

Triggering Factivity: Prosodic Evidence for Syntactic Structure*

Dalina Kallulli
University of Vienna

1. Introduction

It is well-known that, across languages, so-called “given” information (as opposed to “new” information) systematically correlates with lack of phonetic prominence, or deaccentuation (Halliday 1967, Taglicht 1982, Ladd 1996, Selkirk 1995, Schwarzschild 1999, among many others). The primary goal of this paper is to provide a minimalist syntactic account for a sub-case of this phenomenon, namely the correlation between “givenness” and / or “presupposition” of clausal complements (i.e., factivity, Kiparsky and Kiparsky 1970) on the one hand, and deaccentuation, on the other – a correlation that, as I will show, holds across several languages.

In line with Chomsky’s (2004) “best case” scenario, according to which the components of the derivation of <PHON, SEM> proceed cyclically in parallel, the central claim that I put forward in this paper is that (at least some) information which leads to certain prosodic outcomes, or spell-outs, is encoded in the (narrow) syntax. That is, (some) prosodically expressed information is part of the numeration (in the sense of an abstract morpheme, Embick and Noyer, to appear), or its analogue. Specifically, I contend that: (i) the [+presupposed] status of an embedded CP must be expressed; (ii) this is achieved syntactically (via functional structure); and (iii) the head hosting the relevant syntactic feature, which is instantiated overtly either by some expletive-like element (such as a clitic, a pronoun, a modal element, etc.), or simply by destressing (or deaccentuation), is a probe for the goal (here: CP) with an OCC feature, yielding the various patterns that are found and that are described in some detail in this paper.

This paper is organized as follows. In section 2, I start out by presenting Kiparsky and Kiparsky’s (1970) construal of factivity, introduce some factivity triggers, and make a point as to why the distinction factive/non-factive may be thought of in terms of information structure. Then section 3 lays out a syntactic model of the correlation between factivity and deaccentuation, which crucially relies on Chomsky’s (2004) architectural best-case desideratum. Finally in section 4 I discuss certain extensions that push the research agenda introduced here further towards a more syntactic account of so-called information structure.

2. Presuppositions, Factivity, and Factivity Triggers

Kiparsky and Kiparsky (1970) argue that factive verbs differ from non-factive ones in that the truth of the clausal complements of the former is presupposed, whereas the truth of the clausal complements of the latter is asserted. Consequently, negation of the verb in the complement clause of a factive verb yields a contradiction, as in (1), whereas negation of the verb in the complement clause of a non-factive verb does not, as in (2).

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(1) I regretted that John left (*but in fact he didn't).

(2) I believed that John left (but in fact he didn't).

However, also for non-factive verbs factivity can be triggered, for instance, by a modal, as in (3b) and (3c) (as opposed to (3a)), and/or by a so-called pleonastic or correlative pronoun “doubling” the embedded clause, as in (4).²

- (3) a. I believed that John left (but in fact he didn't).
b. Can you believe that John left? *In fact, he didn't.
c. I can believe that John left (*but in fact he didn't).

(4) I didn't believe it that John left. [I.e., in the sense: It's incredible that John left.] *In fact he didn't.

The same pattern is replicable in German. Thus, the sentence in (5b) differs formally from the sentence in (5a) only in that the former contains a so-called correlative pronoun, namely *es* 'it', which seems to be responsible for the factivity of the verb *glauben* 'believe' here.

- (5) a. *Er glaubte, dass Peter verstarb (aber tatsächlich lebt er noch).*
he believed that Peter died (but factually lives he still)
'He believed that Peter died (but in fact he is still alive).'
- b. *Er glaubte es, dass Peter verstarb (*aber tatsächlich lebt er noch).*
he believed it that Peter died (but factually lives he still)
'As for the fact that Peter died he believed it (*but actually he is still alive).'

Similarly, across several so-called clitic doubling languages such as Albanian and Modern Greek (MG), factivity is triggered by clitic pronouns doubling the clausal complement, as shown in (6b) vs. (6a) and (7b) vs. (7a) for Albanian and MG, respectively.³

- (6) a. *Besova se Beni shkoi (por në fakt ai nuk shkoi).*
believed-I that Ben left (but in fact he not left)
'I believed that Ben left (but in fact he didn't)'
- b. *E besova se Beni shkoi (*por në fakt ai nuk shkoi).*
it_{CL,ACC} believed-I that Ben left (but in fact he not left)
'I believed the fact that Ben left (*but in fact he didn't)'
- (7) a. *Pistepsa oti o Janis efije (ala stin pragmatikotita den ejine kati tetio).*
believed-I that the Janis left (but in the reality neg happened something such)
- b. *To pistepsa oti o Janis efije (*ala stin pragmatikotita den ejine kati tetio).*
it_{CL,ACC} believed-I that the Janis left (but in the reality not happened something such)

2.1. Clitic Doubling and Information Structure

Research on the semantic contribution of clitic doubling especially in Balkan languages where this phenomenon is prevailing has shown that clitic doubling systematically produces information structure in that it marks doubled material as [+topic] (in the sense: [+given]) – see Kallulli (2000, 2001) for Albanian and Greek, Franks and King (2000) for Bulgarian, and the references therein.⁴

² The latter fact is discussed by Kiparsky and Kiparsky (1970) themselves, albeit under a non-pleonastic treatment of the pronoun *it*.

³ I thank Marika Lekakou (personal communication) for providing the MG data.

⁴ I will not attempt a formal definition of topichood/givenness here. Roughly, I take it to be the complement of focus. For my purposes here it suffices to state the core intuition around what it means for an utterance to express given information, namely that the utterance is already entailed by the discourse (Schwarzschild 1999).

Consider the Albanian examples in (8).

- (8) a. *Ana lexoi libr-in.*
 Anna_{NOM} read book-the_{ACC}
 ‘Anna read the book.’
- b. *Ana e lexoi libr-in.*
 Anna_{NOM} 3S,CL,ACC read book-the_{ACC}
 ‘Anna read the book.’

The examples in (8a) and (8b) constitute a minimal pair. They differ only with respect to the clitic element doubling the direct object in (8b). However, the way the examples in (8) stand, it seems as if the doubling clitic in (8b) is optional. But, as Kallulli (2000, 2001) shows, the felicity conditions for the sentences in (8a) and (8b), and more generally for sentences with and without clitic doubled direct objects are complementary, as elicited through the question-answer pairs in (9) through (12). Specifically, when the object is focus or part of the focus domain – as brought out by the contexts provided in (9A) and (10A) – a doubling clitic is not tolerated. Crucially, the doubling construction (in (11B) and (12B)), may only be a felicitous reply to the questions in (11A) and (12A), but not to (9A) and (10A). Moreover, note that the presence of the doubling clitic in these cases (i.e., in the contexts provided by (11A) and (12A)) is not only sufficient, but indeed necessary.⁵ Thus, direct objects in Albanian need to be clitic doubled in order to be interpreted as topics.

- (9) A: What did Anna do? B: *Ana (*e) lexoi libr-in.*
- (10) A: What did Ana read? B: *Ana (*e) lexoi librin.*
- (11) A: Who read the book? B: *Ana *(e) lexoi librin.*
- (12) A: What did Anna do with the book? B: *Ana *(e) lexoi librin.*

Secondly, Reinhart (1995: 85) remarks that “even in view of the massive varieties of opinions regarding what topics are, [there] is one context all studies agree upon: the NP in there sentences can never be topic”. If Kallulli’s (2000, 2001) claim that direct object clitics license topichood of the DPs they double is correct, we expect that the object of the verb ‘to have’ may not be clitic doubled in Albanian existential constructions. As the example in (13) shows, this prediction is borne out.

- (13) (*I) *kishte minj në gjithë apartamentin.*
 3PL,CL,ACC had mice_{ACC} in all apartment.the
 ‘There were mice all over the apartment’

Thus, strictly speaking, clitic doubling is *not* an optional phenomenon; it produces information structure in a systematic way.

If doubling clitics mark their doubled associates as [+topic]/[+given], as shown in this section, and in view of the fact that clitic doubling triggers factivity, which is in turn defined in terms of presupposition, one question that arises is what the connection (if any) between “givenness” and “presupposition” is. As has been suggested to me by Manfred Krifka (personal communication), a proposition can shift from being contextually given to being “presupposed”. That is, to say that a sentence is “presupposed” can mean one of two things: Either it is assumed to be true, or the proposition expressed by the sentence (“der Gedanke” in the sense of Frege) has been mentioned before. For instance, it seems that the correlate *es* ‘it’ in German is not satisfied with a situation in which the proposition is just given in context; it must also be true, as (14) shows.⁶

⁵ The situation is slightly different in MG, in that a doubling clitic is a sufficient, though not necessary condition for marking the direct object as topic – see Agouraki (1993) and Kallulli (1999, 2000).

⁶ The context and example in (14) are due to Manfred Krifka (personal communication).

(14) Context: Hans has certainly heard in his geography class that Sydney is not the capital of Australia and that Toronto is not the capital of Canada.

Dennoch GLAUBT er (??es), dass Sydney die Hauptstadt von Australien ist.
 still believes he it that Sydney the capital of Australia is
 ‘Still, he believes that Sydney is the capital of Australia.’

But in spite of this, as Manfred Krifka (personal communication) points out, this distinction mostly seems to be blurred, in the sense that propositions that are presupposed (i.e., assumed to be true) are “given” (either in the immediate context, or via world knowledge), and that contextually “given” propositions are most often taken to be true. In view of this, the difference between the factive and the non-factive uses of ‘believe’ across the languages discussed so far may be reasonably stated in terms of information structure. The question then is at which level of (syntactic) processing information structure is encoded. I turn to this question in section 3, after discussing yet another set of data.

2.2. Prosody

A look at the prosodic realisation of the factive and the non-factive versions of the example sentences introduced in section 2.2 across Albanian, English and German reveals clear correlates of factivity in prosodic structure. Strikingly, as Fig.1 through Fig.6 clearly show that the prosodic structuring and the prosodic differentiation of the sentences with comparable information structure (i.e., with a verb used once as factive and once as non-factive) is comparable in all the three languages under consideration. Crucially, all the sentences with factive *believe/glauben/besoj* have a nuclear pitch accent on the matrix verb.⁷ In contrast, the nuclear pitch accent (i.e., stress) in the sentences with non-factive *believe/glauben/besoj* in all three languages is not on the matrix verb, but on the embedded one.

Fig.1 English: non-factive, e.g. (2)

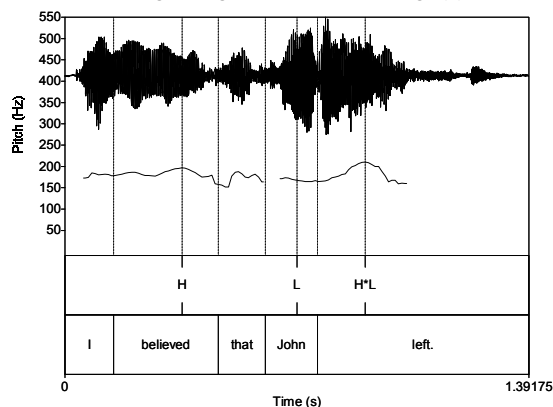
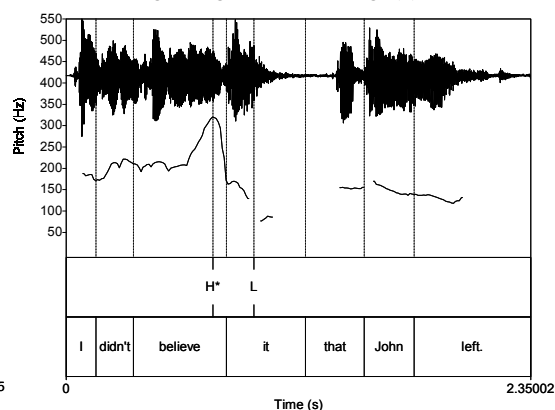


Fig.2 English: factive, e.g. (4)



⁷ Here I have left out the prosodic structures of (3b,c), but these are also rather similar to the one in Fig.2.

Fig.3 German: non-factive, e.g. (5a)

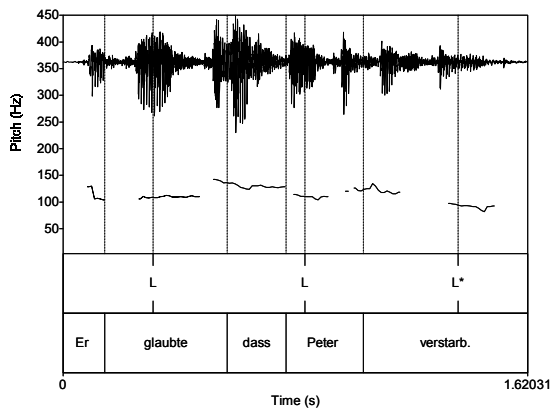


Fig.4 German: factive, e.g. (5b)

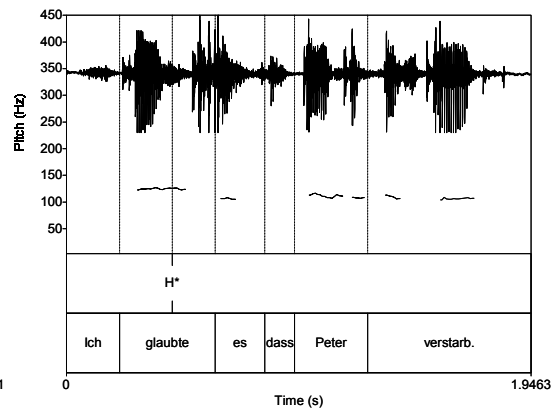


Fig.5 Albanian: non-factive, e.g. (6a)

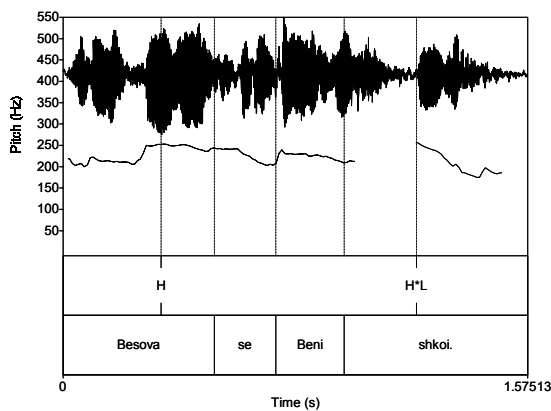
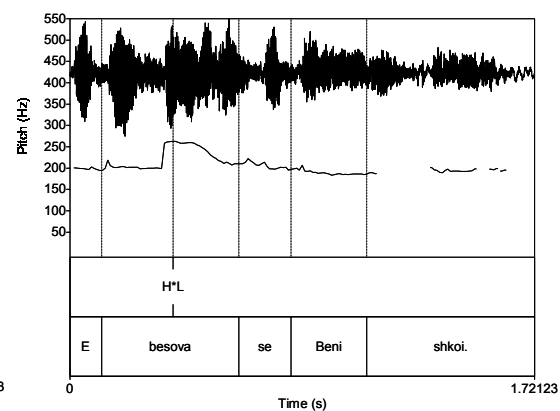


Fig.6 Albanian: factive, e.g. (6b)



Moreover, while correlative pronouns and/or modals are sufficient to trigger factivity in English and German, they are not necessary. Factivity in both languages can also be induced in the absence of these elements, provided that the matrix verb (here: *believe/glauben/besoj*) carries nuclear stress. To show this, consider first the contexts in (15) and (16), which were provided to the test subjects in order to elicit the factive reading of the verb in the underlined sentences in them.

(15) I didn't see John leave my party, but then he called me from his home phone. Now it was obvious. I believed that John left.

(16) *Ich gab bekannt (die Tatsache), dass Peter verstarb. Zuerst wollte Hans nichts davon wissen. Dann zeigte ich ihm die Todesanzeige, und nun sah er die Sache anders. Er glaubte, dass Peter verstarb.*

'I made known (the fact) that Peter died. At first Hans didn't want to hear of it. Then I showed him the death certificate and now he saw the matter differently. He believed that Peter died.'

The prosodic structure of the underlined sentences in (15) and (16) is shown in Fig.7 and Fig.8, respectively. Again, the factive *believe/glauben* here clearly carry a nuclear pitch accent. In other words, the prosodic structures of the relevant sentences in (15) and (16), in which *believe/glauben* is factive, are quite similar to the prosodic structures in Fig.2 and Fig.4, respectively. This fact is of course not surprising, since correlative and/or pleonastic pronouns, like clitics, are phonologically light.

Fig.7 English: factive, e.g. (15)

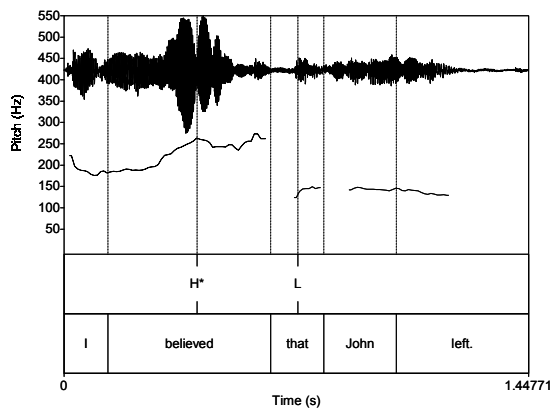
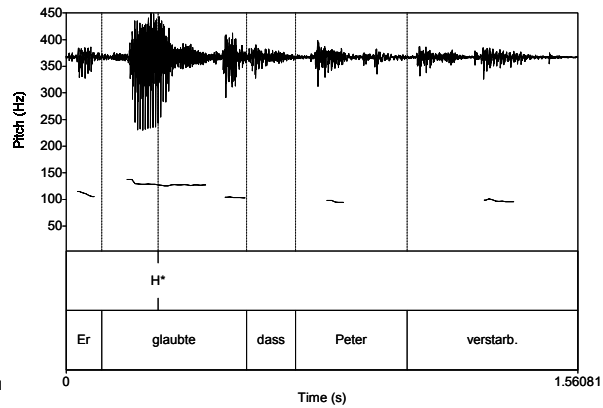


Fig.8 German: factive, e.g. (16)



It is obvious from Fig.2,4,6,7 and 8 that the (factive) embedded clauses are deaccented, and as is well-known, deaccenting is one means of expressing presupposition, or discourse binding – see for instance Krifka (2001) on the role of deaccenting in determining the restrictor of an adverbial quantifier. Of course accent on the verb can also come about because the verb is focused, or f-marked (Selkirk 1995). Crucially, however, deaccenting of the CP and focus on the verb do not exclude each other. In other words, the implication is only one way: In order to get a factive reading, the (factive) verb must carry nuclear pitch accent, but nuclear pitch accent on the verb does not entail (its) factivity. More generally, there seems to be an issue of verum focus (i.e., on the verb, or VP) interacting with information structure even in the contexts that I have provided. However, it seems to me that these contexts still do a good job in at least enabling factive readings.

2.3. Interim Summary

The data presented in this section show that the prosodic structuring and the prosodic differentiation of the sentences with comparable information structure (i.e., with a verb used once as factive and once as non-factive) is comparable in all three languages.

Only in Albanian (and MG) there is always a mechanism in the overt syntax that restricts the information structure and the prosodic structure, namely the clitic (pronoun). In English and German there is no pronoun (or modal element) always, but in view of factivity/non-factivity and prosodic structure correspondences, the relevant features are obviously manifested prosodically. Crucially, this is still an overt manifestation. The question then is how the correlation between deaccenting and factivity described here should be modelled syntactically.

3. A “Best Case” Model

The systematicity of the PF/LF correlation with respect to the phenomenon of (induced) factivity that was described in section 2 is best captured by conceiving of prosodic information as encoded in the syntax (or as part of the numeration itself, which is what syntax manipulates). Thus, adopting a non-lexicalist framework such as Distributed Morphology, prosodic information (in the case at hand, deaccentuation), may be viewed as instantiating (or realizing) an abstract morpheme (Embick and Noyer to appear). This conception enables us to derive the correlation between factivity and deaccentuation in terms of Chomsky (2004:107): “the best case is that there is a single cycle only [...] and the [...] components of the derivation of <PHON, SEM> proceed cyclically in parallel. L contains operations that transfer each unit to Φ and to Σ . At the best case, these apply at the same stage of the cycle. Assume so.”

I contend that the status of an embedded clause as [+presupposed] must be expressed. This is achieved syntactically by way of functional structure. Specifically, the head hosting the relevant syntactic feature (abstract morpheme), which is realized overtly by some expletive-like element (such

as a clitic, a pronoun, a modal element, etc.), or simply by deaccentuation, is a probe for the goal (here: CP) with an OCC feature.

In the remainder of this section, I first introduce the essentials of Chomsky's (2000) probe-goal mechanics, and then provide a structural implementation of factivity in terms of 'Agree' in the probe-goal relation.

3.1 Agree and the Probe-Goal Relation

According to Chomsky (2000), a probe is a set of uninterpretable ϕ -features that are valued and deleted by establishing an Agree relation with a goal containing matching interpretable ϕ -features. Further, Agree is constrained by standard locality conditions, as in (17).

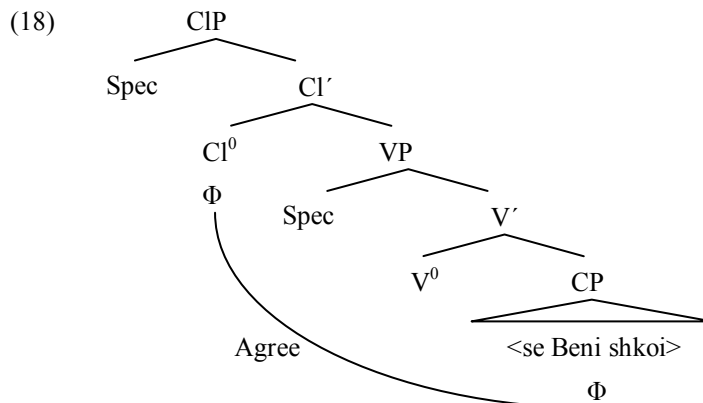
(17) *Locality Condition* (Chomsky 2000):

Agree holds between P and G just in case G is the closest set of features in the domain D(P) of P that match those of P. The domain D(P) of P is the sister of D, and G is closest to P if there is no G' matching P such that G is in D(G').

The category with the probe-feature can also have an EPP- or an OCC-feature. OCC in turn is the condition that an XP is an occurrence of a probe and licenses information structure. For Chomsky (2004), the OCC-feature of a head gets saturated by moving the required category in the domain of H. However, Collins (1997) and Bowers (2002) argue that the OCC-feature of a head can in addition get saturated by merging an expletive with H.

3.2 Clitic Doubling as 'Agree' in the Probe-Goal Relation

Adopting Sportiche's (1995) configurational approach to clitics, according to which clitics head their own maximal projections, I assume that a clitic head is a probe for the goal (i.e., DP or CP) with an OCC-feature (the latter might be further specified as [+Topic] and/or [+Destress]), as shown in (18).



Further, I submit that (clitic) doubling is a universal strategy, as formulated in (19).

(19) The (Clitic) Doubling Principle – A Universal Strategy

Cl⁰ must be filled by prosodic information.

Thus, while some languages (e.g. Albanian) need an overt expletive-like element (such as a clitic), in order to obey this principle, others (e.g. English, German) do not always need such an element.

Turning to the question of why (clitic) pronouns are some of the seemingly preferred means that languages systematically choose to trigger factivity, I assume – in line with previous work (Kallulli

2000, 2001) – that a (definite) pronoun naturally has the characteristic [+topic]/[+given]. Therefore, it can mark a constituent as such.

3.3 Language Comparison – The Locus of Parametric Variation

Unlike in English and German, in Albanian and other languages givenness of object DPs is achieved through doubling clitics, which in turn entail deaccenting of their doubled associate. I suggest that this state of affairs is due to the fact that, while English and German allow free deaccenting, Albanian does not. Nonetheless, however, English and German are similar to Albanian with respect to “doubling” of object CPs. As was discussed in section 2, both English and German display the “clitic” strategy – recall the use of the pleonastic *it* and correlate *es*, respectively. This is potentially due to greater sentence length, or heavier phonological weight, an idea that has been independently defended in recent work by Féry and Samek-Lodovici (2006).

3.4 What about Modals as Factivity Triggers?

In section 2, I showed that factivity may also be induced by a modal verb. Thus, it seems obvious that factives involve more structure than non-factives (as was already argued for by Kiparsky and Kiparsky 1970, and contra de Cuba 2006). Whether or not modals occupy CI^0 or some other position is a matter of secondary importance. However, further scrutiny notwithstanding, since doubling (clitic) pronouns may co-occur with modal elements, it seems reasonable to state that these elements may occupy different positions.

4. Extensions

One of the central claims of this paper, namely that the [+presupposed] status of the embedded clause must be expressed through deaccenting and/or a doubling clitic / (correlative) pronoun is reminiscent of the use of definite articles in Spanish and other languages to mark what in English is expressed by deaccentuation, as in (20) versus (21), respectively. Note in this context also the well-known morphological affinity between clitics – and more generally, pronouns – on the one hand, and determiners, on the other (Postal 1969 and subsequent literature).

- (20) a. *Los vaqueros mascan tabaco.* (Laca 1990)
the cowboys chew tobacco
'Cowboys usually chew tobacco.'
- b. *Los vaqueros mascan el tabaco.*
the cowboys chew the tobacco
'What cowboys usually do with tobacco is: they chew it.'
- (21) a. Cowboys CHEW tobacco.
b. Cowboys chew TOBACCO.

5. Conclusion

The main conclusion reached in this paper is that information structure is encoded in (core) syntax. The main achievement in this paper is the presentation of novel evidence for a truly syntactic treatment of certain traditionally so-called PF phenomena, such as deaccentuation of “given” discourse material. In particular, I have argued that prosodic information is encoded in the narrow syntax. Though the ramifications of such a view are far-reaching, it is worth noting that its implementation is perfectly in tune with other basic tenets of the minimalist agenda, such as lack of optionality and the non-creationist nature of syntax. Finally, the view that prosodic information is encoded in the narrow syntax opens up an entirely new avenue in approaching operations that have increasingly been argued to have an effect on information structure, or be motivated by information structure considerations, such as Germanic scrambling, so-called clitic left dislocation constructions, and others.

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