Abstract
I am concerned with epistemic possibility expressions (EPEs) such as “It might be raining.” Much of the discussion of EPEs has concerned the fact that a given EPE can seem true in one context and false in another. Motivated by this data, contextualists have argued that modal expressions are sensitive to information at a context of use.

Contextualist analyses encounter problems when it comes to disagreements centered on EPEs. Relativists such as John MacFarlane argue that epistemic modals are sensitive to information available to an assessor at a circumstance of evaluation. I side with a relativistic account of epistemic possibility, on which the truth conditions of EPEs depend not only on a context of use but also as on a context of assessment. The stipulation of contexts of assessments explains why third parties can judge an interlocutor’s utterance false, and why the interlocutor will retract her previous utterance. However, judgements of falsity and retraction seem to be absent in future-oriented EPEs such as “It might rain tomorrow.” I propose an amendment to John MacFarlane’s semantics that better models this quirk of epistemic possibility expressions.

Keywords: epistemic possibility, epistemic modals, relativism, contextualism

Introduction
Suppose Nick and Nora are watching an object in the sky. Nick says to Nora “It might be a bird.” The context in which Nick utters this sentence provides information that the sentence’s assertoric contents alone cannot. Is the context of utterance enough to determine the truth of the sentence? Suppose Nora, putting a pair of binoculars to her eyes,
replies “You’re wrong. It’s a plane.” John MacFarlane’s theory of relativism sees such denials as evidence that the truth of a sentence depends not only on a context of utterance, but also on a context of assessment. Suppose the plane’s trajectory veers suddenly downward. Nick exclaims “It might crash!” Nora, even more convinced, proclaims “It will crash!” However, the plane was simply making an adventurous landing. Once the plane is safely on the landing strip, does this information have the same impact on the truth values of both sentences? I contend that it does not. This paper is primarily concerned with how to understand epistemic possibility expressions (EPEs) such as “might” or “it is possible that” as well as the truth conditions of the sentences they occur in, particularly those that express a future aspect.

In this paper, I will explicate MacFarlane’s relativistic account of disagreements centered on epistemic possibility, which relies on both a context of utterance and a context of assessment (§1). I will then introduce a general counterexample to MacFarlane’s semantics, EPEs that express a future aspect (§2). After that, I will discuss MacFarlane’s treatment of future contingent expressions in order to compare their behavior with future-oriented EPEs (§3). Finally, I will propose a solution by positing that information is relevant to EPEs at both a context of utterance and a context of assessment (§4). With a slight departure from MacFarlane’s compositional semantics of EPEs, I believe relativism can be reformed in order to account for the difference a context of assessment has on a future contingent on the one hand and a future-oriented EPE on the other.

§1 Contexts of Use and Assessment

The idea that truth is relative to a context is comparatively uncontroversial; it is the basis of David Kaplan’s analysis of meaning in “Demonstratives”.2 Kaplan argues that the referents of indexicals and demonstratives are sensitive to a context of use.3 Relativism utilizes Kaplan’s framework and stipulates a second context that truth is relative to, a context of assessment.

Kaplan developed a formal model for the meaning of indexical terms and demonstratives, which have in common that they refer to different things in different contexts. Kaplan accounts for the context sensitivity of such words using the following apparatus. The character of an indexical term is its conventional meaning. Kaplan analyzes the conventional meaning of character as a function from a context of use to
a propositional content. The character of an indexical term determines propositional content relative to certain features of any context of use, which is modeled as an ordered n-tuple consisting of parameters such as an agent, or speaker, a time, a location, and a possible world. The context of use also plays a role in fixing the relevant world a propositional content is evaluated at—call this a circumstance of evaluation. So the context of use plays a content generating role and an evaluative role. On this picture, expressions involving indexicals will mean different things in the mouths of different speakers, and the same sentence may be true in one context and false in another. However, an occurrence of such a sentence expresses a proposition that admits of only one truth value; occurrence truth is monadic.

John MacFarlane incorporates much of Kaplan’s mechanism, but rejects monadic occurrence truth. Relativists hold that occurrence truth is further relativized to a context of assessment. According to MacFarlane, a circumstance of evaluation consists of more parameters than just a world at which a sentence is valued true or false. It consists of other parameters, such as times, information states, or gustatory states. Certain of those parameters are provided values by features of a context of assessment; such parameters are assessment-sensitive. A given occurrence of a sentence can be viewed as true from one context of assessment, and false from another.

In the following section, I will describe how relativism is motivated by disagreement in drawing an account of the way we use and assess EPEs. I will then explain how future-oriented EPEs resist a relativistic analysis. Then I will introduce MacFarlane’s treatment of future contingents, as a basis from which to compare future-oriented EPEs, as well as to open up the possibility of a parameter that is relevant at both a context of use and a context of assessment. I will use a similar strategy in proposing a solution to the problem posed by future-oriented EPEs.

§2 Epistemic Possibilities

Consider the following scenario. Bobo and Coco are pondering the whereabouts of Ardbeg. Ardbeg told Bobo that he would be home, which gives him reason to think he is there. However, Coco has just seen Ardbeg at the grocery story on the other side of town. Consider the following conversation:
D1

(1) Bobo: “Ardbeg might be at home.”

(2) Coco: “You’re wrong. Ardbeg can’t be at home. I just saw him at the grocery store.”

(3) Bobo: “OK, then. I was wrong.”

One way to abbreviate an EPE is as $\diamond_e p$, where ‘$\diamond_e$’ represents the modal auxiliary or expression and $p$ the embedded proposition, or prejacent. So, for instance, in (1) ‘might’ can be taken to embed the prejacent $[[Ardbeg is at home]]$. A widely accepted story is one promulgated by contextualists such as Keith DeRose, who argues that the content of the proposition that $\diamond_e p$ is equivalent to $\neg K_S \neg p$, which expresses the proposition that epistemic subject $S$ does not know that $p$ is not the case. Here $K_S$ stands for the knowledge of some relevant epistemic subject(s) $S$, and $p$ the prejacent. An EPE is true just in case $S$ doesn’t know that $p$ is not the case. When Bobo says “Ardbeg might be at home,” he expresses something like $[[I don’t know Ardbeg isn’t at home]]$. Since Bobo doesn’t know that Ardbeg is at the grocery store (which rules out Ardbeg’s presence at home), he is warranted in asserting (1). What is satisfying about the contextualist account is that it vindicates the intuition that we utter EPEs from a subjective standpoint. As well, contextualists have a plausible story for why our ignorance seems to license EPEs.

However, the contextualist has trouble when it comes to disagreements such as D1. A standard view of disagreement is that it can be analyzed in terms of contradictory propositional contents. However, if contextualists can explain why contradictory sentences can both be correct, they undermine their ability to explain what it takes for an interlocutor to reject an EPE. Yet it is clear that Coco takes Bobo’s claim to be false. Further, Bobo agrees with her, and retracts his statement. These two facts want explanation.

A first pass may be that a contradiction of an EPE in the same context counts as disagreement. The contextualist then must explain contradiction in terms of content. That is, a rejection of the occurrence truth of an EPE must express the negation of that EPE’s content with respect to the circumstance of the context. However, such an explanation fails, since Coco cannot contradict Bobo. If Bobo’s utterance is tantamount to “For all I know, Ardbeg is at home,” Coco could only contradict him by telling Bobo he does know something that
rules out her presence there. However, clearly Coco’s rejection is based on her own epistemic state. The contextualist may then argue that Coco is implicitly appealing to a group epistemic state; Bobo is wrong because he didn’t take her into consideration. However, she still cannot contradict him, since the propositional content of “Our group has information that Ardbeg is not at home” is consistent with the content of Bobo’s claim that he doesn’t know Ardbeg is not at home. I outline a formalization of such an exchange below for illustrative purposes:

**D1***

(1) Bobo: $\Diamond Bp$

(2) Coco: No, $\neg \Diamond B,Cp$

DeRose proposed a “single scoreboard” approach in order to explain disagreement over knowledge attributions, which can be extended to an analysis of disagreement over EPEs. On this account, conversations centered on epistemic modals are at least partly about what the interlocutors jointly know. Anyone who utters an EPE is doing so in virtue of a community epistemic position. On this account, D1 (2) can be explained as a contradiction of D1 (1).

**D1***

(1) Bobo: $\Diamond B,Cp$

(2) Coco: No, $\neg \Diamond B,Cp$

I think there are prima facie reasons to be worried about an account that stipulates that we utter EPEs even partly on the basis of what is jointly known by the conversational participants. First, we aren’t psychic, and if we don’t know our interlocuter’s epistemic states, we have no basis for uttering an EPE with any confidence. Further, if we are concerned with what our interlocuters know, but don’t know what they know, asserting an EPE is a bizarre conversational move. Simply asking our interlocuters whether they know some proposition $p$ would be more efficient than claiming that $p$ is possible. Perhaps the best way to take this approach to disagreement is that we presume to know the epistemic states of our interlocuters when we put forward an EPE, and it is rejected when our presumption is incorrect. However, this view paints conversational participants as uncomfortably fallible.
John MacFarlane notes that a single scoreboard approach is limited to intra-conversational disagreement. He outlines three kinds of extra-conversational disagreement which I have amended to reflect disagreement involving epistemic possibility. First, as I gain knowledge, things that used to be epistemically possible to me no longer are. I used to think it was possible that Santa delivered my Christmas presents, but I no longer do. So, I can be taken to disagree with myself. Second, a third party can characterize two groups as disagreeing with each other even if they have no communication with each other. Suppose two groups are investigating whether a radio signal from deep space could be alien in origin. One group has ruled it out since it was generated by the gravitational waves of a binary star system, but the other is still entertaining the possibility. I can characterize the groups as disagreeing with each other. The third type of case, which has gained the most traction as an objection to contextualists, is an eavesdropping case.

In an eavesdropping case, someone who is stipulated not to be a conversational participant, and thus not a relevant epistemic agent, rejects an EPE they’ve overheard in some way. An example of such a case is the following. The notorious gangster Fat Tony has faked his death with copious circumstantial evidence and started a new life in Venezuela. Watching a news report, he sees a detective at a press conference, who says the following: “Fat Tony might be dead.” Smirking, Fat Tony says “He’s wrong.”

In order to explain extra-conversational disagreement in terms of contradictory propositional contents, the only move the contextualist seems to have at this point is to expand the population of relevant knowers to epistemic agents who are not conversational participants. In principle, this expansion could be without end, since anyone could reject an overheard EPE. People could reject recordings of EPEs by speakers long since dead. In this light, an EPE could only be true if nothing anyone comes to know could rule out the prejacent of the EPE. Such moves come at the cost of falsifying many occurrences of EPEs that we intuitively take as true. This is where the relativist comes in.

While contextualists take EPEs to be sensitive to some body of information at a context of utterance, MacFarlane argues that an EPE is sensitive to a body of information at a context of assessment. On the relativist view, the propositional content expressed by an EPE must be neutral with respect to the extra parameter posited in the circumstance of evaluation. The proposition is, in a sense, incomplete. Meaning isn’t complete until the context of assessment values the relevant parameter.
The kind of parameter MacFarlane has in mind with respect to EPEs is an *information state*. An information state $i$ is the set of possible worlds that aren’t excluded by what is known by an assessor. It serves to model the epistemic state of an agent, and the relativist contends that the right agent to initialize the information state is the one at a context of assessment. An EPE expresses a truth as used by a speaker and as assessed by an assessor just in case the falsity of $p$ is not entailed by what is known by the assessor.

The speaker and the assessor can be identical. A speaker assesses the truth of her own sentence as she says it, and MacFarlane locates linguistic warrant here. MacFarlane posits that assertion is constitutively governed by the Truth Rule (TR), which states that a speaker at a context ought to assert a proposition $p$ only if $p$ is true at that context. A speaker is warranted in making an assertion so long as they have good reason to think they meet TR. Bobo’s status as an assessor at his own context of utterance explains why (1) seems true to Bobo. The world in which Ardbeg is at home hasn’t been eliminated on the basis of what he knows.

The context of assessment differs in (2), however, since Coco *does* know something that rules out the world in which Ardbeg is at home. Consequently, she assesses Bobo’s claim as false. Her second person assessment is evidence that what matters, as far as the truth of (1) goes, is the assessor’s information state. Once Bobo’s own information state has been enriched (by being informed of Ardbeg’s grocery trip), he is likely to regard his own claim as false, and retract it; his retraction is further proof that the truth of EPEs do not depend entirely on what is known at the time of use; the truth of an EPE also depends on a context of assessment.

MacFarlane articulates the following compositional semantics for EPEs. A sentence $S$ is true as used at a context of use $c_U$ and as assessed from a context of assessment $c_A$ if and only if for all assignments $a$,

$$[[S]]_{c_U} < wc_U, tc_U, ic_A, a > = \text{True}$$

where $wc_U$ is the world of the context of use, $tc_U$ is the time of the context of use, and $ic_A$ is the information state at a context of assessment. The character of an EPE, together with the world and time of the context of use, generates a propositional content that is true just in case it is consistent with the information state of an agent at the context of assessment. If one thinks of a proposition expressed by a sentence as a set of worlds (the worlds in which it is true) and the information state as a set of worlds (the worlds not ruled out by what the agent knows), then
an EPE is true so long as the intersection of both sets of worlds is non-empty. The semantics makes the clear prediction that if an assessor’s information state precludes worlds in which the prejacent is true, then the utterance should be rejected as false and retracted by the utterer. However, as I will argue in the next section, EPEs that express some future aspect do not behave as predicted.

§3 The Problem of Future-Oriented Epistemic Possibility

In his book *Assessment Sensitivity*, MacFarlane points out a worry brought up by Ian Hacking. Hacking notes that whenever a prejacent $p$ turns out to be false, an EPE that once seemed true no longer does. Then he notes an exception.

Consider a person who buys a lottery ticket. At the time he buys his ticket we shall say it is possible he will win, though probably he will not. As expected, he loses. But retrospectively it would be absurd to say it only *seemed* possible that the man would win. It was perfectly possible he would win. To see this clearly, consider a slightly different case, in which the lottery is not above board; it is rigged so that only the proprietors can win. It only seemed so. “Seemed possible” and “was possible” both have their work cut out for them.\(^\text{12}\)

What Hacking says does not hold for other flavors of modality, such as metaphysical and nomological modality. However, if we read Hacking’s worry as centered on epistemic modality, his example has force. MacFarlane attempts to explain Hacking’s worry away by rephrasing the subjunctive “It was perfectly possible that he would win” into the indicative “It was perfectly possible that he had the winning ticket,” saying his disposition to accept the utterance disappears.\(^\text{13}\) However, this explanation is problematic. Reported speech introduces an opaque context, in which the substitution of coreferential sentential constituents cannot necessarily be done salva veritate. This is relevant because the original utterance may diverge in meaning from the report of that utterance, and that divergence may account for the disposition to accept the utterance but not the report. An assessor doesn’t judge the report of a sentence, but the utterance of that sentence. MacFarlane’s analysis of Hacking’s case is inadequate.

Moreover, Hacking’s worry is generalizable. When an EPE expresses a future aspect, it *often* isn’t felicitous for an assessor to reject it, or
for the speaker to retract it. Such future-oriented EPEs are utterances made in a context in which the speaker has no epistemic access to any information that would rule out the prejacent. However, not all future-oriented EPEs have this characteristic. For instance, if we are at the height of a drought, I would not be warranted in saying “It might rain tomorrow.” This is precisely the difference between the two lottery cases Hacking outlines. In the first, there is no evidence that the speaker has access to that would rule out the prejacent. In the second, though the speaker happens to lack the knowledge, such evidence exists at the time of his utterance. I contend that this difference is what accounts for the variable intuitions Hacking notes, and that an amendment of MacFarlane’s semantics renders this variability explicable. First, however, I will explore how modal expressions interact with time and aspect to ground my considerations. Then I will look to MacFarlane’s account of future contingents for help in formulating an alternative semantic account.

Suppose Miguel has been inside a windowless room for the past three days as part of a medical trial, and today is Tuesday. He has no idea about the weather outside, so he speculates about what is was like, what it is like, and what it will be like. In doing so he might say something like the following:

(9a) Miguel: “It might have rained yesterday.”

(9b) Miguel: “It might be raining.”

(9c) Miguel: “It might rain tomorrow.”

Say he discovers that it was clear and sunny on Monday and Tuesday, and on Wednesday it is just as temperate. It seems clear that he would assess (9a) as false, so long as it is read epistemically, and retract it. We have already established that he would assess a sentence like (9b) as false, and retract it. It is not so clear, however, that once tomorrow passes he would look back and assess (9c) as false. This isn’t the prediction relativism makes. Once Miguel has constrained his information state and ruled out the predicted rain, why doesn’t he assess (9c) as false, and why wouldn’t he then retract his claim?

We read EPEs as false on the basis of facts that rule their prejacent out. Let’s consider those facts as they temporally relate to their respective assertions. In the case of (9a), it didn’t rain. Although the fact came to be in the past, Miguel rejects it on the basis of his current information state. What is important about the fact that it didn’t rain, is that it was possible to know at the context of use, even if Miguel didn’t know
it at the time. That is, there was a fact of the matter that that some epistemic agent could come to know. That fact continues to be possible to know after the context of use, and an agent may assess (9a) as false once he learns of it. In the case of (9b), the fact that it isn’t raining at the time of the context of use is potentially knowable to the speaker at the context of use and to the assessor thereafter. This indicates that the temporal perspective from which an EPE is uttered is a dimension of the context of use. However, this temporal perspective isn’t the only determiner of truth, as shown by Miguel’s ability to assess (9a) and (9b) as false and retract them.

In the case of (9c), the fact that it won’t rain is not available to the speaker or any assessor at the time of the context of use. That is, it isn’t possible to know. The lack of epistemically accessible information is how (9c) differs from (9a) and (9b). We rule out EPEs based on what can, in principle, be known by an assessor at the context of use. We don’t rule them out based on things that can’t be known at the time—for instance, based on evidence that is temporally out of their reach. Is there a way to account for this difference and preserve relativism? Before answering this question, I will turn to MacFarlane’s treatment of future contingents.

§4 Relativism and Future Contingents

In “Future Contingents and Relative Truth”\textsuperscript{16}, MacFarlane argues that distinguishing between a context of assessment and a context of use as it relates to the temporal parameter allows us to explain two conflicting intuitions we have regarding future contingents. Consider the following assertion:

(10) “It will rain.”

In light of the fact that it is possible for it to rain tomorrow and also for it to be sunny, we want to view the truth of (10) as indeterminate (that is, if we are willing to permit truth gaps). In the context of use, we have no epistemic access to the conditions under which it will be true. On the other hand, in light of the fact that only one future will unfold and that by tomorrow we will know whether the sentence is true or false, we want to view its truth as determinate; if it rains we regard (10) as true, and if it doesn’t, we regard it as false. Moreover, a person is likely to retract (10) if it doesn’t rain. The original indeterminacy disappears once we look back at the assertion from the standpoint of the next day.
fig. 1

A temporal parameter at a context of use cannot vindicate these intuitions. Instead, MacFarlane locates his solution in the double relativization of the temporal parameter. For this reason, I will consider (10) as expressing a proposition $P$ whose aspect is fixed at both a context of use as well as at a context of assessment. MacFarlane distinguishes a *moment* from a *history*. A *moment* of utterance $m$ fixes the propositional content $P$ to the time of its context of use. From it project possible future timelines; any one of them is the history $h$ of an utterance. For simplicity’s sake, I identify two: $h_1$ and $h_2$. A *moment* of assessment locates the context of assessment at a certain point on a *history*, the temporal line that links the *moment* of the utterance to the circumstances under which it becomes true or false. For instance, $m_1$ locates the proposition on $h_1$, where circumstances are such that (10) is assessed as true, while $m_2$ locates the proposition on $h_2$, where circumstances are such that (10) is assessed as false. When the *moment* of assessment is the same as the *moment* of utterance (if the *moment* of assessment occurs at $m_0$), our intuitions about (10) are indeterminate, since $m_0$ comprises both histories. This indeterminacy disappears once a historical line passes through a circumstance at which a context of assessment provides a determinate answer, such as in $m_1$ or $m_2$. MacFarlane’s semantics predicts that (10) will be true as assessed at $m_1$, when it is raining, and false as assessed at $m_2$, when it isn’t raining.

This semantic analysis opens up the possibility of using a parameter at both a context of use and a context of assessment. In this case, the *moment* of utterance fixes the propositional content at a context of use. A *moment* of assessment locates the relevant *history*. In my proposal below, I contend that the information state is similar in that it is yoked to both a context of utterance and a context of assessment. It plays a content-fixing role at the context of use, and an evaluative role at a context of assessment.
§5 The Solution to the Problem of Future-Oriented Epistemic Possibility

The important difference between future-oriented EPEs and future contingents is that we lack the intuition that a definite future settles the extension of the proposition expressed by a sentence such as (9c). If it doesn’t rain tomorrow, we will say (10) was false, but that intuition fails in the case of a future-oriented EPE.

We rule out what might actually have happened, what might actually be happening, and what might actually happen on the basis of information that is actually accessed at a context of assessment, but that information is only fair game if it was potentially accessible at a context of use. Future contingents, on the other hand, can be falsified by information that is not potentially at hand at a context of use.

Above, figure 2 represents an EPE with a future aspect, while figure 3 represents a future contingent. Let $\diamond P$ stand for (9c) and $P$ stand for (10). Imagine that someone utters (9c), saying “It might rain tomorrow.” Supposing there is no epistemically accessible evidence that it will rain tomorrow, how would we assess that statement at $m_0$? Would we say they spoke falsely? Would we react to it as if its truth were indeterminate, saying something like “We can’t know that until tomorrow”? I don’t think so. I think, at $m_0$, we would say the person spoke truly. On the other hand, if someone said “It will rain tomorrow,” at $m_0$, I would say they couldn’t know until the following day. A future EPE seems

fig. 2

fig. 3
to capture the indeterminacy a future contingent has at $m_0$ and applies that indeterminacy to its prejacent. It does so in a particular way, by implicitly expressing an inability to access information that rules out the possibility of rain the next day. Without such access, it cannot rule out the truth of the prejacent, which is why we view it as true, or at least are reluctant to judge it as false.

How would we regard the veracity of (9c) at $m_1$, which turns out to be a sunny day? I don’t think we would say it is true. However, I do not think we would say it is false, either. It’s truth is either indeterminate or vacuous—just as the truth of (10) is indeterminate at $m_0$. In fact, a future-oriented EPE is the inverse of a future contingent. At $m_0$, where the moment of assessment is the moment of utterance, the former is true and the latter’s truth is indeterminate. At $m_1$, the truth of the former now seems indeterminate or vacuous, and the indeterminacy of the latter resolves into falsehood.

A future-oriented EPE doesn’t behave very differently from its counterparts at $m_2$; relativism predicts that when the prejacent obtains, the utterance of EPEs are true. I am concerned with how a future-oriented modal’s behavior departs from that of its present and past tense counterparts at $m_0$ and $m_1$. I think we are likely to judge (9c) as true at $m_0$ because we know that it can’t be ruled out. In contrast, (9a) and (9b) can be ruled out at $m_0$. We can judge (9a) and (9b) as false at any context of assessment that occurs thereafter, but we do so on the basis of information that is epistemically accessible at the time of their respective contexts of use; it isn’t accessible to Miguel, but it is in principle accessible to other epistemic agents. An assessor is unlikely to judge a future-oriented EPE as false if the information that rules it out isn’t epistemically accessible at the context of use. The assessor would know the relevant information was inaccessible. However, this is not a contextualist proposal: information accessible at a context of use acts as a constraint on information states that can be used by an assessor to falsify an EPE. This calls for an alteration to MacFarlane’s compositional semantics for EPEs.

Here is what we want to account for: we may confirm or deny an EPE based on information a speaker is unaware of at a context of use, but we don’t do so on the basis of information that isn’t epistemically accessible at that context. The information state, though sensitive to a context of assessment, is constrained by the context of use. Once we have so constrained the domain of an information state, the knowledge of that information is what is sensitive to a context of assessment.
We still want a context of assessment in order to explain why information a speaker doesn’t happen to have epistemic access to can be used by an assessor to judge an EPE as false. However, we also want such information not to temporally surpass the context of use. This requires us to constrain the context of assessment. Suppose that $I(C_U)$ is a set $\{w_a \ldots w_n\}$ that stands for the set of worlds that aren’t excluded by an epistemically accessible body of information at the context of use. Note that this set does not model an individual or group epistemic state. This vindicates Angelika Kratzer’s notion that the flavor of a given modal expression (e.g. whether it is epistemic, deontic, or metaphysical) is sensitive to a context. The $I(C_U)$ models what is knowable, as opposed to what is permissible or what is possible.

Suppose that $I(C_A)$ is a set $\{w_a \ldots w_n\}$ that stands for the set of worlds that aren’t excluded by what is known by an assessor such that $I(C_A) \subseteq I(C_U)$. That $I(C_A)$ is a subset of $I(C_U)$ is a constraint meant to capture the intuition that we only assess an EPE as false on the basis of evidence available at the context of utterance. $I(C_A)$ models not what is known by an assessor at a context of assessment, but what portion of that knowledge can be used by an assessor to confirm or deny an EPE. The newly constrained information state $I(C_A)$ can be used to posit the following semantics for sentences containing an EPE.

1. A sentence $S$ is true (false) at a context of use $C_U$ and as assessed at a context of assessment $C_A$ just in case $\llbracket S \rrbracket_{C_U}^{w_{C_u}}_{C_A} = 1 \ (0)$, where $S$ is true relative to a point of evaluation $< w_{C_u}, I_{C_a} >$ where $w_{C_u}$ is the world of the context of utterance, and $I_{C_a}$ is the set of propositions such that $\{p : p \in I(C_U) \text{ and known at } C_A\}$ and $\bigcap I(C_A, C_U) = I_{C_a}$.

Thus, when we utter a future-oriented EPE such as (9c), an agent can only assess it as false based on the evidence available at a context of use. If the prejacent of a future-oriented EPE can’t be ruled out at $m_0$ (that is, if the intersection of $I(C_U)$ and $I(C_A)$ is empty), the EPE is simply true. At $m_2$, the EPE is also true. At $m_1$, although the prejacent has been ruled out, we know that it couldn’t have been ruled out at the context of use, which explains why an assessor at $m_1$ won’t assess a future-oriented EPE at $m_0$ as false, and why a speaker won’t retract his claim at $m_1$. That is, at $m_1$ the EPE is (vacuously) true.

However, sometimes we do say that future-oriented EPEs are wrong. As in Hacking’s second lottery case, it only seemed like they were true. However, if one examines the reasons for these denials, it is something the theory above gives a good explanation for. Consider the following exchange, extrapolated from his case:
(11a) John: “I might win the lottery.”

(11b) Ian: “You’re wrong. The game is rigged.”

I think most people’s intuition is that if (11a) is false, it depends on the evidence salient to the context of use. If we ever do judge a future-oriented EPE as wrong, it is on the basis of information available at the context of use. Since the context of assessment includes those worlds (that is, since the intersection of $I(C_U)$ and $I(C_A)$ is non-empty), an assessor can felicitously deny such future-oriented EPEs; as in the dialogue above, they tend to do so within the context of conversation, rather than much later. This kind of denial is compatible with the theory outlined above. The assessor is simply drawing the speaker’s attention to a fact he hasn’t considered yet, but one which is at play at the context of use.

§ 6 Conclusion

An EPE can express possibility with respect to things that have occurred, are occurring, or will occur, and an occurrence of an EPE is sensitive to the information an assessor has at a context of assessment. However, the content of such expressions is sensitive to information available at the context of use. As a result, the information that an EPE is assessment-sensitive too is constrained by the context of use. Only information that is epistemically available at a context of use can be used by an assessor to reject an EPE. In solving the problem posed by future-oriented EPEs, I believe we have a better semantics to account for all EPEs; it retains and strengthens the explanatory power of relativism.

Notes

1 In [11].
2 In [3].
3 Context of use and context of utterance can be used interchangeably; I follow Kaplan in using the former for the rest of this paper.
4 [5]
5 [3, §VI]
6 [7]
7 [8]
8 [1]
I will note that epistemic readings are not the only readings available for Miguel’s claims. Metaphysical readings in particular are available and likely to trigger different intuitions. I believe different kinds of modality are expressed differently in discourse, and consequently require different kinds of analyses. My concerns are limited to epistemic modality.

Von Fintel and Gillies argue against this interpretation in [12]. I do not agree with their argument, but this discussion is too far afield of the scope of this paper.

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References


