



A Puzzle about Italian, again (*ancora*)

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Abstract:

The present work focuses on the theoretical analysis of the Italian temporal particle *ancora*, in its aspectual (*ancora/still*) and non-aspectual (*ancora/again*) temporal uses. The gist of this proposal is that the additive component of the meaning of *ancora* comes about as an obligatory inference derived via exhaustification, rather than being presupposed. The interpretation of *ancora* under negation is subject to another instance of Exh, which operates on the alternatives triggered by the Rise-Fall intonation in Italian, similar to other focus particles like *solo* (only) and *anche* (also).

Keywords: *Additives, Exhaustification, Focus Particles, Intonation, Rise-Fall Intonation*

1. Introduction

The Italian temporal particle *ancora* can have several meanings. First, it can be interpreted as an aspectual/temporal particle, like the English word *still* in (1), and as a Negative Polarity Item (NPI), like the word *yet* in (2), when it occurs under negation. Indeed, *ancora* can be translated with *still* even in negative sentences like (2), if the particle takes wide scope with respect to negation.

- (1) Lea sta ancora leggendo il libro.
'Lea is still reading the book'
- (2) Lea non sta ancora leggendo il libro.
'Lea isn't reading the book yet/Lea still isn't reading the book'

Still and *yet*, as mentioned in numerous works (Michaelis 1993; Krifka 2000; Ippolito 2004), can lead to various interpretations, including temporal, scalar, and concessive readings. We see that the meaning of *ancora* is as complex as that of its English equivalents. However, in this work, we will only focus on the temporal readings of *ancora*.

The following examples illustrate the second meaning of *ancora*, which is that of the English additive temporal particle *again*, in either positive or negative environments.

- (3) Sara ha rotto ancora la sua bicicletta.
‘Sara broke her bicycle again’
- (4) Sara non ha rotto ancora la sua bicicletta.
‘Sara didn’t break her bicycle again’

One clear difference between *ancora/still* and *ancora/again* is that the former modifies states, i.e. it combines with an imperfective predicate such as *is reading* in (1) and (2), whereas the latter modifies eventualities such as an event of breaking a bike in (3) and (4). This can be observed by comparing the meaning of sentences (1) and (2) to that of (3) and (4). Intuitively, sentence (1) means that there is an extended interval of time (i.e. a state), which started at some point in the past, where the predicate “Lea is reading the book” holds, while sentence (2) means that there is an interval of time in which the predicate is false. Instead, sentences (3) and (4) refer to a punctual event *e* taking place at a relevant time *t* in the past, according to (3), or not happening at *t*, according to (4). Critically, though, for both (3) and (4) the event *e* had already happened at least once in the past (additive meaning). The main idea of the present work is that the two different uses of *ancora* share a common semantic core. The gist of our proposal is that the plain assertive component of *ancora*-sentences corresponds to the interpretation of the proposition without the temporal particle. The additional contribution of *ancora* to the sentence meaning is the result of an exhaustivity inference, an obligatory implicature (see Panizza and Sudo 2021, for a similar treatment of additives like *anche/also*). Not only does this provide a unitary semantic core for the different meanings of *ancora/still/again*, but it also accounts for a) their purported presuppositions, derived, here, as obligatory inferences, b) the different semantic effects in interaction with the type of eventualities they operate on, and c) the pattern of interpretations resulting from embedding in negative environments. With respect to the last point, we maintain that a key ingredient to derive the readings of *ancora* under negation is the contribution of a set of pragmatic inferences introduced by Rise-Fall intonation in Italian, which seems to be required for sentences such as (4) to be felicitously uttered.

The next three sections are devoted to the interpretation of *ancora/still* and *ancora/again* in positive sentences. In the remaining of the paper (sections 4 to 7) we analyse the interpretation of these construals under negation.

2. “Ancora” as “still” and its purported presuppositional behaviour

Following the works by Krifka (2000) and Ippolito (2004) among others, we maintain that *ancora/still* refers to a salient time that is specified by the tense of the main verb. For instance, in the example in (1) the salient time corresponds to the utterance tense time, and the plain assertive meaning of the sentence is that of the proposition without *ancora*, i.e. “Lea is reading the book”. The contribution of *ancora/still* to the meaning of (1) is such that there is a prolonged interval of time lasting at least until now, that is a state, in which the predicate is true. Sentence (1) means that Lea started reading a book at some point in the past, that she is still reading it at the utterance tense time (i.e. now) and that for every sub-interval of time included in the state the predicate holds. According to standard accounts of *still* (cf. Krifka 2000, Ippolito 2004, among others), this interpretation is obtained with two components: an assertoric component that holds that the proposition is true at the tense time plus a presup-

position stating that the predicated event started in the past. The reason why *still* is argued to introduce this presupposition can be illustrated in the following examples:

- (5) Lea sta ancora leggendo un libro?
'Is Lea still reading a book?'
- (6) Dubito che Lea stia ancora leggendo libro.
'I doubt that Lea is still reading a book'

In both sentences (5) and (6), despite *ancora/still* occurs in a question and under the negative verb *doubt*, respectively, the proposition that she started reading a book in the past remains true.

There are a few problems with a presuppositional account for temporal particles such as *ancora/still*. Some of them concern the behaviour under negation, which will be discussed in the next section. Here, we highlight two of such issues. First, the presupposition of *still/ancora* needs to be stipulated, with its assertoric component being inert. That is, *ancora/still* does not provide any semantic contribution to the assertion other than what the sentence already predicates, if not with its presuppositions. The second problem is that the alleged presupposition introduced by *ancora/still* seems not to behave like standard presuppositions. Consider the next sentences.

- (7) Non so se Gianni guarderà la televisione stasera, ma se la starà ancora guardando quando torno lo sgriderò.
'I don't know if Gianni will watch TV tonight, but if he will still be watching it when I'm back, I'll tell him off.'
- (8) ?Non so se Gianni abbia insultato Maria ieri, ma se è dispiaciuto/sorpreso di averlo fatto ne sarò lieta.
'I don't know if Gianni insulted Maria yesterday, but if he is sorry/surprised to have done it I'll be happy.'

Sentence (7) seems to suggest that the purported presupposition "Gianni started watching TV in the past" does not project out of the conditional, or that its accommodation is very easy to obtain. The oddity of sentence (8), instead, is due to the fact that presuppositional triggers like *to be sorry* and *to be surprised* behave differently: they project their presupposition out of the conditional. For this reason (8) can only be felicitous if the relevant presupposition is accommodated in the antecedent, something that requires an additional effort at the level of interpretation, while sentence (7) sounds much more natural and less problematic.

Here, we propose that a) *ancora/still* asserts that the proposition in which it occurs is true and b) it asserts the purported presuppositional component, namely the additive one. Similarly to what Panizza and Sudo (2021) claimed for additives like *anche/also* (see also Szabolcsi 2017; Ahn 2015) we maintain that the temporal additive component of *ancora/still* comes about as an obligatory inference derived via exhaustification. Not only does this derive the fact that a starting event referring to the state in which the predicate holds took place at a previous time in the past, but also that the predicate is true in any sub-interval of time included in the considered state.

3. "*Ancora*" as "*still*": an account based on exhaustification

The starting point of the present proposal is the idea that time intervals can be considered as alternatives to the asserted proposition, just like focus alternatives for exclusives or additives such as *only* and *also* (cf. Krifka 1998a, 2000). In the framework of alternative semantics, one of the

mechanisms that has been exploited to derive the meaning of focus particles is that of exhaustification. For instance, Fox (2007) maintains that the meaning of *only* asserts that the prejacent, i.e. the proposition modified by *only*, is true and that any alternative that is not entailed by the prejacent and that is Innocently Excludable (I-E) must be false, as formalised in (9a). Innocent Exclusion in (9b) is a mechanism ensuring that the result of exhaustification does not lead to a contradiction. I-E alternatives are constituted by the maximal subset of alternatives that can be negated consistently with the assertion, as illustrated by (9b).

- (9) a. $\text{Only}_{\text{ALT}}(p) = \lambda w: p(w) = 1. \forall q \in \text{I-E}(p, \text{ALT}) [p \not\subseteq q \rightarrow q(w) = 0]$
 b. $\text{I-E}(p, \text{ALT}) = \cap \{A' \subseteq \text{ALT}: A' \text{ is a maximal set in ALT, s.t., } A' \neg \cup \{p\} \text{ is consistent}\};$
 For any A, $A \neg = \{\neg a: a \in A\}$

Let us see how the semantics in (9) works for sentence (10). Assuming the set of salient alternatives activated by focus in (10c), sentence (10a) presupposes the truth of the prejacent in (10b) and asserts that any non-weaker alternative (typed in boldface in (10b)) is false, resulting in the interpretation in (10d).

- (10) a. Sara only bought a bicycle.
 b. prejacent = Sara bought a bicycle
 c. ALT-set of (10a) = {Sara bought a bicycle; **Sara bought a motorbike; Sara bought a car**}
 d. Sara bought a bicycle and she didn't buy a motorbike or a car.

Panizza and Sudo (2021; cf. also Szabolcsi 2017) employ a non-presuppositional version of (9a), the so-called exhaustivity operator *Exh* in (11), to derive the interpretation of additives like Italian *anche* and English *also*.

- (11) $\text{Exh}_{\text{ALT}}(p) = \lambda w [p(w) = 1 \wedge \forall q \in \text{I-E}(p, \text{ALT}) [p \not\subseteq q \rightarrow q(w) = 0]]$

The starting point of the present account is the idea that the difference between additives and exclusives is that the former particles require exhaustified alternatives, as shown in (12):

- (12) a. $\text{Also}(p) = \text{Exh}_{\text{Exh}(\text{ALT})}(p)$
 b. $\text{Exh}_{(\text{ALT})} = \{\mathbf{\text{Exh}_{\text{ALT}}(p)}; \text{Exh}_{\text{ALT}}(q); \text{Exh}_{\text{ALT}}(p)\}$

Notice that, with *anche/also* the only exhaustified alternative that is non-weaker than the prejacent *p* and I-E is the one typed in boldface in (12b), i.e. the exhaustification of the prejacent itself. The other two alternatives contradict the prejacent (i.e. Sara only bought a car contradicts that she bought a bicycle). Assuming a set of focus alternatives as in (10c), sentence (13a) has the meaning in (13c) derived as formalised in (13b).

- (13) a. Sara also bought a bicycle.
 b. $\text{Also}(\text{Sara bought a bicycle}) = \text{Sara bought a bicycle} \wedge \neg \text{Exh}_{\text{ALT}}(\text{Sara bought a bicycle}).$
 c. Sara bought a bicycle and she did not only bought a bicycle
 = Sara bought a bicycle and she bought a motorbike or a car.

We are finally ready to advance a semantics for the aspectual *ancora/still*, sketched out in (14).

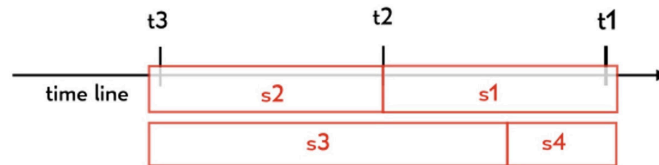
- (14) a. *ancora/still* asserts that the host proposition is true
- b. it introduces time and state alternatives (e.g. $t_1, t_2, t_3, s_1=(t_1+t_2), s_2=(t_2+t_3)$, etc.)
- c. in a state s the sub-intervals of time are all true or all false (homogeneity of states)
- d. *ancora/still* requires obligatory exhaustification of the set of alternatives (via Exh)
- e. $Ancora(p) = Exh_{Exh(ALT)}(p)$

Let us see how the semantics in (14e) works for sentence (1), reported in (15a).

- (15) a. Lea sta ancora leggendo il libro
 ‘Lea is still reading the book’
- b. assertion: Lea is reading at t_1
- c. $ALTs = \{Lea \text{ is reading at } t_1; Lea \text{ is reading at } t_2; Lea \text{ is reading at } t_3; Lea \text{ is reading at } s_1; Lea \text{ is reading at } s_2; Lea \text{ is reading at } s_3; Lea \text{ is reading at } s_4\}$
- d. $Exh(ALTs) = \{Lea \text{ is only reading at } t_1; Lea \text{ is only reading at } t_2 \dots \text{Lea is only reading at } s_1; Lea \text{ is only reading at } s_2; \text{etc.}\}$
- e. $Ancora(Lea \text{ is reading the book}) = Exh_{Exh(ALT)}(Lea \text{ is reading the book})$
 = Lea is reading the book at t_1 and it is false that she only reads it at t_1 and she is reading the book during s_1 and it is false that she only reads it during s_1
- f. Lea is reading the book for any time interval between the utterance tense time t_1 and the moment at which she started reading the book t_3

Sentence (15a) says that there is an interval of time that includes the utterance tense time in which Lea is reading the book. The effect of applying exhaustification to exhaustified alternatives, as in (15e), is such that any exhaustified interval of time that contains t_1 is logically stronger than the assertion hence must be false. From its falsity (i.e. “not only s_1 ”) it follows that a complementary interval of time that does not contain t_1 , such as s_2 , must be true as well. The same holds for any interval of time that contains t_1 (e.g. s_4 , as illustrated in (16)).

- (16) Illustration of the time and state alternatives considered by *ancora/still*



From this computation the universal force of *ancora/still* is obtained. In section 5 we will discuss how the semantics of *ancora/still* proposed in (14) behaves under negation.

4. “Ancora” as “again”

When the temporal particle *ancora* is interpreted as *again* it is standardly assumed to consider punctual events rather than states or time intervals, to assert the host proposition and presuppose that the predicated event has happened already once in the past (Krifka 2000;

Ippolito 2004). In our account this is achieved with the same semantics based on exhaustification that we proposed for *ancora/still* in (14), with the exception that *ancora/again* only considers punctual events and not time intervals. Thus, in a parallel way as (15) the meaning of sentences (3) is derived as follows.

- (17) a. Sara ha rotto ancora la sua bicicletta
 ‘Sara broke her bicycle again’
 b. asserted component: Sara broke her bicycle at t_1
 c. ALTs = {Sara broke her bicycle at t_1 ; Sara broke her bicycle at t_2 ; Sara broke her bicycle at t_3 }
 d. $\text{Exh}(\text{ALTs}) = \{\mathbf{\text{Sara only broke her bicycle at } t_1}; \text{Sara only broke her bicycle at } t_2; \text{Sara only broke her bicycle at } t_3\}$
 e. $\text{Ancora}(\text{Sara broke her bicycle}) = \text{Exh}_{\text{Exh}(\text{ALT})}(\text{Sara broke her bicycle})$
 = Sara broke her bicycle at t_1 and it is false that she only Sara broke her bicycle t_1
 f. Sara broke her bicycle at t_1 and she has broken it at some other time in the past

As with *ancora/still* the relevant time alternatives are exhausted, as in (17d), and the only alternative that is non-weaker than the asserted component in (17b) and I-E is the one in boldface in (17d), namely that Sara broke her bicycle at t_1 but not at any other time in the past. From the negation of this alternative in conjunction with the assertion it follows that she must have broken it at least once, at another time in the past.

5. “Ancora” as “still” under negation

When *ancora* is interpreted as an aspectual temporal modifier like *still*, that is when it modifies the interpretation of a predicate of time intervals – such as verbs with imperfective aspect – rather than events, it gives rise to a puzzle. Consider the next sentences.

- (18) a. Lea non sta ancora leggendo il libro
 b. Lea isn’t reading the book yet
 c. Lea still isn’t reading the book
 (19) a. # Lea is not still reading the book
 b. Lea is not yet reading the book
 (20) a. Dubito che Lea stia ancora leggendo il libro
 b. I doubt that Lea is still reading the book

In sentence (18a) *ancora* occurs under negation (*non*, which means *not*), and it may be translated in English with sentences (18b) or (18c), whose meaning is equivalent. In (18c) *ancora* is translated as still *still*, which takes wide scope with respect to negation. In (18b), instead, *ancora* is translated as *yet*, which must be interpreted within the scope of negation. This observation is compatible with the fact that in English the aspectual particle *still* cannot generally occur under the scope of phrasal negation (see (19a) vs. (19b)). However, as shown by sentences (20a) and (20b), in English *still* can be interpreted in a negative environment, such as under the scope of the negative predicate *doubt*. In Italian, too, the particle *ancora* can be interpreted under negative predicates, but in this case it yields a different meaning than that of (18a), namely the one in (20a). While sentence (18a) says that Lea hasn’t started reading the book yet, but she may do so in the future, sentence (20a) says that Lea was indeed reading the book in the past but the speaker doesn’t think she is reading it at the time of the utterance

anymore. One way to account for this behaviour is to claim that when *ancora* is interpreted as *still*, it behaves like its English counterpart and it must outscope negation in order to be felicitously interpreted, as in (18a). This, however, does not explain why particles like *ancora* and *still* can still be licensed in negative environments such as (20a-b).

Our account offers a possible solution to this puzzle, which builds on the hypothesis that focus particles under negation are subject to another instance of exhaustification. The argument goes as follows. First of all, consider that *ancora/still*-sentences generate a universal interpretation over the relevant time intervals (15f), and by assumption this meaning is part of the assertion. If they occur in negative contexts, then, the composition of the meaning in (21a) with a negative operator returns a weak negative existential interpretation, like the one in (21b).

- (21) a. $\text{Ancora}(p) = \forall s$ such that $t_1 > s > t_3$ p is true at s
 where s is an interval of time and “ $>$ ” means “follows in time”
 b. $\neg\text{Ancora}(p) = \exists s$ such that $t_1 > s > t_3$ p is not true at s

Notice that according to (21b) the interval of time in which the predicate expressed by the sentence is false does not have to include the utterance tense time t_1 , but it may be any interval of time included within t_1 and t_3 .

In general, an assertion can be considered as an answer to a question under discussion (QUD, see von Stechow 1991; Krifka 1998a, a.o.). Sentence (18a) is a congruent answer to the question “What is Lea doing now?”. The idea, here, is that the meaning in (21b) is too weak in that it does not address this QUD. That is, it does not contribute enough information to the communication exchange because it does not inform on which interval of time the predicate is false, thus it requires further exhaustification, as in (22a). By assumption, *ancora* requires exhaustified alternatives, so the relevant alternatives to the meaning in (21b) could be those in (22b).

- (22) a. $\text{not}(\text{Ancora}(p)) = \text{Exh}_{\text{ALT}(22a)}(\neg\text{Ancora}(p)) = \text{Exh}_{\text{ALT}} \neg(p \text{ at } s_1 \wedge p \text{ at } s_2 \wedge p \text{ at } s_3) = \perp$
 b. $\text{ALT}(22a) = \text{Exh}_{\text{ALT}s_1}; \text{Exh}_{\text{ALT}s_2}; \text{Exh}_{\text{ALT}s_3}$

Notice that any alternative in (22b) is logically stronger than the meaning of $\neg\text{Ancora}(p)$ in (21b), therefore every alternative must be false, resulting in a logical contradiction (cf. L-an-ality, Chierchia 2013, among others). To avoid this clash at the level of interpretation, Italian and English use two strategies. In Italian, an occurrence of *ancora* under negation triggers a wide scope interpretation of the particle. In English, *still* cannot be licensed under negation, while *yet*, which has an NPI semantics, is to be used in such a context. Why, then, *ancora/still* can occur under negative predicate, and how is the meaning of sentence (20) derived? We will address this question in the next section.

6. Exhaustification and the implicatures of the Rise-Fall intonation

Several works have investigated the Italian prosody of Contrastive Topic (cf. Frascarelli and Hinterhölzl 2007; Bocci 2013) but the Rise-Fall (henceforth RF) intonation in negative sentences has drawn little attention. Italian sentences involving phrasal negation can be uttered with two prosodic patterns. One includes a prominent stress (let us call it Focus Stress, FS) on the object, the other one a RF intonation followed by de-accented constituents (let us

call it DA).¹ Consider the next pair of sentences, which share the same lexical material but are pronounced with two different intonation profiles.

- (23) a. Sara non ha comprato [una bicicletta]_{FS}.
 ‘Sara didn’t buy a bicycle’
 b. Sara non [ha comprato]_{RF} [una bicicletta]_{DA}.

Sentence (23a) is a felicitous answer to a Wh-question like “What did Sara not buy?”. Sentence (23b), instead, answers a polarity yes/no question like “Did Sara buy a bicycle or not?”. The RF intonation has been associated with Topic (Büring 1997) and Contrastive Topic (Büring 2003; Krifka 1998b, 2000), but it is not clear whether the meaning or the inferences it conveys in a negative sentence is really that of Topicalization (see Wagner 2012). Moreover, it is not clear whether the RF prosodic contour of Italian negative sentences is comparable to that of English and other languages. First of all, it seems that the RF + negation pattern in Italian triggers obligatory wide scope of negation. One issue is whether this is the source of the pattern of inferences we will be discussing or a result of them, as suggested by Büring (1997). Krifka (2000) suggests that the raising pitch on English negated auxiliary (i.e. *didn’t*) triggers polarity alternatives such as {p; ¬p}, but in Italian the RF falls on the main verb, the auxiliary or, if present in the sentence, the past participle as in (23b). Let us turn back to the examples in (23). Sentence (23a) conveys the meaning that a bicycle was the only thing that Sara did not buy, among the objects relevant in the context. This interpretation can be derived by considering alternative propositions of the form {x | Sara did not buy x}, where Exh can apply exactly as in the positive examples in (10), with the effect of asserting that every alternative (e.g. she bought a motorbike, a car, etc.) winds up being true. The final result is an interpretation where the focused constituent scopes out of a Wh-question of sentence (23a): “A bicycle is what Sara did not buy”.

The RF in (23b), instead, seems to trigger a complete different set of alternatives. Indeed, this sentence could be uttered in order to communicate that the proposition that “Sara bought a bicycle” was salient in the context, but it is false according to the speaker (cf. Wagner 2011). Alternatively, sentence (23b) with exactly the same intonation could mean that “Sara bought something else”, or that Sara, rather than purchasing a bicycle, did something else to it, e.g., she rented it. Intuitively, such meanings can be obtained by considering (23b) as the answer to the questions: “Did Sara buy a bicycle?”, “Did Sara buy anything?” and “Did Sara do anything with a bicycle?”. The three set of alternatives that can be used with standard Exh to derive these three meanings are written in (24a-c).

- (24) RF-alternatives for sentence (23b):
 a. ALTs = {Sara bought a bicycle; Sara didn’t buy a bicycle}
 b. ALTs = {Sara bought something; **Sara didn’t buy anything**}
 c. ALTs = {Sara did something with a bicycle; **Sara didn’t do anything with a bicycle**}

¹ We refer to the RF intonation contour, here, as the Rise-Fall or Rise-Fall-Rise contour discussed in many works analysing German and English Topic/Focus marking and scope inversion patterns (see Büring 1997; Krifka 1998b, among many others). It should be noted, however, that the Italian RF intonation pattern could be analysed in different terms, that is, as an instance of Verum Focus or as a focal Pitch Accent realised on the auxiliary or the past participle, rather than on the object (the sentence-final constituent in our examples and thus the standard position for main prominence in Italian). If this is the case, the reason why focus has moved to the auxiliary and its effect on sentence interpretation may still be explained along the hypothesis we propose here, but a serious discussion of this topic goes beyond the scopes of the present work. We thank an anonymous reviewer for pointing out these issues to us.

Büring proposed something very similar for Contrastive Topic in German (1997) but a discussion of why his proposal would not work for the cases under consideration here goes beyond the limits of the present work.

We propose, building on Krifka (2000) and Büring (1997), that RF-alternatives are generated in the following way.

- (25) RF-ALT must be:
- a. polarity alternatives, i.e. positive or negative (e.g. {p; ¬p})
 - b. derived by the substitution of some element of the sentence, e.g. the direct object NP or the main verb in (23b), with an existential quantifier
 - c. stronger or weaker than the assertion (i.e. $\forall p \in \text{ALT} [\forall q \in \text{ALT} p \neq q \rightarrow (p \subset q \vee q \subset p)]$)

Then, an instance of exhaustification is computed taking wide scope over negation with these alternatives, as in (26). If (24a) are the alternatives considered by Exh, the exhaustification is vacuous because every alternative is either equivalent or contradicts the assertion. If, instead, the alternatives in (24b) are considered, a scalar-like implicature is computed by negating the logically stronger alternative typed in boldface, and the resulting interpretation is that in (26b).

- (26) a. not(*Ancora*(Sara bought a bicycle) = Exh_{ALT}¬(*Ancora*(Sara bought a bicycle))
 b. Exh_{ALT(24a)}¬(Sara bought a bicycle) = Sara didn't buy a bicycle
 c. Exh_{ALT(24b)}¬(Sara bought a bicycle) = Sara didn't buy a bicycle but she bought something else
 d. Exh_{ALT(24c)}¬(Sara bought a bicycle) = Sara didn't buy a bicycle but she did something else with it

The fact that the same sentence (23b) may trigger different alternatives, exemplified by different QUDs, supports the idea that they are pragmatically made salient by conversational demands. Moreover, notice that the requirement that alternatives must be entailment-based in (25b) is necessary to filter out the positive alternatives in (24b) and (24c), which are non-weaker than the assertion and whose negation would contradict the meanings in (26c) and (26d). The same constraint has been assumed by Panizza and Chierchia (2019) to account for rank-order readings of exclusives like *solo* and *only*, and it is a hallmark of lexical scales that trigger scalar implicatures.

Finally, as we will see in the next section, if other elements – i.e. focus particles or additive particles – are present in the DA constituent, the exhaustification is obligatory. If additives occur in the DA constituents, the RF-alternatives are exhaustified, just like any other alternative such particles take.

7. “*Ancora*” under negation with Rise-Fall alternatives

Let us focus on the two relevant cases, namely sentences in which *ancora* occurs in negative contexts and it is interpreted as *still* in (27) and as *again* in (28). Because of the reasons outlined in the previous section, in order to force the interpretation of *ancora/still* under negation and prevent it from scoping out in sentence (27) the particle is embedded under *dubito* (*to doubt*), which is usually associated with RF intonation. This strategy is not required for *ancora/still*, although embedding it under *doubt* would result in the same effect as that of phrasal negation plus RF intonation.

- (27) [Dubito]_{RF} che [Lea stia ancora leggendo un libro]_{DA}.
 ‘I doubt that Lea is still reading a book’
- (28) Sara non [ha rotto]_{RF} [ancora la bicicletta]_{DA}.
 ‘Sara didn’t break her bicycle again’

Given that the additive component of sentences (27) and (28) is part of the asserted meaning as a conjunction, their negation results in a weak negative proposition. Moreover, recall that *ancora/still* carries a universal interpretation over time intervals while *ancora/again* introduces an additive existential inference that the predicate held at least at another time in the past. Their negation, thus, results in the two meanings in (29) and (30).

- (29) Believe ($\neg(p \text{ at } s_1 \wedge p \text{ at } s_2 \wedge p \text{ at } s_3)$) = Believe ($\neg p \text{ at } s_1 \vee \neg p \text{ at } s_2 \vee \neg p \text{ at } s_3$)
 = I believe Lea is not reading at s_1 or she is not reading at s_2 or she is not reading at s_3
- (30) $\neg(p \text{ at } t_1 \wedge (p \text{ at } t_2 \vee p \text{ at } t_3))$ = $\neg p \text{ at } t_1 \vee \neg(p \text{ at } t_2 \vee p \text{ at } t_3)$
 = Sara didn’t break her bike at t_1 or she never broke it any time earlier than t_1

The RF intonation triggers another round of exhaustification with scope on the whole propositions in (29) and (30). Let us discuss in detail how this exhaustification works for sentence (30).

- (31) a. prejacent of *ancora* = Sara broke her bicycle at t_1
 b. $\text{Exh}_{\text{ALT}}(\text{ALTs } 1)$ = $\{\text{Exh}_{\text{ALT}}(\text{Sara broke her bicycle at some } t); \text{Exh}_{\text{ALT}}\neg(\text{Sara broke her bicycle at some } t)\}$ = $\{\text{Sara broke her bicycle at some } t; \neg(\text{Sara broke her bicycle at some } t)\}$
 c. $\text{Exh}(\text{ALTs } 2)$ = $\{\text{Exh}_{\text{ALT}}(\text{Sara broke her bicycle at } t_1); \text{Exh}_{\text{ALT}}\neg(\text{Sara broke her bicycle at } t_1)\}$
 = Sara broke her bicycle at t_1 and not at any other t ; Sara did not break her bicycle at t_1 and she broke it at any other t

The RF-alternatives in (31b) and (31c) address the polarity question “did Sara break her bicycle at t_1 ? Did she break it at some time?”. Notice that all these alternatives are exhaustified, a requirement of additive temporal particles. If this were not the case, the meaning of (28) would be equivalent to that of the sentence “Sara did not only break her bicycle at t_1 ”. Furthermore, notice that the exhaustification is vacuous for the two alternatives in (31b), which carry an existential positive and the universal negative meaning, because there are no Innocently Excludable sub-alternatives (i.e. alternatives of alternatives) that can consistently strengthen their meaning. That is, it cannot be the case that Sara broke her bicycle at some time t and for every t she only broke her bicycle at that time.

Instead, the exhaustification of the alternatives in (31c) produces a noticeable effect. In the end, the two set of alternatives for sentences (29) and (30) are those in (32a) and (33a), respectively, and the final interpretation is obtained as illustrated by (32b) and (33b).

- (32) a. ALTs for 29 = $\{\text{I believe Lea is reading at some } s; \text{I believe Lea is not reading at any } s; \text{I believe Lea is reading at } t_1 \text{ and not at any other } t; \text{I believe Lea is not reading at } t_1 \text{ but she does at any } s \text{ that does not include } t_1\}$
 b. $\text{Exh}_{\text{ALTs}(32a)}(29)$ = $\text{Exh}_{\text{ALTs}(32a)}(\text{Believe } (\neg p \text{ at } s_1 \vee \neg p \text{ at } s_2 \vee \neg p \text{ at } s_3))$
 = Believe($\neg p$ at $t_1 \wedge p$ at some s that does not include t_1)

- (33) a. ALTs for 30 = {~~Sara broke her bicycle at some t~~; **Sara didn't break her bicycle at any t**; **Sara broke her bicycle at t_1 and not at any other t**; Sara did not break her bicycle at t_+ but she did at any other t}
- b. $\text{Exh}_{\text{ALTs}(33a)}(30) = \text{Exh}_{\text{ALTs}(33a)}(\neg p \text{ at } t_1 \vee \neg(p \text{ at } t_2 \vee p \text{ at } t_3))$
 $= \neg p \text{ at } t_1 \wedge p \text{ at some } t \text{ earlier than } t_1$

The alternatives that are neither stronger nor weaker than the assertion are filtered out by the constraint in (25c). The alternatives typed in boldface in (32a) and (33a), instead, are logically stronger than the meanings in (29) and (30), respectively, and thus they must be false. The negation of the universal negative, the first alternative in boldface in (31a) and (32a), tells us that there must be a time at which I believe Lea is reading and Sara broke her bike. At this point, however, we do not know whether this time is the one predicated by the assertion, i.e. the tense time t_1 , or another time in the past. This information comes from the negation of the second alternative in boldface in (31a) and (32a), which corresponds to the exhaustification of the proposition hosting the particle *ancora* (i.e. “p is true only at t_1 ”). The intersection of the two implicatures plus the meaning of the assertion returns the desired meaning, as shown in (31b) and (32b). Notice that this happens exactly in the same way for both uses of *ancora*, regardless of the difference in their semantics.

8. Conclusions

In the present work we advanced an account of the temporal particle *ancora* that derives the interpretation it generates in various contexts by means of exhaustification. Not only does this offer a unified semantics for the Italian word *ancora*, but it also has consequences for the interpretation of its English counterparts *still* and *again*. The core idea is that Italian particles such as *anche*, *ancora*, as well as their English counterparts (*also*, *too*, *still*, *again*) introduce an additive inference that some of alternatives they consider must be true. Such alternatives, for temporal particles, can be events or interval of times. The additive inference is derived as an instance of Exh operating on exhaustified alternatives. The survival of the additive inference under negation is obtained by the presence of an other instance of Exh triggered by the negation + RF intonation in Italian. The evidence supporting this claim is that the RF intonation is mandatory for sentences including an occurrence of *ancora* if they are interpreted under negation. This observation is mirrored by the behaviour of other Italian focus particles like *solo* (*only*) and *anche* (*also*), for which the use of a RF intonation is obligatory in contexts where they are interpreted under a negative operator.

The overall assumption behind the present proposal is that negative sentences introduce a systematic uncertainty as to what the speaker is claiming to be false against a shared communication background. In the relevant literature, this has been analysed in terms of conversational interplay between QUDs and assertions as felicitous answers to such questions. When focus particles are present, such an uncertainty is reflected into where the negative operator takes scope with respect to other particles that are present in the sentence. In the present work we remain agnostic as to whether the RF intonation triggers a Contrastive Topic set of pragmatic inferences, or the algorithm we described is specific to the interaction of such a prosodic contour with negation. Likewise, more work is needed to figure out to what extent this pattern can be generalised to other languages. In English, for instance, the RF intonation falls on the negated auxiliary rather than on the past participle as in Italian. This may well be the source of the different licensing conditions of additives and temporal additives in the two languages.

Here, we only hinted at some reasons underlying the reluctance of *ancora/still* to occur under the scope of an overt negative marker, which comes from exhaustification triggered by negation resulting in L-analyticity, and we conclude by suggesting that this is a promising route to pursue.

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