, including mathematics and metaphysics, remains a major challenge. We cannot address it in detail here; see Titelbaum (2013) for discussion.

<sup>4</sup> For a view of modality which is naturalistic at both first and second orders, see Wilson (2020); see also the discussion of grade 4 metaphysical modal naturalism in section 3.3.

## 3.2 Descriptive vs. prescriptive modal naturalism

In this section, we distinguish two distinct forms of modal naturalism, descriptive and prescriptive, which differ in their relative permissiveness regarding the potential for a priori routes to modal knowledge. Descriptive modal naturalism is a (perhaps contingent) methodological claim about how we human investigators in practice typically acquire and justify our modal knowledge. Prescriptive modal naturalism is a (probably non-contingent) claim about what sources of evidence can in principle enable the acquisition and justification of modal knowledge.

Prescriptive modal naturalism involves denying that the modal facts can be known purely a priori, while descriptive naturalism does not. It is compatible with descriptive modal naturalism that there be purely a priori routes to all the modal facts, so long as we typically can't – or don't – make use of these purely a priori routes and instead in fact have to justify our actual modal beliefs with additional forms of evidence. In contrast, according to prescriptive modal naturalism, no fully a priori route to the acquisition and justification of all modal knowledge is available, even in principle. On the prescriptive approach, the modal subject matter is such that at least some modal knowledge cannot be gained purely a priori: in that case, scientific evidence is indispensable to the acquisition and justification of our modal beliefs.

We think that descriptive modal naturalism is plausible on grounds that are largely independent of the underlying metaphysics of modality. Whether or not the fundamental laws of nature are contingent need not bear on how we actually come to most of our modal beliefs. By contrast, the plausibility of prescriptive modal naturalism is tightly linked to the character of the modal facts. If the fundamental laws of nature are entirely contingent, such that there is a background space of metaphysically possible worlds with different fundamental laws, then it looks like science will play no role in providing evidence about that background modal space. Accordingly, while our presentation of descriptive modal naturalism in 3.3.1 will be theory-independent, our presentation of prescriptive modal naturalism in 3.3.2 will be more theory-dependent. Different approaches to the metaphysics of modality will provide the basis for increasingly strong forms of prescriptive modal naturalism.

### 3.2.1 Descriptive modal naturalism

Descriptive modal naturalism is 'descriptive' to the extent that it concerns the realm of actual modal epistemic practice and what is or is not expedient therein. Unlike the prescriptive modal naturalist, the descriptive modal naturalist doesn't conclusively rule out purely a priori pathways to modal knowledge. Rather, she allows that, for all we know, the modal facts could in principle be knowable purely a priori by ideal reasoners or knowers quite unlike us.

For comparison, consider a population of creatures which, in virtue of limits to their cognitive capacities, cannot prove mathematical facts for themselves, but which nevertheless can acquire justified mathematical beliefs through reading textbooks written by more advanced creatures. In this scenario, mathematics remains an a priori discipline because it is in principle possible to justify mathematical beliefs a priori, even though the creatures in question gain all their mathematical knowledge a posteriori.<sup>5</sup> Descriptive modal naturalism allows that we might be in a comparable situation, for all we know, vis-à-vis the modal facts.

But the descriptive modal naturalist is not concerned, in the first instance, with this sort of science-fiction scenario. She sets aside in principle knowability and ideal or alien agents. She reasons: *who knows* whether we might in principle come to know about modal matters purely a priori, and how could we possibly determine what an ideal or alien agent could know a priori? If the descriptive modal naturalist is motivated by broader naturalist proclivities, she might even find such talk inherently suspect. Science can only demonstrate so much about the hard ‘in-principle’ limits on knowability (for minds like or unlike ours) and the normatively loaded matter of ideal reasoning. Instead, the descriptive modal naturalist is interested in practically efficacious pathways to modal knowledge for epistemic agents with cognitive capacities like ours, in epistemic circumstances suitably like our own. She recognizes that those capacities and circumstances are largely contingent. She looks at the historical successes and failures of modal reasoning, such as those we will discuss in chapters 8 and 9, and concludes that unchecked a priori speculation demonstrably isn’t a good guide to the modal facts – and science demonstrably is. According to the descriptive modal naturalist, a sound modal epistemology takes *that* as its starting point.

We have said that descriptive modal naturalism is compatible with any view of the modal status of the fundamental physical laws. That’s because the reliability of how we come to know the modal facts in the particular way or ways we do appears to be independent of whether or not the fundamental physical laws could have been different.<sup>6</sup> Still, suppose that the descriptive naturalist happens to be a *contingentist* – that is, she happens to think that the fundamental physical laws are not metaphysically necessary. This contingentism has important implications for her brand of descriptive modal naturalism. In particular, coupling descriptive modal naturalism with contingentism entails that we have no direct path to knowledge of metaphysical necessities. The contingentist can’t simply point to the laws of physics and get metaphysical necessities for free, as can her *necessitarian* counterpart (i.e. her counterpart who believes the fundamental physical laws *are* metaphysically necessary). When science tells us, for example, that nothing can travel faster than light, contingentism entails that it has acquainted us with a *mere* physical necessity. For the contingentist modal naturalist, science can inform us of metaphysical necessities only indirectly, in virtue of logical

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<sup>5</sup> Burge (1993) argues that the status of beliefs a priori is preserved over testimony; for the sake of this example, we suppose with Malmgren (2006) that testimony does not preserve a priori status.

<sup>6</sup> This assumption is sometimes rejected; see Wilson (2013).

inferences from the possibilities of which science does inform us. When science teaches us, for instance, that it is possible for spacetime to be curved, we learn via deductive inference that it is not impossible for spacetime to be curved. Coupling descriptive modal naturalism with contingentism therefore results in relatively thin knowledge of the domain of metaphysical necessity. By contrast, if necessitarianism is held fixed, the modal naturalist can decisively rule out any ‘in principle’ a priori pathways to modal knowledge and have greater purchase on the domain of metaphysical necessity.

### 3.3.2 Prescriptive modal naturalism

Prescriptive modal naturalism is a thesis about our modal knowledge, not a thesis about the modal facts. But what modal facts there are determines what modal knowledge can be knowledge of, and what modal facts are like helps determine the ways we can come to know them. So, modal epistemology is not wholly isolated from broader considerations concerning modality. In particular, the modal status of the laws of nature bears on what sorts of modal conclusions can be drawn from empirical investigations of various sorts.

Certain precursors of the modal naturalist epistemology have associated it with a hardline ‘modal necessitarian’ metaphysics, according to which the fundamental laws of nature are the same at every possible world (see e.g Bird 2007, Edgington 2004, Wilson 2013). As we noted in the previous section, this metaphysics is optional for defenders of descriptive modal naturalism. But must prescriptive modal naturalists be modal necessitarians? Modal necessitarianism does tend to support prescriptive modal naturalism: if the actual fundamental laws of nature constrain the entire range of genuine possibilities, and if it is primarily by doing science that we acquire evidence about the fundamental laws of nature, then science has a central role to play in modal epistemology. Indeed, if there are no further constraints on the genuine possibilities beyond those imposed by the fundamental laws of nature, then modal naturalism follows immediately. Prescriptive modal naturalism and modal necessitarianism thus form a potentially attractive package, which one of us has defended elsewhere in the specific context of Everettian quantum theory (Wilson 2020).

More moderate views of the modal status of laws are available, which also align with prescriptive modal naturalism. Certain general symmetry or conservation principles are intuitively ‘less contingent’ than the specific force laws which respect those general principles (Lange 2009). The interpretive distinctions typically drawn in philosophy of physics between boundary conditions (including initial conditions), dynamical laws, and ‘constants of nature’ make room for some of these to be metaphysically necessary and others metaphysically contingent (Wolff 2013, Linnemann 2020). Even if only certain general or structural aspects of the actual physical laws were metaphysically necessary, science would retain an indispensable role in coming to know those necessities.

We have distinguished between two forms of modal naturalism, descriptive modal naturalism and prescriptive modal naturalism, which differ in their attitude toward the in-principle availability of purely a priori paths to modal knowledge. For the purpose of evaluating modal naturalism, we aim to stay as neutral as possible on the modal status of the laws of nature. Although the metaphysical necessity of the fundamental laws (or of suitable aspects of the fundamental laws) would seem to enforce prescriptive modal naturalism, we also think that a strong case for descriptive modal naturalism can be made regardless of whether the fundamental laws of nature could have been different.

In our overall case for modal naturalism, we presuppose neither the truth nor the falsity of necessitarianism. However, some of our examples will only count in favour of modal naturalism in the context of modal necessitarianism. Accordingly, we divide our core motivating examples into two categories: discoveries of possibility (chapter 8) and discoveries of impossibility (chapter 9). Our cases of discoveries of possibility can support modal naturalism regardless of the modal status of the laws of nature. Our cases of discoveries of impossibility, however, tend to support modal naturalism only if the fundamental laws of nature are non-contingent; contingentists about the fundamental laws can explain away these examples as discoveries concerning ‘mere’ nomic impossibilities.

### 3.3 How exclusively does science bear on modality?

There are multiple dimensions along which one can distinguish varying strengths of modal naturalism. One such dimension – the focus of this section – concerns how large an overall contribution science makes to meeting our modal epistemic aims. That is to say, there are differing conceptions of just how significant scientific evidence is to modal inquiry as compared with other potential sources of evidence.

In this sense, a relatively weak view of the relevance of science to modal inquiry holds that *some* of the evidence bearing on modal claims (in practice or in principle) is scientific evidence. Essentially, the claim is that science has some relevance to modal inquiry. Such a view is consistent with modal rationalism, modal empiricism, and counterfactual accounts, so it is not by itself characteristic of modal naturalism. As we will discuss in chapters 4-6, modal rationalism holds that modal knowledge is gained primarily a priori, modal empiricism holds that it is sometimes or often gained a posteriori, and counterfactual accounts hold that it is gained through counterfactual reasoning. The view that some evidence bearing on modal claims is scientific is consistent with these frameworks, because it says only that appeal to scientific evidence is one way to meet our epistemic aims. Such a view allows that pure a priori justification, a posteriori justification outside the context of science, or counterfactual reasoning outside the context of science might also conduce to those aims, and in fact might be what most often guides us in practice.

A stronger view holds that science has special evidential import relative to the modal facts. On this view, science is not just one source of evidence about the modal facts among others but our *primary* source, in virtue of the especially strong evidence it generates. Such an account is inconsistent with modal rationalism, since it assigns evidential primacy to science and not to unsupplemented a priori reasoning. The view remains potentially reconcilable with modal empiricism and counterfactual accounts, at least to the extent that a posteriori evidence and counterfactual reasoning are important components of science. However, it does suggest that extant versions of modal empiricism and counterfactual accounts leave out an important part of the overall picture.

Finally, an even stronger view holds that all evidence bearing (in practice or in principle) on modal claims is scientific evidence. That is, science is the only source of evidence regarding the modal facts. We referred to this view in the previous section as uniformist modal naturalism; we might also call it *exclusive modal naturalism*. Exclusive modal naturalism is inconsistent with standard modal epistemologies. If systematic science is the only way to meet our epistemic aims with respect to modality, then neither pure a priori reasoning, nor empirical observation, nor counterfactual reasoning alone are sufficient in that regard; rather, there must be something distinctive about the package of scientific practices that makes science a unique conduit to modal knowledge (or justification or understanding, etc.).<sup>7</sup>

Many will find exclusive modal naturalism unpalatably strong. It is hard to know what the identifiable and *sui generis* aspects of science would be that would make it *the one and only* conduit to modal knowledge (or whatever other epistemic accomplishments). Moreover, would-be proponents of the view would need to argue that no non-scientific evidence bears on modal judgements, which would be a significant dialectical burden. Alternatively, one might think that logic and/or mathematics impose evidential constraints on modal judgements which are not properly regarded as scientific constraints. It has been argued that a priori philosophical components to modal epistemology are required in addition to all the evidence science can offer (e.g. Morganti and Tahko 2017); we shall have more to say about this view in section 7.3.

For the time being, we aim to stay as neutral as possible regarding how much of the evidence bearing on modal facts is scientific; our aim in this chapter is just to lay out the range of different positions that fall under the rubric of modal naturalism.

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<sup>7</sup> This would make modal naturalism inconsistent with accounts such that of Biggs (2011), which indexes modal knowledge to one isolated tool of science, namely abduction.

### 3.4 How extensively does science bear on modality??

In the previous section, we focused on how exclusively scientific evidence bears on modal questions; in this section we focus instead on how extensively science shapes our knowledge of different sorts of modal facts. Some views claim that scientific evidence is relevant only to a constrained subset of the modal facts; other views extend the relevance of scientific evidence across the whole range of modal facts. In short: some metaphysical views are more deeply naturalistic than others.

With a nod to Quine's three grades of modal involvement (Quine 1953b) – in which Quine distinguished three increasingly more committal attitudes one might take to modal discourse – we will classify naturalistic approaches to objective modality into several categories, depending on the depth of scientific modal relevance they allow. Each grade views science as bearing on a broader set of modal facts than the previous grade.

The first category of views we will distinguish – in order to set them aside – is not a version of modal naturalism at all:

- **Ungraded:** There is no such thing as objective modality.

According to ungraded views, scientific discoveries are in principle irrelevant to the nature and extension of nomological and metaphysical modality. Modal truths, insofar as there are any, are conventional. Views of this sort have been defended by van Fraassen (1977), Cameron (2010), and Thomasson (2020). Because they deny any objective standard of correctness for judgements of possibility and necessity, and since we are assuming a broad metaphysical realism about our modal subject matter, these approaches fall wholly outside of our classification of approaches to modal epistemology.

Although the next category of views incorporates realism about objective modality, they are still not versions of modal naturalism as we understand it.

- **Grade 0:** Scientific evidence has no evidential bearing on objective possibility.

According to grade 0 views, nomological possibility is compatibility with the laws of nature, and science (obviously!) bears on what the laws of nature are – but it does not bear on any broader form of objective modality. This sort of view is held by a variety of philosophers (including Armstrong 1983, Bealer 1987, and Lowe 1998 — note that the latter two authors are canonical modal rationalists of the kind we will discuss in chapter 4).

At grade 0 science can tell us about the physical modal facts. However, this does not fall within the scope of the version of modal naturalism which we endorse in this book. Our version of modal naturalism concerns objective modality and scientific input thereinto. At grade 0, the background space of objective possibility remains completely isolated from scientific evidence; hence we set it aside.

Grade 1 is the first grade that, for our purposes, counts as genuine modal naturalism. It allows scientific evidence to support the acknowledgment of previously unrecognised possibilities.

- **Grade 1:** Scientific evidence can support expanding our view of the objective possibilities.

Philosophers at grade 1 allow that science can reveal objective possibilities, while isolated a priori reflection does not (and, perhaps, cannot). Lewis, for example, claimed to be willing in principle to recognise the possibility of ‘unHumean whatnots’ in light of quantum theory (Lewis 1986). A more familiar case is the recognition of the possibility of curved spacetimes in light of general relativity. These cases, and others like them, are discussed in detail in chapter 8.

Grade 1 is the version of modal naturalism that finds widest support in the existing literature. To move beyond it requires that science can provide evidence that something a priori coherent is nevertheless impossible. Such a move generally requires an account of modality according to which there are objective necessities going beyond logical truths or matters of individual identity. The most prominent such approach is contemporary *dispositional essentialism* or *scientific essentialism*, associated with authors like Shoemaker (1980), Swoyer (1982), Ellis (2001) and Bird (2001, 2007). On such views, natural kinds have modally rich characters which are essential to them, so that – for example – salt might necessarily dissolve in water or like charges might necessarily repel. Thus we obtain grade 2 modal naturalism:

- **Grade 2:** Scientific evidence can support contracting our view of the objective possibilities.

Philosophers at grade 2, such as Ellis, make much of the ability of their view to account for science as discovering a genuinely modally rich world. However, it is not clear that the substance of their view fully lives up to this rhetoric. Grade 2 views still typically acknowledge the objective possibility of ‘alien’ fundamental properties with ‘alien’ laws, so that there is a possible but uninstantiated property of ‘schmarge’ which is just like charge except that like schmarges attract (or schmattract). This suggests that grade 2 might not end up being significantly more naturalistic than grade 1: grade 2 views might amount to a mere redescription of grade 1 views, recognizing the same general patterns of possible behaviour and differing only over whether natural kinds have their behavioural profiles essentially. To put this challenge in slogan form: at grade 2, scientific discoveries bear on what cannot happen only by bearing on which properties are rightly called by which names.

Concerns over the substantiveness of grade 2 modal naturalism may be addressed by moving to grade 3, which incorporates grade 2 but adds that science can rule out structural possibilities concerning possible patterns of property behaviour. There might, for instance, turn out to be no possibilities with more than eleven spacetime dimensions—not just because any more complicated structural possibilities would not deserve the name spacetime, but because there just are no such structural possibilities.

- **Grade 3:** Scientific evidence can support contracting our view of the structure of the objective possibilities.

As we interpret them, views of this grade are expressed by Edgington (2004), Leeds (2007), Ladyman and Ross (2007), Wilson (2013b) and French (2014). The kinds of cases which we ourselves take to best motivate grade 3 versions of modal naturalism are discussed in chapter 9.

When it comes to surveying the modal facts – the main modal epistemological project with which we are concerned in this Element – grade 3 is the form of modal naturalism that assigns science the deepest role. However, there is a grade worth mentioning which goes deeper still:

- **Grade 4:** Scientific evidence bears on what objective possibilities are.

Grade 4 extends the bearing of scientific evidence from what we have called the extensional aspects of modal metaphysics to the core aspects of modal metaphysics – that is, to the constitution of modal reality itself. At grade 4, science bears not just on what is possible but on what possibility is.

Grade 4 views are few and far between and best illustrated by example. Wilson (2020) argues that many-worlds quantum theory can be understood as an account of the nature of metaphysical modality. The core proposal of Wilson’s quantum modal realism is that metaphysical contingency is variation across different branches of the quantum wavefunction of the universe. The following two principles underpin the quantum modal realist account of modality:

- **Alignment:** To be a metaphysically possible world is to be an Everett world.
- **Indexicality-of-Actuality:** Each Everett world is actual according to its own inhabitants and only according to its own inhabitants.

Beyond quantum modal realism, it is hard to find unambiguous examples of grade 4 views. Certain views which might be described as radical modal naturalism, such as Price’s projectivist approach (which we will discuss in section 7.4), are more naturally classified as ungraded views. Ontic structural realists

(Ladyman & Ross 2007, French 2014) also sometimes say things which suggest a grade 4 view: e.g. that laws and symmetries are fundamental or constitute modal structure. Insofar as Priest (1987) intends the recognition of contradictions to be motivated scientifically (e.g. via considerations of quantum theory), his dialetheism may also qualify as a grade 4 view. However, there are few discussions of modality in the literature which explicitly commit to the distinctive thesis of grade 4: that the underlying nature of modality is revealed by science in the same way that science reveals the underlying nature of material phenomena.

To summarise the grades again:

- Ungraded: We can know a priori that there is no such thing as objective modality. (Van Fraassen; Cameron; Thomasson)
- Grade 0: Scientific evidence bears on what is nomologically possible. (Armstrong; Bealer; Lowe)
- Grade 1: Scientific evidence expands our view of the metaphysically possible. (Einstein/Minkowski)
- Grade 2: Scientific evidence contracts our view of the metaphysically possible. (Shoemaker; Ellis; Bird)
- Grade 3: Scientific evidence contracts our view of the structure of the metaphysically possible. (Edgington; Leeds; Ladyman & Ross; French)
- Grade 4: Scientific evidence bears on what metaphysical possibilities are. (Wilson; Priest)

For the purposes of motivating modal naturalism, we will focus on grades 1, 2 and 3 in the remainder of this book. In particular, we will focus in chapter 8 on cases from the history of science which can be taken to support grade 1, and in chapter 9 on cases which can be taken to support grades 2 and/or 3. We do not regard ungraded and grade 0 views as meaningfully more naturalistic than other mainstream approaches to the epistemology of the modal facts. By contrast, grade 4 is a radical form of modal naturalism; we prefer to focus here on more modest versions of modal naturalism. Since grade 4 plausibly implies grades 1-3, however, we take it that providing a defence of grades 1-3 also lends grade 4 a little indirect support.

### 3.5 Summary

In this chapter, we began by setting out some of our framing assumptions, including our focus on questions pertaining to possibility and our minimal realism about modality. We distinguished between descriptive and prescriptive forms of modal naturalism, the former of which assigns science a critical role in how we actually acquire modal knowledge, and the latter of which claims science is in principle indispensable to acquiring modal knowledge. On our characterization, descriptive modal naturalism decisively rules out a priori pathways to modal knowledge, while prescriptive modal naturalism does not. We distinguished between different conceptions of how exclusively science bears on modal facts, and we

discussed the compatibility of those conceptions with standard modal epistemologies. We then distinguished several grades of modal naturalism which differed with respect to the types of modal question that science can help us adjudicate.

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