Objective and subjective ‘ought’
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Abstract: This essay offers an account of the truth conditions of sentences involving deontic modals like ‘ought’, designed to capture the difference between objective and subjective kinds of ‘ought’. This account resembles the classical semantics for deontic logic: according to this account, these truths conditions involve a function from the world of evaluation to a domain of worlds (equivalent to a so-called “modal base”), and an ordering of the worlds in such domains; this ordering of the worlds itself arises from two further elements – a probability function and a value function – since this ordering ranks the worlds in accordance with the expected value of certain propositions that are true at those worlds. Thus, a proposition of the form ‘Ought (p)’ is true at a world of evaluation w if and only if p is true at all the top-ranked worlds in the domain assigned to w. This domain of worlds consists of metaphysically possible worlds, while the probability function is defined over a space of epistemically possible worlds (which may include metaphysically impossible worlds, such as worlds where Hesperus is not Phosphorus). Evidence is given that this account assigns the correct truth conditions to a wide range of sentences involving ‘ought’. Since these truth conditions involve both a domain of metaphysically possible worlds and a space of epistemically possible worlds, there are two corresponding kinds of conditional involving ‘ought’, depending on which space of worlds is restricted by the conditional. Finally, some objections that might be raised against this account are answered.

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Over the years, several philosophers have argued that deontic modals, like ‘ought’ and ‘should’ in English, and their closest equivalents in other languages, are systematically polysemous or context-sensitive. On this view, in effect, there are many different concepts that can be expressed by ‘ought’ – as we might call them, many different “‘ought’-concepts” – and whenever the term is used, the particular context in which it is used somehow determines which of these concepts it expresses on that occasion.

More specifically, one way in which these ‘ought’-concepts differ from each other is that some of them are more “objective”, while others are more “subjective” or “information-relative”. When ‘ought’ expresses one of these more objective concepts, what an agent “ought” to do at a given time may be determined by facts that neither the agent nor any of his friends or advisers either knows or is even in a position to know; when it expresses one of the more “subjective” concepts, what an agent “ought” to do is in some way more sensitive to the
informational state that the agent (or his advisers or the like) find themselves in at the conversationally salient time.\footnote{For some philosophers who have advocated distinguishing between the objective and the subjective ‘ought’, see Brandt (1959, 360–67), Ewing (1947), Parfit (1984, 25), Jackson (1986), Jackson and Pargetter (1986, 236), and Gibbard (2005). In a somewhat similar way, Sidgwick (1907, 207) distinguished between objective and subjective rightness and wrongness.}

In this essay, I shall first present some linguistic evidence in favour of this view of ‘ought’. Then I shall propose a precise account of the truth conditions of sentences involving terms that express these different ‘ought’-concepts. Unfortunately, in the available space I shall not be able to do much more than simply to propose this semantic account of these ‘ought’-concepts. In my opinion, the linguistic evidence makes this account more plausible than any alternative account that metaethicists or semanticists have devised so far; but I shall only be able to gesture in the direction of this evidence here.

The general idea of the kind of account that I shall propose is not new. It is basically akin to the theory of “subjective rightness” that was given by Frank Jackson (1986) – since like Jackson’s theory, it gives a starring role to the notions of probability and of the expected value of a possible world. Nonetheless, my account has several crucial differentiating features: unlike Jackson’s theory, my account implies that standard deontic logic is valid for every kind of ‘ought’; it is much more general than Jackson’s theory, since it is designed to account for all the concepts that can be expressed by ‘ought’ and its equivalents (not just the concept of subjective moral rightness that Jackson is interested in); and it is also designed to mesh with a quite different account of how terms like ‘ought’ interact with conditionals.

The proposal that I shall give here also has affinities with that of Gunnar Björnsson and Stephen Finlay (2010), according to which the context-sensitivity of ‘ought’ is explained by the thesis that uses of ‘ought’ are relativized to bodies of information. In a somewhat similar way, I shall propose that uses of ‘ought’ are relativized to probability distributions; and every probability distribution determines a body of information – namely, the set of propositions that have probability 1 within that distribution. Still, as I shall explain in Section 4 below, my approach differs from theirs in several crucial ways.

In my view, a full account of the meaning of a term in a natural language would have to be a fairly complicated story. More precisely, such an account would have to involve the following components:

a. An account of the \textit{syntactic} role of the term – that is, of how the term can combine with other terms to form well-formed grammatical sentences;

b. An account of what it is to \textit{understand} the term – that is, to be \textit{competent} in using the term and in interpreting its use by other speakers;

c. An account of the range of \textit{semantic values} that the term can have – that is, of the contributions that the term can make to the \textit{truth conditions} of sentences in which it appears;
d. An account of the non-truth-conditional aspects of meaning that the term can have – for example, of any conventional implicatures or presuppositions that can be conveyed by the use of the term;

e. An account of how the conversational context in which the term is used determines its meaning and its semantic value in the particular context in question.

In this essay, I shall focus chiefly on the third of these components, (c), the range of semantic values that deontic modals like ‘ought’ and ‘should’ can have – although I shall also comment briefly on the fifth component, (e), the question of how the conversational context in which the term is used determines the meaning that it has in the context in question.

Otherwise, I shall strive to remain neutral about all the other components of the story. Thus, with respect to the first component (a), I shall not commit myself to any detailed claims about the underlying syntax or logical form of sentences involving ‘ought’ and ‘should’. In particular, even though I shall claim that ‘ought’ and ‘should’ have different semantic values in different contexts, I shall not commit myself to any particular view about how these different semantic values arise from the underlying syntax. Specifically, I shall not commit myself to any view about whether sentences containing ‘ought’ contain hidden variables (or hidden terms of any other kind), so that the way in which the term’s semantic value shifts between contexts results simply from different items’ being referred to by these hidden terms, or whether some other syntactic phenomenon underlies these shifts. I shall not even rule out the idea that the term ‘ought’ is syntactically simple and unstructured, and simply demands different semantic interpretations in different contexts.

Similarly, with respect to the second component (b), I shall not here defend any particular view of what it is to understand or to be a component user of the term. In fact, I am inclined to favour a certain sort of account of this second component of a term’s meaning. Specifically, according to an account of this sort, we can explain what it is to be linguistically competent with a term by appealing to the range of concepts that the term can be used to express: to be linguistically competent with the term is to have the ability to use the term to express concepts within that range (in a way that enables competent hearers to interpret one’s use of the term as expressing the concept within that range that one intends to express). Then the nature of each of these concepts can be explained in terms of the conceptual role that the concept plays in one’s thinking, and in terms of the way in which this conceptual role determines the object, property, or relation that the concept stands for or refers to.\(^2\)

However, even though I am attracted to this view of what linguistic competence consists in, I shall not attempt to defend this view here. Instead, I shall simply give an account of the range of truth conditions that sentences involving ‘ought’ can have. To bring out the similarity between the different truth conditions in this range, I shall put my account in the form of a schema involving three different parameters; as I shall explain, the different truth conditions that a sentence involving ‘ought’ can have in different contexts all correspond to different

\(^2\) I have attempted to sketch some parts of this story elsewhere; see especially Wedgwood (2007, chaps. 4–5).
ways of setting these three parameters. So, in effect, something in the conversational context in which the term ‘ought’ is used must determine what these parameters are; I shall try to comment, at least in passing, on what features of the conversational context could do this.

1. A semantic framework

The general semantic approach that I shall take here is in line with what could be called the “classical” semantics for deontic logic. According to this approach, ‘ought’ and ‘should’ and their equivalents in other languages are all broadly modal terms, just like ‘must’, ‘may’, ‘can’ and the like. Every occurrence of ‘ought’ expresses a concept that functions as a propositional operator – that is, as a concept that operates on a proposition (the proposition that is expressed by the sentence that is embedded within the scope of this occurrence of ‘ought’), to yield a further proposition (the proposition that is expressed by the sentence in which this occurrence of ‘ought’ has largest scope).

Thus, for example, the occurrence of ‘ought’ in the English sentence ‘This room ought to be swept’ expresses an ‘ought’-concept that operates on the proposition that is expressed by the embedded sentence ‘This room is swept’. So the proposition expressed by the sentence ‘This room ought to be swept’ has the logical form ‘O(This room is swept)’, where ‘O(…)’ is the relevant ‘ought’-concept. In a proposition of the form ‘O(p)’, I shall call the proposition p on which the relevant ‘ought’-concept operates the “embedded proposition”.

In general, the conditions under which a sentence expressing such an ‘ought’-proposition is true at a possible world can be specified as follows. For every such sentence, and for every possible world w, there is a function that maps possible worlds onto domains of possible worlds, and a relevant ordering on these worlds, such that the sentence expressing the ‘ought’-proposition ‘O(p)’ is true at w if and only if, out of all worlds in the domain that this function assigns to w, the embedded proposition p is true at all worlds that are not ranked any lower down in this ordering than any other worlds in this domain.\(^3\)

If – as will usually be the case – it is possible to express this ordering by means of words like ‘better’ and ‘worse’, then we can say more simply that the sentence expressing ‘O(p)’ is true at w if and only if the embedded proposition p is true at all the optimal worlds in the relevant domain. So, for example, the sentence ‘This room ought to be swept’ is true at w if and only if the proposition that this room is swept is true at all the relevantly optimal worlds in the possible world.

\(^3\) So, if the proposition ‘O(p)’ is not to be trivial, there must be some worlds that are not ranked any lower in this ordering than any other worlds in the domain. That is, what David Lewis (1973) called the “Limit Assumption” must hold. Some philosophers – such as Eric Swanson (forthcoming) – have denied that the Limit Assumption must hold for all ‘ought’-concepts. But in my view, there are independent reasons for thinking that it must hold. Specifically, if ‘ought’ agglomerates over conjunction – including infinite conjunction – and ‘ought’ implies logical possibility, then it seems that the Limit Assumption must indeed hold: that is, in effect, there must be a possible world where everything is as it ought to be.
So long as there are always some worlds in the relevant domain that count as optimal in the relevant way, it will turn out that all of the principles of standard deontic logic – in effect, the modal system KD – will be valid for every ‘ought’-concept.

In this way, this classical approach to the semantics of ‘ought’ involves two parameters: a function that maps possible worlds onto a domain of possible worlds, and the relevant ordering on these worlds. As I shall explain in the third section of this paper, this ordering of worlds can itself be regarded as having an expectational structure: that is, there is some kind of value, and some probability distribution, such that this ordering of the worlds is equivalent to an ordering in terms of the expected value of the worlds, according to this probability distribution. However, before developing this expectational conception of the relevant ordering, I shall survey some of different concepts that the term ‘ought’ can express.

2. The varieties of ‘ought’

In earlier work, I have surveyed several of the different concepts that words like ‘ought’ can express. As I have argued, some of these ‘ought’-concepts are instances of the “practical ‘ought’”; some are instances of the “purpose-relative ‘ought’”, some of the “‘ought’ of general desirability”, some of the “rational ‘ought’”, and so on.

For our purposes, the most important point is that each of these kinds of ‘ought’ can be used in a more or less “objective” or “subjective” way. For example, let us start with instances of the “practical ‘ought’”. Suppose that you are on top of a tower, watching someone trying to escape from a maze on the ground below. Then you might say:

(1) He has no way of knowing it, but he ought to turn left at this point.

Here what an agent “ought” to do does not depend purely on the information that is possessed by the agent at the relevant time; so this first example involves the “objective” ‘ought’, rather than the “information-relative” ought.

On the other hand, sometimes we use ‘ought’ in such a way that it does depend purely on the informational state of the relevant agent at the relevant time. Thus, we might say about the man who is making his way through the maze:

(2) All the evidence that he has suggests that turning right at this point would be the best way to escape from the maze, and so that is what he ought to do now.

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4 This “classical” semantics for deontic operators was defended by such pioneering deontic logicians as Åqvist (1967) and Lewis (1973). My defence of this classical semantics is given in Wedgwood (2007, Chap. 5).

Here what the agent “ought” to do depends only on the informational state of the relevant agent at the relevant time. So this second example involves a subjective or information-relative ‘ought’, not an objective ‘ought’.

In general, many different kinds of ‘ought’ seem to have both an objective and a subjective or information-relative version. For example, consider the purpose-relative ‘ought’, such as ‘He ought to use a Phillips screwdriver to open that safe’. What makes this the purpose-relative ‘ought’ is that the truth value of this statement simply depends on whether or not using a Phillips screwdriver is part of the best way of opening the safe; the statement takes no stand on whether the person in question ought (in the all-things-considered practical sense of ‘ought’) to open the safe at all.

It seems clear that this purpose-relative ‘ought’ also comes in both objective and subjective versions. An objective version of this sort of ‘ought’ might be: ‘He has no way of knowing it, but he ought to use a Phillips screwdriver to open that safe’. A subjective or information-relative version of this ‘ought’ might be: ‘Since he doesn’t know what sort of safe it is, he ought to start with the ordinary screwdriver first’.

In fact, it also seems plausible that other kinds of ‘ought’, like what I have elsewhere called the “‘ought’ of general desirability” and the “rational ‘ought’”, also have both objective and subjective or information-relative versions. In general, it seems that for each of these kinds of ‘ought’, there must be some systematic connection between the more objective and the more subjective versions of that kind of ‘ought’. Moreover, it seems that it must be broadly speaking the same kind of systematic connection in each case. The next two sections of this paper will focus on exploring this connection.

In addition to giving an account of the relationship between the subjective and objective versions of each of these kinds of ‘ought’, I shall also aim to unify my account of these phenomena with yet another kind of ‘ought’ – specifically, with the so-called epistemic ‘ought’, as in:

(3) Tonight’s performance ought to be a lot of fun.

This seems just to mean, roughly, that it is highly probable given the salient body of evidence that tonight’s performance will be a lot of fun. If this is indeed at least roughly what the epistemic ‘ought’ means, then it is clear that the “salient body of evidence” need not include the total evidence available to the speaker at the time of utterance, since it seems that even if one knows that the orbit of Pluto is not elliptical, it might be true for one to say:

(4) The orbit of Pluto ought to be elliptical (although of course it isn’t).

I shall aim to give an account of the semantic value of a range of uses of ‘ought’ that includes these uses of the term.
3. The expectational schema

As I explained in Section 1 above, I am assuming that the truth conditions of sentences that express ‘ought’-propositions are in line with the classical semantics of standard deontic logic. The truth conditions of every such sentence involves the following two crucial elements: first, they involve a function $f$ that maps each possible world $w$ onto a domain of possible worlds $f(w)$; secondly, they involve an ordering on the worlds in this domain. So, to understand the semantic value of any ‘ought’-concept, we need to understand these crucial elements.

In this paper, I shall propose a broadly expectational conception of this ordering. For every use of ‘ought’, the ordering of worlds in the domain is always an ordering in accordance with the expected value of those worlds. If the ordering of worlds has this expectational structure, it is itself the result of two more fundamental components: a probability distribution $E$; and a value function $V$, which assigns a value to each of the worlds within the domain $f(w)$.

There are two ways of interpreting this expectational conception of the orderings that feature in the truth conditions of these sentences. On the first interpretation, the analysis of each of these orderings as resulting from a probability function $E$ and a value function $V$ is built into the semantics of modal terms like ‘ought’. On the second interpretation, the semantics just involves these orderings themselves, without itself containing any such analysis of the orderings; and the analysis is purely a metaphysical thesis about the nature of the orderings in question. In fact, I shall argue in Section 5 below that there are reasons, concerning the truth conditions of conditional sentences involving ‘ought’, for interpreting this expectational conception in the first way, as built into the semantics of terms like ‘ought’. For the time being, however, we simply shall leave it open which interpretation of this expectational conception is correct.

In the rest of this section, I shall explain this expectational schema in more detail, starting with some comments on each of its three elements – the domain function $f$, the probability distribution $E$, and the value function $V$.

(i) The first element of any instance of this expectational schema is familiar: it is a domain function $f$, which maps every world $w$ onto the relevant domain of possible worlds $f(w)$. It is this function that identifies the worlds that are, as we might put it, “up for assessment” by the ‘ought’-concept in question, relative to $w$. In effect, this function $f$ fixes what Angelika Kratzer (2012, Chapter 2) called the “modal base” – the set of propositions that are true throughout the domain of worlds that are up for assessment by the ‘ought’-concept, relative to $w$. We shall explore some specific examples of such domains of worlds in the next section.

(ii) The second element of any instance of this expectational schema is a probability distribution $E$. I shall assume that every probability distribution is a function that assigns real numbers in the unit interval from 0 to 1 to the propositions in a propositional algebra (that is, a set of propositions that is closed under Boolean operations like negation, disjunction, and so on). Any function of this sort that obeys the fundamental axioms of probability theory counts as a probability distribution. So, in particular, the omniscient probability function – the
function that assigns 1 to every true proposition and 0 to every false proposition in the relevant algebra – is itself a probability distribution.

Another way of thinking of such probability distributions is as defined over a *space of possible worlds*, relative to a certain “field” of subsets of this space of worlds. This “field” also constitutes an algebra, in the sense that it is closed under operations like complementation, union, and the like; the probability function assigns real numbers to the sets of worlds in this field. This probability function can be thought of as a *measure* on the space of worlds: intuitively, it tells us *how much* of the whole space of worlds is taken up by each set in this field. (This is why the probability measure has to obey a basic additivity principle: the proportion of the whole space taken up by the union of any two disjoint sets of worlds is the sum of the proportions taken up by those sets.) This way of thinking of probability distributions is equivalent to thinking of them as defined over propositions, so long as for each of the relevant propositions, the field contains a set of worlds in which that proposition is true. (Indeed, on some views, each of these propositions is *identical* to the corresponding set of worlds.)

It seems clear that for some purposes, we will have to consider probability distributions in which some propositions that are metaphysically necessary but knowable only empirically – such as the proposition *that Hesperus = Phosphorus* – have a probability less than 1. If we think of the probability distribution as defined over a space of worlds, this means that we will have to allow the space to include worlds where Hesperus ≠ Phosphorus. Such worlds are not metaphysically possible, but they may still be *epistemically* possible. So the space of worlds over which the probability distribution is defined is a space of epistemically possible worlds, not a space of metaphysically possible worlds.

Although we can make sense of probability distributions in which the proposition *that Hesperus ≠ Phosphorus* has a non-zero probability, the sentence embedded inside a deontic modal term like ‘ought’ seems to permit the substitution of necessarily co-referring terms. Since Hesperus is identical to Phosphorus, if you ought to visit Hesperus, it surely follows that you also ought to visit Phosphorus. To explain this fact about deontic modals, within the semantic framework that I am assuming here, the domain of possible worlds \( f(w) \) must be a domain, not of epistemically possible worlds, but of metaphysically possible worlds.

On this picture, then, we have in effect *two* different spaces of possible worlds – a domain of metaphysically possible worlds, and a space of epistemically possible worlds. Many

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6 For technical reasons (see Easwaran 2014), if the space contains *indenumerably* many worlds, it may not be possible assign a probability to every set of worlds in the space – it may be that only certain sets of worlds can have a probability assigned to them. This is why the probability distribution is defined over the worlds only relative to a “field” of sets of worlds – where this field contains all and only those sets of worlds that correspond to propositions in the relevant algebra. Fortunately, this complication will not matter for present purposes.

7 Invoking two spaces of possible worlds – a space of epistemically possible worlds and a domain of metaphysically possible worlds – in this way sets my account apart from most previous accounts of deontic modals, which have typically sought to explain the semantic value of these modals purely in terms of a single domain of possible worlds. Thus, for example, the account of Silk (2013) resembles mine to the extent that it allows the ordering on the worlds to vary with an “information state”, but for
different interpretations of these two spaces of possible worlds are possible, but to fix ideas, I shall propose one such interpretation here. According to this interpretation, these two spaces of possible worlds correspond to two different kinds of propositions.

The metaphysically possible worlds correspond to propositions of the “Russellian” kind – structured entities that are composed, by means of operations like predication, negation, conjunction and the like, out of entities like individuals, properties and relations. Metaphysically possible worlds are individuated by the Russellian propositions that are true at those worlds: a metaphysically possible world \( w_1 \) is identical to a metaphysically possible world \( w_2 \) if and only if exactly the same Russellian propositions are true at \( w_1 \) and \( w_2 \). The Russellian proposition \( \text{that you visit Hesperus} \) is composed out of you, the visiting relation, and the planet Hesperus itself. This proposition is therefore identical to the Russellian proposition \( \text{that you visit Phosphorus} \). Since the propositions that in this way individuate a possible world must form a logically complete and consistent set, this explains why there cannot be metaphysically possible worlds in which you visit Hesperus but not Phosphorus.

By contrast, the epistemically possible worlds are individuated by the Fregean propositions that are true at those worlds – where Fregean propositions are structured entities that are composed, by means of operations like predication and the like, out of concepts, which are modes of presentation of such entities as individuals, properties and relations. An epistemically possible world \( w_1 \) is identical to an epistemically possible world \( w_2 \) if and only if exactly the same Fregean propositions are true at \( w_1 \) and \( w_2 \). Since one and the same planet may have several different modes of presentation – including a “Hesperus” mode-of-presentation and a “Phosphorus” mode-of-presentation – this allows for the existence of an epistemically possible world in which you visit Hesperus but not Phosphorus.

(iii) Finally, the third element of any instance of this expectational schema is a value function of a certain kind.

In general, this value function will evaluate a certain set of alternatives – such as a set of alternative acts, or the like. When we speak of an “act” here, it seems that what we really mean is a proposition to the effect that the relevant agent performs an act of the relevant type at the relevant time. So a more general account would involve regarding this value function as evaluating a certain set of alternative propositions.

To say that these propositions are “alternatives” to each other is to say that they are mutually exclusive: no more than one of these propositions is true at any world in the relevant domain.

\[ \text{Silk this information state is simply a kind of modal base, and so is nothing more than a “set of worlds” (15). The main exception is Jennifer Carr (2012, 13) who proposes that the semantic value of deontic modals involves a modal background, a probability function, and a value parameter (although confusingly she describes the modal background and the probability function as together constituting an “informational parameter”). The main difference between my account and Carr’s is that her account involves yet another parameter, a “decision rule parameter”, which seems unnecessary to me; she also does not distinguish between metaphysically and epistemically possible worlds in the way that I regard as important. (For further discussion of Carr’s proposal, see Section 6 below.)} \]
of metaphysically possible worlds. I shall also assume that these propositions are jointly exhaustive: that is, at least one of these proposition is true at every world in this domain. In other words, this set of propositions forms a partition of this domain of worlds: at every possible world in this domain, exactly one of these propositions is true.

Since no more than one of these propositions is true at every world in this domain, and there is no metaphysically possible world where you visit Hesperus without also visiting Phosphorus, the proposition that you visit Hesperus cannot be a distinct member of this set of propositions from the proposition that you visit Phosphorus. Thus, the propositions in this set must be Russellian propositions (indeed, each such proposition might simply be identified with a subset of the domain of metaphysically possible worlds). In effect, every such value function provides a set of Russellian propositions \( \{A_1, \ldots, A_n\} \) that forms a partition of the relevant domain of worlds, and assigns a value to each of these propositions.

We may think of the value that the value function assigns to each Russellian proposition \( A_i \) in this set as a real number \( V(A_i) \) that represents the value of this proposition \( A_i \). This measure is presumably not unique: the choice of unit will obviously be arbitrary (just as it is arbitrary whether we measure distance in miles or kilometres), and the choice of zero point may also be arbitrary as well (just as it is arbitrary whether we take the zero point on a thermometer to be 0 Fahrenheit or 0 Celsius). But to fix ideas, let us suppose that except in these two ways, this value function is not arbitrary. Given an arbitrary choice of a unit and a zero point, this function gives the true measure of the relevant value. In more technical terms, we are supposing that the value in question can be measured on an interval scale.\(^8\)

(iv) In this way, any instance of this expectational schema involves three items: a function \( f \) from each metaphysically possible world to a relevant domain of such worlds; a probability distribution \( E \); and a value function \( V \) defined over a set of propositions that constitutes a partition of the relevant domain of metaphysically possible worlds. To represent the fact that a particular instance of the expectational schema gives an account of the conditions under which a use of a sentence involving ‘ought’ is true, I shall explicitly index this occurrence of ‘ought’ to this trio of items: ‘Ought\( \langle f, E, V \rangle \).’

I have proposed that the value function \( V \) is defined over a set of Russellian propositions that forms a partition of the domain of metaphysically possible worlds. However, the probability distribution \( E \) can assign probabilities to hypotheses about the value that \( V \) assigns to various propositions – where each of these hypotheses is, in effect, a Fregean proposition. For example, such hypotheses might include: ‘The proposition that I visit Hesperus has value \( n \)’, and ‘The proposition that I visit Phosphorus has value \( m \)’ – where these two hypotheses are distinct from each other.

In this way, the hypotheses to which \( E \) assigns probability refer to Russellian propositions by means of modes of presentation – where these modes of presentation of Russellian

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\(^8\) Strictly speaking, to accommodate incommensurability, we need to consider a set of such value functions, rather than a unique value function. But I shall ignore this complication for the purposes of the present discussion.
propositions are, in effect, Fregean propositions. It seems that just as the relevant set of Russellian propositions forms a partition of the domain of metaphysically possible worlds, the corresponding Fregean propositions forms a partition of the space of epistemically possible worlds. Since each of these hypotheses involves a Fregean proposition $A_E$ (as a mode of presentation of a Russellian proposition $A_M$), we may think of each of these hypotheses as having the form ‘$V(A_E) = n’$.

We can now give a definition of the $EV$-expected value of a Fregean proposition $A_E$, in the following way. Consider a collection of hypotheses $\{h_1, \ldots, h_k\}$, where each hypothesis $h_i$ has the form ‘$V(A_E) = n_i$’. Suppose that this collection of hypotheses also forms a partition, in the sense that it is epistemically certain that exactly one of these hypotheses is true; and suppose that $E$ assigns a probability to each of these hypotheses. Then the $EV$-expected value of $A_E$ is the probability-weighted sum of the values of $A_E$ according to these hypotheses, where the value of $A_E$ according to each hypothesis is weighted by the probability of that hypothesis. Symbolically, the $EV$-expected value of $A_E$ is:

$$\sum_i n_i E(V(A_E) = n_i).$$

Since the set of Fregean propositions that feature in these hypotheses forms a partition of the epistemically possible worlds, the epistemically possible worlds themselves can be ordered in terms of the $EV$-expected value of the proposition in this set that is true at each world. Let us say that the epistemically possible worlds that are not ranked lower down in this ordering than any other such worlds have “maximal $EV$ value”.

For each of these epistemically possible worlds, we need to find the metaphysically possible worlds that in the relevant way “correspond to” that epistemically possible world. In the simple cases, a metaphysically possible world $w_M$ corresponds to an epistemically possible world $w_E$ if and only if all the Fregean propositions true at $w_E$ are true at $w_M$ (that is, these Fregean propositions are modes of presentation of Russellian propositions that are true at $w_M$). In more complex cases (such as epistemically possible worlds in which you visit Hesperus but not Phosphorus), there are no metaphysically possible worlds where all these Fregean propositions are true. In these cases, we would have to give a different account of what it is for a metaphysically possible world $w_M$ to “correspond to” an epistemically possible $w_E$; for example, we could say that that the metaphysically possible worlds that correspond to $w_E$ are those at which a maximal subset of the Fregean propositions that are true $w_E$ are true.

We can now define a selection function $S_{f, E, V}$ over the metaphysically possible worlds that will pick out the metaphysically possible worlds that correspond to the epistemically possible worlds with maximal $EV$-value: for any metaphysically possible world $w_M$, $w_M$ belongs to the

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9 An alternative approach would be to understand the “expected value” of a Fregean proposition $A_E$ as defined in terms of the conditional probability of such hypotheses – conditional on the world $w_E$ that is in question. To put it symbolically, the appropriate expectation might be: $\sum_i n_i E(V(A_E) = n_i | A_E)$. Unfortunately, I cannot take the time here to explore whether this alternative approach might give a better interpretation of certain uses of ‘ought’.
subset of \( f(w) \) picked out by this selection function \( S_{f,E,V^s}(f(w)) \) if and only if for some epistemically possible world \( w_E, w_M \) corresponds to \( w_E \), and \( w_E \) has maximal \( EV \) value.

The truth conditions of sentences of the form ‘Ought\( _{f,E,V^s}(p) \)’ can be specified in terms of this selection function \( S_{f,E,V^s} \):

‘Ought\( _{f,E,V^s}(p) \)’ is true at \( w \) if and only if \( p \) is true at every world \( w' \in S_{f,E,V^s}(f(w)) \).

Let us illustrate this proposal by considering the example of Frank Jackson’s (1991) “three drug” case. In this case, the speakers using ‘ought’ are focusing on the practical situation of a certain agent \( x \) at a time \( t \); in this situation, there are three options available to \( x \) at \( t \) – giving the patient drug 1, giving the patient drug 2, and giving the patient drug 3. The agent \( x \) knows that drug 3 is second-best. Unfortunately, although \( x \) knows that either drug 1 is best or drug 2 is best, \( x \) does not know which – and \( x \) knows that if drug 1 is best, drug 2 will be disastrous, while if drug 2 is best, drug 1 will be disastrous. The speakers are considering what \( x \) ought to do at \( t \) given the informational state that \( x \) is in at \( t \). Then the three parameters \( f, E, \) and \( V \) will be something like the following:

- \( f(w^*) \) is the set of metaphysically possible worlds that are practically available to \( x \) at \( t \) (so in these worlds, everything that \( x \) cannot change by \( x \)’s actions at \( t \) is exactly as it is in \( w^* \)).
- \( E \) is a probability distribution that in the appropriate way corresponds to \( x \)’s informational state at \( t \).
- \( V \) is a value function that assigns values to the three Russellian propositions, \( A_1, A_2, \) and \( A_3 \) – the propositions that at \( t, x \) gives the patient drug 1, drug 2, and drug 3, respectively – where these three propositions form a partition of the domain of worlds \( f(w^*) \).

\( E \) assigns probabilities to various hypotheses – including hypotheses about the value that \( V \) assigns to \( A_1, A_2, \) and \( A_3 \). In referring to these Russellian propositions \( A_1, A_2, \) and \( A_3 \), these hypotheses use modes of presentation of these propositions – and we are assuming that these modes of presentation of Russellian propositions are themselves Fregean propositions. To keep things simple, however, let us suppose that \( E \) puts the relevant Fregean propositions into a one-to-one correspondence with the Russellian propositions. (That is, for each of these Russellian propositions, there is exactly one Fregean proposition that is a mode of presentation of that Russellian proposition such that \( E \) attaches non-zero probability to any hypotheses involving that Fregean proposition.) Thus, there is also a corresponding set of Fregean propositions forming a partition of the epistemically possible worlds – \( A_{E,1}, A_{E,2}, \) and \( A_{E,3} \) – corresponding to \( A_1, A_2, \) and \( A_3 \).

Assume that for each of these Fregean propositions \( A_{E,i} \), there are two hypotheses \( h_{i,1} \) and \( h_{i,2} \) of the form ‘\( V(A_{E,i}) = n \)’ to which \( E \) assigns non-zero probability:

- \( h_{1,1} \) is ‘\( V(A_{E,1}) = 10 \)’; and \( h_{1,2} \) is ‘\( V(A_{E,1}) = 0 \)’
- \( h_{2,1} \) is ‘\( V(A_{E,2}) = 0 \)’; and \( h_{2,2} \) is ‘\( V(A_{E,2}) = 10 \)’
- \( h_{3,1} \) is ‘\( V(A_{E,3}) = 8 \)’; and \( h_{3,2} \) is ‘\( V(A_{E,3}) = 8 \)’.
Suppose that for all \( i \), \( E(h_{i,1}) = E(h_{i,2}) = 0.5 \). Then the \( EV \)-expected value of each of these three Fregean propositions \( A_{E,1} \), \( A_{E,2} \), and \( A_{E,3} \) is as follows:

- \( EV(A_{E,1}) = E(h_{1,1}) \times 10 + E(h_{1,2}) \times 0 = 5 \)
- \( EV(A_{E,2}) = E(h_{2,1}) \times 0 + E(h_{2,2}) \times 10 = 5 \)
- \( EV(A_{E,3}) = E(h_{3,1}) \times 8 + E(h_{3,2}) \times 8 = 8 \)

Thus, the epistemically possible worlds that have maximal \( EV \)-value are all and only the worlds at which \( A_{E,3} \) is true, and since the metaphysically possible worlds in \( (f(w^{*})) \) corresponding to the epistemically possible worlds at which \( A_{E,3} \) is true are all and only the worlds where \( A_{3} \) is true, \( S_{f,E,V}\langle f(w^{*}) \rangle \) contains precisely these metaphysically possible worlds. It follows that ‘Ought-\( f,E,V\langle A_{3} \rangle \)’ is true at \( w^{*} \).

As I explained above, this proposal is simply an account of conditions under which ‘ought’-sentences are true. I am not proposing that there are hidden variables referring to these parameters \( f, E, \) and \( V \) in the actual syntax of these sentences. I am also not claiming that linguistic competence with ‘ought’ involves some kind of implicit knowledge or grasp of this semantic account; this semantic account does not by itself settle the question of how best to account for our competence with ‘ought’.

However, I shall argue in Section 5 that all of these three parameters – \( f, E, \) and \( V \) – are part of the semantics of ‘ought’, in the sense that they must be included in any systematic account of the truth conditions of the full range of sentences involving ‘ought’. So, in normal contexts when ‘ought’ is used, something must determine what these three parameters are. Presumably, this will involve the speakers in the context actually thinking of something that somehow determines these parameters. I shall not take a definite stand on what exactly the speakers in the context must be focusing on in this way. (No doubt, few actual speakers think of a probability distribution by means of the formal mathematical concept of probability!) For example, the probability distribution \( E \) might be determined by the speakers’ in some way thinking of or imagining a certain epistemic perspective – where as a matter of fact, this perspective can be modelled by the probability distribution \( E \).

As I shall put it, in the context in question, each of these three parameters \( f, E, \) and \( V \) is “contextually salient” (although – as I have said – I shall remain neutral about what exactly is involved in these parameters’ being contextually salient in this way). In the next section, I shall show how different settings of these three parameters \( f, E, \) and \( V \) can yield intuitively plausible truth conditions for each of the kinds of ‘ought’ that we considered in Section 2.

### 4. Instances of the expectational schema

The schema set out in the previous section offers a simple way of understanding the maximally objective kinds of ‘ought’. With these kinds of ‘ought’, \( E \) is the omniscient probability distribution – the function that assigns probability 1 to every truth and probability 0 to every falsehood.
The differences between the semantic values of various objective kinds of ‘ought’ are reflected, not in the probability distribution $E$, but in the different settings of the other two parameters – the function $f$ that fixes the relevant domain of metaphysically possible worlds, and the value function $V$ that measures the value of the worlds in each domain.

It seems plausible that the semantic value of every instance of the practical ‘ought’ is focused on the situation of a particular agent $x$ at a particular time $t$. (It is this that has tempted many philosophers – like Mark Schroeder (2011) – to argue that the practical ‘ought’ actually stands for a relation between an agent and act-type.) So it seems that the semantic value of this use of ‘ought’ will involve a function $f$ that maps each world $w$ onto the worlds that are “practically available” from the situation that the agent $x$ is in at the time $t$ in $w$ – in effect, the worlds that the agent $x$ can realize through the acts that he or she performs at $t$ in $w$.

This semantic value will also involve a function $V$ that measures the value of the various acts that the agent performs at any of these available possible worlds. For example, more specifically, $V$ might be a measure of the choiceworthiness of the act that the agent performs in this situation within each of these worlds. On this view, then, if the relevant ‘ought’ is the objective practical ‘ought’, focused the situation of an agent $x$ at a time $t$, then ‘Ought ($p$)’ is true at a world $w$ if and only if $p$ is true in all the worlds that are practically available from the situation that $x$ is in at $t$ in $w$ where $x$ does one of the maximally choiceworthy acts available at that time $t$.

With the more subjective forms of the practical ‘ought’, $V$ and $f$ are exactly as they are with the objective practical ‘ought’, and $E$ is some less omniscient probability distribution – that is, it is a probability distribution that encodes a significant degree of ignorance and uncertainty about the world. For example, in many contexts we might use a practical ‘ought’ in such a way that its semantic value involves a probability distribution that corresponds to the system of credences that would be ideally rational for a thinker to have if their experiences, background beliefs, and other mental states were exactly like those of the agent $x$ at $t$.

This, however, is not the only concept that a subjective practical ‘ought’ can express. If the speakers have pertinent information that is not yet available to the agent who is under discussion, it will often be natural for the speakers to use an ‘ought’-concept whose semantic value involves a probability distribution that reflects this information. Moreover, if the agent herself also thinks that there is some available information that she has not yet acquired, it will be very natural for the agent to use an ‘ought’-concept that in this way involves a probability distribution that incorporates this information that the agent hopes to acquire.\(^{10}\)

In general, a probability distribution is in effect a way of representing a certain epistemic perspective; and an epistemic perspective can become conversationally salient for many reasons. For example, as we have noted, many probability distributions correspond to the systems of credences that an ideally rational thinker would come to have in response to

\(^{10}\) This is how I would aim to answer the objections of Kolodny and MacFarlane (2011).
certain experiences, given a certain set of background beliefs and other mental states. If this collection of experiences and other mental states is precisely the collection of experiences and states that a conversationally salient agent has at a conversationally salient time, this can explain why the corresponding epistemic perspective will be salient in the conversational context in question. There are many factors can explain why a certain agent and time are salient in a conversational context. For example, in many contexts, the salient time will often be the time of action, rather than the time of utterance; and the salient agent may be an adviser or observer of the agent on whom this occurrence of the practical ‘ought’ is focused, rather than that agent herself.

This idea of relativizing ‘ought’-concepts to probability distributions is clearly akin to the idea of Björnsson and Finlay (2010) that occurrences of ‘ought’ are relativized to bodies of information, conceived of simply as sets of propositions. However, there are a number of crucial differences. First, although every probability function determines a body of information (consisting of the propositions to which the function assigns probability 1), the converse does not hold: there are many different probability distributions in which the same propositions have probability 1. In this way, probability distributions contain more structure than mere bodies of information. Secondly, my proposal is not committed to their view that every occurrence of ‘ought’ is relativized to an “end” or “standard” that can be understood in wholly non-normative terms. Finally, my proposal is easier to integrate with some of the classical theories in this area: unlike their account, my proposal entails standard deontic logic; and it clearly yields the right verdicts in contexts where it is assumed that the agent ought to maximize some kind of expectation of some kind of value.

We can make sense of objective and subjective versions of many kinds of ‘ought’. For example, this point seems to hold, not just of the practical ‘ought’, but of the purpose-relative ‘ought’, the ‘ought’ of general desirability, and the rational ‘ought’ as well. In each case, the objective and the subjective ‘ought’ differ only with respect to the relevant probability distribution $E$: with the objective ‘ought’, $E$ is the omniscient probability distribution, whereas with the more subjective ‘ought’, $E$ is indexed to a probability distribution that corresponds to the credence function of a possible thinker who (although perfectly rational) is significantly more ignorant and uncertain about the world.

It would be intrinsically interesting to explore exactly how this schema can be worked out in detail for each of these other kinds of ‘ought’; but to save space, I shall here only explain how it would work for the purpose-relative ‘ought’. So far as I can see, the purpose-relative ‘ought’ resembles the practical ‘ought’ in that they are both implicitly focused on the situation of a particular agent $x$ at a particular time $t$. So the relevant function $f$ from worlds to domains of worlds is again the function that maps each world $w$ onto the worlds that are “practically available” from the situation that the agent $x$ is in at the time $t$ in $w$.

The only respect in which the purpose-relative ‘ought’ differs from the practical ‘ought’ is in involving a different value function $V$. For the purpose-relative ‘ought’, there is some purpose $P$ that is contextually salient, and the value function $V$ ranks the various acts that the agent performs at any of the worlds that are practically available to the agent at the time in
question, not in terms of their overall choiceworthiness, but purely in terms of how good these acts are as a means to accomplishing that purpose \( P \). Otherwise, the two kinds of ‘ought’ work in more or less the same way.

As I remarked in Section 2 above, it would be preferable if our account of ‘ought’ could also encompass the other kinds of ‘ought’ that I considered in that section – including the epistemic ‘ought’ (as in ‘Tonight’s performance ought to be a lot of fun’, which as I said seems roughly equivalent to saying that the embedded proposition *that tonight’s performance will be a lot of fun* is highly probable given the salient evidence).

The schema that I proposed in the previous section may be able to capture the epistemic ‘ought’, in something like the following way. For the epistemic ‘ought’, the three parameters may be the following. First, \( f \) can simply be the function that maps each world onto the set of all possible worlds that are compatible with everything that is known for certain in the context. Secondly, \( E \) can be a probability distribution modelling some possible epistemic perspective. (Again, this could be pretty well any perspective; the participants in a conversation will just have to interpret the contextual clues in order to discern which perspective is contextually salient in the relevant way.)

Finally, \( V \) could simply be a function that ranks answers to a certain question, which we can think of as a partition of alternative answers to the question, by ranking the true answer to the question above all the false answers – say, by assigning a value of 1 to the true answer and 0 to false answers. Now, as is well known, probabilities are themselves simply expectations of truth-values. So the ranking of answers to this question in terms of their \( EV \)-expected value is identical to the ranking in terms of these answers’ probability according to \( E \); and this ranking determines a corresponding ordering of worlds in accordance with the probability of each world’s answer to the question. So, for example, if the rival answers to the question are simply \( p \) and \( \neg p \), then the sentence ‘It ought to be that \( p \)’, involving this epistemic ‘ought’, will be true just in case \( p \) is more than probable than \( \neg p \) (according to the probability distribution that corresponds to \( E \)).

One might wonder whether \( p \)’s being barely more probable than \( \neg p \) is enough to make it true to say ‘It ought to be that \( p \)’, using this epistemic ‘ought’. At least, if we were considering a fair lottery with 100 numbered tickets, we would not typically say such things as ‘The winning ticket ought to be one of the 51 tickets numbered between 50 and 100’.

However, the reason for this may be that the question that we normally have in mind is not simply whether or not the embedded proposition is true, but whether or not some more general explanatory picture of the world is true. If this general explanatory picture is more than 50% probable, and the proposition \( p \) follows from this explanatory picture, then it will be true to say ‘It ought to be that \( p \)’ (since \( p \) will be true in all the worlds within the domain where this explanatory picture is true). A proposition \( p \) that follows from a general explanatory picture of this sort will typically be significantly more probable than that general picture itself.
This simple account of the value function $V$, in terms of the truth-value of answers to a certain question, may turn out not to be completely defensible in the end; a more complicated of this value function may be required. But at all events, to capture the range of ways in which we use the epistemic ‘ought’, we have to allow that many different probability distributions (or spaces of epistemically possible worlds) can be involved. In particular, when a speaker asserts a proposition involving an epistemic ‘ought’-concept of this sort, the probability distribution $E$ involved in this concept’s semantic value does not have to correspond to the information that is actually available to the speaker. It may be a different probability distribution.

For example, even if the speaker knows perfectly well that the orbit of Pluto is not elliptical, the relevant probability distribution $E$ does not have to assign a probability of 0 to the proposition that the orbit of Pluto is elliptical; it may be a probability distribution that corresponds to the credences that it would be rational to have given a body of information that is different from the speaker’s actual total evidence but contextually salient for other reasons. So this approach has no difficulty handling such puzzling instances of the epistemic ‘ought’ as ‘The orbit of Pluto ought to be elliptical (though of course it isn’t)’.11

5. ‘Ought’ and conditionals

In this section, I shall comment on what this expectational model of ‘ought’ implies about how ‘ought’ interacts with conditionals. It is here that we shall see why the probability distribution $E$ needs to be part of the semantics of ‘ought’.

The general idea is familiar from such classic discussions of conditionals as that of Angelika Kratzer (2012, Chapter 4). According to Kratzer, quite generally, the effect of conditionals is to restrict some domain of possible worlds that is involved in the semantics of a modal operator that appears (at least implicitly) as the dominant operator of the consequent of the conditional – by restricting this domain of worlds to that subset of the domain where the antecedent of the conditional is true.

As I mentioned in the previous section, we can think of the probability distribution as itself a space of possible worlds – where a “space” of worlds is more than a mere set of worlds. A space of worlds involves not just a set of worlds but also a measure on subsets of this space. That is, there is a certain “field” of subsets of the space such that we can make sense of ratios between the proportions of the whole space that are taken up by these subsets. For example, we can make sense of the idea that one subset takes up twice as large a proportion of the

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11 This view of the epistemic ‘ought’ also helps to explain why it has such different truth conditions from the epistemic ‘must’ – even though both modals are broadly speaking necessity operators. For ‘must’, the ordering on the possible worlds makes no difference to the sentence’s truth conditions; and according to my proposal, the only relevance of the probability distribution $E$ is to generate the ordering of possible worlds in terms of their $EV$-expected value. So the truth conditions of ‘Must ($p$)’ depend purely on whether $p$ is true throughout $f(w)$, and is unaffected by what $E$ and $V$ are in the relevant context.
whole space as another. So we can in effect view the probability distribution $E$ as a structured measurable space of worlds of this sort.

Once we have the idea of a *space* of possible worlds – as opposed to a mere domain or set of worlds – it is natural to reinterpret this “restricting” function of conditionals. Instead of simply replacing the domain of possible worlds with the subset of the original domain where the conditional’s antecedent is true, we may conceive of the conditional as replacing the original space of possible worlds with the *sub-region* of the space where the conditional’s antecedent is true.

Where the space of worlds has no more structure than a simple set of worlds, the sub-region of the original space will simply be the subset where the antecedent is true – just as on Kratzer’s original proposal. However, where the space of worlds has the structure of a probability distribution, replacing the space with the sub-region where the antecedent is true is equivalent to replacing the original probability distribution by the result of *conditionalizing* it on the antecedent.

According the account that I have proposed here, the semantics of ‘ought’ involves *two* spaces or domains of possible worlds – the domain of metaphysically possible worlds that is fixed by the function $f$, and the space of epistemically possible worlds $E$. The antecedent of the conditional will restrict one of these spaces of worlds; but it may be up to the particular conversational context to determine which of these two spaces is restricted in this way.

So, some conditionals will restrict the domain of metaphysically possible worlds $f(w)$ to the subset of that domain where the antecedent is true; but other conditionals will restrict the space of epistemically possible worlds $E$ to that sub-region of the space where the antecedent is true. Just to give them labels, I shall call the first sort of conditional ‘ought’ the “metaphysical conditional”, and I shall call the second sort of conditional the “epistemic conditional”.

The truth conditions of these two kinds of conditionals can be specified as follows:

1. **Metaphysical:** For any two propositions $p$ and $q$: ‘[If $p$] $q$’ is true at $w$ iff $q[f/f']$ is true at $w$ – where $q[f/f']$ is the result of uniformly replacing $f$ in $q$ with $f'$, which is the function from any possible world $w'$ to the subset of $f(w')$ where $p$ is true.

2. **Epistemic:** For any two propositions $p$ and $q$: ‘[If $p$] $q$’ is true at $w$ iff $q[E/E']$ is true at $w$ – where $q[E/E']$ is the result of uniformly replacing $E$ in $q$ with $E'$, which is the sub-region of $E$ where $p$ is true.

It is clear that the clause for this second epistemic conditional requires that the space of possible worlds $E$ must itself be part of the *semantics* of the sentence that expresses the proposition $q$. It is only if $E$ is part of the semantics that the effect of embedding this sentence within a conditional can be to restrict this space $E$ to the sub-region of the space where the antecedent proposition $p$ is true.

The truth conditions that I have assigned here to the metaphysical conditionals involving ‘ought’ are in effect the same as those that were assigned to the so-called dyadic ‘ought’-
operator by the classical deontic logicians such as Åqvist (1967) and Lewis (1973). On the other hand, the truth conditions that I have assigned to the epistemic conditionals involving ‘ought’ have the effect of replacing the probability distribution $E$ that would be involved in the semantic value of the consequent of the conditional if it appeared unembedded with the result of conditionalizing that probability distribution on the antecedent.

For an example of the metaphysical conditional, consider the familiar examples that have been used to illustrate the dyadic ‘ought’-operator. Suppose that an adviser is remonstrating with a recalcitrant advisee. First, the adviser says ‘You ought not to shoot up heroin’, and then when the advisee indicates that he may not follow this advice, the adviser continues, ‘And if you do shoot up heroin, you ought to shoot up with clean needles’.

If these statements involve the practical ‘ought’, focused on the advisee’s situation at the time of the utterance, then the adviser’s first statement is true because out of all the worlds that are practically available to the advisee at the relevant time, the worlds where the advisee acts in a maximally choiceworthy way are all ones where he does not shoot up heroin. The second statement is true because out of all the worlds that are practically available to the advisee at the relevant time and the advisee does shoot up heroin, the worlds where the advisee acts in a maximally choiceworthy way are all worlds where he shoots up with clean needles.

For an example of the epistemic conditional, consider the following variant of Frank Jackson’s (1991) three-drug case – specifically, a four-drug case. There are two drugs, 1 and 2, such that it is known for certain that one of these two drugs will completely cure the patient while the other drug will kill him, but unfortunately it is unknown which of the two drugs will cure the patient and which will kill him. In addition, there are two other drugs, 3 and 4, each of which will effect a partial cure, but one of which will have an unpleasant side-effect – though it is not yet known which drug will have that side-effect. Suppose that the patient is about to have a test: it is known that if the test is negative, it is drug 3 that will have the unpleasant side-effect, while if the test is positive, drug 4 will have the unpleasant side-effect. Then it is true to say ‘If the test result is positive, we should give the patient drug 3.’

This statement is true because we give drug 3 in all possible worlds in the relevant domain in which we take the course of action that maximizes expected choiceworthiness, according to the probability distribution that results from our current system of credences by conditionalizing on the proposition that the test result is positive.\textsuperscript{12} This seems to be the

\textsuperscript{12} This interpretation of these epistemic deontic conditionals seems to me to avoid the problems for rival accounts that are canvassed by Nate Charlow (2013). Those rival accounts all represent the relevant body of information by means of the “modal base” – that is, the propositions that are true throughout the relevant domain of worlds $f(w)$; my account represents this body of information in a fundamentally different way – by means of the probability distribution $E$ that, together with the relevant value $V$, determines the ordering of the worlds in this domain. In this way, my account agrees with Charlow’s central point, that a good semantic account must make provision for conditionalizing, not only the modal base, but also the relevant ordering of the worlds. It is precisely for this reason that I propose that there are two different kinds of deontic conditionals.
intuitively correct truth conditions for this sentence – which supports the semantic proposal that I am making here.

This is not to say that every conditional with an ‘ought’ in the consequent conforms to one of these two patterns. Suppose for example that we are considering another agent – call her Alice – and wondering which of two courses of action, A and B, it is most rational for her to take. Then we might say: ‘I’m not sure which of these two courses of action Alice regards as preferable. But if she thinks that A is preferable to B, she should do A’.13 This seems to me to be an ordinary indicative conditional – to be explained in the same way as all other indicative conditionals (whatever that way is). In this case, the local context in which this occurrence of ‘should’ occurs makes a certain possible epistemic perspective E salient – specifically, the perspective that Alice would have if she thinks that A is preferable to B. The semantic value of this occurrence of ‘ought’ is to be analysed in terms of this epistemic perspective E.

6. Objections and replies

There are two main things that I have done in this paper. First, I have set out a related family of truth conditions – in effect, the truth conditions that the sentences expressing a family of concepts might have. These truth conditions naturally divide into those that belong to more “objective” concepts and those that belong to more “subjective” concepts, depending on whether the probability distribution involved in these truth conditions is the omniscient probability distribution, or a probability distribution that in some way reflects a greater degree of ignorance and uncertainty.

Secondly, I have suggested that these truth conditions capture the semantic values of uses of the English deontic modals like ‘ought’ and ‘should’. In the space available, this suggestion could not be defended in detail. The suggestion seems plausible to me, but I concede that much more empirical evidence about the semantic intuitions of competent speakers of English would have to be considered to give a full defence of this suggestion. If this suggestion seems less plausible to some readers than it does to me, then the concepts that I have highlighted – even if they are not expressed in English by deontic modals like ‘ought’ and ‘should’ – may at least turn out to be useful for various theoretical purposes.

In this final section, I shall offer a brief reply to an objection that might be raised against my suggestion that this family of truth conditions really captures the semantic values of uses of ‘ought’. Some readers may worry that my account seems to build in some controversial assumptions about rational choice into the very semantics of ‘ought’. In some unpublished notes quoted by Kai von Fintel (2012: 25), Kratzer objects to accounts that do this, asking rhetorically: “Why pack information about rational decision making into the meaning of modals?”

Strictly speaking, however, I have not in fact said anything about rational decision making here. Admittedly, my account makes use of the general idea of the expected value of a

13 I owe this example to Alex Silk.
proposition, which is an idea that is also invoked in many theories of rational choice—for example, by those theories that imply that a rational choice must maximize expected utility. My account has in fact made absolutely no mention of utility at all. (There may be contexts where the value function $V$ involved in the semantic value of an occurrence of ‘ought’ is a utility function; I take no stand on the issue.) Still, it may seem that the mere fact that I have made use of the general idea of the expected value of a proposition brings my account too close to “packing information about rational decision making into the meaning of modals”.

There are two main problems that might be alleged to affect accounts of the semantics of ‘ought’ that appeal to the idea of the expected value of a world. First, one might think that this idea is too controversial and too technical to be implicit in the linguistic competence of ordinary speakers. Secondly, one might think that there are some specific cases that cannot be handled in an intuitively acceptable way by any such account.

My account is not vulnerable to the first problem, since I have explicitly distanced myself from any attempt to explain linguistic competence in terms of an implicit grasp of the truth conditions that I have described. It is undeniably an important question what linguistic competence consist in, but unfortunately I cannot address that question here. At all events, it is far from obvious that the truth conditions that I have described are incompatible with any plausible account of linguistic competence.

The second problem is potentially more serious. For example, consider an agent—call him John—who harbours grave doubts about all views according to which one should choose options that maximize some kind of probabilistic expectation of some kind of value. Instead, John is attracted to a rival theory of rationality, such as the maximin theory—according to which in every choice situation, one should choose one of the options whose worst possible outcomes are at least no worse than the worst possible outcomes of the available alternatives. Suppose that the most plausible version of the expected-value theory would favour John’s choosing act $A$, and the maximin theory would favour her choosing act $B$. It would seem true to say ‘For all John knows, he ought to choose $B$’. Can we really handle cases of this sort in a satisfactory manner if the notion of maximizing expected value is built into the semantics of ‘ought’ as I propose?

These cases seem hardly typical of the normal use of deontic modals, since they concern the use of these terms by theorists or philosophers in talking about other theorists. It is questionable whether such esoteric uses are the most reliable evidence for a theory of the meaning of words in a natural language. Nonetheless, a number of recent writers seem to have been moved by cases of this sort. For example, Jennifer Carr (2013) has proposed that there should be a separate parameter in the semantics of deontic modals for a decision rule: in some contexts, this decision rule might be maximizing expected utility, but in other contexts, it might be some other decision rule, such as the maximin rule.

In my view, however, this manoeuvre greatly complicates the semantic account of deontic modals, in a way that is far from obviously warranted by the linguistic evidence. Statements of the form ‘For all John knows, $p$’ are hard to interpret. In some contexts, it seems that it
could be true to say such things as ‘For all Pythagoras knew, there are only finitely many prime numbers’. To explain why this sentence is true, it is surely not necessary to argue that there are some possible worlds where there are only finitely many prime numbers! In a similar way, it should be possible to explain why the sentence ‘For all John knows, he ought to choose B’ without supposing that there is any context such that the notion of maximizing expected value plays no role in the correct account of the truth conditions that an ‘ought’-sentence has in that context.

A similar objection is raised by Fabrizio Cariani (this volume, §2.2), who focuses on cases where a sentence involving ‘ought’ is embedded inside a larger sentence, like ‘John believes that he ought to choose B’, which ascribes a belief to a heterodox theorist like John. Cariani argues that an account like mine will have difficulties explaining why this belief-ascription is true.

In fact, however, my account has no difficulty providing such an explanation. It seems most promising to link my account of the semantics of ‘ought’ with a relational analysis of belief-ascriptions. According to this relation analysis, the belief-ascription is true because John stands in the belief-relation to a content of the appropriate kind that can be expressed in this context by the embedded sentence ‘he ought to choose B’.

According to Cariani (ibid.), “the appeal to the relational analysis is merely evasive, unless it is complemented by an account of what content is expressed by a deontic sentence in a given context”. But it is surely not obvious that in order to defend my account of the semantics of ‘ought’, I need to commit myself to a full account of the semantics of belief-ascriptions here. It is enough if I can make it plausible that it is possible in principle to give an illuminating analysis of belief-ascriptions that harmonizes with my account of ‘ought’.

So, to fix ideas, I shall suggest a possible analysis of this sort. I am not firmly committed to all the details of this suggestion; the suggestion is included here only to respond to Cariani’s objection. According to this suggestion, in this context the embedded sentence ‘he ought to choose B’ express a Fregean proposition – presumably, a Fregean proposition that John could express in an appropriate context by uttering the sentence ‘I ought to choose B’.

It seems clear that this Fregean proposition is capable of being true or false; in that sense, this proposition has truth conditions. Presumably, to make this suggestion compatible with my account, this Fregean proposition must have has the same (extensional) truth-conditions that my account assigns to the ‘ought’-sentence in this context. However, there is no reason to think that John himself must entertain this Fregean proposition by means of explicitly thinking of these truth conditions. John must latch onto this proposition somehow, but it is not necessary for him to latch onto the proposition by means of an implicit grasp of the most systematic account of the truth conditions of sentences that express this proposition. Instead, I suggest, John latches onto this proposition by deploying some mode of presentation of the property that, according to my account, the embedded proposition that John chooses B would have to possess for the whole ‘ought’-proposition to be true. The content of John’s belief is a Fregean proposition that applies this mode of presentation to this embedded proposition.
Exactly how John grasps this mode of presentation of this property is a delicate question, but it seems possible that he could grasp this mode of presentation without having any awareness of how the property is analysable in terms of a domain function $f$, a probability distribution $E$, and a value function $V$.

A further concern that Cariani raises is whether my account will make it the case that John’s beliefs are “logically inconsistent”. In principle, there are many views that philosophers have defended that are inconsistent with the correct semantics for some natural-language expressions. For example, some philosophers have defended the view that there are *deontic dilemmas* – cases in which it is simultaneously true that you ought to do $A$ and also that you ought not to do $A$. According to almost all the accounts of ‘ought’ that semanticists have proposed, these philosophers’ views are inconsistent with the correct semantics for ‘ought’. In principle, I accept that cases could be devised in which the beliefs of John the maximin theorist would be similarly “inconsistent”. However, since beliefs can be in this sense “inconsistent” in highly non-obvious ways, I do not see how this counts as any sort of objection to my account.

In general, cases where an ‘ought’-sentence of this kind is embedded within a hyperintensional context like ‘John believes that…’ or ‘For all Barbara knows…’ raise so many problems of their own that they seem not to provide firm grounds for objecting to my account. Moreover, so far as I can see, there is no clear case where we have the intuition that a sentence that has ‘ought’ as the dominant operator – for example, a sentence of the form ‘Barbara ought to do $A$’ – is true, in a way that clearly cannot be handled by the account that I have proposed. In short, the linguistic evidence does not clearly undermine my account of the semantics of ‘ought’.

Even though my account is unified in that the notion of maximization features in my account of the semantic value every occurrence of ‘ought’, it is in other ways an immensely broad and flexible account of the term. Many other philosophers of language and metaethicists have proposed much narrower interpretations of ‘ought’, which dramatically *under-predict* many of the readings of ‘ought’ that seem genuinely available. By contrast, the range of truth conditions that I have identified in Sections 3–4 above is much wider. So my suggestion – that all the truth conditions identified here belong to concepts that can be expressed by ‘ought’ in ordinary English – implies that these deontic modals, like ‘ought’ and ‘should’, are capable of expressing this wide range of concepts, depending on the particular context in which they are used.

In this way, my suggestion clearly runs the opposite danger – that of *over-predicting* the readings of ‘ought’ that are available. For example, the schema that I outlined in Section 3

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14 Indeed, I suspect that in any case where we are tempted to assert a sentence of the form ‘Barbara ought to do $A$’, on the grounds that $A$ is what is recommended by Barbara’s non-maximizing theory, our assertion is either *false*, or else true only when this occurrence of ‘ought’ is understood as the *purpose-relative* ‘ought’, relativized to the goal of *conforming* to the non-maximizing theory in question.

15 For an example of an interpretation of ‘ought’ that is dramatically narrower than mine, see Judith Thomson (2008).
seems to predict that there is a practical ‘ought’-concept that is indexed to the situation that I am in right now, and to the space of epistemically possible worlds that corresponds to Julius Caesar’s state of information on that fateful morning of 15 March 44 BC. It is doubtful, to say the least, whether there is any way of using terms like ‘ought’ in English that will express this concept.

It does not seem clear to me that this point grounds any decisive objection to my approach. We should concede, it seems to me, that this concept really exists, but that we have no natural way of expressing it in English (or in Latin, or in any natural human language), largely because of the very limited interest that this concept would have for us. Admittedly, the suggestions that I have made in this paper would need to be supplemented in order to explain why there is no natural way of using our natural-language terms to express many of these concepts. But I see no reason to think that such supplementation will prove impossible.

In general, of the two dangers that face such interpretations of natural-language expressions, the danger of over-predicting the readings that are available seem less grave than the danger of under-predicting such readings, since it will often be possible to supplement an account that looks likely to over-predict the available readings of a term with some further account that explain why those readings will not in fact be available in any real conversational context. An account that under-estimates the range of concepts that a term can express, on the other hand, seems to have no way of being supplemented in order to rectify this deficiency. So there are some general reasons to be optimistic that the sort of approach that I have sketched here will help us to achieve a better understanding of these deontic modals like ‘ought’ and ‘should’.  

References


Cariani, Fabrizio (this volume). “Deontic modals and probabilities: One theory to rule them all?”


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