Questions under Discussion:
From sentence to discourse[*]

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Abstract

Questions under discussion (QUD) is an analytic tool that has recently become more and more popular among linguists and language philosophers as a way to characterize how a sentence fits in its context. The idea is that each sentence in discourse addresses a (often implicit) QUD either by answering it, or by bringing up another question that can help answering that QUD. The linguistic form and the interpretation of a sentence, in turn, may depend on the QUD it addresses. The first proponents of the QUD approach (von Stutterheim & Klein, 1989; van Kuppevelt, 1995) thought of it as a general approach to the analysis of discourse structure where structural relations between sentences in a coherent discourse are understood in terms of relations between questions they address. However, the idea did not find broad application in discourse structure analysis, where theories aiming at logical discourse representations are predominantly based on the notion of coherence relations (Mann & Thompson, 1988; Hobbs, 1985; Asher & Lascarides, 2003). The problem of finding overt markers for QUDs means that they are also difficult to utilize for quantitative measures of discourse coherence (McNamara et al., 2010). At the same time QUD proved useful in the analysis of a wide range of linguistic phenomena including accentuation, discourse particles, presuppositions and implicatures. The goal of this special issue is to bring together cutting-edge research that demonstrates the success of QUD in linguistics and the need for the development of a comprehensive model of discourse coherence that incorporates the notion of QUD as its integral part.

1   Introduction

Questions under discussion (QUD) is an analytic tool that has recently become more and more popular among linguists and language philosophers as a way to characterize how a sentence fits in its context. The idea is that each sentence in discourse addresses a (often implicit) QUD either by answering it, or by bringing up another question that can help answering that QUD.

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The first proponents of the QUD approach (von Stutterheim & Klein, 1989; van Kuppevelt, 1995) thought of it as a general approach to the analysis of discourse structure where structural relations between sentences in a coherent discourse are understood in terms of relations between questions they address. For instance, according to von Stutterheim & Klein (1989) a typical structure of a narrative is given by a sequence of questions *What happened at t_1?, What happened at t_2?, What happened at t_3?*, etc., where t_1 precedes t_2, and t_2 precedes t_3. The sequence is subordinated to the overarching *quaestio* of the whole text 'What happened at t_i?'. The QUD or the quaestio was seen as a bridge between the global structure of discourse and the local characteristics of sentences, such as between the discourse topic and sentence topics in the work of van Kuppevelt (1995). At the same time QUD was adopted as a global structuring principle in semantic and computational modeling of dialogue (Ginzburg, 1996; Larsson, 2002), where, of course, the questions are often provided explicitly, and the analyst does not have to face the burden of justifying their assumptions of specific implicit QUDs to the same extent as this is needed in the analysis of monologue. The latter circumstance is probably the reason why the idea did not find broad application in the analysis of the structure of text, where theories aiming at logical discourse representations continue to be predominantly based on the notion of coherence relations (also called rhetorical or discourse relations, Mann & Thompson, 1988; Hobbs, 1985; Asher & Lascarides, 2003).

However, the concept of QUD proved useful in the analysis of a wide range of linguistic phenomena that in the general spirit of von Stutterheim and Klein and van Kuppevelt fall under the notion of local, i.e. sentence-level effects of the QUD. This includes first and foremost the information structure of the sentence, the accentuation pattern induced by the partition of the sentence into focus and background and the interpretation of focus-sensitive operators. The influential proposal of Roberts (1996), which provided both a general QUD-based approach to pragmatics and an account of focus, inspired much further theoretical work on information structure including Büring (2003) on contrastive topics and Beaver & Clark (2008) on focus particles. The intuition behind it is the same as that behind the well-known question-answer test used to detect the focus structure of a sentence. An answer to a question is appropriate only if its focused constituent corresponds to the *wh*-phrase of the question. For example, (2-a) with a nuclear pitch accent on the subject *Mary* (indicated by small caps) is an appropriate answer to (1-a), and not to the other questions in (1), and therefore the focus of (2-a) is on the subject *Mary*. Similarly, (2-b) only fits the question in (1-b) and instantiates focus on the direct object, whereas (2-c) is ambiguous between focus on *Sue* (1-c), focus on the whole VP (1-d), and broad focus on the whole sentence (1-e).

(1) a. Who introduced Bill to Sue?
     b. Who did Mary introduce to Sue?
     c. Who did Mary introduce Bill to?
     d. What did Mary do?
     e. What happened?

(2) a. MARY$_F$ introduced Bill to Sue.
     b. Mary introduced BILL$_F$ to Sue.
     c. Mary introduced Bill to [SUE]$_F$. / Mary [introduced Bill to SUE]$_F$. / ...

QUD-based approaches to information structure go one step further in claiming that one of the questions that the sentence fits given its accentuation pattern is a semantic parameter that has to be known before the compositional meaning of the sentence can be calculated. Pragmatically,

the fitted question is the question that the discourse participants are cooperatively trying to address at the current point.

Other phenomena directly or indirectly related to information structure that have been approached in terms of QUD include conversational implicatures (Zondervan et al., 2008) and not-at-issue (projective) content more generally, including presupposition and conventional implicature (Simons et al., 2010) that will be introduced in more detail in sections 2 and 3 below. Schoubye (2010) and Onea (2016) analyze the semantic effects of definite and indefinite referring expressions in terms of QUD. Finally, one should mention studies on the semantics of discourse particles and connectives, such as Umbach (2012) on the German *noch* 'yet, more', Rojas-Esponda (2014) on *überhaupt* 'generally, at all', Onea & Volodina (2011) on *nämlich* 'namely', as well as Umbach (2005), Jasinskaja & Zeevat (2008), Jasinskaja (2012) on *but* and *and*. These studies characterize the semantic contribution of those particles in terms of the relationship between the QUD addressed by the sentence or clause containing the particle and (the QUD addressed by) the previous clause, sentence or longer stretch of discourse. Since particles and connectives often reflect the coherence relations between sentences in discourse, these studies can be seen as a move away from considering purely local effects in the direction of a general QUD-based characterization of discourse coherence, to be addressed in more detail in section 4. Furthermore, there is growing experimental evidence for the relevance of QUD in discourse structuring and discourse interpretation (see e.g. Zondervan, 2009, 2010; Clifton & Frazier, 2012; Cummins & Rohde, 2015).

At the same time, the past decades have brought substantial progress in our understanding of the semantics of questions and the question-answer relationship (Hamblin, 1973; Karttunen, 1977; Groenendijk & Stokhof, 1984; Krifka, 2001; van Rooij, 2003; Groenendijk & Roelofsen, 2009). These studies provide a solid formal foundation for QUD-based theories. It is worth noting that, on the one hand, these theories analyze questions as more or less linguistically defined "templates" for possible answers (e.g. Hamblin, 1973), which underlies the notion of question-answer *congruence* and manifests itself in the question-answer test illustrated in (1)–(2) above. On the other hand, questions reflect what is *relevant* at each point in discourse and can be seen as a conceptualization for discourse goals of the speakers that stand in a systematic relation to their domain-level goals (van Rooij, 2003; Schulz & van Rooij, 2006). This makes QUD an attractive theoretical construct since it is able to connect the linguistic and the pragmatic side of discourse in a natural way.[1]

The goal of this special issue is to bring together cutting-edge research that demonstrates the success of QUD in linguistics and the need for the development of a comprehensive model of discourse coherence that incorporates the notion of QUD as its integral part. The following sections provide background for the contributions to this volume which address questions related to projection of not-at-issue content (section 2), Gricean quantity implicature (section 3) and discourse coherence (section 4).

2   QUDs and projective content

A general definition of *projective content* is difficult to provide. In a widely cited paper, Simons et al. (2010, p. 309) proposed the following definition:

> An implication projects if and only if it survives as an utterance implication when the expression that triggers the implication occurs under the syntactic scope of an

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[1] A vast bibliography on the concept of QUD and its various applications is maintained at `http://www.ling .ohio-state.edu/~croberts/QUDbib/`.

entailment-canceling operator.

This means that if O is an entailment cancelling operator, E an expression that triggers the implication that P, written $E[P]$, then content P projects from under O if the speaker is committed to the truth of P both when s/he asserts $\ldots E[P]\ldots$ and when s/he asserts $O(\ldots E[P]\ldots)$. Examples of entailment cancelling operators are epistemic modal operators, for example, 'may' and 'perhaps'. Also the antecedent of conditionals would count as an entailment cancelling position. The most widely used test for projective content, however, is based on negation: Content P *projects* from under negation '$\neg$', if the speaker is committed to the truth of P both when s/he asserts $E[P]$ and when s/he asserts its negation $\neg E[P]$. For example, in (3-a) the proposition 'Yan had made a mistake' is embedded under a belief-operator. However, neither the speaker of (3-a) nor of (3-b) is committed to the truth of this embedded proposition. Hence, it does not project. In contrast, the speaker of both (3-c) and (3-d) is committed to it. The operator *realize* triggers the *presupposition* that the embedded sentence 'Yan had made a mistake' is true, and this content projects from under the negation.

(3)   a.   Yan believed that she had made a mistake.
        b.   Yan did not believe that she had made a mistake.
        c.   Yan realized that she had made a mistake.
        d.   Yan did not realize that she had made a mistake.
        e.   ⋙ Yan had made a mistake.

Projective content does not have to be introduced by sentential phrases. A paradigmatic example are definite descriptions. In the following sentences, the description 'the secretary' *presupposes* that there exists a secretary. For all examples in (4) the speaker is committed to the existence of a secretary. Hence, this presupposition projects from under the belief-operator (4-a) and from within the sentence (4-c):

(4)   a.   Yan believed that the secretary had made a mistake.
        b.   Yan did not believe that the secretary had made a mistake.
        c.   The secretary had made a mistake.
        d.   The secretary had not made a mistake.
        e.   ⋙ There exists a secretary.

The literature on presuppositions is enormous.[2] Two major explanations offered for presuppositions and their projective behavior are the lexical account and the anaphoric account. The lexical account derives its strongest motivation from examples involving factive verbs, as e.g. realize, discover, know, regret. etc. The basic assumption is that it is a lexical property of the embedding operator whether or not embedded content projects. The anaphoric account derives its strongest motivation from examples involving definites. The assumption is here that presuppositions have to be given in common ground, and if they are not available there, they have to be accommodated.

In the context of QUDs it is important to note that questions and focus phrases are also assumed to carry presuppositions. In (5) the questions presuppose that someone came to the party, and the focus on 'John' in (6) indicates that it was common ground that someone from the alternative set to which John belongs came to the party.

(5)   a.   Who came to the party?
        b.   Who didn't come to the party?

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[2]For overviews, see, for example, Beaver (1997), Geurts (1999), van der van der Sandt (2012).

      c.   ≫ Someone came to the party.

(6)   a.   JOHN came to the party.
        b.   JOHN didn't come to the party.
        c.   ≫ Someone came to the party.

These examples can be well accounted for in an anaphoric account. There are, however, examples of projective behavior that do not fit well with the assumption that presupposed material has to be given in one way or another before the presupposing linguistic means can be used. A large class of phenomena are provided by what Potts (2005) called *conventional implicature*.[3] As Potts (2003, ex. (5)) observed, it would be inappropriate for Bush to report Clinton's utterance (7-a) as in (7-b):

(7)   a.   Clinton: The damn Republicans should be less partisan.
        b.   Bush: Clinton says the damn Republicans should be less partisan.

The reason taht (7-b) is inappropriate is that the embedded 'damn' is normally understood as expressing the speaker's, i.e. Bush's feeling towards the Republicans, and not Clinton's. The expressive content of 'damn' projects from under the verb 'say'. Only if the embedded speech is a quote can 'damn' be understood as being about Clinton's feelings. The negation test shows that the expressive content projects:

(8)   a.   Clinton: The damn Republicans shouldn't be less partisan.
        b.   Bush: Clinton didn't say that the damn Republicans should be less partisan.

In both cases, the feelings associated with 'damn' must be attributed to the speaker — except if understood as quotational.

Potts (2005) introduced the distinction between the *at-issue* content of an utterance and the *non-at-issue* content. What is at issue in (7-a) is whether the Republicans are too partisan. If someone objects to Clinton's assertion with 'No', then 'No' can only object to the at-issue content, and not to the expressive content 'the Republicans are bad'. Also in (7-a), if someone objects with 'No', then this can only refer to what Clinton said about the issue of the Republicans being too partisan, not to the inner feelings of Bush towards the Republicans. Hence, in both examples, the content contributed by 'damn' is not at issue. It has then been proposed that operators such as negation, conditionals and modals only scope over the embedded at-issue content, such that:

> Whatever does not belong to the main point — the not-at-issue content — is left out of the scope of the operator, and hence projects. (Simons et al., 2010, p. 315)

QUDs come into play by defining what is *at issue*. According to Simons et al. (2010, pp. 316f), a proposition is at-issue relative to a QUD, if it contextually entails a partial or complete answer to the QUD.

This QUD based definition of projective content has a much wider application than previous theories of projective content. It not only covers the classic instances of presupposition but also Potts's conventional implicature. For example, the sentence in (4-c) may be an answer to various QUDs, e.g. 'Who had made a mistake?', 'What had the secretary done?', or 'Had the secretary made a mistake?' However, the presupposition 'there is a secretary' answers none of these potential QUDs. Hence, there is no QUD for which it is at-issue, and, therefore, it must project.

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[3]This phrase originates from Grice (1975). Its meaning has been redefined by Potts and comprises, for example, appositives, parenthetical adverbs, and pejoratives.

A comprehensive taxonomy of projective content based on the non-at-issueness criterion was developed in Tonhauser et al. (2013).

A more difficult problem is how to apply the QUD based criterion of projection to factive and non-factive embedding verbs. In this case, it seems most natural to lexically specify for each verb whether its embedded content projects or not. **Mandy Simons, David Beaver, Craige Roberts and Judith Tonhauser** in 'The Best Question: Explaining the Projection Behavior of Factives' (this issue) address this problem. They argue against the lexical account and propose a novel account based on a distinction between the *congruent question*, which is derived from information structural properties of the sentence containing the factive verb (cf. the question–answer test in section 1), and the *discourse question*, which is the relevant QUD provided by the preceding discourse. They show that projective behavior is much more variable than should be expected given a lexical account. For example, their QUD based account can more directly explain why certain contextual knowledge can suppress projective behavior as in (9).

(9)   If Karl discovers that the sun is circled by a ninth planet, he will be famous.

A lexical account would have to assume that the proposition embedded under 'discover' first projects and then is suppressed by the fact that only eight planets are known. If (9) is an answer to the QUD 'By which achievements will Karl be made famous?', then the embedded proposition is part of the answer, and, hence, of the at-issue content. As such, it is predicted not to project.

3 QUDs and implicature

QUDs are relevant to the theory of conversational implicature in several respects. Hirschberg (1991) systematically considered question–answer pairs and showed that if the set of alternative answers is ordered by a salient partial relation, then answers can trigger quantity implicatures that behave similarly to scalar implicatures. In (10) the closeness relation between relatives is activated. B's answer implicates that no person closer to B than her husband's brother speaks Portuguese:

(10)   a.   A: Do you speak Portuguese?
        b.   B: My husband's brother does.
              implicature: B/her husband does not speak Portuguese.

The still most detailed QUD account of implicatures is that of van Kuppevelt (1996).[4] He assumes that discourse is structured by a hierarchy of explicit or implicit QUDs. The questions define the discourse and the sentence topic. Implicatures are semantically inferred from the *topic–focus* structure.[5] Van Kuppevelt assumes that implicatures are inferred if and only if the implicature trigger is part of the focused phrase. Hence, the answer in (11-a) implicates that 'Nigel does not have more than fourteen children' because *fourteen* is focused. In contrast, the answer in (11-b) implicates that 'Nigel, and nobody else, has at least fourteen children', as here *Nigel* is focused.

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[4]See Benz & Salfner (2013) for a more extensive discussion of the dependencies between QUDs and implicature.

[5]Van Kuppevelt (1996) calls it *topic–comment* structure. However, as *focus* is now commonly used for the main accent induced by the QUD, we adapted the terminology here.

(11)   a.   A: How many children does Nigel have?
               B: Nigel has fourteen$_F$ children.
        b.   A: Who has fourteen children?
               B: Nigel$_F$ has fourteen children.

As *Nigel* is not focused in (11-a), and *fourteen* is not focused in (11-b), the corresponding implicatures are only inferred for one question–answer pair but not for the other.

For van Kuppevelt, implicatures are *semantic* inferences from topic–focus structure. To account for implicature cancellation, he has to assume split focus phrases. For example, he assumes the structure 'Nigel has *five$_F$* children, *if not six$_F$*' if it is an answer to the question in (11-a). This leads us to the question of what QUDs contribute to the theory of implicature. The quantity implicatures considered so far seem to suggest that QUDs activate alternative sets, and that the alternative chosen as answer implicates that the stronger alternatives have to be negated. Moving away from quantity implicature, we can see that QUDs also play a role for relevance implicature. In the out-of-petrol-example (Grice, 1989, p. 32) the common goal of B's utterance is to solve A's problem of finding petrol for his car:

(12)   *A stands in front of his obviously immobilized car.*
        A: I am out of petrol.
        B: There is a garage round the corner.

A's assertion activates the QUD 'Where can I get petrol for my car?' B's response can be interpreted as an answer to this implicit QUD implicating that petrol is available at the garage. In this example, the QUD spells out what is relevant to A. There is no exhaustive answer expected, and, therefore, there is no implicature about other places, except that, as in Example (10), closer, and therefore more relevant alternatives are negated. For example, it follows that there is no petrol available right at the place where A and B stand and talk. This shows that questions serve two purposes: they activate alternative sets, and indicate what kind of information is contextually useful. This provides a link between pragmatic theories that infer implicature from QUDs and game and decision theoretic approaches that infer relevance implicature, as those in (12), from underlying decision problems (van Rooij, 2003; Benz, 2006; Benz & van Rooij, 2007).

If one follows the reasoning pattern underlying quantity implicatures, i.e. if one assumes that speakers maximize relevance (van Rooij, 2004; Schulz & van Rooij, 2006), then one should assume that all alternatives are false that are more relevant than the one uttered. In (12), the answer 'There is a garage round the corner' could, in principle, implicate either (A) 'There is a garage round the corner; petrol is available there', or ($\bar{A}$) 'There is a garage round the corner; no petrol is available there.' All common measures of relevance would entail that A is more relevant than $\bar{A}$, which leads to the wrong prediction with the relevance exhaustification approach (Benz, 2007). If one adds the QUD 'Where can I get petrol for my car?' to the picture, then clearly (A) is a more useful answer than ($\bar{A}$). If one assumes that B in (12) is well-informed and cooperative, then the question–answer relation should lead to the preference of (A). This shows that the usefulness of answers to the current QUD provides a better criterion for explaining relevance implicature than relevance exhaustification.

Sperber & Wilson (1995) assume that addressees are entitled to enrich the content of utterances until, at least, a certain expected level of relevance is met.[6] In this framework, all

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[6]These enrichments are contextual inferences made privately about the speaker's intended meaning. However, Sperber & Wilson do not assume that utterances have well-defined literal meanings, in contrast, for example, to Grice (1989).

kinds of implicature are derived from relevance, including quantity implicature. A long standing problem is how the notion of *relevance* can be made more precise, and, therefore, the theory of Sperber & Wilson more predictive. **Chris Cummins** in 'Contextual causes of implicature failure' (this issue) explores QUDs as a definition of *contextual relevance*. He considers, in particular, their role in implicature cancellation. For example, if A says (Q) 'For an interview, I need one person who has at least fourteen children' and then continues with one of the questions in (11-a) or (11-b), then the implicatures of answers (11-a) and (11-b) are canceled. The reason is that in both cases the unenriched answer already answers the superordinate QUD raised by Q, so that there is no need for further enrichment. Cummins contrasts the contribution of QUDs with that of form-based *priming* effects. For example, an assertion of 'I got more than 90 points' would normally raise the expectation that the speaker received fewer than 100 points. In (13), however, this expectation is suspended. This could be attributed to the re-use of previously mentioned linguistic material (90) rather than to the QUD.

(13)   A: I got 90 points.
         B: I got more than 90 points.

As Cummins points out, the QUD account is a high-level account based on principles of rationality, whereas the priming account is based on low-level cognitive processes. He carefully works out the tension between these two accounts of implicature cancellation, and discusses the problems they create for experimental studies.

4   QUD in a general model of discourse coherence

Both the increasing number of linguistic applications of the QUD idea and the development of discourse theories based on coherence relations (such as SDRT Asher & Lascarides, 2003) have led to growing interest in integrating these two approaches, or more radically, in constructing a general theory of discourse coherence taking the QUD as its most fundamental building block and deriving coherence relations from QUDs. While there have been several attempts to define a mapping between coherence relations and QUD-based structures (such as Jasinskaja, 2007; Jasinskaja & Zeevat, 2008; Onea, 2016), the work is still in progress and the endeavor is met with healthy scepticism (see especially Hunter & Abrusán, 2016).[7] It is not our goal here to recapitulate that discussion, which is still in its beginnings. Let us mention just one (perhaps the strongest) argument for the contribution of QUDs to a general theory of discourse coherence going beyond that of coherence relations.

It is interesting to note that this argument comes forward from a definition of discourse coherence formulated by Bill Mann—a co-inventor of Rhetorical Structure Theory (RST) and one of the founders of the relational approach to discourse structure:

> ... For every part of a coherent text, there is some function, some plausible reason for its presence, evident to readers, and furthermore, there is no sense that some parts are somehow missing. (Mann, RST website)

Somewhat reformulating Mann's subsequent remarks about RST, one could say that rhetorical relations capture the first aspect of discourse coherence—an evident role for every part. But

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[7]As mentioned before, one of the problems faced by a question based approach to discourse coherence is that the QUDs are mostly implicit such that they have to be inferred from context. This means also that QUDs cannot be directly used for quantitative measures of discourse coherence. For example, it cannot directly be integrated into the Coh-Metrix tool, that measures coherence on the basis of a variety of cohesion markers (Graesser et al., 2004; McNamara et al., 2010).

what about the second aspect—no parts missing? Strikingly, all theorizing about discourse has concentrated on the first aspect of discourse coherence so far. Existing formal definitions of coherence, both in relation-based (Asher & Lascarides, 2003) and in QUD-based frameworks (Ginzburg, 2012), measure it by the availability and the strength of meaningful links between utterances *as they stand*. None of them captures the intuition that the discourse in (14) as it stands, without a continuation like that in (15), sounds odd. For instance, an SDRT analysis would recognize an *Elaboration* relation between (14-b) and (14-a). Since the sentences are rhetorically connected, the discourse (14) is coherent, and just as coherent as (14) followed by (15), which constitutes another *Elaboration* of (14-a). It is hard to see how a notion of coherence based exclusively on coherence relations would capture the fact that the information about the second "thing" done by the speaker on his birthday is missing in (14).

(14)   a.   I did two things on my seventy-fifth birthday.   John Scalzi, *Old Man's War*
        b.   I visited my wife's grave.

(15)   Then I joined the army.

In order to be able to see that something is missing, one has to have a notion of what is needed, i.e. of the purpose the discourse is supposed to fulfill. As was pointed out in the introduction, QUD is one possible way to conceptualize discourse goals, or purposes. It also offers a straightforward explanation of the incompleteness of (14): Assuming that (14-a) somehow triggers the question *Which two things did the speaker do?* (Onea, 2016) the discourse is not complete until the question is fully answered, i.e. until information on "two things" is provided.

There is a growing body of research showing that different linguistic devices generate different kinds of expectations with respect to the upcoming discourse, most notably the work on the implicit causality of verbs (Garvey & Caramazza, 1974), showing that causality in the semantics of a verb affects the likelihood with which the subject or the object of that verb is referred to by a pronoun in the next sentence. More recently, this phenomenon started to be thought of in terms of expectations for upcoming coherence relations triggered by verb semantics (Kehler et al., 2008; Bott & Solstad, 2014). While it is certainly possible to enrich a theory based on coherence relations with a special forward-looking mechanism, "expectations" do not naturally fit into a standard relation-based framework. In contrast, questions under discussion express missing, expected, or needed information in the most straightforward way. The article by **Kehler and Rohde** 'Evaluating an expectation-driven QUD model of discourse interpretation' (this issue) addresses this phenomenon by comparing the distributions of expected coherence relations and questions under discussion triggered by implicit causality verbs and other semantic verb classes, and their influence on the interpretation of pronouns.

While not providing expected information can lead to infelicity in some cases, such as (14), in other cases it can give rise to pragmatic inferences, in particular Gricean scalar and exhaustivity implicatures already discussed in section 3. **Jasinskaja, Salfner and Freitag** in 'Discourse-level implicature: A case for QUD' (this issue) provide experimental evidence for the presence of exhaustivity implicatures that are difficult to explain unless one assumes that not only single sentences but also multi-sentence discourses address QUDs. The starting point of their argument is the observation that at the sentence level, the presence of a contrastive topic can indicate that the speaker has not provided a complete answer yet and there is more relevant information to come, which in turn suspends the otherwise expected exhaustivity implicature. The paper shows that some exhaustivity implicatures suspended in this way at the sentence level reappear at discourse level, which can be explained if we assume that reasoning with alternatives that leads to exhaustivity as described in section 3 also takes place at discourse level, and the discourse-level QUD provides those alternatives. This is a further argument for QUD-based

discourse structure above the sentence level.

To summarize, QUDs provide essential contextual information in a linguistic format. They have figured as an ingredient of the topic–focus distinction, the definition of utterance alternatives, the specification of relevant information, and in the definition of coherent discourse. The QUD for a given sentence in discourse tells us what the topic of the current conversation is, the answer set provides the alternatives of the given sentence, and, thereby, it also provides us with a notion of what is at-issue and not at-issue. Arguably, the notion of QUD has proved most successful in the analysis of information structure, in particular, the topic–focus distinction. However, it provides a tool for analyzing the interplay of a number of discourse structurally important notions that previously have been studied predominantly in separation.

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