

Epistemic stance without epistemic modals: the case of the presumptive future

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Introduction In a variety of languages, including Italian, Spanish, French, Romanian, Greek, Dutch, the future tense has an ‘epistemic’ or ‘presumptive’ interpretation, illustrated with Italian in (3). This interpretation arises when there is a mismatch between the future tense and the temporal reference of the prejacent (that Gianni was at home yesterday afternoon in (3)). This paper proposes an account of the p-future in Italian that builds on Yalcin’s (2016) treatment of *ought to* in English and accounts for the ways in which the p-future is different from both epistemic and Yalcin-style normalcy modals.

The p-future differs from \Box_{EPI} . Examples (4), (5), and (6) show that the p-future and the epistemic necessity modal *dovere*, ‘must’, differ in distribution, and therefore should not be given the same semantics, *pace* Giannakidou and Mari (2018). (4) shows that when the speaker has evidence supporting the prejacent proposition (this is a case of narcolepsy), the p-future is not appropriate but the necessity epistemic modal *dovere* is. (5) shows that, unlike the necessity epistemic modal *dovere*, the p-future cannot be used in the conclusion of a mathematical argument (cf. Mandelkern (2018) for *must*). In (6) the reverse is true: when the speaker has no direct evidence in support of the prejacent proposition, the p-future is acceptable, while the necessity epistemic modal is not.

The p-future differs from \Diamond_{EPI} . First, note that, as illustrated in (7), when multiple possibilities are considered, the possibility modal *potere*, ‘might’, is felicitous while the p-future is not. Second, as shown in (8), when the speaker expects the prejacent to be true, the p-future is fine while the possibility modal is not.

The p-future differs from normalcy-based necessity. Yalcin (2016) treats the modal *ought to* as a necessity modal ranging over a modal base determined by what is normal in the world of evaluation. Normalcy *ought to* is not an epistemic modal: as illustrated in (9-a), *ought to* is felicitous even when the prejacent (that Noam is in his office) is incompatible with the speaker’s epistemic state. The epistemic flavor of the modal is explained as a default inference from a claim about what is normally the case to a claim about what is presumably the case (cf. Veltman 1996). Yalcin’s analysis extends straightforwardly to the Italian weak necessity modal *dovrebbe*: as shown in (9-b), just like English *ought to*, Italian *dovrebbe* is felicitous when the prejacent is incompatible with the speaker’s epistemic state. The p-future is similar to *dovrebbe* in that it is normalcy-based but it differs from it in that its prejacent must be compatible with the doxastic state of the speaker, as shown in (9-c). The fact that the p-future and *dovrebbe* are not equivalent is also shown by the non-redundancy of the sequence in (10).

The proposal. We treat p-future(p) as asserting that p is more likely than any other contextually salient alternative, where likelihood is assessed based on what is normally the case in the world of evaluation w , relative to a doxastic base anchored to the speaker in declaratives and to the addressee in interrogatives (cf. ‘interrogative flip’; cf. Murray 2010, Meriçli 2016 among others). The semantics of a declarative p-future sentence is given in (1), where A_2 is a free variable ranging over sets of propositions, whose value is contextually determined.

- (1) $\llbracket \text{p-future}(p) \rrbracket^{g,w,c} = 1$ iff $\forall q : q \in A_2$ and $q \neq p$ [$Dox_{i_c}(w) \cap p <_{N(w)} Dox_{i_c}(w) \cap q$], where:
- $N(w) = \{p \in \wp(W) : p \text{ is normally the case in } w\}$
 - For any propositions $p, q \in \wp(W)$:
 $p <_{N(w)} q$ just in case p is more likely than q with respect to what is normally the case in w

Back to the data In our proposal, the p-future shares a normalcy component with weak necessity *dovrebbe/ought*. The p-future is, however, different from *dovrebbe/ought* in that (i) it has a semantic likelihood component, and (ii) it requires the prejacent to be compatible with the speaker's doxastic state. This accounts for both (9-a) (infelicitous because it violates (ii)) and (10) (acceptable because the p-future sentence is about the most likely worlds among the normalcy worlds). Next, the p-future is odd in (4) because doctors are not expected to venture conjectures simply on the basis of what is normally the case, particularly in contexts in which factual evidence is available. Assuming a strong semantics for epistemic necessity (see, for instance von Stechow and Gillies 2010), the epistemic necessity modal *dovere/must* is predicted to be felicitous in (4) because in that case the sentence asserts that the proposition in the scope of the modal follows from what the doctor knows. In a similar vein, the p-future is predicted to be infelicitous in (5) given that conclusions in mathematical arguments must be based on what follows, mathematically, from the premises. The contrast between necessity epistemic modals and the p-future in (6) also follows from the proposed analysis: the p-future is predicted to be acceptable in a context where the speaker has just claimed that she has no evidence or knowledge relevant to the QUD (*where is Maria?*) because claiming that *p* is the most likely possibility on the basis of what is normally the case is compatible with lacking evidence or knowledge about whether *p* is actually the case. *Dovere/must*, on the other hand, is unacceptable in this situation because the modal requires the prejacent to follow from the speaker's epistemic state, hence it is incompatible in a context in which the speaker has asserted lack of evidence/knowledge relevant to it. The impossibility of using the p-future in (7) also follows: according to the semantics in (1), the p-future ranks the prejacent proposition as being more likely than any other salient alternative. Since two different possibilities cannot both be most likely, the conjunction of two p-future statements is ruled out as being contradictory. The p-future is also expected not to pattern with *potere/might* in (8): the latter is too weak and therefore pragmatically odd given that the speaker just dismissed the alternatives (by exclaiming *what do you think!*). In (8), even though the speaker's beliefs do not settle whether John is at home (no alternative can be ruled out) and the speaker asserts that the prejacent is merely most likely given a normalcy base, she is allowed to dismiss alternatives as she does in our example if she places high credence in the fact that the particular situation being discussed patterns according to what is normally the case. Finally, note that our proposal accounts for the contrast between the interrogative p-future sentences in (11) and (12). In a context where the QUD is whether *p*, p-future(*p*) is fine as long as the speaker does not assume that the addressee knows whether *p* is the case or not. This is so under the assumption that the semantic content of an interrogative p-future sentence is as given in (2):

$$(2) \quad \llbracket \text{p-future}(p)? \rrbracket = \{ \llbracket \text{p-future}(p) \rrbracket, W \setminus \llbracket \text{p-future}(p) \rrbracket \}$$

Thus, the answers that an interrogative p-future sentence steers the context toward are p-future(*p*) or its negation, each of which is pragmatically appropriate only in case the person to which the question was addressed is not assumed to know whether *p* obtains or not. This condition is met in (11) but not in (12). To conclude, the p-future in our proposal combines a variety of means language uses to signal nuanced commitment to the truth of a proposition. From a wider perspective, its detailed study sheds light on what these means have in common, and the parameters along which they differ.

Selected references Giannakidou and Mari 2018, Mandelkern 2018, Meriçli 2016, Murray 2010, Veltman 1996, Yalcin 2016

- (3) I called Gianni at the office yesterday afternoon but nobody answered. Where was he?
Sarà stato a casa. / Gianni will-have been at home / Gianni must/might have been at home.
- (4) Maria's doctor has just heard Maria giving a very detailed description of her symptoms and has just reviewed her most recent blood test.
a. Doctor: Deve essere narcolessia. / it-must be narcolepsy / It must be narcolepsy.
b. Doctor: #Sarà narcolessia / it-will-be narcolepsy / It must be narcolepsy.
- (5) Se l'insieme delle formule logicamente valide fosse decidibile, allora il problema della terminazione sarebbe decidibile. Il problema della terminazione non è decidibile. Quindi, l'insieme delle formule logicamente valide deve essere/#sarà indecidibile. (If the set of validities were decidable, then the halting problem would be decidable. The halting problem is not decidable. So the set of validities must be undecidable.)
- (6) a. Where is Maria?
b. Non ne ho la piu pallida idea. #Deve essere a casa. / Not of-it I-have the most faint idea. She-must be at home / I don't have the slightest idea. She must be at home.
c. Non ne ho la piu pallida idea. Sarà a casa. / Not of-it I-have the most faint idea. She-will-be at home / I don't have the slightest idea. She must be at home.
- (7) a. Where's Gianni?
b. Sono le 5. Potrebbe essere già a casa e/ma potrebbe essere ancora al lavoro. / They-are the 5. He-might be already at home and/but he-might be still at work / It's 5 o'clock. He might already be at home and/but he might still be at work.
c. Sono le 5. ??Sarà già a casa e/ma sarà ancora al lavoro. / They-are the 5. He-will be already at home and/but he-will be still at work / It's 5 o'clock. He might already be at home and/but he might still be at work.
- (8) a. Where is John? I can't find him.
b. Dove vuoi che sia! Sara' a casa/dev'essere a casa/#potrebbe essere a casa. / Where you-want that he-be! He-will-be at home/must-be at home/could be at home / What do you think! He must be at home/#he could be at home.
- (9) a. Noam ought to be in his office now but he is not. (normalcy reading)
b. Noam dovrebbe essere in ufficio adesso ma non lo è. (= (9-a))
c. #Noam sarà in ufficio adesso, ma non lo è. / Noam will-be in office now, but not it is / #Noam must be in his office now, but he's not.
- (10) A: Where is John?
B: A quest'ora dovrebbe essere a casa. / At this time he ought to be home.
A: Allora sarà a casa. / Then he will be home / Then presumably he's home'
- (11) Two egyptologists have just discovered a sarcophagus. It contains a mummy.
Egyptologist #1: "Sarà un uomo o una donna?" lit: Will it be a man or a woman?
- (12) Maria is talking on the phone with her sister Anna who she hasn't spoken to in years.
#Avrai ancora quelle vecchie foto della nostra infanzia? / You-will-have still those old photos of-the our childhood / I wonder if you still have those old photos of our childhood.