A QUESTION OF COMMITMENT*

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Abstract
This paper addresses certain restrictions on the use of declaratives as questions in English. Declaratives are taken to express commitment by the speaker, even in a questioning use. The analysis traces the restrictions to two distinct contextual factors: (i) a general principle requiring that a commitment have a recognized *source*, i.e., a discourse agent who plausibly has independent evidence supporting the content committed to; (ii) specific to a questioning interpretation, the need for the context to support the inference that the speaker's commitment depends upon the addressee's anticipated confirmation. Rising intonation contributes a very general element of meaning, indicating that the utterance it marks is *contingent* upon some discourse condition obtaining; the specific conditions required for a questioning interpretation instantiate one such type of contingency. The proposals are modeled via elaboration of standard contextual structures in a possible-worlds framework.

1. Introduction

Consider the three sentences in (1):

(1) a. Is the server down? *Polar interrogative*
b. The server's down? *Rising declarative*
c. The server's down. *Falling declarative*

In English, the polar interrogative in (1a) is the prototypical form for asking a yes/no question. (1c) is a declarative with falling intonation, the canonical device for making a statement. Rising intonation, indicated by the question mark in (1b), renders the declarative superficially similar in effect to a polar interrogative:

(2) a. The server's down? ≈ Is the server down?
b. You ate lunch already? ≈ Did you eat lunch already?

However, the distribution of declaratives as questions is considerably more restricted than that of interrogatives (Bartels 1997; Gunlogson 2003). In this paper I will be concerned with a particular restriction on declarative questions: they are awkward 'out of the blue', with no contextual setup, as in (3):

(3) [to coworker eating a piece of fruit]
a. Is that a persimmon?
b. #That's a persimmon?
c. #That's a persimmon.

Notice that this awkwardness does not extend to the interrogative in (3a).

My primary concern is with restrictions on declarative questions, including but not limited to the sort exemplified by (3). I concentrate on the domain of what I will call *initiating* declarative questions (IDQs for short), those that are either discourse-initial or whose content is not directly related to the content of a preceding utterance. After presenting the basic data in Section 2, I turn to the central claim of the paper in section 3 that declaratives, both rising and falling, express speaker commitment. Commitment is modeled in terms of its effect on the discourse context, and a contextual structure tracking individual discourse commitments is proposed.

I argue that distributional restrictions on declarative questions are due to two distinct conditions on use, both ultimately rooted in the declarative's expression of commitment. The first is that a speaker making a commitment is expected to have some basis for doing so, even in a questioning use. I motivate and develop this proposal through an expansion of the contextual structure in Section 4 to incorporate the notion of *sources* for commitments. A principle specifying that commitments have sources is shown to account for one class of restrictions on IDQs in Section 4.4.

Section 5 introduces and develops the notion of *contingent commitment*, a central notion in the account of the questioning use of declaratives. Contingent commitment figures in the account of the remaining restrictions as well as the proposed effect of rising intonation. Finally, the concluding remarks in Section 6 summarize the results, comment on the relation to previous proposals, and speculate about the extension of the analysis to 'echo' and other uses of declarative questions.

2. Restrictions on declarative questions

2.1 Beyond bias

Declarative questions occur, with few exceptions, in a proper subset of the contexts that support interrogatives with the same descriptive content. In part the broader distribution of interrogatives is due to the fact that they, unlike declaratives, can be neutral as to the answer expected. This difference is brought out in contexts where the questioner is expected to maintain neutrality, as in (4) below:

(4) [in a job interview or on an application form]
a. Have you been convicted of a felony?
b. #You've been convicted of a felony?
c. #You've been convicted of a felony.

Unlike (4a), (4b-c) suggest, inappropriately for the circumstances, that the speaker is confirming the felony conviction rather than inquiring about its existence. Whether or not falling declaratives can be 'questions' in the same sense that rising declaratives can be is an issue deferred to Section 5. Until then the important point is that they pattern with, and are at least as restricted as, rising declarative 'questions'. More examples of the non-neutral character of declaratives, and limitations on their use as questions, can be found in Gunlogson (2003).

Declarative questions pattern in some respects with other types of interrogatives widely recognized as 'biased' or, using Bolinger's (1957) term, *conducive* to a particular answer. Other examples of biased question forms in English include negative polar interrogatives and tag questions. Unsurprisingly, these forms are also inappropriate in circumstances requiring neutrality:

(5) [in a job interview or on an application form]
a. #Haven't you been convicted of a felony?
b. #You've been convicted of a felony, haven't you?[1]

But declarative questions exhibit an additional set of restrictions not shared by the biased types shown in (5). As noted above, they are awkward 'out of the blue', with no contextual setup, as in (6) below:

(6) [Gina to her officemate Harry]
a. Is the weather supposed to be good this weekend?
b. #The weather's supposed to be good this weekend?
c. #The weather's supposed to be good this weekend.

The interrogative in (6a) is not subject to this difficulty; a syntactically interrogative question, unlike a declarative one, can be asked 'by the way'. (6c) can perhaps be offered as a remark out of the blue, but does not function as a question.

Bias *per se* does not appear to be the problem with (6) either. Unlike the inquiry about felony convictions in (4), there is nothing about the situation that precludes as inappropriate the speaker's hypothesis about weather predictions. (7) confirms this point by illustrating that other types of biased questions are fine in the same circumstances:

(7) [Gina to her officemate Harry]
a. Isn't the weather supposed to be good this weekend?
b. The weather's supposed to be good this weekend, isn't it?

Nor does the problem reduce to the absence of a preceding utterance. Though rising declaratives have often been characterized as 'echo questions', recapitulating the content of a previous utterance, a number of observers (e.g. Noh 1998; Bartels 1997) have pointed out that a preceding utterance is not always necessary. (8) demonstrates this:

(8) [Laura has just entered the room, where Max sees her for the first time that day.] Max:
a. Did you get a haircut?
b. You got a haircut?
c. You got a haircut.

The felicity of the declaratives in (8), contrasting with their status in (6), suggests that the context and/or content of (8) supplies an essential element for interpretation of declaratives as questions, an element lacking in (6).

The contrast between (9) and (10) seems to point to contextual factors as well:

(9) [Robin is sitting in a windowless computer room with no information about current weather conditions when another person enters from outdoors.] Robin to newcomer:
a. Is it raining?
b. #It's raining?
c. #It's raining.

(10) [Robin is sitting, as before, in a windowless computer room when another person enters. The newcomer is wearing a wet raincoat and boots.] Robin to newcomer:
a. Is it raining?
b. It's raining?
c. (I see that/So/Oh) It's raining.

Judging from (9)-(10), the declaratives are felicitous when there is evidence available in the discourse context favoring the proposition expressed, a condition met by (10) in the form of the wet raingear but violated by the more neutral context of (9). This is unexpected. Speakers might be expected to have evidence for what they 'say', perhaps even when offering it as a question, but such evidence can normally remain private – it does not have to be displayed in the context.

The existence of a contextual evidence condition on declarative questions was argued for in Gunlogson (2003) and shaped the analysis offered there.

However, as Poschmann (this volume) points out, there are serious difficulties for that position. The felicity of the declaratives in (11) (adapted from Poschmann, this volume) and (12) (from Beun 2000) argues against a contextual evidence requirement. In (11), there is no particular evidence that the woman standing next to Tim is his mother. All three versions of Jack's utterance do convey that he has some reason to suspect the woman is Tim's mother. But though the basis for Jack's conjecture *might* be partly or entirely contextual (Sophie's proximity to Tim, say, together with the favorable odds of encountering a parent at graduation), the declaratives seem to work without requiring us to make that assumption.

(11) [At Tim's graduation, where Tim is standing next to an older woman.]
Jack to Sophie:
a. Are you Tim's mother?
b. You're Tim's mother?
c. [So/I guess] You're Tim's mother.

(12) Agent: Schiphol Information
Caller: Hello, this is G.M. I have to go to Helsinki, from Amsterdam. Can you tell me which flights leave next Sunday?
Agent: Just a moment.
Agent: Yes, there are several flights. One leaves at 9.10, one at 11.10, and one at 17.30.
Caller: The flight takes about three hours?[2]

As for (12), the caller is clearly consulting his memory, not drawing an inference from contextual evidence, which is not available in the situation in any case. The relative ease with which declaratives can be used in (11)-(12) makes the infelicitous cases all the more puzzling.

A further puzzle concerns the status of the falling declaratives in (10) and (11), which are considerably better when accompanied by one of the markers shown in parentheses, all of which tend to suggest that the speaker has just used the contextual evidence to infer the conclusion expressed by the declarative. Why should such a marker be necessary, and why is it apparently unnecessary in (8)?

Returning to (3) and (6), the problems seem to be different again. (6c) is fine for providing information but not for requesting; for (6a) the reverse holds; and (6b) is not clearly in either camp. Note that providing contextual evidence of *future* weather conditions is not as straightforward as adding the wet raingear in (9). (3) is perhaps the most puzzling case of all. There is no apparent reason why the questioner should not have a hypothesis about the name of the fruit, and little in the way of evidence that could be added, short of the name itself.

Summing up so far, there seems to be a lack of uniformity across these examples. Declaratives make poor initiating questions in (3), (6), and (9). The felicitous variation in (10) seemed to require that there be some supporting

evidence available to the speaker, not just privately but openly, in the discourse context. However, no such requirement appears to hold in (11)-(12), where the speaker is free to draw on private knowledge in forming the hypothesis expressed by the declaratives. In addition, falling declaratives in (10) and (11) are awkward in the absence of inferential markers, while in (8) and (12) they require no such support.

I will argue that two distinct generalizations underlie the patterns shown above. In Section 4, after developing a principle requiring sources for commitment, I will show that while the contrast between (9) and (10) can indeed be traced to contextual evidence, there is no reason to expect this requirement to apply in general. The remaining examples are addressed throughout the discussion in Section 5, where I propose that the remaining restrictions, as well as differences between rising and falling declaratives, reflect the need for a significant contribution from the context if a declarative is to be interpretable as a question.

2.2 You ever notice any counterexamples?

In assessing the claims I make here about distributional restrictions, a cautionary note is in order regarding potential confusion between elliptical polar interrogatives and declarative questions. The existence of robust restrictions on declarative questions is sometimes doubted because of apparent counterexamples like the following:

(13) a. [to coworker eating a piece of fruit] That a persimmon?
b. You (ever) tried complaining to the supervisor?
c. They report (any) problems?
d. You know if Katya has left?

The questions in (13) can occur more freely than the observations of the preceding section would lead us to expect. But are they declarative? In casual speech, the fronted auxiliary of a polar interrogative can be elided, as shown in (14):

(14) a. ~~Is~~ that a persimmon?
b. ~~Have~~ you (ever) tried complaining to the supervisor?
c. ~~Did~~ they report (any) problems?
d. ~~Do~~ you know if Katya has left?

The subject can be elided as well, particularly if 2nd person, but the versions with overt subjects and an elided auxiliary are the ones that are often string-identical to declaratives and therefore tend to cause trouble. In principle the two forms are distinct – declaratives have a tensed verb after the subject, while the

tensed verb in an interrogative is the fronted auxiliary. The problem in practice is that tensed and untensed forms are often non-distinct in English.

Polarity sensitive items such as *ever* and *any* provide a diagnostic, since only interrogatives support such items (Hirst 1983; Huddleston 1994). The ungrammatical declaratives in (15), with unambiguously finite non-fronted auxiliaries, illustrate the point:

(15) a. *You've ever tried complaining to the supervisor?
b. *They've reported any problems?

In light of the systematic ambiguity demonstrated above, a reliable investigation of the limitations on declarative questions must be careful to avoid elided forms that are interpretable as interrogatives, since the availability of such interpretation can obscure the behavior of a true declarative in the same context. This is particularly a danger because elliptical forms, like declarative questions, are common in casual conversation, where they frequently feature (implicit or explicit) 2nd person subjects with present tense, as in (13d). Such forms are avoided throughout this paper.

3. Commitment

3.1 The contextual effect of declaratives

I begin with the basic idea of a *discourse commitment slate* (following Hamblin 1971), a set of propositions representing the positions taken by an agent (i.e., participant) in the discourse. I assume a possible-world semantics in which a proposition is construed as a set of worlds, those worlds in which it is true. Using such a framework, the content of a commitment slate can also be described in terms of possible worlds: it is that set of worlds in which all of the listed propositions are true. We are going to term this the *commitment set* (*cs*) of an agent. The commitment set is similar in many respects to Stalnaker's (1978) notion of a context set, with the significant difference that commitment sets are relativized to individuals. The commitment set for each individual can be obtained by intersecting all of the propositions (i.e., all the sets of worlds) on that individual's slate. Or, alternatively and equivalently, the commitment set can be taken as the basic representation, the same kind of thing as a proposition:

(16) $cs_{\alpha,d}$ = { w ∈ W:[3] all discourse commitments of agent α in discourse d are true in w }

I will adopt the commitment set approach consistently for definitions, although it remains convenient at times to speak in terms of 'adding commitments'. Note that *adding* a new commitment corresponds to *eliminating* worlds from the

commitment set, the worlds in which the new proposition is not true. Since an agent's discourse state (as characterized by the commitment set) changes over the course of the conversation, the cs is understood as representing the agent's state at a particular point in the discourse.

We can represent the overall state of the discourse at a particular time, or the discourse *context*, with a tuple collecting the individual commitment sets, as shown in (17) (where capital *C* stands for 'context'):

(17) $C_d = < cs_\alpha, cs_\beta \ldots >$

For simplicity I will assume just two agents throughout.

Strictly speaking, each agent should have their own version of the overall discourse structure, i.e., there should be one structure like (17) per agent. I follow common practice in idealizing away from that level of representation for present purposes, assuming that the agents' individual representations of the context do not differ substantially enough to impede the progress of the discourse. The assumption is admittedly unrealistic, but the simplification will ease the presentation of proposed additions to the context structure. Thus I will speak of *the* discourse context, rather than each agent's version of it.

Committing to the proposition φ can be represented as an operation restricting an individual cs so that it contains only 'φ-worlds', i.e., worlds in which φ holds. Put another way, the operation will eliminate from the targeted cs all the worlds in which φ does *not* hold. For example, if the proposition is *it's raining in Amsterdam*, the update will eliminate from cs all the worlds in which rain is not falling in Amsterdam, leaving a set of worlds that have in common the rainy conditions in Amsterdam, though they differ in other respects.

This update operation corresponds to commitment, the basic meaning I propose for a root-clause declarative sentence (N.B.: declarative sentence, not assertion). Assuming that **.*φ*** represents a sentence with propositional content φ, I take the declarative operator represented by **.** to be a function updating a commitment set by intersecting it with φ, as just described. The effect of **.φ** on a cs is thus a new version of the cs – cs' – which contains only φ-worlds:

(18) $cs' = cs \cap \varphi$

Since the function operates on an individual cs, only one agent's cs is affected. I assume that the matter of whose cs is to be operated on is determined at time of utterance, with the default being the speaker's.

An update is expected to be consistent. That is, we do not expect the intersection operation to result in the empty set, ∅. If it does, the dialogue (for that agent, at least) is at a standstill, since any further intersections with the cs will continue to yield only the empty set. The empty set is the outcome if an agent commits to a proposition inconsistent with previous commitments. (That is, if an agent has previously restricted the cs to 'φ-worlds' by committing to φ,

then any intersection with worlds where φ does not hold is bound to be empty.) Following general practice, I assume a general rule prohibiting updates resulting in an empty cs.

Making a discourse commitment so far simply involves the carrying out of the designated operation on the appropriate individual commitment set. This bookkeeping operation by itself does not seem to shed much light on the nature of commitment. But in fact there are important assumptions built into the notion of the commitment set and the type of operations it is subject to, as follows. I take it to be a defining characteristic of discourse commitments that they carry forward into the future of the discourse, constraining the choices open to the committing agent. The fundamental constraint is the requirement of consistency. If an agent has committed to a position φ, say for example that Lake Superior is the largest of the Great Lakes, then that agent would (ordinarily) cause consternation if she subsequently proposes to commit to Lake Superior *not* being the largest Great Lake, however that is expressed. Of course, discourse agents can revise and retract, especially in light of new information, but the claim here is simply that making a discourse commitment to φ sets up a future for the discourse where taking a position inconsistent with φ is not to be expected.[4] One does not simultaneously hold discourse commitments to two propositions recognized to be inconsistent with each other; when revisions are called for, at least one of the conflicting propositions must be withdrawn.

The idea that discourse commitments carry forward into the future is expressed implicitly in representing an agent's state as a structure that is operated on incrementally, without obliterating the effects of previous operations. It is perhaps easiest to think about this point in terms of adding propositions to a commitment slate. What's important is that the operation leaves in place the propositions already listed. In commitment set terms, where the effect of adding commitments is elimination of worlds from the set, the counterpart to addition is intersection; the worlds already eliminated stay eliminated. The point here is quite simple and intuitive: a discourse commitment, once made by an agent, becomes a fixture of that agent's state – it persists, and subsequent commitments do not (barring revision) affect its status.[5]

As a reminder of where we are so far, nothing said in this section distinguishes the effects of rising vs. falling declaratives. The proposal of this section applies equally to both: declaratives express commitment, whether they rise or fall.

3.2 Implicit commitments

The proposal so far is that ordinarily, a speaker using a declarative sentence makes a discourse commitment to its content, with the effect of updating her commitment set in the manner outlined above. But declarative utterances are not the only way to make discourse commitments; commitments can arise in other ways as well, and need not correspond to an explicit utterance. I assume, for

example, that an agent will ordinarily be *implicitly* committed to entailments, presuppositions, and (non-cancelled) implicatures of her explicit commitments. The usual sort of background knowledge and assumptions agents bring to the discourse will, in a factual discourse at least, constitute implicit discourse commitments. Events occurring in the discourse context, such as a newcomer in a wet raincoat entering the room, give rise to implicit commitments concerning the event itself and possibly inferences drawn from its properties. In a broader sense, anything an agent publicly treats as true for the purposes of the discourse will qualify as a commitment. By 'public' I mean in the discourse context, available to both agents. Every agent will have many epistemic/doxastic commitments whose existence and nature are not accessible to other agents and which are therefore 'private', i.e., not part of the discourse context.

In addition to the kinds of implicit commitment already mentioned, there is a particular sort I want to draw attention to: the process of accepting information based on another agent's contribution, or as I will refer to it, *testimony* by another agent. The negotiation of who plays the role of information provider and who the recipient, and how that is signaled, will be an important factor in considering the workings of declarative questions. I return to the topic in Section 4.

3.3 Contextual bias and neutrality

Consider a discourse in which two agents openly disagree on some point. Suppose, for example, that Amy is known to believe that the Apollo 11 astronauts actually landed on the moon, while Ben has argued that they did not, claiming that the televised event was a hoax, staged somewhere on earth. Let φ stand for the proposition expressed by *The Apollo 11 astronauts landed on the moon.* Clearly φ is not a mutual commitment of Amy and Ben, since Amy and Ben are in disagreement on this point (assuming Ben's position entails ¬φ). Of course ¬φ is not mutually held either, since Amy's position is in conflict with it. Neither φ nor ¬φ can easily become a mutually held commitment in this context; either Amy or Ben would have to revise their position, retracting the current commitment and making a new one. Let us call this sort of situation one in which both φ and ¬φ are *controversial* with respect to the context. Definitions are given in (19)-(22) below. A commitment set is considered *empty* just in case it contains no worlds (=∅); C is empty if any cs in the structure is empty.[6]

Status of a proposition φ with respect to a discourse context C:

(19) φ is a *commitment* in C of an agent α iff cs_α is not empty and $cs_\alpha \subseteq \varphi$.
(20) φ is a *joint commitment* in C iff both agents have a commitment to φ.
(21) φ is *resolved* in C iff either φ or ¬φ is a joint commitment; otherwise, φ is *unresolved* in C.
(22) φ is *controversial* in C iff ¬φ is a commitment of at least one agent, φ is unresolved in C, and C is not empty.

A second, and more directly relevant, type of situation in which φ is an individual commitment without being a mutual one is the following. Suppose Amy has taken the same position as above, making a commitment to φ (i.e., the astronauts landed on the moon). Consider the state of the discourse before Ben makes any response indicating agreement or disagreement (i.e., neither φ nor ¬φ is a commitment of Ben). φ is not a joint commitment in this situation, though it may become one without further ado if Ben were to indicate acceptance. ¬φ is not a joint commitment, either, but its status is different from that of φ. While φ just needs ratification by Ben to become mutual, ¬φ is not eligible as a joint commitment at all, given that Amy has already expressed commitment to φ. In an obvious way the context is *biased toward φ*; only φ can be admitted as a joint commitment without requiring (non-monotonic) revision. Definitions appear in (23)-(24):

(23) C is *biased toward φ* iff ¬φ is controversial in C and φ is not controversial in C.
(24) C is *neutral with respect* to φ iff neither φ nor ¬φ is controversial in C.

Contextual bias toward φ exists if mutual agreement on φ is possible (without revision) while mutual agreement on ¬φ is ruled out due to an existing commitment to φ by at least one discourse agent.[7] If the context is in a neutral state with respect to φ, then mutual agreement on either φ or ¬φ is possible in principle.

The definition of a neutral context allows something more to be said about initiating declarative questions (IDQs), a category earlier described as limited to utterances that are either discourse-initial or whose content is not directly related to the content of a preceding utterance. If 'not directly related' is construed as 'not entailed by', then we can describe an IDQ as a declarative question with content φ used in a context that is neutral with respect to φ. This description excludes echo uses and declaratives with content entailing φ or ¬φ; it includes discourse-initial uses and declarative questions that follow another utterance but do not express consequences of it.[8]

One final remark concerning bias: a declarative, according to the proposal of the previous section, has the effect of updating an agent's commitment set, with the result that at least one agent has a commitment to the content of the declarative. It follows, given the definitions in this section, that use of a declarative cannot result in a context that is neutral with respect to the propositional content of the declarative. This is what we need to account for the inappropriateness of declaratives in situations requiring neutrality, like (4).

The definitions offered in this section allow us to characterize the configuration of the context in certain useful ways. Next, we will look more closely at how joint commitment arises and argue for a further elaboration of the context.

4. Sources for commitments

4.1 The notions of source and dependency

Consider the mechanisms by which a proposition contributed by one agent can become a joint commitment through acceptance by another agent. Here is a simple case:

(25) Amy: The server's down.
Ben: Oh. (I didn't know that.)

In this example, Amy informs Ben that the server is down. Ben's response (*Oh*) acknowledges receipt of new information (Heritage 1984), an acknowledgment that becomes more explicit with a follow-up claiming prior ignorance. The implication is that Ben is taking the server's failure as an established fact, *based on Amy's testimony to that effect*. Let us provisionally call Amy the *source*[9] for the proposition that the server is down. By hypothesis, Amy is explicitly committed to this proposition by virtue of offering it declaratively. No part of Ben's response can be singled out as explicitly committing Ben in the same way, yet unless Ben subsequently goes on to indicate non-acceptance in some fashion, Ben does seem to be committed.

The affirmative particle *yes* (and variants such as *yeah*) are another option for signaling agreement with a preceding statement. But *yes* does more than indicate agreement or acceptance. It conveys that the responder is affirming the stated content *based on his own judgment*, independent of the testimony just offered. Thus *yes* is odd when combined with a claim not to know or a confirming follow-up, as in (26a), but fine with *I know* in (26b):

(26) Amy: The server's down.
Ben: a. #Yes, I didn't know that./#Yes, it is?
b. Yes, I know/Yes, that's right.

The response in (26b) indicates that Ben was already in possession of the information Amy is offering *before* her utterance. Presumably he had access to some evidence relevant to the server's status, quite possibly the testimony of some third person. The use of *yes* does not impose any requirements on the nature or quality of Ben's evidence; it merely signals that he is not dependent on what Amy just said for the information.[10] To use the term introduced above, *yes* indicates that the speaker is a *source* for the relevant information.

oh and *yes* as responses[11] thus diagnose two distinct contextual states in (25) and (26). (25) represents the prototypical case of one agent providing another with information that is new from the point of view of the receiver. In (26) each party affirms that the server is down independently. Both cases result in joint commitment, and thus can be distinguished neither by standard treatments of the

context nor by the individualized context structure introduced above. I will remedy that deficiency shortly.

In (27) I give a working definition of 'source':

(27) An agent α is a source for a proposition φ in a discourse d iff:
  a. α is committed to φ; and
  b. According to the discourse context, α's commitment to φ in d does not depend on another agent's testimony that φ in d.

Notice that sourcehood is local to a particular discourse. As mentioned above, it is perfectly possible for Ben to be a source for φ in a conversation with Amy even though Ben gained his knowledge from the testimony of another agent in an earlier discourse.

Being a source is defined in terms of discourse commitment, not just the agent's private state. Having the requisite knowledge to be a source for some bit of information does not make one a source, in the sense used here. Only when, and if, the information constitutes an actual or potential discourse commitment does the issue of its source come into play. Notice also that (27) makes no demands concerning the agent's qualifications for being a source. Whether an agent presenting himself as a source is in a position to know what he is talking about is something that can be called into question by interlocutors; and his qualifications and history as a reporter of facts certainly bear on whether he is likely to be providing accurate information. But the linguistically-relevant notion of source that I am proposing here is not particularly sensitive to such qualifications or lack of them, or to the likelihood that the corresponding commitment accurately reflects reality.

It is part of the definition above that being a source for φ requires being committed to φ. The reverse does not hold: being committed to φ does not require being a source for φ. Returning to example (26), where Ben has learned from Amy that the server is down, Amy qualifies as source and Ben does not. Thus Ben in accepting Amy's statement implicitly undertakes a commitment he is not a source for. It will be useful to have a term for Ben's state as well; let us say Ben has a *dependent commitment* to φ in this situation:

(28) An agent α has a *dependent commitment* to a proposition φ in a discourse d iff:
  a. α is committed to φ; and
  b. According to the discourse context, α is not a source for φ in d

The joint commitment arising from the exchange in (25) thus is a configuration with Amy as source, Ben as dependently committed. After the exchange in (26), by contrast, the joint commitment results from each party acting as an independent source.

As noted above, there is no direct relationship between being a source and being in possession of the truth. Suppose Ben and Amy disagree on some point:

(29) Amy: Kim works in the Registrar's office.
Ben: No, actually she's in Admissions.

Assuming that each commitment requires a source (more on this below), it must be the case that Amy is the source for her position, and Ben is the source for his. Moreover, assuming they are trying to be truthful, Amy and Ben each believe their claim is true, and believe their supporting evidence to be sufficient. They cannot both be correct. Nevertheless, their status as independent sources is unaffected. Claiming to be a source in the sense defined here does not require being correct. Nor does it require having enough or the right kind of evidence (although pragmatic reasoning about availability of evidence can be important in interpretation, as we will see in applying these notions to declarative questions). It doesn't require that other agents accept the content offered or that they judge the agent involved to be reliable. It simply requires giving the appearance of taking a position arrived at on independent grounds, whether or not other agents in the discourse have taken the same position.

4.2 Putting source and dependency in context

Building on the preceding discussion, I will assume that information about sources is part of the discourse context, and accordingly add a *source set* (*ss*) for each agent to the context structure as follows:

(30) $C_d = < \sigma_\alpha, \sigma_\beta \ldots >$, where each σ_χ is a triple < cs, ss, χ >, with χ an agent in d, and:
a. cs = { w ∈ W: all discourse commitments of agent χ in discourse d are true in w }
b. ss = { w ∈ W: all commitments of agent χ in discourse d for which agent χ is a source are true in w }

The commitment set (*cs*) definition as a set of worlds is unchanged. The source set (*ss*) is also a set of worlds, a (possibly improper) *superset* (more on this below) of the commitment set. It represents the set of commitments that the given agent is source for (and also committed to, by definition). Since it is possible to be committed to a proposition that one is not a source for, but not *vice versa*, an agent will generally have, in propositional terms, more discourse commitments than source commitments. Translating the same relationship to sets of possible worlds, the larger set of propositions corresponds to a smaller set of worlds. Thus, the source set is the larger of the two.

We are now equipped to distinguish the situations of (25), where only Amy is source, and (26), where both Amy and Ben are sources. Let φ represent the

proposition that the server is down. φ is a joint commitment in both situations, thus $cs_{Amy} \cup cs_{Ben} \subseteq \varphi$. (I use the notations cs_χ and ss_χ to refer to the *cs* and *ss* elements, respectively, of the triple represented by σ_χ.) The only difference is in the source sets, Ben's in particular; compare the (b) clauses of (31) and (32):

(31) Amy is source for φ, Ben is dependent with respect to φ:
  a. $ss_{Amy} \subseteq \varphi$; and
  b. $ss_{Ben} \not\subseteq \varphi$; and
  c. $cs_{Amy} \cup cs_{Ben} \subseteq \varphi$

(32) Amy and Ben are both sources for φ:
  a. $ss_{Amy} \subseteq \varphi$; and
  b. $ss_{Ben} \subseteq \varphi$; and
  c. $cs_{Amy} \cup cs_{Ben} \subseteq \varphi$

The new structure can distinguish the two cases of joint commitment to φ, as desired. It also offers other configurations where φ is a joint commitment. Amy and Ben's roles in (31) could be reversed, for instance. Another possibility is that φ could be a joint commitment without there being a source at all. However, in the next section I will motivate and propose a pragmatic principle that rules out such configurations, i.e., where a commitment lacks a source.

A final step in incorporating the new context structure is to revisit the effect of declaratives. I will assume for simplicity that updating the source set, if warranted, happens in tandem with the declarative update but as a separate pragmatic operation. Thus, it is not part of the declarative's effect, strictly speaking. But this is not a principled decision; I leave open the possibility that being identified as a source is better viewed as part and parcel of the declarative update.

Recall that a declarative **.φ** was said to update an agent's commitment set, resulting in a new cs' containing only φ-worlds:

(18) $cs' = cs \cap \varphi$

If in uttering a declarative **.φ**, an agent α is also a source for φ (the usual case, I assume), then the source set update in (33b) will accompany the usual cs update in (33a).

(33) a. $cs_\alpha' = cs_\alpha \cap \varphi$
  b. $ss_\alpha' = ss_\alpha \cap \varphi$

If the agent makes a commitment using the declarative but is not a source, then the update in (33b) does not take place and the source set is unchanged.

4.3 The Source Principle

On general grounds, a discourse commitment is expected to have some foundation in fact. This expectation can be thought of as a generalized version of Grice's Quality maxim, in particular the second clause:

(34) Try to make your contribution one that is true. […]
  a. Do not say what you believe to be false.
  b. Do not say that for which you lack adequate evidence. (Grice 1967, in Grice 1989: 27)

The proposed generalization will refer to the category of commitment rather than to 'saying', and will assign to the notion of 'source' the role played by 'having adequate evidence' in the above version. The idea is that an agent's commitment to a proposition φ is assumed to have a source – that is, some agent(s) in the discourse, possibly the committing agent herself, who has independent evidence for its accuracy. Commitment *without* such a source violates Quality expectations.

Stating this idea informally in the style of Grice gives us (35):

(35) Source Maxim: Do not commit to that which lacks a source.

Like Grice's conversational maxims, (35) is not intended as an enforceable rule but as a guide in interpreting the conversational intentions of others. The assumption that (35) is being observed leads to inferences about agents' intentions and states, as we will see. As noted, it applies not just to uttered content ('what is said') but to commitments generally – including implicit commitments (such as implicatures and background knowledge) and dependent commitments, as defined above, while properly excluding the content of utterances that do not commit the speaker (such as uses of interrogatives, by hypothesis).

The original Quality maxim differs from Grice's other maxims, as Grice himself (Grice 1967/1989: 27) pointed out, in functioning primarily by virtue of being observed. In contexts that admit the possibility that Quality is being respected, it will be assumed that it *is* respected, giving rise to the inference that the speaker believes what he says. Cases of apparent violation of Quality tend to result in infelicity rather than implicature generation. The Source Maxim operates similarly. When it is possible in a context that the Source Maxim is being observed, agents will generally assume that it *is* observed. In the case of a newly presented commitment, this assumption results in an inference regarding the identity of the source(s), i.e., attribution of 'sourcehood' (and/or dependency) to one or more agents. When the context does not allow for assigning at least one source to a commitment, the result is infelicity rather than

an implicature. This point is important in the explanation of infelicitous examples from Section 2.1.

The Quality-like behavior associated with the Source Maxim amounts to a strong expectation that every commitment, existing or new, implicit or explicit, has a source. Stating this expectation directly yields (36):

Source Principle

(36) Commitments have sources.

I adopt (36) as a perspicacious replacement for (35).

The notion of a proposition 'having a source' (or alternatively, 'being sourced') is defined straightforwardly in (37):

(37) A proposition φ *has a source* in a discourse d with agents α and β iff
  a. $ss_\alpha \subseteq \varphi$; or
  b. $ss_\beta \subseteq \varphi$

A proposition is sourced if it is entailed by the source set of either agent.[12]

As we saw with the examples of Amy and Ben in the previous section, the structure of the context now offers multiple distinct configurations representing the same joint commitment. Consider a context with two agents where φ is a joint commitment. If we now constrain the possibilities by requiring conformity with the Source Principle, two types of configuration remain:[13]

(38) How a joint commitment to φ can be sourced
  a. *Sole source*: One agent is the sole source for φ, the other has a dependent commitment
  b. *Independent sources*: Both agents have a non-dependent commitment to φ, each qualifying as a source

It follows from (36) that in a situation where only one agent has a commitment to φ, that agent will be understood to be a source for φ – a sole source, in the terminology of (38). Thus, when an agent introduces a commitment to φ in a context where there has been no testimony for its content by other agents, the introducing agent is by default assumed to be a source. A context that is neutral with respect to φ meets this description by definition – it can only be neutral if there has been no testimony concerning φ.

The connection with declarative questions now begins to emerge. Recall that the initiating uses of declarative questions with which we are concerned are defined by their occurrence in contexts of exactly this sort – neutral with respect to the content of the declarative. Therefore the 'questioner' – the agent uttering the declarative – is expected to be a source. This expectation follows from the Source Principle. Because of its importance in the ensuing sections, I give it its own name and description below:

Rule of Initial Commitment

(39) A speaker making a discourse commitment to φ in a context neutral with respect to φ is expected to be a source for φ.

At the point the commitment is made, the speaker is the only source on record. In making the initial commitment, the speaker may not intend to remain the only source; in fact I will suggest that one of the features essential to a 'question' is for the addressee to be recognizable as a source. But future states do not matter for the purposes of this rule. It applies at the time of the commitment. The speaker's commitment is compatible with a number of outcomes, and (39) is not restricted to a particular kind of use. It is just as applicable when the speaker's commitment is advanced assertively and the speaker expects to be the sole source for its content.

At this point we have the pieces in place to understand the first of two kinds of conditions on IDQs. In the next section I return to the data to begin laying out the proposed account.

4.4 The importance of having evidence

In this section I use the Source Principle introduced above, together with the account of declaratives as expressing commitment, to derive an explanation for the behavior of the declaratives in examples (10)-(13), introduced in 2.1. The remaining examples are addressed in 5.

The discussion will revolve around the infelicity of the declaratives in (9), repeated below:

(9) [Robin is sitting in a windowless computer room with no information about current weather conditions when another person enters from outdoors.] Robin to newcomer:
a. Is it raining?
b. #It's raining?
c. #It's raining.

Let us review the situation first from Robin's point of view. Cooped up in the windowless room, she does not know what the conditions are like outside, and she would like to know whether or not it's raining. An interrogative addressed to the newcomer will serve her well in these circumstances. The declaratives are infelicitous. Why?

In this context, before Robin addresses the newcomer, the context is neutral with respect to the proposition that it is raining (by definition (24) given in 3.3). Observe that Robin's use of either declarative commits her to the proposition that it's raining (according to the proposal for declarative meaning in Section 3.1). Moreover, since she is making that commitment in a neutral context, she is expected to be a source for the proposition that it is raining (by the Rule of

Initial Commitment, Section 4.3). Since she isn't in a position to know whether it's raining or not, making a move that presents her as a source is misleading, at best. But recall that from a linguistic point of view, this deficiency does not automatically disqualify her as a source. It does not explain the infelicity either. To see what goes wrong we must consider the newcomer's perspective as well.

The newcomer, having just entered from outside, is aware of the weather conditions. Assume that, since she is now in the room, she is also aware of its properties, including windowlessness. From the newcomer's point of view, Robin is in a good position to ask her a question about the weather and in a poor position to inform her about weather conditions. Robin's unsuitability as an informant has at least two components: (i) Robin does not have access to the kind of evidence she needs to be a source with regard to current meteorological conditions; (ii) Robin's weather-related information, if she had any, would not be news to the newcomer – the newcomer doesn't need informing.

The key to the infelicity of (9b-c), I submit, is (i) – or more precisely, the status of (i) as a mutually recognized fact of the discourse context. The newcomer, attempting to make sense of Robin's intentions in uttering (9b) or (9c), is guided by the Source Principle. Robin's commitment needs a source, and that source can only be Robin; the newcomer has taken no position. But according to what is known about Robin's resources in the discourse situation, she is *not* a plausible source. These incompatible assumptions cannot be reconciled. Robin's intention in uttering the declarative is unrecognizable, resulting in infelicity.

In a nutshell, the problem with (9b-c) is that the disparity between Robin's claim to be a source (via the declarative) and her contextual status as uninformed with respect to the weather cannot be resolved. If this diagnosis is correct, a prediction follows. We should see improvement from altering the description of the situation to give the speaker greater plausibility as a source. Before turning to (10), note that just endowing the room with a window or two can go some way toward this effect. Imagining that Robin can see outside, perhaps with a less than perfect view, does seem to improve the declaratives, or at least the rising version.

In (10), repeated below, we find more confirmation:

(10) [Robin is sitting, as before, in a windowless computer room when another person enters. The newcomer is wearing a wet raincoat and boots.] Robin to newcomer:
a. Is it raining?
b. It's raining?
c. (I see that/So/Oh) It's raining.

The addition of wet raingear to the scenario has precisely the necessary effect of giving Robin a visible basis for her commitment. This adjustment, in my judgment, results in greater improvement than adding a window, perhaps

because the evidence is introduced by a salient event rather than being a stative property. The falling declarative is at least marginally acceptable in (10), though much better with one of the parenthesized markers, which tend to suggest that the speaker has just used the evidence to reach the conclusion that it's raining.

In this modified situation, the newcomer remains a better source than Robin, in some absolute sense – her evidence is direct experience, Robin's evidence is merely the basis for a deduction. But Robin does not have to achieve a comparable level of authority to be a source. It just has to be conceivable in the context that Robin could reach the conclusion that it's raining without the newcomer telling her. In fact I will argue in the next section that some degree of inequality/discrepancy between speaker's and addressee's positions is needed to facilitate interpretation of declaratives as questions.

It may justly be objected that judgments about how the context interacts with the speaker's status – whether it rules out treating the speaker as a source or allows for it – are not as hard and fast as I am making them appear. There does tend to be considerable variation in judgments about examples like (9)-(10), and the success of various modifications to the context. It is simpler for presentation purposes to talk as though there were a well-defined threshold for acceptability, but that is unlikely, and fortunately not at all essential to my proposal. The bedrock claim I am defending posits a correlation: the IDQ should be acceptable (modulo other factors) *to the extent* that the context supports an inference that the questioner has some basis for the position expressed.

The inference that the speaker has some reason for the hypothesis expressed in the IDQ does seem to be a feature of the felicitous examples (11)-(12), as well as (8), in Section 2.1. There is one more difference between (10) and (11)-(12) that remains to be accounted for. I noted earlier that the improvement of (10) over (9) seems to depend not just on Robin having evidence, but on the evidence being available in the discourse context – a condition that makes no appearance in (11)-(12). The apparent divergence between (10) on the one hand and (11)-(12) on the other stems, I believe, from the nature of what can plausibly constitute relevant evidence motivating the speaker's commitment in each case. In (10), the absence of windows means the speaker's access to evidence cannot be taken for granted. Such access to evidence *in the discourse situation* matters because the issue at hand is what the weather is *right now*, at the time of utterance. Because of this immediacy, any evidence supporting the speaker's commitment must have been available to her very close at hand and very recently – in effect, she must have formed the judgment in the discourse situation. That is just what is implausible from the addressee's point of view in (9), and more plausible in the situations with supporting evidence in (10).

Under the story just told there is no general requirement that the speaker's evidence be available in the discourse context. Rather, what is generally required for felicity of a declarative is just that the discourse context allow the inference that the speaker has some basis for her choice. (11)-(12) are thus the norm, not the exception. The situation in (10) is special in that the Source

Principle, the discourse situation, and the content of the question work together to effectively require that the speaker's evidence be part of the discourse situation.

It is crucial for the explanation advanced in this section that commitment is associated with the effect of declarative sentences, a formal category, and not with a category of use such as assertion. Rising intonation on a declarative does not mitigate the need for the commitment expressed by the declarative to have a source.

5. Questioning

So far, the proposal has concerned only the declarative component of rising and falling declaratives. In this section I address how they function 'as questions' and the related issue of what rising intonation contributes to the 'questioning' interpretation.

5.1 Questions, statements, IDQs

Up to now, we have gotten by without more than a loose functional notion of 'question', which crucially includes certain uses of declaratives as well as interrogatives. In order to achieve some understanding of what it means to be a 'declarative question', we will now examine more closely how the effects of a declarative sentence relate to effects associated with pragmatic categories such as 'questioning' and 'stating'. Canonically, a question is addressed to an agent thought capable of answering it by an agent who doesn't know, or isn't certain of, the answer.[14] The question serves as a request for the addressee to provide the targeted information. I will refer to the questioning utterance seeking such a response as an *information question*. In the more specialized case of a polar information question with content φ, uttered in a neutral context, the speaker doesn't know whether φ or ¬φ holds and thinks that the addressee does know. A polar interrogative is the usual device for realizing a polar question. The canonical outcome of such a question, when successful, is a state where the addressee has provided an answer and the answer has been accepted. In the terminology used here, the answer becomes a joint commitment.

Recall from Section 4 that there are several possibilities for representing the state of joint commitment, depending on which agent(s) are sources. The outcome of the canonical polar question just described would have the initial addressee as sole source for either φ or ¬φ, the questioner as dependent. If we reverse the assignments – speaker as sole source, addressee as dependent – we have the outcome expected from a canonical act of *informing*, where a knowledgeable speaker addresses a statement[15] to an agent presumed to lack the information provided. The source/dependency framework can capture this

proposed difference in outcome states. But what about the rather different processes involved in getting to joint commitment in each case?

In neither instance can the joint commitment be accomplished in a single move, if we count implicit as well as explicit commitments. Assuming the initial state is neutral, joint commitment in the statement case has at least two steps, with α as the agent making the statement, β as addressee:

(40) Joint commitment to φ via informative statement
  a. Utterance by α signaling commitment to φ as source
  b. β's dependent commitment to φ, often implicit

The canonical association between declaratives (falling ones, at least) and informative statements follows straightforwardly under the present proposal. Uttering a declarative in a neutral context will accomplish step (40a), and may be the only explicit move needed, given that (40b) is often implicit. (For further discussion of the range of possible responses to both statements and questions, and a proposal for contextual structures and procedures to model them, see Bruce & Farkas (2007).)

In the case of an information question from β to α concerning φ, there are at least three steps:

(41) Joint commitment to φ or ¬φ via information question
  a. Utterance by β indicating prospective dependency with respect to φ (and ¬φ)
  b. Response by α signaling commitment to φ or ¬φ as source
  c. β's dependent commitment to the answer given by α, often implicit

Step (41a) sets up a situation where the addressee's informative statement is needed to resolve whether-φ. By 'prospective dependency' in (41a) I mean that β's utterance indicates that she is able to commit to φ (or ¬φ) only as a dependent, needing α to be the required source. Steps (41b-c) resemble the two steps of (40), not accidentally. Unlike (40), however, the path in (41) can end in a joint commitment to either φ or ¬φ.

I will assume, without undertaking an account of interrogatives, that uttering a non-negated polar interrogative in a neutral context accomplishes (41a), much as uttering a declarative does for (40a). By hypothesis, then, the contextual effect of a polar interrogative is to offer its content φ without commitment, but also without eliminating the possibility of a future dependent commitment, if the addressee is prepared to be a source for φ. For present purposes I assume that the same holds for ¬φ. That is, in uttering a non-negated[16] interrogative with content φ in a neutral context, the speaker indicates that his dependent commitment to either φ or ¬φ is a possibility.

IDQs depart from the canonical cases above in a number of respects. A joint commitment resulting from a declarative question will have both the questioner

and the addressee as independent sources (assuming the questioner's original position is ratified by the addressee). This configuration matches neither of the canonical outcomes, both of which have as a defining feature an inherent asymmetry between an agent committed as source and an agent holding a dependent commitment.

(42) Joint commitment to φ via IDQ
  a. Utterance by α signaling commitment to φ as source
  b. Response by β signaling commitment to φ as source

As with canonical questions, the addressee is a source in the IDQ configuration. As with informative statements, the speaker is a source, with the further statement-like consequence that joint agreement can be reached in two steps. Since step (42a) commits the questioner, the final acceptance step in the question sequence is superfluous.

Another significant resemblance between IDQs and canonical statements is that after step (a) in either (40) or (42), the context will be biased toward the declarative content. As noted in Section 3.3, the biasing nature of declaratives accounts for their infelicity in situations where the speaker is supposed to act as though she is unbiased, as in the 'job interview' example (4). The polar interrogative, uttered in a neutral context as described for (41a), maintains the neutrality of the context by committing its utterer to neither alternative, consistent with their acceptability in such contexts.

All in all, IDQs seem to have more in common with canonical statements than with canonical questions. I believe this observation to be fundamentally correct, if we limit attention to the contribution of the linguistic form, continuing to set aside for the moment the roles of intonation and context. Declarative questions are at their core *declarative*, and that core remains constant throughout their range of use. The puzzle that remains to be explained is how declaratives function 'as questions' at all, given the identity between (40a) and (42a) and the shortage of properties shared between canonical polar questions and IDQs.

My proposed solution to the puzzle is that, in order for a declarative to function in a question-like way, the context of utterance together with the sentence content must have properties that compensate for the declarative's inherent shortcomings 'as a question.' We will see how the proposed solution also provides an account of the observed restrictions on IDQs.

5.2 Implicit authority

I will begin by comparing more closely the effects of the polar information question as sketched above to the properties of declaratives. As just noted, the natural qualities of IDQs do not in any obvious way lend themselves to 'questioning.' Identifying the points of difference between effects following from the use of a polar interrogative vs. a declarative will give us candidates for

the components of 'questioning'. An obvious difference to start with is the state of the speaker: dependent in the case of the polar interrogative, committed as a source with use of the declarative. But since speaker commitment is, by hypothesis, a consequence of using a declarative, there is not much to be done about this; it could only be overcome by using another sentence form. The same goes for the contextual bias introduced by declaratives – it can be avoided only by *not* using a declarative.

When we turn to the addressee's state, however, there are more possibilities. The description above of a canonical polar question, realized by the utterance of an interrogative, calls for a questioner who (initially) does not know the answer and who assumes the addressee does know it, or at least might. The desire to leave this initial state of 'not knowing whether φ or ¬φ' is presumably what motivates the questioner. Prior to the questioning utterance, however, the addressee does not necessarily have any idea whether the questioner-to-be is in a state of ignorance with respect to φ. For instance, consider the interrogative (6a), repeated below, which I assume functions as a canonical polar question:

(6) [Gina to her officemate Harry]
    a. Is the weather supposed to be good this weekend?

In the situation of (6), there is not necessarily anything in the context prior to Gina's utterance to indicate her lack of familiarity with the weekend weather forecast. It is her utterance of the interrogative that signals to Harry her meteorological ignorance.

Similarly, whether or not the addressee is knowledgeable about some issue will often start out as a private matter, rather than being displayed in the context. In addressing the question to Harry, Gina seems to assume that he is in a position to answer her question. Before her utterance, though, there need not be any indication in the context that Harry is apprised of the weekend forecast (though at least the possibility must not be ruled out). It seems that Gina's choice of the interrogative gives rise to an inference that she takes Harry to be a plausible source for the information in question. This inference can be taken to follow from the Source Principle together with the assumption that, as suggested earlier, use of a polar interrogative in a neutral context has the effect of registering its speaker as *not* a potential source for either φ or ¬φ. Thus, if Gina raises the issue in hopes of resolving it, she can only do so with the prospect of Harry as sole source for the answer.

Notice that presenting herself as dependent effectively rules out the possibility that Gina intends to be *informing* Harry about the weather; that would require Harry's dependence and Gina as source, a configuration she has just made unreachable by using the interrogative. Use of an interrogative thus associates with a non-informative intention[17] quite directly, without requiring any particular contextual support. The relative permissiveness of the

interrogative form with respect to contextual properties is demonstrated by its felicity in all of the examples discussed in Section 2.1.

Now, in the situation of (6), consider Harry's state after Gina has posed her question but before he makes any response. By virtue of her utterance Gina is now recognized as implicitly dependent, as described above. By hypothesis, the interrogative utterance has the additional effect of implying that Harry can answer the question. The result is a state where it is known that Harry will be the sole source for either a *yes* or a *no* answer, though he is committed to neither as yet. I introduce the terms *implicit source* and *implicitly authoritative* in (43)-(44) for this sort of state:

(43) An agent α is an *implicit source* for φ iff:
  a. α is not committed to φ; and
  b. It is inferable in the discourse context that if α commits to φ, α will be a source for φ.

(44) An agent α is *implicitly authoritative* with respect to φ iff α is an implicit source for both φ and $\neg\varphi$.

Note that the definitions above do not mention a particular sentence type. Besides the use of an interrogative, as hypothesized, I assume that a state where an agent is recognized as implicitly authoritative may arise circumstantially. We will see this possibility realized in the next section.

5.3 The authority of the addressee

In contrast to the interrogative use discussed above, the declaratives in (6) are infelicitous as questions:

(6) [Gina to her officemate Harry]
  a. Is the weather supposed to be good this weekend?
  b. #The weather's supposed to be good this weekend?
  c. #The weather's supposed to be good this weekend.

I wish to argue that the addressee's unknown state is the key factor in the data pattern of (6). As we saw earlier, a commitment by the speaker as source is a fine first step for a speaker who is intending to make an informative statement. If nothing is known about the addressee's state, this interpretation should be available, and it seems to be, at least for the falling declarative in (6c). While posing a canonical question, as in (6a), leads to inferences that result in the addressee's status as implicitly authoritative, a declarative will not have this result. This is because the inferences in question were taken to be triggered by the speaker's *in*ability to act as a source, a consequence of using the interrogative. The unavailability of such inferences about the addressee's authority presents a problem for a questioning interpretation of the declarative.

Consider a speaker choosing to use a declarative, and thereby making a commitment as a source. How can such a speaker be interpreted as intending to appeal to the addressee, except by the presumed authoritativeness of the addressee?

We can test the importance of the addressee's status as a factor by modifying the context in (6). Say, for instance, that Harry is reading the local newspaper when Gina addresses him. Gina can see that he's on the weather page, and although she is at some distance, she sees what appear to be several sunny-day icons in a row. In these circumstances Harry is implicitly authoritative; Gina's imperfect view of the page is enough to make her a plausible source. The rising declarative (6b) is now fine and has the expected air of soliciting Harry's ratification or rejection of Gina's hypothesis. (6c), as expected, can no longer function as an attempt to tell Harry something he doesn't know. With the help of *so* or *I see* (6c) can, however, be read as a grounding move, i.e., a move clarifying the status of information as shared in the discourse context: Gina utters the declarative not to inform Harry, but to let him know that she has this information too. Anticipating the discussion below, I want to suggest that grounding and questioning are not mutually exclusive. The grounding intention just described is compatible with an intention to get Harry's response, especially since, unlike Gina, he is in a position to actually read the forecast.

The felicitous examples from Section 2.1 provide another testing ground for the hypothesis that the addressee's implicit authoritativeness is obligatory for interpretation of a declarative as a question. As the reader can verify, it is in fact a common property of all the situations where IDQs are felicitous that, at the time of utterance, the addressee clearly qualifies as implicitly authoritative. Furthermore, as with the amended situation just proposed for (6), in each such case the addressee is in a *better* position than the speaker to render a verdict on the truth of the proposition, and both parties are aware of the addressee's superior position. If the addressee's response is to deny rather than affirm the declarative content, the speaker is in no position to argue the point, though a discussion may ensue about how the speaker arrived at the mistaken hypothesis. In (10), if the newcomer says that it's not in fact raining outside, Robin can hardly insist that it is, though both parties are likely to feel something more needs to be said about the impression created by the dripping raincoat and boots. In (11), if Sophie denies being Tim's mother, Jack may try to rescue the situation by explaining why he thought she was, but he isn't likely to try to persuade her that she's wrong. The caller in (12) would presumably defer to the travel expert he is talking to. And so on.

This latter observation suggests that the mere implicit authority of the addressee is not sufficient. The addressee must be, in some sense, *more* authoritative than the speaker, and that differential must be evident at the time of utterance. This idea seems intuitively plausible. It meshes with the need identified earlier to indicate somehow, if the utterance is to be taken as questioning, that the speaker intends to be presenting the commitment for the

addressee's ratification. Notice that we will not find an exact counterpart of this relation in examining the canonical polar question, because the questioner in that case isn't authoritative in the least. However, the questioner's dependency vs. the addressee's authority in the canonical case constitutes a more extreme form of the same *kind* of relation.

In the canonical polar question this asymmetry between addressee and questioner is fundamental and arises from the use of the interrogative, by hypothesis the form responsible for bringing about such effects. For the non-canonical questioning use of a declarative, the context of utterance must again do most of the work, though rising intonation can assist, in a way to be described shortly. In the next section I propose modeling the relation in the declarative case as *contingency* – the questioner's commitment is contingent on the addressee's ratification. I propose that the rise serves to mark contingency and thus associates indirectly with a questioning interpretation.

5.4 Contingent commitment

To develop this part of the proposal and its motivation, I return to a felicitous example from Section 2.1:

(8) [Laura has just entered the room, where Max sees her for the first time that day.] Max:
   a. Did you get a haircut?
   b. You got a haircut?
   c. You got a haircut.

In uttering (8b) or (8c), Max commits himself, as a source, to the proposition that Laura got a haircut. Both the rising and falling declaratives are fine here. The falling declarative comes as close as it gets to functioning 'as a question', in the sense that it seems to present the proposition to the addressee for verification. No support from markers like *so* or *I see*, nearly obligatory for felicity in other contexts, are required for the falling declarative in this case.

The situation in (8) conforms to the generalization advanced above: assuming normal circumstances, Laura is unequivocally in a better position than Max to judge the truth of his hypothesis that she got a haircut. Her testimony will be based on her direct experience and thus carries more weight than Max's. That does not mean Max is overstepping his bounds in presenting himself as a source. Max has relevant evidence, too – his assessment of Laura's appearance, hair in particular. Max's evidence is indirect and undeniably weaker than Laura's, but that does not make it inadequate or disqualify him as a source. As evidence goes, though, both parties are well aware that Laura is in a superior position. If she denies getting a haircut, Max is in no position to argue (though he may be inclined to seek an explanation for what he perceived as a difference in her looks).

Laura's implicit authority in the context of utterance means that Max's commitment is made with the (tacit) knowledge that Laura will prevail in case of disagreement. The context and content are such that if she does not ratify φ as a source when presented with the opportunity to do so, Max's commitment to φ and status as source are called into question.

We can think of Max's commitment to φ, the proposition that Laura got a haircut, as contextually *contingent* upon Laura's subsequent endorsement of φ. I take contingent commitment in turn to be a specific instantiation of a more general category of *discourse contingency*, and I start by defining the latter. The idea is that a discourse move can be presented as linked, in effect, to the outcome of a succeeding move, with the update of the first move carried out or accepted only if some contextually salient condition is met by the second. By *discourse move* I mean an agent-initiated transition from one discourse state to another, typically effected by an utterance. (45) defines such a move as contingent if it is understood to depend on the outcome of the succeeding move:

(45) A discourse move μ by an agent α is *contingent* upon a discourse condition δ if:
  a. δ does not obtain at the time of μ
  b. It is inferable in the discourse context that the update effected by μ is to be retained only if δ obtains after the discourse move immediately succeeding μ

The update represented by the contingent move thus has a provisional status. It is subject to withdrawal if not followed by[18] an update that satisfies the requisite condition.

I propose that rising intonation marks an utterance as contingent in this *general* sense. The marking does not obviate the need for contextual support of the sort we have been discussing for a questioning interpretation of a declarative. By signaling the presence of a discourse-related contingency, however, the rise makes the most of context in ways to be discussed further below. Falling declaratives lack this advantage and are correspondingly more limited.

Tailoring the general definition in (45) to our specific purposes, we get the following working definition of *contingent commitment*:

(46) A discourse move μ committing an agent α to φ is *contingent* upon ratification by an agent β, α≠β, if:
  a. β is implicitly authoritative with respect to φ at the time of μ
  b. It is inferable in the discourse context that α's commitment to φ will be withdrawn unless the discourse move immediately succeeding μ has the effect of committing β to φ as a source

At the time of Max's utterance of (8b) or (8c), the contingency of his commitment upon Laura's authority is inferable in the discourse context. This, I suggest, is an essential condition for interpreting a speaker's expression of commitment as questioning. I state the condition below:

(47) In the context of utterance, the speaker's commitment to the content φ must be recognized as contingent on the addressee's ratification of φ

(47) is not an arbitrary condition. I take the inequality it requires between speaker and addressee as sources to reflect something fundamental about questioning, reproducing a form of the asymmetry found in the canonical polar question. In that light, it is better to think about the requirement not in terms of imposing conditions on a category of 'declarative questions', but as defining a property essential for imparting a questioning flavor to a declarative.

As with judgments of plausibility in connection with source attributions in Section 4.4, I would like to suggest that contingent commitment is not a strictly categorical matter. The expectation is rather that a commitment-expressing utterance will have a 'questioning' flavor *to the extent* it is judged contingent on the addressee's ratification. This view allows judgments to be sensitive to a variety of factors and to exhibit individual variation, both of which are expected. A version of (47) reflecting these comments is given in (48):

Contingent Commitment Criterion

(48) An utterance of a declarative with content φ is *questioning* to the extent that the speaker's commitment is understood as contingent on the addressee's ratification of φ.

5.5 The role of the rise

Now we are at last in a position to examine the role of rising intonation. As sketched earlier, the basic hypothesis is that the rise marks an utterance as contingent, in the sense of (45), on some discourse condition whose identity is determined in context. Why should this general marking be so conducive to a questioning interpretation of declaratives? Part of the answer emerges with the generalization in (48). The rather direct connection posited between contingent commitment and questioning means that contributing such a marking is not as far removed from questioning as a first impression might suggest.

But there are more specific ways in which the rise can contribute to interpretation of an utterance as questioning. First, simply being marked as 'contingent' makes the utterance more question-like; it is complete only when some follow-up move is carried out, much like a question and its answer. Second, the presence of a placeholder for a condition to be determined in context lightens the burden placed on contextual factors for rising declaratives. The elements relevant to IDQs just need to be salient enough to make the

contingency of the speaker's commitment a good candidate for the opening provided. Falling declaratives have the additional burden of needing the contextual factors to achieve enough salience independently to influence the interpretation. And third, rising intonation, by flagging the existence of some kind of contingency, has the effect of highlighting it when identified. To this last characteristic I attribute the tendency with rising declaratives to go to some lengths in accommodating the question interpretation; falling declaratives are much less prone to this treatment.

The facilitative effects of rising intonation can be seen in part by taking note of difficulties in interpreting falling declaratives as questions. Recall that the support of markers such as *so* and *I see* improved the falling declaratives in (10)-(11) considerably, but were not needed in (8), or for the rising declaratives in (10)-(11). These markers seem to suggest that the speaker has just made an inference from available evidence. I speculate that this can lead to improvement of the falling declaratives in at least two ways: (i) it makes clear that the speaker is drawing an inference and not speaking from more direct experience, hence can make contingency of the commitment more likely; (ii) it draws attention to, and thereby enhances the salience of, the contextual factors supporting interpretation as a question.

Returning to the haircut questions of example (8) for comparison, where no such markers are needed, provides an instructive reminder that multiple factors can aid (or inhibit) a questioning interpretation. In (8) the forces are joined in favor of contingent commitment, even for the falling declarative. Of central importance is the fact that it is crystal clear in this situation who is the more authoritative source and why, for obvious reasons having to do with the nature of haircuts. A second helpful factor is that Max's utterance coincides with a salient event – Laura's entrance – that provides Max with his evidence and ensures that Laura is aware of what occasioned his hypothesis. The 'evidence' – Laura's appearance – and the content of the question, which concerns an event resulting in an alteration to Laura's appearance, dovetail to a greater extent than in other examples, another boon. Finally, I consider it no accident that the content is about the person the utterance is addressed to. That is, a questioning interpretation tends to correlate with content that involves the 2nd person as participant in the eventuality described. Often, though not invariably, the addressee will be clearly authoritative in such a case; (8) is a textbook example. The felicity of falling declaratives is especially sensitive to the factors just catalogued, but they can make a difference for rising declaratives too.

5.6 The persimmon problem

To conclude the discussion, let us return to the first example of an infelicitous IDQ presented, repeated below:

(3) [to coworker eating a piece of fruit]
a. Is that a persimmon?
b. #That's a persimmon?
c. #That's a persimmon.

First note that there is no reason to think that the problem here involves the Source Principle. It is perfectly reasonable to assume that the speaker has some private basis for thinking the fruit might be a persimmon. What about the fruit-eating addressee? It also seems quite reasonable to assume, on general grounds, that she knows whether the fruit she's eating is a persimmon. After all, people generally are acquainted with the names of foods they consume. There are several factors that set this example apart from other examples, however. For one, the assumption that the addressee can identify the fruit is based on a generalization about people rather than an observation about the addressee in particular. For another, the experience of eating some food does not automatically confer knowledge of its name, even if the two do tend to go hand in hand. The name of the fruit is an arbitrary bit of learning, not deducible from consumption.

These observations raise the possibility that the addressee does not qualify as implicitly authoritative in the context of (3). Perhaps she must be recognized as possessing specific knowledge appropriate for answering the question, and generalizations about what most people know do not suffice. However, the fact that (3c) is quite marked even as a statement supports the initial impression that the addressee *does* qualify as an implicit authority. Otherwise we would expect (3c) to have a readily available reading as informative statement, just as (6c) did when the addressee's authoritativeness was not specified.

But the kind of knowledge involved in (3) – that is, knowing the name of a kind – may still figure in the explanation of (3) in another way. By hypothesis, the implicit authority of the addressee is necessary but not sufficient for a questioning interpretation. There must also be enough of a differential between the states of speaker and addressee, evident in the context of utterance, to support viewing the speaker's commitment as contingent on the addressee's. This, I submit, is what is lacking in (3). Furthermore, it is somewhat difficult to supply, apart from the addressee already having mentioned the name itself. In other cases we have considered, the superiority of one agent as a source could be attributed to relatively clear-cut evidential distinctions, such as direct experience vs. inference. It is hard to see how a comparable distinction between sources could be made for name-knowing.

If this explanation is on the right track, it suggests that additional background assumptions distinguishing speaker and addressee might improve the declaratives. Suppose, for instance, that the fruit-eater is known among her colleagues (including the speaker) for the delicious-looking lunches she brings from home, which sometimes include some relatively obscure fruit. The speaker has in the past asked about fruits unfamiliar to him, and each time she has

unfailingly supplied the name. It seems to me that with this assumed background, both declaratives improve; the falling version is (unsurprisingly) better with *so*.

6. Conclusion

In this paper I have offered a proposal that models the notion of 'commitment' and links it to the use of declarative sentences in English. The influence of declarative form, and the commitment it expresses, is shown to carry over into the non-canonical use of declaratives as questions. Along the way I introduced a characterization of *sources* for commitments, useful among other things for reasoning about contextual requirements and the nature of questioning.

One goal of the paper was to draw attention to the reality of restrictions on declaratives as 'initiating' questions, above and beyond limitations attributable to the expression of bias. I argued that the restrictions in question fall into two classes. The underlying factor in the first class is the pragmatic expectation that commitments will have sources. In the usual course of events, this expectation leads to an inference that the speaker who commits as a source has adequate evidence, with infelicity arising only in contexts where that inference is blocked.

The second and broader class of restrictions reflects the need for supplementary features to support interpretation of a declarative as 'questioning'. Under the proposed analysis the restricted domain of IDQs is a natural consequence of their declarative nature, given that expressing speaker commitment is not a move inherently suited to questioning. The speaker's commitment, I claim, is interpretable as questioning to the extent it is understood as *contingent* on the addressee's ratification of the content. Rising intonation facilitates such an interpretation by marking the utterance as contingent in a general sense, with the context filling in the details. The context, for its part, must cooperate in making evident the superiority of the addressee over the speaker as a source. The shortcomings of the contexts where declaratives are infelicitous were explained in these terms.

The present analysis departs significantly from that of Gunlogson (2003), and differs as well from other recent treatments such as Nilsenova (2006), Bartels (1997), and Poschmann (this volume). One important point of commonality, however, is the association of declaratives with commitment, 'assertiveness', or the like. All of these accounts accept the premise that the declarative component contributes in some fashion to the interpretation, and that its contribution goes, roughly speaking, on the assertive side of the ledger rather than the inquisitive. A corresponding premise is that rising intonation is ultimately responsible, directly or indirectly, in part or wholly, for the relative ease with which (at least some) rising declaratives are interpretable as questioning. The analyses differ considerably in how they approach the problem of how these elements join to produce a questioning effect, and the

accompanying problem of what a 'questioning effect' amounts to. One point of difference relevant here is the focus on distributional restrictions as a phenomenon in need of explanation in both the present analysis and Gunlogson (2003). The goal of accounting for these restrictions on declaratives as questions, which is at the heart of this proposal, does not figure significantly in the other proposals. A direct comparison is therefore somewhat difficult, although I will comment briefly on Gunlogson (2003) and on Poschmann's proposal.

The present analysis shares with Gunlogson (2003) the fundamental premise that declaratives are 'true to form' in expressing commitment across their range of use, including questioning. In contrast to the proposal made here, Gunlogson (2003) adopted lack of speaker commitment as a definitional property of 'questions' and proposed that the rise was responsible for assigning the declarative commitment to the *addressee*, consistent with interpretation of a rising declarative as a question. A biased context resulted from the addressee's commitment while the speaker could remain uncommitted. The restrictions were taken to follow from a contextual bias condition requiring that the addressee be understood as committed to the content of the rising declarative in the context of utterance; only then, with an addressee recognized as already in possession of the content, could the declarative be taken as a question.

Some of the flaws of the 2003 approach are noted by Poschmann (this volume). Her criticism of the Contextual Bias Condition was noted and accepted in the presentation of data in Section 2.1. While I cannot address the rest of Poschmann's observations in detail, I do want to acknowledge their role in the rethinking that went into the substantially revised analysis presented here. In particular, her detailing of the differences between 'echo' declarative questions and what she calls 'confirmative' questions was influential in my decision to confine attention at first to instances of what I call 'initiating' questions. (Poschmann's 'confirming' and my 'initiating' categories are quite similar, possibly identical, depending on how the definitions are construed.)

Beyond the fine points of category names and definitions, there is a more significant difference between Poschmann's binary classification (echo vs. confirmative question) and my *de facto* division of declarative questions into IDQs vs. everything else. I have not proposed that the IDQ category has theoretical significance, nor do I intend to do so. For Poschmann, by contrast, the categories of echo questions and confirmative questions correspond to two distinct kinds of speech acts. A confirmative question is said to operate as a 'tentative assertion', an idea that sounds quite compatible with the notion of contingent commitment put forward here. Assessment is difficult, though, because the level of analysis is different in the two cases: where Poschmann's account uses speech acts such as QUEST, mine involves more primitive elements than speech acts (such as *being a source*) and can be viewed as an attempt to derive a category like QUEST.

I expect the account offered here to generalize over 'utterance-based' uses of declarative questions, including at least some of the uses classified as echoes by Poschmann (reserving judgment for now on whether there is a core subset of echoes warranting special treatment; as Poschmann notes, the relevant distinctions are not entirely clear-cut). Echoing uses differ crucially from IDQs in their context of utterance. By definition, when an echoing declarative is uttered, the context is *not* neutral with respect to the declarative content. Instead, the initial speaker is committed as source, with the result that the echoer does not have to be. The relative freedom of the echoer is reflected in the observation that echo questions (rising ones at least) allow for a broader range of attitudes, including skepticism, than IDQs do. Ultimately, I expect this difference to be traceable to the independently motivated Source Principle.

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Notes

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[1] Tag questions come in different intonational flavors, but since none of them are without bias, the point holds regardless of which is chosen.

[2] The question mark does not necessarily indicate rising intonation in Beun's examples, but just indicates that the declarative functions as a question.

[3] The symbol *w* stands for a possible world; and *W* stands for the set of all possible worlds.

[4] The rule prohibiting inconsistency can likewise be thought of as a constraint on the discourse future, an expectation of non-empty commitment sets that holds for all discourses.

[5] I'm idealizing here by ignoring psychological factors such as memory limitations, without denying that they exist and play a role in actual discourse.

[6] The empty set, being a subset of every set, must be excluded as a commitment set because it entails every proposition.

[7] I reserve the term *neutral* for a context where all possible configurations of positions on φ and ¬φ remain accessible without revision. *Biased* as defined picks out only a subset of the remaining possibilities. As a result, *neutral* and *biased* are not converse, i.e., a non-neutral context is not necessarily biased and a non-biased context might not qualify as neutral.

[8] Declaratives that present a non-entailed inference drawn from the preceding utterance are not excluded. I do not consider such cases in this paper.

[9] I am aware that the term *source* evokes evidentiality and perhaps other topics. I expect that there *are* connections with evidentiality to be found, but I do not have any to propose at this point, and my claims about *source* are restricted to the sense in which I define it.

[10] This does not rule out the possibility that a preceding statement sparked the process leading to the responder's affirmation, thus inspiring it in a sense even if the affirmation does not depend

on the statement's content. My claim concerns independence in the narrower, content-based sense.

[11] Both particles have other uses than the ones illustrated above, and *oh* especially has a very broad range. There is much more to be said about them, and about related particles such as *ok* and *no*, but it is not a topic I can do justice to here.

[12] There exists another possibility: a proposition should count as sourced if it is entailed by some combination of sourced propositions of α and β. For instance, if α is the sole source for ψ, β the sole source for $\psi \rightarrow \varphi$, and both ψ and $\psi \rightarrow \varphi$ are joint commitments, then α and β are entitled to conclude that φ. We can think of φ as having a composite source in this case. I omit composite sources from the discussion here as they introduce complications not relevant to the issues at hand.

[13] I consider here only cases of joint commitment; additional configurations are possible if cases of disagreement and non-commitment are included.

[14] This is not to deny the existence of less canonical uses, such as exam questions, or to insist that only sincere requests for information qualify as 'questions'. I assume that these uses are related in important respects. For instance, in both exam and information questions, the speaker refrains from supplying an answer and indicates a desire for the addressee to supply one. The difference lies in the motivation and intention attributed in each case, with an epistemically-based interpretation as default. Elaborating and defending this claim would take me well beyond the scope of this paper, however, so I settle for the usual simplifying step of concentrating on the information question first.

[15] I avoid the term 'assertion' since it is generally associated in formal semantics and pragmatics with the category I call 'joint commitment', rather than the individual-level commitment I intend here.

[16] As mentioned in Section 2.1, negative polar interrogatives are biased in ways that will not be explored here.

[17] Non-informative, that is, with respect to the propositional content. The speaker may intend to 'inform' in a more general sense of expecting the addressee to learn something novel from the utterance.

[18] The restriction to an immediately succeeding move is ultimately too narrow, on two counts: (i) the possibility of marking contingency with respect to the *preceding* move should be recognized; and (ii) the demand for an *immediately* succeeding/preceding move can perhaps be relaxed. I offer the narrower version for the sake of specificity and adequacy for present purposes.

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