Ineliminable Underdetermination and Context-Shifting Arguments

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Abstract:

The truth-conditions of utterances are often underdetermined by the meaning of the sentence uttered, as suggested by the observation that the same sentence has different intuitive truth-values in different contexts. The intuitive difference is usually explained by assigning different truth-conditions to different utterances. This paper poses a problem for explanations of this kind: These truth-conditions, if they exist, are epistemically inaccessible. I suggest instead that truth-conditional underdetermination is ineliminable and these utterances have no truth-conditions. Intuitive truth-values are explained by the effect that all the most reasonable interpretations have on the common ground: An utterance is intuitively true when it is true on all interpretations that answer the question under discussion.

Keywords: Underdetermination, Polyselmy, Question under discussion, QUD, Context-shifting arguments.

1 Context-sensitivity and the problem of underdetermination

Here's a simple account of communication. One party utters a sentence. The utterance is true in certain conditions and untrue in others. The speaker intends to indicate that the utterance is true and so that the corresponding conditions obtain.[1] For this account to have any predicative power, we need an account of how the truth-conditions of utterances are determined.

Truth-conditional semantic approaches assign truth-conditions to utterances as a function of the sentence uttered and the context.[2] The need for context is most clearly shown by sentences involving indexicals like 'I', 'here', 'today', and 'you', whose reference varies with the context in which they are used. The underdetermination of truth-conditions by sentence uttered is evidence by *context-shifting arguments*. If a sentence S determines truth-conditions, then all utterances of S should have the same truth-conditions. Context-shifting arguments consist of a pair of utterances $\langle u_1, u_2 \rangle$ of a sentence S, each made in a different conversational context, such that u_1 is intuitively true and u_2 is intuitively untrue. u_1 and u_2 should differ only in their conversational context. The broader state of the world

[1] This is, of course, only the simplest case and not intended to exclude irony etc. in which the speaker doesn't intend to indicate the truth of their utterance.

[2] I'll speak freely of the truth-conditions of an *utterance*, as opposed to a *sentence-context pair* or *sentence-in-a-context*. Kaplan (1989, 546) eschews this way of speaking on the grounds that semantics should be able to assign truth-conditions to sentences relative to context in which they are not uttered and that logic needs the ability to assess premises and conclusions in the same context. None of this conflicts with the suggestion that utterances determine truth-conditions. Indeed, it should be expected that utterances determine truth-conditions if they determine a sentence and a context.

(and, in particular, the state of the utterances' subject-matter) should be held fixed, which can be done by considering a pair of simultaneous utterances made in the same world. If these utterances had the same truth-conditions, both utterances would be true, or both untrue, given that the world is exactly the same in both cases. If Obama is tired and Trump is not, an utterance of 'I am tired' by Barrack Obama is true and a simultaneous utterance of the same sentence by Donald Trump is false, suggesting that these utterances have different truth-conditions. One is true if and only if Obama is tired; the other is true if and only if Trump is tired.[3]

Cases involving indexicals are also the easiest cases for the truth-conditional semanticist to explain. Truth-conditions are not determined by sentences alone, but by sentence-context pairs, a la Kaplan (1989), where the context supplies the referents of any indexicals occurring the sentence. The referents of indexicals are determined by context in a principled manner. 'I', 'here', and 'today', for example, refer to the speaker, location and day of the utterance. There remain problems associated with indexicals[4] but few consider them a threat to the truth-conditional semantic project.

More threatening is the possibility that truth-conditional underdetermination

[3]I take truth-conditions to be the truth-conditions of propositions, and I assume the principle of bivalence that every proposition is either true or false given the world as it actually stands at any given time. Propositions themselves needn't be identified with truth-conditions. Propositions may, for example, have structural properties in addition to truth-conditional properties but it is assumed that every proposition determines truth-conditions. I will occasionally lapse into talk of propositions or truth-conditional content but this is merely for ease of expression. The only features of propositions or contents relevant to our discussion are their truth-conditions.

[4]Michaelson and Cohen (2013) offer an introduction to the influential answering machine paradox and I have presented a new problem about indexicals (Bowker n.d.).

is a feature of sentences in general and that it often can't be resolved in any principled way. The point can again be illustrated through context-shifting arguments. One of the most well-known context-shifting arguments concerns Pia, who coats her naturally red Japanese maple in green paint. If uttered to a photographer looking for a green subject, the sentence 'Pia's maple is green' seems true. If uttered to a chemist looking to study the chemistry of green leaves, the same sentence seems untrue. This, despite the fact that the state of Pia's maple is the same whether uttered to the chemist or the photographer.

Context-shifting arguments can be generated ad nauseam.[5] If the case of Pia's maple indicates that the truth-conditions of utterances of 'Pia's maple is green' are underdetermined by the meaning of the sentence, then the same holds of a great many (if not all) sentences.[6]

The Pia case will serve as our primary example. Going forward, 'S' will be used to refer to the sentence 'Pia's maple is green', 'u_1' to the utterance addressed to the photographer in context c_1, and u_2 to the utterance addressed to the chemist in context c_2. u_1 is intuitively true. u_2 is intuitively false. In the following section, we'll consider two families of theory that attempt to explain the intuitive difference in truth-value by associating u_1 and u_2 with different truth-conditions. Section 3 argues, however, that if these utterances have truth-conditions, then we

[5] See work by Cappelen and Lepore (2005), Carston (2002), Recanati (2010), Searle (1980), and Travis (2008) for a taste of the cases in the literature.

[6] Cappelen and Lepore (2005, 40) argue that context-shifting arguments can be generated for any sentence whatsoever. The sentiment is echoed by Schoubye and Stokke (2016, 762). While I find the claim plausible, I don't assume it here. My ultimate claim is schematic: For any sentence S, if the meaning of the sentence S underdetermines the truth-conditions of its utterances, then S has no truth-conditions.

cannot know what they are. For any utterance of S, we can imagine a situation in which it is unclear whether or not the utterance is true. If we knew the truth-conditions of the utterance, then we would know whether or not they are satisfied in the imagined situation. We do not know the truth-conditions of S, so knowledge of truth-conditions cannot explain the intuitive truth-values of u_1 and u_2.

This paper pursues an explanation that abandons the simple picture of communication above. Utterances are not associated with unique truth-conditions. There are often many different interpretations of an utterance's truth-conditions that are compatible with the meaning of the sentence uttered and the context in which it is uttered. Instead of trying to eliminate this underdetermination by identifying features of the context that determine unique truth-conditions, section 4 of this paper will present an account of communication under conditions of underdetermination that explains our intuitions of truth and untruth. In short, an utterance is intuitively true if and only if all the most reasonable interpretations of the utterance provide a true answer to the question under discussion.

2 Two responses to context-shifting arguments

The intuitive truth-values of u_1 and u_2 are generally explained by assigning different truth-conditions to these utterances. Two primary families of explanation have emerged: contextualist and pragmatist responses. A third family of *semantic minimalists* like Cappelen and Lepore (2005) and Borg (2012), suggests that the meaning of the sentence determines a 'minimal proposition' which is either

true or untrue in both cases. As our interest here is in explaining the intuitively different truth-values of u_1 and u_2, we can set semantic minimalism to one side. To the extent that Minimalists offer an explanation of the difference in intuitive truth-value, they will appeal to pragmatic processes that result in divergent pragmatically conveyed truth-conditions. The minimalist view is therefore subsumed under the pragmatist response.

2.1 *Semantic responses*

Semantic context-sensitivity is a well-known phenomenon by which the meaning of a sentence determines different truth-conditions in different contexts. A semantically context-sensitive term is one whose conventional meaning requires completion by appeal to the context in which it is used. The clearest examples of semantically context-sensitive terms are overt indexicals like 'I', 'here' and 'now'. The meanings of these terms may roughly be characterised as rules for determining their content relative to the context in which they are used. The meaning of 'I', for example, stipulates that the term refers to the speaker who uses it.[7] According to contextualist accounts, S includes a semantically context-sensitive term that makes a different contribution to truth-conditions in c_1 and c_2. As S contains no overt indexicals, the expression may be a 'hidden indexical' that features in the logical form of the utterance despite being unpronounced, or a 'surprise indexical'

[7] Various other terms have been suggested as semantically context-sensitive. These include tensed expressions like 'is' and 'was', quantifiers like 'all' and 'some', modals like 'might' and 'must', scalar adjectives like 'tall', incomplete predicates like 'ready' and 'late', and epistemic terms like 'knows'.

that is pronounced but not ordinarily thought to be context-sensitive.

Szabó (2001) proposes a 'hidden indexical' account on which the logical form of S includes an unpronounced pair of indexicals, one denoting a contextually-determined comparison class and the other denoting a contextually-salient part of Pia's maple. The comparison class comes into play when a hue is on the borderline between green and another colour. As Pia's paint is a paradigm instance of green, we can hold the comparison class fixed between c_1 and c_2. Szabó suggests instead that the truth-conditions of S vary between c_1 and c_2 because different parts of the leaf are at issue in each context. In conversation with the photographer, we are interested in the outside of the leaf. The utterance to the photographer is therefore true if and only if Pia's maple is green *on the outside*. In conversation with the chemist, we are interested in the colour of the leaf under the paint. When uttered to the chemist, the sentence is therefore true if and only if Pia's maple is green *on the inside*. As Pia's maple is green on the outside but not on the inside, u_1 is true and u_2 is not, explaining their intuitive truth-values.

Szabó's account is tailored to colour predicates and other predicates may need different variables. As it stands, the account will be inadequate even for colour predicates, as differences in the intuitive truth-value of colour predications are not always due to interest in different parts of the relevant object or borderline colours. We might be interested, for example, in natural vs artificial colour. Suppose that the maple is dyed thoroughly green inside and out (Kennedy and McNally 2010). Still, an utterance of 'Pia's maple is green' seems untrue when uttered to the scientist, who wants a naturally green subject. Or we might be interested in the

appearance of the maple under different lighting conditions. Suppose the maple is naturally green but coated in a luminous paint that glows red under a camera flash. S may then seem true when uttered to the scientist in c_2 but untrue when uttered to the photographer in c_1.[8] If extended to deal with this cases, Szabó's account will be to be extremely complicated. At the very least, 'green' will have to be associated with variables for parts, lighting conditions, naturalness, and a comparison class. If we imaginative enough, this series of variables could no doubt be significantly extended. To try and explain the case along Szabó's lines, we'll need a vast array of variable in the logical form of 'green' and it seems implausible to some that we need to supply values for such an array of variables to interpret this simple predicate. Indeed, there may be no way to identify a complete list of the relevant variables. Technologies like photography, artificial lighting, and luminous paint can lead us to posit new variables, and this process may never end.

Rothschild and Segal (2009) present a 'surprise indexical' account on which colour predicates themselves are indexicals. For each context of utterance c_n, there corresponds a predicate 'green$_n$'. 'Pia's maple is green$_n$' is true if and only if Pia's maple is green by the standards of c_n. Assuming that being green$_1$ requires that Pia's maple is visibly green and that being green$_2$ requires being naturally green, u_1 is true if and only if Pia's maple is visibly green, and u_2 is true if and only if Pia's maple is naturally green. As Pia's maple is green by the standards of c_1 but

[8]The suggestion that sentences can be assessed for truth relative to contexts should not be taken to imply, contrary to Kaplan (1989), that there is no distinction between context and circumstance of evaluation. Kaplan suggests that the default circumstance of evaluation is the world of the context. Kaplan (1989, 510) also talks of a sentence being true in a context. Thanks to an anonymous referee for requesting clarification.

not by the standards of c_2, we again have an explanation of our intuitions.

2.2 *Pragmatist responses*

Accounts in the pragmatist family attempt to explain our intuitions of truth and falsity by appealing to pragmatic processes, often 'free enrichment' or 'modulation'. Enrichment is 'free', not necessarily because it is unnecessary (on some pragmatist accounts, all sentences require enrichment) but because it is not semantically mandated by indexical expressions in the logical form of the sentence uttered. A term such as 'green' admits of many different interpretations. To identify the truth-conditions of an utterance, we have to identify the interpretation required by the context. If 'green' is to be understood as 'visibly green' in c_1 and as 'naturally green' in c_2, then u_1 is again true if and only if Pia's maple is visibly green and u_2 true if and only if Pia's maple is naturally green.

Pragmatist solutions may be motivated by considerations of theoretical parsimony. We have to posit pragmatic mechanisms of enrichment because the interpretation of a sentence can vary even when a contextualist account has no plausibility. Proper names like 'Edinburgh' are not plausibly analysed as containing hidden variables, yet the reference assigned to this term varies with context, referring to various locations defined by city limits, urban area, or local council jurisdiction; referring to different groups of individuals, such as the local inhabitants ('Edinburgh votes to remain in the EU'), or members of the local council ('Edinburgh proposes council tax rise'); or as a term referring to no physical object at all ('Aberdeen is no Edinburgh'). As we have to allow for free enrichment

anyway, we might as well extend it to cases like 'green' without positing unnecessary indexicals.

The explanations given by pragmatic theories are often worryingly vague. We're told that truth-conditions are determined by pragmatic processes, but we're not always told how these processes work. This deficit is not present in the pragmatist explanation of Schoubye and Stokke (2016). The account is worth some further discussion because the same mechanisms will play a role key in the account offered in section 4. That said, a simplified presentation will do for our purposes. Resources for further details will be noted as we go along.

Schoubye and Stokke assume that the meaning of S determines a truth-condition, which they term its *minimal content*. The truth-conditions of an utterance of S (in their parlance, *what is said* by an utterance of S) often diverge from this minimal content, however, as a function of the question under discussion (QUD) and the common ground (CG) in the context of the utterance.

The notion of CG is familiar from Stalnaker (1999a, 1999b, 1999c). Schoubye and Stokke model the CG by the set of propositions presupposed by the speaker and their audience, which determines the set of worlds that are compatible with these presuppositions: the set of worlds at which these presuppositions are true. I will henceforth use 'CG' to refer to this set of worlds. The truth-conditions of utterances are modelled by sets of possible worlds: the worlds at which the truth-conditions are satisfied. By intersecting these two sets, all worlds at which the truth-conditions fail to be satisfied are eliminated from the CG, representing the addition to the CG of the presupposition that the truth-conditions are satisfied.

The CG represents the possible ways the world might be, given what is presupposed. It can be seen as the answer to the question 'What is the world like?', that answer being 'It is exactly like one of these worlds'. But conversations aren't investigations of the world with complete generality, they often involve a series of more targeted questions. Roberts (2004, 2012) characterises conversational structure by a series of QUDs. For our purposes, it will be sufficient to consider a snapshot of a conversation in which a single question is under discussion. The QUD functions to partition the worlds in the CG, with each cell of the partition representing a different complete answer to the question.[9] If the question is 'How many prickly pears did Baloo eat?' and the common ground includes worlds $w_1 - w_5$ such that Baloo ate exactly one in $w_1 - w_2$, exactly three in $w_3 - w_4$ and exactly five in w_5, the CG can be partitioned into three cells: one representing the answer 'Baloo ate exactly one prickly pear' that contains $w_1 - w_2$, one representing the answer 'Baloo ate exactly three prickly pears' that contains $w_3 - w_4$, and one representing the answer 'Baloo ate exactly five prickly pears' that contains w_5. A complete answer to the QUD like 'Baloo ate exactly one prickly pear' will rule out all but one of these cells, while a partial answer like 'Baloo ate at least three prickly pears' will rule out some cells but leave more than one open.

Different questions are at issue in c_1 and c_2. Suppose q_1 is the QUD in c_1 and q_2 is the QUD in c_2.

q_1**:** Is Pia's maple a suitable subject for the photographer?

[9]For more detailed discussion of answers, see Hamblin (1973). For more detailed discussion of partitions, see Groenendijk and Stokhof (1984).

q_2**:** Is Pia's maple a suitable subject for the chemist?

These YES/NO questions will partition worlds in the CG into two cells: the worlds at which the answer to the question is 'Yes' and the worlds at which the answer is 'No'. Suppose that the CG is the same in c_1 and c_2. Because the QUD differs between c_1 and c_2, the CG will be structured differently in each context. For simplicity, let us suppose that only four possible worlds are compatible with the presuppositions of the speaker and audience in c_1 and c_2: the actual world @ at which Pia's maple is naturally red, painted green, and hence visibly green; w_2 at which Pia's maple is naturally red, unpainted, and hence not visibly green; w_3 at which Pia's maple is naturally green, unpainted, and hence visibly green; w_4 at which Pia's maple is naturally green, painted red, and hence not visibly green.[10]

Suppose that Pia's maple is suitable for the photographer only if it is visibly green. Partitioning these worlds according to q_1, we attain the following two sets $\{@, w_3\}$ and $\{w_2, w_4\}$. The partitioned CG of u_1 can therefore be represented as follows:

[Figure 1 here]

Schoubye and Stokke assume three pragmatic constraints on the interpretation of utterances. The first is that 'discourse participants should strive to make their contributions relevant' where 'A conversational move m is relevant to the question under discussion q iff m either introduces a partial answer to q (m is an assertion) or is part of a strategy to answer q (m is a question)' (Schoubye and

[10]This assumption is made for ease of presentation. The idealisation can be made less extreme by considering @, w_2, w_3, andw_4 as sets of worlds. Such a situation could then actually arise if, for example, it was common knowledge that Pia's maple is in one of these four configurations.

Stokke 2016, 771).[11] In the case we are considering, m is an assertion and, as the QUD is YES/NO, the only answers are complete answers. A second constraint is that interpretations of an utterance are restricted by the meaning of the sentence uttered and, in particular, by its minimal content. Specifically, 'What is said by a sentence S relative to a context c and question q_c must entail the minimal content of S in c' (Schoubye and Stokke 2016, 773).[12] A less explicit constraint is that interpretations should be the least informative that satisfy the previous two constraints. This captures the natural assumption that there are limits on how much interpreters should read into an utterance.

Putting these constraints together, the truth-conditions of an utterance are given by the largest set of worlds that answers the QUD and entails the uttered sentence's minimal content. To answer the QUD, u_1 must either eliminate @ and w_3 or eliminate w_2 and w_4. The minimal content of S is not obvious but I will follow the precedent set by Schoubye and Stokke's own examples in taking that content to be satisfied by any world in which Pia's maple is green *in some way*.[13] To entail the minimal content of S, the truth-conditions of u_1 must eliminate w_2 because a world at which Pia's maple is naturally red and unpainted is a world

[11] See also Roberts (2012, 21).

[12] To deal with cases involving downward entailing operators like 'nobody' and 'never', Schoubye and Stokke (2016, 782-783) later replace this with the constraint that the truth-conditional content of the utterance 'must either entail, *or be entailed by*, the minimal content.' We aren't dealing with these operators here, so can safely ignore that otherwise important amendment.

[13] Schoubye and Stokke don't discuss S, but explicitly assume 'that all declarative sentences (pace, say, presupposition failure) are associated with a minimal content that can be derived simply from the meaning of the constituents (relative to the discourse context) and the order in which these constituents are combined' (2018, 773). Discourse context is required to resolve indexicality and other context-sensitivity that is best described in terms of free variables.

at which Pia's maple is in no way green.[14] The largest set of worlds that meets both these conditions is one that eliminates w_2 and w_4, which we might characterise as the proposition that Pia's maple is visibly green. This proposition is true, explaining our intuition.

Things are different in c_2, as Pia's maple is suitable for the chemist only if it is naturally green. q_2 therefore partitions CG into the sets $\{@, w_2\}$ and $\{w_3, w_4\}$. To answer this question, u_2 must eliminate both members of one of these sets. To entail the minimal content of S, it must eliminate w_2. The largest set that meets both conditions is $\{w_3, w_4\}$, which we might characterise as the proposition that Pia's maple is naturally green. As this proposition is false, we have an explanation of both intuitions.

The contextualist and pragmatist responses are distinct and each may be cashed out in a variety of ways, yet all forms of these responses share a central feature: intuitive truth-values are explained by taking an utterance of S in c_1 and an utterance of S in c_2 to have different truth-conditions. In the next section, I pose a problem for these explanations.

[14] Schoubye and Stokke's account should also accommodate conversations in which the participants presuppose that Pia's maple is green in some way. Perhaps they presuppose that even naturally red plants have some green in their stalks. In this context, even w_2 is a world at which the minimal content of S is true. Given these presuppositions, however, all worlds in the CG are such that Pia's maple is green in the way described and so green in the minimal sense. Neither of these interpretations will answer the QUD, as they would fail to eliminate any cell, so the audience will have to select another interpretation. The weakest interpretation of 'green' that eliminates a world from the CG will be an interpretation that eliminates w_2.

3 Against contextualist and pragmatist responses

Contextualist and pragmatist responses to context-shifting arguments explain the intuition that u_1 is true and u_2 false by associating these utterances with different truth-conditions such that the truth-conditions of u_1 are satisfied and those of u_2 are not. As we know the truth-conditions associated with each utterance and we know the state of the world, we know that u_1 is true and u_2 is untrue, which explains our intuitive judgements.

This explanation can only succeed on the assumption that we know the truth-conditions of u_1 and u_2. I want to challenge this assumption. If we know these truth-conditions then we should be able to evaluate these utterances as either true or untrue at any possible world (or at least any possible world that meets the utterances' presuppositions). Consider u_1. This utterance is intuitively true. Contextualists and pragmatists explain the intuition by associating the utterance with truth-conditions, which are given by sets of possible worlds. Every possible world is either a member or a non-member of this set. If we know the truth-conditions, therefore, we should know whether they are satisfied at any possible world. Yet, we cannot.

Travis (2008, 112) asks us to consider the world in which Pia's maple is painted in a pointillist style, such that the surface of the leaf appears uniformly green when viewed from a distance but is clearly red in places when viewed close up. If u_1 is associated with truth-conditions, then they are either satisfied in this circumstance, in which case u_1 is true relative this circumstance, or they are un-

satisfied, in which case u_2 is untrue relative to this circumstance. But we cannot evaluate u_1 as either true or untrue relative to the this circumstance. Should it turn out that Pia's maple was painted in this style, it would be unclear whether or not u_1 was true. As we cannot know whether u_1 would be true of untrue in this circumstance, we do not know the truth-conditions of u_1. If we don't know the truth-conditions of u_1, we cannot explain the intuitive truth-value of the utterance by associating it with truth-conditions.

Schoubye and Stokke don't discuss S, so it may be worth making this point with one of their own examples. They consider the following exchange

a. **Julie.** Is Tipper ready for the interview?

b. **Rebecca.** She's ready.

Julie introduces the QUD: Is Tipper ready for the interview? Rebecca's assertion is intended to answer the QUD. Schoubye and Stokke (2016, 779) assume that the minimal content of the sentence Rebecca utters is 'the set of worlds where Tipper is ready for at least one thing'. The QUD partitions the CG into two cells: the worlds at which Tipper is ready for the interview and the worlds at which Tipper is not ready for the interview. The truth-conditional content of Rebecca's utterance must eliminate exactly one cell of the partition to answer the question, and must entail the minimal content that Rebecca is ready for something. As the worlds at which Tipper is not ready for the interview will include worlds where Tipper is not ready for anything (and may not even exist) the only interpretation

that meets both conditions is one that eliminates this cell, that is, the proposition that Tipper is ready for the interview.[15]

What is it to be ready for an interview? Schoubye and Stokke (2016, 786) note that this will be down to features of the CG but 'it is natural to think that, in contexts of this kind, it will typically be common ground that having prepared for a long time is sufficient to count as ready for an interview'. So Tipper is ready for the interview if and only if she has prepared for long enough. 'Long enough' is a vague term. Even if it is context-sensitive, it is vague as well because it is a very peculiar conversation in which the participants presuppose a precise length of preparation time after which one becomes ready for an interview. This needn't make it difficult to answer the QUD, as Julie and Rebecca may presuppose that Tipper is not a borderline case of preparedness: she has either clearly prepared enough or clearly failed to prepare enough to qualify as ready for the interview. Borderline cases, in which it is unclear whether Tipper is ready, can be excluded from the CG.

This does not resolve the problems associated with borderline cases, however. If Rebecca's utterance has any truth-conditional content, that content must be true or false at any possible world. Schoubye and Stokke do, after all, share my assumption that a truth-conditional content is defined by the set of worlds at which it is true. If the utterance has determinate truth-conditions, it must be determinately true or false at any possible world, as every world is either a member or

[15]The account can be extended to deal with contexts in which it is assumed that Tipper exists and is ready for something, as suggested in footnote 14.

a non-member of the set. So consider a world at which Tipper has prepared for some time but it is unclear whether that length counts as 'long enough'. Is this a world at which Tipper is ready for the interview? She will likely perform well, although she may come undone and completely flunk it, but there is some risk of disaster no matter how long Tipper has prepared for. So is this world a member of the set that characterises the truth-conditions of the utterance or not? If there is an answer here, then we cannot know what it is. The utterance is neither clearly true nor clearly false with respect to such a world, so our intuitions concerning its truth-value and truth-conditions at the worlds in the CG cannot be explained by associating it with truth-conditions. If it has truth-conditions, we cannot know what they are.

Schoubye and Stokke might try to defend against this objection by suggesting that the truth-conditional content of an utterance should only include worlds in the CG. At worlds beyond the CG, Rebecca's utterance is either false or it lacks a truth-value due to presupposition failure.[16] Such a suggestion would be a disaster for their account, however. Their overarching aim is to respond to the minimalist challenge that explaining context-shifting arguments by appealing to

[16]Rayo (2013) presents a *localist* picture on which utterances need only determine a partition of possible worlds in the common ground, rather than a partition of the entire space of possible worlds. Rayo says that an utterance is false if it eliminates the actual world from the common ground, and true if the actual world remains in the common ground. If the actual world has already been eliminated by a false presupposition, Rayo appeals to the context of an eavesdropper who doesn't make the false presupposition. The utterance is counted as true if and only if the actual world remains in the eavesdropper's information state after updating with the utterance. Such an account is not available, however, if the utterance's truth-conditions are given by a subset of the worlds in the common ground, as we are considering here. If the actual world is excluded from the common ground, then the utterance cannot be true, regardless of how it would be treated by an eavesdropper.

context-sensitivity leads inexorably to radical contextualism. Defending their position against allegations of radical contextuality, Schoubye and Stokke (2016, 787) note that, on their view, 'one cannot use sentences such as 'Sue is ready' or 'Smith weighs 80 kg' to say that Louise is German or that the king of Sweden is a poor driver.' But if Rebecca's utterance is true only at worlds within the context set then, her utterance will entail anything that is presupposed, including these two propositions. That is an extremely radical position, not at all in keeping with the aim of their paper.[17]

Cases such as this pose a dual challenge to Schoubye and Stokke's account. Schoubye and Stokke's account relies on two sets of truth-conditions: the truth-condition of the utterance and the minimal truth-conditions of the sentence uttered. Just as it is unclear whether Tipper counts as ready for the interview when she is a borderline case of preparedness, it is unclear whether Tipper is ready in the minimal sense. Unless we ignore all such cases, the assumption of a minimal content looks like wishful thinking and, again, these cases cannot be ignored when truth-conditions are given by sets of possible worlds. Every possible world either is, or is not, included in the set.

There are a few ways to criticise this line of argument. First, the mention

[17]Though it isn't clear that it counts as 'radical contextualism' as Schoubye and Stokke (2016, 762) define the term. Radical contextualists are said to 'hold that all sentences are propositional fragments. In other words, no sentence ever expresses a fully truth-evaluable content.' On this version of Schoubye and Stokke's view, the problem is rather that all sentences can express truth-evaluable contents that go well beyond anything related to their conventionally-encoded meaning. They might not be able to express any proposition at all, as the proposition expressed must at least entail their minimal content, but for any proposition p and sentence S, S can be used to express a proposition that entails p. This is certainly a consequence that Schoubye and Stokke are keen to avoid.

of vagueness two paragraphs up may suggest an appeal to vague truth-conditions. 'Max is bald' is plausibly true if and only if Max is bald. We cannot know whether or not this condition is satisfied in a world at which Max is a borderline case between baldness and non-baldness but this doesn't prevent us from knowing that the condition is satisfied at the actual world in which Max has not a single visible hair. Similarly, perhaps we can know that the truth-conditions associated with u_1 are satisfied *in the circumstance of* u_1 without knowing whether they are satisfied in some borderline possible world, such as the world in which Pia's maple is painted in pointillist style.

Vague truth-conditions cannot save the explanation of our intuitions, however, as we cannot know the vague truth-conditions of the utterance. Vague truth-conditions are defined, in part, by a set of borderline cases. Consider two different candidates for the vague truth-condition associated with u_1 in a context. One deems a certain colour distribution as a clear case in which 'Pia's maple is green' is true and the other deems the same distribution to be a borderline case. As there is no way for us to choose between these two vague truth-conditions, we can't explain our intuitions of truth and untruth on the basis of a unique vague truth-condition associated with the utterance in context.

Second, Borg (2005) notes that there is a difference between knowing the truth-conditions of an utterance and knowing whether they are satisfied. An utterance of 'Mary is happy' is true if and only if Mary is happy, but verifying that these conditions are satisfied may require significant investigation into the state of the world. While Borg is correct, we assumed above that we know all the

relevant facts about the troubling possible world. Even if the possible world is described down to the minutest detail, we cannot know whether or not it satisfies the truth-conditions of u_1. The problem is not simply that we do not know whether the truth-conditions are satisfied, perhaps due to some deficit in our information about the described circumstance, but that we don't know what is required for the utterance to be true.

Third, we might deny that we need to know the truth-conditions of an utterance to know whether it is true or not. If I am introduced to a new phrase through its application to a particular circumstance, then I can know that the phrase is actually true, even if I don't know whether it is true or not in any other circumstance. This is correct but is not in tension with the point presented here. It is the contextualist and pragmatist responses that attempt to explain knowledge of truth-value through knowledge of truth-conditions. Cases in which we can know the truth-value of an utterance without knowing its truth-conditions show that another explanation is possible. The next section offers an explanation of our intuitions that does not assume we need to know the truth-conditions of an utterance to intuitively assign it a truth-value.

Fourth, we might maintain that we know some things about the truth-conditions of u_1, even though we don't know everything about its truth-conditions. We know enough to know that the truth-conditions are satisfied at @ but not enough to know whether they are satisfied if the maple is painted in pointillist style. This strikes me as a decidedly optimistic response. Despite our failure to identify the truth-conditions of u_1, we maintain that it determines truth-conditions. The only reason

I can see to assume such a realm of unknowable semantic facts is that we need this assumption to explain the case. In the next section, I will explain the case without this unnecessary baggage.

4 Truth-values without truth-conditions

The previous section argued that we cannot explain the intuitive truth-values of u_1 and u_2 by associating them with different truth-conditions. This section offers an alternative explanation of our intuitions about u_1 and u_2. The account takes context-shifting arguments to show not only that the *sentences* involved fail to determine truth-conditions but that *utterances* involved fail to determine truth-conditions.

There are at least two ways to describe an utterance that fails to determine truth-conditions. First, we can say that the utterance determines a set of alternative truth-conditions, the members being all assignments of truth-conditions compatible with the meaning of the sentences as uttered on that occasion.[18] Second, we can say that the utterance has no truth-conditions at all. I favour the second way of speaking because it is unclear how we can associate an utterance with a set of truth-conditions without associating it with a unique truth-condition. If we take the utterance to be true at any world that satisfies any one member of the set, then we have a standard truth-conditional account. If we take a sentence to be

[18]Dobler (Forthcoming) identifies a truth-condition as a set of possible worlds. Utterances do not determine a single truth-condition but do determine a single *truth set* which is the union of all possible worlds at which the utterance is true on its different truth-conditional interpretations.

true only at worlds which satisfy all members of the set, then we have something like a standard supervaluationist account.[19] If we take different utterances to be associated with different members of the set, then we have a standard contextualist account. On all of these accounts, sets of truth-conditions reduce to unique truth-conditions.

I will say that u_1 and u_2 have no truth-conditions, though they are compatible with various different truth-conditional interpretations. These utterances are not semantically vacuous. The meanings of the words, their mode of composition, and the context in which they are uttered semantically (and pragmatically) restrict the set of their reasonable truth-conditional interpretations, though they fail to reduce the set to a unique interpretation. We are unable to know whether the truth-conditions of u_1 are satisfied in various possible circumstance because the utterance has no truth-conditions. It admits of various different truth-conditional interpretations, some of which are satisfied and some of which are not satisfied in, for example, the possible circumstance in which Pia's maple is painted in pointillist style, explaining our inability to give a single judgement as to whether u_1 is true or not in that circumstance.

This view retains a role for truth-conditional semantics. Truth-conditional semantic theories are not interpreted as deriving the truth-conditions of utterances but as deriving the truth-conditions of interpretations of utterances. Different interpretations of one utterance can be derived compositionally by associating its constituent expressions with subtly different denotations. 'Green', for example,

[19] On supervaluationism, see Fine (1975).

may admissibly be assigned a denotation that includes Pia's maple painted in pointillist style and a denotation that does not, allowing for two possible interpretations. The fact that utterances admit of different truth-conditional interpretations will be central in what follows.

While truth-conditional underdetermination prevents us from assigning a truth-value to u_1 relative to some possible worlds, we have no trouble assigning a truth-value to u_1 relative to the world of u_1 itself and this fact still calls for explanation. In other work (Bowker 2019, forthcoming), I have explained how utterances may be assigned unique truth-values in the absence of unique truth-conditions. Given a context, for example, in which we know that all and only the glasses on our table are glasses from the last round, there are two possible interpretations of 'All the glasses are empty': that all the glasses on our table are empty, or that all the glasses from the last round are empty. These are distinct truth-conditional interpretations because it is possible for one to be true and the other false, as when all the glasses on the table are empty but a glass from the last round is resting half-full on the pool table.

Travis (2008, 120) suggests a response to cases like this. 'That the content of words is consistently supplementable in more than one way is not in itself a block to those words stating truth. It is so only where different such supplements, or different ones within some range of reasonable ones, yield different results as to truth—where, that is, the content to be supplemented is compatible both with truth and with falsity.' In the case above, there are two equally reasonable ways of interpreting an utterance of 'Every glass is empty' but this is no block

to those worlds stating the truth (or falsehood) when both interpretations are true (or false). As all and only the glasses from the last round are on the table, we can explain the intuitive truth-value of the utterance without privileging one of these interpretations as giving the actual truth-conditions of the utterance. Every glass on the table is empty if and only if every glass from the last round is empty. Our truth-value intuitions depend on the truth-value shared by both admissible interpretations.

There are at least two possible interpretations of S: one on which Pia's maple is visibly green and one on which Pia's maple is naturally green. Call these p_1 and p_2, respectively. Given the state of Pia's maple, these two interpretations yield different results as to truth: p_1 is true, while p_2 is untrue. We cannot simply mirror the explanation of 'Every glass is empty' and explain our intuitions about u_1 and u_2 by claiming that these utterances have the same truth-value on all interpretations. We can, however, follow Travis's suggestion that truth and falsity are not always assessed by considering all possible interpretations, but often by considering only 'some range of reasonable ones'.

As Schoubye and Stokke recognise, cooperative conversational partners attempt to contribute by answering the QUD. Assuming that one's partner is cooperative and capable, a reasonable interpretation is one that answers the QUD by eliminating at least one answer to the QUD. Recall from section 3 that c_1 and c_2 are characterised by different QUDs. Suppose, for simplicity, that p_1 and p_2 are the only possible interpretations of S. q_1 partitions the CG into $\{@, w_3\}$ and $\{w_2, w_4\}$. p_2 will eliminate only worlds @ and w_2. As it is compatible with both

some Yes-worlds (w_3) and some No-worlds (w_4), it fails to answer the QUD. p_1 on the other hand will eliminate worlds w_2 and w_4, thereby providing an affirmative answer to the QUD by eliminating all the No-worlds. As u_1 is true on all reasonable interpretations, the utterance strikes us as intuitively true. For c_2, the situation is reversed: only p_2 provides an answer to q_2. As p_2 is untrue at the actual world @, u_2 is untrue on all reasonable interpretations and so strike us as intuitively untrue, explaining our intuition.

It may seem that this is simply a pragmatist response on which and utterance of S expresses either p_1 or p_2, depending on the QUD. In that case, then this solution is also subject to the criticism levelled in the previous section. Take the world w_5 at which Pia's maple is painted in a pointillist style. Is u_1 true there? Our inability to answer this question shows that p_1 cannot give the truth-conditions of the utterance.

The appearance of a pragmatist response is, however, an artefact of our simplistic toy model. We can distinguish truth-conditional interpretations of S far more finely than p_1 and p_2. Consider two further candidates for the truth-conditions of 'Pia's maple is green': p_3 and p_4. Like p_1, they are true at @ and w_3 and untrue at w_2 and w_4. They differ in truth-value, however, at w_5 in which Pia's maple is painted in pointillist style. p_3 is true at w_5 while p_4 is untrue. As p_3 and p_4 both answer q_1, they are both reasonable interpretations of S as uttered in c_1. As both are true at @, u_1 is true on all reasonable interpretations and so strikes us as intuitively true. As they take different truth-values in w_5, however, we explain why we are unable to decide whether u_1 is true or not at w_5. The interpretations of S

that are reasonable in c_1 yield different results as to truth in w_5.

This situation is represented in the picture below, where the dotted line indicates the set of worlds at which p_3 is true, the dashed line indicates the set of worlds at which p_4 is true, and the grey area represents their shared answer to the QUD.

[Figure 2 here]

To summarise, truth-conditional underdetermination is not eliminable by appeal to context. Even given a particular context of utterance, sentences are compatible with various different truth-conditional interpretations. An utterance of S produced in c_1, for example, may be compatible with interpretations p_3 and p_4. While these interpretations differ in truth-value at w_5, this world is excluded by the presuppositions of the conversational participants in c_1 and c_2. This underdetermination is unproblematic, however, when all the most reasonable interpretations provide the same answer to the QUD. This is what we see in c_1 and c_2, the difference between them being that the interpretations reasonable in c_1 are true and the interpretations reasonable in c_2 are untrue, explaining the intuitive difference in truth-value of u_1 and u_2.

What of a context in which w_5 is compatible with the CG? At w_5, I have suggested, it is unclear whether u_1 is true because u_1 is compatible with an interpretation on which it is true at w_5 and an interpretation ot which it is untrue at w_5. If the utterance is made against the background of a common ground that includes w_5, then it will be prima facie defective, as it will be unclear whether or not the utterance is intended to eliminate w_5. This need not be the end of the

story, however. At w_5, it is unclear whether the answer is 'Yes' or 'No', yet it may be clear from the context that the speaker intends their utterance to answer the QUD and their utterance may be accommodated by eliminating w_5 from the common ground. This is plausibly the situation in c_1. Before Pia's maple is mentioned, it is compatible with the common ground that Pia's maple is in absolutely any state whatsoever. When Pia's maple is said to be green, it is clear that this is supposed to answer the QUD, but the utterance can only be an answer to the QUD if w_5 is eliminated from the common ground before updating the context with the utterance. Saying that Pia's maple is green immediately focuses our attention on worlds at which Pia's maple either is or is not green in respects that make it a suitable subject for the photographer.

5 Conclusion

This paper has posed a problem contextualist and pragmatist explanations of underdetermination. Even if utterances determine unique truth-conditions, this fact cannot explain our intuitions of truth and falsity, because these truth-conditions are epistemically inaccessible. It has been shown that we can account for the intuitive truth-values of utterances without assigning them truth-conditions, so the assumption that utterances determine truth-conditions is redundant. Utterances may always be compatible with various different interpretations of their truth-conditions. Whether an utterance is intuitively true or untrue is not determined by truth-conditions associated with the utterance but by the common truth-value of

the interpretations that answer the QUD.

I have no doubt that difficult cases could be posed. I am thinking in particular of cases in which an utterance has an intuitive truth-value that is not shared by all interpretations that answer the QUD. In this paper, I have focused on one way of distinguishing the 'most reasonable' interpretations of an utterance: whether or not they answer the QUD. Many more have been mentioned in the literature, such as simplicity, relevance (in the Gricean sense), relevance (in the relevance-theoretic sense), and so on. If faced with these difficult cases, I am optimistic that we can appeal to further factors of this sort in order to narrow the range of the most reasonable interpretations to those that make the same contribution to the CG. Given that we cannot know the truth-conditions of the utterance, however, this set of most reasonable interpretations will never consist of a unique truth-conditional interpretation.

In closing, I want to consider one final objection. The account offered here has been billed as an account on which utterances have no unique truth-conditions. As utterances are still assigned truth-values, however, it may be objected that they must be associated with truth-conditions that are satisfied in all and only the cases they are true. In particular, it seems that an utterance of S is true as uttered in a context c if and only if all of the most reasonable interpretations of S in c are true. The objection is that this is simply a supervaluationist semantics on which an utterance of S is true if and only if it is supertrue, or true on all the most reasonable interpretations.

The first thing to note is that an explanation of our intuitions about u_1 and u_2

doesn't require an explanation of when these utterances are actually true. All that is required is an account of when we are disposed to treat u_1 as true or untrue. We might hold that u_1 and u_2 are simply not viable objects of truth-valuation. The primary bearers of truth-values are propositions. Utterances are true and untrue only in so far as their truth-conditions are described by propositions. As the utterances in question have no truth-conditions, they are neither true nor untrue; they are simply not capable of having truth-values.

The second thing to note is that, though the two are related, the view presented here is not a species of supervaluationism. Notably, I have denied that we can know whether u_1 is true or untrue when evaluated at a world like w_5. According to a supervaluationist semantics, however, u_1 should be neither true nor false and so untrue at w_5, given that it is neither supertrue nor superfalse at this world. On the account presented here, the utterance simply cannot be evaluated for truth or untruth at that world. It is neither true nor untrue because it is compatible with various different truth-conditional interpretations. As some are true and some are untrue at w_5, the utterance itself is neither true nor untrue at this possible world.

Third, and most importantly, we should remember that there is a particular sense of 'truth-conditions' at play in semantics and pragmatics. On the account given here, u_1 has no semantically or pragmatically-determined truth-conditions. That does not entail, however, that we can't construct conditions that would be sufficient for its truth. u_1 is true if and only if it is true; it is true if and only if is has semantically-determined truth-conditions that are satisfied at the actual world. These are truth-conditions in some sense but not in the sense of truth-conditions

that capture anything like ‘what is said’ by the utterance. The truth-conditions that might be assigned to u_1 according to my account are also not suitable candidates for ‘what is said’. On this account, nothing is said.

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