What is Said?

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It is sometimes argued that certain sentences of natural language fail to express truth conditional contents. Standard examples include e.g. *Tipper is ready* and *Steel is strong enough*. In this paper, we provide a novel analysis of truth conditional meaning (*what is said*) using the notion of a question under discussion. This account (*i*) explains why these types of sentences are not, in fact, semantically underdetermined (yet seem truth conditionally incomplete), (*ii*) provides a principled analysis of the process by which natural language sentences (in general) can come to have enriched meanings in context, and (*iii*) shows why various alternative views, e.g. so-called Radical Contextualism, Moderate Contextualism, and Semantic Minimalism, are partially right in their respective analyses of the problem, but also all ultimately wrong. Our analysis achieves this result using a standard truth conditional and compositional semantics and without making any assumptions about enriched logical forms, i.e. logical forms containing phonologically null expressions.

1   Introduction

It is traditionally assumed that the meaning of a declarative sentence, the proposition it expresses, or *what it says*, is given by its truth conditions. It is also traditionally assumed that the truth conditions of a sentence are a function of the meaning of its constituents and their syntactic mode of combination. In other words, it is assumed that truth conditional meaning is compositional. Along with this view, it is standardly agreed that the main task of a theory of linguistic meaning is to provide an explanatory and systematic way of compositionally deriving truth conditions.

A number of philosophers and linguists have in recent years argued that this project faces a significant problem. In particular, it is often argued that even when disregarding conventional context-sensitive expressions (e.g. indexicals, demonstratives but perhaps also expressions such as gradable adjectives, quantificational determiners, and so on), natural language contains grammatically well-formed sentences that cannot be assigned fully fledged truth conditional contents without appealing to factors beyond lexical meaning, semantic composition principles, and syntax. Given this, it is concluded that truth conditional meaning, or *what is said*, is underdetermined by conventional linguistic meaning.

1.1   Linguistic Underdetermination

Opinions on the scope of the underdetermination problem differ. *Radical Contextualists* like Searle (1978, 1980), Travis (1985), Sperber and Wilson (1986), Carston

(1988, 2002) argue that underdetermination is ubiquitous, ineliminable, and that the project of compositional, truth conditional semantics is fundamentally misguided. As Carston writes,

> Underdeterminacy is an essential feature of the relation between linguistic expressions and the propositions (thoughts) they are used to express; generally, for any given proposition/thought, there is no sentence which fully encodes it [...] **Underdeterminacy is universal and no sentence ever fully encodes the thought or proposition it is used to express**. (Carston, 2002, 29, our emphasis)

In contrast, *Moderate Contextualists* such as Perry (1993, 1998) and Bach (1994) maintain that only a limited range of natural language sentences are underdetermined and, so, that the project of analyzing natural language in terms of a compositional derivation of truth conditions is not, as such, threatened by underdetermination.

However, against Moderate Contextualism, Cappelen and Lepore (2004) have argued that this position is unstable in the sense that it invariably collapses into its radical counterpart. Consequently, according to Cappelen and Lepore, one must either hold that all of language is underdetermined or that none of it is.[1] In other words, one must either be a Radical Contextualist (which effectively entails surrendering the project of semantics to pragmatics) or a so-called *Semantic Minimalist*. On the Semantic Minimalist view, viz. the preferred view of Cappelen and Lepore, *all* declarative sentences are associated with a simple truth conditional content and the only contextual effects on this content comes from distinctly indexical expressions such as *I*, *here*, and *now*.[2] In other words, according to the Minimalist, there are no semantically underdetermined sentences in natural language.[3]

The central thesis in this paper is, contra both Minimalists and Contextualists, that the truth conditional meaning of a sentence in a context, or *what is said* by a sentence in a context, is partly determined by the question under discussion (QUD), cf. Roberts (2004, 2012). More specifically, according to our proposed view, what is said by a sentence in a context is the answer that it provides to a relevant question that is antecedently accepted as the topic of discussion. As we will demonstrate, this view provides a systematic account of the intuitive truth conditions of natural language sentences, while simultaneously explaining why certain such sentences appear to be truth conditionally underdetermined.

The plan is as follows: In **Section 2** (Context Shifts and Incompleteness Arguments), we review the case for contextualism and explicate Cappelen and Lepore's

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[1]As acknowledged by Cappelen and Lepore (2004, 43), their arguments for this claim are in fact rehearsals of arguments already given in various places by proponents of Radical Contextualism.

[2]The list of context-sensitive expressions whose content Cappelen and Lepore consider part of the truth conditional content expressed by the sentence is essentially those discussed by Kaplan (1989).

[3]Another prominent defender of semantic minimalism is Borg (2004, 2012), but we focus on Cappelen and Lepore's view here.

arguments for the instability of Moderate Contextualism. In **Section 3** (Questions and Discourse Structure) and **Section 4** (What is Said) we detail our own account. In **Section 5** (Resolving Potential Objections), we address a couple of potential problems and in **Section 6** (Contrasting Accounts: Differences and Advantages), we contrast our view with the accounts discussed earlier and show that our view is compatible with the main case for instability yet does not collapse into Radical Contextualism or force us to embrace Semantic Minimalism.

2 Context Shifts and Incompleteness Arguments

2.1 Radical and Moderate Contextualism

Consider the sentences below.[4]

(1)   a. Steel is strong enough.
         b. Tipper is ready.
         c. Al has finished.
         d. The king has arrived.

Radical and Moderate Contextualists maintain that these sentences are *propositional fragments*. That is, the sentences above express something truth evaluable only in conjunction with some kind of completion, i.e. a supplementation of information.[5] Two arguments are typically cited in favor of this view.

The first argument, the *Context Shifting Argument* in Cappelen and Lepore's terminology, is the simple observation that the contents communicated by utterances of (1a)–(1d) can vary with context. For example, (1a) can in one context be used to communicate that steel is strong enough to support a bridge and in another context that steel is strong enough to keep out unwanted predators. Similarly, (1b) can in one context be used to communicate that Tipper is ready for Betty's wedding, and in another context to communicate that she is ready for a job interview.

Intuitively, then, what is said by (1a)–(1d), i.e. their truth conditional content, depends on the context. However since these sentences seem to contain no indexical (or otherwise conventionally accepted context sensitive) expressions, what is said by these sentences is claimed to be underdetermined.

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[4]These examples are due to Bach (1994). Other examples of expressions and constructions that are sometimes argued to engender underdeterminacy include *incomplete definite descriptions* ('the table is covered with books'), *quantified noun phrases* ('every beer is in the fridge'), *possesives* ('Peter's book is boring'), *gradable adjectives* ('that lamp is cheap'), *exclusives* ('Gregor was merely/only/solely a book keeper'.) Bach (1994, 128) refers to these types of cases as 'constituent underdetermination', which contrast with cases of underdeterminacy involving an implicit location, situation, or action. We focus here on the latter type of examples.

[5]'Propositional fragments' is the terminology used in Cappelen and Lepore (2004, 11). Other names that have been used in the literature are *subpropositional logical forms* (Sperber and Wilson, 1986, 188), *propositional radicals* (Bach, 1994, 1994), *semantic skeletons* (Recanati, 2004, 6), *semantic schemata* (Recanati, 2004, 56).

The second argument, the *Incompleteness Argument* in Cappelen and Lepore's terminology, is the claim that sentences such as (1a)–(1d) become truth-evaluable only if supplemented with information that goes beyond the resolution of conventional context sensitivity (i.e. beyond the domain of compositional semantics). In other words, these sentences need a particular kind of extra-linguistic *completion* in order to express propositions.

For example, (1a)–(1d) could be completed literally in the following ways.

(1)   a′. Steel is strong enough *to support the roof*.
        b′. Tipper is ready *for the party*.
        c′. Al has finished *speaking*.
        d′. The king has arrived *at the palace*.

Yet Contextualists argue that absent completions of these kinds, (1a)–(1d) are incomplete and truth conditionally underdetermined.

These arguments motivate the conclusion that contextual processes (over and above the assignment of semantic values to conventionally accepted context sensitive expressions) are needed in order to render certain sentences truth evaluable. If this is correct, then examples such as (1a)–(1d) constitute a challenge to the traditional view that meaning is given by truth conditions and that truth conditions can be compositionally derived.

The difference between Radical and Moderate Contextualism is that Radical Contextualists hold that all sentences are propositional fragments. In other words, no sentence ever expresses a fully truth-evaluable content. By contrast, Moderate Contextualists maintain that only some sentences are propositional fragments. In addition, Moderate Contextualists distinguish between genuinely underdetermined sentences and complete sentences that are merely "conceptually enriched or elaborated version[s] of the [proposition] explicitly expressed" (Bach, 1994, 133). Bach refers to this process as *expansion*. Standard examples include (2).

(2)   You're not going to die.   Bach (1994, 134)

According to Bach, (2) determines a complete truth conditional content and hence is not a propositional fragment. In particular, if addressed to *a*, (2) literally expresses the proposition that *a* is not going to die (ever). Nevertheless, it will most often be used to communicate something different, e.g. that *a* is not going to die from some more specific thing.

Thus while proponents of Radical Contextualism would argue that there is no determinate truth conditional content even in cases such as (2), and hence that it is a propositional fragment, Moderate Contextualists insist that such sentences are unproblematic — cases that we refer to as *propositional wholes*.

2.2 The Case for Instability

While Moderate Contextualism might seem the less radical, and thus more plausible, view, Cappelen and Lepore (2004) argue that this position is unstable and inevitably collapses into Radical Contextualism. Their case for this instability thesis rests on two observations.

First, Context Shifting Arguments can be constructed for any natural language sentence. That is, with enough contextual setup, the intuitive truth conditions of any putatively propositional whole can be made to vary with context. Consequently, once it is accepted that *some* sentences require completions, there is then, according to Cappelen and Lepore, no principled way of avoiding the conclusion that *every* sentence requires completion, i.e. a collapse into Radical Contextualism. To see this, consider the example in (3).[6]

(3)   Smith weighs 80 kg.

Intuitively, (3) expresses a complete proposition. That is, (3) seems uncontroversially to express the proposition that Smith weighs 80 kg. and so, correspondingly, (3) is naturally interpreted as having straightforward disquotational truth conditions, i.e. it is true iff Smith weighs 80 kg. Moreover, it does not seem, at least on the face of it, as if (3) normally requires an expansion so as to communicate something beyond its literal meaning.

However, Cappelen and Lepore claim that even the truth conditional contents communicated by propositional wholes, like (3), can be made to vary with context. In support of this, they provide the following two scenarios:

> *Scenario One.* Smith has been dieting for the last eight weeks. He steps on the scale one morning, naked, before breakfast (but after having gone to the bathroom), and it registers 80 kg. A friend at work who wants to let Smith's co-workers in on his achievement can use [(3)] to say something true. Notice it doesn't matter at all that Smith is, at that time, dressed, wearing a heavy overcoat, and has just consumed an enormous lunch.

> *Scenario Two.* Smith is exactly as in Scenario One. However, the speaker's circumstances (and purposes) have changed. At the time of this utterance of [(3)] (suppose the same time as in Scenario One), Smith is about to enter an elevator with a capacity of no more than an extra 80kg. An utterance of [(3)] in these circumstances could be both fatal and false. Note that what the scale registers when Smith is naked in the morning is in this context irrelevant.

> (Cappelen and Lepore, 2004, 43)

According to Cappelen and Lepore these scenarios characterize:

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[6]This case is due to Travis (1985, 196) who uses it as an example of general underdeterminacy. Bach (1994) discusses a similar case ('André weighed 500 pounds') which he takes to be a case that will typically trigger expansion. Bach is concerned with expansions in the degree of precision regarding the measured weight, and hence, his focus is different.

> [...] contexts in which two (simultaneous) utterances of the same sentence type
> with the same meaning, whose referring terms are assigned the same referents,
> are alleged to differ intuitively in their truth conditions due to 'nonsemantic'
> differences surrounding their respective contexts of utterance.
>
>   (Cappelen and Lepore, 2004, 43-44)

They therefore conclude that Context Shifting Arguments can be adduced even for putative propositional wholes.

Second, similar to Context Shifting Arguments, Incompleteness Arguments can also be constructed for every natural language sentence — even sentences where completions have already been supplied. Consider again the candidate completions in (1a')–(1d').

(1)   a′. Steel is strong enough *to support the roof*.
        b′. Tipper is ready *for the party*.
        c′. Al has finished *speaking*.
        d′. The king has arrived *at the palace*.

As Cappelen and Lepore observe, there is a wide variety of issues not addressed by completions such as (1a')–(1d'), but which could seem to be just as truth conditionally relevant. Take, for example, the candidate completion in (1a'). One might wonder why the required completion need not settle, say, (*i*) the duration of time for which steel must support the roof, (*ii*) how much steel is needed to support the roof, (*iii*) whether steel is strong enough to support the roof at temperature t, etc.

Requiring such degrees of specificity in the truth conditions of (1a) might seem absurd, but the question is why it should be assumed that the completion in (1a') is mandatory if further expansions of the truth conditions, such as (i)–(iii), are merely optional. According to Cappelen and Lepore, there is no principled answer to this question:

> What's the principled difference? None, as far as we can tell. One can trigger
> *exactly* the same kind of incompleteness intuitions for [(1a')-(1d')] as one can for
> [(1a)–(1d)].   (Cappelen and Lepore, 2004, 62)

Finally, Incompleteness Arguments can also easily be constructed for sentences that are normally considered propositional wholes. Consider again (3).

(3) Smith weighs 80 kg.

As Cappelen and Lepore point out, there are multiple issues that (3) fails to settle. For example, one might wonder whether (3) is true if Smith is dressed in heavy winter wear, if Smith has just eaten a big lunch, if Smith is submerged in water, or if Smith is in a space shuttle orbiting the moon, etc.

As before, to suppose that to determine what is said by (3), one must be capable of settling these issues seems absurd, but again the question remains: what is the reason that expansions are not required in this case, while they are required in cases such as (1a)–(1d)?

Cappelen and Lepore conclude,

> Moderate Contextualism (MC) is not a stable position. A consistent (and suffi-
> ciently imaginative) Moderate Contextualist must endorse Radical Contextu-
> alism (RC). The kind of evidence that supports MC leads directly to RC. The
> kinds of arguments used to support MC lead directly to RC. Someone who
> starts down the path of contextualism, but wants to stop short of RC, can do so
> only arbitrarily. (Cappelen and Lepore, 2004, 39)

2.3 Semantic Minimalism

Cappelen and Lepore's Minimalist alternative assumes the opposite view, namely
that there are *no* propositional fragments. On the Minimalist view, every declarative
sentence is therefore a propositional whole with a simple truth conditional content.
This goes even for the sentences that both proponents of Moderate Contextualism
and Radical Contextualism agreed are cases of underdetermination. In short, Cap-
pelen and Lepore assume that the truth conditional content of the sentences in (1)
can be stated in the following straightforward disquotational way.

(4)   a. 'Steel is strong enough' is true iff steel is strong enough.
       b. 'Tipper is ready' is true iff Tipper is ready.
       c. 'Al has finished' is true iff Al has finished.
       d. 'The king has arrived' is true iff the king has arrived.

This position is regularly met with incredulous stares. One example is Recanati
(2006) who refers to Cappelen and Lepore's view as "Crazy Minimalism", remarking
that it "[...] is, of course, very hard to take this position seriously". Recanati also
asks what "led two able philosophers to risk their reputation in the service of that
position." (2006, 22)

We agree with the spirit of this reaction, i.e. we agree that simply stating the
disquotational truth conditions in (4) is unilluminating and unsatisfying. While the
truth conditions of sentences relative to context often coincide with the "minimal"
content, we reject the thesis that the minimal content always coincides with the
truth conditional content.

2.4 Preview

We think that Radical Contextualists and Minimalists are correct when they claim
that the intuitive truth conditions of any sentence can be made to vary with context.
However, in contrast to Cappelen and Lepore, we do not think that this constitutes
a good reason to embrace minimalism. We also reject Cappelen and Lepore's claim
that there is no principled way of determining which completions or expansions are
adequate in a given context. Indeed, we will argue that there is a both principled
and systematic way of pairing sentences with their intuitive truth conditions in

context while maintaining that, for any sentence, these truth conditions can vary across contexts.

Our proposal is to identify what is said (by a sentence in a context) with answers to QUDs, and by 'what is said' we mean truth conditional content, that is the truth conditions of the sentence relative to the context of utterance. In short, contexts will be assumed to contain QUDs (as formal objects) and sentences will be analyzed as true or false relative to the QUD addressed in that context.

However, we will also argue that what a sentence can be used to express, i.e. what its potential truth conditions are, is constrained by a compositionally derived *minimal* content. So, while a single sentence has a wide variety of potential truth conditions depending on the contextually relevant QUD being addressed, this set of potential truth conditions is constrained by the meanings of its constituents and its syntax. The absolutely crucial difference between our proposed view and Semantic Minimalism is therefore that we do not identify minimal compositional meaning with the truth conditions of a sentence relative to the context. For this reason, we can avoid the highly counterintuitive conclusion that the truth conditions of the sentences in (1) are straightforwardly disquotational.

3   Questions and Discourse Structure

In this section we detail our proposal. We begin by introducing the QUD framework and then provide a rudimentary semantics for questions. Using these elements, we argue that what is said by a sentence in context depends on both its compositional meaning and the QUD it is used to address.

3.1   Questions under Discussion

Our proposed account relies on a semantic/pragmatic framework developed by Roberts (2004, 2012), so we begin by providing an outline of this framework.

First, Roberts follows Stalnaker (1970, 1978, 1984, 1998) in taking discourses to be goal directed activities whose fundamental aim is discovering what the actual world is like. On this familiar picture, the information that is mutually taken for granted by the discourse participants is referred to as the *common ground* and the notion of *assertion* is analyzed in terms of information updating. That is, to assert ϕ is to propose to make ϕ common ground. The common ground is formally modelled as a set of propositions, namely the set of propositions the discourse participants are presupposing. Moreover, propositions are modelled as sets of possible worlds, namely the set of worlds where the propositions are true. So, when a proposition ϕ is asserted relative to a context c, and it is accepted by the discourse participants, the proposition is added to the common ground by taking the intersection of the

common ground (the so-called *context set*) and intersecting this with ϕ — thereby eliminating every $\neg\phi$-possibility from the context set.

Following Carlson (1982), Roberts assumes that a discourse is structured around a set of questions and that answering these questions is the principal strategy for achieving its goal, namely eliminating non-actual possibilities. Roberts therefore supposes that there are two key conversational moves in a discourse, what Carlson (1982) refers to as *setup* moves (questions) and *payoff* moves (answers to questions, i.e. assertions). As Roberts writes,

> Assertions are [...] choices among alternatives. If accepted, they are added to the common ground and thereby shrink the context set. In order for discourse to be coherent [...], it must be clear what alternatives [...] a given assertion selects among. The relevant alternatives are those proffered by the question, or topic, under discussion. (Roberts, 2012, 6)

In short, the goal of a discourse is to resolve the QUDs that have been accepted by the discourse participants and these QUDs delimit the set of contextually relevant alternatives.[7]

Since QUDs play a principal role in this framework, we need at least an outline of a semantics for questions. Here we adopt a simplified version of the semantics proposed by Roberts (2012) which in turn draws extensively on the work of Hamblin (1973) and Groenendijk and Stokhof (1984).

3.2 The Semantics of Questions

One standardly distinguishes between so-called *polar* questions, which can be addressed by a simple 'yes' or 'no', and *wh*-questions (also called *constituent* questions), cf. the examples below.[8]

(5) POLAR QUESTIONS
    a. Is Mary awake?
    b. Does Mary like peanuts?
    c. Is Mary in Rome?

(6) *wh*-QUESTIONS
    a. Who is awake?
    b. What does Mary like?
    c. Who is where?

Following Hamblin (1973), we will assume that the denotation of a question is a set of propositions, namely a set of possible answers. Call this *the set of alternatives*. Roughly, the set of alternatives for a *wh*-question q is the set of propositions obtained

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[7]For other work where QUDs are assumed to be part of the discourse context, see e.g., Beaver and Clark (2008), Schoubye (2009), Potts (2010), Simons *et al.* (2010), Schaffer and Szabo (2013).

[8]There are, of course, several other question types that have been discussed extensively in the literature on questions, namely *conditional* questions ("if Jimmyis sleeping, who is taking care of the baby?"), *alternative* questions ("Did Mary walk there or did Frank drive her?"), and *embedded* questions ("Jack knows where the store is").

from first abstracting over its *wh*-elements and then applying the resulting property to each appropriate entity in the domain. We can therefore represent the meaning of (7) as a set of propositions, i.e. a set of sets of possible worlds, cf. (7a).

(7)   Who is awake?
        a. $\big\{\{w \mid \text{Mary is awake in } w\}, \{w \mid \text{Kelly is awake in } w\}, ... \big\}$

Using this notion of alternatives, we can distinguish between *partial* and *complete* answers as follows.

PARTIAL AND COMPLETE ANSWERS

A **partial** answer to a *wh*-question q is a proposition that entails an evaluation (either true or false) of *at least one* alternative of q.

A **complete** answer to a *wh*-question q is a proposition that entails an evaluation (either true or false) of *every* alternative of q.

While the alternatives of a *wh*-question can be determined by abstraction, the meaning of a *wh*-question can also be thought of as a simple list of polar subquestions. For example, the *wh*-question in (7) could be thought of as a proxy for the list of subquestions below.

(8)   a. Is Mary awake?
        b. Is Kelly awake?
        c. Is Jimmy awake?
        d. ...

Moreover, the distinction between partial and complete answers to *wh*-questions can then be explicated in terms of polar subquestions. For example, a proposition that entails a 'yes' or 'no' to every polar subquestion of a question q is a complete answer to q whereas a proposition that entails a 'yes' or 'no' to at least one polar subquestion is a partial answer to q. On either construal of partial and complete answers, it follows that any complete answer to a question q is also a partial answer.

Since polar questions have only positive or negative answers, just two alternatives are associated with these questions, namely the '*yes*'-alternative and the '*no*'-alternative. For example, the denotation of a question such as (5a) is a set of two sets, namely the set of possible worlds where Mary is awake and the set of possible worlds where she is not.

(9)   Is Mary awake?
        a. $\big\{\{w \mid \text{Mary is awake in } w\}, \{w \mid \text{Mary is not awake in } w\}\big\}$

Following Groenendijk and Stokhof (1984), we can quite generally represent the set of complete answers to a question as a partition on a set of possible worlds. For example, assuming a domain of only three individuals, Mary, Kelly and Jimmy, (7) partitions the set of worlds into eight 'cells' corresponding to each of its possible complete answers. Let M, K, and J denote the propositions that Mary is awake, that Kelly is awake and that Jimmy is awake, respectively. If so, the partition determined by (7) is illustrated by the figure below.[9]
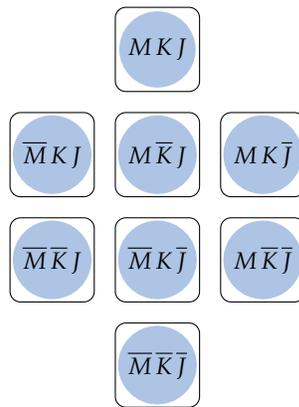

Figure 1

Each cell of this partition represents a complete answer to (7), viz. a set of worlds where every polar subquestion of (7) is settled.

Given our definition of partial and complete answers, the following generalization now holds (for both *wh*-questions and polar questions): relative to any partition p on a question q, the union of any non-empty proper subset of p is a partial answer to q. If this proper subset is a singleton set, its union is a complete answer to q.[10]

So, speaking loosely, we might simply refer to a *complete* answer as a proposition that rules in a unique cell of a partition and a *partial* answer as a proposition that rules in at least one, but not every, cell. Cells that are ruled in represent possibilities that remain live given the answer to the question.

To illustrate, consider the (non-exhaustive) list of possible answers to (7) in (10).

(10)   a. Mary is awake.
　　　 b. Mary and Kelly are awake.
　　　 c. Only Jimmyis awake.

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[9]Lines over letters here represent set theoretic complementation, i.e. standard (Boolean) negation.

[10]If the subset is either improper or empty, it will not entail a positive or negative evaluation of any subquestion and this is a necessary condition for being both a partial and a complete answer.

First, (10a) is a partial answer because it entails an evaluation of just one of the alternatives of (7). That is, (10a) rules in only the worlds where Mary is awake, i.e. the (union of the) highlighted cells in Figure 2.
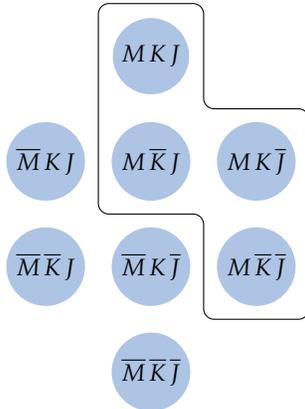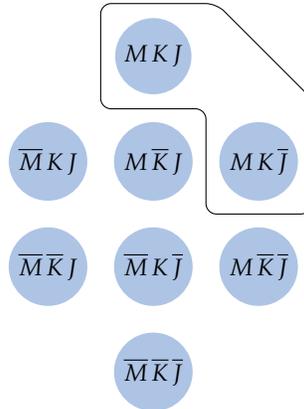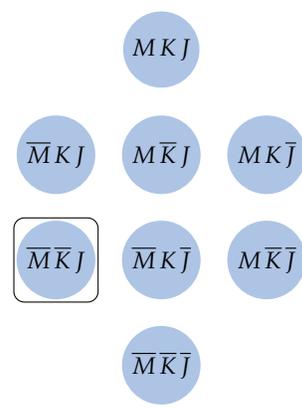

Figure 2

Figure 3

Figure 4

Second, (10b) is also a partial answer to (7), because it entails an evaluation of two of the alternatives of (7), but leaves open the third. (10b) thus rules in worlds where both Mary and Kelly are awake, viz. the (union of the) highlighted cells in Figure 3. And, finally, (10c) is a complete answer to (7) because it entails an evaluation of every alternative of (7). That is, (10c) rules in a *unique* cell, namely the set of worlds where Jimmy is awake, but Mary and Kelly are not, cf. Figure 4.

Much more could be said about the semantics of questions, but this will suffice for our purposes. Before detailing our analysis of what is said, we now introduce a couple of pragmatic principles that will be important in subsequent sections.

3.3 Strategies of Inquiry

On the view proposed above, where discourses are structured around a common goal, namely the resolution of the QUD, the discourse participants may attempt to achieve this goal using different 'strategies of inquiry' (Roberts, 2012, 6). A strategy of inquiry is a sequence of conversational moves, i.e. raising questions, providing answers etc. However, in order to answer, say, a particularly general QUD, a good strategy of inquiry might involve segmenting the QUD into various subquestions and then addressing these individual subquestions in turn. The relation between different questions can captured in terms of a notion of question entailment, defined as follows:

> [...] one interrogative q_1 entails another q_2 iff every proposition that [completely]
> answers q_1 answers q_2 as well. For example: *What do you like?* entails *What food
> do you like?*. An answer to the Big Question, *What is the way things are?*, entails
> the answer to any other possible question. We might call q_1 in such a relation
> the *superquestion*, and any q_2 which it entails we might call a *subquestion*. [...]
> Given the ultimate aim of discourse and the rationality of the participants, these
> types of relations are the principal factors that structure our moves.
>
> (Roberts, 2012, 6)

In short, there is a sense in which a *wh*-question can be a subquestion of another
wh-question. So, a fruitful strategy for answering one *wh*-question might involve
segmenting that *wh*-question into various other *wh*-questions that are subquestions.
Answering those subquestions might prove a more manageable task and thus a
better strategy. To illustrate, Roberts (2012, 16) provides an example along the
following lines. Suppose our domain contains only two individuals (Mary and
Kelly) and two locations (Ohio and Pittsburgh). Moreover, suppose that the relevant
QUD in some context c is (11).

(11)   Who went where?

Instead of addressing this QUD head on, one might choose to introduce sub-
questions that bear on the main QUD, e.g.

(11)   a. Who went to Ohio?
         b. Who went to Pittsburgh?

And, again, even further subquestions might then be introduced, e.g.

(11) a_1 Did Mary go to Ohio?
         a_2 Did Kelly go to Ohio?

         b_1 Did Mary go to Pittsburgh?
         b_2 Did Kelly go to Pittsburgh?

Since an answer to a subquestion is, by definition, a partial answer to a super-
question, in this example (11), answering any subquestion will be part of a strategy
for answering its superquestions, and ultimately (11).

3.4 Relevance and Conversational Moves

Given that a discourse is organized around a set of QUDs, being part of a dis-
course incurs a commitment to resolving the QUDs. In particular, once a QUD is
accepted among the discourse participants, each participant is thereby committed
to answering that QUD — unless it is deemed practically unanswerable.

Consequently, to be cooperative, i.e. to proceed in a way conducive to the goal of
the discourse, only a limited range of conversational moves will be appropriate. For
example, discourse participants should strive to make their contributions *relevant*
where this notion is defined as follows, cf. Roberts (2012, 21).

> RELEVANCE
>
> 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).

In short, if the discourse participants are rational, and so aiming to reach the goal of the discourse, the available conversational moves will be limited to answering already established questions or proposing a revision of the strategy of inquiry by raising new questions.

3.5 Implicit Questions

Roberts' question-based framework assumes that a discourse always has at least one QUD. This might seem an implausible assumption as questions are often never explicitly stated in many discourses. It might therefore be natural to conclude that there is no specific QUD in such discourses.

However, it is crucial to recognize that questions need not have been explicitly stated to be the topic of discussion. There are numerous ways of implicitly raising a question and in most given contexts it will be inferable from various contextually available cues which specific question is the topic. Thus, even though discourses are functionally organized around a set of questions, an assertion can express an answer to a question even if that question was never explicitly raised.

One example of a contextually available cue is *prosody*.[11] To illustrate, notice that a given sentence can in principle be used to address a number of different questions. Consider, for instance, the following example due to Krifka (2011, 1751-1752).

(12)   Fritz will go to Potsdam tomorrow.

The sentence in (12) can be used to answer any of the questions in (13).

(13)   a. Where will Fritz go tomorrow?
       b. When will Fritz go to Potsdam?
       c. Who will go to Potsdam tomorrow?
       d. Who will go where tomorrow?
       e. Who will go where when?

Unless one of the questions in (13) has already been explicitly stated, an assertion of (12) would seem to raise a difficult interpretative challenge, namely determining which question (12) is being used to address.

---

[11]This issue is discussed in much more detail by Roberts (1998, 2012), but since it will be important for our purposes, we include a brief discussion here.

Now, it is widely agreed that topic–focus structure is indicated intonationally in English, i.e. in terms of prosody. In addition, it is also widely agreed that there is close connection between prosodic focus and *wh*-questions. That is, a sentence *S* is a felicitous answer to a *wh*-question *q* only if the focused part of *S* (the intonationally stressed part) corresponds to the *wh*-phrase(s) of *q*. This is standardly referred to as question–answer congruence and it is illustrated in the examples below.[12]

(7)   Who is awake?
      a. [MAry]$_f$ is awake.
      b. #Mary [is aWAKE]$_f$.

(14) Where is Mary?
      a. #[MAry]$_f$ is in France.
      b. Mary is [in FRANce]$_f$.

Given this relation between prosodic focus and *wh*-questions, it should be clear that prosodic focus provides a crucial contextual cue as regards determining QUDs. To see this, consider the following possible intonational patterns for (12).

(15) a. Fritz will go [to POTSdam]$_f$ tomorrow
      b. Fritz will go to Potsdam [toMORrow]$_f$.
      c. [FRITZ]$_f$ will go to Potsdam tomorrow.
      d. [FRITZ]$_f$ will go to [POTSdam]$_f$ tomorrow.
      e. [FRITZ]$_f$ will go to [POTSdam]$_f$ [toMORrow]$_f$.

The important point here is that each intonational pattern is felicitous relative to only one of the questions in (13). Hence, the intonational pattern, i.e. the prosodic focus marking, seems to help indicate the question that the speaker is addressing.

On the basis of this kind of data, Roberts (1998, 2012) argues that prosodic focus simply presupposes the question under discussion. That is, a speaker's prosodic choices reflect the question that the speaker is taking to be under discussion.

If this is correct, if prosodic focus presupposes that a certain question is under discussion, this would explain why an assertion of a declarative sentence can succeed in raising a novel question, namely by the process of *accommodation*. What is accommodation? In short, if a sentence *S* triggers a presupposition *p*, an assertion of *S* would normally require that *p* is common ground. Indeed, if *p* is not common ground, an assertion of *S* should be infelicitous. However, if *p* is both uncontroversial and consistent with the common ground, an assertion of *S* will typically just

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[12]Capitals indicate pitch accents and angle brackets indicate the scope of the focus. For discussion and details about the semantics of focus and the phenomenon of question–answer congruence, see e.g. Rooth (1996), Krifka (2004), Truckenbrodt (2012).

cause the discourse participants to adjust the common ground so as to include p. In other words, they will *accommodate* the presupposition triggered by S.[13]

Similarly, if a speaker asserts a sentence S where the prosody associated with the assertion presupposes the question q (where q is not already under discussion), the interlocutors may simply accommodate q. Hence, the assertion of S might have the effect of raising a novel question. This would explain why discourses generally proceed unproblematically without a single question ever being stated explicitly.[14]

Much more deserves to be said about these issues, but we leave a more in-depth discussion for another occasion.

4   What is Said

In this section, we outline our proposed analysis where what is said by a sentence S relative to a context c (i.e. the proposition it expresses or its truth conditional content in context) is a function of the question that S is being used to address.[15]

Although this is a non-trivial simplification, let's assume for now that a given context contains a single QUD. We denote the QUD of a context c as q_c.

The meaning of the constituents of a sentence S and the order in which these are combined intuitively constrain what S can be used to say (relative to a given context). We therefore 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. We assume that this derivation of the minimal content includes the saturation of various overt and covert context-sensitive expressions.[16] We refer to contents determined using this compositional procedure as the *minimal content* or the *minimal proposition* expressed by S in c.

---

[13]This is a significantly over-simplified explication of a very complex pragmatic mechanism. The classic paper on accommodation is Lewis (1979), but for more recent discussions in relation to presuppositions, see e.g. Beaver and Zeevat (2007) and von Fintel (2008).

[14]However, as Krifka (2011) also points out, a single intonational pattern is sometimes consistent with different foci, so prosody alone is admittedly not always sufficient for determining the question being addressed. In those cases, other contextual cues would need to be taken into consideration.

[15]We are using the following terms interchangeably: 'what is said' by S in c, 'proposition expressed' by S in c, and 'truth conditional content' of S in c.

[16]For example, contra Cappelen and Lepore, we are happy to accept that both quantified noun phrases and gradable adjectives are conventionally context sensitive expressions that are associated with phonologically null variables at LF and that these are saturated by context. Semantic proposals that appeal to covert constituents at LF include Stanley and Szabó (2000) and Kennedy (1997, 2007). Nothing major hangs on this assumption. It only reflects our intuitive judgment that this kind of context sensitivity is better captured in terms of variables rather than in terms of question sensitivity. That is not to insist that this kind of context-sensitivity could not be a kind of QUD sensitivity, but we leave this open here.

Let $\mu_c(S)$ denote the minimal proposition expressed by S relative to c and let $\sigma_c(S)$ denote what is said by S relative to c and q_c. We start by defining the following minimal content constraint.

> MINIMAL CONTENT CONSTRAINT
> 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 (i.e. $\sigma_c(S) \subseteq \mu_c(S)$).

In short, we assume that a proposition ϕ can be the truth conditional content of a sentence S (relative to a context c and a question q_c) only if ϕ entails the minimal content of S. This constraint guarantees a strict relation between the minimal content of a sentence (i.e. its compositional semantic value) and its intuitive truth conditional meaning in context. The words in any given sentence intuitively constrain what that sentence could mean and this is what the above constraint is meant to capture.

Next, since the Minimal Content Constraint only provides a necessary condition on what is said, we need a principled method for choosing between the remaining available candidates, viz. the propositions that entail the minimal content of the relevant sentence. We therefore first introduce a notion of propositional strength.

> PROPOSITIONAL STRENGTH
> Given propositions ϕ and ψ, ϕ is weaker than ψ iff ψ asymmetrically entails ϕ (i.e. $\psi \subset \phi$).

Given the Minimal Content Constraint and Propositional Strength, we can now state our definition of *what is said*.

> WHAT IS SAID
> What is said by a sentence S relative to a context c and a question q_c (where q_c is the QUD in c) is the weakest relevant proposition ϕ such that ϕ entails the minimal content of S in c.

What is meant by a 'relevant proposition' here is essentially 'an answer'. Recall, for a conversational move to be relevant, it must either raise a question or propose

an answer. So, to determine what a declarative sentence S says in a context, one must search for an answer to a QUD that S could potentially provide. That, however, will be constrained by S's minimal content. Thus, the truth conditions of a sentence S relative to c and question q_c is the weakest proposition that entails the minimal content of S and, moreover, is an answer to q_c. In short, to determine what is said by S relative to c and q_c, take the union of any non-empty proper subset of the partition on q_c and pick the weakest one that entails the minimal content.

With this definition of what is said, sentential truth can now be defined as follows.

> TRUTH
> A sentence S is true in w_c relative to a context c and a question q_c
> iff $w_c \in \sigma_c(S)$, where w_c is the world of the context.

4.1   Applications: A Simple Example

To see our proposed definition at work, assume that the QUD in c is the question in (16).

(16)   Who is awake?

Let 'M-world' denote any possible world where Mary is awake. Now consider the sentence in (17).

(17)   Mary is awake.

Intuitively, the minimal content of (17) is simply the set of all M-worlds. Given our definition above, *what is said* by (17) is the weakest relevant proposition, i.e. the weakest answer to the QUD, that entails this minimal content. An answer to (16) must rule in at least one (but not every) cell of its partition, but to entail the minimal content, it cannot rule in any $\neg M$-worlds. Consequently, the remaining candidates for what is said are the various possible answers that contain only M-worlds. Examples are illustrated in Figures 5–7.
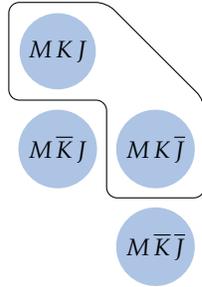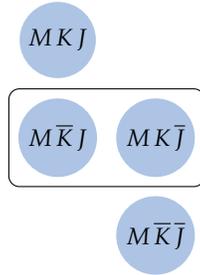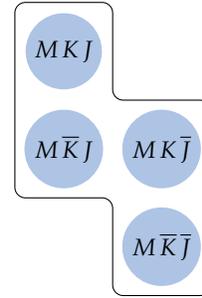
Figure 5　　　　　　　Figure 6　　　　　　　Figure 7

The union of these subsets each denote an answer, i.e. a proposition, but our definition states that what is said is identified with the weakest of these propositions, i.e. the proposition asymmetrically entailed by the others. This is the proposition denoted by the union of the cells in Figure 7, viz. the set of all *M*-worlds. In other words, we predict that what is said by (17), relative to the question in (16), is simply that Mary is awake (nothing more, nothing less). Intuitively, the correct prediction.

Of course, this example is not particularly interesting as the minimal content and what is said simply coincide, but it is meant as a simple illustration of a derivation of what is said. Moreover, in subsequent sections, we consider cases where these two types of content come apart. It will then become clear that our account provides an elegant and simple explanation of the truth conditional content of putative propositional fragments.

4.2 A Quick Note on Compositionality

On our proposed analysis, since *what is said* is determined in part by the minimal content and in part by a QUD, what is said is not fully compositionally determined. However, it is important to emphasize that despite this, what is said by a given sentence *S* relative to a context and a QUD *is* determined in a thoroughly systematic and constrained way, because what is said by *S* is simply a function of its compositional meaning (its minimal content) and the QUD that it is used to address. So, what truth conditions a sentence can be assigned in context is not only highly constrained, it can also be derived via perfectly principled means.

That our account has this non-compositional feature is no surprise. After all, our main thesis is that relative to different QUDs, sentences can express more specific contents than the "contents" strictly mandated by their immediate lexical constituents and their syntactic modes of combination.

While some might think that this lack of full compositionality is a disadvantage to our view, we consider it congenial to an old but increasingly popular perspective

on philosophy of language and formal semantics, namely that one must distinguish between *compositional semantic value* and (different types of) *content*. On this view, first put forward by Dummett (1973) and Lewis (1980) but more recently defended by e.g. Ninan (2010), Rabern (2012), and Yalcin (2014), it is maintained that what is delivered by the semantic system (i.e. compositional semantic values) cannot be directly equated with content (e.g. assertoric content, attitude content, or *what is said*).[17] These are notions that may be intimately related to the deliverances of the compositional semantic system, but ultimately they cannot be *identified* with these. Thus, one way of taking our proposed view is that the minimal content of a sentence *S* is what is delivered by the compositional semantic system and, in contrast, that what is said by *S* is a closely related notion which is *defined* in terms of *S*'s (compositionally derived) minimal content. In conclusion, our view is not a threat to the compositionality of meaning, because the compositional semantics does play a central content-determining role in the definition of what is said — and nothing more should really be expected.

4.3   Applications: Completion Examples

4.3.1   "Steel is strong enough"

First, consider a simple example, the dialogue in (18).

(18)   a. **Mike**: The space shuttle must be able to carry 35 tons of cargo, endure
               extreme temperatures, and be capable of withstanding severe cyclonic
               dust storms. So, what material for the shuttle is sufficiently strong?

           b. **Carl**: Steel is strong enough.

   Mike's utterance introduces a QUD, namely the question in (19).

(19)   What material for the shuttle is strong enough for carrying 35 tons of cargo,
       enduring extreme temperatures, and withstanding severe cyclonic dust
       storms?

   Moreover, intuitively, what is said by Carl's reply is the minimal content of (20).

(20)   Steel is strong enough for carrying 35 tons of cargo, enduring extreme
       temperatures, and withstanding severe cyclonic dust storms.

   A semantic theory should therefore ideally predict that, relative to (19), what is said by the reply in (18b) is (20).
   To demonstrate that this is precisely what our proposed account predicts, let's work through a slightly simplified example.

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[17]For example, Lewis writes "It would be a convenience, nothing more, if we could take the propositional content of a sentence in context as its [compositional] semantic value. But we cannot. **The propositional contents of sentences do not obey the compositional principle**, therefore they are not semantic values." (Lewis, 1980, 95, our emphasis).

Let *S*, *A*, and *I* be the minimal propositions that steel, aluminium, and iron, respectively, are strong enough for carrying 35 tons of cargo, enduring extreme temperatures and withstanding severe cyclonic dust storms. For simplicity, suppose that the partition determined by the question in (19) is defined only over these three alternatives.
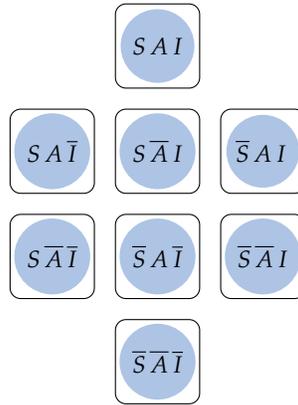

Figure 8

If we assume that the minimal content expressed by (18b) is simply the set of possible worlds where there is at least one thing that steel is strong enough for, then this minimal content is clearly not identical to the intuitive truth conditions of (18b), i.e. what is said by (18b) relative to (18a). Our theory should therefore predict a divergence between the minimal content of (18b) and what is said by (18b) relative to (19).

What does our theory predict? First, what is said by (18b) relative to the question in (19) must be one of its possible answers, i.e. it must be relevant. In other words, what is said by (18b) must be a proposition that rules in at least one (but not every) cell of the partition above. This proposition must, however, also entail the minimal content of (18b). Any proposition that rules in a $\overline{S}$-cell will fail to entail this minimal content. The reason is that each $\overline{S}$-cell denotes a set of possible worlds where steel is not strong enough for carrying 35 tons of cargo etc. Among these worlds, there will be at least one world where there is no steel or where steel is simply not strong enough for anything. In other words, the set of worlds denoted by a $\overline{S}$-cell will not be a subset of the minimal content of (18b) — and hence will not entail this minimal content. Consequently, only propositions that rule in *S*-cells are eligible. Lastly, what is said must be the weakest relevant proposition. However, this will simply be the union of the set of all *S*-cells as this will be a superset of any other answer (that does not include any $\overline{S}$-cell), cf. Figure 9 below.

$$
\begin{array}{ccc}
 & S\,A\,I & \\
S\,A\,\overline{I} & S\,\overline{A}\,I & \overline{S}\,A\,I \\
S\,\overline{A}\,\overline{I} & \overline{S}\,A\,\overline{I} & \overline{S}\,\overline{A}\,I \\
 & \overline{S}\,\overline{A}\,\overline{I} &
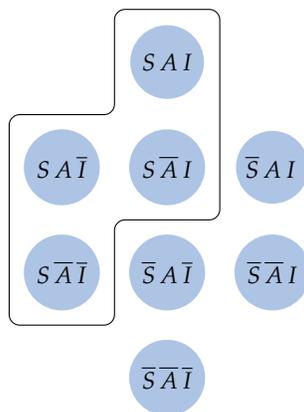\end{array}
$$

Figure 9

So, we predict that what is said by (18b), relative to (19), is that steel is strong enough for carrying 35 tons of cargo, enduring extreme temperatures, and withstanding severe cyclonic dust storms. Again, intuitively, the correct result.

To summarize, using this QUD-driven analysis of *what is said*, we are now in a position to predict that what is said by a putative propositional fragment, e.g. "Steel is strong enough", relative to a discourse context c (and question q_c) is in fact a full-fledged and suitably enriched content that corresponds to its intuitive truth conditions in that context.

We think that this is a nice result. First, this analysis avoids the counterintuitive minimalist conclusion that the truth conditional content of (18b) is just invariably its minimal content. Second, it also avoids the radical conclusion that truth conditional semantics is a futile project. Indeed, our analysis is both a truth conditional and compositional analysis. Third, no assumptions are made about hidden syntactic constituents, or various other enrichments of the LFs, and nevertheless the relevant "completions" are determined in a principled way.[18]

So, although the previous example was somewhat simplified, we hope that it is clear that our proposed analysis will yield correct predictions even in more complex cases, e.g. cases involving other questions and various other propositional fragments.[19] To demonstrate this, let's consider another case, this time involving a polar question.

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[18] So while we have not shown that the thesis that "all effects of extra-linguistic context on the truth conditions of an assertion are traceable to elements in the actual syntactic structure of the sentence uttered", famously maintained by Stanley (2000, 391), is false, we do think our view provides some prima facie evidence against that thesis.

[19] Also, as should be obvious, the fact that a number of possible answers were omitted in our analysis of (18a)–(18b) does not affect the conclusion.

4.3.2 Tipper is ready

Consider the dialogue below.

(21)   a. **Julie.** Is Tipper ready for the interview?
       b. **Rebecca.** She's ready.

Intuitively, what is said by (21b) is that Tipper is ready *for the interview* and this is what our account should ideally predict.

Let's assume that the minimal content of the sentence in (21b) is simply the set of worlds where Tipper is ready for at least one thing. The partition on (21a) is a set of two cells corresponding to the '*yes*'-alternative and the '*no*'-alternative. Letting R-worlds be worlds where Tipper is ready for the interview and $\overline{R}$-worlds worlds where Tipper is not ready for the interview, the partition of (21a) and the answer selected by (21b) are represented by Figure 10.

Figure 10

The $\overline{R}$-cell, which is the set of every possible $\overline{R}$-world, will contain worlds where Tipper is not ready for anything (for example, Tipper might not exist in that world). Any set containing such worlds will fail to entail the minimal content of (21b) and therefore be ruled out as a candidate for what is said. In contrast, the R-cell contains only worlds where Tipper is ready for the interview and so ready for at least one thing. The R-cell thus entails the minimal content of (21b) and since it is the *only* answer that entails this minimal content, it is also (trivially) the weakest. As a result, the weakest relevant proposition expressed by (21b) relative to (21a) is the proposition that Tipper is ready for the interview — again, intuitively, the correct prediction.

However, here is a worry about our proposed explanation for the case above.[20] The predicate 'ready' belongs to a general category of expressions sometimes referred to as *incomplete predicates* or *definite null complements*. These are expressions that seem to permit phonologically unrealized complements that are intuitively anaphoric. Moreover, it is generally agreed that whether an expression permits a null complement is grammatically controlled. To give an example, the verbs 'find out' and 'discover' are near synonyms, but only one of them permits a phonologically null that-clause.[21]

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[20]We are grateful to an anonymous referee for pushing this issue.
[21]For further discussion, see e.g. Fillmore (1986).

(22)   a. Mary cheated. Susie found out.
       b. Mary cheated. *Susie discovered.

So, whether an expression permits a null complement is likely a feature of its lexical specification. On the other hand, as argued by Shopen (1973, 71-72), these null complements cannot plausibly be the result of deletion as, in the terminology of Hankamer and Sag (1976, 411), they can be "pragmatically controlled". In short, the correct explanation in the case of 'ready' cannot be that its complement is deleted at PF but present at LF, as in cases of e.g. VP-ellipsis.

Given these observations, one might therefore be tempted towards a view where 'Tipper is ready' contains a phonologically null demonstrative or pronoun (e.g. 'that' or 'it') which must be anaphorically resolved. If this is the correct view, there is then no specific underdetermination problem with respect to bare occurrences of 'ready'. Rather, this would just be a case of a covert variable that would need to be assigned a value in context.[22] Moreover, if this is the correct view, it might seem misleading to assume that the minimal content of 'Tipper is ready' is simply its existential closure, i.e. that Tipper is ready *for something*.

There are many proposals for the analysis of incomplete predicates (see e.g. the references above and further below) and the issue is obviously complex. Engaging in an extensive discussion of the issue is therefore not feasible here. However, since we do think that our proposed solution might be correct for cases involving bare 'ready', we provide a few arguments in favor of our analysis.

First, it is important to understand the role of minimal content in our analysis. We agree that bare uses of 'ready' are almost invariably understood as relative to some intended purpose ('ready to eat', 'ready to dance', 'ready for the show'), but this is perfectly consistent with our proposal, because the minimal content is not equivalent to what is said, i.e. the truth conditional content in context. What is said is always determined relative to a question and relative to a relevant question, 'ready' will almost invariably mean something more specific than simply 'ready for something'. In a sense, we are proposing to use the QUD framework to explain why there is a preference for interpreting bare 'ready' as more specific than merely 'ready for something'. It intuitively requires a more specific interpretation because there are almost no conceivable contexts where it would be used to express something as unspecific as 'ready for something'. However if the context is sufficiently bizarre, we maintain that it could be used to express that content — for example, imagine a context where the question under discussion is literally who is ready for at least one thing (no matter what that thing is).

_____

[22]So, it would be similar to a view of e.g. quantifier domain restriction where each nominal is assumed to come with a variable at LF or a view of gradable adjectives where these are associated with a phonologically null variable for a comparison class. That said, it is worth mentioning that this is a view that the proponents of Radical Contextualism, Moderate Contextualism, and Semantic Minimalism discussed here explicitly reject.

Second, while one might think that bare 'ready' is *necessarily* anaphoric, Gauker (2012, 73-74) provides extensive arguments against this view by constructing multiple examples where bare occurrences of 'ready' have no linguistic antecedents.

Gauker (2012, 63-67) also provides arguments against the view that 'Tipper is ready' contains a covert demonstrative or pronoun showing that this analysis runs into problems explaining various intuitively valid/invalid inferences.[23] Interestingly, Gauker instead suggests an analysis of 'ready' which has several similarities to our proposed analysis, specifically with respect to the minimal content of 'Tipper is ready'.[24]

Finally, it is worth emphasizing that even if bare 'ready' is necessarily anaphoric (and assuming that this entails that the minimal content of 'Tipper is ready' cannot just be its existential closure), this is consistent with our view. It would only mean that 'Tipper is ready' is not "underdetermined" in any interesting way that requires an explanation based on QUDs.

4.4 *Applications: An Expansion Example*

Consider the dialogue in (23).

(23) a. **Ali.** What did you do while you were waiting for your laundry yesterday?
   b. **Barbara.** I wrote my paper.

We take it that the sentence uttered by Barbara intuitively means that she wrote her paper while waiting for her laundry yesterday. One piece of evidence for this comes from noting that subsequent denial of this proposition, as in (24), is clearly infelicitous.[25]

(24) **Ali.** What did you do while you were waiting for your laundry yesterday?
   Barbara. I wrote my paper.
   Ali. Wow, you wrote your paper while waiting for your laundry?
   Barbara. #No, I just meant that I wrote my paper yesterday.

Again, our account provides a straightforward way of explaining this.

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[23]These arguments seem convincing to us, but given their intricacy, we refer the interested reader to Gauker's paper. Further arguments against the demonstrative/pronoun view can also be found in Williams (2012).

[24]That is, to the extent that this notion is applicable to Gauker's view. In short, Gauker argues that 'Tipper is ready' is true iff there is some *relevant* event e in the context c such (a) that Tipper is ready for e and (b) for no relevant e' is it the case that Tipper is not ready for e'. Gauker is working with a rather complicated notion of context that involves sets of propositions (and which functions in a way similar to our QUDs), but his proposed view is essentially that 'Tipper is ready' expresses its existential closure but that the context narrows the domain of the quantifier.

[25]The idea that in question/answer pairs, what is said by the answer depends in a systematic way on the question was first proposed by Mandy Simons. Simons is currently developing an account of this dependency within DRT, see Simons (2015).

First, the question in (23a) determines a partition of complete answers. Each cell in this partition thus denotes at least one activity that Barbara did while waiting for her laundry. Second, we assume that the minimal proposition expressed by (23b) is just the proposition that Barbara wrote her paper at some time or other prior to the time of the context, but as in the previous examples, this is not what is intuitively expressed by Barbara's utterance. So, in order to determine what is said, we need to first determine which possible answers entail the minimal proposition. Again, only answers that unconditionally include the activity of Barbara writing her paper will entail the minimal proposition and each of those answers will be candidates for what is said. But, the weakest of these answers will clearly just be the minimal proposition expressed by (25) below. Intuitively, the correct prediction.

(25)   Barbara wrote her paper while waiting for her laundry yesterday.

We think that cases involving run-of-the-mill 'propositional wholes' fit the same general pattern. As Cappelen and Lepore also emphasize, it is difficult to imagine a sentence that could not be expanded in this way. Consider, for example, (26).

(26)   a. **Elvis**. Suppose Smith is dressed in heavy winter wear, is carrying two large bricks, and has just consumed a huge lunch. Given this, how much does he weigh?
       b. **Ashley**. He weighs 80 kg.

Parallel to the previous case, what is intuitively said by (26b) is that Smith weighs 80 kg. when dressed in heavy winter wear, carrying two large bricks, and having just consumed a huge lunch. Moreover, this content is intuitively different from the minimal proposition expressed by (26b). But, given our proposed analysis, and the reasoning used in the previous cases, these are precisely the predictions that our account makes.

This concludes the sketch of our proposed analysis of truth conditional content. Of course, since this is a rather ambitious project, there are several concerns that one might now raise. We address some of these concerns in the next section.

5   Resolving Potential Objections

5.1   *Reversed Entailment Relations*

In order to ensure that the meaning of the constituents of a given sentence *S* and their order of combination, in part, determines what is said by *S*, we introduced the minimal content constraint. This constraint is a requirement that there be a relation of entailment between the (compositional) meaning of the constituents and what is said by the sentence in context.

However, a problem seems to arise in certain types of cases. For example, recall Bach's (1994) observation that (27a) can be used to convey (27b). In contrast to Bach,

we think that an adequate account should predict that the minimal proposition expressed by (27b) could, relative to the right question, be *what is said* by (27a).

(27)   a. You're not going to die.
          b. You're not going to die from that cut.

The problem is that if what is said is required to entail the minimal content, our account predicts that in order for (27b) to be what is said by (27a), the minimal proposition expressed by (27a) must be entailed by (27b). But here the opposite seems to hold, i.e. (27a) appears to asymmetrically entail (27b), cf. Figure 11 below.

worlds where *a* does not die from that cut.
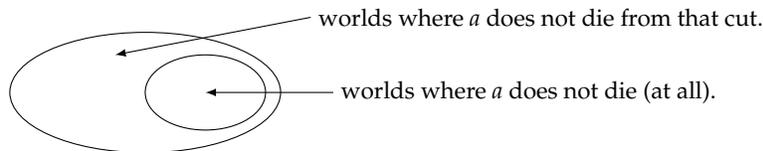
worlds where *a* does not die (at all).

Figure 11

The source of the problem in this particular case is the negation in (27a)–(27b). The negation reverses the entailment relations and, as a result, the definition of what is said makes the wrong prediction. The same problem will generally arise whenever the "underdetermined" part of the content is in the scope of a downwards entailing operator. Consider for example (28a) and (28b).

(28)   a. **Nobody** is going to die [*from that cut*].
          b. You will **never** die [*from those bruises*].

Luckily, there is a fairly natural solution to this problem. The minimal content constraint was introduced to ensure that what is said by a given sentence in context is constrained by the meaning of its constituents. Specifically, it was meant to ensure that the meaning of the constituents and what is said are suitably related. However, in cases involving downwards entailing operators, it seems that to capture that the meanings of the constituents constrain what a sentence can mean, entailment in the opposite direction is needed. So, instead of the requirement that what is said entails the minimal content, the requirement should simply be that what is said must either entail, *or be entailed by*, the minimal content.

This revised version of the minimal content constraint suffices to guarantee that there is a constraining relation between the minimal compositional meaning and what is said (in the context of both upwards and downwards entailing operators).[26] In some cases, what is said goes beyond minimal content, while in other cases, what

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[26]Notice that in the general case (cases not involving underdeterminacy), what is said will coincide with the minimal content. As a result, what is said will both entail, and be entailed by, the minimal content.

is said is circumscribed by minimal content. But in all cases, there is a strict and well defined relation between the two.

Given this revision of the minimal content constraint, the definition of what is said should be revised as follows:

WHAT IS SAID (revised)
What is said by a sentence S relative to a context c and a question q_c (where q_c is the QUD in c)is the weakest relevant proposition ϕ such that ϕ either entails or is entailed by the minimal content of S in c.

In cases where no weakest relevant proposition either entails, or is entailed by, the minimal content relative to a question q_c, *nothing is said* by that sentence relative to that question. However, in such cases, the natural reaction is to search for an alternative question that it could be used to address.

As regards (27a), let's assume that the QUD in the context is "how is a going to die?" (a being the addressee). Let's also assume that it is common ground that everyone is going to die (eventually). If so, the sentence 'you're not going to die' provides no answer to the QUD (technically, because there will be no *unique* weakest relevant proposition). Consequently, assuming cooperativity, the speaker must be addressing a different (but relevant) question, e.g. a subquestion of the QUD. In the context of a's visit to the doctor, one natural candidate is the subquestion 'Is a going to die from this cut?'. The partition of this question consists of two sets, namely a set of worlds where a dies from the cut and a set of worlds where a does not die from the cut. Neither entails the minimal content, but the latter *is entailed by* the minimal content. Since this is the only possible relevant proposition, it is trivially the weakest. Hence, what is said by (27a) in the context of the question 'Is a going to die from that cut?' is that a is not going to die from that cut. A similar explanation would work for cases such as (28a) and (28b).

5.2   Unavailable Strengthened Meanings: Possible Overgeneration

By defining what is said in terms of not only minimal content but also relative to a QUD, what is said by a sentence S in a context c can differ from the minimal content of S. For example, a sentence S with a minimal content ϕ can, relative to some QUD, be predicted to have a meaning ψ that asymmetrically entails ϕ. We think that this is an elegant strategy for capturing the meaning of putative propositional fragments, but one might worry that it overgenerates.

Consider the question in (29a) and the putative answers in (29b)–(29c).[27]

(29)   a. Is Mary awake?

     b. Someone is awake.
     c. Mary or Sue is awake.

It is, intuitively, felicitous to respond to (29a) by uttering either (29b) or (29c). Again, the immediate problem for our proposed account is that if what is said by e.g. (29b) is defined relative to (29a) — i.e. if (29b) is an answer to (29a) — we then predict that what is said by (29b) is simply *that Mary is awake*. The reason is that (29a) sets up a two-cell partition, but the minimal content of (29b) is only entailed by one of these cells, namely the 'yes'–alternative. So, the proposition expressed by the 'yes'–alternative is, trivially, the weakest relevant proposition that entails the minimal content. Consequently, what is said by (29b) is predicted to be the set of worlds where Mary is awake. The same can be shown to follow for (29c).

We contend that (29b)–(29c) are felicitous only because they are addressing a different but importantly related question. To see this, focus on (29b). First, notice that for an assertion of (29b) to be felicitous, the term in subject position must be intonationally stressed.

(30)   a. Is Mary awake?
     b. [SOMEone]$_f$ is awake.

Second, notice that an analogous intonational pattern as applied to (30c) below renders the sentence infelicitous.

(30)   a. Is Mary awake?
     c. #[MAry]$_f$ is awake.

So, if one intends to give a simple positive response to (29a), and nothing more, one cannot stress the subject term. Moreover, given question–answer congruence, i.e. the constraint that focus and *wh*-phrase must coincide (discussed in section 3.4), this seems to strongly suggest that (30b) could not be used (with that intonational pattern) to adddress (29). Instead, it is plausibly used to address a related question, namely the *wh*-question "Who is awake?". If this is correct, what is said by (29b) is simply that at every relevant world, there is at least one individual who is awake (which, in this context, are the intuitively correct truth conditions). An analogous explanation can be given mutatis mutandis for (29b).

Could this explanation also explain why (30c) is infelicitous when (30b) is not? Given a couple of independently plausible assumptions, yes. First, in order for it to be felicitous to address a different question than the question explicitly raised, the answer provided to the alternative question should not also be a complete answer

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[27]Thanks for Torfinn Huvenes for drawing our attention to this problem.

to the original question. If it was, there would be no need to both raise and address the alternative question rather than just the original question.

Second, the answer to the alternative question should be part of a strategy to answer the initial question. The reason (30c) is infelicitous is that this answer indicates that an alternative question is being addressed ("Who is awake?"), but the answer it provides to this question ("Mary is awake") is straightforwardly the positive answer to the original question ("Is Mary awake?"). Hence, there was no need to address an alternative question to begin with. In constrast, (30b) is felicitous because while it does not answer the original question ("Is Mary awake?"), it provides information that is relevant to addressing the original question. Indeed, one strategy for answering the original question (in the negative) would be to establish that no one is awake. By asserting (30b), the speaker provides information that the negative answer cannot be established in that way. So, while it is not in fact an *answer* to (29a), it is part of a strategy for answering the question.

A related problem arises with the question–answer pair below.

(31)   Are Mary and Kelly both awake?
        a. Mary is awake.

The sentence in (31a) cannot intuitively be used to assert that Mary and Kelly are *both* awake. However, asserting (31a) seems felicitous in response to (31) and so, one might think, (31a) is an answer to (31). In addition, the minimal content of (31a) is entailed by the '*yes*'-alternative to (31). So, it seems that our proposed account must predict that what is said by (31a) is just the affirmative answer to (31).

Here is an alternative explanation along the lines of the explanation above. The assertion in (31a) is not addressing the question (31), but rather the related question in (16), repeated below.

(16)   Who is awake?

Here it should be noticed that the questions in (32a) and (32b) are subquestions of (16) and that an answer to either of these questions would be part of a strategy for answering the conjunctive polar question in (31). So, it makes perfect sense to answer (16) in the context of (31) if this is also an answer to either (32a) or (32b).

(32)   a. Is Mary awake?
        b. Is Kelly awake?

And again, notice that (31a) is felicitous in response to (31) *only* when the subject term 'Mary' is intonationally stressed, viz. focused.

(33)   Are Mary and Kelly both awake?
        a. [MAry]$_f$ is awake.
        b. #Mary [is aWAKE]$_f$

Thus, given question–answer congruence, this is strong evidence that (31a) is addressing the question in (16). Relative to this question, our account predicts that what is said by (31a) is simply that Mary is awake.

5.3 Implicated Answers

Finally, we want to turn to a potential worry for our proposal concerning *implicated answers*.[28] Consider the dialogue in (34).

(34) a. **Sean.** Is Ellen ready for the interview?
      b. **Maddy.** She's been preparing for weeks.

Intuitively, (34b) is a felicitous response to (34a) and will naturally be taken to provide an indirect indication of the positive answer to the question. More specifically, (34b) is naturally seen as *implicating* that Ellen is ready for the interview, while *saying* that she has been preparing for weeks. Yet, at the same time, on our account, (34b) is not an answer to (34a), since it does not entail an evaluation of either the positive or the negative alternative of (34b).

However, even though we cannot offer a rigorous analysis of such cases here, we already have the resources to set out what we take to be a promising route for such an explanation. Arguably, the reason the response in (34b) is felicitous is that it forms part of a reasonable strategy of inquiry with respect to (34a). In particular, it is reasonable to assume that, when trying to answer (34a), it is a good strategy to address a question like (35).

(35) How long has Ellen been preparing for the interview?

The reason (35) might be seen as a way of addressing (34a) will ultimately be due to certain features of the common ground. For example, 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, while having failed to prepare is sufficient for counting as not ready, and so on.[29] Hence, given what is already common ground, when (34a) is raised as a QUD, participants may recognize that part of a good strategy of inquiry is to try to answer (35). Accordingly, we take it that (34b) is relevant, in the specific sense in which we are using this term, because it introduces and answers the question in (35) as part of a strategy of inquiry with respect to (34a).

Given that (34b) is seen as addressing (35), our account predicts that what is said is that Ellen has been preparing for the interview for weeks, which we take to

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[28]Thanks to an anonymous editor for pressing us on this problem.

[29]There will doubtless be other contexts in which the common ground has different characteristics. For example, it may not be common ground that having prepared for a long time is sufficient for counting as ready for an interview. Moreover, there may be contexts in which the speaker's and the hearer's idea of what is common ground in this regard are different. Such situations can be exploited in various ways by speakers in avoiding commitments.

be intuitively the correct result. Furthermore, by providing this answer to (35), the reply contributes to answering the original question in (34a). Hence, we explain the felicity of the response.

To be sure, it is very much an open question whether an approach of the kind we have just sketched can account for the full range of relevance implicatures.[30] But we take this to be at least a promising line of response, and we think that it highlights the fact that there might be different ways of addressing a QUD, depending on what presents itself as a good strategy of inquiry.

6   Contrasting Accounts: Differences and Advantages

6.1   *Responding to the Minimalist Challenge*

As mentioned earlier, we agree with Cappelen and Lepore's argument for the instability of Moderate Contextualism, namely their observation that Context Shifting Arguments proliferate. Correspondingly, we have argued that the truth conditions of any sentence can vary with context. This is particularly clear with regards to propositional fragments, but even propositional wholes exhibit this kind of variability.

On our view, however, the proliferation of Context Shifting Arguments is easily explained. Since the notion of what is said is question sensitive, and since there is a potentially wide range of questions that a sentence could be used to address, what is said varies with QUDs which vary with context.

Cappelen and Lepore think that embracing this type of variability leads to Radical Contextualism (viz. massive underdeterminacy and no role for truth conditional semantics), but as demonstrated this is not a consequence of our view. We avoid this consequence by assuming that truth conditional content and minimal content must stand in a strict relation of entailment. Consequently, 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. There are, in other words, strict constraints on what sentences can mean.

As regards Cappelen and Lepore's second argument, namely that there is no principled way of determining when a completion or expansion is adequate, we obviously reject this. Our account provides a perfectly principled way of determining which completions or expansions are possible. Consider again (18).

(18) a. **Mike**. The space shuttle must be able to carry 35 tons of cargo, endure extreme temperatures, and be capable of withstanding severe cyclonic dust storms. So, what material for the shuttle is sufficiently strong?
b. **Carl**. Steel is strong enough.

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[30]See Roberts (2012, 60–61) for some relevant remarks.

Intuitively, there are many issues that are in fact settled by Carl's response but also a number of additional issues that are not settled. The issues that are settled include (*i*) how much cargo can be supported by steel, (*ii*) what kind of temperatures steel can withstand, and (*iii*) how steel deals with cyclonic dust storms. These issues are settled because they form part of the question that was addressed.

In contrast, Carl's utterance is indeterminate with regards to, say, (*i*) the amount of steel needed to build the space shuttle, (*ii*) the level of pressure that the shuttle should be able to withstand, etc.

Cappelen and Lepore's challenge to Moderate Contextualists was how to provide a principled stopping point for completions — and while our account does not strictly deal in "completions", it does provide a principled stopping point as regards truth conditions going beyond minimal content, namely the content determined by the QUD.

As another example, consider again the dialogue in (21).

(21) a. **Julie.** Is Tipper ready for the interview?
  b. **Rebecca.** She's ready.

As before, several issues are not addressed by Rebecca's reply. For example, it does not settle (*i*) how long it took Tipper to prepare for the interview, (*ii*) where Tipper prepared for the interview, etc. The utterance simply fails to address such issues. As in the case of (18), the explanation is that these issues are not raised by the QUD that the utterance is responding to. Nevertheless, the truth conditional content of the reply in (21b) is predicted to go beyond that determined by the minimal content.

In conclusion, Incompleteness Arguments do not proliferate either for fragments or wholes. Since completions and expansions are determined directly by QUDs, they are also constrained by those very QUDs. Hence, it is not the case that there is no reason for regarding certain candidate completions or expansions as sufficient.

6.2 Explaining Incompleteness Intuitions — The Challenge from Moderate Contextualism

According to proponents of Moderate Contextualism, e.g. Bach (1994), there is a principled distinction between propositional fragments and propositional wholes. The former are cases of genuine semantic underdetermination and, as a result, do not have truth conditions (without completions), whereas the latter are not truth conditionally underdetermined (and consequently do not require completions).

We reject that there is such a principled distinction. In particular, we maintain that no sentence strictly requires a completion in order to express a truth evaluable proposition and that more or less any sentence can express a truth conditional content that diverges from its minimal content (given the right QUD). In this regard, our view is more in line with Radical Contextualism than Moderate Contextualism.

However, few people would contest that there is an intuitive difference between the alleged propositional fragment in (36a) and propositional whole in (36b).

(36)　a. Tipper is ready.
　　　b. Smith weighs 80 kg.

The prevailing judgment is that (36a) seems intuitively underdetermined whereas (36b) does not. Assuming a principled distinction between these sentences in terms of underdetermination allows one to explain this difference in intuitions, but without this distinction, an alternative explanation would then seem to be needed.

Instead of taking the intuitive difference to be semantic in nature, we think that it is pragmatic. As noted in the discussion of the predicate 'ready', we think that the intuition of underdeterminacy related to bare 'ready' arises from the fact that there are almost no conceivable contexts where the minimal content of bare 'ready' is the relevant one. In general, in order for it to be practically relevant to be informed that Tipper is ready, one needs to know what exactly Tipper is ready for. That Tipper is ready for *something* is close to trivial, so it is difficult to imagine how this could be practically relevant.

In contrast, it is much easier to imagine a context where the precise conditions under which Smith weighs 80kgs are not particularly important and yet the information that he weighs 80kgs is practically relevant. As a result, 'Smith weighs 80 kg.' does not seem, intuitively, underdetermined.

This is just one potential pragmatic explanation of the felt intuitive difference between alleged fragments and wholes and, granted, it is unclear how far it can be pushed. However, even if this proposed explanation does not explain the contrast between *every* putative propositional fragment and whole, this does not mean that the explanation is incorrect. There might be a variety of pragmatic reasons why certain sentences seem intuitively incomplete or underdetermined.

7　Conclusion

In conclusion, our proposed view shares certain elements with both Minimalism and Radical Contextualism, however it avoids all the bad consequences of these views, namely that truth conditional semantics is futile or that it can only play a minimal role.

We acknowledge that the account presented here is closer to a programmatic statement rather than a full-fledged theory. There are many non-trivial questions that we would need to address in order for our account to provide something truly predictive and explanatory. Yet, this would be true of any of the theories discussed above. We thus consider this a starting point for further inquiry — especially into the pragmatics underlying our view. Since questions play such a foundational role in meaning determination, better understanding of how questions can be raised and accommodated in context is vital.

A full development of the view we have sketched, on which what is said is determined relative to QUDs, will arguably be a partial vindication of the traditional goal

for a theory of meaning, namely that of providing a systematic way of associating truth-conditions with sentences that is at least constrained compositionally.[31]

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