Modal Predicates

John T. Maier

Forthcoming in *Linguistics and Philosophy*

1. Introduction

This essay states and defends a semantics for a certain class of sentences. Sentences like these are core expressions of modality in English, and accordingly have figured prominently in a number of philosophical discussions. A proper account of their semantics yields consequences for the philosophical study of modality.

The class of sentences includes:

(1) The glass is fragile
(2) The blanket is flammable
(3) The planet is observable
(4) The bread is edible
(5) The cat is lovable
(6) The deed is commendable

These sentences are similar to one another. At first pass, the similarity is morphological: each includes a predicate constructed from an adjective formed with an '-ile', '-ible', or '-able' suffix. Accordingly, I will call the predicates occurring in these sentences 'Φable-predicates'. The precise boundaries of this class will be demarcated, and its semantic significance explained, in what follows.

My project overlaps, but does not coincide, with the project of giving a semantics for disposition ascriptions. (1) is generally classed as a disposition ascription; (6) is generally not. The question of where on this list we are to find a boundary between the dispositional and the non-dispositional, as well as the question of whether that boundary is a sharp one, will itself be one of the questions at issue in what follows.

As (6), at least, indicates, the presence of a Φable-predicate is not sufficient for a sentence to be a disposition ascription. Neither is it necessary:

(7) The box is rigid

(8) The liquid is toxic

(9) The glass is disposed to break when struck

(7) and (8) are plausibly disposition ascriptions, though 'rigid' and 'toxic' do not satisfy the morphological criterion just given. (9) is a disposition ascription as well; indeed, in much of the contemporary philosophical literature (such as [Fara 2005], [Choi 2008], and [Manley and Wasserman 2008]), the project of giving a semantics for disposition ascriptions is simply identified with the project of giving a semantics for sentences like (9).

The shift of attention, in the literature on dispositions, from sentences such as (1) to sentences such as (9) is a recent development. If one looks at earlier authors on disposition ascriptions (including Carnap [Carnap 1936], Ryle [Ryle 1949], Goodman [Goodman 1954], Quine [Quine 1970], and Mackie [Mackie 1972]), they are explicit in taking sentences like (1), or the Φable-predicates from which such sentences are constructed, as their object of concern.[1]

Insofar as our concern is only with the ascription of dispositions, it may be that nothing has been lost in this change. But insofar as our concern is with the expression of modality more generally, this change threatens to obscure important parallels between disposition ascriptions and other sentences involving modal locutions. The list with which we began presents us with a continuum. If we focus on the availability of the 'disposed to' locution, we break off this continuum at a certain point (as it happens, including (1) and (2) but excluding (3) and the later items). But this breaking-off point threatens to be, in at least two ways, arbitrary.

---

[1]. As a historical matter, the source of the shift seems to lie in an influential article by David Lewis [1997]. Lewis writes:

> The beginning of any analysis is its analysandum. Ours will be as follows: 'Something x is disposed at time t to give response r to stimulus s iff ...' The noteworthy thing about our analysis is what is not. Our plan is to answer one question without getting entangled in another. The question we want to answer is 'What is it to *have* such an such a disposition?' . . . The question we want to leave unsettled is 'What *is* a disposition?' [Lewis 1997: 151]

If intended as an argument for taking sentences such as (9), as opposed to sentences such (1), as our analysanda, this is a non sequitur. An account of the truth-conditions for (1) is an account of the conditions under which a glass is fragile; it does not purport to be an account of what fragility is.

First, it threatens to be linguistically arbitrary. As noted at the outset, and as will be argued at greater length in the next section, the mechanisms that generate the adjectives in (1)-(6) are essentially the same. Furthermore, I will eventually argue, this morphological unity corresponds to a semantic unity: we may give a uniform semantics for (1)-(6), and indeed for any sentence of this general form.

Second, it threatens to be metaphysically arbitrary. One traditional philosophical reason for being interested in dispositions is that they are a paradigm of the merely possible, as opposed to categorical, aspects of the world. But if our concern is with the 'merely possible' aspects of things, then (6) is no less significant than (1). Goodman writes that a thing's dispositions are 'no less important to us than its overt behavior, but they strike us by comparison as rather ethereal. And so we are moved to inquire whether we can bring them down to earth' [Goodman 1954: 40]. But if fragility and flexibility are 'ethereal', then so too are observability and edibility, and still more so are lovability and commendability.

It is true that, relative to certain philosophical projects, certain members of our list are more central to the modal than are others. And I will eventually argue that there is indeed a distinction between (1) and (2) and the other members of our list that is not, ultimately, arbitrary – though it is fully explicable in terms of a uniform semantics for (1)-(6), coupled with general linguistic mechanisms. But the present essay aims to take, at least at the outset, an egalitarian view of our list. Insofar as there are significant distinctions to be made among its members, they will drawn only at the end of our discussion, and not at the beginning.

2. 'Φable'

In the previous section I noted that I will be focusing on sentences involving a certain class of predicates, which I will call 'Φable-predicates'. A necessary condition for being such a predicate is morphological: all such predicates include an adjective including the English suffix '-ile', '-ible', or '-able'. The differences between these suffixes – such as the alternation of the initial vowel – are explicable in terms of phonetic or historical pressures, and I will disregard them in what follows.[2]

---

[2]. In the case of '-ible' and '-able', the historical pressures tend to tell in favor of using '-ible' when the

This morphological condition is, while necessary, not sufficient. There is a further semantic condition on being a Φable-predicates. Some predicates satisfying the morphological condition just sketched are, as I will say, *associated* with certain verbs, in the sense that the applicability-conditions of these predicates make appeal to some specific verb. For instance, a semantics for sentences including 'is lovable' will involve the verb *love*. These verbs are often, but need not be, morphologically apparent: for instance, 'is fragile' is associated with the verb *break*, though this verb appears nowhere in its morphology. Since such predicates may be thought of as being somehow composed from the '-ble' suffix and their associated verb, I will refer to them as *complex* predicates.[3] A Φable-predicate, then, is simply any predicate that both satisfies the morphological condition given in the previous paragraph and is semantically complex in the sense given in this one.

When we ascribe a disposition with a predicate, that predicate is almost always complex. And this is not surprising. We have already noted that dispositions admit of ascriptions such as (9) as well as ascriptions such as (1). If the predicate in (1) is complex, it will admit of a verb to serve as the complement of 'disposed to' in (9); if it is not, it will not. In this case, 'fragile' is indeed complex – it is associated, as we have noted, with the verb *break* – and as such furnishes a verb to serve as the complement of 'disposed to'.

With these distinctions in place, we can state our problem more precisely. Earlier I proposed to give a semantics for sentences like (1)-(6). All of these sentences involve a noun-phrase combined with what we are now calling a complex Φable-predicate. So we can ask, for an arbitrary object x, for the truth-conditions of the following sentence:

(10) x is Φable

---

root is (or seems to be) of Latin origin, and '-able' otherwise, but this policy is highly defeasible. The case with '-ile' is different: the absence of 'b' is explained by the absence of the 'b' in Latin root, with these suffixes deriving from the Latin '-ilis' (for instance, *fragilis*) rather than '-bilis'.

[3]. The contrast is with 'simple' predicates, which satisfy the morphological criterion but which are not associated with some verb as 'is fragile' is associated with *break*. Examples include 'is miserable' and 'is seasonable' (as well as philosophically-central predicates such as 'is probable' and 'is possible').

A semantics for (10) would provide a semantics for (1)-(6), and many other sentences besides. We have not shown that (10) in fact has a unified semantics. For all we have said thus far, it may be that the class of Φable-predicates is a semantically disjunctive one. I propose, however, to proceed on the working assumption that (10) does have a unified semantics; eventually, I will provide such a semantics, and thereby show our assumption to be correct.

Since (10) is an ascription to x, its truth-conditions will involve x. And since (10) include a complex predicate, its truth-conditions will involve the verb V associated with that predicate. Our question then is: what is the relation between x and V such that (10) is true when that relation holds?

A simple answer to this question is given by the following hypothesis. Consider some Φable-predicate, associated with some verb V. Then:

(Able) 'x is Φable' is true iff x is able to be Ved

The idea of (Able) is simply to 'read off' the truth-conditions for Φable-predicates from their morphology. We convert the '-able' suffix from which such a predicate is constructed to the 'able to' clause.

This is a natural way of proceeding, and it yields the right results in at least some of the cases considered above. Consider (3). According to (Able), 'The planet is observable' is true iff the planet is able to be observed. This appears, at least at first pass, roughly correct.

Yet (Able) is false. The main concern about (Able) is anticipated, in a different context, by Noam Chomsky [Chomsky 1970]. Consider 'is readable', which is a Φable-predicate according to the criteria given above. Applying (Able) to the predicate 'is readable', we have: 'x is readable' is true iff x is able to be read. But, Chomsky notes, '*readable* is much more sharply restricted in meaning than *able to be read*' [Chomsky 1970: 212]. This is plausible. Consider:

(11) The Manhattan telephone book is readable

Relative at least to a certain conversational context, (11) is false. While it is able to be read, the Manhattan telephone book is not readable. Intuitively, this is because there are some further conditions on readability: for something to be readable it must be that it is pleasant, or at least not interminably boring, to read it. The grounds for these intuitive remarks will be pursued at greater length in what follows.

For now, the point is that 'is readable' is a counterexample to (Able). And, as Chomsky notes, the difficulties for (Able) do not end there:

> Consider commendable, abominable, irreplaceable, incomparable, despicable, decidable, laudable, insufferable, noticeable, changeable, pitiable, enviable, preferable, insufferable [*sic*], inviolable, admirable, deplorable, adorable, irritable, lamentable, quotable, detestable, lovable, admissible, livable, laughable, honorable, valuable, and so on. [Chomsky 1970: 212]

The aim of the present project was precisely to accommodate this kind of semantic diversity, and some of these adjectives ('commendable', 'lovable') have already occurred beloved. Given that project, I do not see a way of defending (Able) in light of this range of cases. I do, however, think that a somewhat more sophisticated proposal can succeed where (Able) does not.[4] I now propose a semantics that aims to accommodate most of the data just adduced.[5]

---

[4]. Chomsky himself makes these points in the context of a (successful) attack on the program of 'generative semantics'. I do not aim to pursue that program here, but I do adopt the more modest idea that we can meaningfully pursue intralexical questions in semantics, at least in sense that there is something semantically in common between the variety of predicates that satisfy our schema (10). The question of how that semantic idea is to be reconciled with the 'lexicalist' program in syntax often associated with [Chomsky 1970] is one that I do not attempt to resolve here. For an important criticism of lexicalism, as well as of the received wisdom about the lessons of [Chomsky 1970], see [Marantz 1997].

[5]. I say 'most' as I will set aside those predicates that seem to involve some kind of negation, such as 'is irreplaceable' and 'is incomparable'. The semantics for (10) to be given in what follows could, I think, be extended to such cases, but I do not develop such an extension here. Accordingly, Φable-predicates should henceforth be construed narrowly so as to concern those composed from *only* an appropriate suffix and the

3. An ordering semantics

The framework for the semantics is developed in a series of papers by Angelika Kratzer. Kratzer's proposal has its foundations in the semantics for modal logic. In modal logic, we confront formulas of the form: ◊p. On a standard semantics, we give a semantics for such a formula in terms of three factors: the proposition p, a set of worlds W, and an accessibility relation obtaining (or not obtaining) between any two worlds w and w' in this set. '◊p' is true at a world w just in case there is world w' such that p is the case at w' and w' is accessible from w. Where our concern is with whether '◊p' is actually true, we simply substitute the actual world (@) for w: '◊p' is actually true just in case there is a world w' such that p is the case at w' and w' is accessible from @.

On Kratzer's initial proposal [Kratzer 1977], this framework applies straightforwardly to the expression of modality in natural language. Consider:

(12) Ann can smoke

We give a semantics for (12) in terms of the modality associated with 'can' (in this case, possibility), the proposition that Ann smokes, and a further factor (a 'conversational background') that determines what worlds are, or are not, accessible. Thus (12) is true just in case there is a world accessible from actuality where Ann smokes. The semantic contribution of a modal expression consists of, first, its being an expression of possibility or of necessity and, second, the accessibility relation that it imposes.

In subsequent work [Kratzer 1981], an additional dimension is added to the semantics of modal expressions. This is what Kratzer calls an 'ordering source'. An ordering source is given by a set of propositions S, an 'ideal', which allows us to order worlds in relation to one another. In terms of such a set, we may define an ideal world w_s, such that all and only the propositions of S are true at w_s. We may then order worlds by

---

associated verb, and to exclude those, like 'is irreplaceable', whose composition is still more complex.

their closeness to, or distance from, w_s: a world w is at least as close to w_s as some other world w' just in case every proposition in S that is true at w' is also true at w. Ordering sources are initially motivated in Kratzer by the need to handle comparative constructions among modals, but on her view they are present whenever a modal is used. Those modal constructions that do not involve comparing worlds with some ideal are to be regarded as a special case; here the ordering source is said to be 'empty'.

One way of seeing the utility of this framework is by considering two possible readings of (12). On the one hand, (12) has a reading which is closely connected with what Ann is *able to* do. Smoking is something that is within Ann's power given, for instance, the availability of cigarettes. On the other hand, (12) has a reading which is closely connected with what Ann is *permitted to* do. Smoking is something that is allowed by, for instance, the policies of the restaurant where she is eating.

One response to these facts would be to suppose that the English 'can' is ambiguous between an abilitative and a permissive reading. A more theoretically satisfactory response would be to find some feature of the semantics of 'can' that allows us to derive these two readings. The response proposed by Kratzer is that the English 'can' tolerates a range of ordering sources. On the latter reading, we do not merely demand that there be an accessible world where Ann smokes, but that the world be sufficiently close to some conversationally determined ideal – here, this is roughly the ideal that all the restaurant policies are followed. Thus, on this reading, (12) may be false even though Ann is able to smoke. On the former reading, in contrast, the ordering source for 'can' is empty.[6]

I have stated Kratzer's theory in terms of modal auxiliary verbs like 'can', but it is intended to apply also to modal suffixes, include those involved in what we have been calling complex Φable-predicates. Consider again:

---

[6]. While the variability of 'can' is a useful way of explaining the nature of ordering sources, the order of exposition here does not quite match the order of discovery, for these facts about 'can' may also be accommodated within the simpler framework of [Kratzer 1977]. The most compelling reasons for rejecting that framework as inadequate lie rather, as noted above, in comparative constructions, especially those among epistemic modals (see [Kratzer 1981: 46-51]). Once that framework is rejected, however, and ordering sources introduced, these provide an elegant treatment of the variability of 'can', in the way described in the text.

(11) The Manhattan telephone book is readable

We noted that (11) is false, at least relative to a certain conversation context, but that it is true according to the simple semantics proposed by (Able). We are now in a position to see that, though 'is readable' and the other predicates adduced by Chomsky are counterexamples to (Able), they may be accommodated within the more subtle semantic theory just sketched.

On this theory, each of these predicates is associated with an ordering source, and the differences among them are to be explained in terms of differences among their ordering sources. Thus the ordering source for 'is readable' is, roughly, an ideal according to which all readings are interesting, informative, and so forth. A book is readable just in case there is an accessible world where that book is read that is sufficiently close to this ideal world.[7] For the Manhattan telephone book, there is no such world. And this is why (11) is false.

More generally, we regard an arbitrary Φable-predicate as being associated with, as before, a verb V, and, relative to a given conversational context, an ordering source S. Our proposal for the semantics of such predicates is then:

(Φable) 'x is Φable' is true iff there is an accessible world w, sufficiently close to w_s, at which x is Ved

(Φable) is not so different from our earlier proposal (Able). Indeed, if we accept a possible-worlds semantics for 'able to', and accept our earlier conjecture that the abilitative reading of modals involves an empty ordering source, then (Able) is a special case of (Φable). It is the semantics for all and only those complex Φable-predicates whose ordering source is

[7]. A world w, accessible from some world w', is 'sufficiently close' to an ideal world w_s just in case it is at least as close to w_s as w' is. Thus, evaluated relative to the actual world (@), a world w is sufficiently close to w_s just in case every proposition in S that is true at @ is also true at w. In short, w does not add any departures from the ideal beyond those which are actual.

empty.

Note that much of the content of (Φable) will hang on how precisely we understand the clause 'at which x is Ved'. The Kratzer semantics applies only when we have a proposition to which to apply it. The informal idea suggested thus far has been that it applies to the proposition denoted by 'x is Ved'. But what proposition, precisely, does this denote? The next section addresses this question.

4. Predicates and the passive

On the view defended thus far, there is a tight connection between Φable-predicates and passive constructions of the form 'x is Ved'. This raises two problems. First, how precisely are such constructions to be understood in the present context? Second, how shall we account for those Φable-predicates where the connection to the passive voice appears to be more attenuated than it is in the case of, for instance, 'is readable'?

Begin with the first problem. Consider:

(13) Ann read the book

(14) The book was read by Ann

It is natural to suppose that these two sentences express the same proposition, and that they differ only in where they direct our audience's attention. That is to say, the contribution of voice is pragmatic, and not semantic. This puts pressure on the present point of view, where 'passive propositions' of the form 'x is Ved' figure centrally in the semantics.

The first point to note is that the proposed transformation cannot always be so simple. Consider:

(15) Over the centuries, the temple was destroyed

(15) may be true in virtue of the fact that the temple was subjected to a range of assaults: vandalism, wars, bad weather, and so forth. There is no particular agent to whom we can attribution the destruction of the temple, even if we construe 'agent' broadly so as to include, for instance, inanimate forces such as weather.

A different problem occurs in modal contexts. Consider:

(16) The mountain is able to be climbed

(16) may be true even though no actual agent is able to climb the mountain. For instance, it may be that all actual agents are too ill or too weak to climb the mountain. Consider:

(17) S is able to climb the mountain

It may be that, though (16) is true, (17) is false (relative to the very same conversational context) for the substitution of any actual agent for 'S'.

The semantics of the passive (and the question of whether the passive even is a semantic phenomenon in the first place) is a rich topic in its own right. For present purposes, I will appeal to 'passive propositions' in the semantics of Φable-predicates, and resist any simple attempt to reframe them in the active voice, in light of the kinds of subtleties just raised. I remain neutral on the question of whether, at some still more fundamental semantic level, the passive may be eliminated altogether.[8]

Consider then the second problem. (Φable), as just noted, appeals to a passive proposition to give the semantics of Φable-predicates. But such predicates include, inter alia, those predicates that figure in predicative disposition ascriptions, such as 'is fragile'. But these two facts appear to give rise to a problem. In the semantics of (1), according to (Φable), the verb associated with the predicate occurs in the passive voice: a glass is fragile

[8]. I have been focusing on difficulties for reductive views of the passive at the level of semantics, but further difficulties would arise also at the syntactic level; see [Baker et al. 1989].

only if there is a possible world at which it *is broken*. But in ascriptions that appeal to the 'disposed to' locution, such as (9), the verb occurs in the active voice: a fragile glass is one that is disposed to *break* when struck. Even if we hold that there are important linguistic differences between (1) and (9), this difference in voice is perplexing. One might then object to (Φable) on the grounds that it neglects the active aspect of disposition ascriptions, which is manifest in ascriptions such as (9).

This phenomenon, however, is entirely explicable within the framework proposed by (Φable). The distinctive behavior of 'fragile' is to be explained by distinctive features of the verb with which it is associated. *Break* gives rise to what is referred to in the linguistics literature as a 'causative alternation' [Schäfer 2009]. When it occurs in a transitive construction, with some object O as the object of breaking, it licenses an intransitive construction where O serves as its object. Thus:

(18) Ann broke the glass
(19) The glass broke

Given that (18) is true, (19) must also be true. This does not depend on any contingency of the situation; rather, it follows from the meaning of *break*.

Not all verbs give rise to a causative alternation. A verb allows for such an alternation only if it has both a transitive and an intransitive form. But this is not sufficient, as shown by the following pair:

(20) Ann read the book
(21) The book read

Read admits of a transitive reading, so (21) is well formed. But the truth of (21) obviously does not follow from (20). When (20) is true, (21) need not be true – indeed, since books are seldom if ever the subjects of reading, the normal case is that (21) is not true.

Among those verbs that give rise to a causative alternation are *break, flex*, *burn*, and *dissolve*. This list is telling, for each of these verbs is associated with a paradigmatically dispositional predicate: these are, respectively, 'is fragile', 'is flexible', 'is flammable', and

'is soluble'. The nature of the causative alternation and its sources remains, like the nature of the passive, an open problem. But for our purposes is that, in large part, those predicates that figure in complex Φable-predicates are associated with verbs that give rise to it.[9]

This observation answers the proposed objection to (Φable). As the causative alternation allows for a move from the active transitive form to an intransitive active form, so it allows for a move from the passive transitive form to an intransitive active form. Thus:

(22) The glass was broken
(19) The glass broke

As with our earlier pair of (18) and (19), the truth of (22) ensures the truth of (19). It is this phenomenon that explains the active aspect of disposition ascriptions. Their semantics are indeed to be given in terms of passive constituents, as is proposed by (Φable), but the distinctive behavior of the verbs with which they are associated means that these passive claims entail certain active claims, taking the bearer of the disposition as their subject.

5. Dispositional predicates

The central aim of this essay was to give a semantics for sentences like (1)-(6). That aim has now been realized in (Φable), which gives a general semantics for (10). In introducing our topic, I distinguished it from the project of giving a semantics for disposition ascriptions. The project is in one respect a more inclusive one – it gives a semantics for sentences like (6), which are not disposition ascriptions. But it is another respect a less inclusive one – it does not purport to give a semantics for sentences like (7)-(9), which are disposition ascriptions.

The foregoing leaves the following question, however, unresolved. Among Φable-predicates, some, like (1) and (2), seem paradigmatically dispositional. Can we give an account, in terms of (Φable), of what it is that is distinctive about these predicates? That is, can we give an account of what it is for a given Φable-predicate to be dispositional?

---

[9]. These facts are noted and emphasized in [Maier ms.]. Maier's explanation of these facts, however, is limited: he explicitly sets aside the evaluative aspect of Φable-predicates, and does not aim to accommodate these aspects of dispositional language within a more general semantic framework, as is proposed here.

This section proposes just such an account.

The previous section yields one necessary condition on the dispositionality of Φable-predicates. An Φable-predicate will be dispositional *only if* the verb with which it is associated gives rise to a causative alternation. As noted in the previous section, this explains an otherwise puzzling phenomenon. On the present semantics, the truth of a disposition ascription such as (1) involves the object (in this case, a glass) being acted on in a certain way. But (1) is roughly equivalent to (9), where the latter seems to say that the glass *acts* in a certain way. If this is indeed a general aspect of dispositional predicates, then we will need to explain how we can move from taking the bearer of being a disposition from being the object of a verb to being the subject of the very same verb, without any semantic loss. And this will be possible just in case the verb from which the underlying dispositional adjective is generated allows for a causative alternation.

This condition, while necessary, is not sufficient. Consider for instance:

(23) The ship is sinkable

Sink, like *break*, allows for a causative alternation: if a ship can be sunk, then it can sink. Yet (23) does not appear be a disposition ascription, at least not if we take the availability of the 'disposed to' locution to be diagnostic of dispositionality. (23) is not equivalent to any claim about the ship is disposed to do.

There is then a further distinction to be drawn between (1) and (23). The resources to draw it lie in the ordering semantics developed in section 3. In proposing an ordering semantics I distinguished between, on the one hand, the kinds of 'evaluative' ordering sources associated with, for instance, 'is readable' and, on the other hand, the empty ordering source. Neither of these seems entirely appropriate to dispositional predicates. An evaluative ordering source is not what is at issue. For something to be fragile or flammable, it is not necessary that its breaking or its burning be in any sense 'good' or 'appropriate'. Indeed, to apply such evaluations to the manifestation of a disposition, at least in the normal case, is to make a kind of category mistake. The breaking of a glass is, considered in itself, neither good nor not good, and neither appropriate nor inappropriate. Neither, however, does a merely empty ordering source appear to be appropriate to

paradigm dispositional predicates. Whatever precisely is involved in a glass's being fragile, it is more than there being some accessible world or other at which the glass is broken.

But this distinction is not exhaustive. There is an ordering source that is neither empty nor straightforwardly evaluative, which figures prominently in [Kratzer 1981], but which has not been discussed thus far. This is what Kratzer calls the 'stereotypical' ordering source; it orders worlds according to how 'normal' they are. 'Worlds in which the normal course of events are realized are a complete bore, there are no adventures or surprises' [Kratzer 1981: 47]. The stereotypical ordering source counts a world as appropriately close to actuality just in case it contains no more surprises than does actuality itself.

A further condition on the dispositionality of Φable-predicates, then, appeals to the stereotypical ordering source. A Φable-predicate is dispositional only if its ordering source is stereotypical. Returning then to (23), what distinguishes it from paradigmatically dispositional predicates is that its ordering source is empty: for a ship to be sinkable just is for there to be some accessible world where it is sunk. In contrast, the ascription of a disposition demands that world be sufficiently close to normality. A glass is fragile, for instance, just in case there is an accessible world where it is broken that involves no gratuitous surprises, or no more than are already included in actuality itself.

The contrast between dispositional predicates and non-dispositional (and non-evaluative) Φable-predicates is most clearly marked when the verb from which they are generated is the same. Indeed, we several such cases in the lexicon, for instance in the pair:

(1) The glass is fragile
(24) The glass is breakable

Or in the pair:

(2) The blanket is flammable
(25) The blanket is burnable

In both cases, the truth-conditions of these sentences involve the object in question being subjected to the process denoted by the salient verb (being *broken* or being *burnt*,

respectively). Since these verbs allow for a causative alternation, we may say, equivalently, that these involve the object in question being the subject of the verb *(breaking* or *burning*, respectively). What makes (1) and (2) dispositional is the further condition imposed by the stereotypical ordering source: the world at which the glass is broken (or breaks), or the blanket is burnt (or burns), must be sufficiently close to an entirely unsurprising world.

A Φable-predicate is dispositional, then, only if (i) it is associated with a verb that allows for a causative alternation, and only if (ii) its ordering source is stereotypical. At the outset I noted that, if our interest is in disposition ascriptions, we must break off our list of sentences involving Φable-predicates so as to include:

(1) The glass is fragile
(2) The blanket is flammable

But so as to exclude:

(3) The planet is observable
(4) The bread is edible
(5) The cat is lovable
(6) The deed is commendable

We are now in a position to say, in terms of a general semantic theory, what explains this division. (1) and (2) both satisfy our conditions on being dispositional predicates. In contrast, the other sentences violate both of them: none of them involves a verb that allows for a causative alternation, nor does any of them involve the stereotypical ordering source: the ordering sources for (4)-(6) involve particular evaluative dimensions, while the ordering source for (3) seems to be empty.

I have not, it bears emphasizing, given a general semantics for disposition ascriptions. For one thing, such a semantics would have to reckon with sentences like (9), which I have scarcely addressed here.[10] Rather I have explained, by appeal to the general

[10]. A crucial issue to address would be the alleged role of 'stimulus conditions' in disposition ascriptions. In the formal mode, such a condition is what is designated by the 'when'-clause in (9). I bracket this issue

semantic resources afforded by (Φable), why the attributions of some Φable-predicates, but not others, ascribe dispositions.

6. Modal predicates and modal metaphysics

The main proposal defended in the foregoing, (Φable), is a semantic proposal, not a metaphysical one. It tells us that certain sentences are true when things a certain way. In particular, it tells us that such a sentence is true just when there is an accessible world of a certain sort, sufficiently close to an ordering source of a certain sort. It does not tell us what it is for things to be this way. In particular, it does not tell us in virtue of what there is such a world, and in virtue of what it is sufficiently close to an ordering source. Nor, for that matter, does it tell us whether we may give a reductive account of worlds or of ordering sources, or whether these must be taken as primitives.

The metaphysical neutrality of (Φable) may be doubted. After all, (Φable) is unabashedly in the tradition of 'possible-worlds semantics'. And this tradition has been allied, most notably in the work of Lewis, with the 'Humean' project of giving an account of modal facts wholly in terms of amodal ones. For Lewis, this project centrally involved giving a counterfactual analysis of various phenomenon, giving a semantics for counterfactuals in terms of possible worlds (originally in [Lewis 1973]), and then giving an amodal characterization of possible worlds (initially in [Lewis 1973], and then more fully in [Lewis 1986]). Indeed, Lewis's account of dispositions figures as a key plank in his defense of this program. Accordingly, those who have opposed Lewis's project – notably those who have advocated the 'anti-Humean' view that dispositions (or 'powers') are irreducible features of the world – have sometimes opposed also the project of giving a

---

because it is not at all clear whether, and to what degree, such conditions are characteristic of disposition ascriptions generally. Certain cases suggest that they are not: an irascible person is someone who is disposed to get angry *simpliciter*, rather than when certain circumstances obtain. Authors mindful of this issue who take sentences like (9) as their object of analysis tend to begin with an account of cases involving a 'stimulus condition' and then treating those that lack one, like irascibility, as a special case: see [Manley and Wasserman 2008: 77] and [Fara 2005: 70-71]. The approach suggested here, in contrast, does not grant any special place to stimulus conditions, and treats the semantic contributions of (for instance) 'is fragile' and 'is irascible' symmetrically. The question of how such an approach is to be extended to sentences that do seem to involve explicit appeal to stimulus conditions, like (9), is one that the present discussion leaves unresolved. Relatedly, I have made no attempt to address the difficulties that arise in attempting to understand the relationship between such stimuli and the manifestation of dispositions in terms of counterfactual conditionals [Martin 1994].

possible-worlds semantics for modal language.[11]

It is crucial to distinguish the project of possible-worlds semantics from Lewis's own reductive deployment of such a semantics. I hold that the former is the appropriate framework for understanding dispositional language (and other language besides), but do not endorse the latter. (Φable) is silent on that in virtue of which sentences like (10) are true. For all that is said by (Φable), it may be true that ascriptions of (for instance) fragility are ultimately made true by primitive powers of objects. For instance, it may be that facts about what worlds are, or are not, accessible from a world are fixed by the powers of objects at that world.

Yet, in an indirect way, (Φable) does put pressure on 'powers'-based approaches to the metaphysics of dispositions. According to (Φable), the propositions central to the truth-conditions of sentences of (10) are passive ones: they involve the object in question being acted on in a certain way. The appearance of 'active powers', for instance the power of a glass *to break*, turn out to be a kind of grammatical illusion, cast by the causative alternation of the underlying verbs. Whatever the virtues of a powers-based metaphysic, it finds no support, according to (Φable), in our attributions of powers to objects in natural language.

Neither, however, should we assume (Φable) to be congenial to 'Humean' projects. For one thing, as already noted, I do not presuppose that accessibility relations among worlds, nor the nature of worlds themselves, may be explained in ultimately amodal terms. Even if this could be done, the appeal to ordering sources would remain to be dealt with. It is tempting to think that the evaluative aspect of modal language as a somehow superficial phenomenon. The world settles whether or not it is possible that things be a certain way, and we then evaluate such possibilities by the lights of our own tastes and interests. But such a view finds no support in the present formalism. The evaluative aspect of modal language is a genuinely semantic, and not pragmatic, phenomenon. If being a 'realist' about some class of sentences involves giving a truth-conditional semantics for those sentences, and accepting the existence of that over which such a semantics quantifies, then a realist stance towards (Φable) enjoins us to take ordering sources no less seriously than we do possible worlds themselves.

---

[11]. See, for instance, [Jacobs 2010] and [Vetter 2013].

Works cited

Mark Baker, Kyle Johnson, and Ian Roberts. 1989. Passive Arguments Raised. *Linguistic Inquiry* 20: 219-251.

Rudolf Carnap. 1936. Testability and Meaning, I. *Philosophy of Science* 3: 419-471.

Sungho Choi. 2008. Dispositional Properties and Counterfactual Conditionals. *Mind* 117: 795-841.

Noam Chomsky. 1970. Remarks on Nominalization. *Readings in English Transformational Grammar,* eds. Jacobs and Rosenbaum. Ginn and Company: Waltham, Mass..

Michael Fara. 2005. Dispositions and Habituals. *Noûs* 39: 43-82.

Nelson Goodman. 1954. *Fact, Fiction, and Forecast*. Cambridge, Mass.: Harvard UP.

Jonathan Jacobs. 2010. A Powers Theory of Modality – Or, How I Learned to Stop Worrying and Reject Possible Worlds. *Philosophical Studies* 151: 227-248.

Angelika Kratzer. 1977. What 'Must' and 'Can' Must and Can Mean. *Linguistics and Philosophy* 1: 337-355.

Angelika Kratzer. 1981. The Notional Category of Modality. In *Words, Worlds, and Contexts*, Eikmeyer and Rieser, eds. Berlin: de Gruyter.

David Lewis. 1973. *Counterfactuals*. Oxford: Blackwell.

David Lewis. 1986. *On the Plurality of Worlds*. Oxford: Blackwell.

David Lewis. 1997. Finkish Dispositions. *The Philosophical Quarterly* 47: 143–158.

J.L. Mackie. 1972. *Truth, Probability, and Paradox*. Oxford: Oxford UP.

John Maier. ms. Dispositions and Ergativity. Forthcoming in *The Philosophical Quarterly*.

David Manley and Ryan Wasserman. 2008. On Linking Dispositions and Conditionals. *Mind* 117: 59-84.

Alec Marantz. 1997. No Escape from Syntax: Don't Try Morphological Analysis in the Privacy of Your Own Lexicon. *University of Pennsylvania Working Papers in Linguistics* 4: 201-227.

C.B. Martin. 1994. Dispositions and Conditionals. *The Philosophical Quarterly* 44:1-8.

W.V. Quine. 1970. Natural Kinds. In *Essays in Honor of Carl G. Hempel*, ed. Rescher.

Dordrecht: D. Reidel.

Gilbert Ryle. 1949. *The Concept of Mind*. Chicago: University of Chicago Press.

Florian Schäfer. 2009. The Causative Alternation. *Language and Linguistics Compass* 3: 641-681.

Barbara Vetter. 2013. 'Can' Without Possible Worlds: Semantics for Anti-Humeans. *The Philosophers' Imprint* 13 (16): 1-27.