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## **Is the Order of Adverbs Predictable on Lexical Grounds?<sup>1</sup>**

### **1. Introduction**

Linguists and philosophers have made claims on the relative order of adverbs (see below). According to one of these claims, modal adverbs precede temporal ones within a sentence (see, e.g., Holmberg *et al.* 1993). Usually this generalization pertains to English only, but sometimes it is extended to cover other languages as well. The present study focuses on a series of off-line experiments administered in order to find out the empirical justification for this claim and the prototypical order of modal and temporal adverb pairs in Finnish. A third issue is the suggestion that a set of sentence-initial temporal adverbs is susceptible to gaining modal or discourse-related aspects.

A number of definitions of adverbs, especially those based on syntactic or logical criteria (see, e.g., Jackendoff 1972; Baker 1981, 1989; Travis 1988), are rather strict about the position that adverbs can occupy in a sentence. Especially for sentences with more than one adverb, there are hypotheses concerning the relative adverb order. Jackendoff (1972, 93), for example, claims

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<sup>1</sup> These data have been previously presented at the 23rd Finnish Conference of Linguistics, Helsinki 1996, and at the XVIth Congress of Linguists, Paris 1997 (see Nenonen *et al.* 1996 and Niemi *et al.* 1997, respectively). The authors wish to thank the participants of these meetings, especially Urpo Nikanne, and the two anonymous referees for their insightful comments.

that subject-oriented sentence adverbs tend to be in a certain order in English sentences (see (1) vs. (2)):

- (1) *Evidently John often avoids work.*  
 (2) *?Often John evidently avoids work.*

As far as English is concerned, the claim that the relative order of adverbs is strictly defined sounds plausible. After all, the word-order in English is to a large extent grammaticalized. More generally, it may be the case that the claim on a tightly constrained order of adverbs might be more relevant in languages with grammatically fixed word-orders like English and German, and less relevant in languages with more free word-order.

As for German, Steinitz (1969) shows that the modal (M) and temporal (T) adverbs in German sentences must always come in a strictly defined order, although, surprisingly enough, the order is reversed from that of English: the temporal adverbs precede the modal ones.<sup>2</sup>

Holmberg, *et al.* (1993) extend the English type of linearization principle to include Finnish. They formulate a rule which says that in Finnish the modal adverbs precede the temporal and aspectual ones (i.e., adverbs expressing time, frequency or degree). Moreover, they claim that this order (M-T) is *obligatory* in Finnish (p. 195). A claim like this sounds *a priori* doubtful, since adverbs, which are scope-sensitive, are supposed to be able to change their position rather freely in a free-word-order language like Finnish. In order to study the question of the relative order of Finnish adverbs in depth we administered the following series of off-line experiments.

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<sup>2</sup> Knowing the word-order differences between English and German, the latter still carrying verb-finality in embedded sentences, it would be tempting to hypothesize whether the mirror images of adverb(ial) linearization and word-order are subsumed under a single parameter. However, we will not touch upon this parametric conjecture related to SVO/SOV any further.

## 2. Language Users and the Order of Adverbs in Finnish

### 2.1 Experiment 1: General Place Assignment Task

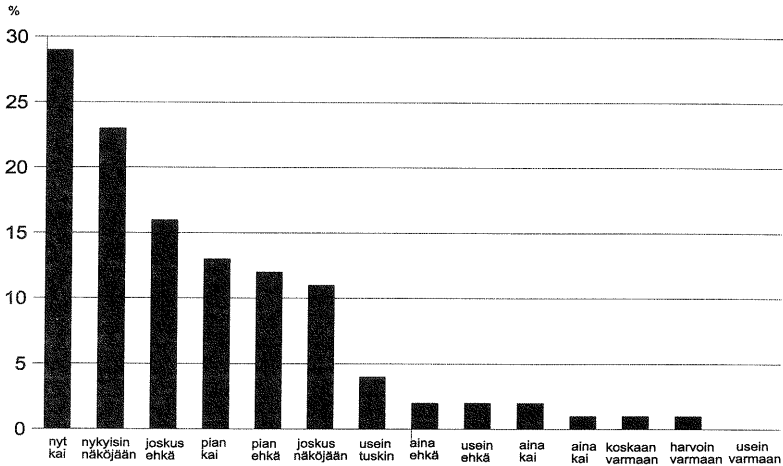
In the General Place Assignment Task we studied the acceptability of the M-T order hypothesis by using pairs of modal and temporal adverbs in simple Finnish sentences (see Hakulinen & Karlsson 1979). For this we chose 13 very frequently used modal and temporal adverbs of Finnish (based on the frequency of use data of Saukkonen, *et al.* 1979) in pairs consisting of one modal and one temporal adverb. Both adverbs of a pair had approximately the same number of syllables so that their length would not have an adverse effect on the order assignment due to the endweightedness effects. In order to test the prototypical positions of these adverbs we designed four counterbalanced forms containing simple Finnish intransitive and transitive sentences, one sentence with each adverb pair. Each form included 13 test sentences and 13 fillers.

The experiment was administered to 83 University of Joensuu students (about 20 subjects/form), who were all native Finnish speakers. The subjects were asked to place the adverbs in the test sentences in the positions they found the most natural. They were to do this by joining the adverbs with lines to the slots given in the sentences written below the adverb pair. Moreover, both adverbs could be placed adjacent to one another. The order of the two isolated adverbs was systematically varied. In a counterbalanced manner, two of the test groups received forms where it was also possible to place the adverbs in the initial position of the sentence, the two other groups did not have this possibility. All the other positions in the sentence were allowed for both groups. An example of a task, with its English translation, can be seen in Figure 1.

2.	JOSKUS	EHKÄ	
____ ____ JUSSI ____ ____ KATSOO ____ ____ TELEVISIOTA ____ ____ .			
2.	SOMETIMES	PERHAPS	
____ ____ JUSSI ____ ____ WATCHES ____ ____ TELEVISION ____ ____ .			

**Fig. 1.** A General Place Assignment Task item with its English translation.

The results of this experiment show that most of the responses (94 per cent, 1140/1238) came out as the M-T hypothesis would predict. In other words, the prototypical order of modal and temporal adverbs in Finnish sentences seems to be that an M adverb precedes a T adverb. However, there are certain interesting pairs which our subjects tended to place in a reversed order relatively often (see Figure 2).



## MODAL ADVERBS

*ehkä* 'perhaps'  
*kai* 'probably'  
*näköjään* 'evidently'  
*tuskin* 'hardly'  
*varmaan* 'certainly'

## TEMPORAL ADVERBS

*aina* 'always'  
*harvoin* 'seldom'  
*joskus* 'sometimes'  
*koskaan* 'ever'  
*nykyisin* 'nowadays'  
*nyt* 'now'  
*pian* 'soon'  
*usein* 'often'

**Fig. 2.** The number of adverb pairs placed in T-M Order in Experiment 1 (N=1238).

Using an impressionistic cut-off point of 15 per cent, we may assert that the following three adverb pairs were used relatively often in the T-M order:

*nyt - kai* 29 %<sup>3</sup>  
 ‘now’ - ‘probably’

e.g.,	<i>Nyt</i> now	<i>Tommi</i> Tommi	<i>kai</i> probably	<i>siivoaa.</i> cleans up	
	<i>Nyt</i> now	<i>kai</i> probably	<i>Tommi</i> Tommi	<i>siivoaa.</i> cleans up	
	<i>Tuula</i> Tuula	<i>potkii</i> kicks	<i>nyt</i> now	<i>kai</i> probably	<i>palloa.</i> a ball

*nykyisin - näköjään* 23 %  
 ‘nowadays’ - ‘evidently’

e.g.,	<i>Nykyisin</i> nowadays	<i>Jukka</i> Jukka	<i>tiskaa</i> washes	<i>näköjään</i> evidently	<i>astioita.</i> dishes
	<i>Pasi</i> Pasi	<i>tekee</i> does	<i>nykyisin</i> nowadays	<i>näköjään</i> evidently	<i>läksyjä.</i> homework

*joskus - ehkä* 16 %  
 ‘sometimes’ - ‘perhaps’

e.g.,	<i>Joskus</i> sometimes	<i>Minna</i> Minna	<i>ehkä</i> perhaps	<i>nukkuu.</i> sleeps	
	<i>Matti</i> Matti	<i>laittaa</i> prepares	<i>joskus</i> sometimes	<i>ehkä</i> perhaps	<i>ruokaa.</i> food

Crucial for placing these adverbs in the T-M order appeared to be whether there was a possibility to use the sentence-initial position or not, with the initial slots attracting temporal adverbs in solo or with their modal mates (see example sentences above). In order to study this question more deeply we designed the

<sup>3</sup> As one of the anonymous referees observed, the Finnish sentence initial *kai* renders interrogative flavor to the sentence, e.g.

<i>Kai</i> probably	<i>Jaana</i> Jaana	<i>nyt</i> now	<i>paistaa</i> bakes	<i>pullia.</i> coffee bread
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following experiment concentrating on the syntax of these three adverb pairs.

## 2.2 Experiment 2: Place Assignment of Adverbs With High T-M Order

In the present experiment we analyzed the "exceptional" cases found in Experiment 1, in other words, the adverb pairs *nyt - kai* 'now - probably', *nykyisin - näköjään* 'nowadays - evidently' and *joskus - ehkä* 'sometimes - perhaps'. The architecture of the present experiment was basically identical to that of Experiment 1. This time we devised two counterbalanced test forms with 12 test sentences and 18 fillers each. The sentences were once again simple transitive and intransitive Finnish sentences, with as neutral content as possible. The subjects, who were all native speakers of Finnish studying at the University of Joensuu, were asked to use their intuition and place the two adverbs in the positions that they felt the most natural. There were altogether 39 subjects who were divided into two groups (19 in one, 20 in the other) each receiving a separate test form. None of the subjects of this task had participated in Experiment 1.

The results gave us the most preferred positions for each of the adverb pairs. As could be expected, the overall proportion of the T-M order is much higher now than in Experiment 1, since every fourth (24 per cent) sentence has the adverbs in the T-M order. The majority of these instances (viz., 82 per cent) had the temporal adverb in the initial position. The attractiveness of the different positions can be seen in Table 1.

It is obvious that there are some positions that attract adverbs more than other positions, and one of the preferred positions for the temporal adverbs seems to be the sentence-initial one, since as many as 70 % of all the initial positions are occupied by a T adverb. One possible explanation for this is that sentence-initially these temporal adverbs may not always be regarded strictly as temporal but they are able to carry some sort of modal or discourse-related sense.

	INITIAL POSITION BARRED	INITIAL POSITION ALLOWED
Intransitive Sentences	67% S M V T 29% S V M T	33% T S M V 32% S M V T
Transitive Sentences	26% S M V T O 25% S V M T O	19% S V M T O 16% S M V T O 14% T S V M O 13% T S M V O

**Table 1.** Most frequent positions of adverbs (in per cent). Rare types have been omitted from each cell using a cut off percentage of 10% (S: Subject, V: verb, O: object, M: modal adverb, T: temporal adverb).

Hakulinen and Saari (1995) suggest that the Finnish temporal adverb *nyt* 'now' and its Swedish equivalent *nu*, especially in Swedish spoken in Finland, are losing their temporal aspect and are assuming discourse particle functions. This phenomenon seems to be so effective that it is possible to refer to it as grammaticalized.<sup>4</sup>

On the basis of our findings, it may be the case that other temporal adverbs going through a similar semantic change in Finnish are *aina* 'always' and *sitten* 'then'. In order to study this phenomenon further we devised another experiment with extra emphasis on semantics.

<sup>4</sup> This possibility was indicated as early as 1933 by Erik Ahlman, who noticed that there are certain adverbs which can function both as, according to his categorization, material and modal adverbs; one of these adverbs is *nyt* 'now', which is also one of the temporal adverbs tested in our experiments (see Ahlman 1933).



### 2.3 Experiment 3: Paraphrase Task

The present syntactic-semantic paraphrase experiment aims at finding out in what degree speakers interpret the meaning of adverbs in function of sentence position. In order to study this we designed four counterbalanced questionnaires with three sentence pairs each. The sentences that were used were simple intransitive Finnish sentences, but this time the adverb pairs were embedded in them. The difference between the two sentences of each pair was that the positions of adverbs in the first sentence was reversed from those of the second sentence (i.e., M-T vs. T-M).

Each of the three sentence pairs in a questionnaire had a different pair of adverbs. The adverb pairs were the same as in Experiment 2, i.e. *nyt - kai*, *nykyisin - näköjään* and *joskus - ehkä*. The positions of the adverbs were the four most preferred positions of Experiment 2 (see Table 1), e.g.,

I	1.	a)	<b>Nyt</b> Now	<i>kissa</i> the cat	<b>kai</b> probably	<i>kehrää</i> purrs.
		b)	<b>Kai</b> Probably	<i>kissa</i> the cat	<b>nyt</b> now	<i>kehrää</i> purrs.
II	1.	a)	<b>Kai</b> Probably	<i>kissa</i> the cat	<i>kehrää</i> purrs	<b>nyt</b> now.
		b)	<b>Nyt</b> Now	<i>kissa</i> the cat	<i>kehrää</i> purrs	<b>kai</b> probably.
III	1.	a)	<i>Kissa</i> The cat	<b>nyt</b> now	<i>kehrää</i> purrs	<b>kai</b> probably.
		b)	<i>Kissa</i> The cat	<b>kai</b> probably	<i>kehrää</i> purrs	<b>nyt</b> now.
IV	1.	a)	<i>Kissa</i> The cat	<i>kehrää</i> purrs	<b>kai</b> probably	<b>nyt</b> now.

b)	<i>Kissa</i>	<i>kehrää</i>	<i>nyt</i>	<i>kai.</i>
	The cat	purrs	now	probably.

Examples above present the first of the three sentences in each of the four questionnaires. The four questionnaires were given to altogether 80 new subjects. Thus we received 20 responses for each questionnaire. The subjects were, once again, students at the University of Joensuu and native speakers of Finnish. In the questionnaire they were asked to explain how they thought that the two sentences of the three pairs of sentences with adverbs in the reversed positions differed in meaning.

Their responses were analyzed on the basis of which aspect, the modal/discourse-related or the temporal one, was regarded as primary for the interpretation of the meaning of the sentence. The results of the present experiment further substantiate the hypothesis based on Experiment 2 and studies by Ahlman (1933) and Hakulinen and Saari (1995), since the sentences where the modal adverb came first were interpreted primarily as modal, and the sentences where the temporal adverb was first were often interpreted as non-temporal. Observe that it is thus not only *nyt* that has this function, but also *nykyisin* and *joskus*, since there were no differences between the adverb pairs.<sup>5</sup> The interpretations of the sentence-initial adverbs are presented in Table 2.

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<sup>5</sup> To be frank, experiments where prosody is taken into consideration should be carried out to complement the Paraphrase Task. The intervention of prosody was, in fact, brought up by several subjects in Experiment 3 when they claimed that it was very difficult to provide an interpretation because the meaning was dependent on the intonation pattern and stress that certain elements would have received in their spoken form.

INTERPRETATIONS	MODAL	TEMPORAL
Modal-adverb-initial sentences	112	58
Temporal-adverbs-initial sentences	93	86

**Table 2.** Modal and temporal interpretations in function of sentence-initial adverb type (response categories of “unclear and ambiguous meaning assignment” and “missing” excluded, total 127). The difference between the interpretations of the adverbs was statistically significant, (Chi test,  $p < 0,01$ ).

### 3. Concluding Remarks

On the basis of the present experiments it is possible to make the following overall conclusions. First, as a positive answer to the question presented in the title of this study it is possible to say that at least as far as modal adverbs and temporal adverbs of Finnish are concerned, they seem to have a prototypical order, according to which the modal adverbs *tend* to precede the temporal ones.

Moreover, adverbs, at least in Finnish, seem to be prone to occupy the sentence-initial position. It is probably too strong a claim to argue that the sentence-initial position is the prototypical one for adverbs, but in any case it is one of the positions that seem to attract adverbs to a large extent (see, e.g., Van Valin and LaPolla 1997 for the notion of periphery and adverb position, and Vilkuna 1989 for contrastive focus).

Finally, there seems to be an ongoing tendency according to which sentence-initial temporal adverbs in Finnish, not only *nyt*, but also such as *nykyisin* and *aina*, are becoming more and more modal or developing towards discourse-particlehood (see e.g., Hakulinen and Saari 1995).

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