

THE ROLE OF SENTENCE INTONATION IN SEMANTIC INTERPRETATION OF NORWEGIAN NEGATIVE DECLARATIVES

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ABSTRACT

It is demonstrated how a particular model of intonation-syntax interaction will account for the ways in which Norwegian sentence intonation affects one's understanding of the relative semantic scopes of negator and quantifier/adverb in negative sentences with straight and inverted word order. The central prosodic unit referred to in this study is the Intonational Phrase, which is an immediate constituent of the largest intonational unit.

STATING THE PROBLEM

The data with which I am concerned are spoken utterances of Norwegian sentences containing two semantic operators, one of which is the negation marker *ikke* (or enclitic '*ke*') and the other one a quantifier or a time or frequency adverb. Cf. English.

- (1) It didn't happen often.
(= It happened seldom)
- (2) We didn't find many.
(= We found few)

If often and many are preposed, the scope relations are reversed. The operator to the left takes priority over the one to the right. While often and many are NEG-INTERNAL (i.e. inside the scope of n't) in (1) and (2), they are NEG-EXTERNAL in (1') and (2').

- (1') Often it didn't happen.
- (2') Many we didn't find.

Substituting a time adverb like yesterday for the frequency adverb of (1)-(1'), it is possible to get a NEG-external interpretation of the adverb even in (3) where the negator precedes it. (This is hardly possible with often in (1) or many in (2).)

- (3) He didn't come yesterday.
- (3') Yesterday he didn't come.

A falling nuclear tone on come followed by a low rise on yesterday favours an interpretation of (3) that makes it synonymous with (3'). All other intonation patterns communicate that the adverb is supposed to be in the scope of not. The corresponding types of scope assignment in spoken Norwegian are mental tasks that

rely rather more on the employment, and recognition of intonational devices. An adverb/quantifier may be NEG-internal even if it is placed to the left of the negator in the linear syntactic string of words. Conversely, an adverbial operator may be NEG-external even if it is located to the right of the negator, provided a specific intonation structure is assigned to the sentence. The rules according to which a Norwegian adverb/quantifier is understood to be NEG-internal or NEG-external will have to refer to properties of intonational as well as syntactic form. In our discussion of relative semantic scope determined by the interaction of word order and the intonation structure of utterances, we shall refer to the following three pairs of sentences.

- (4) Han kom ikke i går.
(He didn't come yesterday)
- (4') I går kom han ikke.
(Yesterday he didn't come)
- (5) Det skjer ikke ofte.
(It doesn't happen often)
- (5') Ofte skjer det ikke.
(Often it doesn't happen)
- (6) Vi fant ikke mange.
(We didn't find many)
- (6') Mange fant vi ikke.
(Many we didn't find)

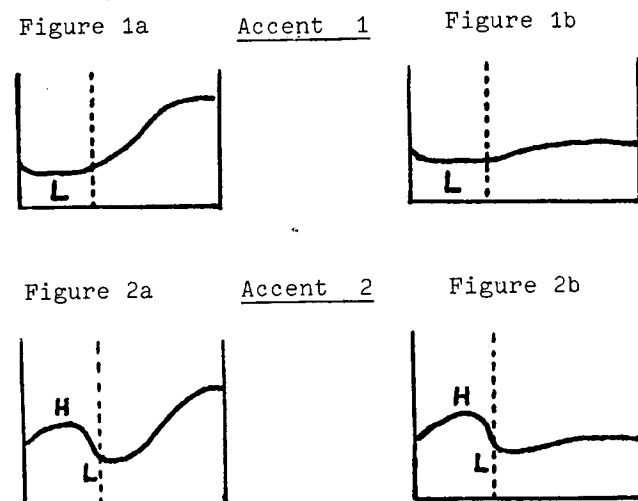
The intonation structures that we are going to impose on these syntactic structures all share certain important features. They all contain one very prominent rising pitch accent movement at a fairly early point in the utterance.

THE INTONATION MODEL

Cruttenden, in his textbook on intonation [1], distinguishes between intonation languages, pitch accent languages, and tone languages. He classifies Norwegian and Swedish as 'predominantly intonational languages' in which 'a limited number of words are distinguished by tone alone'. His remarks on Norwegian and Swedish prosody

are unfortunately marred by his expressed belief that one of the two word accents, the so-called Accent 1, is somehow 'the common accentual pattern', and that Accent 2 has a much more limited range of occurrence than Accent 1. Cruttenden shows a lack of appreciation of the fact that any assignment of pitch accent to a word form in a Norwegian or Swedish utterance entails the use of one or the other of the two opposing word accents. The pitch contours determined by the word accents are always present in spoken signals, and they are phonologically distinctive quite independently of their differentiating morphological function. The actual number of minimal pairs whose members are distinguished solely by word accent - say a limited number like five hundred, or a larger number like five or ten thousand - is quite irrelevant if the issue is whether Norwegian and Swedish are tone, pitch accent, or intonation languages. It has no bearing on the structural relations between pitch profiles determined by word accent and the pitch profiles that make up the global intonation patterns of utterances. In East Norwegian, on which the present study is based, there is no neutralisation of the word accent distinction in any environment. The two paradigmatically opposed pitch profiles can actually be said to shape the various sentence intonation patterns of East Norwegian to a large extent. The word accent dichotomy is an invariant phonological feature of accented words in actual utterances. Not even tonal 'perturbations' caused by the global intonation structure can ever modify the fixed pitch accent contours of Accent 1 and Accent 2 for any specific linguistic purpose. In the West and the North of Norway, where accented syllables are associated with high tone (Accent 1) or a rise to high tone (Accent 2), there is definitely a distinction between a rising and a falling NUCLEAR tone, but in the East (including the capital Oslo), where accented syllables are low-pitched (Accent 1) or gliding down to a F0 minimum point (Accent 2), there is no nuclear tone in the proper sense of the term, and rising vs. falling intonation only plays a subsidiary role, in a small subsection of the intonation system. It is fair to describe the essence of the East Norwegian intonation system as being encapsuled in a specific structural property of the prosodic FOOT unit (i.e. the stretch of syllables from one accented syllable up to, but not including, the next accented syllable of the segmental chain). Any foot is assigned either the plus or the minus value of the binary tonal feature of [+raised peak] (the term 'raised peak' being due to Ladd [2]). Morphologically a foot encompasses a whole word, just part of a word, or a sequence of words. Phonetically it is mono- or polysyllabic. No matter how extensive or how short a foot is, it consists of two parts, one in which the intonational distinction be-

tween [-raised peak] and [+raised peak] is realised and one in which word accents occur. Let us refer to a [+raised peak] foot as a FOCAL foot, and a [-raised peak] foot with only a moderate, or even nonexistent end-peak as a NONFOCAL foot. The foot contours of Figure 1a and b display Accent 1 melodies before the dotted vertical line, and focal and nonfocal accent, respectively, after the dotted line. Figure 2a and b show the corresponding Accent 2 patterns.



That part of the F0 curve that appears to the left of the dotted line is intonationally irrelevant, and the part that appears to the right of the dotted line is word-prosodically irrelevant. Observe that scholars like Selkirk [3] and Nespor & Vogel [4] use the term 'foot' with a meaning that differs from the meaning attributed to Norwegian feet in the present study. 'Clitic groups' necessarily contain more than one syllable. My foot contains n syllables (with the monosyllable as the minimum foot), and, for that matter, an indefinite number of unaccented words after the accented word, which is an obligatory element of the foot. For me, a given clitic group is either equal to, or smaller than the foot in which it appears. For the above-mentioned authors, however, a foot is a unit below, and the clitic group a unit above the word level. In Gårding's model of intonation developed principally for Swedish [5], overall sentence intonation patterns are generated independently of the local highs and lows of the Swedish word accent melodies. Matsunaga [6] considers it necessary to separate accent from intonation in Japanese, a pitch accent language. Accent and intonation are treated as independent cooccurring prosodic systems. I am arguing that East Norwegian (word) accent and intonation should in fact not be viewed as mutually independent. The intonational distinction between [+raised peak] and [-raised peak] in East Norwegian involves the presence vs. absence of a LH pitch movement in the

latter part of a foot. These are features of the sound wave which are clearly dictated by the fact that you go down in pitch when you move from a foot F_i to F_{i+1} , that is, when you produce the East Norwegian word accent in the initial part of F_{i+1} . In West and North Norwegian where the word accents are associated with high pitch, [+raised peak] coincides with the word accent realisation in the initial part of the foot. Hence, where East Norwegian has intonationally significant pitch movements up to a raised peak, West and North Norwegian have intonationally significant falls from a raised peak. The exact length of a Norwegian foot can be ascertained quite easily due to the two contrasting word accent melodies appearing early in the foot. Because the word accents are so easy to perceive for the (native) listener, the word accent melodies in foot contours, which are associated primarily with the accented syllable heading the foot, have an important function apart from the lexical one. They also function as juncture markers for prosodic feet, and the tonal structure of the foot is of paramount importance for Norwegian sentence intonation. A raised foot-final peak is an important juncture marker, too. The turning-point where the pitch starts to drop from a focal peak marks the boundary between two INTONATIONAL PHRASES (IPs). In East Norwegian intonation there is a phonetic difference between PRE-focal and POST-focal in the category of nonfocal. Pre-focal feet permit a mild tonal upglide after the F0 minimum point in the foot. Post-focal feet are generally quite even and low in pitch after the F0 minima, and successive feet after a focal IP boundary usually exhibit a marked F0 declination, both through minima and maxima. The systematic phonetic difference between pre-focality and post-focality provides evidence that nonfocal feet before and after a particular raised, focal peak belong to the same larger intonation pattern. Since pre-focal and post-focal foot profiles are in complementary distribution, they are both phonologically nonfocal, but the auditory difference between those two types of nonfocal foot may ease the listener's identification of the locus of a focal peak representing the end of an IP. I shall refer to the intonational category above the IP as the INTONATIONAL UTTERANCE (IU). An IU can contain from one to three IPs but only two focal feet. The final IP in an IU made up of three IPs may not include a focal foot at the end, and when the IU consists of two IPs, the later one may or may not terminate in a focal foot.

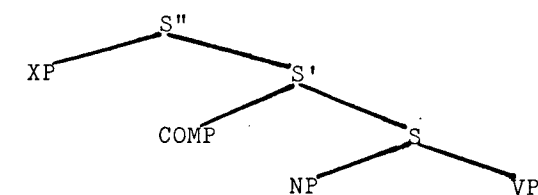
INTONATIONAL PHRASES AS INFORMATION UNITS
Differences in intonational phrasing bear directly on the information structure of utterances. For any IP ending in a foot specified as [+raised peak] there is a

corresponding FOCUS DOMAIN in the surface-syntactic representation of the sentence. Terminal symbols of surface phrase-markers are enriched with the feature [+raised peak] if they head a focal foot in intonation structure. (Cf. Selkirk's concept of 'intonated surface structure'.)

I shall propose the following operational definition of the concept of 'focus domain':

- A focus domain is the highest syntactic node up in the syntactic tree from a given instance of [+raised peak] assigned to a terminal symbol, which
- i) dominates no other instance of [+raised peak],
 - and
 - ii) dominates no symbol to the right of (i.e. temporally succeeding) the symbol specified as [+raised peak].

There are certain weaknesses pertaining to this definition but it will work in the context of the present study. I assume that Scandinavian main clauses should be represented syntactically by a phrase-marker in which there is an XP node to the left and an S' node to the right:



In declaratives, the XP position is filled by a subject (coming from NP under S) or a nonsubject (coming from somewhere within VP under S). COMP is filled by the finite verb of the sentence.

I also assume that there are certain FOCUS INTERPRETATION rules applying to focus domains of the surface-syntactic structure. One rule says, if there are two focus domains both of which are part of S', then the first one is a RHEME and the last one a THEME. On the other hand, if XP is one focus domain and the other one is S' or part of S', then the former is a theme and the latter a rheme.

Thus the syntactic focus domains (henceforth FDs) associated with IPs of IUs are considered to be the smallest information units in a discourse. FDs comprising the whole S'' exemplify BROAD FOCUS as described by Ladd [7] and others. In Norwegian the contrary phenomenon of NARROW FOCUS is a result of splitting the IU into two or three IPs by assigning [+raised peak] to prosodic feet that are not utterance-final.

NEG-INTERNAL AND NEG-EXTERNAL THEMES

Let us return to the main topic of this paper, and to the sentence pairs of (4)-(4'), (5)-(5') and (6)-(6').

If you assign focal accent to the pronominal subject of (4) - *Han kom ikke i går* -

you have thematised the subject, intonationally as well as syntactically, and a later focal accent will coincide with the rhematic syntactic element sometimes referred to as the information focus of the sentence or the item with the 'highest degree of communicative dynamism (CD)' in Firbas' sense. The following three distinct IUs contain the same number of IPs and display the same basic type of theme-rheme structure. (I am using a self-explanatory labelled bracketing notation where focally accented words are written in capitals.)

- (7) (((HÁN-kom)) ((IKKE-i)) ((gár)))
 IU IP F IP F IP F
- (8) (((HÁN)) ((KÓM-ikke-i-gár)))
 IU IP F IP F
- (9) (((HÁN)) ((kóm-ikke-i) (GÁR)))
 IU IP F IP F F

Though all three versions are negations of the proposition 'he came yesterday', they do not answer the same questions. The underlined words constitute syntactic phrases which are separate focus domains according to the definition of focus domain offered above. (7) is an example of 'phrasal negation', which means that there is a positive CONVERSATIONAL IMPLICATURE, namely There were others who did come yesterday, attached to the negative statement, an implicature that is lacking in (8)/(9). In (7) the scope of the negator ikke includes the thematic FD in the XP position. Similar things can be achieved in English by means of one tonal nucleus placed on he and another on not: HE did NOT come yesterday. Ikke is focally accented in (7) in order to underscore the negative polarity of the statement. The denial of the proposition 'he came yesterday' is the only directly conveyed new information in (7). In (8) the finite verb, kom, carries focal accent for a similar reason. Here the rhematic FD dominated by S is the COMP node. That FD includes the negator, because any occurrence of unaccented ikke is verb-enclitic, even if it retains its segmentally full form. The verb gets focal accent in (8) for the same reason that the negator got it in (7). It is made accentually prominent for modal reasons, and there may be no 'contrastive stress' involved here. There is, however, one interesting functional difference between assigning POLARITY FOCUS [8] to ikke and assigning it to the verb. Focal accent placed on ikke links the negator with some other FD in the sentence in such a way that we readily interpret the syntactic material of that FD as a phrase which is inside the scope of ikke - a NEG-INTERNAL phrase, and in our example (7), a NEG-internal theme, the subject han. When it is the verb that carries focal accent in order to highlight the (negative) polarity of the sentence, we tend to understand the semantic scope relations differently. Now the scope of ikke is generally taken to cover no syntactic items to the left of the negative operator, and

the subject han of (8) is therefore a NEG-EXTERNAL theme. Suppose we retain the polarity focus on the verb/negator in sentence (4) but assign focal accent to the AdvP i går ('yesterday') instead of the subject. The actual denial will again be the new information conveyed in the speech act, and focal accent on ikke may still be felt to connect the negator more closely to the succeeding thematic FD i går than in the alternative version where kom gets the focal accent. And indeed, it is possible to interpret the FD i går as either a NEG-internal or a NEG-external theme if ikke is the focussed polarity item, but only the NEG-internal interpretation is possible if the focal accent is on kom. Preposing the AdvP, as in (4'), we find a potential meaning difference between letting polarity focus be carried by the verb or by the negator, but this time (10) is the ambiguous structure and (11) the unambiguous form which only admits a NEG-external interpretation of the phrase i går.

- (10) ((i (GÁR-kom-han)) ((IKKE)))
 IU IP F IP F
- (11) ((i (GÁR)) ((KÓM-han-ikke)))
 IU IP F IP F

The pair (5)-(5') contains a frequency Adv - ofte - where (4)-(4') had a time Adv. The only difference between (5) and (4) is that with a frequency Adv it is impossible to get a NEG-external interpretation of a sentence-final theme even if there is focal accent on the verb. (5') differs markedly from the English sentence Often it does not happen, where often is NEG-external regardless of the intonation employed. The theme ofte in (12) is ambiguously NEG-external or NEG-internal, depending on the context.

- (12) (((OFTE-skjer-det)) ((IKKE)))
 IU IP F IP F

If the accent is shifted from ikke to skjer ofte is outside the scope of negation, as in the English translation. Our decision to distinguish NEG-external from NEG-internal themes is strongly supported by data like (6)-(6') where a quantifier - mange ('many') - interacts with the negator. When mange is in the XP position and receives focal accent there is a clear-cut semantic difference between the negator-in-focus version, which means either Many we didn't find or We found few (=not many), and the verb-in-focus version, in which mange only has the former reading with a NEG-external theme.

REFERENCES

- [1] A. Cruttenden, "Intonation", CUP, 1986.
 [2] D.R. Ladd, "Phonological features of int. peaks", 1985.
 [3] E. Selkirk, "Phonology and Syntax", MIT, 1984.
 [4] M. Nespor & I. Vogel, "Prosodic Phonology", 1986.
 [5] E. Gårding, "Contrastive Prosody", SL, 1981.
 [6] T. Matsunaga, "Prosodic Systems of Jap.", 1984.
 [7] D.R. Ladd, "The Structure of Int. Meaning", IUP, 1980.
 [8] C. Gussenhoven, "On the Grammar and Semantics of Sentence Accents", Foris, 1984.