Part I | The Explanatory Role of Necessity

1 Modality and Explanation

Some of our assertions ascribe properties of "necessity," "possibility," "impossibility," "essence," and the like to propositions or individuals. These *modal* statements go beyond simple assertions about what is the case – *you are sitting in a chair now, wondering if your decision to open this book was a wise one* – and make claims about how things could not possibly be, or could be, or must be – *you could not be listening to Mozart on Neptune*, yet *you could be lounging in a comfortable chair in your home listening to Mozart*, and in any case *you must be mad to have freely chosen to read the reflections of a philosopher instead*.[1] Or again, and more relevant to theoretical concerns, *it is impossible for there to be true contradictions*, *cows are essentially mammals*, *it is impossible for humans to survive the ingestion of large doses of cyanide*, and (closer to home) *it might have happened (it was once possible) that I was kidnapped at birth by a band of gypsies related to some of my less distinguished Bohemian forebears and joined in their adventures rather than pursuing the far less exciting life of a philosopher*.

As these examples suggest, the specific meanings of modal terms such as "necessity" and "possibility" varies with context. (But note that these properties are interdefinable within a given context: To say that a proposition expresses a possibility, in some particular sense, is just to say that it is not necessary in that same sense. Or to say that it is necessary is to say that it is not possible that it be false.)

Relative and Absolute Necessity

The central distinction to notice is that between absolute and (merely) relative kinds of necessity/possibility (cf. Hale 1996: 93–117; 1997: 487–514).

Many familiar modal claims are clearly made against some set of background assumptions, as when a detective says that Professor Plum could not have been the murderer, or when I say that I cannot run a 4-minute mile. When making such claims, we hold fixed certain background truths (vaguely understood), and intend to call attention to the fact that the 'necessity' in question is an invariable consequence of those truths. (In the examples given, such background truths include, in the one case, perhaps facts about the Professor's location around the time of the murder, together with facts about time limits on travel across the requisite distance given available means of transport. *Given* these and a few other unquestioned facts, the Professor could not have been the murderer. In the second case, the background facts include my current level of physiological stamina and biological facts about the consequence of this when I set out to run a mile as fast as I can.) If we dignify such homely examples by taking them to implicitly express a general form of necessity, then details aside, it is clear that the kind in question would be merely relative or conditional: relative to some basic facts at least some of which need not have been the case, the proposition in question is necessary because a direct consequence of those facts. (One might say that the fact that I cannot run a 4-minute mile represents a 'biological necessity' for me at the present time. And perhaps it is a biological necessity for human beings generally that none of us can run a 2-minute mile.)

Notice that our understanding of such relative necessities rests on a prior grasp of absolute necessity, or necessity *tout court*. To say that it is biologically impossible for a human being to run a 2-minute mile is to say that certain facts about human biology are strictly inconsistent with their achieving such a feat: it is flat-out impossible that such facts and feat co-obtain. Similarly, consider what philosophers term 'the law of noncontradiction': For any statement p, it is not the case that both p and not-p. (That is, there are no true contradictions.) This proposition does not, it seems, just happen to be true, as if it would be intelligible to suppose that tomorrow I should go into my office and discover, contrary to the principle, that my desk both is and is not there at one and the same time. Rather, we recognize that it must be true, entirely independent of engaging in any kind of empirical inquiry, as all such inquiry presupposes it. Contrast the necessity of such a logical truth with the example of biological necessity just given. It is not absolutely necessary that I cannot run a 4-minute mile. Presumably, I can or could have so trained myself that this would have been possible. Likewise, even the physically unalterable fact that none of us can run a 2-minute mile is not obviously absolutely necessary. Imagine there having been different basic physical forces such that the power generated when our feet

make contact with the ground is greater than is the case as things actually stand.

Scientifically Established Necessities

Ordinary explanations of particular phenomena that draw upon scientific theories are replete with modal concepts. Human beings cannot survive more than 5 days without water; matter-energy must be conserved; it is possible that this atom of radium will decay within its half-life, and possible that it will not; all physical structures conforming to the molecular structure of H_2O and within a certain range of temperature must exhibit the characteristic properties of liquidity.

Now some philosophers and even the occasional scientist will interpret all this as loose talk. The strict truth, on at least one view, is that a physical theory simply identifies measurable qualities and describes a model of their dynamical co-variation. The theory predicts (and retrodicts) that the distribution of qualities in the world conforms to the model. It does not imply that the world *must* conform to the model.

This sort of view is plausible to the following extent: a well-trained scientist who refuses to assert anything beyond this minimalist claim for a theory he embraces can hardly be accused of misunderstanding the theory. Grasping a scientific theory and engaging in the process of refining it in the light of new evidence surely does not involve taking a contentious stand on the philosophical question of what explanation entails by way of metaphysical commitment. By the same token, this minimalist core that is common ground to all competent theorists, regardless of their philosophical views, cannot simply be presumed to suffice of itself for explanatory purposes. And prima facie, it does not. Given simply a range of observations in which F-ness is linked to G-ness either invariably or by some high statistical measure, and a model that links together this and other observed regularities in an elegant fashion, what reason could we have for presuming that unobserved past and future occurrences of F-ness likewise are accompanied by G-ness? When probed, our strong inclination to think the pattern will hold quickly reveals a deeper assumption that it must hold. 'That is the way nature *works*.' Something's being F naturally gives rise, or has a measurable tendency to give rise, to (a suitably placed) something's being G. The property of F-ness, in other words, is somehow assumed to be bound up with a G-ness promoting *tendency*. How precisely we should think about this is a subject we will consider below. For now, I just note that some such partly developed assumption underlies our pervasive tendency to generalize

observed results. And it is not just the vulgar who speak and think this way, but ever so many of the learned as well. Consider these randomly selected snippets from discussion in recent issues of *Nature*:

> Injury to the adult central nervous system (CNS) is devastating because of the inability of central neurons to regenerate correct axonal and dendritic conne ctions. . . . The inability of the adult neurons to regrow after injury cannot be entirely attributed to intrinsic differences between adult CNS and all other neurons. As reported by Ramón y Cajal in 1928, Tello showed in 1911 that adult CNS neurons could regrow if they were provided access to the permissive environment of a conditioned sciatic nerve. Seventy years passed before Aguayo and colleagues replicated these studies with new methods that definitively confirmed that adult CNS neurons have regenerative capabilities. This finding revealed that the failure of CNS neurons to regenerate was not an intrinsic deficit of the neuron, but rather a characteristic feature of the damaged environment that either did not support or prevented regeneration. (Horner & Gage 2000: 963–70)

> It has long been known that stable BECs can exist in an infinite homogeneous gas with repulsive interatomic interactions (that is, positive A), but cannot exist in a gas with attractive interactions (negative A). (Burnett, Julienne, Lett, Tiesinga, and Williams 2002: 225–32)

> The amino acid phenylalanine is yet another. Without it, the body cannot function. It is heavily involved in neuron-to-neuron communication and it controls the release of some sleep-, and appetite-regulating hormones. Too much of it, however, damages the brain.
>
> The biological catalyst phenylalanine hydroxylase (PH) fine-tunes phenylalanine levels by converting excess amounts into another amino acid, tyrosine. Faulty PH, therefore, can lead to a build-up of phenylalanine in the blood and hence to mental retardation.
>
> This is exactly what happens in the genetic condition known as phenylketonuria. All babies are tested for this PH disorder soon after birth since, if present, brain damage can only be averted by stringently controlling a sufferer's dietary intake of phenylalanine. (Moderation in all things 1999)

> Motor proteins are essential to life: without them, all cellular transport would grind to a halt. (Geeves 2002: 129–31)

> These low-Mg# amphiboles are also able to cause the greatest fractionation between Nb/La and Zr/Sm (Fig. 2b). In contrast, amphiboles with Mg# > 80 cannot impart low Nb/Ta to coexisting melts, nor can they cause low Nb/La. (Foley, Tiepolo, and Vannucci 2002: 837–40)

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Necessity plays a yet deeper role in the practice of *formulating* scientific theories. Alongside the ever increasing constraints of accumulating empirical evidence, theories are always held to the constraint of logical and mathematical consistency. Possible models that embody formal contradictions are never (knowingly) given consideration. Why not? Let us not be ashamed to consider the obvious: contradictory theories cannot be true. Reality, whatever its particular character, must conform to fundamental logical constraints. It is a rightfully controversial matter exactly which candidate formal constraints are real ones. Surely not *all* those of first-order logic? The vagueness of most of our concepts, the useful invocation of the notion of property indeterminacy (perhaps conceived along the lines of value intervals for the possession of a property) in describing quantum phenomena, and other considerations all raise legitimate issues concerning the normative character of first-order logic with identity. These controversies of detail may be set aside at present, since it remains plausible that whatever we might think about them, a minimum core of pretheoretic formal constraint including, for example, the law of noncontradiction is inevitable. How we are to decide which logical system best captures the necessary structure of reality is a matter to be considered in the next chapter.

The last few paragraphs express common philosophical claims concerning the place of modality in scientific explanations that have nonetheless been heavily challenged, especially in the twentieth century. Various thinkers have sought to reject, deflate, or reconstrue such claims in ways designed to show how the world might be wholly devoid of primitive modal features. Let us call the view these thinkers oppose "robust modal realism."[2] In doing so, we risk confusing it with David Lewis's notorious identification of possible ways things might be with an enormous array of concrete totalities ('worlds') disconnected to the one we inhabit. But Lewis has misappropriated that title (as will become clear below) and so in the interests of clarity it is fitting that we should claim it back. I will consider and criticize a range of views that stand opposed to robust modal realism shortly. But let us first note an important, perhaps central, motivation for pursuing such revisionary stances.

An Epistemological Worry about Modality: Causal Contact with Modal Facts

Assume for the moment that there are irreducible, objective truths involving necessity, such as *Necessarily, there are no true contradictions*. How could we come to know such a truth? Apparently not by anything even generally

like the process whereby we come to know truths about our physical environment.[3] In paradigm cases of environmental knowledge, such as my knowing that there is now a computer screen before me, there is a fairly direct causal signal from the circumstance that grounds the truth to my sensory apparatus, giving rise in turn to my belief. In other cases, such as when I come to learn about the world through the testimony of others, there remains a causal connection between the circumstance and my believing it, albeit one that is rather more circuitous. Finally, even in cases of generalizations, my knowledge is typically based in part on causal acquaintance (direct or via testimony) with some of its instances. But, of course, even if I based my acceptance of *Necessarily, there are no true contradictions* on my repeated failure to observe any 'contradictory scenarios', this sort of evidence would provide (meager) evidence only in favor of the embedded, nonmodal generalization. It gives me no reason to accept that such a proposition is *necessarily* true.

Underlying this 'causal contact' challenge to the modal realist is a thesis that all true propositions are in some way 'grounded' in reality, such that one can sensibly ask for a given case whether there is a causal connection between the grounds and an instance of believing the proposition so grounded. In the previous paragraph, I used the vague term "circumstance" to preserve neutrality between two different views about the general nature of such grounds. On the view I favor, for every truth, there is some *entity* or collection of entities that is its grounds, in the sense that the obtaining of those entities metaphysically necessitates the truth of the proposition. This is the 'truthmaker' doctrine, promulgated in recent times by David Armstrong (most recently, 1997: 115–19). Armstrong's version of the doctrine posits that every truthmaker consists in a *state of affairs*, a structured fact (in the Tractarian sense) that helps to constitute the fabric of the world and that consists in an object or objects having properties and/or standing in relations. (Where the cat is on the mat, there is the cat, the mat, the being-on relation, and a further entity, the-cat's-being-on-the-mat, into which the cat, the mat, and the being-on relation enter as constituents.) A less demanding view of grounds maintains that truth does not supervenes on entities alone – on *whether* things are – but on objects and 'how things are' with respect to those objects. According to this view, objects have properties and stand in relations without their being entities which are their having those properties or standing in those relations (see Dodd 2001: 215–20). Defenders of this minimalist view find mysterious the nonmereological composition of Armstrongian states of affairs. They also point out that Armstrong is forced posit a strange global fact (that delimits the totality of facts) to handle seeming counterexamples such as negative truths and is in any case forced

to acknowledge that some truths resist grounding in Tractarian facts – e.g., the truth that redness is a property, not an individual.[4]

One need not commit to a view on this matter to see the problem facing the modal realist. Whatever the metaphysical character of the 'grounds' of irreducible modal truths, they wouldn't seem at first glance to be capable of triggering a causal chain that ultimately impacts our cognitive system. The felt immediacy of our grasp of certain elementary necessary truths makes it natural instead to speak of our directly 'seeing' or 'recognizing' their truth. But when such a perceptual metaphor is taken as some kind of analogy, it becomes obscure. It suggests we have a modal-property-detecting capacity in our cognitive architecture, one that is unmediated by anything like sensory organs, such that modal facts impress themselves *directly* on our minds. The problem here is that such a view is wholly implausible on empirical grounds.[5]

Let us be clear about what a causal/perceptual model of knowledge of modal truths requires.[6] Alvin Plantinga (1993) construes the challenge as simply that of showing how a subject has a causal connection to the *proposition* that is believed to be necessary. On his reading, the root worry for Benacerraf and others concerning a priori knowledge (which includes much of our modal knowledge) is that I cannot so much as believe or even entertain the proposition in question without such a state's having the proposition itself in its causal ancestry. In response to this worry, he suggests that it might suffice that we have ordinary perceptual acquaintance with instances of properties that enter into the relevant modal propositions. (e.g., the greenness and redness that appear in *Nothing can simultaneously be green and red all over*). In virtue of this fact, we might be said to be indirectly acquainted with the proposition itself. But, contra Plantinga, the problem is not merely one of showing how I can be causally affected by an abstract object (a proposition). It is rather to show how my belief is a causal consequence, in part, of the proposition's ground, or truthmaker. And the suggestion is that acceptances of (what we are assuming to be) primitive modal truths resist any such subsumption under familiar causal processes such as sensory perception. Causal acquaintance with the nonmodal features of redness and greenness doesn't explain how I come to know that nothing *can be* simultaneously green and red all over. It is the necessity of these properties' mutual exclusion that apparently fails to play a role in my forming this belief. To make matters worse, there surely is *some* kind of true causal explanation for my having such beliefs, in which case my belief will be explained by something other than the modal fact itself. The upshot is that our modal beliefs are at best accidentally true. Were those facts false (*per impossible*), our beliefs would be just as they are.

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Laurence Bonjour advances an outline of a response to the challenge as follows (1998: esp. 101–10, 156–62, 180–6). Using the example of the necessary mutual exclusion of redness and greenness, he suggests that we may intelligibly suppose that the properties themselves (rather than representational surrogates) in some manner enter into the content of the correlated thought. If this is granted, we can then say that we may 'see', by a kind of inspection of these properties' natures, that the relation of mutual exclusion obtains. This is a primitive act of 'rational insight', but, Bonjour contends, there is nothing mysterious about it. It is just what we find it natural to say about such an example, it requires no mysteriously direct contact between a nonspatiotemporal entity and the mind, and it is anyways implicitly presupposed by our practices of rational inquiry, as no alternative view of the justification of such a priori propositions is possible.

However, even if this last claim were correct (something I will challenge in the next chapter), it is doubtful that adopting Bonjour's suggestion would take us very far towards allaying the Benacerraf-inspired worry about a broadly rationalist understanding of modal belief. First, it isn't possible to extend Bonjour's suggestion to cases of highly general propositions that do not reference specific properties or individuals but which instead have a universally quantified form. Second, and more fundamentally, even if Bonjour were right that we have the kind of maximally direct acquaintance with some properties such as redness and greenness, it doesn't become automatically transparent how we might 'see' their necessary mutual exclusion. How exactly does this go beyond our having a disposition to strongly believe the incompatibility to hold when we consider the matter? As best I can see, Bonjour doesn't say anything further that might shed light on this matter.

My ultimate aim is, with Bonjour, to defend the possibility of justified modal belief. Other philosophers, however, have thought that something on the neighborhood of Benacerraf's worry is sufficiently decisive as to warrant a shift to one of the deflationary or anti-realist positions that we will now consider.

Modal Nihilism

The most influential critic of any form of modal realism is W. V. Quine. Quine not only repudiated the modal realist's unabashed acceptance of primitive modal truths and properties but judged modal talk as altogether beyond rehabilitation. His recommendation, then, is stark: purge our theoretical discourse of modal terminology altogether, letting it go the way of other such unsatisfactory notions as phlogiston and the ether. Not only is

nature to be purged of causal powers, in Humean fashion, but the formal structure of logic and mathematics is taken to be a body of claims concerning this world alone, of the same status as those traditionally deemed 'empirical'. (One might be tempted to put the matter thus: all truths are contingent truths. But a Quinean would reject this formulation as resting on the very modal distinction he denies.)

Quine is famous for his attack on the concept of analyticity, which concept he takes to be bound up with necessity.[7] I will not explore this very familiar territory here. I want only to sketch out the consequences he draws from this for the metaphysics and epistemology of necessity.

Quine's repudiation of necessary truths leads him to hold that no beliefs are beyond revision, contrary to the traditional view on which logical, mathematical, and other truths are apprehended a priori and have the epistemic status of certainty.[8] Instead, all beliefs receive their justification from being integrated into a 'web' of interconnecting beliefs, in terms of which we account for the continual flood of data from our sense organs. In contemplating changes in this structure of belief, we have to try to maximize agreement with experience while maintaining the greatest simplicity and explanatory power in our theory. Beliefs concerning elementary logic are *unlikely* to be revised owing to their place at the 'core' of the web (meaning that they are implicated in virtually all other beliefs). Surprising new data is most easily accommodated by making revisions nearer to the 'periphery', where beliefs have fewer connections with the rest of the web, as they generally concern particular matters of fact now or in the past. But should a large body of data prove recalcitrant to less drastic revision (such as revising the particular catalogue of fundamental physical qualities posited in the current physics), the most conservative change adequate to the data might be the most drastic one conceivable: revision of fundamental logical and mathematical beliefs.[9]

Quine's overall epistemological views raise several large issues, but considering many of them would constitute a diversion from our present purpose.[10] I will focus solely on Quine's rejection of facts involving possibility and necessity and his resulting views concerning the justification of beliefs concerning elementary logic.

Crispin Wright (1986) has well argued that Quine's view runs into problems when we apply it to conditional logical statements concerning the observational implications (O) of our theories (Ø) in particular experimental circumstances (C): $Ø \rightarrow (C \rightarrow O)$ (see also Wright 1980: 415–20). We draw upon such statements in order to assess how well our theories fare at the tribunal of experience. But note that on Quine's view one option open to us when experiential evidence contradicts the predicted outcome is to

replace that very conditional with another – to change our view concerning the logical implications of the theory. But when should we do so? Only when it will lead to a better optimization of fit with experience balanced by theoretical simplicity and power. To judge this matter, we need to know the logical consequences of the different change-in-logic options open to us. And so again we must ask: Which hypothesis concerning the consequences for each such option will achieve the desired optimization? It appears that in adjudicating the original issue of when it is best to change logics we are led to inquire first, and without end, concerning the theoretical virtue of related higher-order principles. Or perhaps we are just led back to the very principles we were intending to adjudicate. Which is to say we are either caught in a vicious regress or reasoning in a circle.

Thus we cannot sensibly consider the possibility of rejecting statements that are themselves bound up with our most basic standards for good theory formation. Now the moral of this for our question of whether we are to accept that such logical statements are objective necessities has yet to be drawn. For one might contend that Wright's argument shows only that our practice of theory formation requires that some principles or other be regarded as beyond revision (an epistemological category), not that they be accepted as necessary truths (a metaphysical category). So let us now ask how the acceptance of such principles is not only required on practical grounds for theory formation, but also is justified, if with Quine we take them to have the same metaphysical status as exceptionless generalizations in physical theory. In asking this, we are asking about the rationality of the theory-forming practice itself. In particular, we need to consider whether that practice implicitly presupposes theses that run contrary to Quine's modal strictures.

Consider the law of noncontradiction. As we have already seen, it differs from an empirical generalization, such as that mass/energy is conserved, in that we presuppose the law in our inquiries. We do not look and see whether or not there are logical contradictions out in the world and then build theories that reflect what we find in this regard; we presuppose there are not and reject out of hand theories that entail that there are. So we cannot claim indirect, theory-mediated evidence. Nor does it seem sensible to hold, as Mill did, that this logical principle is inductively justified by direct experience of the world. For we have no notion of what it would be to observe a counterinstance to the principle. Once I assume that there might, epistemically speaking, be contradictions 'out there', my experience seems powerless to disconfirm this hypothesis. For as best I can judge, my experience as it is might have just the character I should expect in a world where the hypothesis is true.

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Graham Priest, the foremost contemporary defender of the claim that there are true contradictions, argues that we do know what it would be to perceive contradictions and that such perception is not typical of ordinary experience. Hence, we have (defeasible) evidence against all sorts of hypotheses concerning contradictory states of affairs (1999: 439–46). His argument rests on the perceptual effects of certain 'impossible figures' – drawings depicting impossible situations, such as one point on a staircase being higher than itself, or a point in a field being both at rest and in motion. But he does not make a case for supposing that contradictions (supposing there could be such) are apt to manifest themselves in the way that impossible figures, which are not themselves impossible objects or situations, do. Priest cannot rightly claim the anti-skeptical high ground by insisting that only a general skepticism would take seriously the (im)possibility that we might have consistent perceptual experience of an inconsistent situation. We must first perceive some real contradictions before we can make claims about what impossibilities it is reasonable to exclude, given our experience.

It is not reasonable to accept a principle that lacks any positive confirmation and that is, in some sense, an 'open question' – given the totality of our cognitive practice and evidence, it might (epistemic) be false. (This is not the skeptic's reasoning. He restricts permissible evidence in a highly controversial way.) If, contrariwise, we justifiably hold that the principle is *necessary*, our acceptance of its *truth* is in good order. Furthermore, even if I am wrong and success in systematizing our experience through reliance on the law of noncontradiction does confer justification on believing *some* such principle, the target principle is likely to be far more limited. At best, such justification would accrue to belief in a version of the noncontradiction principle restricted to the past and present, for the commonsensical reason discussed in the section above, "Scientifically Established Necessities": if the principle does not reflect a fundamental necessity, but is simply a general proposition that has held good up until now in the particular world there happens to be, we have no clear basis to presume that it not only has held true, but will continue to do so. This is of course a variant of the problem of induction – the problem of showing the reasonableness of projecting certain past regularities consistent with the denial of any kind of necessity in their so holding. Its most usual form concerns lawlike regularities concerning specific matters of fact, regularities that are provisionally posited and in some cases confirmed in scientific theorizing. Oddly, many twentieth century metaphysicians (until recently, anyways) have dismissed the problem with a shrug, perhaps accompanied by the astonishing declaration that rationality "just consists," in part, in presupposing the legitimacy of induction quite apart from any metaphysical theses that might serve to ground it.

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A better reply claims the problem is insoluble *whatever* one's metaphysics of modality, and so it cannot be wielded against one who would reject necessities, whether causal or logical (Lewis 1986: 117; Loewer 1996: 101–27). But I think that this reply rests on a misunderstanding of the problem – or if one likes, it conflates two problems of induction, one insoluble but resulting from unreasonably high standards of justification, and the other quite sensible and insoluble only for the impoverished metaphysician. The unreasonable problem, posed by the skeptic, is to give non-question-begging proof or evidence that (proper) inductions will mostly pan out in our world. Positing causal necessity here is no good, of course, since it covertly begs the question. The other 'problem' allows that we may reasonably assume induction to be a fundamentally reliable practice, but it goes on to ask what sort of metaphysical conception of the world (as regards its basic dynamics) meshes with – makes sense of – that epistemological assumption. A Humean world that consisted of fundamentally *independent* occurrences that happened to conform, at a deep level of description, to certain fairly simple regularities would be a "cosmic coincidence" (Armstrong 1983: 161; Strawson 1989: 253–77). If each of an enormous class of descriptions of what the future holds are equally possible, metaphysically, then an epistemological principle that permitted one to believe that the actual future will fall within a particular, very narrow subclass of that space of possibilities would be arbitrary. (Note that the problem actually applies to the past as well, once we question the ground of our accepting apparent memories as veridical. Absent the right kind of causal necessity, the assumption that these states have any reliable correspondence to past events is baseless.)

The only kind of metaphysical account we seem to be able to give is modal in character. True causal structure (as against reductive surrogates, involving actual or counterfactual patterns of regularity) alone can make sense of this.[11] If the world's dynamics are an outworking of stable causal necessities or probabilistic propensities, then it follows that inductions that sufficiently track such necessities will be upheld, notwithstanding the trickiness of spelling out that "sufficiently."[12] What I have done here is simply to generalize this lesson to the very extreme skepticism of Quine, which extends beyond causal to absolute necessity.[13] It *is* reasonable for us to believe that fundamental logical principles will govern the flow of future experience. But this does not cohere with our also believing, with Quine, that logical principles are, metaphysically, just a subset of universal generalizations, distinguished only by their degree of generality. Contrariwise, if some logical principles are absolutely necessary, then it follows that our future experiences will perfect conform to them, and so it is reasonable to

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incorporate such principles into each attempt to revise or replace our going theories.

Modal Reductionism and Deflationism

Quine's view on modality is extreme and not widely shared. But many take themselves to be kindred spirits even while accepting a legitimate role for modal discourse. In this section, I will briefly canvass the ideas of some who, while accepting that many modal statements are true, have sought either to reductively analyze modal statements in terms of the nonmodal or to deflate their 'ideological' or ontological commitments.

Tarski

Alfred Tarski's famous paper "On the Concept of Logical Consequence" (1983 [1936]), presented a now-standard method for defining the intuitive notions of logical consequence and logical truth. The method involves characterizing a class of set-theoretic models, or interpretations, and defining a notion of truth-in-the-model. A sentence A is said to be a logical consequence of a set of sentences B if and only if A is true in every model in which all members of B is true. And A is a logical truth just in case A is true in all models *simpliciter*.

Tarski's method, broadly speaking, undeniably clarifies these notions. Our present concern is not with the details and applications of these methods, either in Tarski's hands or in those of his successors, but with their significance to reductionist ambitions in the philosophy of modality. I think light can be shed on this matter by considering John Etchemendy's (1990) provocative critique of Tarski's analysis.[14] I am not here concerned with whether Etchemendy has got Tarski right or with the details of the alternative account of model-theoretic semantics that he favors. It is the nature of Etchemendy's central criticism that interests me. Some philosophers see Tarski's analysis as achieving a *reduction* of the concepts of logical truth and consequence: logical truth is not merely helpfully represented in terms of truth in all models, constructed in some fashion, it simply *is* truth in all models. If this were right, it would be a large step in favor of general modal reductionism. Etchemendy agrees that analytic reduction is Tarski's ambition, but he argues that the ambition is misguided. Model theory cannot offer a true analysis of logical notions but must, in fact, presuppose them. The core intuition driving his argument seems to me fundamentally right, though Etchemendy himself, I believe, fails to recognize its full import.

Etchemendy's Tarski ("e-Tarski") develops an "interpretational" semantics for the logical notions. To make short a long story, we hold fixed the logical constants of our sentences and construct interpretations which, in a systematically varying fashion, assign each of the remaining terms to actual-world objects falling within the logically appropriate category (objects to singular terms, n-place predicates to n-place properties, etc.). As Etchemendy puts it, we hold fixed the world and vary the interpretation of the sentence in all ways consistent with its logical (syncategorematic) form. A sentence is then deemed a logical truth just in case it is true in every such interpretation. And a sentence A is a logical consequence of a group of sentences B, C, . . . just in case A is true in every such interpretation in which B, C, . . . are true. These, importantly, are intended as reductive definitions, and not merely claimed to be extensionally adequate.

Etchemendy criticizes e-Tarski for grounding logical truth and consequence in *empirical* generalizations – the actual truth of a general class of statements sharing logical form – and thereby missing the essential element of their independent 'guarantee' of truth and validity. What is special about logically valid forms of inference is that we can recognize their truth-preserving character without first knowing the truth values of their many instances. As a result, we can then learn the truth of a conclusion on the basis of the truth of the premises. But if e-Tarski were right, it would need to go the other way around: to determine an argument's validity, we would have to check all the instances and see whether truth is universally preserved in them. But we don't do this, of course. Somehow, we are confident that appropriate model-theoretic accounts of validity are extensionally adequate without checking the associated generalizations. Validity is, therefore, conceptually independent of the analysis and our grasp of it is indeed used in judging the analysis's extensional adequacy.[15]

Etchemendy's criticism of e-Tarski is strikingly similar to the causal realist's critique of a Humean reduction of causation to general patterns, actual or counterfactual, in the distribution of qualities in the world. Supposing there to be no causal necessity which constrains future outcomes, the realist then asks, what gives us a "guarantee or reason to expect" that our inductive generalizations are true, without our having verified each of the instances? That we confidently judge future outcomes based on quite limited evidence shows, the realist argues, that we regard the truth of such outcomes as grounded in something explanatorily prior to the generalizations.

It is natural to assume with respect to logic that the guarantee stems from the necessity of the truth of a logical truth or the truth-preservation of a valid form of inference. But Etchemendy himself is unclear on this

point. In the book (1990), he asserts that necessity is a necessary condition on such properties, but says it is unclear whether it is an alethic or epistemic variety, since some necessities are not logically demonstrable. Perhaps the best way to interpret him is as holding that logical truths are necessary truths that meet some further condition of formal provability. However, in the later paper, Etchemendy says that his own explanation of validity "is semantic, not modal": "the logic of [a given] language arises from the meaning of its constituent expressions," and these logic-generating expressions are not limited to those figuring in first-order logic and traditionally termed "logical constants." (Such 'logical' expressions are special only for their ubiquity in language and their sharpness: "The expressions traditionally singled out in the argument forms studied by Aristotle or Boole or Frege or Gentzen are simply expressions whose logic is particularly clear, interesting, and widely applicable." Hence, not just "and," "or," and "not," but also "elephant" and "grey" contribute to fixing the logic of English. This would seem to lead to a muddying of logic with ubiquitous vagueness, worries about identifying the presumably nominal essential features of natural kind terms, and so on. But the particulars of Etchemendy's views on the demarcation of logic is not our concern here.)

Etchemendy may be supposing – his remarks on this point are unclear to me – that the *nonmodal* properties of the meanings or concepts expressed by the terms of a language suffice to fix the logical properties of its sentences, so that no appeal to primitive necessities is needed. If so, we would have a kind of reduction of logic after all. But such a view, whether Etchemendy's or not, will not carry through. Do our concepts have primitively essential properties? If so, we have not avoided appeal to unanalyzed necessities. If not, our view will face much the same objection that Etchemendy presses against e-Tarski. Even granting that concepts are timeless entities, which fact precludes intrinsic change over time, without a way to ground the further suppositions that they are *essentially* timeless (or what here amounts to much the same thing, that what *is* timeless *cannot* become temporal), and that contradictions *cannot* be true, we have no 'guarantee' that whatever is now true of concepts must continue to be true of them, and so no guarantee that the logical properties they now fix are true for all times. (We would be forced to rest the truth of the logic our concepts generate on unverified generalizations over such abstracta, or abilities, or whatever else we take concepts to be.)

Perhaps we might reply to this problem that it is part of the concept of a concept that it is timeless and unchanging.[16] That is to say, we treat concepts as functional roles. It need not be primitively the case that the occupant of the concept *elephant* itself has primitively essential features; instead,

it is the case only that we would not classify that occupant as being the concept *elephant* unless it has the relevant features. Our concept of a concept, then, provides the missing guarantee of the requisite stability in the features of our concepts. But the same dilemma as the original one can be posed to this view of the concept of a concept: is it essentially as described or not? Duplicating the strategy of replying by appeal to a still higher-level concept would result in a vicious regress, since the features of a given concept-level appear to depend on those of the concept one level up.

I conclude that Etchemendy's criticism of e-Tarski reductionism about logical notions stands and appears to generalize. If we rely upon the logical notion of consequence (and those interdefinable with it, such as logical truth) in our theorizing, we are implicitly committed to its irreducibility.

Armstrong

Our next proposal for modal reductionism finds its material not in set-theoretic machinery but in the elementary features of the physical world. David Armstrong (1997) defends an ontology on which the world is constituted by an enormous array of states of affairs, or facts, which themselves consist in a particular's having a property (conceived as an 'immanent universal') or a plurality of things' standing in a relation. The sole higher-order structure to this array are contingent nomic connections among certain universal pairings and a totality fact that all the first-order states of affairs there are, plus the contingent nomic states of affairs, are all the facts there are *tout court*.

His first step towards an account of modality is to advocate the thesis of *Independence* for first-order states of affairs: no states of affairs, individually or in conjunction, entail the existence or nonexistence of any wholly independent states of affairs. (Some complex states of affairs are treated as overlapping. To get the basic picture, think of the world on a logical atomist model, though Armstrong is officially neutral on this matter. Here there will be atomic states of affairs that do not admit of further decomposition. Then Independence says that any conjunction of atomic facts are consistent with the existence or nonexistence of any wholly distinct atomic fact.)

Armstrong then treats possibility in terms of consistent combinations from among *actual* states of affairs. Given Independence, the scope of consistency is quite wide. Corresponding to every form-respecting mereological sum of actual states of affairs and their constituent universals and particulars, there is a possibility. Respecting ontological 'form' here means that a

particular can only play the role of particular – for example, be instantiated by a universal, not by another particular – and a universal must retain its – adicity – whether it is a one-place property or n-place relation. What of 'alien' possibilities, involving possible particulars or universals that are nowhere instanced in our own world, such as a fundamental force-generating property completely other than any of our mass, charge and the like, known or unknown? These Armstrong handles by indirect specification, using existential generalization: it is possible that there be a particular *A* (or distinct particulars *A* and *B*) that are not any of the actual particulars a, b, c . . . and that have properties p, q, and r . . . and so on.

Such is Armstrong's basic picture. There are several quite basic problems with it, it seems to me, that show it to be wholly untenable. One concerns the truthmaker for possibilities involving 'alien' fundamental properties (ones not instantiated in our world). Armstrong suggests that the sum of actual states of affairs, minus the totality fact, suffice for these possibilities. But I cannot see that they do. These states of affairs are *consistent* with there being a plenitude of alien possibilities, but also with there being none or only some of those that we might have thought there were. Which is to say that the actual facts can be truthmakers for none of these candidates for the truth concerning alien possibilities. Armstrong might here appeal to Independence, which holds that no states of affairs, individually or in conjunction, entail the existence *or nonexistence* of any wholly independent states of affairs. This fact, if it is a fact, when conjoined with the totality of particular actual facts, is capable of generating a plenitude of abstractly characterizable alien possibilities, but at a cost: for then he can no longer maintain (as he wishes – p. 160) that Independence is itself simply an expression of what possibility *is*, not a further fact needing its own ontological basis. Given its crucial role in underwriting a plenitude of alien possibilities (in fact, garden-variety nonactual possibilities as well), it will have to be posited as an ultimate and irreducible modal fact, which result undercuts the attempt to provide a completely reductive analysis.

Armstrong's problems extend beyond a failure to achieve a plausible and complete reduction of modality. In common with all reductive analyses, it appears arbitrary in refusing to allow us to ask certain questions about its basic reducers. In Armstrong's case, it is natural to wonder why, for example, a universal U could not have been a thin particular.[17] Note that we are not asking why something doesn't count as a universal if it doesn't play the role that fixes the meaning (in this context) of "universal." We are, rather, asking of the entity itself, apart from how it may be varyingly described in different contexts, why it could not possess certain higher-order characteristics had in the actual world by those entities we dub

"particulars." It appears that Armstrong simply *stipulates* that the space of possibilities is constrained by adherence to this sort of ontological form without such entities having primitively essential features that make true the constraint. That is to say, a modal truth is treated as trivial despite its lacking a truthmaker.

I turn to a couple epistemological criticisms. If Armstrong were able to achieve his reductionist ambition of analyzing what possibility is, it is hard to see why we should feel constrained to believe that truths concerning *this* world are wholly consistent. There would be no fundamentally normative fact underwriting the consistency of the world. The hypothesis that it is so would seem just that: a hypothesis.

Secondly, I suggest that however successful Armstrong is in allowing a place for modal claims consistent with strong actualist scruples, his account makes them insignificant. If these be the facts of which modal discourse speaks, why should we care? Why should we care about combinatorial arrangements of actual stuff? If Armstrong is right, there is a mereological sum of actual stuff that is just what I am referring to when I say that I might have had the more exciting life of a gypsy. But the world's containing such a disconnected sum doesn't seem worth taking notice of, let alone spending long summer days musing about. Reduce (strictly, ontologically) one class of facts to another whole class of facts and you seem to give up on their having any distinctive significance – yet we assume that both practical and theoretical possibilities often have great and distinctive significance. It is the stuff of our dreams – our hopes and fears, our pride and shame. Alas, the deflationary accounts of possibility to be discussed immediately below, while not equally fraught with internal difficulties, give equal cause for the puzzled response: "Is *that* it?"

Lewis

While we will make several criticisms of our next account, let us acknowledge that its author was not without a metaphysician's proper courage. You say your picture of reality is large? Chances are, when compared to the view of David Lewis, your picture is extraordinarily provincial, a mere speck in the galaxy he took himself to inhabit. For while you believe in one all-encompassing connected totality – in short, a great big world – Lewis believed in uncountably many of these. What we call the "actual" world is just (trivially) the one we inhabit. There are ever so many worlds more or less like ours that we properly call "possible, but not actual," but this distinction is merely perspectival, as when we say that our friend is there and not here. (From the perspective of persons engaged in modal

discourse within other possible worlds, their world is actual and ours is merely possible.)

Lewis developed this thesis in great detail and used the resulting theory to analyze a number of philosophical concepts beyond modality itself. Here I will merely indicate a few basic elements of the account of modality, since his account should be familiar to most readers of this work – as should be my criticisms of it, which are very general. One familiar criticism that I won't make is the one that Lewis told us he most commonly faced: the Incredulous Stare. I myself should be prepared to accept or at least take seriously his ontology if I thought it could plausibly claim to illuminate modality and other philosophical issues. In fact, as we will see in Chapter 5, I am prepared to take my courage in my hands and give (quite independent) a priori reasons for thinking there to be very many things rather like the things Lewis called "worlds." (Mine differ from his in having a common source.) But even if there were as many as he thought and they were completely disconnected in the way he required, I should deem them to be completely irrelevant to modality, mental content, causation, and other such philosophical notions.

It is possible that I have been kidnapped at birth by a band of gypsies and gone on to live a very different life. Lewisian truthmaker: another world rather like ours in which a person rather like me – the person most like me within that world – has such a history. (Actually, there are an enormous number of such worlds, differing in various details inessential to underwriting this basic scenario.)

More radically: *I might have been a disembodied spirit, subject to constant illusion of embodiment in a world such as ours by a very powerful evil spirit*. Truthmaker: worlds a lot less like ours than the those cited in the previous paragraph, in each of which there is a disembodied person with a psychological history similar to mine (more similar to mine than any other denizen of that forsaken world) who undergoes such deception.

In general, possibilities for me are grounded in ("made true by") the careers of my other-worldly *counterparts*, defined in terms of similarity relations to me, which Lewis said are inconstant and indeterminate, tacitly fixed by the context in which the modal claim is made. Likewise, for possibilities for other actual things. And there are lots of worlds besides that are so unlike ours that none of its objects bear similarity relations to any of our world's objects except under the most liberal and tenuous of standards. Thus, unlike Armstrong, Lewis provided for robust truthmakers for alien possibilities. While the number of worlds must have some transfinite cardinality, whatever that is, they will together constitute a nonarbitrary plenum, corresponding to all the logically possible ways one might suppose

things might have been – given a Humean rejection of necessary connections between distinct existences.

Lewis did not suppose that when an ordinary person utters the sentence "I could have been a contender," the person is thereby claiming that there is a world disconnected from this one in which a person much like himself is a contender. But neither does the person have a contrary conception, tacit or explicit, of the truthmaker of his sentence. According to Lewis, pretheoretic commonsense has no opinion on this matter. At the outset of theorizing, therefore, the philosopher has wide latitude in generating an account of modal truthmakers on which (most, uncontroversial) modal statements come out true.[18] His constraints come from outside the target discourse. Apart from empirical information about the nature of our world, these constraints are principally the general theoretical virtues of theoretical conservatism, unity, and explanatory strength. Lewis thought his picture is a good bargain, overall, since it can analyze away abstract entities such as propositions and properties and reduce the stock of conceptual primitives, all by simply coming to believe in more of what we already believe in (concrete worlds).[19]

Lewis was right to describe his ontology as a philosopher's paradise. The main trouble is, it doesn't plausibly do any of the work it is meant to do. Three basic criticisms that we laid at Armstrong's feet apply equally well here. First, the theory seems arbitrary in ruling out of bounds questions we naturally want to ask about its reducers, questions that betray a dogged refusal to recognize the acceptability of the proposed reduction. (Hence, Lewis's claim that we have no pretheoretic commitments concerning the truthmakers of modal claims seems mistaken. We may not be committed to a *theory* of modal ontology, but dissatisfaction with certain kinds of answers betrays intuitions concerning the direction in which the truth lies.)[20] When we ask, "why could not world A have failed to exist?" or "why could there not have been nothing at all?" we are not given satisfying answers. Instead, we are told "world A necessarily exists," even though there is nothing *about* it or anything external to it that accounts for why this is so. (It is not, e.g., taken on as an ontologically primitive feature of worlds.) Possibilities just are worlds, according to the reductive analysis, and it is a trivial consequence of ordinary modal thinking (and so reflected in Lewis's theory) that whatever is possible is necessarily possible. But even when one entertains Lewis's ontology and sees how he exploits it to do modal theory, it is hard to resist thinking that the question "why must *that* world exist?" is sensible and does not receive an appropriate answer in Lewis's theory. One might say that Lewis's theory, despite its grandiosity, doesn't take modality seriously enough. Being a realist about modality means one can

ask for substantive accounts – ones not simply stipulated by the formal apparatus of the theory – of the modal properties of any entities.

And as with Armstrong's reductionist account, we are presented with a theory that underwrites modal claims but undercuts their practical and theoretical significance. It is mysterious that so much of our practical reflection on our lives should concern a realm of objects utterly disconnected from the world in which those lives are carried out. And it is equally puzzling why we should be rational to conform our theories about *this* world to truths about patterns among all worlds, which is just what we are doing according to Lewis when we constrain our theories by logical principles.

Rosen and Sider

Many philosophers balk at Lewis's account of possible worlds because they find the thesis of countless concrete worlds incredible. But most find talk of possible worlds useful, even essential, for systematizing modal beliefs. They take such talk heuristically, rather than literally. Gideon Rosen (1990) suggests that modal thinking is guided by something like Lewis's account *regarded as a fiction*. When I say, "Gandalf is powerful and mysterious," I am not actually asserting the existence of a large wizard having such features. Instead, my remark should be taken along the lines of, *according to the fiction of J. R. R. Tolkien, Gandalf is powerful and mysterious*. Similarly, says Rosen, we might look to Lewis's theory of possible worlds as indicating a large fiction. On Lewis's theory, the modal assertion that there might have been wizards is analyzed as 'in some possible world there are wizards.' The fictionalist likes the form of the analysis, but not its substantive commitment. So he suggests, alternatively, that the assertion be analyzed as *according to the possible worlds theory, in some possible world there are wizards*.

Of course, Lewis did not explicitly state the alleged facts about any of the possible worlds, let alone all of them. Instead, he put forward various principles that he believed governs truths across the worlds, giving us some general indication about what he took the worlds to be like. And this is all well for Lewis, since he straightforwardly believed the modal facts to outstrip anything he might say about them, much as the physicist believes there are ever so many particular physical facts that he has not directly described. But the matter is more delicate for the fictionalist. He does not believe there are any modal facts beyond what is (in some way) indicated by the statements of Lewis's theory. Hence, the fictionalist must suppose that many of these truths are merely *implicit* in the theory. Just as we may assume that

Gandalf's having ten fingers is implicit in *The Lord of the Rings*, despite the fact that Tolkien never explicitly tells us this and it is not a strict logical consequence of anything he does tell us, so we may assume many facts are implicit within possible worlds theory, despite the fact that neither Lewis nor anyone else has enumerated or logically implied them.

Notice that Rosen's "according to the fiction of possible worlds . . ." operator is *modal* in character, similar to an entailment relation. Hence, Rosen's fictionalism (as he recognizes) cannot be taken as a complete reduction of modality, as with Lewis's own account. Its goal is the more modest one of *paring down* the ontological commitment of one who makes ordinary modal assertions, consistent with the minimum corresponding increase in conceptual primitives. For Rosen, a primitive notion of truth-in-fiction isn't too high a price to pay for rejecting Lewis's worlds.

But notice that there is an awful *lot* of modal truth that Lewis's general theory neither tells us about nor strictly implies. Ted Sider (2002) convincingly shows that Rosen's "according to the fiction of possible worlds . . ." operator will have to carry a lot of weight beyond not just strict entailment, but also the more liberal (and vaguer) *ordinary* notion of implied truth-in-fiction. For instance, it is impossible for a compact machinery of some fundamental principles plus a generative recombination principle to entail all the mathematical and conceptual necessities there are, let alone truths involving 'alien' fundamental properties (2002: 279–315; see also Sider 2003: 180–208). So the fictionalist will have to contend rather implausibly that these are nonetheless implicit in the basic possible worlds account. One might indeed deem Rosen's notion to be tantamount to simply taking the interdefinable notions of absolute possibility, necessity, and (broadly) logical consequence as primitive.

Sider recommends an alternative account which identifies an ersatz "pluriverse" as the truthmaker for modal assertions about possible worlds and their denizens. On his favored account of this, it is a set-theoretic linguistic construction.[21] By positing such a sentence, we are not limited to a sketchy human account of the nature of possible worlds, and dubious claims about what the account implicitly asserts. Instead, we stipulate the pluriverse sentence to strictly entail *all* the facts about all the possibilities. Sider shows how to do this starting from a primitive modal notion of necessity (and possibility) that guides our construction of the surrogates for individual worlds within the single pluriverse. We then analyze the claim that there might have been wizards as *according to the pluriverse sentence, there is a possible world in which there are wizards*.

For my purposes, the differences between the positions of Rosen and Sider are not germane.[22] Common to their approaches is a primitive modal

concept and a story-like construction built upon it. There are no primitive modal properties of things, no modal truthmakers *in rebus*. I believe there is reason to be dissatisfied with any deflationary stance of this sort, as well as a reason to think it is not stably deflated. I will frame the objections in relation to Sider's account, since I accept his argument that he gets more bang for his buck than Rosen does.

The first objection we've already seen, as it is equally telling for all reductive and deflationary accounts of modality. If facts about my possible histories are just facts about the content of Sider's sentence, there seems to be no good reason why I should care about them as I do. Suppose it is true according to the pluriverse sentence that a person with characteristics like I actually have works as a roofer in a world a lot like the actual world, and that the person thereby counts as a 'counterpart' of me. Why should I care about that fact at all, let alone care about it more than I care about an analogous feature of the sentence involving the counterpart of Sider? Sider cavalierly dismisses an objection similar to this ("We're not talking about *that*!") by asserting that our modal concepts are purely structural. But the intuitive indifference one feels in response to Sider's truthmaker is *evidence* that a structuralist view is implausible. Rosen (1990), by contrast, recognizes the intuitive force of the worry without attempting a conclusive response to it. His main suggestion – that perhaps our response to the fictionalist's deflationary analysis of possible worlds should be to change our view of what we should care about – strikes me as simply implausible on its face.

My second criticism is specific to the accounts of Sider and Rosen. I begin with the observation that they follow Lewis in claiming that none of us has pretheoretic views on the truthmakers for our modal claims. The man on the street goes around saying "Possibly, *this*" and "Necessarily, *that*," but is rather clueless when it comes to what his statement is about, from the ultimate, metaphysical standpoint. (If you ask him, are you talking about basic features of the universe and its occupants themselves, or disconnected concrete totalities, or a complex abstract object, he will have no inclinations towards any of them. "I just know it is possible that I have been a roofer, and there's an end on it!") It is not clear to me, though, why a theorist of this stripe should strive (as each of them do) to accommodate a great deal of commonsense modal judgment. Perhaps commonsense opinion has a general grasp, for example, on some main features of Sider's pluriverse sentence, but goes badly wrong on other main features.

This thought, in turn, leads to an objection to Sider and Rosen: their accounts invite a skeptical response to the fact that theorists have stubbornly diverging opinions about substantive modal matters. If all of our modal

disagreement is, in the end, directed at the content of a pluriverse sentence, a set-theoretic structure with which we have no causal contact, why suppose we are all trying to get at that *same* sentence? That is, why suppose there is a single, common truthmaker for our modal assertions? There are ever so many set-theoretic structures of comparable scope, differing in detail, among Sider's abstracta. These are all unimaginably complex and, for any one of them, there is a large number of barely distinct others. They won't all count as "pluriverse sentences," since Sider stipulates that such a sentence includes all the *de dicto* modal facts that flow from the *one*, primitive modal concept of necessity. But the truth value of many disputed modal statements (e.g., possibly, there are talking donkeys) are of no consequence for most other modal assertions. Alongside Sider's single modal concept of necessity are ever so many other related concepts that consistently imply different truth values for certain such arcana. So why suppose a common object of our modal discourse built on a single modal concept, rather than a plurality of sentences built on highly similar, but distinct concepts?

Insistence that we are all arguing about precisely the same thing in a subtle and complex subject matter makes sense where, for example, the facts in question are ones directly connected to the objects of our experience, since there could be but one set of such facts, however difficult they may be to pin down in particular cases. But on Sider's picture, no fact *directly* about ourselves or our environment are in dispute, despite how it superficially appears. So where stubborn disagreement persists, why not suppose we simply have in mind *distinct* pluriverse-like sentences? Sider may appeal to the important role of modal claims in a variety of philosophical contexts, roles that require there to be objective modal facts, even if reducible ones. But for this, all we need to suppose is that the objects of our discourse overlap a great deal, which is consistent with supposing that they are partially distinct.[23] What is more, since none of us could ever conceive a pluriverse sentence in all its totality, nor could we conceive a set of rules that would distinguish it from all others which are quite similar to it, there is perhaps no good reason (assuming Sider's account) for thinking that an *individual* modal theorist is getting at a particular pluriverse sentence with his modal assertions.

What this criticism makes plain is that coupling deflationary ontology with continued commitment to a robust objectivity for modal discourse is unmotivated. In Sider's and Rosen's hands, disagreement about the modal 'facts' should give way to a recognition of a somewhat fragmented discourse, in just the way that we (ought to) recognize the lack of an objective answer to disputes about traits of a fictional character on which the text is not definitive.

Modal Anti-Realism and Quasi-Realism

We've seen two general forms of opposition to a robust realism about modality. One denies the meaningfulness of modal language altogether (Quine). The other seeks to tame modality by reducing modal statements and properties (in whole or in objectionable part) to more favored elements of an ontology. A third type of strategy accepts the legitimacy of modal discourse but denies that it aims to make objective claims about reality. Instead, our modal claims reflect facts about certain of our *own* propensities as thinkers and language-users. Given our discussion of other approaches, brief critical remarks on two versions of this anti-realist strategy will suffice.

Conventionalism

Our first strategy holds that nonanalytic modal claims are *conventional*. These thinkers agree with the modal realist that the simple act of reference to an object commits one to supposing persistence conditions for that object, conditions that are modal. But, they hold, the realist errs in his view of the *basis* of such modal truths. According to the conventionalist, Fido the dog could not have been a dolphin because of a tacit convention regarding the use of "dog" and how objects so identified are to be 'tracked' in counterfactual scenarios. These are not facts about objects independent of our language intentions, since there *are* no individuated objects 'there' totally independent of our conceptual scheme. Through language, we carve up the world stuff into certain categories, imposing in the process modal identity conditions. The fount of all varieties of necessity, then, is analytic, in logic and linguistic convention. A view of this sort is defended at length by Alan Sidelle (1989).[24]

One problem discussed in another connection applies here as well. Since the conventionalist denies the existence of a privileged ontology, he cannot be a realist regarding causality. And so, like the Humean, he has no basis for supposing that the 'world-stuff' will continue to be describable in terms of the laws that have adequately described the world through the present.[25]

But the conventionalist's problems do not end with an implausible epistemology. There is a central internal difficulty as well. The individuation of objects is supposed to rest entirely on our linguistic conventions. But we ourselves are among those real-world objects. What should the conventionalist say about us? One possibility is a sharp *dualism*, on which we ourselves are wholly distinct from the stuff of the physical world and exist as an

objective matter of fact, prior to all convention. But if this were so, we should want a story on why this cannot be true for at least some physical objects as well. The more principled route for the conventionalist is to say instead that thinkers, too, exist as a matter of convention. But the principled route lands us in paradox. Do human beings not have to exist 'first' in order to do something as complicated as laying down conventions? No bootstrapping metaphor should persuade us that we can bring ourselves into existence.[26]

A conventionalist might respond (cf. remarks by Sidelle on 76–7) that this problem rests on a confusion, at least by the conventionalist's lights. From the fact that we might have failed to conceive reality as including ourselves, it infers that there might have been world-stuff in some sense arranged just like the stuff of our world, but in which it was false that we existed. In so supposing, the critic smuggles in realist convictions. To see this, consider what the conventionalist says about possible worlds containing no thinkers. Such worlds are possible and are characterized in terms of *the categories we use in the actual world*. That is, we hold fixed the conceptual scheme implicit in our actual conventions in determining what the possibilities are, whether or not they contain thinkers such as ourselves endorsing such conventions. It might have been that there were no humans, or thinkers generally, but it is *impossible* that actual human categories fail to apply altogether: necessity-fixing conventions are themselves necessary. In particular, it might have been that there were humans who failed to use conventions specifying human persistence conditions, but this is still a world in which there are humans. (What *they* would say about the denizens of the world would in this respect be *wrong*.)

The logic of modality implicit in this response warrants further discussion.[27] We may leave that aside, however, since, even granting the logic of the conventionalist's picture, the response itself fails to alleviate the problem originally posed. That problem concerned not the seeming contingency of the convention-making that generates necessity. Rather, it points to the unassailable fact that the existence of convention-makers is logically posterior, as a conceptual matter, to the activity of convention-making. If, as it appears, our modal conventionalist is committed to denying this fact, we must judge his position a failure.

Blackburn's quasi-realism

Finally, another view that locates the source of necessity within ourselves is *expressivist*. Unlike conventionalism, it is unrestricted, applying to formal truths of logic and arithmetic as much as to claims about essential

properties of objects in the physical world. As Simon Blackburn (1986) puts the view, when we say that *p* is necessary, we are expressing our inability to 'make anything of' *p*'s denial:

> We cannot see our failure to make anything of them as the result of a contingent limitation in our own experience, nor of a misapprehension making us think that their truth should be open to display in a way in which it need not be. We express ourselves by saying that they cannot be true – that their negations are necessary. (136)[28]

Many of the problems of explanatory adequacy for views discussed above also apply here, I believe. But as with conventionalism, there is a decisive internal difficulty. In this case, it centers around the expressivist's core notion, "we can make nothing of *p*'s denial." On its face, this is itself a modal notion. It will not do to say that we are analyzing one type of modality (absolute necessity) in terms of another (causal necessity), since the latter in turn requires the former for *its* explication. The causal realist's appeal to primitive dispositions implicitly makes use of the notion of (absolute) impossibility. ("Under circumstances C, F-ness necessarily gives rise to G-ness, or is necessarily disposed to producing G-ness with probability n.") The same is true, however, for a reductionist account of causality. By way of illustration, the reigning reductionist account, Lewis's, appeals to counterfactuals that treat modal facts as objective, even if reducible to facts about the array of worlds.

Let us examine this in a bit more detail. Impossibilities, for the expressivist, are those propositions we 'cannot make anything of.' We grant the expressivist, for the sake of argument, a reductionist view of causation. He must then tell us how to understand the idea of causal necessity so that it does not rely on an objective conception of logical consequence. Perhaps the best the expressivist can do here is to analyze logical consequence in terms of proof procedures, involving chains of reasoning and the distinctive expressivist attitude towards each move from one step to the next. Plugging that result back into a reductionist account of causation, we will end up with something such as this:

> causal necessities are general 'lawlike' propositions satisfying formal methodological criteria of empirical adequacy, simplicity, explanatory power, etc. – these are the basic causal necessities – together with the vast number of propositions at the ends of chains of reasoning from the basic necessities and true observational propositions, such that 'we can't make anything of' a denial of any step when conjoined with the previous step.

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But now we still have that unanalyzed modal residue at the end ("we can't make anything of") and in the idea of "chains of reasoning," which doesn't refer to any *actual* pieces of reasoning.

Furthermore, for the reductionist, the facts about causality supervene on the total distribution of noncausal, 'local matters of fact,' including future facts. So if I am expressing an inability in making a modal utterance, and we go reductionist on this causal notion of inability, then I am in part expressing a conviction about the contingent distribution of psychological facts. (There are ever so many Lewisian worlds like ours up through the present, time t, that radically diverge in different ways from what we now expect. In those worlds, the facts about human inabilities *at t* differ from one another.) What business have I in expressing such a conviction even now? Many of my counterparts *turn out* to be able to make something of the counterpossibles eventually, even if they are hopelessly muddled in so doing. The expressivist cannot retort that it is simply *impossible* to make something of a contradiction, as that retort in the present context is available to the modal realist only. (Nor can he – unlike the realist – reasonably dispute one's making something of the scenario in which a person makes something of a contradiction. Easy as pie: I imagine a person going through a subtle process of reasoning, the outcome of which is that the law of noncontradiction is false.)

Finally, the expressivist allows that we occasionally err in our judgments of necessity, as did earlier thinkers who deemed Euclidean geometry to necessarily describe any physical space. These are, Blackburn says, simply "failures of imagination" (1986: 136). But the expressivist who relies on a deflationary account of causality has no resources to distinguish forever *unrectified* failures of imagination – unbroken failures of human beings to make something of particular claims, throughout their history, as a result of an imaginative block – from true *inabilities*, corresponding to true necessities.

Perhaps more might be said on behalf the conventionalist or the expressivist – though I'm unaware of any place where anything more *has* been said concerning the above difficulties.[29] I submit that we have seen enough to conclude that the modal anti-realist enterprise is fraught with difficulty.

Conclusion

Many of the critical remarks above on this or that deflationary strategy regarding modality are familiar ones, and various contemporary theorists

will endorse select criticisms. Less common, however, is to trot out all of them with the purpose of drawing the general moral that deflationism is a hopeless project, which has been my aim here. A great many contemporary metaphysicians have been captivated by the modally denuded Humean picture of the physical world and our interaction with it to an extent that they can scarcely contemplate abandoning a general deflationist conviction, despite the hopeless state of extant proposals. It is time we address head on, then, the epistemological problem many see as confronting the modal realist. I believe we will see that it is far less formidable than has been advertised.