

# CONCLUSION, CONSEQUENCE AND SOLUTIONHOOD: THE SEMANTICS OF THREE CATALAN CONNECTIVES\*

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## 1 Introduction

The goal of this paper is to analyze the different semantic and pragmatic behavior of three related discourse connectives in Catalan: *per tant* ('therefore'), *aleshores* ('then') and *doncs* (which does not have an equivalent in English, cannot be translated as French *donc*, but is equivalent to Spanish *pues*).

We argue that these connectives, which are often interchangeable, participate in different rhetorical relations, namely, conclusion, consequence and solutionhood. While *per tant* introduces a conclusion, *aleshores* and *doncs* introduce the consequent of a (covert) conditional. *Aleshores* and *doncs* differ in that the former introduces a consequence while the latter can also introduce a solution.

In a nutshell, *per tant* truth-conditionally conveys that two propositions hold, and is only defined if it is usually the case that when one holds, so does the other; *aleshores* is a pro-adverbial that refers back to an *if*-clause and triggers a contrastive topic interpretation, and *doncs* is a discourse connective whose job is to keep the previous question under discussion open.

Our paper is structured as follows. Section 2 presents the data we aim to account for, section 3 analyzes the three connectives and, finally, section 4 concludes.

## 2 Data

The three Catalan connectives *per tant*, *aleshores* and *doncs* show a complex distribution pattern. For instance, in example (1) both *per tant* and *aleshores* are acceptable, while *doncs* is not. In contrast, examples (2) and (3) show a different pattern: *aleshores* and *doncs* are acceptable, while *per tant* is not.

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- (1) a. A: A és més gran que B i B és més gran que C.  
‘A is bigger than B and B is bigger than C.’  
b. B: Per tant,/Aleshores,/ #Doncs A és més gran que C.  
‘Therefore,/Then,/ #DONCS A is bigger than C.’
- (2) a. A: Tens la tarda lliure?  
‘Are you free tonight?’  
b. B: Sí  
‘Yes.’  
c. A: #Per tant,/Aleshores,/Doncs anem al cine.  
‘#Therefore,/Then,/DONCS let’s go to the movies.’
- (3) a. A: No he estudiat gens aquest estiu.  
‘I haven’t studied at all during the summer.’  
b. B: #Per tant,/Aleshores,/Doncs suspendràs.  
‘Therefore,/Then,/ DONCS you’ll fail.’

In fact, these two connectives (*aleshores* and *doncs*) can sometimes even co-occur, as shown in (4), although this is not always the case, as (5) illustrates.

- (4) a. A: Està plovent  
‘It’s raining.’  
b. B: Doncs aleshores em quedo a casa.  
‘DONCS then I’ll stay at home.’
- (5) a. A: La Maria ha perdut la feina.  
‘Mary has lost her job.’  
b. B: Doncs/#aleshores ja en trobarà una altra.  
‘DONCS/#Then she’ll find another one.’

### 3 Three connectives

We start our study with the connective *per tant* (‘therefore’), continue with *aleshores* (‘then’) and finish the section with *doncs*. First, we first give the characterization of the semantic import of each connective and, next, we expose how our account explains the data presented in section 2.

#### 3.1 *Per tant* (‘therefore’)

The meaning contribution of *per tant* is two-fold: (i) truth-conditionally, *p per tant q* asserts both *p* and *q*, and (ii) *per tant* is only felicitous if it is common ground that in any *p* situation that is normal, *q* holds (see Jayez and Rossari (2000) for a similar proposal for French *donc*). That is, proposition *p* is taken as a true premise (and not as a hypothetical state of affairs) which leads to the conclusion *q*. The semantic contribution of *per tant* can be seen in (6):

- (6)  $[[p \text{ per tant } q]] = p \ \& \ q$   
 defined only if:  $p > q$  is common ground  
 where  $>$  conveys that if  $p$ , then normally  $q$ . Cf. the definition in (7).
- (7) The Truth Definition of  $A > B$  (From Asher and Lascarides 2003:p. 189)  
 $[[A > B]]^M(w)$  is true iff  $*_M(w, [[A]]^M) \subseteq [[B]]^M$ .

The default use of *per tant* occurs when the same speaker utters the premise  $p$  to reach a conclusion  $q$ , as it is the case in (8).

- (8) No he estudiat gens aquest estiu. Per tant, suspendré.  
 ‘I haven’t studied at all during the summer. Therefore, I’ll fail.’

Moreover, if  $p > q$  is not part of the common ground, it is usually possible to accommodate that this is the case. That is, if Susan says (9) to Harry and Harry did not know that Susan takes a blue pill on Thursday, he will have to accommodate and introduce this information into the common ground, given that Susan treated this relationship as if it were already in the common ground.

- (9) Avui és dijous. Per tant, m’haig de prendre la pastilla blava.  
 ‘Today is Thursday. Therefore, I must take the blue pill.’

In a dialogue between A and B, the use of *per tant* is more constrained, since it is A who expresses his belief in  $p$ . If, subsequently, B utters *per tant*  $q$ , it is B who needs to believe that  $p$  is true, although he has never explicitly asserted that.

### 3.1.1 Explaining the facts in §2

In dialogues, *per tant* is acceptable in logical reasonings, where  $p > q$  (or even  $p \rightarrow q$ ) has been explicitly asserted, as in example (10), or is part of the common ground, as was the case in example (1), and it is easy for the interlocutor to believe that  $p$  is true.

- (10) a. A: Si la llum està verda, l’habitació està lliure. I, mira, ara la llum s’ha posat verda.  
 ‘If the light turns green, the room is free. Look, the light just turned green.’  
 b. B: Per tant, l’habitació està lliure!  
 ‘Therefore, the room is free!’

In example (2), *per tant* is not acceptable because generally  $p > q$  is not part of the common ground. If it is clear that speaker and hearer have an agreement saying that they go to the movies whenever they are free, then the use of *per tant* would be felicitous. Finally, in example (3), the unacceptability of *per tant* stems from the fact that, in most contexts, it may be harder to accommodate that the speaker adopts the belief in  $p$  expressed by A. Again, if we find ourselves in a context in which it is clear that the speaker believes  $p$  (i.e., a mother talking to her lazy child), this would render *per tant* felicitous.

## 3.2 *Aleshores* (‘then’)

Our starting point for analyzing *aleshores* is Iatridou’s (1994) analysis for English *then*. According to her, *then* is a resumptive *pro-adverbial*, and the construction *if p ... then q* is analogous to a left dislocation plus a resumptive pronoun. Given that it is treated as a proform, *then* is interpreted as

the restrictor of an operator (i.e., the function that would otherwise be carried out by the *if*-clause), and the *if*-clause is a left-dislocated clause.

We follow Iatridou in treating *aleshores* as a resumptive pro-adverbial. However, unlike her (see Iatridou 1994 for the details of her presupposition-based analysis), we propose that the resumptive pro-adverbial carries a contrastive topic (CT) interpretation (see Büring 1999, 2003, Hara and van Rooij 2007, Tomioka 2008, among others, for different analyzes of the CT interpretation). In English, a CT is usually marked by a L-H\* prosody, as in (11), where the CT is placed on the proper name.

- (11) a. A: Among John and Bill, who came to the party?  
 b. B: [<sub>CT</sub> John] came.

According to Hara and van Rooij (2007), a CT generates topic alternatives. For instance, the CT in example (11) would generate the alternatives shown in (12a). Furthermore, it triggers an implicature according to which, for each of the non-asserted alternatives, the speaker does not know whether the alternative is true. For example (11), this amounts to (12b): the speaker does not know whether Bill came or, in other words, it is possible that Bill did not come.

- (12) a. Topic alternatives: {John came, Bill came}  
 b. CT-implicature:  $\neg K_{sp}(\text{Bill came})$   
 Possibly Bill didn't come.

Going back to *aleshores*, we propose that the resumption is about worlds instead of individuals. We treat *aleshores* as a VP modifier that makes sure that the content it modifies is evaluated against a set of worlds (or rather world-time pairs) that have been previously mentioned. This can be seen in (13), where *aleshores* is not picking out the referent of an *if*-clause.<sup>1</sup>

- (13) a. En Joan va venir *aleshores*<sub>i</sub>  
 '(lit.) John came then<sub>i</sub>'  
 b.  $\exists e[\text{come}(e,j) \ \& \ \text{PAST}(e) \ \& \ \text{AT}(e,\text{THEN}_i)]$   
 c.  $[[\text{aleshores}_i]]: \lambda P \lambda e.P(e) \ \& \ \text{AT}(e,\text{THEN}_i)$   
 d.  $[[\text{THEN}_i]]: g(i)$   
 where  $g$  is an assignment function from indices to worlds that are distant from the actual world.

What (13) shows is that *aleshores* is a VP modifier that introduces the AT-relation between an event and a state of affairs which bears an index. This index is fed the assignment function  $g$ , which returns a world in which this event takes place. Note that we have included the requirement that the only suitable worlds to be referred to are those considered distant. Although this demands further research, this should be integrated in the semantics of *aleshores* in similar terms as the distance

<sup>1</sup>This *aleshores* should be distinguished from the discourse connective *aleshores* that introduces the rhetorical relation of narration, as in (i).

- (i) En Pere va arribar a casa. *Aleshores*, va entrar a la cuina i es va preparar un entrepà.  
 'Peter arrived home. Then, he got into the kitchen and prepared a sandwich.'

presupposition in *there* (vs. *here*) or *that* (vs. *this*). *Aleshores* is thus interpreted as an anaphoric but not indexical item, that contrasts with *now*.

In (14) we provide a kratzerian semantics for conditionals (Kratzer, 1977, 1981, Kratzer et al., 1991). Following standard practice we conjoin the denotation of the *if*-clause with a modal base  $f$ : for all worlds compatible with the circumstances and the meaning of the *if*-clause, I stay at home at these worlds.

- (14) a. If it's raining, I'll stay at home.  
 b.  $\forall w' \in \bigcap f(w) \cup \{w'' : \text{it's raining in } w''\} : \exists e[\mathbf{stay-home}(w')(e, I)]$

In (15) we see that *aleshores* is coindexed with the *if*-clause that precedes it (see (15a)) and, hence, our modal base  $f$  is intersected with the set of worlds entertained by the *if*-clause irrespective of the presence of *aleshores*. In (15b), *aleshores* bears index 2, just like the *if*-clause, so the variable introduced by *aleshores* is now bound.

- (15) a. [If it's raining]<sub>2</sub>, *aleshores*<sub>2</sub> [I'll stay at home]  
 b. [[*aleshores*<sub>2</sub> I'll stay at home]]<sup>[2→if it's raining]</sup>

In fact, *aleshores* does not introduce any truth-conditionally relevant differences, as shown in (16). However, the presence of a resumptive pro-adverbial does yield a pragmatic effect. We propose here that it is amenable to CT.

- (16) a. If it's raining, then I'll stay at home  
 b.  $\forall w' \in \bigcap f(w) \cup \{w'' : \text{it's raining in } w''\} : \exists e[\mathbf{stay-home}(w')(e, I) \ \& \ \text{AT}(e, w')]$

Consider examples (17) and (18). Their basic meaning is the same: all raining worlds are worlds in which I stay at home. However, in (18), the presence of *aleshores* forces a CT reading of the *if*-clause in that (i) alternatives to  $p$ -worlds are evoked and (ii) the speaker conveys that his assertion only concerns  $p$ -worlds. That is, the difference between (17) and (18) is that, if it doesn't rain, the former is true regardless of whether I stay at home or not, whereas in the latter, the speaker is not committed to saying what happens in those worlds where it doesn't rain.

- (17) Si plou, em quedo a casa.  
 'If it's raining, I'll stay at home.'
- (18) Si plou, *aleshores* em quedo a casa.  
 'If it's raining, then I'll stay at home.'
- a. CT implicature: There may be non-raining worlds, and I'm not committed to saying what happens in those worlds.

(19) shows a general schema of the CT contribution of *aleshores*. First, two topic alternatives are generated and it is implicated of the non-asserted one that the speaker doesn't know what happens if  $p$  does not hold.

- (19) a. Topic alternatives: {what happens if  $p$  holds?, what happens if  $p$  does not hold?}  
 b. CT-implicature: the speaker doesn't know what happens if  $p$  does not hold.

This analysis allows us to explain Iatridou's observation that *then* (and also *aleshores*) is unacceptable in some conditionals, as shown in (20) and (21) for two conditional constructions in English and Catalan.

- (20) a. # If John is dead or alive, then Bill will find him. (From Iatridou 1994)  
 b. # Si el Joan està viu o mort, aleshores el Guillem el trobarà.
- (21) a. # Even if John is drunk, then Bill will vote for him. (From Iatridou 1994)  
 b. # Fins i tot si el Joan està begut, aleshores el Guillem el votarà.

Our account readily explains these facts. In both cases the CT implicature is incompatible with the conditional. In (20), the antecedent of the conditional ('If John is dead or alive') exhausts all possibilities and thus it is impossible to generate the alternatives required by *aleshores* and *then*. In (21), *even* and *fins i tot* presuppose that if John is not drunk, Bill will also vote for him. This contradicts the CT implicature, according to which if John is not drunk, the speaker does not know whether Bill will vote for him.

### 3.2.1 Explaining the facts in §2

Let us go back to the data we introduced in section 2. In examples (1)–(4), *aleshores* was acceptable. All these examples are fully compatible with the CT implicature. Since *aleshores* targets an antecedent *if*-clause, if it is not overt, it will be covert. Thus, (2) is interpreted as (22), and (3), as (23).

- (22) Si tens la tarda lliure, aleshores anem al cine.  
 'If you are free tonight, then, let's go to the movies.'
- (23) Si no has estudiat gens aquest estiu, aleshores suspendràs.  
 'If you haven't studied at all during the summer, then you'll fail.'

We will be concerned with the co-occurrence of *aleshores* and *doncs* (examples (4) and (5)) once the analysis for *doncs* is introduced.

## 3.3 Doncs

At this point we turn to a connective that doesn't have a counterpart in English, but whose distribution is parallel to Spanish connective *pues*. The Catalan connective *doncs* is obviously etymologically related to French *donc*, but while the French connective is translated as *therefore*, *doncs* conveys different information.

*Doncs* comes from Latin *tunc*, which means 'then', and while it shares contexts of occurrence with *then* and French *donc*, it has a wide variety of uses, which makes it a very elusive word. It goes from being a filler word that gives the speaker time to think about what comes next, to signaling that the proffered proposition contrasts with the one uttered previously.

Two properties are common to all uses of *doncs*: first, it is a particle that does not bear the sentence stress; second, it conveys – non-truth-conditionally – that the speaker acknowledges the interlocutor's previous move and that the proposition it introduces relates to the previous question under discussion (QUD) (Roberts, 1996).

In Roberts's QUD model, conversation proceeds via raising and resolving questions, and the current QUD corresponds to the discourse topic. Typically, we start out by posing or addressing a very general question such as *How is the state of things?*, but it doesn't get resolved in the first

move. Alternatively, the next moves consist of posing and addressing sub-questions that are related to the more general one via entailment (e.g. *Did you have a nice weekend?*, *Did you hear back from your doctor?*). They pile up in the partially ordered set that constitutes the QUD, and once they get resolved, they disappear from the set.

As for the uses we are interested in (that is, those that apparently overlap with *therefore* and *then*), we posit two different *doncs*: “conseq-doncs” and “solution-doncs”, which are mapped onto the two different structures in (24).

- (24) a. conseq-doncs: doncs (if  $p$ ,)  $q$ .  
 b. solution-doncs: (if  $p$ ,) doncs  $q$ .

Whereas conseq-doncs introduces a conditional construction, solution-doncs introduces the consequent of a conditional. In both cases, the previous utterance is taken by the speaker as the antecedent of a conditional ( $p$ ) and the sentence uttered behaves as its consequent ( $q$ ). In conseq-doncs,  $p$  is interpreted as the cause for the consequence  $q$ . In solution-doncs, the consequent is interpreted as the best possible follow-up given the situation described in the antecedent.

Let’s begin with conseq-doncs by going back to sentence (3).

### 3.3.1 Consequence

We assume that in (3), B’s answer is short for (25).

- (25) Doncs si no has estudiat gens aquest estiu, suspendràs.  
 ‘DONCS if you haven’t studied at all during the summer, you’ll fail.’

*Doncs* forces the accommodation of a missing antecedent (Roberts, 1989) corresponding to the previous utterance, which is treated as the antecedent of a conditional ( $p$ ).

Following the dynamic perspective on conditionals, we take these constructions to involve a two-fold process. First, the speech context is updated with the previous utterance ( $p$ ) creating a sub-common ground or derived context, and, next, the uttered sentence ( $q$ ) updates this derived context (Stalnaker, 1968, Karttunen, 1974, Roberts, 1989, Heim, 1992).

In (3), failing is evaluated against those hypothetical worlds where A hasn’t studied at all during the summer. Following Heim’s approach in (26), the set of worlds compatible with A not studying during the summer and failing are the exact set of worlds (very close to the actual world) where A hasn’t studied during the summer.

- (26) For any context set  $c$ , clause  $\phi$  and clause  $\psi$ :  
 $c + [[\text{If } \phi] \psi] = \{w \in c : \text{Sim}_w(c + \phi) + \psi = \text{Sim}_w(c + \phi)\}$   
 From Heim (1992)

This is the dynamic view of the static analysis such that all worlds where A hasn’t studied during the summer are worlds where he fails in the future.

By treating the previous utterance as the antecedent of a conditional, *doncs* indicates that the previous QUD has not been resolved. Take for instance a possible QUD and a possible sub-QUD for the scenario about not studying and failing:

- (27) a. question: have you studied during the summer?  
 b. sub-question: what is the consequence of not studying?

It has to be noted that taking the previous utterance as the antecedent of a conditional is, more than anything, a rhetoric move. Since  $p$  is first asserted by A and then taken up by B's covert conditional without B expressing his opposition to A's assertion, the derived context and the context set should be very similar. However, this does not mean that *doncs* doesn't have any effect. On the contrary, in absence of *doncs*, as in (28), B's utterance is evaluated against the context set (i.e., not a derived context), and so we infer that A's assertion has been accepted to be part of the common ground and, crucially, that it has resolved the QUD that it was addressing.

- (28) a. A: No he estudiat gens aquest estiu.  
'I haven't studied at all during the summer.'  
b. B: Suspendràs.  
'You'll fail.'

Since B's utterance does not explicitly bear on the topic raised by the previous utterance, A's utterance can be interpreted as a move that resolves the QUD, and B's utterance can be the answer to a new implicit QUD. This is shown in the possible scenarios depicted below.

- (29) a. question 1: have you studied during the summer?  $\rightsquigarrow$  resolved by A's assertion.  
b. question 2: what's going to happen?  $\rightsquigarrow$  resolved by B's assertion.

What is important here is that there is no explicit marker that B's assertion is related to the previous QUD, so it may be addressing a new QUD, as we have illustrated, and this makes this discourse less cohesive and natural.

A final property of *conseq-doncs* is that it is compatible with conditionals that occur in causal contexts but not with indication conditionals (Copley, 2009), so the uttered sentence ( $q$ ) is interpreted as a consequence. Below are a few examples of the contrast between causal and indication conditionals. Causal relations – such as the one in (30c) between striking a match and the match lighting – cannot be expressed with the paraphrase “this means”. The conditionals that can be paraphrased with “this means”, like (30d), are indication conditionals.

- (30) Copley (2009)  
a. If you strike this match, it will light.  
b. If the dogs run around in circles, it's going to snow.  
c. # If you strike this match, this means it will light.  
d. If the dogs run around in circles, this mean it's going to snow.

As will be shown in §3.3.3, the incompatibility of *doncs* with indication conditionals explains its different distribution with respect to *aleshores*.

### 3.3.2 Solutionhood

*Doncs* can also be placed before  $q$ , in which case, the resulting rhetorical relation is one we have named *solutionhood* after Mann and Thompson (1986).<sup>2</sup> This case is illustrated by (5), whose underlying structure is (31).

<sup>2</sup>Note, though, that Mann and Thompson use the term *solutionhood* in a different way.

- (31) Si la Maria ha perdut la feina, doncs ja en trobarà una altra.  
 ‘If Mary lost her job, DONCS she’ll find another one.’

Solution-doncs occurs after the *if*-clause and introduces  $q$ . As in *conseq-doncs*, the previous utterance generates a derived context, since the presence of *doncs* involves taking the previous utterance as an *if*-clause. In (31), the derived context entertains the possibility that Mary has lost her job. The presence of *doncs* indicates that B is evaluating the best answer to the implicit QUD “What is a possible follow-up of  $p$ ?”, which is addressed by  $q$ .

We model solutionhood as the ranking of the possible alternatives to  $q$  in an order of preference according to the speaker. Since the speaker chooses to utter  $q$  instead of its lower ranked alternatives, and  $p$  is usually viewed as a problem that needs solving,  $q$  is typically considered a solution.

This meaning is conveyed non-truth-conditionally, so we take it to be so-called *projective meaning* (Simons et al., 2010), while the conditional clause contributes the at-issue meaning of the construction. (32) shows the at-issue and projective meaning of solution-doncs. The projective meaning is that the speaker evokes a non-empty set of alternatives, and for any of these alternatives of type  $\langle s, t \rangle$ , they have to make a plausible continuation of the *if*-clause. Hence, we posit that the resulting context when updating the derived context with one of these alternatives cannot be the empty set. Moreover, we propose that an ordering source ranks  $q$  and  $\alpha$ , and  $q$  turns out the preferred option, according to the speaker.

- (32) a. at-issue: For any context set  $c$ , clause  $p$  and clause  $q$ :  
 $c + [[\text{If } p] q] = \{w \in c : \text{Sim}_w(c + p) + q = \text{Sim}_w(c + p)\}$   
 From Heim (1992)
- b. projective: the speaker evokes a non-empty set  $A_{\langle st, t \rangle}$ :  
 $\forall \alpha [\alpha \in A \rightarrow \{w \in c : \text{Sim}_w(c + p) + \alpha\} \neq \emptyset \ \& \ \text{given an ordering source } g \text{ relativized to the speaker, } q\text{-worlds } \prec_g \alpha\text{-worlds}]$

Now, with the example in (31).

- (33) a. at-issue: the set of worlds that are very close to the actual world where Mary loses her job and finds another one in the future is the same set where Mary loses her job.  
 b. projective: the speaker evokes a set of alternatives to finding another job such that any of the alternatives are ranked lower.

This can also be approached from a Kratzer-style semantics. Imagine we have a modal base  $f$  that gives us a set of propositions that exemplify the circumstances of the context.

- (34)  $f(w)$ : {Mary is hard-working, she has savings, losing your job is problematic nowadays, ... }

Then, we treat the *if*-clause as a restrictor of an operator over worlds, and its content is added to  $f$ , yielding  $f^+$ .

- (35)  $f^+(w)$ :  $f(w) \cup \{w' : \text{Mary loses her job in } w'\}$

The assertion of the conditional tells us that for all worlds compatible with  $f^+$  and given a future time  $j$ , Mary finds a job in these worlds in  $j$ , as shown in (36).

(36)  $\forall w'' \in \bigcap f^+(w) \exists j \succ i: \text{Mary-finds-new-job } (j)(w'')$

What would possible alternatives to  $q$  be? For example, those in (37).

(37)  $\alpha: \{ \text{she will get depressed, she won't be able to pay the rent, she will steal, she will have to move to her parent's place...} \}$

So far, we haven't paid attention to a short word that is doing an important job in (5) and (31), namely *ja*, which literally means 'already'. We suspect that *ja* in Catalan has evolved from being an aspectual marker to a modal particle. It conveys non-truth-conditionally that the uttered sentence is a lesser evil given the described problematic situation. Roughly, it alleviates the gravity of the situation and prompts the addressee not to worry about it. In English, this could be achieved with connectives such as *nonetheless* in "She will nonetheless find another job". In a way, the presence of *ja* indicates that  $q$  is the best option given the circumstances. The meaning of *ja* matches well with solution-doncs and it isn't a coincidence that they tend to co-occur.

However  $p$  doesn't have to describe a problematic scenario. If this is the case,  $q$  is not technically a solution, but it's still viewed as the best possible outcome given a set of alternatives. Consider (38).

- (38) a. Si fa bo, doncs me'n vaig a la platja.  
'If it is sunny, DONCS I'll go to the beach.'
- b. The speaker evokes a set of alternatives to going to the beach (e.g., going to the movies or staying at home) such that any of the alternatives are ranked lower than going to the beach.

Here, we don't have *ja*. If it were here, we might interpret that going to the beach is less problematic than the rest of alternatives. Without it, we just take going to the beach as the best option in the hypothetical case that it is sunny.

### 3.3.3 Explaining the facts in §2

To finish this section on *doncs*, we have to explain the contrasts raised in section 2.

First, *doncs* is unacceptable in (1) and (10). Conseq-doncs is not an option, because the conditional relation involves an indication context instead of a causal one. Recall from (30) that conditionals that can be paraphrased as "this means" (i.e., indication ones) are incompatible with conseq-doncs. On the other hand, it cannot be solution-doncs either, because  $q$  is viewed as the unique result of the truth of  $p$ , so the existence of alternatives is infelicitous in this context.

Second, observe that *doncs* is compatible with a  $q$  that is not causally related with  $p$ , as shown in (5). As already mentioned, conseq-doncs cannot introduce an indication conditional, but solution-doncs introduces a solution, which does not need to obviously follow from  $p$ . In contrast, *aleshores* can introduce a consequence, but not a solution. Thus, *aleshores* is not compatible with the contexts that license solution-doncs.

Finally, there are contexts where *aleshores* is compatible with *doncs*. This is possible as long as we have an instance of conseq-doncs, as shown in (4). In this case, *doncs* marks that the previous QUD is not resolved by treating the previous assertion as the antecedent of a conditional,  $p$ . Thus, a derived context where it is raining is entertained, and the proffered sentence  $q$  updates this derived context. The consequence of it raining is that B is staying at home. *Aleshores*, on the other hand,

targets this covert *if*-clause as its referent, and the pragmatic effect of this is a CT interpretation. Thus, the speaker is not committed to saying how the world would look like if it didn't rain.

## 4 Concluding remarks

To conclude, we have analyzed the behavior of three connectives that seem interchangeable in some occasions, and that have in common a certain relation with conditional constructions. From this exploratory work, we have been able to identify a number of differences and to characterize each connective.

First, *p per tant q* asserts both *p* and *q*, and presupposes a conditional relation between *p* and *q*. The use of *per tant q* in a reply is possible only if it is easy to assume that B can be attributed the belief expressed by A in the previous utterance.

Second, *aleshores* is a pro-adverbial that refers back to an *if*-clause in an indication or causal conditional, and the presence of both the dislocated element and the proform yields a CT implicature s.t. the speaker is not committed to the possible consequent when  $\neg p$  is the case.

Third, *doncs* generates a derived context where the previous assertion is the antecedent of a conditional that cannot be indication, and it comes in two flavors expressing either consequence or solution. An interesting outcome of this research on *doncs* is that we have found an explicit marker that shows that a QUD can be entertained in a middle of a complex syntactic construction, here a conditional.

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