# Compliance and non-compliant strategies

**—A reply to comments by Dustin Tucker—**

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This is a reply to comments made by Dustin Tucker on our paper *Inquisitive Semantics and Pragmatics* (Groenendijk and Roelofsen, 2009) at a workshop on questions in discourse and action, held in Michigan, October 2-4, 2009.

Dustin raises a number of issues concerning our notion of *compliance*, and also criticizes our treatment of alternative questions. His observations have affected our perspective on these aspects of the paper quite significantly. In this reply we will only be concerned with compliance. We have also given a lot of thought to Dustin's critique on our analysis of alternative questions, and we will certainly address this in future work, but we feel that our ideas are too much 'in progress' at the moment to include them in this reply. We may provide an extended reply at some later stage.

## 1 Compliance

One of Dustin's main observations is that non-compliant responses are not always 'bad'. To illustrate this, he gives two examples of under-informative responses, (1) and (2), and two examples of over-informative responses, (3) and (4):

(1) Will Alf go to the party?
   a. Will Bea go?
   b. He will go if Bea does.

(2) Was the die roll odd?
   a. Well, it wasn't a 1 or a 3.
   b. Well, it wasn't a 2 or a 4.

(3) Was the die roll odd?
   a. Yes, it was a 3.

(4) Is it raining or snowing? (pronounced as a polar question)
   a. Yes, it is raining.

What exactly is the notion of relatedness that compliance is supposed to capture? The above responses are intuitively perfectly 'related' to the issues that they address, so why are they not regarded as compliant?

### 1.1 What is compliance supposed to capture, and why?

Compliance is intended to capture a notion of *logical relatedness*, just as entailment is intended to capture a notion of logical consequence. To see what this amounts to, consider the following examples:

(5) a. Alf is at a workshop in Chicago this week.
b. So he will not come to the party tomorrow.

(6) a. Will Alf come to the party tomorrow?
b. He is at a workshop in Chicago this week.

Intuitively speaking, the inference in (5) is perfectly valid. But (5b) is not a logical consequence of (5a). For it to be a logical consequence we would need the additional premisses that Alf cannot be in two places at the same time, and that 'tomorrow' is still part of 'this week'. Similarly, the discourse in (6) is perfectly coherent—intuitively speaking, (6b) suitably addresses the issue raised by (6a). But (6b) is not *logically* related to (6a). Therefore, our theory should predict that (6b) is not compliant with (6a). So compliance is intended to be a very strict notion of relatedness, just as entailment is a very strict notion of validity.

Moreover, compliant responses are characterized as responses that are *safe*: assuming that the initiator was inquisitively sincere, compliant responses are guaranteed to be compatible with the initiator's information state. Thus, compliant responses avoid conflicts, and smoothly enhance of the common ground.

*Optimally* compliant responses have the additional feature that they *completely satisfy* the initiator's needs. They completely resolve the given issue, and they do nothing more than that, thus preventing any potential conflicts with the initiator's information state. Thus, optimally compliant responses enhance the common ground in a safe and fully satisfying manner.

For these reasons, optimally compliant responses are *ideal* responses from the viewpoint of cooperative information exchange. Sometimes, there will be very good reasons to give a response that is not optimally compliant. But optimal compliance is ideal.[1]

## 2 Non-compliant strategies

As indicated above there may be several reasons for a responder to give a non-compliant response. In this section we will consider some of these in somewhat more detail, with particular reference to Dustin's examples (1)-(4).

### 2.1 Over-informative responses

**Knowing too much.** Sometimes a cooperative responder is forced to give a non-compliant response, because she 'knows too much', so too speak. For

[1] Apart from this, compliance is a useful notion in characterizing *congruence* requirements on the placement of focus. A detailed discussion of this goes beyond the scope of the paper under discussion and also beyond the scope of this reply. But see (Groenendijk, 1999) and (Balogh, 2009).

instance, if she knows that $\neg p$, then she must respond to a conditional question $p \rightarrow ?q$ with $\neg p$. For, even though this response is not compliant, it is the *optimally informative response* given her information state. In general, optimally informative responses are defined as follows.

**Definition 1 (Optimally informative responses).** *$\varphi$ is an optimally informative response to $\psi$ for a responder $r$ with information state $\rho$ just in case:*

$$|\varphi| = \bigcap \{\alpha \in [\psi] \mid \rho \subseteq \alpha\}$$

That is, $\varphi$ is an optimally informative response to $\psi$ for a responder $r$ iff:

- $\varphi$ establishes every possibility for $\psi$ that is supported by $\rho$, and
- $\varphi$ does not provide any more information than that.

A responder will generally seek to give an optimally informative response, even if such a response is not compliant. If an optimally informative response is indeed non-compliant, then it may go against the expectations of the initiator, and this may lead to a conflict that disturbs the enhancement of the common ground. This is something that should in principle be avoided. However, detecting conflicts is an important aspect of maintaining the common ground, and without proper maintenance, enhancement of the common ground entirely misses its point.

**Justifying a compliant response.** Another situation in which a responder may choose not to give a compliant response—or at any rate not *just* a compliant response—is when, in addition to the response itself, she wants to convey her *justification* for that response. This is illustrated by Dustin's examples (3) and (4). In (3), the responder first gives a compliant response, *yes* (the die roll was odd), and then gives a justification for this response, *it was a* 3. It may be good for a responder to provide a justification for her response, especially if she is not entirely sure about it, in order to 'double-check' with the initiator. This could prevent the participants from establishing unjustified information, as illustrated in (7):

(7) a. Ann: Will Alf come to the party tomorrow?
b. Bill: No, he is at a workshop in Chicago this week.
c. Ann: I think he cancelled that trip in the end.
d. Bill: Oh, then I don't know whether he will come to the party.

Another reason to justify a compliant response is to anticipate a potential follow-up question. If Bill had simply replied *no* in (7b), it would have been very normal for Ann to ask *why*. And then Bill would have been forced to justify his response. By providing that justification right away, he anticipates the *why* question.

Sometimes (in fact rather often) one can already tell from a given question what a likely follow-up question will be. Consider the following example:

(8) Are you seeing someone tonight?

This can be taken as a polar question and answered as such, with either *yes* or *no*. If the answer is *yes*, then the follow-up question is likely to be:

(9) Who?

Therefore, it is very natural to respond to (8) not only with a compliant answer, but also a justification thereof, in anticipation of the follow-up *who* question.

The phenomenon that polar questions like (8), when answered positively, almost automatically lead to a follow-up question like (9) seems to be a rather general phenomenon, which we call *inquisitive disclosure*. The basic inquisitive semantic framework that we presented in the paper does not give us enough tools to model this phenomenon formally. But we are currently developing extensions of the basic framework that would allow us to do so.

Notice that it is in fact quite natural to skip the compliant response itself, and directly proceed to the justification, or to the follow-up question if you want:

(10) Are you seeing someone tonight?
  a. Yes, I am seeing Ann tonight.
  b. I am seeing Ann tonight.

Responses like (10b) do two things at the same time: they imply a compliant response to the question, and they provide a justification for that response.

### 2.2 Under-informative responses

We have so far discussed two scenarios in which a responder has good reasons not (just) to give a compliant response. The first was one in which 'she knew too much', in the sense that none of the compliant answers she could give was optimally informative. The second scenario was one in which she provided a justification for her response, either in order to double-check her judgment, or in anticipation of a follow-up question. These are both cases in which an *over-informative* response is given.

There are also situations in which the responder does not have enough information to provide an optimally compliant response, and is therefore forced to adopt an alternative strategy. In this case, the responder could choose to give a non-optimal compliant response, in the form of a partial answer or a sub-question. However, there are also various non-compliant strategies that she could adopt. We will briefly discuss three such strategies below, which are especially intended to shed light on Dustin's examples (1) and (2).

**Bridging questions.** Consider Dustin's example (1a), repeated in (11):

(11) a. Will Alf go to the party?
  b. Will Bea go?

According to our definition of compliance, (11b) is not a compliant response to (11a). This correctly reflects the fact that (11b) is not logically related to (11a).

That is not to deny that, in a more broad sense of the word, these two sentences are related. They are formally very much the same, the first sentence even serves as a source for the ellipsis in the second. It is natural to read the second sentence with contrastive focus on *Bea*, which we may take to indicate that (11b) is a specific instance of a more general theme: who else will go to the party? We may also observe that both (11a) and (11b) are subquestions of the bigger question: Who will go to the party? And we may go on like this for a while. Both sentences are about the attendance of a certain party...

But none of these obervations show in any way that the two questions are *logically* related. They are not. When translated in propositional logic (or in predicate logic) they correspond to two polar atomic questions $?p$ and $?q$ (or $?Pa$ and $?Pb$) that are logically independent, just like the atomic sentences $p$ and $q$ (or $Pa$ and $Pb$). This means that this example does not really present a problem for the definition of compliance in our view.

Still, the intuition is that a sequence of two logically unrelated atomic questions such as those in (11) constitutes a coherent piece of discourse, and in particular, that (11b) may very well be a sensible counter question to (11a), in case the question cannot be resolved directly. So, let us try to figure out in some detail why this is the case.

Let us consider some potential continuations of (11). An ideal continuation would be the one in (12):

(12) a. Will Alf go to the party?
b. Will Bea go?
c. Yes, she will.
d. Then Alf will go as well.

This is one out of four ideal continuations: (12d) could also have been: "Then Alf will not go"; both these options for the (d) sentence could also have followed a negative answer in (12c).

The continuation of (11) in (12), and its three alternatives, can be used to clarify the type of relatedness between the questions in (a) and (b) that is at stake. It is the piece of contingent world knowledge that whether or not one person will attend a certain party may depend on whether one or more other persons will or will not attend that party. The happy continuation of (11) in (12) reveals that the person who asked the second question, although she neither knows the answer to the first, nor to the second question, does possess the relevant information that a positive answer to the second question brings her to a positive answer to the first question. And that is what she finally reports in (12d): if Bea goes to the party, then Alf will go as well.

Note that the *Then* in (12d) can not just be left out. The person who asked (12b) may happily accept the information provided by (12c), whereby her own state comes to support a positive answer to the original question in (12a). But to arrive at this 'conclusion' she combines information from two different sources, and hence it is inherently insecure. The interjection *Then* signals this. It is left to the other participants, in particular the person who asked (12a), to decide

whether they are also prepared to accept these two pieces of information from different sources (see Groenendijk, Stokhof, and Veltman, 1997).

The coherence of the conversation in (12) is not due to logical relatedness of the two questions in (12a) and (12b). Its 'success' derives from the contingent fact that *relative to the information* of the person who responds to (12a) with the counter question (12b), the two questions happen to be related in a way that the conversation can be brought to a happy end, thanks to the answer that could be provided to the counter question.

Note also that the more and less superficial relations between the two questions play no role. In principle, the questions in (12a) and (12b) can be replaced by any arbitrary two atomic questions, and the structure of the story remains precisely the same. It is not difficult to invent a story where relative to the information state of the person who asks (13b), this question is related to the question in (13a).

(13) a. Will Alf go to the party?
b. Will it rain in Tel Aviv?

Alf lives in Jerusalem, he will not drive to Tel Aviv on his motor bike to attend a wet garden party.

Our diagnosis so far is that a counter question is perceived as 'good'/sensible just in case it is not too difficult to imagine that relative to the state of the responder the counter question is related to the initial question. But we have not provided a clear picture yet of what it means for two questions to be related relative to an information state.

First, note that instead of the happy continuation of (11) in (12) there is also the less happy scenario exemplified in (14).

(14) a. Will Alf go to the party?
b. Will Bea go?
c. Yes, she will go.
d. Then I don't know (whether Alf will go to the party).

One thing we can conclude from (14d) is that, unlike in the happy conversation (12), the state of the responder does not support (an answer to) the conditional question (15).

(15) If Bea goes to the party, will Alf go as well?

However, provided that we may assume that asking the counter question was a cooperative move in the conversation in (14), we may also conclude from (14d) that in an alternative scenario where the answer in (14c) had been: "No, she will not go", the conversation would not have ended with (14d), but rather with a conditional response "Then Alf will go to the party", or "Then Alf will not go to the party either". In other words, we may reasonably conclude from the way things proceed in (14) that the state of the responder *does* support the conditional question (16).

(16) If Bea does not go to the party, will Alf go?

So, the most straightforward way to perceive the counterquestion in (14b) as 'good', i.e., as being related to the initial question in (14a) in the state of the responder, is that she either has an answer to the conditional question in (15), or to the conditional question in (16), or to both. That guarantees that at least one of the four ideal continuations of (11) could potentially be realized. At least one of the two answers to the counter question is such that it not only resolves the counter question as such in the state of the person who asked it, but also the initial question in one of the two ways in which it can be resolved.

If we translate the initial question as $?p$, and the counter question as $?q$, and let $\varrho$ be the state of the responder, then in order for the counter question to be a cooperative move, the following things should hold:

(17) a. $\varrho \not\models ?p$
b. $\varrho \not\models ?q$
c. $\varrho \models (q \to ?p) \vee (\neg q \to ?p)$

There is an alternative way to put (17c). We can also say that $\varrho$ supports a compliant answer to the conjunction of the two conditional questions in (15) and (16), which can be represented as in (18a), and which is equivalent with (18b).

(18) a. $(q \to ?p) \wedge (\neg q \to ?p)$
b. $?q \to ?p$

The formulas (18a) and (18b) express the same question, for which there are four possibilities:[2]

(19) a. $|(q \to p) \wedge (\neg q \to p)| = |p|$
b. $|(q \to p) \wedge (\neg q \to \neg p)| = |q \leftrightarrow p|$
c. $|(q \to \neg p) \wedge (\neg q \to p)| = |q \leftrightarrow \neg p|$
d. $|(q \to \neg p) \wedge (\neg q \to \neg p)| = |\neg p|$

The state $\varrho$ of the responder supports the question $?q \to ?p$ iff $\varrho \models p$ or $\varrho \models \neg p$ or $\varrho \models q \leftrightarrow p$ or $\varrho \models q \leftrightarrow \neg p$. The first two of these four options are out, given that $\varrho \not\models ?p$. The other two options correspond to two different ways in which there is a full dependence of the question $?p$ on the question $?q$ in $\varrho$. If one of these two options holds, then an unhappy continuation of the discourse as exemplified in (14) will not occur. If the counter question can be resolved, then one of the four ideal continuations will be realized, and the initial question will eventually be resolved as well.

There are also four non-trivial non-optimal compliant answers to $?q \to ?p$:

(20) a. $|q \leftrightarrow p| \cup |p| = |q \to p|$
b. $|q \leftrightarrow p| \cup |\neg p| = |\neg q \to \neg p|$
c. $|q \leftrightarrow \neg p| \cup |p| = |\neg q \to p|$

[2] Compare the discussion of $(p \vee q) \to ?r$ in the paper.

d. $|q \leftrightarrow \neg p| \cup |\neg p| = |q \rightarrow \neg p|$

When at least one of these four answers is supported by the state of the responder, we can say that there is at least a partial dependence of the question $?p$ on the question $?q$ in her state. This does not necessarily prevent an unhappy continuation of the discourse as exemplified in (14). But as long as one of these four partial answers is supported, then one of the ideal continuations could be realized. And as we already noted above, this is what we expect the state of the responder to be like: it should support a non-trivial compliant answer (although not necessarily an *optimally* compliant answer) to $?q \rightarrow ?p$, that is, it should support one of the conditional questions in (15) and (16).

**Bridging conditionals.** This brings us to Dustin's second example, (1b), repeated in (21), where the response is not a counter question, but a non-compliant conditional assertion:

(21) a. Will Alf go to the party?
b. He will go if Bea does.

This conditional response, $q \rightarrow p$ communicates that there is at least a partial dependence between the initial question $?p$ and the question $?q$ relative to the information state of the responder. This implicitly raises the issue $?q$. One of the ideal continuations of (21) is given in (22).

(22) a. Will Alf go to the party?
b. He'll go if Bea does.
c. (Will Bea go?)
d. Yes, Bea will go.
e. So, then Alf will go as well.

The discourse in (22) has exactly the same overall effect as the discourse in (11). It only follows a different route in that the responder immediately indicates the dependence between the two questions in her state.

It is important that the kind of relatedness that plays a role here is relatedness relative to the information state of a participant in the conversation, not *logical* relatedness. The following minimal pair may illuminate this point.

(23) Will Alf go to the party?
a. Who will go to the party?
b. Who else will go to the party?

Intuitively, (23a) is a 'bad' response to (23), whereas (23b) is not. The counter question (23a) is logically related to (23). In fact, (23a) entails (23). Every complete answer to the *who*-question (23a) will also resolve the polar question (23). This is not so for (23b). Every complete answer to (23b) will inform us about everyone except Alf whether that person will go or not. This will not tell us

whether or not Alf will go, *unless* we already know that there is a certain contingent dependency between certain people besides Alf going or not going to the party, and Alf's going there. In this case, even a rather partial answer to (23b) may help us to resolve the issue whether Alf will go.

So, precisely if $\models ?\psi \to ?\varphi$, that is, if $?\psi \models ?\varphi$, $?\psi$ is unequivaocally perceived as a bad response to $?\varphi$. On the other hand, if $\not\models ?\psi \to ?\varphi$ while $\varrho \models ?\psi \to ?\varphi$, then it makes perfect sense for a responder with information state $\varrho$ to respond to $?\varphi$ with $?\psi$.

**Other kinds of bridging responses.** Apart from the bridging questions and bridging conditionals discussed above, there are other kinds of bridging responses as well. For instance, there are bridging conditional questions:

(24) a. Will Alf go to the party?
b. Will he go if Bea does?

It seems plausible that these and other bridging responses can all be dealt with in essentially the same way as the bridging questions and bridging conditionals discussed above.

One case may be worth commenting on explicitly here: the case of a *compliant* counter question (i.e., a subquestion). One could argue that responding with a compliant counter question is not necessarily a very sensible move to make. When we discuss such cases in the paper, in particular in motivating the ask-less part of homogeneity, we say that it makes sense to respond with a subquestion of an initial question if resolving *this part* of the bigger question may enable us to resolve *another part* of the bigger question as well. A typical example is provided in (25).

(25) a. Who will go to the party?
b. Will Alf go?
c. Yes, he will go.
d. Then Bea will go as well.
e. Ok, so both Alf and Bea will go to the party.

So, here contingent dependencies play a role as well, not between (25a) and (b), but, as becomes apparent in (25d), between the two subquestions of (25a) whether Alf will go and whether Bea will go. If no such dependency between (25b) and some other subquestion of (25a) exists relative to the information state of the person who asks (25b), then, compliant as it may be, responding to (25a) with (25b) is not very helpful.

If $?\psi$ is to be a good response to $?\varphi$, then there should be a subquestion $?\chi$ of $?\varphi$ such that $\not\models ?\psi \to ?\chi$, whereas in the state of the responder $\varrho \models ?\psi \to ?\chi$.

**Question decomposition.** Finally, let us turn to Dustin's example (2), repeated in (26a-b). Dustin observes that even though (26b) is perhaps not as

good as an optimally compliant response to (26a), it is certainly helpful, as illustrated by the continuation in (26c-e).

(26) a. Was the die roll odd?
b. Well, it wasn't a 1 or a 3.
c. (Was it a 5?)
d. It wasn't a 5 either.
e. Then the die roll wasn't odd.

Our diagnosis of this case is the following. First, the response in (26b) indicates that the responder is not able to give an optimally compliant answer to the question in (26a). Her strategy, then, is to *decompose* the polar question in (26a) into a more fine-grained question, and provide a compliant (though partial) answer to *that* question. Presumably, the decomposed question here is:

(27) Was the die roll a 1 or a 3 or a 5, or was it a 2 or a 4 or a 6?

We believe that this strategy is quite often adopted when an optimally compliant answer cannot be provided directly. Here are some examples that exemplify, in our view, essentially the same phenomenon:

(28) a. Did John send out the folders and the leaflets?
b. Well, he did send out the folders.

(29) a. Did John take all the packages with him?
b. Well, he did take the ones that were on my desk.

(30) a. Is John ready for his trip to Singapore tomorrow?
b. Well, his suitcase is packed.

(31) a. Did Susan win the tennis game?
b. Well, she did win the first two sets.

We believe that *inquisitive disclosure*, mentioned earlier on page (9), plays an important role here. If this is right, it would establish a nice connection between Dustin's two types of 'die-examples':

(32) a. Was the die roll odd?
b. Well, it wasn't a 1 or a 3.

(33) a. Was the die roll odd?
b. Yes, it was a 3.

In (32), an optimally compliant response cannot be given directly, so inquisitive disclosure is used to decompose the question into a more fine-grained question, which can then be partially resolved. In (33), an optimally compliant response can be given directly, and inquisitive disclosure is used to determine a pertinent follow-up question. This follow-up question, which is addressed by the second part of the response in (33b), is the same more fine-grained question that plays a role in (32).

# 3 Summary

Let us briefly summarize the remarks made above.

## 3.1 Compliant and non-compliant strategies

Compliance is intended to capture a notion of *logical relatedness*. Moreover, compliant responses are characterized as *safe* responses, in the sense that they are guaranteed not to conflict with the initiators information and expectations. Optimally compliant responses have the further feature that they completely satisfy the initiator's needs. Therefore, optimally compliant responses are ideal responses from the perspective of cooperative information exchange.

However, sometimes there are good reasons not to be compliant. A responder may choose to provide an over-informative response, either because she 'knows too much'—that is, neither of the compliant answers she could give are optimally informative relative to her information state—or because she (fore-)sees a need to justify her compliant answer. In other situations, a responder may not have enough information to provide an optimally compliant response, and therefore resort to a non-compliant strategy. In particular (and probably among other things), she could give a *bridging* response or *decompose* the given question into a more fine-grained question, and then give a partial answer to this more fine-grained question.

## 3.2 Expectations, implicatures, and marking

This conceptual story has the potential to shed light on several empirical phenomena. We have hinted at some of these along the way. First, we have pointed out that optimally informative, but non-compliant responses characteristically provide more information than is strictly necessarilly in order to resolve the given issue. Therefore, they may be perceived as 'unexpected' by the initiator, even though they are evidently among the most helpful answers that could be given. For example, $p \wedge q$ may come unexpected as a response to $?(p \vee q)$ and $\neg p$ is unexpected as a response to $p \rightarrow ?q$.

In case the initiator takes the responder to be fully competent to resolve the given issue, these expectations actually take the form of implicatures, or 'suggestions' as we have called them. Other inquisitive implicatures are triggered by under-informative non-compliant answers. First of all, such responses implicate that the responder was not able to give an optimally compliant response directly. Moreover, in the case of bridging responses, they implicate that there must be certain contingent dependencies between two questions relative to the information state of the responder. We have discussed in some detail what kind of dependencies are implicated in the case of a non-compliant counter question, in the case of a compliant counter question (a subquestion), and in the case of a bridging conditional.

Finally, there is the general prediction that any response that is not optimally compliant, and thus deviates from the ideal continuation, is typically linguistically marked. It seems that a further distinction is made in this regard between under-informative and over-informative responses. Under-informative responses are typically marked with a particle like *well*, while over-informative responses are typically marked with particles like *actually*, *in fact*, etcetera. Some key examples are given below:

(34) *Over-informative response:*
   a. Is Alf or Bea coming to the party?
   b. Actually, they are both coming.

(35) *Under-informative response (compliant counter question):*
   a. Who is coming to the party?
   b. Well, is Bea coming?

(36) *Under-informative response (non-compliant bridging question):*
   a. Is Alf coming to the party?
   b. Well, is Bea coming?

(37) *Under-informative response (non-compliant bridging conditional):*
   a. Is Alf coming to the party?
   b. Well, he is coming if Bea is.

(38) *Under-informative response (involving question decomposition):*
   a. Was the die roll odd?
   b. Well, it wasn't a 1 or a 3.

Optimally compliant responses on the other hand are typically unmarked. Marking them with *actually* or *in fact* generally indicates that the responder believes that they are going against the initiators expectations, just as the over-informative responses that are typically marked with *actually* or *in fact*:

(39) a. Is Alf coming to the party?
   b. Actually, he is. ⇒ you didn't quite expect that, did you?

(40) a. Who is coming to the party?
   b. Actually, Alf is coming. ⇒ you didn't quite expect that, did you?

Marking an answer with *well* generally indicates that 'there is more to say', even though the answer itself may already be optimally compliant:

(41) a. Is Alf coming to the party?
   b. Well, yes. ⇒ but there is more to say...

(42) a. Who is coming to the party?
   b. Well, Alf is coming. ⇒ but there is more to say...
   ...other people may come as well

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