

Reason questions with *comment* are expressions of an attributional search

Damien Fleury
Université Paris VII Diderot
dmnflry@gmail.com

Lucia M. Tovena
Université Paris VII Diderot
tovena@linguist.univ-paris-diderot.fr

Abstract

Expectancy disconfirmation by an unexpected event can initiate a scan of the situational information by the speaker, aiming at attributing to someone/something the cause of what happened. Questions with a sentence initial wh-item *comment* (how) in a reason reading verbalise such an exploratory behaviour that serves the speaker's adaptation in the face of failure represented by the unexpected actual or potential situation depicted in the clause. The speaker is seeking information for resolving the opposition. Expectation is a set of propositions characterising some aspects of potential worlds according to her view, and is defined as a minimal set that makes the proposition characterising the situation depicted in the clause as non contingent.

1 The issue

Expectancy disconfirmation by an unexpected event can initiate a scan of the situational information by the speaker, aiming at attributing to someone/something the cause of what happened. This is what social psychologists call an attributional search, and it appears to be one of the discourse functions that questions with the wh element *comment* (how) in French can have in a dialogue. Consider first the various readings of question (1).

- (1) Comment Max lit le courrier de Paul?
- a. Q: How is Max reading/reads Paul's mail? (manner)
A: He does it furtively.
 - b. Q: How is Max reading/reads Paul's mail? (means)
A: He does it with a remote login.
 - c. Q: How (is it that/come) Max reads Paul's mail? (reason)
A₁: He is a nosy person.
A₂: He certainly doesn't, he is so respectful.

The question in (1)—as shown by its various translations in (1a,b,c)—allows several types of interpretations that are highlighted by its taking several congruent answers. A first interpretation is enhanced by the suitable answer about manners, cf. (1a). A second interpretation is enhanced by an answer about means, cf. (1b). Both cases are characterised by a 'literal/basic' interpretation of the wh expression, if we may talk of literal meaning of wh expressions, they differ insofar as the former is typically associated with a domain that is not easily contextually restricted, hence the issue of getting an exhaustive answer looks problematic. Another interpretation is highlighted by the suitable answer about reasons, cf. (1c), and may be more easily accessible in a variant of (1) with a modal as in (2).

- (2) Comment peut-il lire le courrier de Paul? (How can he read Paul's mail?)

The case illustrated by (1c) is special from several points of view. The wh expression *comment* has a *why*-like reading that is non-literal/basic. *Comment* does not freely alternate with *pourquoi* (why), for instance it cannot be used to inquire about the motivation of the initiator of the event, e.g. Max's goals in (1). The *why*-like reading is not exclusive of French, see i.a. (Collins, 1991; Tsai, 2008; Hsiao, 2017)

about the how-why alternation. It might be a case regular polysemy (Apresjan, 1974). Considering the types of grammaticalisation often discussed, a.o. (Closs Traugott and Dasher, 2002), it might be amenable to a metaphor from manner of action to form of epistemic state, with a consequent change in the semantic type of the domain taken by the *wh* word, but this issue would deserve a study on its own. Next, *comment* is a proform for a proposition in (1c). The answer to (1c) can be positive or negative, cf. answers A_1 and A_2 to (1c). Furthermore, the question has a mention-some reading, as Max's being nosy is not the only relevant factor in the dialogical context, yet A_1 may count as a satisfactory answer.

The reason reading of questions with *comment* is the reading this paper is primarily concerned with. In order to appreciate its conversational import, it is essential to take into consideration information on the epistemic state of the speaker relatively to a matter discussed in a conversation, his expectations about it, and the point of view that he may ascribe to other participants in the dialogue. Our working hypothesis is that the main dialogical function of questions with *comment* with a reason reading is to channel an attributional search by the speaker. They are used to verbalise exploratory behaviour that may serve the speaker's adaptation in the face of failure represented by an unexpected event, or an unanticipated and unfavoured potential event. Expectations are defined as a minimal set of propositions that, from the point of view of the speaker, characterise the potential worlds in which the event does/can not hold. We look at questions where *comment* occurs sentence initially, as they are ambiguous—contra in situ occurrences—and focus on simple questions so as to better understand the core mechanism of this construction without the hindrance of island effects, and the like, that may arise from biclausal or more complex structures.

2 Some data and notions

2.1 The *wh* element *comment*

When question (1) is interpreted as being about a manner or a means, the *wh* element is used to ask about a participant in the event/situation described by the clause, or a modifier of the event. For example, (1a) and (3) ask about the manner in which the event unfolds or the state holds, e.g. (3a) illustrates an adjunct, and (3b) a subcategorised manner.

- (3) a. Q: Comment Max a-t-il couru? A: Vite
How did Max run? Fast
b. Q: Comment Max se porte-t-il? A: Bien
How is Max doing? Fine

Question (1b) asks about a means used to perform the action of reading Paul's mail, and (4) provide another example. Sometimes the distinction between manner and means readings may not be straightforward. For instance, opinions may diverge when the question (1) is congruent with an answer that is the description of a concomitant event, as with the expression *by looking at the letter against the light*.

- (4) Q: Comment sortir du palais de justice? A: Par la porte arrière
How to get out of the courthouse? Through the back door

The *wh* element *comment* can question adjuncts and arguments low in the syntactic structure, and it may be seen to bind a variable in what semantically is an open proposition. Conversely, when *comment* is interpreted as being about a reason, the *wh* element is used to question some conditions about the proposition expressed by the clause. In this case it is understood not to bind a variable low in the syntactic structure, below the IP node. The issue of whether it binds a variable and where this would be positioned can be left aside, in spite of its importance, because what is relevant for our purpose is the opposition between occurrences of a *wh* element that bind arguments and adjuncts on the one hand, and why-like expressions that look like operators on propositions on the other hand. It seems plausible to say that *comment* with a reason interpretation works as an operator, and that the rest of the sentence describes a situation. In the following, we call (pseudo) prejacent the proposition expressed by the clause the *comment* of reason operates on, borrowing the term from the literature on modality. In the cases of manner and means interpretation of *comment*, we prefer not to talk about a prejacent. The event/situation described by the clause is assumed to hold, precisely with respect to a particular value for the variable

bound by the wh element, not on its own, which is reminiscent of the debate in the literature on whether wh questions come with existential presuppositions. In the next section, we discuss about the status of the (pseudo) prejacent, and for the sake of simplicity, we drop the qualifier '(pseudo)'.

2.2 The prejacent

Once it is assumed that *comment* of reason applies to a proposition, a natural question to ask is whether such a proposition is assumed to be true or not. Another question is whether the truth is in the eye of an epistemic agent. When *comment* is used in question (1) interpreted as being about a reason, cf. (1c), the event/situation described by the prejacent *p* is not necessarily assumed to hold, for the speaker. In case it is not believed by the speaker, it is contextually relevant because the speaker ascribes to someone the belief that *p* is true. The simplest instance is one where he ascribes such a belief to his interlocutor.

Even if, as just argued, the speaker does not have to assume *p*, there are linguistic factors that contribute to influence the status of the prejacent. Passé composé is known to give rise to actuality entailments in French, compare (5) with (1). A salient reading of (5) is about the reason of the fact that Max read Paul's mail, with the prejacent as non-at-issue information conveyed by the clause with passé composé.

(5) Comment Max a lu le courrier de Paul? (How did Max read Paul's mail?)

This same reading is available for (1), but in (5) it is strongly enhanced by the passé composé form. With a different prosody, another possible interpretation of (5) is as a question about the manner of a reading event. On the contrary, the question is understood to be about the reason of an event of reading by Max that is not assumed to be true in (6) where the verb is in the conditional form.

(6) Comment Max aurait lu le courrier de Paul? (How would have Max read Paul's mail?)

There is a host of factors that make the reason reading more prominent and many seem to be related with the syntactic expression of the prejacent as a separate clause, for instance as a clausal complement under attitude or opinion verbs, or embedded under a modal, as illustrated in (2). On the contrary, the use of a second person pronoun in the prejacent makes the reason reading less accessible. A corpus study of these factors will help to clarify the situation. In this article, we mainly focus on reason questions from the speaker point of view and do not address the issue of interpretation from the addressee point of view.

Whether *p* is the case, and whether the speaker believes *p* to be the case, he perceives the prejacent as describing a fact or a potential situation contrasting with his expectations. We turn next to expectations.

2.3 About expectations

According to a widespread assumption, the Common Ground (CG) is the set of propositions that are taken for granted by a group of interlocutors in a conversation. They represent common or mutual knowledge among the participants. The Context Set is the set of worlds compatible with the common ground i.e. the intersection of all the propositions in the common ground (Stalnaker, 1979; Stalnaker, 2002). Several frameworks have been proposed for modelling dialogues. For example, it has been proposed to treat discourse as a game, with context as a scoreboard organized around the questions under discussion by the interlocutors, see i.a. (Roberts, 2012). At the moment, we have no reasons for opting in favour of one specific framework, and we leave the choice for the future. This is the backdrop that we adopt.

Against this standard backdrop, an agent may entertain an articulated view and have expectations captured by several relevant propositions. They are collected in a set called Exp, to which we refer as the expectation set or simply the expectation(s) in the following. This expectation set should contain only the propositions that are relevant for the truth of the prejacent at the time the question with *comment* is uttered. For the speaker, these propositions are those that make the prejacent *non contingent*, i.e. true in all the worlds faithful to this expectation set or false in all these worlds. In the case of reason questions with *comment*, Exp makes the prejacent false in all these worlds. For our purpose, the expectation set needs not contain all the propositions that the speaker considers true or relevant for the discussion.

The speaker's expectation has a crucial utility in the case of a question about reasons. The speaker has a judgment about the situation, and the truth of the prejacent in the situation. When he gets new information, he checks how it may affect his initial judgment about the situation and the truth of the

prejacent. A reply of a cooperative addressee provides information supposed to have an impact on the speaker's initial judgment. Such information is 'good' for him if it affects his initial judgment so as to make it compatible with the truth of the prejacent, and it is 'bad' otherwise. On the contrary, the criterion the speaker uses to decide if the new piece of information is good in questions about manner or means, is to check whether it makes the open proposition true, regardless of his expectation.

In the case of a question about reasons, the propositions in Exp can be of two types, namely propositions that are about events or states, and propositions expressing relations of dependence between the propositions of the first type. The dependence relation may arise from a cause-and-effect relationship or any other relationship—deontic, stereotypical, metaphysical, logical, etc.—that may be relevant in the context. For instance, the concept of cause and effect is used by Alonso-Ovalle and Hsieh (2017) in their analysis of the interpretation of a Tagalog ability/involuntary action verbal form, inside the Causal Premise Semantics framework (Kaufmann, 2013).

Consider (1) in a scenario where the speaker believes he knows Max and believes him to be respectful. His belief may be based on findings, be a stereotypical judgment, or a mixture of the two. In addition, the speaker expects a respectful individual to refrain from reading another person's mail. This is a stereotypical relationship between the proposition *Max est respectueux* (Max is respectful) (p_1) and *Max ne lit pas le courrier d'autrui* (Max does not read someone else's mail) (p'), thus $p_1 \rightarrow p'$.

Let's now consider a different scenario, where the speaker does not know Max, but has deontic—or even stereotypical—expectations about the conventional behaviour of every human being in the society. In this case, the expected relation is that the proposition *Max suit les conventions sociales* (Max follows the social conventions) implies the proposition *Max ne lit pas le courrier d'autrui* (p'). From a conversational point of view, the interlocutor will not have access to the grounding of this expectation, but only to the existence of an expectation that is antagonistic to the prejacent (Max reads Paul's mail). But the response of the interlocutor—or any other type of intervention in the conversation, for that matter—will have an effect on this expectation, be it its confirmation, reversal, or revision.

In short, expectations are propositions meant to characterise some aspects of potential worlds according to a specific epistemic agent. They are relevant to the analysis of *comment* questions with a reason reading because this type of question has two specific properties. First, the question is not about the truth value of the prejacent, like yes-no questions, nor is it about a participant in the situation described by the prejacent, like a standard partial question. The prejacent conveys topic information, and the reason(s) for the (potential) actualisation of the situation it describes are focussed on in the question. This yields a question where prejacent and expectation of the speaker are compared, and the comparison gets discursive relevance. Second, it is an antagonistic comparison. The question depicts the prejacent p and an expectation about such a prejacent as opposing, and the opposition is ascribed a discursive function. This particular type of question helps to communicate the fact that the speaker has an expectation that is inconsistent with the truth of the prejacent. This is independent from the actual truth value of the prejacent, and of whether the speaker knows such a value.

Let's see how to represent the opposition. Assume that the expectation of the speaker is a structured object, and has the form $\text{Exp} = \{p_1, p_2, \dots, p_n\} \cup \{q_1, q_2, \dots, q_m\}$ where the propositions p_i are attached to events or states and the propositions q_j are implications involving p_i propositions. This setup is inspired from the causal structure used in (Alonso-Ovalle and Hsieh, 2017). For our purpose, modality is not called in and the relations between propositions are not necessary causal relations.

For example, assume the speaker of (1c) has expectation $\text{Exp} = \{p_1, (p_1 \rightarrow \neg p)\}$, where $p_1 = \text{Max est respectueux}$ (Max is respectful). He expects Max to be respectful and that if Max is respectful he does not read Paul's mail. The set of propositions representing the expectation of the speaker is clearly inconsistent with the prejacent p , i.e. with the proposition *Max lit le courrier de Paul*. Inconsistency captures the opposition. Another way to capture this opposition is by writing $\bigcap(\text{Exp} \cup \{p\}) = \emptyset$, which means that there is no world faithful to the expectations of the speaker in which the prejacent is true. Note q_1 the proposition $p_1 \rightarrow \neg p$. In this simple example, q_1 involves the prejacent p . But the speaker's judgment can be more complex. Instead of expecting the truth of a specific proposition about Max, he could have a more generic expectation characterised by the proposition $q'_1 = \text{someone}$

respectful does not read someone else's mail. Proposition q'_1 involves the proposition p_1 in that we can apply it to Max, i.e. *if Max is respectful then he does not read someone else's mail.* Propositions p_i and q_j may both be existential or universal instantiations. Here, we have $p_1 = \text{respect}(m)$ where m represents Max and *respect* is the predicate such that $\text{respect}(x)$ means x is respectful, and $q'_1 = \forall x \forall y \forall z [\text{respect}(x) \wedge \text{mail}(y, z) \rightarrow \neg \text{read}(x, z)]$ where $\text{mail}(y, z)$ means that z is mail of y and $\text{read}(x, z)$ means that x reads z . When we apply q'_1 to m , we get a proposition that involves p_1 .

Expectations may evolve during a conversation. Typically, the speaker may use a reason question with *comment* and intend to modify his expectation in an effort to make sense of a prejacent p that is perceived to be true in the actual world. The sought information is likely to modify his initial judgement so as to make it consistent (or compatible) with p . The ensuing change can concern the p_i propositions and/or the q_j ones. For instance, if the new piece of information is that Max is not respectful and if the speaker accepts the truth of it, then his expectations should reflect this and be adapted accordingly.

In order to explain the mechanism for adapting expectations, we need to define a specific expectation set related to the prejacent, its inputs and outputs. What exactly happens during this processing depends on the choice of the general framework in which the mechanism is embedded. The input, here, is p'_1 (Max is not respectful) which is incompatible with p_1 (Max is respectful). As a result, p_1 is taken out, and the expectation set has to be recomputed. Alternatively, suppose the new piece of information is that Max got permission from Paul to read his mail, and the speaker accepts the truth of it. Then, the implication q_1 (i.e. $p_1 \rightarrow \neg p$) has to be taken out of his expectations. The speaker uses the more complex implication *if Max is respectful he does not read Paul's mail except if he got permission from Paul* instead. In either scenario, the prejacent is no longer incompatible with the new expectations of the speaker, and it is as if his new expectation set were empty with respect of the prejacent.

2.4 Expectations and attributions

Since (Heider, 1958), the explanations humans come up with in order to understand the causes of behaviours, actions and events, are called attributions. The background hypothesis of this paper is that reason questions with *comment* are possible linguistic expressions of attributional searches. To Heider, humans are motivated to understand others, assign causes to their actions and explain their behaviour.

Within social psychology, it has been proposed that we often attribute causality on the basis of correlations (Kelley, 1973). However, we may at times not have enough relevant information from observations, possibly multiple and at different spatio-temporal locations, to make that kind of judgment. This looks typically the case where questions with *comment* are used. Speakers are often likely to fall back on past experience and exploit causal schemata (Kelley, 1973) that allow them to look for necessary causes or sufficient causes for an observed or potential situation. First, notice that any one reason would be sufficient, and this corresponds to the preferred mention-some meaning of questions with *comment* that we pointed out in the introduction. Second, a causal schema may refer to the way a person thinks about plausible causes in relation to a given effect, and may also be understood in more general terms as the use of some rhetorical rules of thumb.

Topoi (Ducrot, 1988; Anscombe, 1995; Breitholtz, 2010; Schlöder et al., 2016) look like suitable instances of such schemata. For example, we can assume a topos relating some social behaviour—e.g. not invading someone's private space like the content of email and social accounts, etc.—with the attribution of some internal characteristics, e.g. being respectful, or with some external attribution, e.g. being confined to a prison institute. A set of topoi, called in on demand, could capture knowledge that helps to define the space of plausible answers, without forcing logical consistency on the speaker, nor mutual acceptance between dialogue participants. Although q_j relations in the expectation set are expressed as logical implications, it may be that they are not logical from the view of the speaker, but rely on other language resources such as topoi. Furthermore, the worlds faithful to these relations may be determined by means of topoi in addition to the propositions of the expectation set.

3 A detailed discussion of example (1) with reading (1c) and answer A₁

In this section, we are going to discuss in detail the example (1) with reading (1c) and answer A₁. We first present how expectations are used when computing the meaning of the question, and next discuss some discourse functions of the question.

3.1 Expectations in action

In order to illustrate how the expectations of the speaker contribute to the meaning of a reason question with *comment*, and how these expectations may evolve during the discourse, let us consider the dialogue in (7) where speaker A is aware that Max read Paul's mail. By 'aware' we mean that either someone told the speaker that Max read Paul's mail or the speaker saw (or thinks he saw) Max reading Paul's mail.

- (7) a. A : Comment Max lit le courrier de Paul? (reason)
 How (is it that/come) Max reads Paul's mail?
 b. B : Max est trop curieux (Max is ways too curious)
 c. A : Ce n'est pas une raison (That's no reason)
 d. A : Non, c'est faux (No, that is false)
 e. A : Dans ce cas, je comprends mieux (Then, I have a better understanding)

Let's assume that the speaker expects that Max is respectful (p_1) and that if Max is respectful then he doesn't read the mail of others, in this situation Paul's. The expectation set of the speaker, at the time of uttering the reason question (7a), is: $\text{Exp} = \{p_1, p_1 \rightarrow \neg p\}$. From Exp , we define a partition on possible worlds W , along the lines of (von Stechow and Gillies, 2010). If p_1, \dots, p_n , are propositions in Exp , we define a partition S_{Exp} as follows.

- i) $S_0 = W \times W$ (universal relation on W)
- ii) $S[p] = \{ \langle w, v \rangle \in S : w \in p \text{ iff } v \in p \}$ (S a partition on W and p a proposition)
- iii) $S_{\text{Exp}} = S_0[p_1] \dots [p_n]$
- iv) A proposition q is an issue in the partition S if and only if $S[q] = S$

In this example, we have : $S_{\text{Exp}} = S_0[p_1][p_1 \rightarrow \neg p]$. There are three equivalence classes, $p \wedge p_1$, $\neg p \wedge p_1$ and $\neg p_1$. In Figure 1, the expectation p_1 is represented by a hatched area, and the expectation $p_1 \rightarrow \neg p$ by a grey area. The intersection of these two areas is $\bigcap \text{Exp}$, that is $\neg p \wedge p_1$.

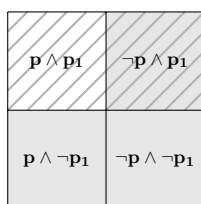


Figure 1: $\text{Exp} = \{p_1, p_1 \rightarrow \neg p\}$

$\text{Exp} = \{p_1, p_1 \rightarrow \neg p\}$ is incompatible with the prejacent p (Max reads Paul's mail) because p turns out to be false in all the worlds faithful to this expectation set, i.e. is incompatible with the intersection $\bigcap \text{Exp} = \neg p \wedge p_1$. The speaker is looking for new information able to change his expectations into a new expectation set Exp' , i.e. $\bigcap \text{Exp}'$, compatible with the prejacent.

By answering (7b), the addressee B brings new information into the conversation, namely that Max is ways too curious (p_3). Then, the speaker can refuse the relevance of this new piece of information and answer (7c). Or, if he accepts the relevance of p_3 , he has to recompute his expectations no matter what he thinks about the truth of p_3 . First, the speaker settles the relations between p_3 and the propositions in Exp . For instance, he thinks that if Max is ways too curious (p_3) then he is not respectful anymore ($p_3 \rightarrow \neg p_1$), and if Max is not so curious then he is still respectful ($\neg p_3 \rightarrow p_1$), that is $p_3 \leftrightarrow \neg p_1$.

Moreover, he thinks that $p_1 \rightarrow \neg p$ holds in anycase. In Figure 2, $p_3 \leftrightarrow \neg p_1$ corresponds to the hatched area, and $p_1 \rightarrow \neg p$ to the grey area. The new expectation set is $\text{Exp}' = \{p_3 \leftrightarrow \neg p_1, p_1 \rightarrow \neg p\}$ and the intersection of this new expectation set is $\bigcap \text{Exp}' = (\neg p_1 \wedge p_3) \vee (\neg p \wedge p_1 \wedge \neg p_3)$. Then the prejacent p is compatible with this new expectation set. For instance, we can have $\neg p_1 \wedge p_3 \wedge p$ (w_0 in Figure 2).

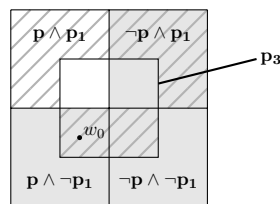


Figure 2: $\text{Exp}' = \{p_3 \leftrightarrow \neg p_1, p_1 \rightarrow \neg p\}$

Now, if the speaker does not accept the truth of answer (7b), he could utter (7d). Then, $\neg p_3$ is a new piece of information to compute with Exp' . We get $\text{Exp}'' = \{p_3 \leftrightarrow \neg p_1, p_1 \rightarrow \neg p, \neg p_3\}$ and $\bigcap \text{Exp}'' = \neg p \wedge p_1 \wedge \neg p_3$, and the prejacent p is incompatible with Exp'' . On the contrary, if the speaker accepts the truth of answer (7b), he could utter (7e). Then, p_3 is a new piece of information to compute with Exp' . We get $\text{Exp}''' = \{p_3 \leftrightarrow \neg p_1, p_1 \rightarrow \neg p, p_3\}$ and $\bigcap \text{Exp}''' = \neg p_1 \wedge p_3$. In this case, the prejacent p is compatible with the new expectation set Exp''' . Figure 3 represents expectation Exp , which is incompatible with the prejacent p , and the two expectations Exp' and Exp''' , compatible with p . In expectation Exp' , the speaker accepts the relevance of the proposition p_3 , but does not know if it is true or false. In expectation Exp''' , he accepts the relevance of the proposition p_3 and its truth. Dark grey areas in Figure 3 correspond to the intersections $\bigcap \text{Exp}$, $\bigcap \text{Exp}'$ and $\bigcap \text{Exp}'''$ of the expectation sets.

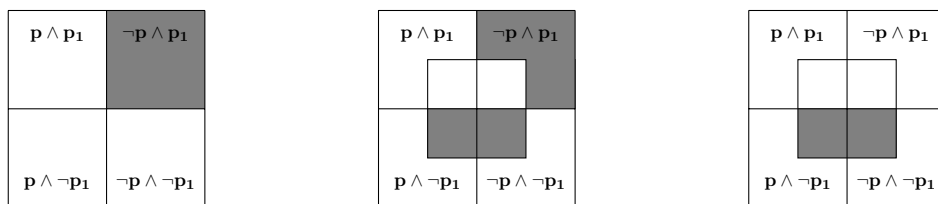


Figure 3: $\bigcap \text{Exp}$, $\bigcap \text{Exp}'$ and $\bigcap \text{Exp}'''$

In Figure 3, we see that the new piece of information p_3 is able to change the judgment of the speaker about the truth on some cells of the partition S_{Exp} such that the prejacent becomes contingent, i.e. true or false, in the intersection of the new expectation set Exp' or Exp''' . A particular case, not addressed here, would be one where the prejacent becomes necessarily true in this intersection. Example (7) shows a particular kind of revision that allows the speaker to move from an initial expectation set Exp to a new one Exp' . More investigation would be necessary to characterise all the possible revisions. (Gärdenfors, 1992b; Gärdenfors, 1992a) proposes rationality postulates for revisions.

Let us return to the relevance of a proposition with respect to an expectation set $\text{Exp} = \{p_1, \dots, p_n\}$. A new piece of information q will be called *relevant* with respect to Exp if q changes the judgment of the speaker. In this way, $p_i \wedge q$ or $p_i \wedge \neg q$ becomes false for his judgment (whereas p_i was true in the initial judgment) and/or $\neg p_i \wedge q$ or $\neg p_i \wedge \neg q$ becomes true for his judgment (whereas $\neg p_i$ was false in the initial judgment), for at least an i in $\{p_1, \dots, p_n\}$. If the new piece of information q is not relevant, then the new judgment on the cells of $S_{\text{Exp}[q]}$ is the same as the initial judgment on the cells of S_{Exp} , regardless of whether q is an issue in S_{Exp} or not. Then q does not define a new expectation set. If relevant, the new piece of information gives rise to a new expectation, but not necessarily compatible with the prejacent p . The expectation set Exp is defined as a set of expectations incompatible with the prejacent p , which is *minimal*, in that the speaker is not aware of any additional piece of information q relevant with respect to Exp . In view of the mismatch between his expectations and the prejacent, the speaker looks for relevant information able to define a new expectation set compatible with the prejacent. We have focused here on the specific search triggered by the question with *comment* rather than a complete system of reasoning.

3.2 On discourse functions of reason questions with *comment*

When the speaker utters a reason question with *comment*, he gives the addressee some information about his epistemic state regarding the truth of the prejacent, i.e. that the prejacent (either true or not) is incompatible with his expectations, thus $\bigcap(\text{Exp} \cup \{p\}) = \emptyset$. Moreover, clues such as prosody, lexical or grammatical elements, give the addressee further information about the epistemic state of the speaker, that is whether he seeks new information about the situation in order to revise his initial judgment.

Let us start with the case of a reason question with *comment* used for seeking information. The speaker seeks information likely to modify Exp so as to make it compatible with p . When the addressee gives the speaker some new information, the speaker can either accept the truth of it or reject it. If he accepts the truth of it, then he uses it to revise his initial expectations in a unique way. Note τ_r the function from sets of propositions to sets of propositions that takes the initial expectation set of the speaker and returns the new expectation set revised by the speaker with respect to the new piece of information r . The speaker seeks some new information r such that $\tau_r(\text{Exp})$ is compatible with the prejacent p , i.e. $\bigcap(\tau_r(\text{Exp}) \cup \{p\}) \neq \emptyset$. However, although the speaker accepts the truth of the new piece of information, it does not follow that he definitely adapts his initial expectations into a new expectation set compatible with the prejacent p . For instance, suppose the speaker accepts the truth of the prejacent p (Max read Paul's mail), but has the expectation that Max does not read Paul's mail because of the nature of Max (Max is respectful), and because of a deontic reason (if Max is respectful, the speaker expects him not to read Paul's mail). When the addressee answers something like *Max found out the password of Paul*, in the eye of the speaker, this circumstantial reason may not transform his initial deontic expectations into new expectations compatible with the prejacent p .

Consider next the use of a reason question with *comment* that does not seek information. This is the case where the speaker thinks that there is no reason that can make his expectations compatible with the prejacent. Therefore, he challenges the addressee to find any such reason, i.e. $\forall r[\bigcap(\tau_r(\text{Exp}) \cup \{p\}) = \emptyset]$. Using the question with *comment* is a way for the speaker to let the addressee know his epistemic state about his expectations, to put the burden of the proof on the addressee, and eventually to force him to accept that there is no such reason. Two subcases have to be distinguished where no reason is able to make the new expectation set compatible with the prejacent. We note $f(p) = p$ if p is true, and $f(p) = \neg p$ if p is false. In the first subcase the speaker presupposes that the prejacent is true, $f(p) = p$, and that this situation is not compatible with his expectations, $\bigcap(\text{Exp} \cup \{f(p)\}) = \emptyset$. In the example (1c), the epistemic state of the speaker is that the situation where Max reads Paul's mail (if it is true) is unacceptable or deontically impossible. Otherwise, and this is the second subcase, the speaker does not presuppose that the prejacent is true, but that the situation is (must be) compatible with his expectations, $\bigcap(\text{Exp} \cup \{f(p)\}) \neq \emptyset$. Here, the only way to have a situation compatible with the initial expectations of the speaker is that the prejacent is false, $f(p) = \neg p$. In either subcase, the speaker endeavours to communicate this epistemic state about the truth of the prejacent and his expectations, and he does not seek new information. It may be hard to see the difference between these two subcases for the addressee. They could both go under the header of *rhetorical uses of comment* questions. However, despite being intuitively appealing, this qualification is of rather little help because there is no agreement on its content across linguists, when the content is spelled out. Let's recall that rhetorical questions i) are viewed as not interrogative anymore, but rather as assertions of opposite polarity (Sadock, 1971; Han, 2002); ii) are said to have biased answers that belong in the CG (Caponigro and Sprouse, 2007), or iii) to have obvious particular answers that imply the bias of an assertion (Rohde, 2006). No matter which option is taken, it is crucial to work out the details of the cases, which is what we have strived for in this section.

4 Concluding remarks

The working hypothesis developed in this paper is that the main dialogical function of questions with a sentence initial *comment* in their reason reading is to channel an attributional search by the speaker.

These questions verbalise the speaker's attempt to adapt—in the face of failure represented by an unexpected event—by attributing to someone/something the cause of what happened or is perceived as impending. They are not about the truth value of its descriptive content (call it prejacent), like yes-no

questions, nor about an entity, like a partial question. The prejacent conveys topic information, and the focus is on the reason(s) for the (potential) situation described by the prejacent. The reasoning goes from a situation to its potential preconditions, rather than to its results.

The expectation of the speaker is a minimal set of propositions that make the prejacent non contingent. The speaker communicates that his expectation is inconsistent with the truth of the prejacent, and seeks information for resolving the antagonism. The status of the prejacent is not fixed, it may characterise actual or potential situations. The speaker's stance also may vary, as he may accept the truth of the prejacent or reject it. We go through different cases in the text, including the case where the speaker shifts on the addressee the burden of the proof, which is reminiscent of wh questions called rhetorical in the literature.

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