Swedish as a [+Continuity] language : left-edge prosody and right-edge morphosyntax

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Swedish as a [+C-continuity] language
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1 Introduction

There is a general tendency for languages to employ the left periphery of utterances to establish coherence with the preceding discourse. However, languages differ in the way this is done (Molnár 2003; Molnár & Järventausta 2003; Molnár & Winkler 2006). Molnár (2003) has proposed the notion of "C-hierarchy" to classify languages typologically according to the relative importance of having different "C features" – discourse 'Continuity', 'Contrast' and 'Focus' – at the left edge of utterances. For example, in languages classified as [–C], neither Contrast nor Continuity is constrained to being expressed at the left edge. Therefore, Hungarian readily allows focused information at the left periphery. Swedish and French, on the other hand, avoid placing new information at the left-edge and are thus classified as [+C-continuity] languages, i.e. they strongly prefer given information (Topic continuity) at the left periphery.

Molnár has further proposed that the information structure available at the left edge for a given language is constrained by its morphosyntactic and phonological characteristics. In this contribution, we will elaborate on these ideas related to formal restrictions on the information content of the left edge. We will present findings on the structure of Swedish prosodic phonology that lie at the basis of its classification as a dominant [+C-continuity] language avoiding Focus at the left edge, and will further provide evidence that Focus is instead strongly preferred at the right edge. We will also make brief references to the prosodic structure of French and English.

2 Swedish and French as [+C-continuity] languages

Molnár groups Swedish together with French at the extreme end of the scale of left-edge focus avoidance languages, i.e. they are both assumed to be [+C-continuity] languages. At first this grouping may seem unexpected given the fact that French and Swedish differ in many respects regarding their prosodic structure. French does not have word stress or word tones like Swedish for example. However, both French and Swedish have a number of common formal structures. As regards syntax, both languages tend to use cleft structures, which prevent focus from being realized at the beginning of utterances (Lambrecht 1994; Huber 2002). In addition, both languages are said to have "plastic" intonation, in the sense that accentual prominence can be realized in different positions (cf. Vallduví & Engdahl 1996).

Moreover, Swedish, like French and even Portuguese (Frota 2003), belong to a group of languages that can be termed 'phrase languages' in terms of prosodic structure, i.e. they make use of prosody to signal syntactic boundaries. French and Swedish have left-edge boundary tones that seem to be closely associated with the syntactic structure. They can thus be thought to be in potential conflict with placement of pragmatically related accentual prominences should they occur at or near syntactic boundaries. Thus, in French, the left edge is marked by a high boundary tone that is associated with the first phrase of the utterance (Féry 2001). Similarly, Swedish has been shown to have a left-edge boundary tone at the beginning of main clauses which is associated with the first prosodic word (Roll 2006). If this syntactic boundary-related prosody is superordinate to pragmatic uses of prosody, then this could explain why French and Swedish avoid placing focus-related accents at the left periphery. Doing so would force a suboptimal prosodic structure where focus accents would tend to overlap with boundary accents and thus obscure phrasal cues to syntactic structure. Focus accents are rather preferably placed in non-peripheral position, towards the end of a phrase. In what follows, we will present the left-edge boundary tone in more detail as well as results that indicate that it plays an important role in on-line parsing. It will be shown that it functions to signal the beginning of a new clause in on-line language processing.

3 Left-edge accentual prominence

Left-edge accentual prominence has long been a phenomenon that has been difficult to get a handle on. In many respects, this has been due to the idea that accentual prominence is associated only with 'new' information. Thus the accentuation of seemingly 'given' information in examples like (1) (cited in Gussenhoven 1985 and Fuchs 1984) or thetic sentences such as (2) has been puzzling (* = accentual prominence):

(1) a. Where's your purse?

b. My purse is gone!

(2) The sun is shining.

The association of accentual prominence with left-edge 'given' information has been the subject of a number of studies on English (Gussenhoven 1985; Horne 1990, 1991a, 1991b; Shattuck-Hufnagel et al. 1994). Results suggest that these initial accentual prominences have other functions than expressing focus. In particular, rhythmic factors have been assumed to play an important role in the appearance of left-edge accents in English. For example, the prominence on *purse* in (1b) and *sun* in (2) (where * represents an accentually prominent syllable) can be seen to create a 'beat' which is necessary in order to create a rhythmically acceptable utterance in English. (As Hayes 1981 has shown, words, and thus sentences, can begin with at most one unstressed syllable in English.) Tests with synthetic speech have shown that without these early accentual prominences, the intonation sounds very unnatural (Horne 1988). A factor, however, which makes it problematic to distinguish between different functions of English accentual prominences is that their realization does not necessarily differ in varying contexts and thus a H-tone in a stressed syllable can function both to express focus as well as to create a rhythmic prominence.

Research on Swedish has also led to findings that indicate that left-edge prominences are also associated with factors other than information structure. However, in Swedish, unlike English, there is a specific tonal pattern associated with initial accents that differs from the tonal pattern related to focus and rhythmical

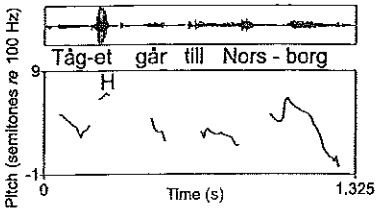

Figure 1: Intonation curve for the utterance *Tåget går till Norsborg* 'The train goes to Norsborg' as an answer to the question *Vart går tåget?* 'Where does the train go?'. The H(igh) tone associated with the end of *tåget* 'the train' is the initial boundary tone.

prominence. Thus in a study on spontaneous task-related dialogues, Horne et al. (2001) found that left-edge constituents expressing given information were associated with a prominent tone. Although this high tone resembled a focal tone, its timing in relation to the syllable structure indicated that it was not a focal accent. For example, instead of being associated with the post-stressed syllable in an 'Accent 2' word, the initial accent was associated with the last syllable in a prosodic word, i.e. later than a focal accent.[1] In Figure 1, an illustration of an initial accent on given information is seen.

4 Empirical evidence for initial boundary tones in Swedish

In recent years, a number of empirical studies have provided results that support the interpretation of the initial rise in Swedish as a syntactically motivated prosodic phenomenon. By comparing intonation patterns in embedded main clauses and subordinate clauses, Roll (2006) found that the initial accent in Swedish was associated with main clause structure. Roll observed that speakers produced a high tone at the left edge of embedded main clauses, but not in embedded subordinate clauses. Thus, in a sentence like *Johan sa att Gunnar ringer inte* 'Johan said that Gunnar does not call ((lit.) Johan said that Gunnar calls not)', where the post-verbal negator *inte* 'not' indicates main clause word order (Subject-Verb-Sentence Adverb), speakers produced a high tone in the second syllable of Gunnar. How-

[1] Test participants showed a general preference for the late-timed accent in contexts where it occurred on given information.

ever, in a sentence of the type *Johan vill att Gunnar ringer lite* 'Johan wants Gunnar to call a little ((lit.) Johan wants that Gunnar calls a little)', the 'non-assertive' verb *vill* 'want' requires a subordinate clause complement, and hence shows the subordinate status of the *att* 'that'-clause. Therefore, when reading these kinds of sentences, test participants did not produce a high tone in the second syllable of the subject in the *att* 'that'-clause. Figure 2 illustrates this difference in the prosodic structure of embedded main clauses and subordinate clauses.

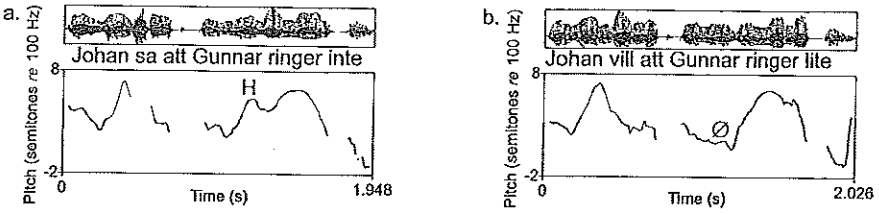

Figure 2. (a) Intonation contour for the utterance *Johan sa att Gunnar ringer inte* 'Johan said that Gunnar does not call ((lit.) Johan said that Gunnar calls not)' with an embedded main clause *Gunnar ringer inte.* The H(igh) tone associated with the final syllable of *Gunnar* is the initial boundary tone. (b) Intonation contour for the utterance *Johan vill att Gunnar ringer lite* 'Johan wants Gunnar to call a little' with an embedded subordinate clause *Gunnar ringer lite* 'Gunnar calls a little'. Notice the absence of a H initial boundary tone on Gunnar in this case.

In a neurolinguistic experiment, Roll, Horne & Lindgren (2009) used Event-Related Potentials (ERP) to investigate the perception of left-edge boundary tones and their effect on on-line syntactic processing. Participants listened to examples like *Besökaren menar/hoppas att familjen känner ju det* ... 'The visitor thinks/hopes that the-family feels thus that ...,' where the sentence adverb *ju* 'thus' following the verb indicates main clause structure. The sentences were presented with or without a high tone in the last syllable of the first prosodic word in the embedded main clause. The neurophysiological processing of a high tone gave rise to a 'P200', a relatively early, frontocentral ERP component that has been argued to indicate non-voluntary direction of attention. In this case, it can be thought to show increased processing resources directed to the upcoming main clause struc-

ture associated with the initial high tone. The ERPs showed a similar effect on processing the embedded main clause structure when a high tone was missing on the clause-initial word (here *familjen* 'the family') as when the subordinating verb was non-assertive, e.g. *hoppas* 'hope'. When the sentence adverb was unexpected either due to a subordinating verb not taking main clause complements or due to the lack of a left-edge boundary tone, a 'P600' effect was observed, indicating that the sentence needed to be mentally restructured. In other words, test participants needed the left-edge boundary tone as a cue for main clause structure. Similar results were obtained using the negator *inte* 'not' in Roll, Horne, & Lindgren (2011), as well as using coordinated structures in Roll & Horne (2011).

5 The right periphery and Focus in Swedish

In contrast to the left periphery of utterances, the right edge of clauses (VP in generative grammar) has been argued to be strongly associated with the expression of Focus in Swedish (Diesing & Jelinek 1995; Holmberg 1999). This is in line with Molnár's classification of Swedish as a [+C-continuity] language where Focus is avoided at the left periphery. The use of clefts in Swedish has already been mentioned as a formal means of moving focused information away from the left periphery. In this section, we would also like to point to a strong preference for focused constituents to be placed at the right-edge of utterances.

The right edge of Swedish main clauses can be seen by inserting a sentence adverb such as *inte* 'not'. Focused objects, e.g. *färg* 'paint' in (3), appear to the right of the sentence adverb.

(3) Ni köpte inte färg.
you bought not paint
'You did not buy paint'.

Unfocused pronominal objects are instead moved away from the right edge position, to the left of the sentence adverb, as shown in (4).

(4) Ni köpte den inte.
you bought it not
'You did not buy it.'

Thus in sentences like (4), only a pronominal object (*den* 'it') can precede the sentence adverb *inte* 'not'. Both the indefinite form *färg* 'paint' and the definite

form *färgen* 'the paint' are associated with low degrees of referent 'accessibility', and therefore tend to be focused (Ariel 1988). However, the indefinite form (*färg* 'paint') more strongly – or even obligatorily – attracts Focus (Holmberg 1999).

Neurophysiological evidence for the assumption that Swedish would tend to place focused information at the right periphery was obtained in an ERP study (Roll, Horne & Lindgren 2007). When test participants read sentences where *inte* 'not' followed full NP complements, reprocessing of the unexpected (*full NP + *inte*) structure was reflected in a P600, which is a relatively late ERP component. An early ERP effect was observed only when the negator followed indefinite full NP objects, i.e. **Ni köpte färg inte* 'You bought paint not'. This effect was a negative potential over posterior electrode sites, with an onset at around 175 ms. This early posterior negativity might index a pre-attentive response to an unexpected word form. The fact that it only appeared when the negator followed an indefinite object NP suggests that the morphosyntactic form (indefinite NP) was highly unacceptable in this position moved away from the right edge. Thus the form of the NP (full vs. pronoun) and the pragmatic status (focus vs. non-focus) of the object is decisive for confirming that the right edge of the clause has been reached. In other words, the right edge of clauses seems to be strongly associated with new information/Focus in Swedish.

6 Conclusion

Valéria Molnár's research on the relation between information structure and its expression in different kinds of linguistic form has led to a better understanding of how languages behave typologically with respect to the way they express information structure. The aim of this contribution was to add to the evidence for Molnár's classification of Swedish as a [+C-continuity] language. As regards the left periphery of utterances, crucial in the establishment of the C-hierarchy, Molnár has claimed that Swedish, like French, avoids focus placement in this position. One reason for this has been assumed to be the "plastic intonation" patterns characterizing these languages. We have elaborated on this idea and related it to results which suggest that Swedish and French are prosodically 'phrase languages' where left-edge prosody is exploited to signal syntactic boundaries. In Swedish, the left-edge boundary tone signals the beginning of a main clause. Further evidence for Swedish as a [+C-continuity] language comes from studies related to the formal

means used in Swedish to express Focus. The placement of sentence adverbials at the border of the right periphery, combined with the avoidance of full NP's in non-final position constitute further evidence for the [+C-continuity] status of Swedish.

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