PHONETICS LABORATORY
DEPARTMENT OF GENERAL LINGUISTICS
LUND UNIVERSITY

# WORKING PAPERS

16 · 1978

STUDIES IN GENERAL LINGUISTICS
dedicated to
BERTIL MALMBERG
by students and colleagues
on the occasion of his 65th birthday
22nd April 1978

Lunds Universitet
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# Bertil Malmberg

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# SOME THOUGHTS ABOUT FUNCTIONAL SENTENCE PERSPECTIVE, EMPATHY, AND REFLEXIVES*

Milan Bílý

The Prague school, besides the well-known literary structuralism and the linguistic structuralism (above all the phonology), made an important contribution to linguistics which has been almost unknown in wider linguistic circles – the theory of Functional Sentence Perspective (FSP).[1] Only during the last decade has this theory been known by other than Czechoslovak linguists or foreign Slavists. Unfortunately, many of those who try to use the theory either have only some fragmentary knowledge of it, or they misunderstand it completely.[2] Others have laboriously 'rediscovered' facts that were described in Prague about half a century age. One of the linguists, whose obvious fallacies concerning FSP I have strongly criticized elswhere,[3] is S. Kuno. He, however, has found a subjective complement to the FSP structure of a sentence, namely, the way the speaker can express his attitudes toward the participants of an event or a state. The concept of empathy, as Kuno says, is not new; it belongs to what has been called 'point of view' in literary criticism. What is new in Kuno's evidence that empathy can play an important role in many phenomena that are often regarded as syntactic ones. Kuno[4] exemplifies empathy with the following sentences:

(1) John hit Mary.
(2) John **hit** his wife.
(3) Mary's husband hit her.

These sentences can be used to describe the same event, but the speaker's attitudes vary. (1) is the neutral sentence where the speaker does not take sides with any of the participants. In (2), the speaker is taking sides with 'John' because he is referring to 'Mary' as 'his wife', i.e. 'Mary' is defined by her relation to 'John', and vice versa in (3). In other words, the speaker is empathizing with 'John' in (2) and with 'Mary' in (3). (It should be added that this analysis seems to hold for (2) and (3) pronounced in the 'normal', 'neutral' way only. It is quite dubious whether, e.g., 'JOHN hit his wife' should be interpreted as (2). Unfortunately, Kuno, as is usual in the generative tradition, takes here into consideration only the written sentences, which are, of course, usu-

ally interpreted as if pronounced in the 'normal', 'unmarked' (meaning here 'usual') way. If not stated otherwise, all the sentences throughout this paper are analyzed as if pronounced in this 'neutral' way.)

(4) *Mary's husband hit his wife.

(4) is unacceptable as referring to the same event as (1) - (3), "unless it were used in a context in which hitting one's own wife has been under discussion", which means, in FSP terms, that "Mary's husband" is the rheme of the sentence. Kuno claims that there is a Ban on Conflicting Empathy Foci, i.e. a single sentence cannot contain two or more foci of the speaker's empathy. (4) is wrong as the husband is defined by her relation to the husband (= The speaker empathizes with John.).

Another principle that Kuno postulates is the Surface Structure Empathy Hierarchy: "It is easiest for the speaker to empathize with the referent of the subject; it is next easiest to empathize with the referent of the object; . . . It is next to impossible to empathize with the referent of the by-agentive.". This sounds intuitively correct and is in agreement with the tendency, that we believe exists more or less at least in all Indo-European languages, to make the theme proper the subject of the sentence.[5]

Finally, it is easiest for the speaker to empathize with himself, then with the addressee, last with third persons. (This hierarchy is called in Kuno and Kaburaki (1975) 'Speech Act Participant Empathy Hierarchy'.) This seems a logical consequence of the FSP theory, if we imagine that degrees of Communicative Dynamism (CD) carried by sentence elements are wider and wider circles departing from 'the centre of the speaker's universe', which is 'me and now and here', without doubt often 'the most given elements in a communication' (= the most thematic elements), that remain most usually unexpressed in a sentence. Then comes the addressee, who is usually also 'given' by the very nature of communication, then other pieces of information. (The performative analysis of various sentence types with deleted performative sentences - or a similar performative interpretation - 'I say to you . . .', 'I ask you . . . ' etc., confirms the basically lowest degree of 'I' followed by 'you' as the performatives are usually deleted and all deleted elements are thematic ones (except for rhematic elements missing in sentence fragments completed with gestures and other non-linguistic means).

We will see the scale of CD (= the FSP structure of a sentence) as ob-

jectively determined by the consituation (= linguistic context + extra-linguistic situation), lexico-semantic means of FSP, linearity and intonation, with the possibility for the speaker to make some little subjective (e.g. empathic) modifications of the scale. Thus, while (2) must be used when the existence of 'Mary' and her being John's wife are new information (therefore, according to analyses of Firbas, 'his wife' carries the highest degree of CD, even higher than that of the verb), the speaker can even use (2) if he/she wants to 'twist' the objective scale a bit, even when both 'Mary' and 'John' are 'given' (= thematic), and to lower the CD carried by the first NP in relation to the second NP in question. As for the Surface Structure Empathy Hierarchy, it makes (together with the Ban on Conflicting Empathy Foci) (5) very strange without a special context:

(5) *John's wife was hit by him.

Kuno marks the sentence as ungrammatical, however, it is possible in a context where 'Who was hit by whom?' and perhaps even 'Who hit John's wife?', 'Who hit JOHN's wife:' or 'Who hit John's WIFE?' is under discussion. Kuno omits the possibility of less usual sentence stresses, but it seems that placing sentence stress in (5) on 'HIM' in the above-mentioned contexts obviates the interpretation of the speaker's empathy with the referent of 'John' and two conflicting empathy foci are avoided:

(6) John's wife was hit by HIM.

There is a similar phenomenon in (7) and (9):

(7) *John's sister and he went to Paris.
(8) Both John's sister and he went to Paris.
(9) *His sister and John went to Paris.
(10) His sister and even JOHN went to Paris.

(7) is wrong (with respect to the coreferent reading) because the empathy is with 'John' – 'sister' is defined by her relation to 'John' and at the same time another of Kuno's principles is violated: 'Give syntactic prominence to the person . . . who you are empathizing with.' (Syntactic prominence is said to be realized by command, precedence, and subjecthood.) The pronoun 'he' placed after 'John's sister' does not give 'syntactic prominence' to 'John'. However, our comment on (5) and (6) is true even for (7) and (8). In (8), the person to whom 'John' and 'he' refer is 'disqualified' as the person empathized with by 'both', which increases

the CD carried by 'he', in the way sentence stress did in (6). Similarly, even the linear arrangement of (9) can be saved by increasing the degree of CD carried by the sentence element referring to a person which should have been empathized with otherwise. There is no confict of empathy foci in (10). It is not quite clear if empathy in (6), (8), and (10) is with the person referred to as 'wife' or 'sister' respectively, nor if these sentences, where there is no conflict on empathy foci, are neutral, as Kuno claims (1) is. The same uncertainty exists even for our comments on (2) - (4).

Kuno exemplifies Speech Act Participant Hierarchy with

(11) I hit Mary.
(12) *Mary was hit by me. (The marking is Kuno's own.)

In (11), there is an agreement between Surface Structure Hierarchy and Speech Act Participant Hierarchy, while there is said to be a conflict in (12). Our comment on (6), (8), and (10) is valid even for (13):

(13) Mary was hit by ME.

What is even more important, (12) is quite correct for non-volitional actions, where the speaker describes himself/herself as a sort of 'natural force' without a proper intention. ('Mary happened to be hit by me by mistake.') Thus it seems that there is another hierarchy at play which is formulated in Kuno and Kaburaki (1975) - Humanness Hierarchy that says that the speaker can most easily empathize with a Human, less easily with an Animal, least with a Thing.[6] However, it is true that sentences like (14), where the above-mentioned conflict is claimed to exist, demand a context where the speaker takes (or pretends to take) a detached view of himself/herself, as in a scientific or journalistic report:

(14) The president was interviewed by me for three hours on the lawn in back of the Executive Office Building.

Kuno has also pointed out that there are certain verbs that demand that the speaker's empathy be with the referent of the subject and other verbs that demand empathy with the referent of the object. The verb 'to meet' is one of the subject centred verbs, while 'to strike someone as (something)' is one of the object centred verbs.

(15) ?John's wife met him . . .
(16) *John met me . . .
(17) *An elephant met John . . .

(18) *I strike John as pompous.

In (15), there is a conflict between the verb and the person in question. The verb demands (when interpreted as meaning 'happened to come upon, found') that the person the speaker empathizes with be referred to by the subject, and the person, who is defined by her relation to another person, should therefore be empathized with. In (16), a similar conflict comes about between the verb and Speech Act Participant Hierarchy. In (17), there is a conflict between the verb and Kuno's and Kaburaki's last principle - Topic Empathy Hierarchy, which says that it is easier to empathize with discourse-anaphoric 'objects' than with discourse non-anaphoric ones. (To make this Hierarchy more general, we can substitute 'thematic' for the former and 'rhematic' for the latter, because not all thematic elements are necessarily 'discourse-anaphoric'.)

As for (18), which contains an object centred verb, there is a conflict between the demand of the verb and Speech Act Participant Hierarchy. However, the Ban on Conflicting Empathy Foci needs a reformulation as can be seen from the following example:

(19) *I met his sister and John.

(19) should have been correct as the subject centred verb and Speech Act Participant Hierarchy demand that the empathy is with 'me'. As there cannot, according to the Ban be another empathy focus within the simple sentence, 'his sister and John' should have been equivalent to 'John and his sister', which is not true. My opinion is that there can be only one empathy focus per Communicative Field. (See Svoboda 1968.)

My previous remarks on the Ban can be summarized by the following formulation: It is impossible to empathize with somebody/something referred to by a sentence element that is rhematic within its own Communicative Field. Therefore the Ban on Conflicting Empathy Foci is avoided in sentences where a noun or an NP that should be an empathy focus according to some criteria, is coreferential with a sentence element that is rhematic within its own Communicative Field.

Warning for the reader

You are leaving the relatively safe ground of the first part of this paper and entering the linguistic speculations of the Wild West and brave samurais.

If you happen to be a sober European, stop reading here and say: So what? Kuno and Kaburaki (1975) claim that a reflexive pronoun in English is acceptable only when the speaker is empathizing with its referent, which means that the antecedent of the reflexive must be interpretable as expressing the speaker's empathy with its referent. Some of Kuno's and Kaburaki's examples are far from convincing and seem to be an outcome of their own theoretical principles rather than a true evaluation of acceptability degrees,[7] but there are others that look sound. (Some of the example sentences are slightly changed for the sake of simplicity.)

(20) John talked to Bill about himself.
(21) *John discussed Mary with herself.
(22) *Bill was talked to by Mary about herself.
(23) *John asked the company about itself.

(20) is primarily interpreted as 'himself + coreferent John' and for some speakers, there is a secondary interpretation 'himself + coreferent Bill'. The second interpretation is less natural (or even impossible for some speakers) because of Surface Structure Empathy Hierarchy. (21) is explained by Kuno and Kaburaki as follows: 'It seems to us that the sentence is unacceptable because Mary does not refer to Mary as a person.' (Kuno and Kaburaki 1975, p. 37). But there is also a difference in the degrees of CD carried by the indirect object of (20) – 'Bill' and the direct object of (21) – 'Mary' (higher CD) that makes it more difficult to place empathy (as we regard it as a 'subjective decrease in CD') on the referent of 'Mary'. (22) is against the Surface Structure Hierarchy, too – in our theory, the FSP structure of the sentence offers, after passivation, only one candidate for empathy – the surface subject. (23) does not allow placement of empathy with "the company" because of the Surface Structure Hierarchy combined with the Humanness Hierarchy.

(24) John said that there was a picture of himself in the post office.
(25) ?Mary told John that there was a picture of himself in the post office.
(26) *Mary said of John that there was a picture of himself in the post office.

(24) allows the use of reflexives, so does (25) (though Kuno and Kaburaki consider it worse than (24)), but (26) is definitely wrong. The reason is again the difference in degrees of CD inherently carried by the subject, indirect object, and the other oblique noun, as in (20) and (21).

Kuno has always tried to explain many facts concerning pronominalization and reflexivization with so-called Direct Discourse Analysis, ignoring the fact that it was, at least partially, proved to be wrong by Hinds (1975). (Otherwise, Hinds uses the terminology of and praises Prague school theory without really understanding it.) Thus (26) is wrong for Kuno because the structure to start with is something like 'Mary said of John: There was a picture of John/him in the post office.'. Thus John/him cannot become a reflexive. However, our analysis is confirmed in Jackendoff (1972) who shows the following sentences, where it is not possible to make a sensible Direct Discourse Analysis for (27) in order to explain the difference between (27) and (28), (29).

(27) John told Bill a story about himself.

The necessary Direct Discourse Analysis is quite nonsensical: 'John told Bill: A story about yourself.'.

(28) John criticized Bill in a story about himself.
(29) John learned about Bill from a story about himself.

Jackendoff just notes the difference - (27) allows both interpretations, 'John + coreferent himself' or 'Bill + coreferent himself', while (28) and (29) can be interpreted only as 'John + coreferent himself' - without any explanation. For us the difference is the same as between (20) and (21), as well as (24), (25) and (26).

(30) Physicists like myself do not often make mistakes.
(31) Physicists like yourself do not often make mistakes.
(32) *Physicists like himself do not often make mistakes.
(33) Preparing myself for the exam will be impossible.
(34) Preparing yourself for the exam will be impossible.
(35) *Preparing himself for the exam will be impossible.

(30) - (32), which Kuno will explain again with his Direct Discourse Analysis, can be accounted for within our concept with the Speech Act Participant Hierarchy. Similarly we can explain (33) - (35). It is worth noticing that (33) - (35) without an expressed antecedent confirm what has been said about the basic 'giveness' (= thematicity) of 'I' and 'you'. That's

why there does exist an 'antecedent' (though an unexpressed, 'deleted' one) for 'myself' and 'yourself'. Reflexives must have antecedents, except for 'I', 'you' (for the reason given above) and 'dummy subjects' to infinitives meaning 'for any subject in question' - for example: To shave oneself is boring.

It is interesting to notice even the lesser degrees of acceptability for 'ourselves' and 'yourselves' in (33) and (34). 'Ourselves' and 'yourselves' are not a simple multiplication of the 'given' 'I' and 'you', since 'we' is 'I' + 'you' + ('you') . . . or 'I' + 'he/she' + ('he/she') . . . or 'I' + 'you' + 'he/she' + ('you') + ('he/she') . . . etc.

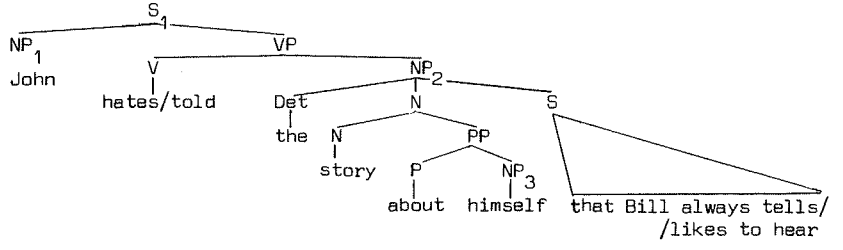
Other examples confirming our theory:

(36) John and Bill collaborated on a story about themselves.
(37) *John collaborated with Bill on a story about themselves.
(38) John collaborated with Bill on a story about himself.
[(38) is taken from Jackendoff 1972.]

(37), in comparison with (36), makes empathizing possible only for the 'promoted' antecedent, not the 'demoted' one. Therefore 'themselves' becomes impossible. (38) can be interpreted only as 'John + coreferent himself' because the 'demotion' of 'Bill' explicitly 'disempathizes', makes it unsuitable as the antecedent to 'himself'.

(39) John hates the story about himself that Bill always tells.
(40) John told the story about himself that Bill likes to hear.
[(39) and (40) are taken from Jackendoff (1972) and slightly changed.]

These sentences are excellent arguments against all attempts to describe reflexivization in syntactic terms. The structure is the same with respect to the relevant relationships within the $NP_2$:



But the semantics of the verbs and the interpretation possibilities are different. (39) is ambiguous, while (40) allows only the interpretation 'John + coreferent himself'. Why? In note 6 we wrote about 'anthropocentrism in language'. In our opinion, this anthropocentrism comes into action in the Humanness Hierarchy, where the next subdivision of Human - as we have seen in our sentence (12) - is (if the reader excuses the use of a vague and 'cheerfully intuitivistic' term[8]) Agent - Non-Agent. The most naturally empathized-with 'object' is the speaker, subject, human and doer. 'John' in the main clause of (40) is the subject of the main clause, (i.e. he is given syntactic prominence in Kuno's terms: precedence, subjecthood, command), and the human doer. As such it is the only suitable antecedent for the reflexive. 'Bill' in the sub-clause is neither an agent nor the person given syntactic prominence within the main clause. In (39), both 'John' and 'Bill' are almost equally strong candidates for 'empathizees', i.e., the doer vs the syntactically prominent NP. Both interpretations are possible.

Descriptions similar to those presented here concerning Japanese are reported to be in Kuno (1975) and (1976), while Thrainsson (1975) is said to corroborate them in a study of reflexivization in Icelandic and Nilsson (1978) corroborates them in Turkish. At the first look, there seems to be a relatively good correspondence between English and Swedish, as well. English is not exactly the best language to analyze with regard to reflexives as the use of reflexives is restricted to personal reflexives (there are no possessive reflexives) minus some language-specific extra constraints (personal pronouns are used in locative constructions). A remarkable theory of Russian reflexives (Russian has both personal and possessive reflexives) has been presented in Yokoyama (1975) and Yokoyama and Klenin (1975). Their claim is that in the first and second person, the possessive reflexives are marked [+Distance] (= [+Non-Empathy]), while in the third person, where it is traditionally said that reflexivization is obligatory, it is the possessive pronoun that is marked [+Distance]. 'Distance' is exemplified as a 'psychological distance' - the speaker keeps a distance to the referent he/she dislikes, a 'social distance' between the speaker and the referent of the antecedent of the reflexive, or as a time distance - the speaker will differentiate between the referent now and in the past, or the speaker will differentiate between the speaker's way of seeing the referent and reporting other peoples' opinions, etc. All these cases would have in common that they increase resp. decrease the distance

in degrees of Communicative Dynamism between the speaker ('I') and the NP referring to the referent in question, i.e. Distance in Russian would be just the opposite of and function as such for English Empathy. These findings would suit very well our concept of Empathy and Distance as subjective complement to the objective FSP structure of a sentence.

Unfortunately, our Russian informants question the grammaticality of many of Yokoyama's examples and doubt her being a native speaker of Russian. (Some suggest that she may be a Russian émigrée of second or third generation.) The severe limitation of space does not allow us to start examining Russian reflexivization, however, I will claim that there exist clear proofs that the traditional 'optional rule' of reflexivization in first and second person is unsatisfactory and there even exist examples of reflexivization resp. non-reflexivization in all grammatical persons that cannot be accounted for syntactically.[9]

Notes

* This is the first part of a paper the second part of which will be published as Bílý (1978).

1. It seems useless to start every paper concerning the Prague school's theory of FSP with a 'course for beginners', as, for example, J. Firbas does. Those who do not know what it is are advised to read some papers by Firbas. There are some reading suggestions in the bibliography. Prospective readers are warned not to start with, say, Halliday or Kuno, as they would get a wrong impression of what the theory of FSP is about.

2. For example, Halliday (1967-8) identifies the theme with the first constituent of a sentence, i.e., he bases his concept on sentence linearity only, thus making it separate from discourse functions. Similarly, Chomsky in 'Aspects', p. 221, in blessed ignorance of the theory of FSP defines the topic of a sentence (= roughly the theme proper) "as the leftmost NP that is immediately dominated by S in the surface structure and that is, furthermore, a major category . . . . ". Thus, for him, 'John' in "It was John who I saw." is the topic, when, in fact, with the most natural way of pronunciation (i.e. with sentence stress on 'John'), 'John' is the rheme of the sentence! (The part about 'a major category' is to avoid an even more ridiculous claim that 'It' in the sentence above is the topic.) Jackendoff (1972, p. 262), influenced by the peculiarity of English, which does tend to make the theme proper to the subject of a sentence oftener than many other languages, identifies the topic with the subject. If he had read Firbas' paper on non-thematic subjects in English (Firbas 1966) or if he had known something about FSP at all, he could not have made such a claim. Some of the most outrageous deeds of Kuno are criticized in Bílý (1977 a).

3. Bílý (1976) and, above all, Bílý (1977 a).

4. Kuno (1975) and (1976).

5. Of course, this tendency is much weaker in languages with free word-order, for example, in Slavic languages, where it is possible to get the basic distribution of Communicative Dynamism (as progressively increasing with sentence linearity) via permutations of sentence partswithout changing the grammatical relations within a sentence, but the tendency can be observed even in, say, Czech. (Cf Bílý 1977 b.)

6. The next subdivision would be probably Concrete and/or Individualized Person, Animal, Thing vs. Abstract and/or Non-Individualized Person, Animal, Thing - at least so findings about Czech neutral word-order referred to in Bílý (1977 b) can be interpreted. Even the Humanness Hierarchy is something that can be traced back in the Czech linguistic tradition, where an 'anthropocentrism in language' is talked about.

7. For example, the following dubious scale of acceptability:

   a) (?) John showed Mary a picture of herself.

   b) ? You showed Mary a picture of herself, didn't you.

   c) ?(?) I showed Mary a picture of herself, didn't you.

   d) ?? John received from Mary a picture of herself.

   e) ?* You received from Mary a picture of herself, didn't you.

   f) * I received from Mary a picture of herself.

   (All the marks are Kuno's and Kaburaki's own.)

   a) to f) are meant to show the accumulating and aggravating deviations from the principles named in the first part of this paper: a) shows a slight deviation from Surface Structure Empathy Hierarchy only and is okay for many speakers. b) should be worse as even the hierarchy of grammatical persons is violated. In c), the violation is more severe. The same gradation is to be found in d) - f), accompanied by the fact that 'to receive' is a subject centred verb, which should make the subjects of d) - f) even more empathy-prone and therefore disqualify 'Mary' as the antecedent of 'herself'. There is hardly any substance in these evaluations. Apart from the difficulties connected with establishing such detailed scale of acceptability, the scale seems completely wrong. Let us take one of the 'unacceptable' sentences, say, d) sentence: It would be much worse, perhaps unacceptable, if the semantics of the reflexive made it possible to interpret the reflexive as coreferent with the subject, i.e., 'John received from Bill a picture of himself.'. In this sentence, the previously named hierarchies do seen to block any interpretation other than 'John coreferent himself'. However, in the original d) 'Mary coreferent herself' is the only possible interpretation because of the semantics and d) seems correct. Thus, as for reflexives, the hierarchies just help to clarify some of potentially ambiguous sentences.

8. See Cruse (1973).

9. Kuno does not take into account the substantial difference between 'real reflexives' and the more or less amphatic English reflexives, which become personal pronouns or words of emphasis when translated into many other languages. (Cf., for example, the Swedish reflexive

'sig' and the empathic word 'själv' ['self', alone].) It is also not yet certain whether some restrictions must be formulated syntactically or in FSP terms: for example, reflexives cannot stand as subjects in English. (There may be some syntactically defined boundary beyond which reflexivization is absolutely impossible, too.) Is this a syntactic restriction or an FSP restriction similar to that claimed for personal pronouns in Bílý (1977 a)? There is some evidence for the latter in Czech: Svoje děti se mu vychovávají nejhůř. (Literally: "His (refl.) children (nominative) 'refl. particle of verb' for him (dative) raise worst.", i.e. 'It is most difficult for him to raise his (own) children.'.) The enclitic pronoun 'nu' carries such a low degree of CD that it can function as the 'antecedent' of the reflexive, which does not carry the lowest degree of CD since it is the determination and not the head-word of the subject.

Kuno's empathy is also insufficient for cases like '*Peter's wife shaved himself.', where according to Kuno's own analysis, 'Peter' is empathized with and should be suitable as the antecedent of the reflexive. A possible solution can be stated in FSP terms: The determination is an essential amplification of the semantics of 'wife' and therefore it carries a higher degree of CD than is allowed for the antecedents of reflexives, i.e. it can be explained as the Czech sentence quoted above. (A similar conclusion can be obtained via the popular notion of 'topic' defined as 'what the sentence is about' - the sentence in question is about the wife, not about Peter.)

Nevertheless, Kuno's articles which recognize the necessity to describe various rules in other terms than syntactic ones (and, above all, as we see it, the necessity to use the theory of FSP), are valuable contributions to the linguistic theory, regardless of their quite numerous shortcomings.

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# TONES IN NORTHERN KAMMU: A PHONETIC INVESTIGATION*

Eva Gårding and Kristina Lindell

Kammu is a Mon-Khmer language spoken in Northern Laos, Vietnam and Thailand and in Southern China.[1]

Table 1 shows an analysis of the segmental phonemes of five northern (Khwɛɛn, Yuan, Krɔɔŋ, Rɔ́ɔk and Lɨɨ) and one southern (ʔUu) sub-dialect of Kammu.[2] In the northern dialects, the feature voice plays a minor role in the consonant system. These dialects have been analysed as having two tones, called high and low (Lindell 1974). The non-tonal southern dialects, on the other hand, use the feature voice contrastively throughout the consonant system.[3]

In view of these facts it has been suggested (Ferlus, 1974; Lindell, Svantesson & Tayanin, 1976) that the southern dialects are closer to the non-tonal Proto-Kammu stage than the northern dialects, which are in the process of developing tones. The relationship between consonant types and tone in these dialects has a direct bearing on the origin and development of tone (Haudricourt, 1961; Matisoff, 1973; Maran, 1973; For a summary of theories on this subject, see Matisoff, 1973).

As a complement to the phonological analysis (Table 1) it is our aim here to present a preliminary acoustic and perceptual study of the "tones" of Northern Kammu. A male native speaker of the Yuan sub-dialect, about 40 years old, participated in the experiment.

The acoustic analyses and perceptual tests will be described under the headings Production and Perception, respectively.

## Production

Table 2, p. 21, shows the speech material selected for investigation. The four pairs of words have been analysed as being minimally distinguished by tone, the three unpaired words as 'neutral' with respect to tone (Lindell et al., 1976). These words will hereafter be referred to as high-tone words, low-tone words and neutral words. Care was taken to find words the meaning of which could be illustrated by drawings. The drawings were used to elicit natural productions of the test words in two different contexts.

* Also in Acta Orientalia 38.

Table 1

## Kammu phonology

### Initial consonants

#### Northern Kammu

| | | | | |
|---|---|---|---|---|
| p | t | c | k | ʔ |
| – | – | – | – | |
| ph | th | ch | kh | |
| ʔb | ʔd[1] | | | |
| – | – | | – | |
| m | n | ñ | ŋ | |
| | – | | | |
| | r | | | |
| | – | | | |
| | l | | | |
| | s | | | h |
| – | | | | |
| w | | y | | |

#### Southern Kammu

| | | | | |
|---|---|---|---|---|
| p | t | c | k | ʔ |
| b | d | j | g | |
| ph | th | ch | kh | |
| ʔm | ʔn | | | |
| m̥ | n̥ | | ŋ̊ | |
| m | n | ñ | ŋ | |
| | r̥ | | | |
| | r | | | |
| | l̥ | | | |
| | l | | | |
| | s | | | h |
| w̥ | | | | |
| w | | y | | |

### Final consonants[2]

| | | | | |
|---|---|---|---|---|
| p | t | c | k | ʔ |
| m | n | ñ | ŋ | |
| | s | | | h |
| | r | | | |
| | l | | | |
| w | | y | | |

### Vowels[2]

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| i | ɨ | | u | | ii | ɨɨ | | uu | ia | ɨa | ua |
| e | ə | | o | | ee | əə | | oo | | əa | |
| ɛ | a | ɑ | ɔ | | ɛɛ | aa | ɑɑ | ɔɔ | | | |

(After Lindell, Svantesson & Tayanin, 1976)

1 The phonetic characteristics remain to be investigated.

2 The same systems for both dialects.

Table 2

Test items

| | |
|---|---|
| [ŋɔ́ʔ] 'rice in husk' | [ŋɔ̀ʔ] 'to fear' |
| [prnɔ́ʔ] 'broom' | [prnɔ̀ʔ] 'sling to carry baby' |
| [klá:ŋ] 'kite' | [klà:ŋ] 'stone' |
| [rá:ŋ] 'tooth' | [rà:ŋ] 'flower' |

[si:m] 'bird'

[chuk¹] '(kind of) bamboo'

[mat¹] 'eye'

In the first context, the subject was asked to give the word illustrated by the drawing, in aswer to the question What is that? The question was asked in Kammu by one of the experimenters (KL), who pointed to the drawing. In the second context, the subject was asked to give the word embedded in the frame [ki: màh . . . kə:] 'this is his . . . ' and for the word (ŋɔ̀ʔ) 'fear' in the frame [kə: . . . kə:] 'he . . . him'.

The words were elicited in four different orders. The recordings, made in a sound-proof room (Phonetics Laboratory, Lund University), yielded eight productions of each test item.

This material was analysed by means of a Frøkjaer-Jensen pitch extractor. The fundamental frequency ($f_0$) curves, four for each test item, were superimposed on tracing paper with the beginning of the vocalic segment as a common time reference for each sentence. Figure 1 is an example of these tracings. The four curves follow each other closely, indicating little variation in the productions of the test items.

Figure 2 shows the average $f_0$ curve of each member of the four minimal pairs in phrase-final position. The tracings of the $f_0$ curves of the embedded words were similar, except for a slight rise over those words ending in a nasal.

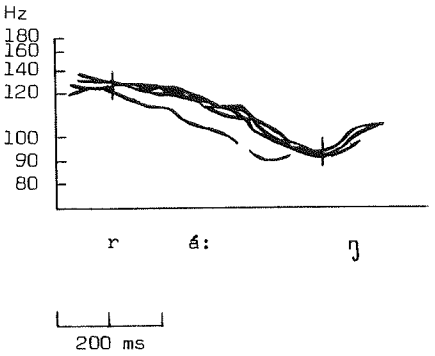


Figure 1. Superimposed $f_0$ tracings from four productions of [rá:ŋ].

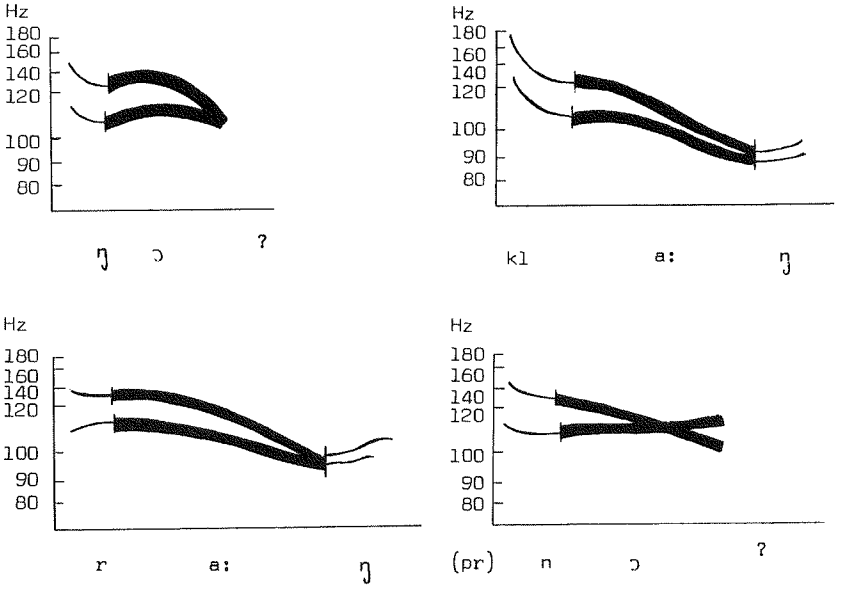


Figure 2. Average $f_0$ curves of four productions of minimal pairs. The upper curve in each pair is derived from a high-tone word,

The high-tone words have a higher average $f_0$ value than the low-tone words. The largest difference, 30 Hz, is to be found at or near the beginning of the $f_0$ tracing. Towards the end of the vocalic segment the curves converge.

There is some variation in the configuration of the curves that can be associated with the different segmental composition of the syllables. For the sequences [kla:ŋ] and [ra:ŋ] both the high- and the low-tone words have falling curves, for the sequences [ŋɔ$^{?}$] and [ŋɔ$^{?}$] the high-tone word is falling and the low-tone word is close to level. There are higher $f_0$ values in all the sequences ending in [$^{?}$]. This may be a consequence of the glottal stop which involves a contraction of the vocalis muscle. The pitch-raising effect of [$^{?}$] has been noted in other languages (e.g. for Arabic, Hombert, 1975; for Swedish, Gårding et al., 1975).

Figure 3 shows the $f_0$ curves of the neutral words. The tracings of the four productions of each test word follow each other as closely as the words minimally distinguished by tone. The words beginning with a voiceless fricative have an $f_0$ configuration similar to that of the high-tone words, whereas the word beginning with a sonorant has an $f_0$ curve similar to that of the low-tone words.

The fact that the neutral words have two tonal configurations depending on consonant type calls for an investigation of the spectral composition of the minimal pairs, notably the initial consonants. Are they really as alike as the phonological analysis would imply? One remark made by the informant suggests a possible difference in their articulation. In the high-tone words he "spits out the vowels", in the low-tone words he "sucks them in".

A spectrographic analysis of the minimal pairs showed that in three of four pairs the initial consonants had essentially the same spectral patterns. Only in the pair [ra:ŋ] is the initial consonant different. In the low-tone word, /r/ is trilled with two to four trills, in the high-tone word it has no trills but an initial phase of weak friction preceding the voiced part of the /r/. Figure 4 shows typical examples of spectrograms for [ra:ŋ] and [kla:ŋ].

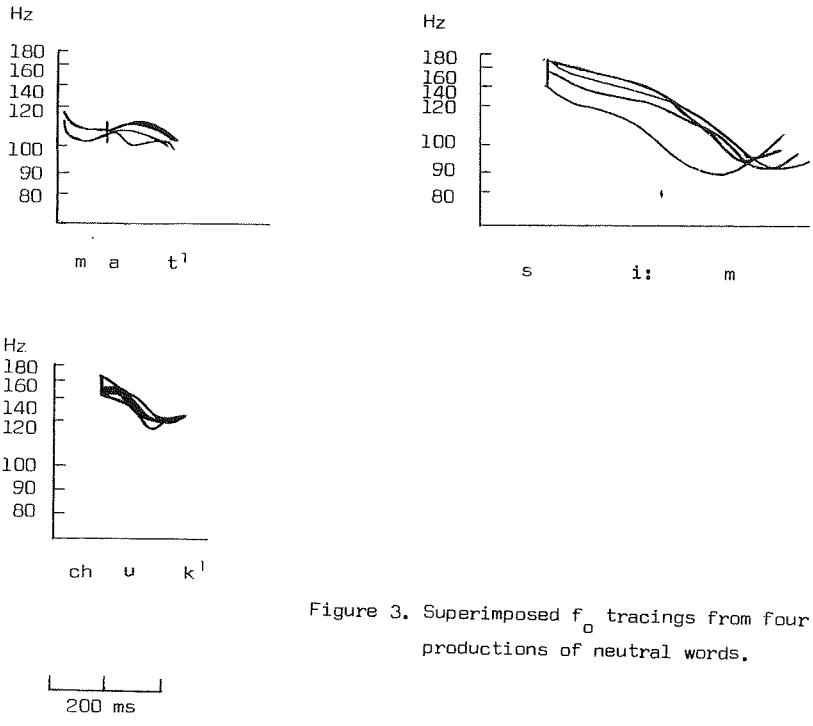


Figure 3. Superimposed $f_0$ tracings from four productions of neutral words.

## Perception

A test was run one week after the recording to check if the informant could identify his own productions. The words were presented four times, each time in a different order. The subject was asked to point to the picture that corresponded to the word he had heard. In this task he made no errors.

A test on the role of the initial consonants for the identification of the minimal pairs was also performed. Stimuli were prepared by removing the initial consonants from three productions of the four minimal pairs using an electronic gating technique. This procedure gave us 24 stimuli.

The informant was asked to listen to the stimuli and identify the words from which the stimuli had been derived. He was to answer by pointing to the appropriate drawing.

The informant gave correct answers for all stimuli except [klá:ŋ] and [prnś$^{?}$] which were judged incorrectly one third of the time. It is also of interest that the informant soon discovered that a stimulus like [á:ŋ]

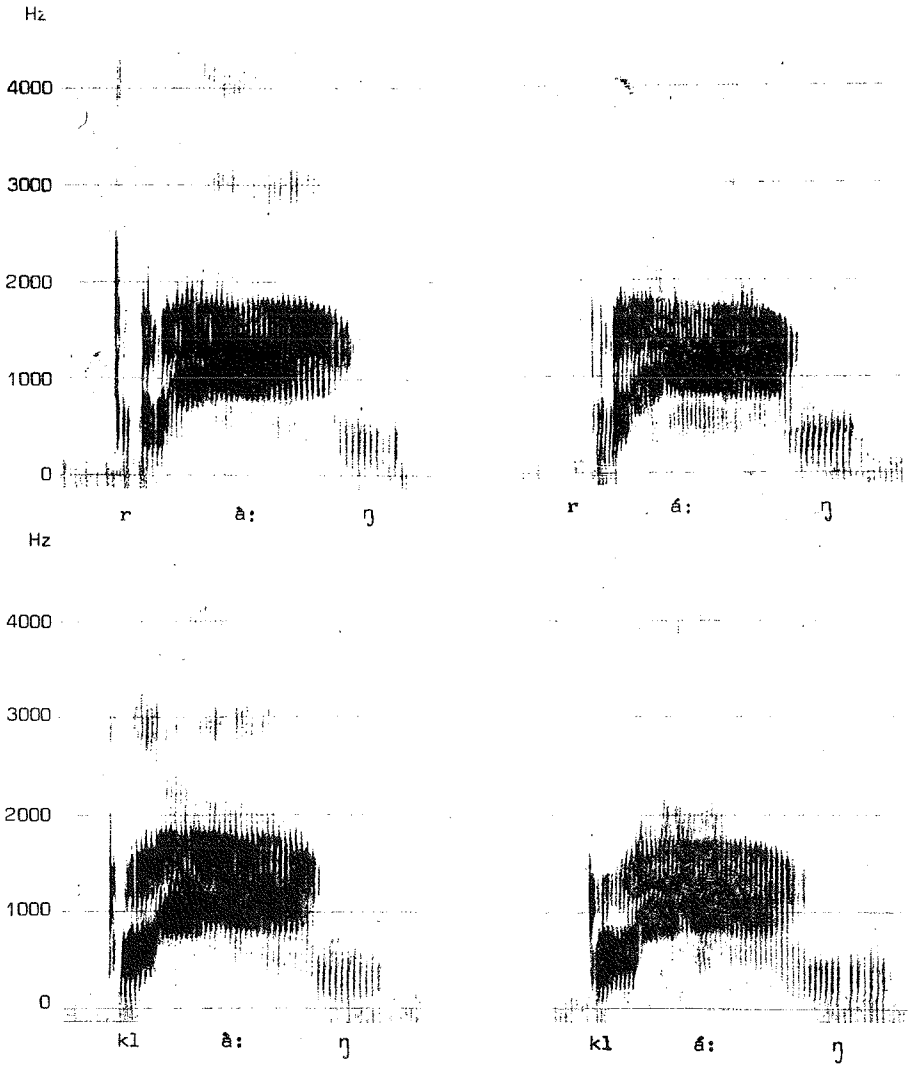


Figure 4. Wide-band spectrograms of [ra:ŋ] and [kla:ŋ]. Notice difference in initial /r/ in the first pair.

could come from both [rá:ŋ] and [klá:ŋ] and similarly for the other stimuli. His reaction to the truncated stimuli was that they sounded like children's speech.

This remark may suggest that children belonging to this speech community acquire tone earlier than certain types of syllable-initial consonants and clusters which would be in agreement with the results of an investigation of tone acquisition in Mandarin Chinese (Li & Thompson, 1976).

## Discussion

Our results lend support to the phonological analysis proposed by Lindell et al. High- and low-tone words were found to have higher and lower $f_0$ curves, respectively.

There is also confirmation of the phonological analysis on the perceptual side. Stimuli in which the initial consonants had been deleted could still be identified correctly.

Although the vocalic segments of a pair have similar formant patterns - as indicated by the spectrograms - it is still possible that spectral information other than fundamental frequency could possibly distinguish these words. In order to establish that $f_0$ is a sufficient cue, we plan to present stimuli for identification in which the fundamental frequency pattern associated with the high-tone words is superimposed on a low-tone word, and vice versa.

The fact that the three neutral words showed fundamental frequency patterns similar to the high- and low-tone words, with "high" curves after voiceless consonants and "low" curves after voiced ones, suggests that all words in this dialect have "tone". It also seems likely that only in cases where the dialect has developed minimal pairs is the informant's judgement of the tonal quality of a word consistent. These hypotheses remain to be tested in follow-up experiments.

The difference in $f_0$ associated with consonant type in the neutral words (about 25 Hz) is somewhat larger than what is found in other languages (Lehiste, 1961; Lea, 1973; Hombert, 1975; Gandour, 1974). Figure 5 gives $f_0$ values of vowels after voiced and voiceless aspirated stops in American English.

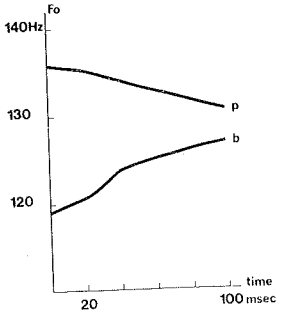


Figure 5. Fundamental frequency values of vowels after voiced and voiceless aspirated stops - [p] and [b] represent the voiceless aspirated and the voiced series respectively. Fundamental frequency (vertical axis) is measured as a function of time (horizontal axis) - (5 subjects).

(After Hombert, 1975)

Since this phonetic study has supported the tonal analysis of Northern Kammu, it is of interest to examine the dialectal differences between Northern and Southern Kammu.

A list of cognates reveals the following correspondences (Lindell et al., 1976) between consonant types and tone.[4]

| Southern Kammu | Northern Kammu |
|---|---|
| pV | pV́ |
| bV | pV̀ |
| tV | tV́ |
| dV | tV̀ |
| jV | cV̀ |
| blV | plV̀ |
| drV | trV̀ |
| klV | klV́ |
| glV | klV̀ |
| hmV | mV́ |
| mV | mV̀ |
| hŋV | ŋV́ |
| ŋV | ŋV̀ |
| hwV | wV́ |
| wV | wV̀ |

One possible interpretation of these correspondences is that Northern Kammu replaced the distinctive value of voice with tone.

Thus the northern and southern dialects of Kammu seem to confirm a

widely accepted theory of the origin of tone. According to this theory (e.g. Haudricourt, 1961), tones arose when redundant $f_0$ features connected with the consonant types became primary, and consonantal oppositions disappeared in the beginning and/or the end of syllables.

Acknowledgements

1. The investigation of Kammu is part of a project entitled Kammu Language and Folklore sponsored by the Swedish Humanistic Research Council and the Swedish Bank Tercentenary Foundation.

2. We are indebted to Jack Gandour for discussions which led to improvements in the form and substance of this paper.

Notes

1. For a general description of the Kammu see LeBar et al., 1964. For the Kammu in Vietnam, China and Thailand see also Dang, 1976; Davies, 1909; LeBar, 1967.
2. The phonemic system of the southern ?Uu dialect is in close agreement with that described by Smalley, 1961; Delcros, 1966; and Maspero, 1955. Although 'n is not represented in our material we have completed the table using Smalley's analysis.
3. In Ferlus, 1974, the southern dialects are designated 09-1, the northern 09-2. We have no representation of Ferlus' 09-3, where the voiced plosives have become unvoiced and aspirated.
4. Not all possibilities are found in the material on which that paper is based.

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# THE COMMUNICATIVE COMPETENCE OF FOREIGNERS IN SWEDISH: LISTENER ATTITUDE AND CONTEXTUAL APPROPRIACY

D.J. Hackman

## I. Introduction

This paper is intended quite simply to report the results of two investigations, which were made in order to try to discover the role of two non-linguistic factors in a speech act situation involving foreign speakers.[1] These factors are situational - the contextual appropriacy of the foreigner's utterance; and attitudinal - the native listener's bias regarding foreign speakers. As will shortly become apparent, both these areas of investigation are particulary resistant to empirical research.[2]

It is difficult to isolate such factors, which results in many uncontrolled variables being involved; and this, combined with the limited scope of the investigations necessitated by the practical difficulties of such testing; are clear restrictions on the generality of the results. It is worth asking whether such restricted results justify the time and effort involved; but nevertheless they are clearly of interest, as is discussion of the method of investigation.

The background theory is that deviation on the part of the speaker on any level of the speech act will affect the interpretation process adversely; and where the listener's threshold for repairing deviantly formulated speech acts is crossed, could cause the speech act to fail as communication. The reason for this is that the speaker's non-native pronunciation is already taxing the listener's ability to repair the speech signal, which he does in order to be able to interpret the utterance. Additional deviance in, for instance, the contextual appropriacy of the utterance, could well mean that the listener's ability to repair the utterance is overtaxed. Similarly any unwillingness or inability on the part of the listener to make the necessary effort could also result in the failure of the speech act.

## II. Listener attitude

The aim of this investigation was to establish a means of testing the hypothesis that the native speaker is less willing to interpret the utterance of a foreigner than that of a native, due to preconceived notions about foreigners; 3 (i) & (ii) and further, that these attitudes vary according to the type of foreigner they have to deal with. Consequently, an experiment was set up to discover native Swedish attitudes to different accents in Swedish, both foreign and dialectal.

A major problem with such investigations is that the different personal voice qualities and degree of non-native pronunciation of the speakers play an uncontrolled role. Therefore, a matched guise technique[4] using a talented native speaker[5] imitating the various dialects and foreign accents. The immense good fortune of a person who can successfully imitate accents being available thus overcomes the problem of holding personal factors constant. Although this means that native speaker reactions to native speaker impressions of what accents are like will be elicited, such reactions tend to be very stereotyped,[6] and will probably reflect attitudes to the groups who speak with those accents.

### II.1. Material, informant and recording

The material consisted of a short text with what was neutral subject matter at that time:

> Kan vi få energi från solen? Ja, på ett miljövänligt men dyrt sätt genom solceller, som kan förvandla solljus till vanlig elektricitet.[7]

The informant was a Swedish male from Scania, Southern Sweden; an academic about 30 years old; endowed with an ability to mimic with stunning accuracy. He imitated Stockholm, Gothenburg and Northern Swedish dialects; was also recorded in his native, Southern dialect; and imitated American English, Finnish and French foreign accents in Swedish. The texts were recorded as many times as were necessary, until the speaker and those listening were satisfied; in the echo-free studio at the Department of Phonetics, University of Lund.

## II.2. Test tapes, subjects and procedure

The subjects[5] were predominantly 18 year old South Swedish girls at a local school, who intended to train for health care jobs. The question form they filled in after completing this and other tests showed them to be homogenous groups of about 15 each, largely middle-class, all of whom had studied English for about 8 years, three quarters German for 4 years and one third French for 3 years. About half had foreign friends, of these 14 had English friends, with whom they often spoke English, while 7 had Finnish friends, with whom they always spoke Swedish.

The test tapes were put together in such a way that all four listener groups heard all the Swedish dialects, and half heard the foreign accents. (The other half listened to real foreign accents.) All groups heard Southern Swedish first, for practice, as a buffer, and for intergroup comparison. Instructions had been recorded by a female South Swedish speaker;[5] and these were included on the tape, as well as being written out on the stencilled answer sheet, as was the text. The test tapes were played at the front of the classroom on a Tandberg tape recorder. No subject sat more than 3 metres away from the tape recorder, and no difference could be noticed according to where they sat, nor between the four groups.

The listeners then used the stencilled answer sheet to judge each of the speakers they heard with regard to the following six aspects,[8] making their judgements in terms of one of five categories for each aspect. It is difficult to evaluate how successful the questions were in eliciting judgements about the areas to be investigated; however, few subjects showed any confusion about or unwillingness to complete the task set for them. Those who did object did so in the space provided on the question form – they felt one shouldn't have predjudices based on how people speak. The six aspects were:

1. Which job the speaker is most likely to have.
2. How successful the speaker is likely to be in life.
3. How well the speaker would do in a fight.
4. How dependable the speaker is.
5. How attractive – desirable as a friend – the speaker is.
6. How intelligent the speaker is.

## II.3. Results of listener attitude investigation

There are many things which should be kept in mind when considering the results, the most important are perhaps: it is more probable that a Finn would be expected to be a factory worker, and that an American would be expected to be an academic in Sweden, due to factual rather than attitudinal factors. Secondly, one major difference in the experience Swedes have of the different foreign nationalities both as groups and as individuals, is how many immigrants of each nationality there are in Sweden, whereabouts they live in Sweden, how likely Swedes are to come into contact with them, and what sort of contact.

On 31st December, 1975 - about the time the investigation was carried out - there were approximately 400,000 unnaturalized foreigners living in Sweden, the largest group were Finns - 184,000 - and 6500 were from the U.S.A. (there were also 7000 from the U.K.), and no figures are given for the French.[9] Further questions one could ask are about what sort of reactions were evoked, whether there were for instance, stereotyped reactions to social groups mixed with more purely linguistic reactions to the pleasingness of certain foreign accents. Also, the limited scope of the investigation should be kept in mind; and ordinal categories are not the best way to quatify a test of this nature.

### II.3.1. Analysis of results

For each test and group, the number of responses in each of the five possible response categories was counted, then this was reckoned as a percentage of the total number of subject responses (i.e. in all categories) for that question. The results of the investigation, in percentage of subject responses, are given in table 2. They are presented under the five graduated ordinal category response possibilities - where 5 indicates the best category - for the six judgement aspects. The median category value is underlined.

As these rows of figures are difficult to absorb, and the median category is too imprecise; I have used the interpolation of a median in the percentage figures, to rank the different dialects and accents, according to which was evaluated most highly. Strictly speaking this is an illicit procedure with ordinal categories. However, the interpolated median is only used to provide an overview by facilitating inter-speaker comparison; and the percentage results can be referred to for exact figures.

| 1.JOB | 2.SUCCESS | 3.FIGHTING | 4.DEPENDABLE | 5.ATTRACTIVE | 6.INTELLIGENT |
|---|---|---|---|---|---|
| 1.Gothenburg | 1.Gothenburg | 1.Stockholm | 1.Stockholm | 1.Stockholm | 1.Stockholm |
| 2.Sth Sweden | 2.Stockholm | 2.Nth Sweden | Gothenburg | 2.Sth Sweden | Gothenburg |
| 3.Stockholm | 3.Sth Sweden | Finnish | 3.Sth Sweden | Nth Sweden | 3.Sth Sweden |
| 4.Nth Sweden | 4.Nth Sweden | 4.American | 4.Nth Sweden | 4.Gothenburg | 4.Nth Sweden |
| 5.American | 5.American | 5.Sth Sweden | American | 5.American | 5.American |
| 6.French | French | 6.French | 6.Finnish | 6.French | French |
| 7.Finnish | 7.Finnish | 7.Gothenburg | 7.French | 7.Finnish | 7.Finnish |

Table 1. Ranking of 'matched guise' foreign accent and dialect imitations.

II.3.2. The attitudes of some South Swedish listeners to other accents

As can be seen very easily in table 1, there is clear patterning of preference for Swedish speakers as opposed to foreigners; for big city as opposed to country (including the local) dialects; and for American as opposed to Finnish foreigners. It is quite amazing to be able to elicit the prejudices often attributed to Swedish listeners in this way; despite the many shortcomings in the formulation of the investigation. It is to be remembered that it is the same speaker who is being judged differently according to how he speaks. In all aspects except fighting ability, Swedish dialects are evaluated more highly than foreigners - they are thought to have better jobs, be more likely to succeed, be more dependable, more attractive and more intelligent than foreigners.

When we compare the attitudes displayed to the different foreign accents, in most cases an American accent is valued most highly, a Finnish accent least highly, and a French accent somewhere between. This is again with the exception of fighting ability. In addition it can be noted that a Finnish accent is considered more dependable than a French, and that an American accent is thought as dependable as a North Swedish dialect, considered least dependable of Swedish dialects by these Southern Swedish listeners. Further with regard to dialects, it is surprizing that these listener should prefer city dialects to the local dialect, even with regard to dependability; but perhaps not so surprizing that they are least appreciative of the most distant dialect.[10] When it came to fighting abil-

ity however, although the results were very close in this area, the Stockholm dialect ranks highest, North Swedish and Finnish - usually considered to be best at fighting - come equal second, American ranks before South Swedish, and French before Gothenburg.

## III. Contextual Appropriacy

The aim of this investigation is to try ways of testing the hypothesis that the native listener is less able to repair a contextually deviantly formulated utterance, when the speaker is a foreigner.[1] The contextual appropriacy of an utterance is regarded as having to do with the native application and manifestation of the rules for using the language: what is said to whom, how it is said, and under what circumstances.[3(iv)]

Two aspects in this area which are particularly problematical for foreigners are those of culturally based presupposition, and of focus. Presupposition is taken to be the knowledge which the speaker assumes in his utterance to be shared with the listener, and focus is taken to be the information in the utterance. It is difficult to systematically vary the degree of contextual appropriacy: as native norms are not known, deviance from them cannot be measured. Furthermore, contextual appropriacy is rarely if ever the only non-standard factor in the foreigner's utterance - rather, he deviates on all levels of the speech act. The scope of this investigation will therefore be limited to finding out about the native Swedish listener's ability to repair the same contextually inappropriate utterances from different native and non-native speakers.

### III.1. Material, informants and recording

The material consists of four sentences, each with a context, the latter, like the instructions, were on the test tapes and on the stencilled answer sheet:

(a) Pretend you are standing in a queue at the post office. The person in front of you says the following to the assistant:

> 'Det finns inga telegramblanketter.' (There are no telegram forms.)

This sentence presupposes that telegrammes are sent from post offices, which is not the case in Sweden.

(b) Pretend you are waiting for your turn in a cheese shop. The person before you says the following to the assistant:

'Jag vill köpa trehundra gram lagrad Havarti.' (I want to buy three hundred grammes of matured Havarti = a Danish cheese.)

In Sweden one asks for hektos, not hundreds of grammes, so the focus was incorrectly formulated.

(c) Pretend you are standing in a queue at the telegraph section at the telecommunications building (televerket). The person in front of you says the following to the clerk:

'Det finns inga telegramblanketter.' (same as for (a))

The presupposition is now correct, as telegrams are sent from the televerket in Sweden.

(d) The same context as for (b)

'Jag vill köpa tre hekto lagrad Havarti.'

The focus is now correctly formulated.

The informants were all women, 20–30 years old, with university level education.

1. Native Swede, with General Swedish dialect.
2. Finnish accent in Swedish, from Finland, 6 years in Sweden.
3. Australian accent in Swedish, from Australia, 3 1/2 years in Sweden.
4. English accent in Swedish, from Surrey, England (Southern Standard), 5 years in Sweden.

The recordings, including the instructions, were all made in the same way as for the attitude investigation.

### III.2. Test tapes, subjects and procedure

The test tapes were made up according to the following pattern, all listener groups heard a buffer sentence first for practice, and instructions.

| listener group | sentence (a) - presupp'n | sentence (b) - focus | sentence (c) + presupp'n | sentence (d) + focus |
|---|---|---|---|---|
| 1 | Swedish | Australian | English | Finnish |
| 2 | Australian | Finnish | Swedish | English |
| 3 | Finnish | English | Australian | Swedish |
| 4 | English | Swedish | Finnish | Australian |

Each sentence was followed by a 50 second pause followed by the word 'stop' in which the two following questions were to be answered:

(i) How do you think the shop assistant will reply?

(ii) How do you think the assistant experiences the situation?

Five words were given, one of which was to be underlined in answer to (ii):

difficult/strange/normal/humerous/fun (jobbig/konstig/normal/skojig/festlig)

The subjects and procedure were the same as for the previous investigation.

### III.3. Results of contextual appropriacy investigation

The results for the Swedish speaker are regarded as the norm for how easily the utterance can be understood, and what attitude it is thought would normally be held toward a speaker in the context described. The results for sentences with 'correct' presupposition and focus (c and d) indicate how easily the speaker would be understood under favourable conditions, worse results for sentences with 'incorrect' presupposition and focus (a and b) would constitute some evidence for contextual inappropriacy affecting the interpretation process adversely. If this happens more with the foreigners than with the native, we have some evidence concerning foreign speakers' utterances being more difficult to repair. The personal difference between the speakers cannot be taken into account.

#### III.3.1. Analysis of results

No subjects in the listener groups were excluded from the results. This was partly to preserve the random nature of the cross-section, but primarily because it is difficult to motivate exclusion of e.g. those who stated they had slightly impaired hearing, when they performed as well if

not better than the average on a word identification test with the same informants. From the reply the subject thought the assistant would have given, it was determined whether the utterance had been understood. The number of responses in each of the four categories, since no subject underlined 'fun', was calculated as a percentage of the total subject responses for that sentence, separately for understood, and not understood. See Table 3.

### III.3.2. How contextual appropriacy affects intelligibility

All subjects understood the utterances involving faulty presupposition when the speaker was Swedish - thus faulty presupposition should not affect intelligibility. A similar if slightly worse result was obtained for the foreign speakers - they were all understood by about 90 % of the subjects, whether the presupposition was correct or not. However, one third of the subjects realized and commented the presupposition was incorrect when the speaker was Swedish, while only one tenth indicated this when the speaker was foreign.

Faulty formulation of focus did not affect the intelligibility of the native speaker either - about 95 % understood the utterance regardless of whether the focus was correct or not. The results for the foreigners differ markedly from this - by 25-50 %. Three quarters of the subjects understood the correctly formulated utterance for the Finnish speaker, while only half understood the incorrect one. For the English speaker almost all understood the correct one, but only three quarters the incorrect one. For the Australian, three quarters understood the correct utterance, and only one quarter understood the incorrectly formulated one. That the results were so poor for the Australian could be due to the utterance having been judged by group one, which did not perform as well on the buffer as did the other groups. One listener for the English speaker commented the faulty construction: 'You mean three hectos'.

There was very little difference in attitude to the different speakers, as judged by the subjects in this test. It can be assumed that such a test as this is not an effective way of finding out what attitudes native speakers have, as they realize that this is a question of prejudice, which they choose to conceal. In any case, about three quarters of the responses were for experiencing the situation as normal, the remaining responses scattered evenly over the other three categories for all speakers.

The results clearly confirm that a native listener is less able to repair a deviantly formulated speech act when the speaker is a foreigner. This is consistent with the results of informal fieldwork carried out over about a year, to see how these constructed speech acts function in face to face interaction. About twenty assorted native speakers and foreigners in all, were accompanied to post offices, cheese shops and the telecommunications building. Reactions depended a great deal on how busy the office or shop was, and on the personalities involved. Native speaker's utterances were usually understood, while foreigners' often were not. Further, there were clear attitudinal differences towards different nationalities and sexes; displayed in, for instance, how patient the assistant was.

## IV. Conclusion

The results of these two investigations support the hypothesis that a native speaker is less willing and less able to interpret utterances when the speaker is a foreigner; which is a contributing factor to the failure of speech acts involving foreigners, though all the cautionary words about limited scope and uncontrollable variables should be borne in mind. Some of the many interesting aspects in this problem area which would be worth pursuing further are: how the foreigners' or dialect speakers' systematically deviant speech can function as a social handicap, like any 'restricted' code.[3(iii)] Or the role the mass media have played in altering attitudes to various nationalities - e.g. the post-war attitude to Americans. The unquestioning willingness of the subjects to perform the tests. Whether one can elicit attitudes to a variety of a language without involving the attitudes held towards those who speak that variety.[11] Devisning means of researching the role played by non-linguistic factors in the speech act is indisputably difficult, but will undoubtedly ultimately prove to be worth while.

| area: | 1. JOB | | | | | 2. SUCCESS | | | | | 3. FIGHTING | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| category: | 5 | 4 | 3 | 2 | 1 | 5 | 4 | 3 | 2 | 1 | 5 | 4 | 3 | 2 | 1 |
| South Swedish | 10 | 52 | 13 | 13 | 12 | 6 | 49 | 42 | 0 | 3 | 5 | 20 | 43 | 25 | 7 |
| Stockholm | 14 | 45 | 25 | 16 | 0 | 14 | 48 | 32 | 6 | 0 | 2 | 36 | 42 | 15 | 5 |
| Gothenburg | 31 | 34 | 11 | 17 | 7 | 18 | 49 | 23 | 6 | 4 | 1 | 15 | 34 | 35 | 15 |
| North Swedish | 3 | 25 | 25 | 32 | 15 | 7 | 44 | 42 | 5 | 2 | 4 | 22 | 52 | 20 | 2 |
| American | 2 | 18 | 19 | 26 | 35 | 8 | 23 | 54 | 15 | 0 | 5 | 24 | 43 | 21 | 7 |
| French | 20 | 13 | 8 | 13 | 46 | 7 | 29 | 46 | 15 | 3 | 5 | 16 | 33 | 39 | 7 |
| Finnish | 0 | 14 | 17 | 21 | 48 | 0 | 13 | 72 | 9 | 6 | 0 | 32 | 43 | 18 | 7 |

| area: | 4. DEPENDABLE | | | | | 5. ATTRACTIVE | | | | | 6. INTELLIGENT | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| category: | 5 | 4 | 3 | 2 | 1 | 5 | 4 | 3 | 2 | 1 | 5 | 4 | 3 | 2 | 1 |
| South Swedish | 12 | 23 | 48 | 17 | 0 | 3 | 7 | 54 | 16 | 20 | 11 | 37 | 42 | 10 | 0 |
| Stockholm | 10 | 32 | 44 | 11 | 3 | 0 | 25 | 52 | 13 | 10 | 8 | 55 | 29 | 6 | 2 |
| Gothenburg | 9 | 34 | 36 | 17 | 4 | 0 | 11 | 49 | 29 | 11 | 17 | 45 | 32 | 3 | 3 |
| North Swedish | 10 | 22 | 47 | 18 | 3 | 1 | 26 | 32 | 29 | 12 | 6 | 29 | 50 | 15 | 0 |
| American | 8 | 16 | 58 | 9 | 9 | 2 | 8 | 43 | 32 | 15 | 8 | 9 | 57 | 23 | 3 |
| French | 2 | 14 | 36 | 28 | 20 | 0 | 10 | 39 | 20 | 31 | 14 | 17 | 32 | 34 | 3 |
| Finnish | 5 | 11 | 49 | 20 | 15 | 0 | 2 | 36 | 34 | 28 | 0 | 13 | 52 | 32 | 3 |

Table 2. Results of Listener Attitude Investigation in percentage of subject responses. Five ordinal category response possibilities (5 = 'highest') in six judgement areas. Median category underlined.

| Speaker: | | SWEDISH | | | | FINNISH | | | |
|---|---|---|---|---|---|---|---|---|---|
| Understood: | difficult | 5 | 0 | 0 | 8 | 0 | 5 | 6 | 0 |
| | strange | 16 | 17 | 0 | 33 | 8 | 16 | 0 | 11 |
| | humerous | 0 | 6 | 0 | 8 | 8 | 0 | 6 | 0 |
| | normal | 79 | 72 | 100 | 42 | 75 | 32 | 81 | 63 |
| Not | difficult | 0 | 0 | 0 | 0 | 8 | 11 | 0 | 0 |
| understood: | strange | 0 | 0 | 0 | 0 | 0 | 21 | 0 | 5 |
| | humerous | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 |
| | normal | 0 | 0 | 0 | 0 | 0 | 16 | 6 | 21 |
| Total understood: | | 100 | 95 | 100 | 91 | 91 | 53 | 93 | 74 |
| Listener group: | | 1 | 4 | 2 | 3 | 3 | 2 | 4 | 1 |
| ± Presup'n/Focus: | | -P | -F | +P | +F | -P | -F | +P | +F |

| Speaker: | | AUSTRALIAN | | | | ENGLISH | | | |
|---|---|---|---|---|---|---|---|---|---|
| Understood: | difficult | 16 | 5 | 0 | 12 | 6 | 25 | 5 | 0 |
| | strange | 0 | 0 | 0 | 6 | 24 | 8 | 0 | 0 |
| | humerous | 0 | 0 | 8 | 0 | 0 | 17 | 0 | 0 |
| | normal | 68 | 16 | 83 | 53 | 71 | 25 | 85 | 95 |
| Not | difficult | 0 | 21 | 8 | 6 | 0 | 0 | 0 | 5 |
| understood: | strange | 5 | 16 | 0 | 0 | 0 | 8 | 5 | 0 |
| | humerous | 0 | 0 | 0 | 6 | 0 | 17 | 0 | 0 |
| | normal | 11 | 42 | 0 | 18 | 0 | 0 | 5 | 0 |
| Total understood: | | 84 | 21 | 91 | 71 | 100 | 75 | 90 | 95 |
| Listener group: | | 2 | 1 | 3 | 4 | 4 | 3 | 1 | 2 |
| ± Presupp'n/Focus: | | -P | -F | +P | +F | -P | -F | +P | +F |

Table 3. Results of Contextual Appropriacy Investigation in percentage of subject responses. In four categories, for Understood, and Not understood.

Notes

1. For discussion of the theory of speech acts involving foreigners, see Hackman 1977.

2. For discussion of extra-linguistic factors in the speech situation, see Malmberg 1971, chapter 3; and 1973, chapter 11.

3. See Stroud, this volume, for discussion of:
   (i) treating all immigrants as semilingual unless/untill they prove to be otherwise.
   (ii) the dubiousness of concluding intellectual deficiency from just one concept of linguistic ability. See also Hansegård 1968.
   (iii) the parallel between monolinguals of low socio-economic status and bi-/semilinguals with regard to Bernstein's theories about the interrelation between the degree of elaboration of the linguistic code being used; and success at school. See also Bernstein 1971 and 1972.
   (iv) the context dependence of satisfactory social interaction, and the need for adequate (native) linguistic competence to acheive this.

4. See Lambert 1972, for reports of investigations involving bilingual French/English Canadians, and the attitudes of the two language communities to the informants in their two guises.

5. To whom go my heartfelt thanks.

6. For discussion of the stereotyped nature of listeners' judgements of speaker characteristics based on voice quality, see Laver and Hutcheson 1972, Part three.

7. Literal translation: 'Can we get energy from the sun? Yes, in a milieu-friendly but expensive way through suncells, which can change sunlight into ordinary electricity.'

8. See Loman 1974 a and b; Labov 1972 and Lambert 1972 for different attitudinal areas investigated.

9. Figures reported in Statens Invandrarverk 1976.

10. See Dahlstedt and Teleman 1974, for attitudes to dialects.

11. My thanks go to the members of the Linguistics post-graduate seminar for discussion.

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# PERMISSIBLE AND NOT PERMISSIBLE VARIATIONS IN PITCH CONTOURS

Kerstin Hadding and Kerstin Nauclér

## Introduction

In a project, still at a very preliminary stage, the various functions of intonation are being studied, among others similarities and dissimilarities in pattern between languages, as well as characteristic variations in pattern between the sexes, between generations, and between individuals. In one of the pilot studies within the project, data from a small group of speakers of southern Swedish have been analyzed.

Data collected from more than one subject often seem to point in different directions, much to the investigator's dismay. We had the same experience. It was obvious, however, that a certain amount of variation in pitch patterns[1] was not only tolerated by listeners but felt to be perfectly acceptable.

## Procedure

A group of four students of Phonetics, two male and two female, speaking roughly the same dialect and belonging to the same generation (age 26 to 36) spoke, or rather read the same simple piece of conversation, comprising statements and answers, questions (wh-questions, yes/no questions, and "echo-questions"), exclamations, admonitions and commands. The context did not invite strong emotional coloring, but a few utterances called for emphatic or contrastive stress.

Five students of Phonetics listened to the recordings. The recordings were all of good quality and had been made in an anechoic chamber at our institute. A possible source of error is the fact that the listeners were acquainted with the speakers.

Listeners were asked to judge whether the meaning of the utterances was transmitted satisfactorily or not, by marking each utterance with either a plus or a minus. Zeroes were also permitted, if need be, to indicate that a particular utterance was neither quite satisfactory nor entirely unacceptable. After comparing the recorded speech and listeners' responses we draw the conclusion that zeroes in the majority of cases meant that listeners had reasoned like this: "Well, this does sound rather strange. But

I can hear this particular person saying it just this way - so I will put a zero." When asked, listeners confirmed this interpretation of the zeroes. The zeroes are interesting, we believe, because they indicate that some variations are tolerated in connection with a particular speaker. However, as they might be unacceptable, or ambiguous, to people unacquainted with the speaker, they have been classed as minuses in this report. This assumption is being tested.

Data were also analyzed instrumentally by means of a pitch meter device (FONEMA 3-channel, Phonetic Analysis Assembly and Siemens Mingograf 34T). Mingographic representations that were difficult to interpret were checked by means of narrow-band sonagrams (Key Sonagraph 6061-A).

## Results and discussion

In this report we will only discuss pitch contours. We are, however, well aware of the fact that speech always involves a subtle interplay between features of pitch, duration, and intensity. We expected to find some few, fairly clearly distinguishable pitch patterns: one pattern for statements (a moderately high or low precontour, a moderate rise on the stressed unit, a fall in pitch at the end, accompanied by falling intensity); one for questions (a high, even precontour and a finally rising pitch); one for "echo-questions" (a continuous rise); perhaps wh-questions would differ from yes/no questions by having a choice between a final rise and a fall. We assumed that exclamations and "commands" would show some similarities and differ from other types of utterances by a finally sustained pitch and intensity (Hadding-Koch, 1961).

We found that although these assumptions were on the whole borne out by our instrumental analysis, every speaker was, within limits, evaluated as a speaker "in his own right". The four speakers represent very different personality types. Listeners obviously made allowance for this fact, which also explains why different renderings of the same utterance were considered equally good. As several utterances were nevertheless refused, our next step was to try to map out the limits for permissible variations.

In the following, the female speakers will be referred to as A1 and A2 and the male speakers as B1 and B2. A few pertinent, characteristic features will be mentioned. A1 is a girl with common sense and great self-control. Her speech conforms well with the expected norms. A2 is a lively person and a bit of a bohemian. Very few of her utterances are entirely

"neutral" - they are all said with "feeling". B1, on the other hand, is "neutral" in the extreme. His speech is said to be unacceptable much more often than that of anybody else. After all, every utterance demands an intonation that follows its content like a glove. Less pitch movement than called for and you get indifference, fatigue or the like. B2 is a reasonable and amiable person - his intonation shows, by usually ending in a rise even in statements, that he is always willing to give the other person a chance to voice his/her opinion in the matter and to continue the conversation. In most conversational situations he is a strongly aware of the listener as most of us normally are only in "true" questions.[2] As a parenthesis we would like to add that we were conscious of the existence of this (universal?) listener-oriented pitch contour but had expected to find it among the female speakers, if at all, in the age-group in question (cf. Bolinger, 1964, 1972, 1973; Lakoff, 1972; Hadding and Studdert-Kennedy, 1974).

Mingograms and sonagrams of the speech of our four subjects were analyzed. Results:

Accepted norm: Statements and answers start on a medium or low pitch level, rise to a moderately high peak on the stress (or stresses, if several), and fall to lowest pitch within the speaker's range of voice, accompanied by a slowly falling intensity. This was as expected.

(1) A2: Jag ska träffa 'John i'dag (I'm meeting 'John to'day). Fig. 1a.

(2) A1: Det är en 'hund (It's a 'dog). Fig. 1c.

Permissible variations: Emphasis increases the height of the peak(s) and thus increases the size of the ups and downs of the utterance. Even a moderate extra emphasis or contrast may raise the pitch at the peak to very high. Cf. Figs 1c and 1d.

(3) A1: En "katt (A "cat). Fig. 1d.

Statements that expect or invite a reaction on the part of the listener may have a final rise. However, they show the medium or low initial pitch level of statements. This pattern is typical for B2. It occurs sometimes also in the speech of A1 and A2 in "introductory" statements (such as "I have got a 'cat", "I'm 'leaving 'now"), but is rare in responses to questions.

(4) B2: Jag ska 'träffa nån (I'm going to 'meet somebody). Fig. 1b.

Even a slight coloring of some attitude or other, viz., surprise, joy, indignation, disgust, has an immediate and noticeable effect on the pitch pattern. These effects will be discussed in a later report.

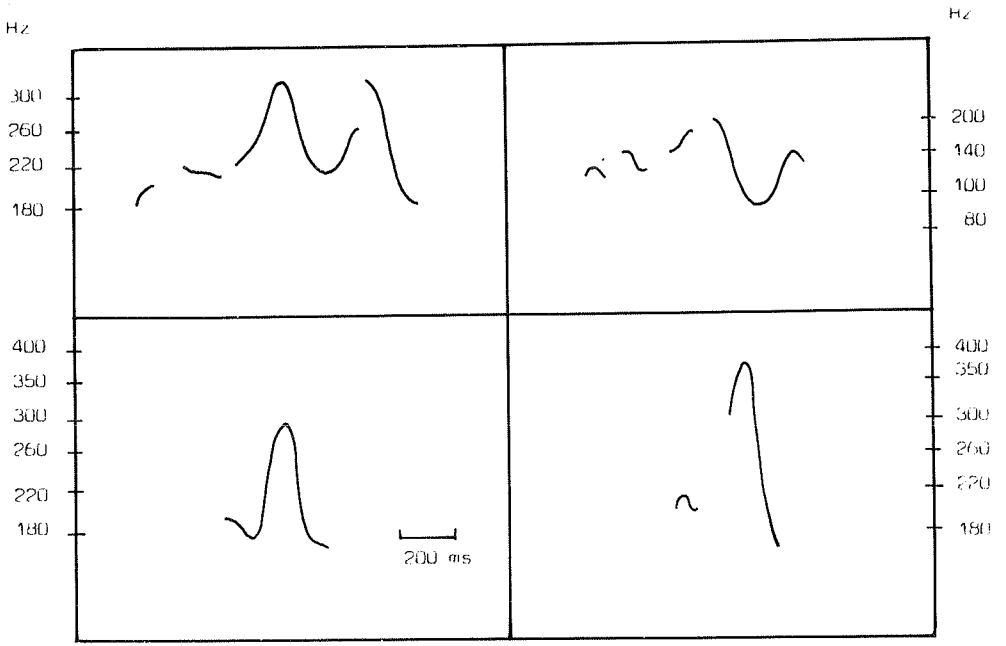


Fig. 1. $F_0$-curves traced from mingograms. Statement contours.

Not permissible variations: The few statements that were found to be unacceptable showed pitch contours affected either by attitudes not compatible with the context or by a deviating placement of the stress(es).

Accepted norm: Wh-questions and yes/no questions differed from statements by having a raised even pitch in their initial part, followed by a fall and ending in a rise of varying size. The stressed syllable of wh-questions does not rise as much in pitch above the precontour as does that of statements – it could even be realized by a fall in pitch. Wh-questions thus do not seem to point at any particular part of the utterance as more important than the rest. Instead, the utterance as a whole forms an interrogative unit. Yes/no questions, on the other hand, often have a very high stress peak.

(5) A1: Vad har du 'där? (What have you got 'there?). Fig. 2a.

(6) B2: Varför 'inte? (Why's 'that?). Fig. 2b.

(7) A1: Har du 'också en katt? (Do you have a cat 'too?). Fig. 2c.

(8) B2: Kommer du 'hit i'gen i'dag? (Will you be coming 'back 'today?). Fig. 2d.

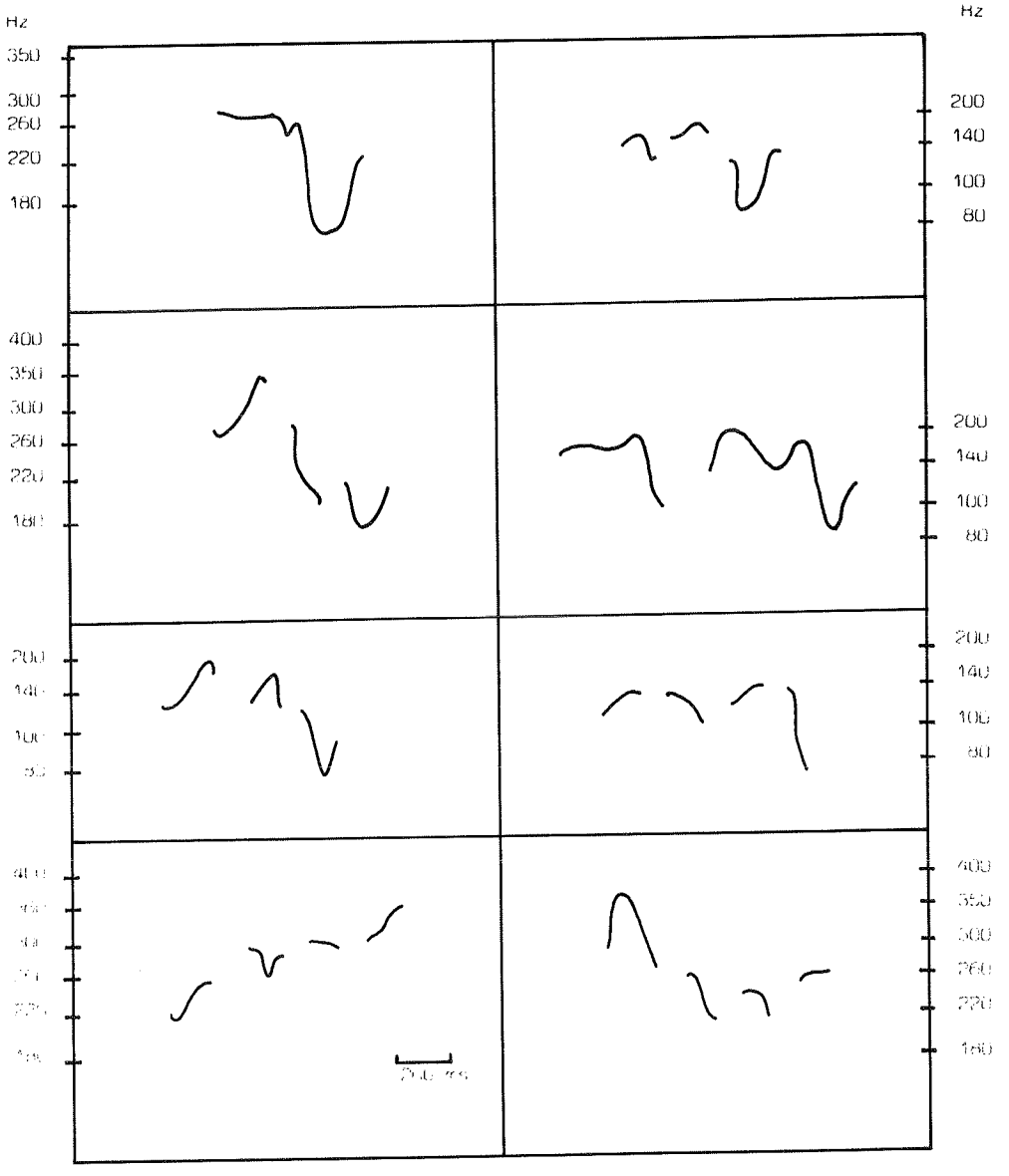


Fig. 2. Question contours, a, b = wh-questions; c, d, e = yes/no-questions; g = echo-question. - f = unaccepted wh-question; h = unaccepted echo-question.

Permissible variations: A final fall may occur in wh-questions instead of a rise but in combination with a raised precontour. This variation is only used by B1. In his statements the fall usually ends in a "creak" and the intensity falls at the same time. In the questions, however, the pitch of the fall is measurable throughout and the intensity is comparatively sustained.

(9) B1: Har du 'också en katt? (Do you have a cat 'too?). Fig. 2e.

The precontour may be moderately high. In that case the utterance must, in order to be accepted as a question, have marked dip in pitch preceding a marked final rise.

Not permissible variation: Utterances with a low or moderately high precontour and a low terminal fall are not accepted as questions - the speaker is not interested in the answer. Cf. footnote 2.

(10) B1: Vem ska du 'träffa? (Who are you 'meeting?). Fig. 2f.

Accepted norm: "Echo-questions" show a continuous rise from low or medium pitch to high. The stress is usually evenly distributed.

(11) A1: Vem ska du träffa? (literally: Who are you meeting?). Fig. 2g.

There are no permissible variations as no other type of contour conveys the echo-effect. Fig. 2h shows an utterance that was refused as an echo-question - the pitch curve is that of the corresponding wh-question, but with emphatic stress on vem.

(12) A2: "Vem ska du träffa? ("Who are you meeting?).

Norm: Exclamations usually lack the initially high pitch of questions. They may have the high peak of emphatic statements but end on a finally sustained pitch. They are often combined with some strong emotion that affects the contour in some way and are therefore not included in the present report. Their most consistent feature is the finally sustained pitch.

To sum up: A description of the pitch contour of statements as characterized by a final fall and, in contrast, as questions as characterized by a final rise does not cover the data found in the present study. Instead, under certain conditions, statements may end in a final rise and questions may have a final fall.

Personal idiosyncracies may, within limits, produce permissible variations. Permissible variations will be such as are caused by attitudes permissible within the semantic context of the utterance. Acquaintance with the speaker may increase the listener's tolerance to otherwise not permissible variations.

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# HISTORICAL LINGUISTICS AND GENERATIVE PHONOLOGY

Olav Hammer

1. Scope. In this essay I propose to examine some theories of historical generative phonology. I shall concentrate on certain aspects of formal and functional explanation. This means that I shall leave aside questions such as social motivation, and historical changes versus child language, which in themselves merit attention. Further, I shall neglect certain theories of historical change which are rather marginally connected with the mainstream of research in this area. Finally, I will be concerned with sound changes in relation to the system of rules of a language, rather than in relation to acoustic and articulatory facts about sound change, as illustrated in e.g. Ohala (1974).

## 2. Formalism

2.1. General Remarks. The hypothesis that the phonological system of any language consists of a set of ordered rules entails that it is possible to describe historical changes as changes of sounds, as in earlier theories, as well as changes in the system. Accepting the latter proposal has the advantage of allowing a classification of sound changes into a small number of types. Besides restructuring of the underlying representation, to which I will return in section 2.6, there are four kinds of system changes, following the proposal of Kiparsky (1968):

(1) a. Rule loss
    b. Rule change
    c. Rule addition
    d. Rule reordering

The remainder of this discussion is based on the assumption that historical sound changes are better studied as changes in the phonological system than as changes of surface segments or classes of segments. I will not present arguments for this view here. For a defence of this approach, cf. Saporta (1965), among others.

In the following four sections I will discuss each of the types of language change mentioned above individually.

2.2. Rule Loss. This kind of system change is very frequent. Rule loss can have two effects. The rule in question may be dropped entirely, and

the surface representation will not retain any traces. On the other hand it may lead to a change in the underlying form, which will be reflected on the surface. These two types are by no means clearly differentiated.

An example of rule loss can be observed in Yiddish. At an early stage Yiddish had a rule of final devoicing, similar to that of German. German retains this rule, while it has been lost in Yiddish. Thus Yiddish has lid "song" and tog "day" where German has Lied /li:t/ and Tag /ta:k/.

Rule loss is often caused by a more profound change in the structure of the language. It seems quite plausible to assume that many rules in Latin were dropped when the complex inflectional system of the language lost its original character. Examples of such rules are rhotacism, Lachmann's law and the rule which drops (or adds) an n in e.g. natio - nationis and homo - hominis. Rhotacism is quite typical in this respect. It was active mainly in noun paradigms of the type os - oris, mus - muris. When the inflectional system was lost, there was no need to preserve rhotacism as a special rule.

2.3. Rule Change. Kiparsky proposed that rule change could be of one of the following two types:

(2) a. Rule simplification
    b. Rule complication

The first type implies either that the environment becomes more general, or that the class of segments affected is more natural. A typical case, cited by King (1969) is that of a certain rule in German which applies to the segment /t/ only, in Darmstadt Hessian, to /p t/ in Alsatian and to /p t k/ in the Swiss German dialect of Zürich.

The latter type is the inverse of the former one. Here the environment becomes more specific or the segments affected belong to a smaller, less natural class.

Dinnsen (1975) wants to constrain the concept of rule change in the following way:

Rule generalization can be of one of the two following types. A feature specification may be lost. The rule applying to the three German dialects is clearly of this kind. On the other hand, the value of the feature, i.e. + or -, may become a variable, $\alpha$.

Rule complication arises in order to avoid opacity, in the sense of Kiparsky (1971).

2.4. Rule Addition. Rule addition can be split up into two types: addition at the end of grammars, and addition in the middle of grammars. The latter type has been called rule insertion.

It is rather clear that the first type exists. The latter type is, however, much more controversial, and its existence has been questioned by King (1973). It is also quite difficult to imagine how rule insertion could have psychological reality. Probably, putative cases of rule insertion are merely misanalyses of data due to our faulty understanding of rule ordering. In fact most proposed cases of rule insertion have later been reanalyzed, e.g. as normal rule addition with subsequent rule reordering.

There remains however at least one example of rule insertion which has resisted all attempts of reanalysis: Lachmann's law. This rule is formulated as follows by King (1969):

(3) $V \longrightarrow [+\text{tense}] / \_\_\_\_ \begin{bmatrix} -\text{continuant} \\ +\text{voice} \end{bmatrix} \begin{bmatrix} -\text{continuant} \\ -\text{voice} \end{bmatrix}$

i.e. a vowel is lengthened before a cluster consisting of a voiced obstruent followed by an unvoiced one.

This rule is followed by one of assimilation:

(4) $[-\text{continuant}] \longrightarrow [\alpha \text{ voice}] / \_\_\_\_ \begin{bmatrix} -\text{continuant} \\ \text{voice} \end{bmatrix}$

i.e. an obstruent assimilates in voice to a following obstruent.

The assimilation rule is inherited from Proto-Indo-European. Lachmann's law, however, is a Latin innovation. Yet rule (3) must be ordered before rule (4) in order to yield the correct outputs:

(5) a.

| | | cf. |
|---|---|---|
| ag+tum | | fac+tum |
| $\bar{a}$g+tum | Rule (3) | - |
| $\bar{a}$c+tum | Rule (4) | - |
| $\bar{a}$ctum | Output | factum |

b.

| | |
|---|---|
| ag+tum | |
| ac+tum | |
| - | |
| *actum | |

I will not go into a discussion of Lachmann's law here. Note, however, that the formulation of this rule is suspect, since it involves an en-

vironment which never occurs in the surface representation, and which actually is forbidden by the general phonotactic constraints of Latin.

2.5. Rule Reordering. This form of language change is naturally enough closely connected with theories of rule ordering. I will here mention two such theories, which have been more generally accepted than the dozen or so other proposals.

The constraint proposed by Kiparsky (1968) states that rules tend to be reordered in order to permit their fullest utilization. Kiparsky's own example, from the two Swiss German dialects of Schaffshausen and Kesswil are typical in this respect.

The second constraint is that proposed by Kiparsky in 1971. He states that rules tend to be reordered in order to eliminate opacity. A rule is said to be opaque if one cannot see from the surface form whether it has applied.

2.6. Restructuring. It is clear that modifications of the system of rules cannot account for all changes. If this were the case the underlying representation would become more and more abstract. Somehow the underlying representation must change,too. For example, at some point in the history of French, underlying /uˆ/ became /ü/ (cf. Hall, 1976).

There is at present an almost total lack of interesting hypotheses on why and how underlying representations change. It seems quite probable that most such changes actually result from earlier changes in the system of rules. Thus, the change from /uˆ/ to /ü/ is probably due to the addition of a rule converting /uˆ/ to /ü/, optionally, in certain dialects, sociolects or styles.

The connection between rule loss and restructuring is rather problematic. The very same rule may in some cases remain productive, and in others lead to restructuring. On the other hand, there are cases where a rule may be lost entirely in some forms, and lead to restructuring in others.

As an example of the former type we have rules such as rhotacism in Latin. In paradigms such as os - oris the rule is productive. In forms such as angor and honor there is no alternation with forms containing s, and we must conclude that restructuring has taken place.

As an example of the latter type we have the rule of terminal devoicing in Yiddish. In forms such as tog it has been lost entirely. In other forms, such as avek "away" restructuring has taken place.

## 3. Functionalism

3.1. General Remarks. One of the questions that linguists have tried to answer since the first attempts at investigating historical linguistics is why changes occur. So far, nobody has been able to formulate even one necessary and sufficient condition for language change. In fact, maybe the very nature of historical changes makes it impossible to formulate such conditions.

In modern times this has led some phonologists, e.g. Postal (1968), to reject a priori the possibility of formulating functional statements, and to restrict their attention to the strictly formal aspects of language change.

Nevertheless, it has been observed again and again that changes do not work at random. Historical processes seem to work according to certain patterns, or in order to achieve certain ends. In the following paragraphs I shall discuss some of the functional explanations that have been proposed in recent literature.

3.2. Natural Changes. The concept of natural phonology has been very fashionable these last years. Segments, systems of underlying segments as well as rules have been classified as natural (unmarked) or as unnatural (marked). Natural rules, for example are those which occur in a variety of unrelated languages and are easily acquired by children. They are often easy to identify intuitively, but difficult to formalize.

Of the following pairs of rules, the a rules are more natural than the b rules:

(6) a. [-continuant] $\longrightarrow$ [-voice] / ___ #

b. [-continuant] $\longrightarrow$ [+voice] / ___ #

(7) a. k $\longrightarrow$ c / ___ i

b. c $\longrightarrow$ k / ___ a

(8) a. V $\longrightarrow$ [+nasal] / ___ $\begin{bmatrix} C \\ +nasal \end{bmatrix}$

b. V $\longrightarrow$ [+high] / ___ $\begin{bmatrix} C \\ +high \end{bmatrix}$

These rules are formalized in a very similar fashion. A minimum of acquaintance with how natural languages work will leave little doubt that the first member in each pair of rules is much more plausible than the second.

One functional approach to language change involves this concept. It has been proposed that less natural rules are changed into more natural ones, that unnatural rules may be dropped, and that rules are reordered in order to stand in the most natural (usually feeding) order. Thus, this functional concept cuts across the formal ones outlined in the preceding sections.

There are however several difficulties with this approach. The first is that, so far, nobody has been able to give any formal criteria for distinguishing natural rules from unnatural ones. A first step in this direction has been taken by Schane (1972), who tries to classify natural rules into classes, which in turn could be defined formally. His three classes are:

(9) a. Assimilative rules.

b. Rules which strive to produce an optimal syllable structure.

c. Rules which strive to produce a natural set of segments, in the sense of Jakobson.

Further Schane classifies features according to a hierarchy. Those features which are high up on the hierarchy will not be subject to assimilation, while those which are further down on the hierarchy will be.

These ideas seem more promising than other proposed criteria of naturalness. However, they are certainly far from universally valid. Further they raise a number of interesting questions. If there really is a hierarchy of features, why are the features subject to this difference in their ability to resist assimilation? If there really are certain types of rules which are natural, what makes just those rules natural?

The second difficulty with the concept of natural processes is that there clearly are cases of highly unnatural changes, as well as cases of loss of natural rules. Examples of the former kind are the "crazy rules" discussed by Bach & Harms (1972) and Beade (1974). A well-known case is the German consonant shift which replaced the common and natural segments p, t and k by the highly marked pf, ts and kx. An example of the latter kind is the loss of the rule of final devoicing in Yiddish.

A plausible extension of the concept of naturalness would be to assume that changes in underlying segments will replace marked ones by less marked ones. One such discussion of restructuring in terms of natural changes is that of Lass (1971).

Unfortunately, however, there are serious problems connected with this

approach. Either this hypothesis is wrong or our concept of naturalness is. There are innumeral examples of quite natural segments developing into highly marked ones. To cite just a few, we have the German consonant shift mentioned above, the development of retroflex consonants in the Indo-Aryan languages and the development of implosives and clicks in certain southern Bantu languages.

Eventually one could consider a kind of "areal naturalness" rather than a universal one. This could account for the two last cases of unnatural developments cited above. However, this still does not explain the phenomena in Old High German.

3.3. Maximal Differentiation. It has been suggested that the surface form of a string influences the phonological system in that the derivations should lead to distinct survace forms where there are grammatical differences. A quite logical extension of this concept is to have derivations preclude semantically distinct forms having the same surface forms, in certain instances at least.

The classical example of this phenomenon is one taken from certain urban dialects of American English, first mentioned by Twaddell (1935), and given a functional interpretation by Kiparsky (1972). In these dialects the past tense morpheme -t is deleted except where this would lead to homonymy between the past and present tense forms. Thus the past tense of keep is pronounced /kep/, while the past tense form of step is pronounced /stept/.

It is easy to imagine that this functional constraint is psychologically real. However, there are many attested cases of grammatically distinct, but related, forms which are not differentiated on the surface. To remedy this, Kiparsky (1972) proposes a hierarchy of grammatical functions. Those which are weak are easily dropped, while strong distinctions tend to be maintained. If this hierarchy is correct, several interesting questions arise. Is the list universal or language-specific? Is there any deeper reason for certain grammatical distinctions being weaker than others? How would such a hierarchy look for languages which have different grammatical functions than those found in the languages cited by Kiparsky?

Cases of semantic rather than morphological differentiation can be found too. Typical cases are where a word fails to undergo a regular historical change because it would become homonymous with a tabu word. All

these cases have, however been rather marginal, and it is difficult to draw any general conclusions from them.

3.4. Analogy. One of the oldest principles of functional explanation is that of analogy. Due to the rather unconstrained application of this principle, it fell into discredit after the development of generative grammar. In recent years, however, it has become respectable again, both in synchronic (Harris 1973) and in historical phonology (Kiparsky 1971, 1972, 1974; King 1972; Beade 1974; Vincent 1974).

Two similar, though not identical principles are involved. On one hand there is analogy proper, the extension of a certain pattern from one part of the lexicon to another. On the other hand there is paradigmatic regularity, which eliminates irregular forms within a given paradigm. In recent literature attention has focused mainly on the latter, and it is this concept with which I will be concerned here.

Also this functional principle cuts across formal classes. Harris (1973) shows that paradigms can be made regular by changing the order of certain of the rules involved. Other means of achieving this regularity can be to drop rules which make the paradigm irregular, to generalize a rule so that it applies to all forms of a given paradigm and not only some of them, and finally, by restructuring.

Analogy probably has psychological reality. However, the term is vague and needs constraining if it is to have any theoretical validity. Kiparsky (1974) discusses such constraints in general terms, but does not arrive at any definite conclusions.

Another interesting question involving analogy is how this concept interacts with other constraints on language change. King (1972) discusses the connection between analogy and opacity. Since his discussion is based on one single example one can question its validity.

3.5. Optimal Phonotactic Structure. Kiparsky (1972) proposes that phenomena such as derivational constraints and phonological conspiracies actually are attempts to arrive at the optimal phonotactic structure. Examples are the realization of the CV syllable and the elimination of complex consonant clusters. For a case of the latter type, cf. Kisseberth (1970).

A possible example involves the rule of e-epenthesis in Spanish. The general phonotactic structure of Spanish prohibits initial clusters of the general type s+consonant. All words which would ordinarily begin with

a cluster of that kind receive an epenthetic e. This applies to inherited words such as escuela and estrella, "school" and "star" respectively, as to loan-words such as estación "station" and esquí "ski".

Another example is cited by Schane (1972). He suggests, for French, that the rules for deleting a word-final consonant before a following word-initial one are due the constraints on syllable-structure which make CV syllables less marked than other types. Thus:

(10) a. /pətit ami/ /pəti garsʔ/
C V CV CV

Studies on language universals show that there is a set of universal or near-universal constraints on phonotactic structures. There are several interesting questions which arise from this approach to historical changes. Which are these universal optimal structures? Is there a universal set of ways at arriving at these structures?

## 4. Conclusion

The treatment of historical changes in terms of changes in the system of rules seems quite superior to a description of changes of segments. However, the formal constraints proposed at first were not strong enough to provide a really interesting theory of language change. Further, all formal constraints seem to reach a merely descriptive level, while functional theories seem to come closer to explanatory adequacy. On the other hand, functional explanations are expressed too vaguely to be adequate in their present shape. Many other questions were raised in connection with the specific proposals that were discussed in the previous sections. Two questions, are more general and have to do with the relation between the different constraints.

First, is there a hierarchy of constraints? This involves, among other things the interaction between formal and functional theories.

Second, how does one change in a system affect the rest of that system? Since the set of rules of the phonological component is so complex, it seems natural that a disturbance caused at one point will set off a kind of "domino reaction".

Given the rather primitive state of historical generative phonology, answering these questions would contribute vastly to our understanding of language change.

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# A FRAMEWORK FOR THE STUDY OF INTERLANGUAGE CONTINUA

Kenneth Hyltenstam

## Introduction

The focus of attention in this paper falls on the development of linguistic competence in a second language. It will be claimed that this development is best described as a linguistic continuum rather than as a sequence of autonomous systems.

After a preliminary discussion of various methods used in second language learning studies, which I relate to explicit requirements on a theory of language learning, I propose that one interesting research goal at present is to arrive at a constrained notion of possible developmental sequence. I suggest that this notion is best researched within the variable paradigm of Labov and others, utilizing the notion of linguistic continua. This framework makes possible an interesting characterization of developmental continua as differing in complexity in its polar parts, in contrast to lectal continua (Corder 1976). In the last section I emphasize the differences between the various types of developmental continua. I note that interlanguage continua are characterized by interference structures and suggest that these structures are most insightfully studied in relation to different degrees of structural complexity at various stages of development.

## Background

An important concept in any theory of language learning is that of 'developmental sequence'. In point of fact, it can be taken as one of the primary aims of language learning theory to provide insightful and adequate constraints on this notion. Information relevant to this task can be found in data from first and second language learning as well as from the reverse phenomena - language loss in bilinguals (due to non-use) or in aphasics. The study of language change in general can also provide insights into the nature of possible developmental sequences.

To better understand the merits of the developmental approach to second language learning, it may be illuminating to contrast it with other approaches and to compare the alternatives as to what extent they fulfil some natural requirements on a relevant theory of language learning.

A theory of language learning should enable us to find answers to the following questions:

1) Is the process of acquiring a second language principally the same as the acquisition of the first (cf. e.g. Ravem 1968, Dulay and Burt 1974, Ervin-Tripp 1974, Wode 1976)?

2) What is the role of the native language in second language acquisition (cf. e.g. Dulay and Burt 1974, Hakuta 1976)?

3) Is there a natural sequence in the acquisition of a second language in such a way that some structures are earlier acquired and therefore more basic than others (cf. e.g. Cazden et al. 1975, Hakuta 1976, Wode 1976)?

4) How do specific structural areas develop (cf. e.g. Ravem 1968, Hatch 1974, L. Dickerson 1975, W. Dickerson 1976, Hyltenstam 1977)?

In addition to the above points, we can further investigate the extra-linguistic factors that govern the development of a new language, such as age, motivation, setting etc. (Schumann 1976).

To answer these questions, we need to take a stand on a number of methodological issues such as:

5) How best to give an overall characterization of the learner's language at earlier and later stages in development (cf. e.g. Ervin-Tripp 1974, Corder 1976, Meisel 1976, Schumann 1976, Wode 1976)?

6) Which techniques should be used in data collection? What methods in the analysis of data (cf. e.g. Corder 1973, Swain et al. 1974, Rosansky 1976)?

In practice contrastive analysis as such never studied the actual language of the learner but was interested mainly in predicting the future learning problems. The techniques used in data collection and analysis of data were essentially derivative of the current linguistic theory. The notion of interference between languages was taken as axiomatic and figured prominently in any answer to questions 1-4 above.

In the late sixties, it was realized that the goal of predicting learning problems could not be reached through comparison of language systems alone. It was claimed that this goal could be gained more adequately through investigations into the linguistic behaviour of actual language learners (Corder 1967, 1971, Selinker 1969, 1972, Richards 1971, Nemser 1971). Strong emphasis was placed on discovering the underlying system

actually used by the learner. Corder calls this system the transitional competence (1967) or idiosyncratic dialect (1971) of the learner, Selinker calls approximately the same phenomenon interlanguage while Nemser prefers the term approximative system. Interlanguage is the term most extensively used now.[1]

The analytical method used for obtaining the learner's underlying system is known as error analysis. As this term indicates, the analyses concentrate on "errors" produced by the learner. The erroneous structures are to be described and plausible explanations for their occurence found. An implicit hypothesis of earlier error analysis was that non-erroneous structures in the learners production are most adequately described in terms of the rules for the target language. As we shall see, this is not necessarily a valid assumption.

Although error analysis - through its emphasis on language learner production - makes possible a number of tentative answers to questions 1-2 and thus comes closer to fulfilling the requirements on a language learning theory, it suffers from a number of methodological defects:

1) It has never been satisfactorily demonstrated that it is acually possible to represent the learners's language at one point in time as an independent definable system (Johansson 1973).

2) Freely produced data alone - which has been the general object of analysis - must be considered as insufficient to reveal the learner's underlying system, as the learner can, in a communicative situation, avoid structures that he is unsure of (Corder 1973, Schachter 1974).

3) Since error analysis has been claimed to be of direct practical application in language teaching, another point of criticism has to do with the fact that most analyses give a too narrow description of errors by ignoring the total system in which these errors are located (Hammarberg 1973).

In what follows I will sketch one way of constraining the notion of possible developmental sequence that suggests interesting research perspectives on questions 1-4 above.

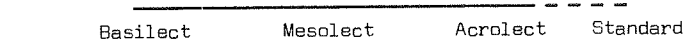
Variation and linguistic continua

Variability, or linguistic heterogeneity, is a common and important characteristic of language. Evidence of variation can be found in data from both groups of speakers and individual speakers. Until quite recently, the study of variation in a systematic way was ruled out of linguistics by the methodological assumption of "the ideal speaker-listener in a completely homogeneous speech community" (Chomsky 1965:3) - an assumption shared by both pre-generative structuralists and generativists alike. In Peter Trudgill's words: "Concentration on the 'idiolect' - the speech of one person at one time in one style - was a necessary simplification that led to several theoretical advances." However, "linguistics has now arrived at a stage where it is both possible and beneficial to begin to tackle this complexity." (Trudgill 1974:32)

How, then, are we to account for variability? At first glance it would appear as though variation could be handled with the aid of optional rules within a generative framework (which are of course a notational variant of the pre-generative structuralist notion of free variation). This is however, not possible in all cases, if in any, since variation is usually not random but patterned in certain ways (e.g. Labov 1969) and these regularities should be reflected by the rules of the grammar. Optional rules would, of course, generate only random variation. Labov (especially 1969) has developed techniques for the description of variability that involve quantification of variable features and of the linguistic and non-linguistic contexts that influence these features. Techniques for description of variability have been further developed in different directions by e.g. Cedergren and Sankoff (1974) and Bickerton (1975).

Through the introduction of these techniques and their application to speech communities, it has been possible to develop the notion of linguistic continua. Instead of treating a speech community as consisting of a number of discrete and non-overlapping systems, we can view it more realistically as being composed of a number of varieties with a continual change from the one variety to the other. This is particularly clear in the case of creole and post-creole speech communities where the amount of variation is especially large (DeCamp 1971:358, Bickerton 1975:14). The speakers in such communities are spread along a continuum of varieties and the varieties can be scaled on the continuum after degree of approximation to the standard. The varieties at the polar parts of the continuum

are termed basilects and acrolects respectively. The mesolects fall between the two. This situation can be illustrated in the following way




What is interesting here, is that the facts observed in the continuum can be interpreted as a reflection of what has happened diachronically. The acrolectal forms can be taken to be the most recent developments, while the basilectal forms can be seen as older stages. To quote Bickerton "a synchronic cut across a Guayanese community is indistinguishable from a diachronic cut across a century and a half of linguistic development" (ibid. 17). This view is in accordance with what Labov has called the uniformitarian doctrine of linguistics, i.e. that the study of present-day variation and change will give insights into what has happened in the past (Labov 1971:470).

The relevancy of the above presentation for the notion of linguistic development should now be apparent. We can view the output of a group of learners as constituting a continuum in the same way as the output from members of the creole speech community. Different learners will approximate to the target in various degrees and we can view development towards the target language as movement along the resulting continuum. This parallel is made possible by the fact that language learners exhibit a great deal of variation. To cite Haugen (1970) on this point:

> The main thing is that bilinguals exhibit in principle a succession of variable competences, which may be infinite in number, since they represent points on a continuum from one language to another. The concept of variable competence needs to be developed in order to account not only for the interference of bilinguals, but for all kinds of idiolectal, dialectal, social and historical variation. (p. 5)

Although Haugen speaks of bilinguals in general here, he seems mainly to accress the case where the individual is "on the way from minolingualism to bilingualism", i.e. the case of language learners. Rather than point to factors that distinguish variation in the language of the learner from variation in the native's language he prefers to emphasize the similiarity between the two as a striking fact.

Thus, by enlisting the theoretical apparatus and background assumptions

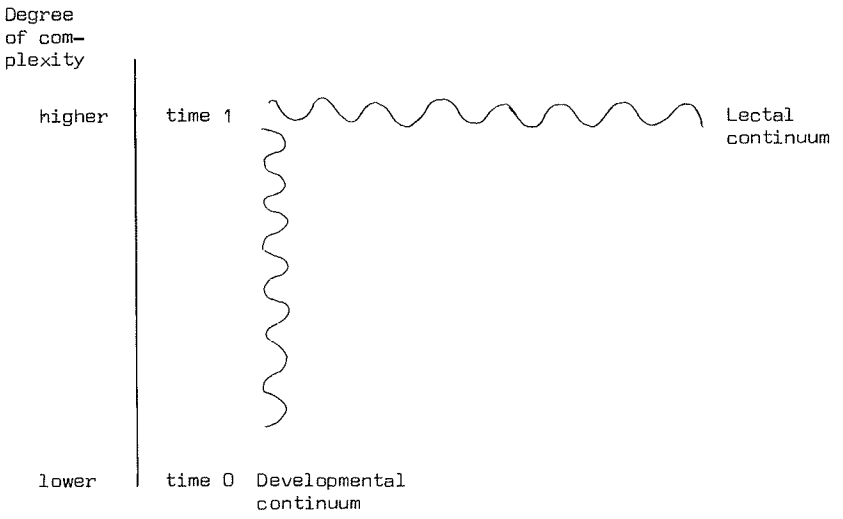
of the variable paradigm, we get a firm descriptive and methodological basis on which to build further research into the characteristic development of second language learners.

For example, a comparison of the learner's sequence of development with the "lectal", i.e. sociolectal, dialectal etc. continua reviewed above, will reveal a significant difference as to degree of complexity between the two (Corder 1976). Thus, it is generally agreed that the degree of complexity is the same for the different lectal varieties, i.e. there is no linguistically adequate measure that can distinguish between different dialects, sociolects or different stages in the diachronic development of a language as a whole, and thus point out certain varieties as simpler than others (Bartsch 1973:28). On the other hand, within certain structural areas, or even within certain constructions, it is possible to measure complexity. For example, the vowel system can be less complex in one language than in another. However, this type of simplicity in one part of the language is often outweighed by complexity in another part.

But there are types of speech that do not exhibit the complexity that is typical for natural languages. We find, for example, a low degree of complexity in the initial stages of child language and interlanguage.[2] Also "registers of a special kind for use with people who are regarded for one reason or another as unable to readily understand the normal speech of the community" (Ferguson 1971:143), i.e. pidgins, foreigner talk, baby talk etc., can be classified as low-complexity systems. It is this fact that leads Corder to distinguish different types of continua: On the one hand we have a lectal continuum where the degree of complexity is the same at any point in the continuum, as is typically the case with the post-creole continuum, the sociolectal continuum etc., and on the other hand we have an interlanguage continuum.

This latter type is exemplified primarily by first and second language acquisition, but any continuum where there is a difference of complexity at its polar parts can be considered a continuum of this type, e.g. the development from pidgins to creoles. Since the term interlanguage is strongly associated with second language acquisition, I will use it in this respect in the following exposition. A better term covering both first and second language acquisition continua and the pidgin-creole case would be developmental continuum.

We are now in a position to illustrate the two kinds of continua:




The figure shows that the developmental continua change from lower to higher degree of complexity over time, while the lectal continua involve a change where the degree of complexity is constant.

## The nature of developmental continua

The description of linguistic continua thus takes linguistic variation as a mediating link between points with categorical use of certain rules. The linguistic performance of different speakers can be described as a continuum only if the variation in their speech is regular in some way.

What evidence is there, then, for such regularities in developmental continua?

A number of observations from both the acquisition of second language phonology (L. Dickerson 1975, W. Dickerson 1976) and syntax (Hyltenstam 1977) indicate that variation in the speech of the learners is not random, and Brown (1973) points to the same fact regarding child language development (p. 432). In these studies, the regularities are interpreted as a reflection of the gradual and successive change that takes place over time. This interpretation is in accordance with the uniformitarian doctrine of Labov (see p. 69 above).

The Dickerson studies, both dealing with Japanese speakers' pronunciation of English, observed that certain phonemes are variably pronounced

during a learning period. However, the result of their analysis showed that the set of variants was stable among the speakers. For example, W. Dickerson found the following variants in the subjects' pronunciation of English /l/: [l], [l̆], [r], [r̆], and [ə]. These variants were considered similar to the target to different degrees. The first variant was the most similar and similarity decreased in the order given here. When the distribution of the variants was studied, it was found that certain contexts were more favourable for the use of target-like variants than others. These contexts could be described according to the height of the following or preceeding vowel and the position of /l/ in the word. Low vowels were shown to be more favourable to more target-like variants than high vowels. Initial position of /l/ was more favourable than medial position. Most difficult was the position after another consonant. The proportion of the different variants in the different contexts was regular over the five subjects studied, and the change in these proportions that took place over time turned out to be exactly the same for all subjects.

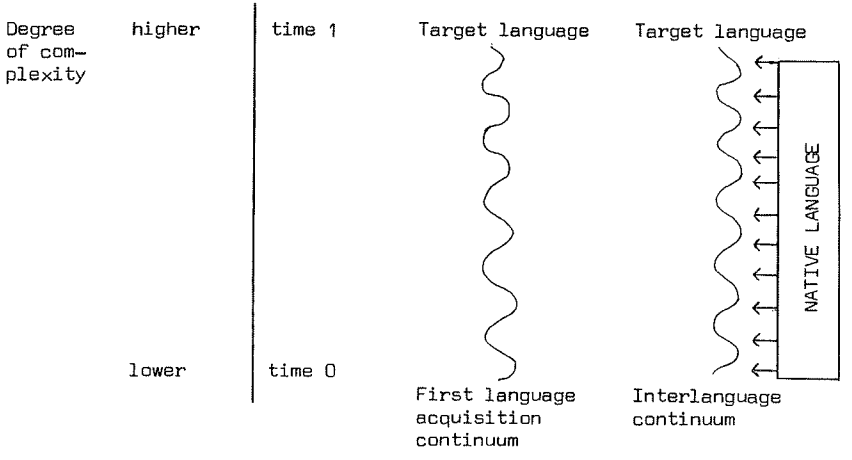
Hyltenstam (1977) studied second language learners' acquisition of negative placement in Swedish. Instances of preverbal and postverbal variation in the placement of negation were analysed, and it was found that the target variants of placement (different for main and subordinate clauses) were used more often in certain syntactic environments. The class of verbs occurring in the sentences, i.e. whether the finite verb was an auxiliary or a non-auxiliary verb, appeared to be the important factors for choice of variant. Also in this case development towards the target was concluded to be regular over all 160 subjects studied.

Brown (1973) has not studie the contexts for variation in his first language acquisition data, since he found it not to be possible in the kind of data he worked with. However, he is quite sure that there are both random and regular (according to context) variation that needs to be accounted for. As a consequence he is "prepared to purpose that the learning involved must be conceived as generally gradual change in a set of probabilities rather than as the sudden acquisition of quite general rules." (p. 442).

Even if the data in these studies have been limited in various respects, they strongly sustain the view that variation in the learners output is regular to a much greater extent than was formerly believed. Thus, it seems justifiable to view the language of both first and second language

learners as describable by developmental continua. We will call these the first language acquisition continuum and the interlanguage continuum respectively.

These two continua show both interesting structural similarities and differences. Ignoring phonological development here, we can preliminarily illustrate the syntactic/semantic similarities and differences in the following figure:




There are two similarities indicated in this figure:

1) The degree of structural complexity observed in the initial stages of both first and second language acquisition is similar.

2) In both cases, the degree of complexity increases over time.

As regards the differences, they have to do with the fact that the interlanguage continuum is characterized by interference structures.

We will postpone our discussion of the differences until the next section, and will concentrate on the similarities in the remainder of this section. In what follows, it is most illustrating to have untutored or "natural" second language learners in mind.

Structural similarities between different kinds of simple system have been extensively noted. Pidgins related to quite different languages exhibit the same grammatical characteristics (Todd 1974), and foreigner talk in different languages is very similar (demonstrated for German, French, and, to some degree, Finnish by Meisel 1976). The structures found in foreigner talk are similar to those found in the speech of immigrant workers

(Schumann 1976, Meisel 1976), and foreigner talk is structurally similar to baby talk (Ferguson 1971). Child language exhibits almost the same characteristics (Brown 1973).[3] So, what are the characteristics of these simple varieties?

The following features are some of the most often noted:

1) Disregard of inflections
2) Disregard of elements such as articles, prepositions, copula, modals and certain pronouns, i.e. a great deal of the function words
3) Analytical expressions for time relations etc.
4) Rigid word order. As a consequence of 1 and 2, basic semantic relations such as agent-action-object, possessive, locative, negation etc. are expressed by word order alone.

In general, simple systems are comparitively limited in communicative function, since they are heavily dependent on non-linguistic context. The degree of redundancy is low.

Many authors have, of course, reflected on the similarities between these different types of systems. For example, Jespersen states:

> in all these seemingly so different cases the same factor is at work, namely, imperfect mastery of a language, which in its initial stage, in the child with its first language and in the grown-up with a second language learnt by imperfect methods, leads to a superficial knowledge of the most indispensable words, with total disregard of grammar. (1922:133-4)

This statement is made in a discussion of pidgins.

As regards the ability to simplify, Jakobson says:

> Es wurde mehrmals festgestellt, dass ein Kind im vollen Besitze der Sprache sich plötzlich wieder in der Rolle eines Babys gefallen kann . . . (1941:13)[4]

Traugott finds the similarities between second language learner systems and reduced registers to be easily explainable:

> Second language learning involves problems of new vocabulary, new sounds and sound combinations, and new syntactic structures. I hypothesize that we [the learners] concentrate on the first two while turning to basic semantic processes for the third. These processes are more available than we might think since we use them (in part) in simplified registers. (1976:26)

In summary, it appears as though we have implicit knowledge as to what the minimal requirements are for verbal communication to succeed. This knowledge helps us in the initial stages of language acquisition, or when reducing our language. We know beforehand what structural characteristics need to be used to fulfil these minimal requirements.

At this stage, it is obviously desirable to sketch a framework within which to treat the above notion of structural complexity more systematically. We want a framework which would make it possible to

1) predict characteristics of simple systems
2) characterize typical structural developments
3) constrain the notion of interference in interlanguage.

To acheive these goals, I believe that a fruitful point of departure would be a general linguistic theory of markedness. Such a theory might furthermore allow us to formulate the following hypotheses:

H:1) The initial stages of interlanguage are characterized by unmarked categories.

H:2) Development towards a given target is acheived from unmarked to marked categories.

Let us look at negation and try to determine what the unmarked categories would be in this case. We can use various types of evidence to determine this, such as the frequency of the category and the behaviour of the category in simple registers, aphasic disturbance etc.

In simple registers, time relations, aspectual relations, and operations like negation are expressed analytically rather than synthetically (see above p. 74). For negation, this means that the operator appears as a free morpheme rather than as an affix in simple registers. As regards the placement of logical operators, such as the negator, we often find them immediately before the element they modify (Meisel 1976:6), i.e. before the focused element in an utterance, or, if the utterance is a negated sentence with neutral focus, before the "finite" verb,[5] as in I no can do this, or as in the German example, wir nix gehen hin, 'we not go away'.

Interestingly enough, we have a frequency argument that points in the same direction. Dahl (1977) came to the conclusion that exactly this way of expressing negation, i.e. analytically before the finite element of the clause, is the most common one in the world's languages (p. 22).[6] This is an interesting fact considering the familiar results of Jakobson (1941): The most common phonological distinctions made in languages were also those earliest acquired by the child and latest lost by the aphasics.

It looks like something similar is going on in negative constructions. The negator is not placed preverbally only in the earlier stages of language acquisition, but this is also the most common way of expressing negation in the world's languages.

From this we can conclude that a theory of markedness - here of course highly tentative - would state that the analytical expression for negation is unmarked in relation to the synthetical expression, and further, with regard to placement, that preverbal placement is unmarked in relation to postverbal placement.

Having established this, it would be interesting to see whether the unmarked category occurs in the initial stage of interlanguage. According to our hypothesis 1 on p. 75, the following pattern would be predicted for second language learners with different types of native languages learning different target languages.

| | Native language | Target language | Initial stages of interlanguage |
|---|---|---|---|
| 1. | NEG - V | NEG - V | NEG - V |
| 2. | NEG - V | V - NEG | NEG - V |
| 3. | V - NEG | NEG - V | NEG - V |
| 4. | V - NEG | V - NEG | NEG - V |

As this table shows, we would expect the same way of expressing negation in initial stages whatever the constellation of language pairs. Such a hypothesis is of course testable. If tested, what would the facts look like that supported it?[7] If case 4 was observed in actual data, this would be our piece of evidence for the correctness of one hypothesis. If, on the other hand, the constellation of languages shown in case 1 gave rise to the pattern V - NEG in initial stages, our support would not be very firm, since we could then suppose that the negator was just placed anywhere at first, and not necessarily in accordance with the predictions of a markedness theory. To the best of my knowledge, no such cases have been reported.

The situation hypothesised in case 4 is thus the most interesting one for our purposes, since such a pattern cannot be explained by interference (as can case 2), nor by the fact that the pattern of the target may have already been learnt (like case 3). An interesting question, then, is whether there is any evidence at all supporting case 4. I will point to a few observations that would support an affirmative answer to this question, although our hypothesis has not been the focus of empirical research so far.

In my study of the acquisition of Swedish syntax, partly reported in Hyltenstam 1977, a native speaker of French exhibited more cases of preverbal than postverbal negation in Swedish. (Both Swedish and French have postverbal negation – i.e. if we limit ourselves to simple clauses in spoken language, and these should be the essential facts to consider here – and can thus be viewed as examples of case 4.) Independent observations of this have been reported by several teachers of Swedish as a foreign language.

The reverse constellation of languages, i.e. speakers of Scandinavian languages learning French, gives a similar result: In prompted conversation in initial stages of learning, it is not uncommon to hear phrases like Je non venir domain instead of what one would have expected, if interference hade taken place: Je venir non demain.

A Scandinavian language and English would also be a pair of type 4, but here the matters are complicated by do-support in English. Interference from Norwegian to English concerning the placement of negation would have given phrases such as I like not that. "What we find, however, are such sentences as I not like that . . ." (Ravem 1968:180). This can be interpreted as a case of using the unmarked construction, but, of course, also other explanations are readily found, e.g. that do in English has not been observed by the learner.

So far then, we have pointed to areas where possible support for hypothesis 1, p. 75, can be found. As regards the developmental hypothesis, i.e. that development proceeds from unmarked to marked categories, we will be very brief.

In the development towards the target language, both first and second language learners show similar patterns. For one thing, the expressions for grammatical categories are learnt disregarding variants. One form is chosen for the expression of each content element (cf. Brown 1973:342, Meisel 1976). This form is then said to be overgeneralized, since it is used in environments where alternative variants would have been the correct choice according to the norms of the target language. Thus, we have the common goed forms, or to take a Scandinavian example form syntax, it has been noted that postverbal placement of negation is in one stage of development used in both main clauses (correctly) and in subordinate clauses (incorrectly) (Kunøe 1972:66). This development can be said to be in accordance with a markedness theory, since it should be the un-

marked case to have one-to-one correspondence between expression and content element and the marked case to have one-to-many correspondence.

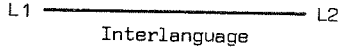
Another piece of evidence that can be taken as suggestive of hypothesis 2 concerns adjective agreement. Languages with gender and plural agreement on adjectives can express this agreement in both attributive and predicative position or in attributive position only. There does not appear to be any languages where agreement is expressed in predicative and not in attributive position.

Among languages which show agreement in both positions we find Spanish, French, and Swedish. German is a language that expresses agreement only in attributive position. (It is interesting to note that certain Swedish dialects do not show agreement on adjectives in predicative position.)

Learners of Swedish tend to find it easier to apply agreement to adjectives in attributive position than to adjectives in predicative position. This is the case regardless of conditions of agreement in the learner's native language, i.e. regardless of whether the conditions are the same as in Swedish (Spanish, Greek) or otherwise (teacher observation).

## The interlanguage continuum

If we can thus conclude that the second language learner starts building his new language in a way similar to the child when acquiring his first language, it follow that the view presented by the earlier interlanguage studies - that there is a development from one language to another, or from L1 to L2, or from source language to target language - has missed the point that the continuum describing this development does not have the same degree of complexity in its two polar parts. This same-complexity-view is often illustrated in the following way:




This figure illustrates that the starting point of the learner's development towards the target is the native language of the learner. In our discussion, based on Corder's distinction between lectal and interlanguage continua, we have arrived at a view where the starting point is rather a basic or simple system. A similar view is expressed by Malmberg (1975:124 and elsewhere) in discussions of the structural complexity of different linguistic systems.

As was mentioned above, what distinguishes the interlanguage continuum from the first language acquisition continuum is that the former develops under influence of the native language of the learner a fact which gives rise to interference structures in the learner's language. A lot has been said about the notion of interference. The discussion has been especially fervent since the late sixties, when the notion began to be generally challenged. Linguistic interference was taken as a specific instance of transfer phenomena in general, and was thus associated with stimulus-response theories of learning. Such theories fell into disrepute within the field of language acquisition at this time and simultaneously there emerged a growing dissatisfaction with contrastive analysis for independent reasons (p.66). Since stimulus-response theories of learning were the psychological basis for contrastive analysis, it was not strange that interference, a corner-stone of both stimulus-response theories of learning and therefore in contrastive analysis was looked upon with suspicion.

This resulted in attempts to explain "interference-like" deviations in the speech of second language learners in other terms than as instances of interference from the learner's native language. Dulay and Burt (1974) for example, attempted to do away with the notion of interference altogether - at least for children acquiring a second language. They observed that children who acquire English as a second language make the same kind of deviations from standard English as can be observed in children acquiring English as their first language. This observation led them to the hypothesis that all second language learner deviations could be identified with first language learner deviations. This analysis seems to be a consequence of their view that an active and creative learning process is found only where a language is built up "from inside" as is the case in first language acquisition. For them, the occurence of interference phenomena means that learning takes place in a habit formation mode. That there does not necessarily have to be any link between active and creative learning and lack of interference, not even in the case of children, was demonstrated by Malmberg (1945) in his account of a four year old Finnish-speaking girl acquiring Swedish in a target language environment. The analysis of several features of the child's speech showed that she quite actively and creatively used whatever means she could, among which many elements from Finnish, in her attempts to communicate in Swedish.

Anyhow, most writers on the subject of language learning seem to recognize interference as a fact about interlanguage. It seems to me that the

recognition of interference together with the insights that there are similarities between first and second language development leads to a more realistic view of second language acquisition as a creative process, an integral part of which is interference from the native language. This leads us to interesting hypotheses as to the exact nature and extent of interference in the different developmental stages of second language competence.

The notion of interference is given a thorough and interesting treatment in Kellerman 1977, although this author does not relate the phenomenon to degrees of structural complexity in different developmental stages. Kellerman takes the view that the structural compatibility between two languages decides which elements or structures can be transferred from one language to another. He distinguishes language specific from language neutral elements in an arbitrary pair of languages, i.e. those elements of the two languages that seem compatible to the learner are language neutral, while those elements that the learner would not find adequate to use in both languages are language specific (1977:102). The greater the difference between languages in contact are, the more difficult it is for the learner to " find" language neutral elements and the amount of interference will consequently be small. In most constellations of languages, inflectional morphology would fall in the language specific category, as would idioms, but in very closely related languages, even inflectional morphology might be language neutral. Such a case can be well illustrated by Swedish and Danish. Both languages make use of suffixation for the definite article. 'The table' is bordet in both languages, where -et is the definite article. However, if there is an adjectival modification as in 'the big table', both languages use a preposed free article, det, in the position before the adjective, but whereas Danish deletes the suffixed article in these cases and gets det store bord, it is not deleted in Swedish: det stora bordet. As Danish and Swedish are closely related languages - they are mutually intelligible for a great proportion of the speakers - a native speaker of one of them easily transfers even the morphological patterns of his own language when attempting to speak the other. This can often be observed for the above case.

Kellerman's view then, is in sharp contrast with general transfer theory which explicitly or implicitly claims that the amount of interference is greater the greater the difference between the two languages in contact

(e.g. James 1971:63). But, how do these two views relate to our previous discussion of degrees of complexity?

The latter view, the greater difference the more interference, is compatible with the view that the learning of a second language is a process of turning the structures of one's own language into those of the target language. It predicts that whenever communication takes place in the target language, the only thing the learner can cling to in cases where he is ignorant of the target, is his native language competence. So, if there is a great difference between the two languages, there will be many deviances when the learner communicates in the target, since the structures of the native language will turn up in the target. This view has been illustrated earlier in this paper in the following way:

L1 ——————————— L2

Kellerman's view, on the other hand, is compatible with what we can call the differing-complexity view. If we assume that the language learner starts from a simple system, the degree of compatibility between this early system, i.e. the learner's version of the target language, and the native language of the learner will be relatively small. The type and extent of interference in this case varies along the developmental sequence for different areas (cf. also Wode 1976). For example, even if both the target language and the learner's native language have definite articles as English and Swedish, the English learner of Swedish would probably not notice the correspondence at first, but would rather strip his Swedish of articles. Thus, the amount of interference would be null at this point due to lack of language neutral elements. (The learner would not consider the articles of his own language as transferable - or even necessary elements for communication in the target.) However, at a later stage, it would hopefully be apparent to the learner that articles are used in Swedish. Possibly, the free definite article would show up in an early stage giving <u>det bord</u>, since this article should be more salient and less marked. (Examples of this can be found in Tingbjörn 1977.) Later, the suffixed article would be noticed. Once the learner had identified the expression elements in the new language, he would probably conclude that these elements work in much the same way as they do in English, i.e. the elements would have become language neutral at this stage. Thus, the learner's version of Swedish would be structurally more similar to English at this point, and the result would be that interference from English could be ob-

served here. Structures such as Hon är en lärare, 'She is a teacher', would be produced instead of the correct Swedish version, Hon är lärare, thus reflecting the use of articles in English. Structures like these are exactly what we observe in many cases. What remains to be stated is when in the learner's development such structures begin to occur.

## Summary

In this paper the nature of the development in a second language has been discussed and it has been compared to the nature of the development in the first language. The important similarities found in the two areas concern the development from a less complex to a more complex state. This development is claimed to be a continual change. The differences concern the fact that second language development takes place under influence from the native language of the learner, which accounts for the interference phenomena found in this case. The view of the less to more complex developmental nature of the continuum, combined with the view that there are definite structural limitations for the occurence of interference predicts that interference is to be found in certain structural contexts at certain definite stages of development.

A suggestion is made that the second language development is best studied within the framwork of a linguistic theory of markedness. Such a theory would be of value both for the definition of the initial simple structures produced by the language learner and for a specification of the differences between these structures and those structures produced as a result of interference.

## Notes

1. As will be apparent from the following discussion, the term interlanguage is used not only to denote the linguistic system underlying the performance of one learner, but also the way a group of learners of the same target language with the same (or different) native language(s) use the target.
2. Here, and in the following exposition, the term interlanguage is used for the developing linguistic competence as reflected by the learners' performance in the language being learnt.
3. This does not of course mean that there are no differences.
4. Page reference to the 1969 edition, Frankfurt am Main: Suhrkamp Verlag.
5. It is not quite adequate to talk about finite verbs here for obvious reasons. What is meant is the verb that would carry the finite element in an utterance expanded to the target language version.

6. Dahl's study covers approximately 225 languages representing 40 language families and various genetically isolated languages.

7. Considering the fact that the development towards the target starts very early, we need not expect categorical use of one pattern (except in case 1 which is a non-crucial case for the hypothesis): Variation is a necessary concomitant of linguistic development according to the view presented in this paper.

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# EFFET COMMUNICATIF DE LA DISLOCATION D'UN NP EN FRANÇAIS

Eva Larsson

En étudiant la dislocation d'un NP dans une langue telle que le français, il est naturel de commencer par regarder de plus près le choix de prédéterminant. On constate qu'un nom en position disloquée peut être précédé d'un prédéterminant défini aussi bien que d'un prédéterminant indéfini :

Les tortures subies par Djamila, il ne les mit pas en doute (Beauvoir)[1]
Ces paroles qui me semblaient stupides, je déclare aujourd'hui qu'elles étaient nobles et utiles (Nimier)
Une femme qui veut bien tenir sa maison, elle a toujours du travail (Orléans)
Je les détestais, quant à moi, les longues promenades (Céline)
Il ne l'aimait pas, ma chambre (Rochefort)
Ça doit être bourré de souvenirs virils, un hussard (Nimier)

Cela ne veut cependant pas dire que n'importe quel NP, pourvu d'un prédéterminant défini ou indéfini, puisse apparaître en position disloquée. La phrase suivante, p ex, n'est pas grammaticale :

*Un monsieur, je crois qu'il vient d'entrer par la porte.

On a voulu formuler la restriction en disant que la référence du NP doit être connue (Karlsson, 1975). Si l'on veut dire par là qu'il faut que le référent du NP soit identifiable, la formulation est inexacte, vu qu'il est également possible de disloquer des NP qui ne sont pas référentiels à proprement parler :

Sa douche, il l'a prise comme d'habitude
La capitale de la France, c'est Paris[2]

Il serait probablement plus exact de dire que la restriction concerne la présence d'une présupposition existentielle. Les NP des exemples ci-dessus, sa douche et la capitale de la France, sont porteurs de présuppositions existentielles, bien qu'ils soient non-référentiels. Il en est de même des NP définis employés attributivement (Donnellan, 1971, p 102 s). Ceux-ci présupposent normalement l'existence d'un objet ou d'un individu pour lequel la description définie est appropriée, mais ils n'impliquent pas que le référent du NP soit déterminé et identifiable. Même si l'as-

sassin dans l'exemple suivant est interprété comme quiconque a commis le crime, la dislocation est possible :

L'assassin, c'est quelqu'un de malade

Les NP, dont la référence est générique, présupposent qu'il existe une classe d'individus ou d'objets que l'on peut désigner par l'expression en question (Gundel, 1974, p 36). Un NP générique peut être disloqué :

Les lions, ils sont forts

Il existe cependant un groupe de NP qui sont dépourvus de présuppositions existentielles, à savoir les NP indéfinis, dont la référence est spécifique. Dans ce cas, l'existence fait partie de l'assertion et non pas de la présupposition (Gundel, 1974, p 36). Nous avons vu que ce sont justement ces NP-là qui sont exclus de la position disloquée. Inversement, cela signifie que quand un NP disloqué contient un prédéterminant indéfini, sa référence n'est pas spécifique mais générique.

Une restriction qui tient compte de la présupposition existentielle du NP prédit donc correctement qu'un NP disloqué doit être soit spécifique et défini, soit générique. Nous allons montrer, cependant, que cette condition n'est pas suffisante. Si le domaine d'investigation est élargi de manière à comprendre non seulement la phrase qui contient le NP disloqué mais aussi le contexte dans lequel la phrase se situe, on découvre que dans certaines situations où le contexte linguistique est réduit au minimum, l'emploi d'une phrase disloquée impose des conditions particulières au contexte extralinguistique. Si ces conditions ne sont pas satisfaites, la construction disloquée est tout à fait inappropriée. Imaginez p ex les phrases suivantes au début d'une émission de nouvelles ou comme phrase initiale d'une conversation :

(Voici les nouvelles de la journée :) La grève des travailleurs de l'usine Solex, le premier ministre l'a commentée hier soir dans une conférence faite à Strasbourg

Salut, Jacques! Comment ça va? - La soeur de Jean-Pierre, je l'ai rencontrée hier au cinéma.

Ces phrases ne sont naturelles que si la grève des travailleurs de l'usine Solex et la soeur de Jean-Pierre représentent quelque chose de familier et de facilement actualisé pour l'auditeur. La grève et la soeur font partie des thèmes à propos desquels il pourrait s'attendre à recevoir des informations.

La contrainte dont il est question peut être formulée vaguement dans les termes suivants :

> Un NP peut être disloqué s'il est en rapport avec le contexte linguistique précédent ou s'il joue un rôle de premier plan dans la situation de la parole.

Cette contrainte, qui fixe le caractère d'élément donné d'un NP disloqué, est plus générale que la contrainte concernant les présuppositions existentielles. Elle s'étend sans difficulté à d'autres catégories disloquées (PP, AP, VP) auxquelles le concept de présupposition existentielle n'est pas applicable. En même temps, elle exclut d'une manière naturelle les NP indéfinis à référence spécifique de la position disloquée. L'emploi de l'article indéfini indique, si la référence est spécifique, que le NP est présenté comme nouveau dans le discours et que son référent ne peut pas être identifié par l'auditeur à l'aide de ce qui a été dit précédemment ou à l'aide de la situation de la parole. Si au contraire le NP est en rapport avec le contexte - ce qui ne veut pas nécessairement dire que son référent ait été introduit préalablement - le locuteur se servira d'un prédéterminant défini. Le caractère d'élément donné d'un NP disloqué à gauche a été observé par Hankamer (1974, p 221) et par Kuno (1972, p 298 s). Le premier range la dislocation à gauche parmi les transformations qui sont " discourse-conditioned ". Kuno cite des phrases avec dislocation à gauche d'un NP comme exemples d'une construction où l'existence d'un thème (= élément donné) est obligatoire. Pourtant, la contrainte que nous venons de formuler vaut aussi bien pour un NP disloqué à droite que pour un NP disloqué à gauche. Comme l'effet communicatif des deux types de dislocation n'est pas le même, nous analyserons cependant les deux cas séparément.

## La dislocation à gauche

L'effet communicatif obtenu en disloquant un NP à gauche est de marquer ouvertement le thème de la phrase. Un NP disloqué à gauche sert de point de départ de la communication et indique ce de quoi on va parler par la suite.

Dans l'organisation normale du discours, le thème de la phrase représente quelque chose qui est actualisé par le contexte ou par la situation. Il sert de transition entre ce qui est déjà dit et la nouvelle information qui va suivre. Certains linguistes ont ressenti le besoin de

distinguer entre les concepts de thème et d'élément donné ; une phrase peut ne pas avoir d'élément donné, mais on voudrait tout de même pouvoir la diviser en deux segments, dont l'un signale le sujet duquel on va parler et l'autre contient ce que l'on dit à propos de ce sujet[3].

Quand le thème de la phrase est marqué ouvertement par une dislocation, ce thème est toujours un élément donné. La langue répugne normalement à mettre un élément non connu en position initiale et cette tendance est renforcée quand il s'agit de la position initiale disloquée, où l'élément est syntaxiquement isolé du corps de la phrase[4].

Les rapports entre le contexte et le NP disloqué peuvent être relativement variés. Nous pouvons distinguer le cas où le rapport se fait avec un contexte linguistique de celui où c'est la situation extralinguistique qui est responsable du caractère donné du NP disloqué.

Un cas simple de contexte linguistique est celui où le référent du NP a été mentionné dans le discours précédent. Ici, il est justifié de parler de référence connue :

> Le jeudi, c'est Stéphanie, elle veut aller voir un Mickey, vite je cours ; mais il n'y a qu'un jeudi par semaine ; et puis Stéphanie, il me semble que je la déçois (Rochefort)

Mais il arrive aussi que le NP disloqué introduise un référent nouveau. On peut alors tracer des lignes associatives entre ce référent et l'information contenue dans le texte précédent. Très souvent, le référent est contrasté avec quelque chose que l'on vient de mentionner :

> Vous n'avez que le bonheur des gens en tête et vous leur faites bouffer du poison, respirer du poison, vous les faites vivre dans la laideur. La beauté, ça alors, ça n'existe pas du tout (Rochefort)

L'association peut également se faire d'un terme à un autre à l'intérieur d'un champ conceptuel sans qu'il y ait nécessairement un effet de contraste. Dans les exemples suivants, ce champ conceptuel est respectivement le couple, les minorités éthniques des États-Unis et les moyens de communication culturels :

> (Après une description de P. Brasseur qui rend visite à Sartre et à S. de Beauvoir :) Sa femme, Lina, je l'avais souvent aperçue au bar du Pont-Royal, au temps où elle était pianiste (Beauvoir)

> C'est vrai qu'il y a des endroits aux États-Unis où les Noirs ont pas le droit d'entrer? - Et les Indiens, m'dame, pourquoi y sont dans des sortes de camps? (Delanoë)

Le cinéma français s'étiolait ; à part les journaux communistes, il n'y avait plus de presse de gauche ; cinéastes, reporters en herbe n'avaient donné qu'une maigre récolte. La littérature, ils doutaient trop de leur époque, donc d'eux-mêmes, pour s'y acharner (Beauvoir)

Pour qu'un thème soit donné par le contexte extralinguistique, il faut qu'il se détache du fond d'une manière particulière dans la situation de la parole. Nous pouvons distinguer notamment deux classes naturelles de thèmes : l'une comprend les participants de l'acte de parole, parmi lesquels la première personne a une position particulière, et l'autre des expressions déictiques, où un individu ou un objet, présent dans la situation[5], est signalé par le locuteur (au moyen d'un geste p ex). Il y a souvent une effet de contraste, surtout dans le premier cas, mais cela n'est pas obligatoire :

prévenant tout commentaire, une jeune femme dit sèchement : " Nous, elle ne nous plaît pas du tout. " (Beauvoir)

Allez-y vous aussi ; ce livre qui vous embarrasse, enfoncez-le dans votre poche et quittez ce compartiment (Butor)

Les exemples où le thème est contrasté montrent qu'un NP disloqué à gauche peut avoir les caractéristiques accentuelles et intonationnelles d'un foyer, bien qu'il soit donné par le contexte. Il s'agit alors d'un foyer de contraste ; un foyer qui contient toute la nouvelle information de la phrase ne se prête guère à la dislocation :

(Quelqu'un est-il venu?) - ?Pierre, il est venu [6]

Dans l'analyse de la dislocation à gauche comme processus de thématisation, le fait que plusieurs éléments différents puissent se trouver en position disloquée dans la même phrase pourrait poser un problème :

Eux ils veulent faire du Beau Poker. Pour l'Art. Moi le poker je m'en fous je veux empocher leur fric (Rochefort)

Sartre était assis entre une Russe et une Allemande qui lui demanda de lui dédicacer un livre ; il le fit et se tourna vers son autre voisine avec un peu de gêne : " Je suppose que vous, les dédicaces, vous trouvez ça idiot. " (Beauvoir)

secret parce que chez Scabelli, sur le Corso, personne ne sait que vous serez à Rome ... secret même pour Cécile en ce moment puisque

vous ne l'avez pas prévenue de votre arrivée ... Mais elle, ce secret, elle le partagera totalement (Butor)

D'habitude, on s'attend à trouver un thème par phrase - ici, nous en avons deux. Nous voyons, pourtant, qu'il y a une certaine différenciation fonctionnelle entre les deux, l'un étant un thème contrasté, l'autre un thème " neutre ".

La dislocation à droite

L'effet communicatif de la dislocation à droite semble être de rhématiser le contenu propositionnel. On y arrive en déplaçant à droite, en dehors de la phrase proprement dite, les descriptions détaillées des référents qui figurent sous forme pronominale dans la phrase. On a souvent dit qu'un élément disloqué à droite est quelque chose qui s'ajoute après coup, lorsque celui qui parle se rend compte que la référence du pronom dont il s'est servi, peut ne pas être tout à fait évidente pour son interlocuteur. Les exemples suivants ne contredisent pas une telle explication. Dans les premiers, le contexte linguistique contient un antécédent possible du pronom ; dans le dernier, le contexte extralinguistique le signale :

et Maigrat qui leur avait refusé du pain, lui en a donné ... On sait comment il se paie, Maigrat (Zola)

Vous doubliez en côte. Votre compteur marquait cent soixante. Je l'ai vue cette côte : pas de visibilité (Rochefort)

cette fois vous ne l'avez pas lu, ce livre que vous tenez entre vos doigts, vous ne l'avez pas même ouvert (Butor)

En plus de ne pas être très convainquante du point de vue de l'organisation psychologique de la parole, une telle explication suggère que la construction disloquée est segmentable en une phrase, comportant un pronom dont l'antécédent se trouverait dans le contexte précédent, et un NP, coréférentiel avec ce pronom et ajouté après coup. L'exemple suivant montre que ceci n'est pas toujours le cas :

comme dans le fond de leur coeur, avec quelle sincérité ils se jurent d'êtres fidèles l'un à l'autre! Combien de temps vont-elles durer ces illusions? (Butor)

Ici, l'interprétation du pronom repose entièrement sur la présence du NP disloqué. Si ce NP est omis, la phrase est inintelligible. La construction disloquée est à considérer comme un tout où la référence du pronom est déterminée par le NP disloqué, qui remplit la fonction de postcédent.

La dislocation à droite est un processus intermédiaire entre l'emploi d'un NP (plein) défini et la simple pronominalisation, en ce qui concerne les exigences contextuelles. L'emploi d'un NP défini présuppose l'existence d'un référent qui, dans la plupart des cas, est déterminé et identifiable ; la dislocation à droite du NP exige en plus que ce NP soit actualisé par le contexte linguistique ou extralinguistique. La pronominalisation, finalement, demande que l'antécédent du pronom puisse être retrouvé, sans équivoque, dans le contexte immédiat.

A la différence de l'emploi d'un NP plein, la construction disloquée permet de concentrer l'attention sur la nouvelle information et de mettre à l'arrière-plan un élément donné par le contexte. Mais cet élément donné ne disparaît pas ; il conserve, au contraire, sa forme pleine, ce qui fait que la dislocation est utilisable là où la pronominalisation simple ne l'est pas à cause d'un manque d'antécédent dans le contexte immédiat.

Le fait qu'un élément disloqué à droite est mis à l'arrière-plan, en dehors de l'information essentielle de la phrase, est reflété par l'intonation. L'élément disloqué est prononcé sur un ton bas et égal que l'on peut rapprocher de celui qui caractérise la prononciation d'une apposition ou d'une relative non-restrictive. Comparez de ce point de vue les phrases suivantes :

Je l'ai rencontré hier, l'ancien professeur de français
M. Legrand, l'ancien professeur de français, est venu me voir
M. Legrand, qui est d'ailleurs ancien professeur de français, est venu me voir hier.

A la différence d'un élément disloqué à gauche, un élément disloqué à droite ne peut pas être contrasté :

Ce livre-là, je l'aime bien mais celui-ci, je le trouve détestable
*Je l'aime bien, ce livre-là, mais je le trouve détestable, celui-ci

Cela signifie que lorsque nous avons plusieurs NP disloqués à droite dans la même phrase, il n'y a pas de différenciation de fonction comme dans les cas parallèlles de la dislocation à gauche :

Le matériel à écrire d'Alcide tenait dans une petite boîte à biscuits ... Mais quand il me vit l'ouvrir sa boîte, Alcide, il eut un geste qui me surprit pour m'en empêcher (Céline)

(en parlant des dîners offerts à Philippe et à ses amis :) Il les sent passer ses dîners Philippe je n'y vais pas de main morte (Rochefort)

Le rejet à droite de plusieurs NP ne fait qu'augmenter l'effet de rhématisation. La phrase proprement dite est débarrassée de détails descriptifs, sans importance immédiate pour ce que l'on veut communiquer.

La transformation dite " Topicalisation "

Une phrase " topicalisée " est une phrase où un constituant a été déplacé à gauche et mis en position initiale. Contrairement à la dislocation à gauche, ce constituant n'est pas doublé par un élément pronominal. La dénomination de la transformation donne à penser que son effet serait à peu près identique à celui que nous avons indiqué pour la dislocation à gauche. Un coup d'oeil rapide sur les phrases topicalisées montre cependant que ceci n'est pas le cas. L'effet communicatif principal de la topicalisation est de focaliser explicitement un constituant de la phrase. La valeur informative du reste de la phrase peut varier. Dans les exemples suivants, où un attribut est placé au début de la phrase, cette valeur est à peu près zéro :

Et pendant ce temps-là vous démolissez, vous dégradez, vous enlaidissez tout. Développement vous appelez ça (Rochefort)

Pour l'eau qu'il fallait boire, il avait eu raison, de la boue c'était, du fond de vase (Céline)

Dans d'autres cas, la nouvelle information n'est pas limitée au constituant déplacé, mais celui-ci conserve néanmoins son rôle de foyer :

Je le regarde avec horreur, je gagne mes appartements d'un pas morne. Je reste hébété. De lui, je me vengerai (Nimier)

Il semble donc justifié de parler de focalisation au lieu de topicalisation. Il est vrai que dans des phrases comme la suivante, le constituant placé au début servirait plutôt de thème, mais ce n'est pas un véritable contre-exemple. Il s'agit d'une construction disloquée où l'élément pronominal a été omis, chose fréquente après certaines prépositions :

Ce briquet justement, j'ai allumé tes cigarettes avec quand tu es venue chez moi pour la première fois (Beauvoir)

## Conclusion

Nous avons vu que la dislocation d'un NP en français est soumise à des conditions contextuelles. Pour que la construction disloquée soit naturelle, il faut que le NP disloqué ait été actualisé par le contexte linguistique ou bien qu'il se détache d'une manière particulière dans la situation de la parole. Formulé négativement, cela implique qu'un NP disloqué ne peut être indéfini, si sa référence est spécifique.

La dislocation à gauche est un processus de thématisation, qui permet de marquer explicitement le sujet de la communication suivante. La dislocation à droite, au contraire, est un processus de rhématisation, qui fait ressortir l'information principale en rejetant à droite, donc après le rhème, une information parenthétique. Finalement, la transformation dite topicalisation est plutôt à décrire comme un processus de focalisation.

## Notes

1. Les exemples de l'article sont soit des citations, soit des exemples construits dans le but d'illustrer un certain phénomène. Dans le premier cas, l'auteur du texte cité est indiqué entre parenthèses. Les exemples qui portent l'indication (Orléans) viennent du corpus de langue parlée, recueilli par l'équipe de Michel Blanc à Orléans en 1968–1970.
2. Les exemples (dans leur forme non-disloquée) sont de Ducrot (1972, p 221 s).
3. Selon Gundel (1974, p 33 s), le thème de ces phrases serait une expression qui situe, temporellement ou spatialement, ce qui est dit dans la phrase. Cette indication de temps ou de lieu peut être absente dans la structure de surface.
4. Il y a de bons arguments pour le placer en dehors du S qui domine les constituants principaux de la phrase (NP, Aux, VP).
5. Ducrot (1972, p 221 s) fait observer une différence d'emploi entre le prédéterminant ce (déictique) et l'article défini. Ce + nom a toujours une fonction référentielle et il se réfère à quelque chose de présent dans le contexte linguistique ou extralinguistique. Si l'on demande à quelqu'un d'aller chercher un livre dans la chambre à côté, on peut dire (a) mais pas (b) :
   (a) Prenez le livre rouge sur le bureau
   (b) Prenez ce livre rouge sur le bureau
6. Voir Cornulier (1974, p 160).

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# READING CHOMSKY

Thore Pettersson

Un estomac malade pousse
au scepticisme
Maupassant

The impact of Chomsky's works on modern linguistics has been tremendous. As Lyons (1970) correctly points out generative transformational grammar is not just one linguistic school among many. Though numerous of Chomsky's cavillers and just as many of his followers have taken positions in specific linguistic or philosophical questions that go contrary to claims made by Chomsky, the publication of Syntactic Structures twenty years ago must be looked upon as revolutionary in a much more radical, much more profound way than is representative of other new linguistic ideas, including Saussure's Cours or the Prague theses. One has to go back to the New Grammarians of the 19th centuary to find something similar in the history of linguistics. This is a fact which must not be forgotten today when generative grammar has lost its reputation to a considerable degree.

It would be premature to try to explain the sudden rise and sudden decline of the intellectual empire of Massachusetts. We do not have the perspective. But it is not out of place for the contemporary scholar to speculate about the vices of his own time. It could possibly help him to get grip of himself so as to avoid mistakes so typical of the last two decades. That is why I think it is not out of place to read Syntactic Structures, the very motor of generative grammar, once more, and read it critically. As a matter of fact, Chomsky's ability in formulating platitudes as if they were precious gems, and his love for polemics seem to have concealed the intrinsic weakness of his theoretical writings. This is true of Syntactic Structures as well as subsequent writings. Thus Chomsky's critics, even the most skilful of them all - Coseriu (1975), have restricted themselves to discussing the theory in one or more of its revelations, but they have neglected to examine Chomsky's argumentation for proposing this theory at all. I will hereby try to show that such an examination ought to have been done long ago.

For the sake of discussion I am bound to accept Chomsky's modest demands concerning the formal properties of a linguistic theory. Otherwise the very idea is simply naive, the idea that a natural language could be exhaustively described by way of a device spelling out the possible strings of morphemes, which, in turn, are thought to explain the <u>structural</u> pro-

perties of the language in question. But even within this restricted frame-work Chomsky's evaluation of alternative grammars (devices of producing sequences of morphemes) does not hold.

The three alternatives of such grammars that Chomsky is able to propose, are a finite state grammar, a phrase structure grammar, and a transformational grammar, the last of which partly includes a phrase structure grammar. Chomsky's evaluation procedure is obviously chosen in such a way that it will select a priori among the three mentioned grammars in precisely the order bad, better, best. As a matter of fact, the evaluation procedure Chomsky claims to have been following is no real evaluation procedure in the sense defined by Chomsky himself. It is rather a decision procedure (see Chomsky, 1957, 51f.). This is a consequence of a very peculiar feature of the thinking of contemporary linguists: love for formalism and exactness combined with horror for consistency.

Chomsky's finite state grammar is a rather scanty copy of the so called Turing machine. But whatever the properties of the Turing machine, they must necessarily also be properties of a finite state grammar, even those Chomsky has chosen to omit. Thus a Turing machine is able to move both to the left and the right, and, consequently, the machine can erase what it has written at an earlier state. This is exactly what so-called deletion transformations are supposed to do. Accordingly, the finite state grammar is quite more efficient than Chomsky seems to believe.

Chomsky obviously underestimates his machine. But this detail should not bother us here. There is another oddity in Chomsky's reasoning which is far more disturbing. Chomsky extends his machine with closed loops, thus making it recursive. With this fact in mind it is hard to understand on what grounds he can disqualify the machine as a suitable device for generating strings of morphemes.

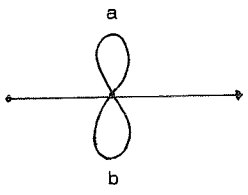
His argumentation runs as follows: given the general remark about English:

(1) English is not a finite state language

he states that "it is <u>impossible</u>, not just difficult, to construct a device of the type described above [. . .] which will produce all and only the grammatical sentences of English" (Chomsky 1957, 21).[1] The reason for this curious postulation is that there actually are sentences in English - sentences with embeddings - which, according to Chomsky, could not be adequately handled by a finite state grammar. Given languages containing just the two elements <u>a</u> and <u>b</u>, it would quite generally be impossible to

generate mirror image sentences of the type aa, bb, abba, baab, and so on, using this type of machine. And since embeddings in natural languages actually result in mirror image sentences, the same would be true of English. As a matter of fact, this "rough indication of the lines along which a rigorous proof of (1) can be given"[2] is utter nonsense. Sentences of the type mentioned can easily be produced by adding closed loops:

(2)




The device (2) will produce not only mirror image sentences but also sentences of the types ab, aabb, aaabbb and aa, bb, abab, aaaa, all of which are claimed by Chomsky not to be sentences of finite state languages. Chomsky's decision to reject finite state grammars as inefficient for describing at least one natural language is simply unfounded. Consequently, there are no reasons at all to prefer phrase structure grammars to the finite state grammar. In fact, Chomsky's phrase structure grammar is - to use a term that he later on became so fond of - nothing but a notational variant of a finite state grammar.

Observe that I will not claim that Chomsky's fragile finite state grammar or even a more elaborated machine would be superior to any other sort of sentence-generating device. My aim is only to demonstrate what kind of deficient argumentation is allowed to pass for genuine scientific work. What I say here does not imply that I find Chomsky deceitful in this specific case. I think he simply was ignorant. Rather to be blamed are we who once accepted this type of preposterous argumentation, we who became so impressed by Chomsky's stylistic abilities that we did not even suspect it to be fallacious.

The remarks made are serious. But they would not have been worth mentioning, if the positive argument for adopting a phrase structure grammar in favour of a finite state machine had not been quite as invalid and, furthermore, if the arguments for adding transformations to this kind of grammar in order to generate such structures, which are supposed to be impossible to form directly by the aid of phrase structure rules, had not been just as fallacious. Those facts are much more alarming, because Chom-

sky as far as concerns the formal properties of finite state machines is an amateur - just as the present author. But with regard to constituent analysis of syntactic chains Chomsky had already when formulating his theory a thorough linguistic education. Nevertheless his argumentation is just as amateurish.

Chomsky's starting point is traditional constituent analysis. There is of course no harm in that. But it is questionable to assert that this kind of analysis presupposes a certain kind of grammar[3] and, furthermore, that this sort of grammar would be essentially (italics in Chomsky's text - see Chomsky, 1957, 26) more powerful than the finite state model. Obviously Chomsky means that the proposed model has more descriptive power, which is true only to the extent that we accept arbitrary and technically unmotivated restrictions on the finite state model. Otherwise both models are equally powerful, as far as concerns the type of structures Chomsky discusses. But per se the finite state grammar - even without closed loops - is more powerful, since it does not presuppose an analysis brought about by way of binary partitions. This deficit of traditional IC analysis has crept into generative grammar and made it tremendously laborious. Actually, bipartition is a prerequisite for Chomsky's phrase structure grammar as well as for IC analysis. It cannot be removed. This is a deficit so embarrassing that any grammar with a phrase structure grammar of the type concerned as a base cannot gain explanatory power. It is bound to remain a clumsy descriptive device.

Now consider Chomsky's motivations for incorporating transformational rules. The main argument is that there are - at least in English - certain syntactic constructions that only clumsily or ad hoc can be formulated in a phrase structure grammar, i.e. be generated by rewriting rules of the form $X \longrightarrow Y$. Chomsky is somewhat vague on the point concerning the capacity of phrase structure grammars. On the one hand he seems to admit that this type of grammar could be made efficient enough by a more complex account of the notion of phrase structure than he proposes himself. On the other hand he explicitly tells us that certain types of linguistic constructions and elements cannot be handled within a grammar of phrase structure. And the reason for this vagueness is the same as in the case of his rejecting his finite state grammar: ignorance of the capacities of the model he has proposed himself.[4] It is quite possible to reformulate the model without significantly increasing its complexity in such a way that it could handle conjunctions - it is enough to add closed

loops. The difficulties with regard to auxiliaries are merely pretended: the elements ought to be ordered, there is no urgent need to have them fused into one rule. This solution is even intuitively to be preferred: a grammar of English has more of descriptive power if it can generate "am" in

(3) (a) I am hungry.
    (b) I am starving.

in one single rule. What regards the third argument – the relation between active and passive sentences – the reasoning is not only formally deficient, it is deceitful. Firstly, the phrase structure rules for passives are deliberately complicated in order to become exceedingly cumbersome for the given model. Secondly, the proposed grammatical relation between actives and passives has never been established but simply taken for granted. The fact that

(4) (a) John drinks wine.
    (b) Wine is drunk by John.

approximately render the same propositional content is rather a lexical fact and need not be stated in terms of a grammatical relation. The rule

(5) If $S_1$ is a grammatical sentence of the form
    $NP_1 - Aux - V - NP_2$,
    then the corresponding string of the form
    $NP_2 - Aux + be + en - V - by + NP_1$
    is also a grammatical sentence.

has just as much bearing as the following rule:

(6) If the proposition
    The pope is elected by the Roman curia.
    expresses a fact about the present world, then the corresponding proposition
    The king of Sweden inherits his dignity.
    also expresses a fact about the present world.

The very fact that an innovation – such as is the case with transformations – has not been properly motivated does, however, not imply that it would be useless in scientific work. True creative innovations are most often genuine hypotheses and cannot be motivated exclusively with regard to their postulated or factual advantage over competing theories. Further-

more, the truth or the efficiency of a certain theory does not per se depend upon standards of any kind. Standards such as simplicity or descriptive power are merely devices we use to assure that it be possible to examine the consistency of our theory. And our theory might very well turn out to be consistent, even if it has been stated by way of a fallacious argumentation. Thus, both the finite state grammar and the phrase structure grammar could possibly turn out to be consistent theories as such, even if they, in the form presented in Syntactic Structures, are not completely in accord with the object they are said to represent – natural language. Let us now suppose that the notion of constituent structure based upon constituent analysis really is consistent within the framework of phrase structure grammar. We shall then ask: is the notion of transformation consistent with the notion of constituent structure? If we find it is, we ought to abandon one or both of the notions with respect to Occam's razor. However, if it is not consistent in this sense, we should reject it as scientifically unsound and metaphysical.

Consider now Chomsky's informal definition of the notion of grammatical transformation:

(7) A grammatical transformation T operates on a given string (or [. . .] on a set of strings) with a given constituent structure and converts it into a new string with a new derived constituent structure.[5]

The notion of derived constituent structure is not properly defined in Syntactic Structures, but we find this general condition – there may be more – formulated on page 73:

(8) If X is a Z in the phrase structure grammar, and a string Y formed by a transformation is of the same structural form as X, the Y is also a Z.

This means that everything that can be recognized as, say, a PP in a transformed string, also is a PP in terms of a non-transformed string. This in turn must mean that a derived constituent structure is identical to an ordinary constituent structure except for the fact that it is generated through the application of a transformational rule. A transformed string thus corresponds to the same type of constituent tree as the non-transformed tree, and any constituent tree is by definition a graphic representation of what is essential for the determination of the phrase structure (constituent analysis) of the analyzed sentence. Consequently, also the transformed string must presuppose a set of ordered phrase struc-

ture rules, given definition (7), condition (8), and the general but false assumption made by Chomsky concerning the possibility of deriving grammars from constituent structure. That is: either a transformed string corresponds to a set of phrase structure rules or the notion of derived constituent structure is incompatible with the notion of constituent structure.

If the first alternative is true, then transformations ought to be abandoned with regard to the standards of descriptive power and simplicity. Transformations can under those circumstances do nothing that cannot be done directly by phrase structure rules derivable from the transformed string. This in turn means that transformations are totally redundant and, consequently, unnecessarily add to the complexity of the grammar. Customarily, generative grammarians seem to accept the first alternative; at least they claim that it principally should be possible to construct the constituent tree corresponding to the derived form (cf. discussions in Bach, 1964, and Ruwet, 1967). The phrase structure rules generating this type of derivation are, on the other hand, considered as non-existent. In fact, nobody has ever asked what they would be like. And no believer would ever ask, because he is not used to asking questions that could risk destroying his idea of the universe and force him to put his raison d'être in question. Unfortunately, I am not able to tell whether the notion of transformation is consistent to other critical notions of generative transformational grammar, notably the notion of constituent structure. I must leave the reader to judge for himself. But I can certainly state: the definition (7) of the notion of transformational rule is gua definition invalid, and it leads to unsurmountable difficulties with regard to the general frame-work of the grammatical theory in question.

Notes

1. A finite state language is by Chomsky defined as "any language that can be produced by a machine of this sort" [i.e. a Turing machine - T.P.]. See Chomsky (1957, 19).
2. See Chomsky (1957, 23).
3. The claim is nothing but a presumeably unconscious inductive syllogism, the inconsistency of which the Stoics already were aware. Moreover, the deductive way of reasoning Chomsky obviously believes himself to follow leads to a vicious circle. The truth is of course that there cannot be any restrictions put on the number of string generating devices. Any technique for analysis is just a technique. And as

such, a technique cannot tell us anything about the form of grammar underlying the analyzed sentences. It is the hypothetical grammar that presupposes the form of analysis, not the other way round.

4. Chomsky specifically claims that conjunctions and discontinuous morphemes could not be adequately handled within this model, which is said to be due to the fact that his machine cannot "look back" to earlier strings in the derivation. In reality his machine has the capacity of "looking forward" to the end result of the derivation, which makes any back-looking mechanism unnecessary. That is why it has been possible in the later development of transformational grammar to undo the results of transformations by way of filters and global constraints. Such devices are implicitly incorporated into the model already in Syntactic Structures.

5. See Chomsky (1957, 44).

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# THE SWEDISH PREPOSITIONS PÅ AND I FOLLOWED BY MEASURE PHRASES

Christer Platzack

1.

Among the different ways to express the duration of an event or action, Swedish can use the prepositions i and på followed by a measure phrase (MP). These adverbial phrases have different meanings. Thus, i x tid 'for x time' is used as an answer to the question "How long?", whereas på x tid 'in x time' answers the question "In how long time?" In this paper, I will take this difference of meaning as the starting point for an investigation of one of the meaning differences between the prepositions på and i. This investigation will show that it is no coincidence that we use MPs preceded by precisely the preposition i to express the first mentioned meaning, the preposition på to express the second one.

The adverbial phrases mentioned have different distributions. Thus, i x tid 'for x time' occurs in sentences like (1) and (2), where we cannot use på x tid 'in x time':

(1) Katten låg på mattan i 10 minuter
'The cat lay on the mat for 10 minutes'[1)]

(2) Kalle drog vagnen i 10 minuter
'Kalle pulled the cart for 10 minutes'

On the other hand, på x tid, but not i x tid, can be used in sentences like (3):

(3) Kalle skrev brevet på 10 minuter
'Kalle wrote the letter in 10 minutes'

The sentences (1)-(3) express different Aktionsarten. In the terminology of Vendler (1967), we have a State in (1), an Activity in (2), and an Accomplishment in (3). In each of these cases, what is described by the sentence has an extension in time, the duration of which is

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1) The Swedish examples are accompanied by more or less literal English translations.

expressed by the measure phrase of the adverbial.[2] However, (3) differs from (1) and (2) in one important respect: if we disregard the durational adverbials of (1)-(3), sentence (3) still expresses a temporally bounded event, whereas sentences (1) and (2) express states or events which are temporally unbounded. In these cases, the notion of a bounded state or event depends wholly on the adverbial.

In other words, the difference in use between the two adverbial expressions seems to be that på x tid must be attached to a temporally bounded concept, which is expressed whether or not we add the durational adverbial, whereas the addition of i x tid creates an interval of time, during which the state or event described by the verb takes place.

2.

The theoretical framework for this investigation is given in Jackendoff (1972, 1974, 1975, 1976). In these works, Jackendoff presents a linguistic theory where the level of semantic interpretation is related by a system of rules to the syntactic form of the language. We can distinguish three main phases in the process of interpreting semantic information:

a) Autonomous syntax: a phase during which deep structures are formed and transformed into surface structures. The deep structures are rather shallow; thus, for instance, active and passive sentences have different deep structures (cf Bresnan (1977)). According to the theory, all rules that are function-dependent are eliminated from the syntactic component.

b) Functional semantics: a phase during which the deep-structural representations are translated into semantic representations. The crucial part of this work is provided for in the lexicon. This contains a set of lexical functional structures, which provide a direct mapping between the logical argument structures of words and the syntactic patterns in which they appear.

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2) A closer account of these adverbials is given by Andersson (1977, chapter 2).

c) Symbolic-logical representation: a phase during which the semantic representations are translated into formal logic.

The phase of greatest interest to us here will be the second one. In his outline of this phase, Jackendoff (1976) makes a distinction between two different ways of combining semantic markers: restrictive modification and functional composition. Restrictive modification means that a semantic marker M1 is combined with another marker M2 to form a new marker M3 that picks out a more restricted class of referents than does M1. An example of this is the addition of an adjective to a noun. Given the semantic markers HORSE and RED (these representations in capital letters are intended as shorthand for sets of more primitive semantic markers), the meaning of red horse is represented as $\begin{bmatrix}\text{HORSE}\\ \text{RED}\end{bmatrix}$.

Functional composition is chiefly used in the description of verbs. These are analyzed as semantic functions, the arguments of which are filled with the semantic representations of the deep structure subject, object, adverbials of valency, etc. Jackendoff (1976) presents five semantic functions, two of which will interest us here. The following description is built partly on Jackendoff (1976), partly on Platzack (in preparation).

Verbs which describe the location of an object relative some other object are represented as $\text{BE}^{t}(x,y)$, where x is the located object, y the location, and t is a temporal marker, which represents an interval of time. This interval of time is further related to the moment of speech, as shown in Platzack (1976). Some examples of sentences analyzed with the BE-function are given in (4). Compare (1) above.

(4)a The cat lay on the mat — $\text{BE}^{t}$(THE CAT, THE MAT)

b The girl was angry — $\text{BE}^{t}$(THE GIRL, ANGRY)

Verbs which describe the movement of an object or substance from one place to another are represented as $\text{GO}^{t}(x,y,z)$, where x is the moving object, y the Source of the locomotion, and z the Goal of the locomotion. Consider the examples of (5), and compare with (3):

(5)a The boy walked from Lund to Malmoe $GO^{t}$(THE BOY,LUND,MALMOE)

b The boy grew fat $GO^{t}$(THE BOY,x,FAT)

The Source and the Goal are temporally related to t, the temporal marker of the GO-function. Thus, the function which represents (5)a expresses a) the presupposition that the boy is in Lund at a time before t, b) the assertion that the boy is passing over different places, which are neither Lund nor Malmoe, at a time interval which includes t, and c) the implication that the boy is in Malmoe at a time after t. For similar treatments, cf Fabricius-Hansen (1975, 23) and Dowty (1977, 48).

As we can see from the examples (4)b and (5)b, the theory presented is localistic in its approach, i.e., it adheres to the hypothesis that spatial expressions are more basic than various kinds of non-spatial expressions. Cf Lyons (1977, 718 ff) and the references given there. To distinguish between the various degrees of concreteness, Jackendoff introduces restrictive modifiers on the semantic functions. This is not relevant here.

In Platzack (in preparation), the different types of Aktionsarten are described within the theoretical framework outlined above. Elaborating a suggestion by Teleman (1969, 37), I introduce a restrictive modifier [±DIVIDUA], and attach it to the semantic marker GO. This modifier also distinguishes between uncountable and countable nouns. The GO-functions of (5) are considered [-DIVIDUA], whereas the GO-functions of (6) are considered [+DIVIDUA]:

(6)a The boy was running $GO^{t}_{[+\text{DIVIDUA}]}$(THE BOY, x, y)

b The boy grew fatter $GO^{t}_{\substack{[+\text{DIVIDUA}]\\[\text{FATTER}]}}$(THE BOY, x, y)

A GO-function marked [+DIVIDUA] has properties which partially differ from those of a GO-function marked [-DIVIDUA]. For instance, the function of (6)a just asserts that the boy passes over different places during an interval of time which includes t. Compare the properties of a GO-function marked [-DIVIDUA], mentioned above in connection with example (5).

Let me finish this theoretical section with an indication of

the relation between [±DIVIDUA]-marked GO-functions, and uncountable/countable nouns. The difference between (7)a and b is described as a difference between a GO-function marked [+DIVIDUA] in the case of (7)a, [-DIVIDUA] in the case of (7)b. This marking is a consequence of the presence of brev in (7)a, which is [+DIVIDUA], and brevet in (7)b, which is [-DIVIDUA]:

(7)a Kalle skrev brev
'Kalle wrote letters'

b Kalle skrev brevet
'Kalle wrote the letter'

For further information of these things, cf Platzack (in preparation).

3.

After this digression, we are at last in a position to return to our main theme, the description of i + MP and på + MP. Let us first notice that only i x tid can be combined with (7)a, only på x tid with (7)b. (The reader should notice that I will disregard iterativity and generic meanings altogether in this paper.) The difference between [±DIVIDUA] thus seems to play a crucial role for the distribution of these adverbials.

As noticed in connection with examples (2) and (3) above, adverbials of the type i x tid are found in sentences which express an activity, but not in sentences which express an accomplishment. This is just the opposite of what holds true for adverbials of the type på x tid. Now, consider the examples (5) and (6), where (5) expresses accomplishments and (6) activities (or processes). We can expand the Swedish equivalents of (5) with på x tid, and the Swedish equivalents of (6) with i x tid, but not the other way around. Furthermore, the examples of (5) have GO-functions marked [-DIVIDUA], the examples of (6) GO-functions marked [+DIVIDUA]. Thus, it seems to be a proper description to claim that på x tid demands a [-DIVIDUA]-marked GO-function, i x tid a [+DIVIDUA]-marked one, or a BE-function.

Jackendoff (1972, 69 ff) discusses the description of sentences with various kinds of adverbials. Adverbials of manner, time, and degree are dealt with on page 70 f. According to Jackendoff, the

semantic representation of such adverbials "can be attached as additional specification on the function corresponding to the verb, without changing the number or method of incorporation of strictly subcategorized arguments [...] The semantic structure can be represented roughly as $[^{f}_{ADV}](NP^{1},\ldots,NP^{n})$."

Thus, following Jackendoff, I will propose the following projection rules for i + MP and på + MP, rules which are considered triggered by the meaning of i and på, respectively:

a) When we have i + MP, the MP restrictively modifies a GO-function marked [+DIVIDUA], or a BE-function.
b) When we have på + MP, the MP restrictively modifies a GO-function marked [-DIVIDUA].[3]

Examples of the description of sentences with på + MP and i + MP are given in (8):

(8)a Pojken gick från Lund till Malmö på tre timmar
'The boy walked from Lund to Malmoe in three hours'

$$\begin{bmatrix} GO^{t} \\ -DIVIDUA \\ 3\ TIMMAR \end{bmatrix} (POJKEN, LUND, MALMÖ)$$

b Pojken blev tjockare i fyra månader
'The boy grew fatter for four months'

$$\begin{bmatrix} GO^{t} \\ +DIVIDUA \\ TJOCKARE \\ 4\ MÅNADER \end{bmatrix} (POJKEN, x, y)$$

Thus, (8)a asserts that the interval of time, during which the boy is passing over the distance between Lund and Malmoe, is 3 hours, whereas (8)b asserts that the interval of time during which the boy grew fatter is 4 months.

To be able to claim that it is no coincidence that i + MP and på + MP show different meanings and distributions, we have to prove that the differences found with regard to the use of these phrases as time adverbials show up when other uses are considered, too. If

3) Verkuyl (1976, 490) proposes a different projection rule for durational-measuring adverbials. However, as he does not give any real arguments for his position, and furthermore does not seem to be aware of the fact that Jackendoff has proposed a rule for these adverbials, I will leave his attempt out of account here.

we can do that, it should be possible for us to represent i and på in the lexicon in such a way that the lexical representations provide for the differences in behaviour.

Let us start with a look at adverbials of place, in this case adverbials which measure a distance. Consider the sentences of (9), where we have verbs of motion:

(9)a Han kröp {*på / i} 30 meter
'He crawled PREP 30 metres'

b De promenerade {*på / i} fem kilometer
'They walked PREP five kilometres'

Ordinary verbs of motion are represented as in (6), as long as the Source and the Goal are not mentioned. Thus, the GO-function is marked [+DIVIDUA], and the absence of any på + MP adverbial is just what we should expect, given the description above. On the other hand, the description allows for an adverbial with i + MP, and such adverbials are indeed found.

However, meanings similar to those of i + MP in (9) can be expressed by a construction Noun + på + MP:

(10)a Han kröp en sträcka på 30 meter
'He crawled a distance PREP 30 metres'

b De promenerade en sträcka på fem kilometer
'They walked a distance PREP five kilometres'

The phrase på + MP is here used as an attribute of [-DIVIDUA]-marked nouns. Thus, what was covered in the case of på x tid is here made overt: the expression på + MP presupposes the existence of a quantity to be measured.

The difference between i and på is obvious from these examples. The preposition på relates an MP to an overtly expressed countable noun, or to a covered (but existentially presupposed) conception of a quantity, and the whole construction is then related to the verb. On the other hand, i relates the MP directly to the verb, the meaning of which is delimited according to the meaning of MP.

Let us now turn to other cases where i/på + MP are used attributively. Due to our description, we should expect på + MP with countable nouns, i + MP with uncountable ones. This distribution

also turns up in (11) and (12):

(11)a ett belopp{*i / på} 30 kronor
'an amount PREP 30 crowns'

b en vätskemängd {*i / på} två liter
'an amount of liquid PREP two litres'

c en smörklump {*i / på} tolv gram
'a lump of butter PREP twelve grams'

(12)a Flygning{i / *på} tre timmar kan vara tröttande
'Flying PREP three hours can be tiring'

b Löpning{i / *på} femton kilometer är farligt för hälsan
'Running PREP fifteen kilometres is dangerous for the health'

c Arbete {i / *på} fem dagar är allt vad jag kan hoppas på
'Work PREP five days is all I can hope for'

Whereas the nouns of (11) are typical countables, and thus [-DIVIDUA], the nouns of (12) are used as uncountables, thus they are marked [+DIVIDUA]. Hence, the distribution of i + MP and på + MP adheres to the prediction.

The head nouns of (12), used in a [-DIVIDUA] sense, take attributes of the type på + MP, not i + MP, just as predicted:

(13)a Det var en flygning {*i / på} fem timmar till Rom
'There was a flight PREP five hours to Rome'

b Löpningen {*i / på} fem kilometer gick över myrmark
'The run PREP five kilometres passed over swampy ground'

As we can see from (12) and (13), the Swedish nouns flygning and löpning translate differently into English, depending on their use as [+DIVIDUA] or [-DIVIDUA].

However, Swedish can also use the derivatives flygande and löpande when the [+DIVIDUA] sense is aimed at. Loman (1962, 17) agrees with Noreen (1904, 449) that nouns like flygande have a durative sense, whereas nouns like flygning usually express something completed, individual. Thus, as expected, the forms on -ande are preferred

together with i + MP:

(14) Detta flygande {i / *på} tre timmar är tröttande
'This flying PREP three hours is tiring'

(15) Denna flygning {?i / på} tre timmar är tröttande
'This flight PREP three hours is tiring'

According to what I have said above, the noun flygande in (14) should be considered [+DIVIDUA]. At first sight, it could be surprising to find a noun of this type after a demonstrative pronoun. However, as Teleman (1969, 72) has shown, the noun after a demonstrative pronoun is often interpreted in such a way.

4.

In the examples considered thus far, we have seen that attributes with på + MP are attached to [-DIVIDUA]-marked nouns, attributes with i + MP to [+DIVIDUA]-marked nouns. This distribution is in line with the description proposed. However, the phrases i + MP and på + MP differ in other respects, which do not seem to have anything to do with the [±DIVIDUA] distinction. Consider the examples of (16) and (17):

(16) *Detta flygande är i tio minuter
'This flying is PREP ten minutes'

(17) Denna flygning är på tio minuter
'This flight is PREP ten minutes'

As we can see from (16), we cannot paraphrase detta flygande i tio minuter with a sentence where the prepositional phrase is used as a predicate complement to the verb vara 'be'. However, such a paraphrase is acceptable in the case of denna flygning på tre timmar, as can be seen from (17).

What is the reason for the distribution shown in (16) and (17)? Let us first notice that i tio minuter in (16) behaves like a manner adverbial: such adverbials cannot occur as predicate complements to nouns like flygande either, though they do occur as attributes:

(18)a *Detta flygande är {snabbt / långsamt}
'This flying is {fast / slow}'

b Detta {snabba / långsamma} flygande
'This {fast / slow} flying'

Other kinds of adverbials, which are not represented as restrictive modifiers of the semantic functions (consider Jackendoff (1972, chapter 3)), can be used as predicate complements:

(19) Detta flygande är {förfärligt / uppiggande}

'This flying is {dreadful / stimulating}'

This is not the place to try to give a complete answer to the question of why restrictive modifiers of the type discussed above cannot be used as predicate complements to a noun like flygande. To do so would entail a thorough description of the lexical relations between verbs and verbal nouns. However, I will point out an interesting fact in this connection, which should be taken into consideration when we try to give a unifying description of these relations. In his account of the Swedish adjectives, Noreen (1904, 511 ff) distinguishes two semantic classes, and these are called Classifying adjectives and Characterizing adjectives by Teleman (n.d., 76 ff). For instance, we have a classifying adjective in manligt arbete 'men's work', and a characterizing adjective in ett tungt arbete 'a hard job'. Classifying adjectives function as descriptions, which name some relatively permanent trait possessed by the entity under consideration. A significant change in the character of the entity will result if the description is altered. On the other hand, characterizing adjectives denote conditions in which an entity finds itself and which are subject to change without there being any essential alteration of the entity. According to this description, i + MP, used attributively, seems to be like the classifying adjectives, whereas på + MP is similar to the characterizing adjectives. This is further underlined by the fact that characterizing adjectives, but not classifying ones, can be used as predicative complements:

(20)a Arbetet var tungt
'The work was hard'

b *Arbetet var manligt
'The work was men's'

Thus, it seems to be the case that the MP of a i + MP construction is more intimately connected with the meaning of the modified concep-

tion than is the MP of a på + MP construction. This conception of intimacy seems to be a (latent) property of the preposition i also when it is followed by other types of phrases than MP. Consider, for instance, the following minimal pairs:

(21) a en staty i brons — en staty av brons
'a statue in bronze' 'a statue of bronze'

b stövlar i läder — stövlar av läder
'boots in leather' 'boots of leather'

(22) en lektion i engelska — en lektion på engelska
'a lesson in English' 'a lesson [given] in English'
='an English lesson'

In these cases, the PPs of the examples to the right can be used as predicate complements, whereas this is not the case with the PPs of the left column. The NPs of the i-constructions also seem to be more closely connected with their head words than the NPs of other constructions. Informally, the expressions en staty i brons, stövlar i läder, and en lektion i engelska can be explained through the notion of the complement of i and the modified concept together forming a dimensional unit, a dimensional whole, different from what each is separately. The complement of i and the modified concept together are seen as perpetually united.

The difference between the examples of the left and right column of (21) and (22) could be described as a difference in how the meaning of the complement of the preposition is connected with the meaning of the modified expression. Consider once again the examples of (21). Statues, as well as boots, are made out of something, i.e., the notion of making something out of a material plays a crucial role for the meaning of words like staty and stövlar. When such words are combined with i + NP, where NP represents some kind of material, the meaning of this NP amalgamates with the notion of material in the description of the modified word. This amalgamation is brought about by the meaning of i. On the other hand, when such words are combined with av + NP, where NP represents some kind of material, the NP just modifies the head word, it does not amalgamate with it.

If the NP of an i + NP construction does not represent a meaning which can amalgamate with a part of the meaning of the modified word,

we get a construction where i + NP can be used as a predicate complement:

(23) Statyn i parken — 'The statue in the park'
Statyn är i parken — 'The statue is in the park'

Thus, in such a case, i + NP behaves like a characterizing attribute, not as a classifying one.

A similar difference between classifying and characterizing attributes seems to be involved in a group of examples, where both i + MP and på + MP can be used attributively:

(24)a ett skådespel {i / på} fem akter
'a drama PREP five acts'

b ett epos {i / på} tolv sånger
'an epic PREP twelve books'

c ett uppslagsverk {i / på} tjugo band
'a dictionary PREP twenty volumes'

Notice that the cases with i behave like NPs with classifying adjectives, whereas the corresponding cases with på behave like NPs with characterizing adjectives:

(25)a Detta skådespel är {*i / på} tre akter
'This drama is PREP three acts'

b Eposet är {*i / på} tolv sånger
'The epic is PREP twelve books'

c Mitt uppslagsverk är {*i / på} tjugo band
'My dictionary is PREP twenty volumes'

The different behaviour of i + MP and på + MP in these cases should be expected, given the discussion above. The concepts of acts, books, and volumes are inherent properties of dramas, epics, and lexicons, respectively, and they are therefore apt to amalgamate with the meanings of their head words, given that they are attached to them with the preposition i.

I will end this survey with the mention of two more differences

between attributively used i + MP and på + MP. First, consider what happens if we pluralize the head noun:

(26) Två skådespel{?i / på} fem akter kan jag väl stå ut med

'Two dramas PREP five acts I probably can endure'

With på + MP, the interpretation will be that we are talking about two dramas, each of which has five acts. In the case of i + MP, the interpretation seems to be that the two dramas together have five acts. Consequently, we cannot extend the phrase i + MP with an expression which says that each of the dramas has five acts:

(27) Två skådespel{*i / på} fem akter var kan jag väl stå ut med

'Two dramas PREP five acts each I probably can endure'

Thus, the quantifier attached to the head noun seems to be included in the scope of the quantifier of the MP of the i-construction, whereas we have the opposite situation in the case of på + MP. I will not enter upon an attempt to explain this fact here, as such an attempt would presuppose a detailed study of the description of quantifier scope. Let me just mention that none of the 13 principles for regulating the correspondence between semantic and syntactic structure, presented by Andersson (1977, chapter 7), seems to be capable to account for the given facts.

Let us finally consider examples like (28):

(28)a Ett skådespel i fem akter, som var {långtråkigt / långtråkiga}

'A drama PREP five acts, which {was / were} boring'

b Ett skådespel på fem akter, som var {långtråkigt / *långtråkiga}

'A drama PREP five acts, which {was / were} boring'

As these examples indicate, a relative clause attached to a noun + på + MP construction cannot modify the MP, just the total NP. Such a restriction is not found with i + MP. A possible explanation could have something to do with the fact that the prepositions i and på exert different kinds of influence on their complements.

This difference is easy to discern when the complement is a concrete noun. Lindén (1918) points out that the use of på + NP seems to force us to view 3-dimensional NPs as 2-dimensional ones. We can compare examples like på byrån - i byrån 'on/in the drawer', på gräset - i gräset 'on/in the grass', etc. Also, compare the following discussion by Waugh (1975, 12):

> Just as meaning is a categorization or a classification imposed on extra-linguistic reality, so the various prepositions categorize and classify their object in different ways, even though the object may remain the same. Thus, although the table in à la table 'at the table', sur la table 'on the table', dans la table 'in the table' [...] etc. may objectively remain the same, it is viewed differently. The table as a table - i.e., in terms of its lexical meaning - will remain invariant; the lexical content is not changed. What changes is precisely our view of it, given the prepositional relationship into which it is integrated.

The complement of på seems to lack a dimension also in non-concrete cases. For instance, the word kronor 'crowns' in an example like (11)a, ett belopp på 30 kronor 'an amount of 30 crowns', is just considered as a unit of measurement. Thus, we cannot attach an adjective which qualifies kronor as a thing. Whereas blanka kronor 'bright crowns' is an acceptable NP, referring to the quality of some coins, we cannot say *ett belopp på 30 blanka kronor, where kronor refers to a unit of measurement.

Furthermore, we can expand the complements of på in many of the cases given in this paper with nouns which express extensions of some kind, whereas this usually is not possible with the complements of i. Consider the examples of (29):

(29)a Ett skådespel {*i / på} fem akters längd (Compare 24)

b Ett epos {*i / på} tolv sångers längd (Compare 24)

c Ett uppslagsverk {*i / på} tjugo volymers omfång (Compare 24)

d En vätskemängd på två liters rymd (Compare 11)

e En smörklump på 12 grams vikt (Compare 11)

f *Han kröp i 30 meters längd (Compare 9)

g Han kröp en sträcka på 30 meters längd (Compare 10)

The only exceptions seem to be the cases where the phrases with i and på have temporal meanings.

Examples like those of (28)b and (29) could be given an explanation if we assume that på forces us to disregard the full lexical meaning of its complement. The plausibility of this explanation is further underlined by examples like that of (30), collected from Pettersson (1976):

(30) Min gård är på 12 hektar, vilket är för lite för moderna maskiner
'My farm is PREP 12 hectare, which is too little for modern machines'

The relative pronoun vilken in this example does not agree in form with its correlate. According to Pettersson, this indicates that the correlate does not have its full meaning here. Thus, once again, we have an example of the change of view brought about by the preposition på.

5.

To sum up, it seems to be the case that the differences between durational adverbials like i x tid and på x tid are mirrored in other uses of i + MP and på + MP. I have argued for a description where the occurrence of i brings about a restrictive modification of a BE-function, or a GO-function marked [+DIVIDUA], by the MP, whereas the occurrence of på leads to a case where MP restrictively modifies a GO-function, marked [-DIVIDUA]. Furthermore, whereas the MP of a på-construction seems to be attached to the modified concept as a characterizing attribute, the MP of an i-construction seems to amalgamate with the modified concept to form a new entity; i.e., it functions as a classifying attribute.

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THE SIGN AND ITS SUBSTANCE

A coloured view

Sven Platzack

Contents: 1. the Model
2. the Laws

A simple model will be constructed and used for studying the relation between signs and their substances. The model consists of a system of discrete values ordered in signs, and a simple topological system defined by an ordering relation. These two systems are then connected by a primitive relation, denotation, for which a rule is given. In the second part, this model is used to formulate some tentative laws for human linguistic behaviour. (See for example Malmberg 1977.) No attempt will be made to prove these laws, they are just illustrated by some examples. The laws are thought to be universally valid - i.e. they describe any human linguistic behaviour whatsoever. They can consequently be refuted by examples from any language.

## 1. the Model

The model we are going to work with recieves its structure from the definitions. It is very simple - obviously too simple for a complete language description. But it can be used to formulate some laws about how a sign is related to its substance. The definitions are valid only for the constructed model. They are not an attempt to describe real language. They have no real content. Their only function is to give the model its structure.

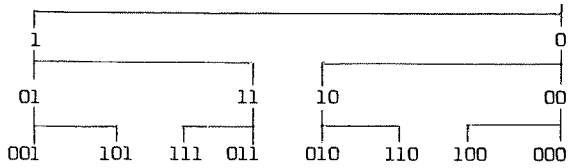
The concepts to be defined are: value, sign, language system, purport, to specify, to denote, substance; also, a rule is given.

We will use "=df" for 'is defined as'.

D1. value =df
1. an empty place is a value
2. if v is a value, then 1v and 0v are values
3. there are no other values than those you get by using 1. and 2..

i.e. if you have a value, you can get a new one by concatenating either of the marks "1" and "0" to the left of the value.

The values are generated in the following way:




and so on.

Values are symbolized with:

1. letters x, y, z, w, . . . , a, b, c, . . . , k, l, n, m, . . .
2. words horse, "horse", 'horse' (the word is normally thought of as a substitute for its value in the language)

D2. sign =df if x and y are values, then $\underline{\overset{x}{y}}$ is a sign.

A sign is composed of two values. For example: $\underline{\overset{0110}{11011}}$ is a sign. Sometimes we will use a word between ".." to symbolize the lower value in a sign, and the same word between '...' to symbolize the upper value. The whole sign is then symbolized by the word underlined, ____ . For example: horse is the sign $\underline{\overset{'horse'}{"horse"}}$ .

D3. a significative value =df a value in a sign

If we have a sign $\underline{\overset{x}{y}}$ , then the values x and y are significative.

D4. a language system =df a set of signs

So $\left\{\underline{\overset{x}{y}}, \underline{\overset{v}{u}}, \underline{\overset{y}{w}}, \underline{\overset{z}{u}}, \underline{\overset{a}{y}}, \underline{\overset{c}{e}}\right\}$ is a language system. A sign belongs to a language system, if and only if it belongs to this set.

D5. purport =df anything that can be structured (divided, articulated).

We will use figures (and sometimes words) to represent the purport. The figures will be such that it is possible to divide them. Below there are some examples of purports that will be used.

We will often use an area,  , as a purport. This area can be divided:  but if not, it is an undivided continuum.

The purport can be a "hilly" area:  an area with "mountains" and "valleys" - a three-dimensional area. This is also a continuum, but a continuum with potential "cuts" in it.

The purport can be a coloured area:

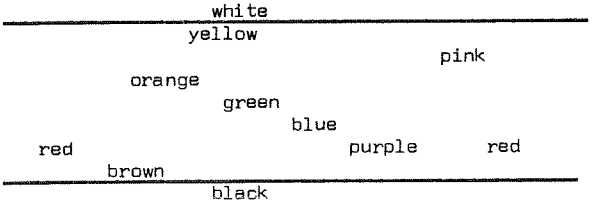
| violet | blue | green | yellow | orange | red |
|---|---|---|---|---|---|

(the readers are to replace the words with the spectrum), and any other area you can think of, because an area can easily be structured, divided.

The purport can be a line, _____ . It is easy to divide a line. The line can be curved,  , broken,  ,  , connected,  ,  ,  , or shaped in any other way - it is just as easily divided.

The purport can be a set. A set is easily divided in subsets.

A purport we will use several times, to illustrate different points, is a coloured area:




This is the three-dimensional colour solid projected on to a two-dimensional rectangle, by the omission of degrees of saturation. The neutral colour grey is not represented (Berlin and Kay, 1969, see Leech 1974). The words in the area are to be replaced with colours, in such a way that a continuum results.

Note: a purport is defined by its potentiality - it can be divided. It is not defined as amorphous, unstructured, or the like.

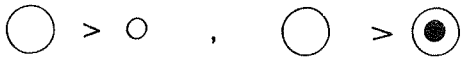
D6. to specify =df to divide a purport and select one of the parts thereby created.

We will use " > " for "to specify". Some examples:

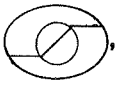
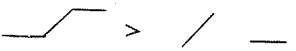
If the purport is a set, it is specified to any of its subsets - including the elements in the set (= the subsets with only one element).

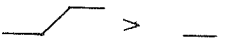
a set > a subset, a set > one of its elements

If the purport is a circle,  , and we divide it as  , then it can be specified either to the inner circle, or to the margin between the circles.

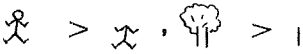
 (the inner circle is removed)

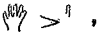
If the purport is a line,  , it can be specified to any part of this line: 

If the purport is a broken line,  , and this broken line is divided as  , then it can be specified as 

or as 

If the purport is an area,  , and this area is divided in parts:  then the purport can be specified to any of these parts. For example: 

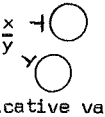
Other specifications:  (a tree> its trunk)

Sometimes we will use words for the purport. Then we have specifications as: a colour > yellow, a sound > a vowel, a human being > his soul, a human being > his body, a hand > a finger,  , an activity > its agent, an activity > its object, a thing > its attributes, a change > what was before.

D7. to denote =df to connect a significative value and a specified purport

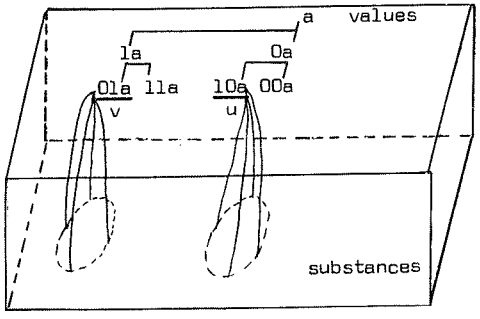
We will use " ⊣ " for "to denote". If x is a significative value, and z is a specified purport, then x ⊣ z, or z ⊢ x, is a denotation.

D8. z is a substance =df there is a denotation x ⊣ z.

i.e. a substance is a purport formed by, specified by, a significative value. To every sign, $\frac{x}{y}$ , there are two substances: 

In order to state which part of a purport a significative value denotes, we will use lines that connect the value with its substance: 

– the value x denotes the inner circle.




Let 'red' and "red" be two values, and $\overline{\overline{\text{'red'}}}$ a sign. Let the purport be the spectrum, a continuum: violet - blue - green - yellow - red - .

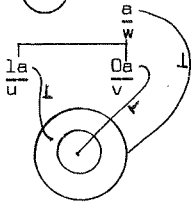
Then we have: $\overline{\overline{\text{'red'}}}$ - violet - blue - green - yellow- orange - (red) -

We will also need a connection between the inner structures of the values, and the relations between their substances.

R1. Rule: If k, nk, are significative values, and k → a, nk → c, then a > c.

(nk is the value obtained by concatenating n to a given value k)

For example: if $\frac{a}{u}$ , then $\frac{ca}{v}$




a denotes the whole circle,
1a denotes the margin,
and 0a denotes the inner circle

This rule means that we build into the model the fact that brown horses are a part of all horses, that poodles are a subset of all dogs, that to run fast is more specific than to run, that to go by car is more specific than to go, that . . . It is a severe restriction of the usefulness of the model.

Thereby the model is complete. We will now proceed to use it.

## 2. the Laws

The laws given below are thought to be universally valid. They allow of no exceptions. If there seem to be apparent counter-examples to some of the laws, as for example the phenomena pars pro toto to the law of specification, then these counter-examples will turn out to be no real counter-examples on a closer analysis.

### L1. The Law of Metaphor

A significative value can denote completely different substances.

You can use a word like warm about: a temperature, "It is warm in here.", a feeling, "He feels warm.", something that warms, "The coat is warm", something that is warm, "The water is warm.", a character, "a warm person", and so on.

A significative value does not denote a single substance, but picks out different substances in different purports. It is consequently not possible to describe the denotation by lists of value-substance assignments. You have to find the laws behind it - you have to find out how a given significative value picks a substance out of a given purport.

### L2. The law of Specification

If a significative value x denotes a substance s, $x \dashv s$, then it can also be used for an r, such that $s > r$. But x can not be used for an r, such that $s \leq e$.

i.e. it is possible to use a sign for a substance that is more general than the thing meant, but not vice versa. If the thing meant is the inner circle in  , and we have a significative value for the whole circle, then this value can be used also for the thing meant.  $> \bigcirc$

We can use animal for a horse, but we can't use horse for an arbitrary animal. the set of animals $>$ the set of horses. do can be used for 'to log', but not vice versa. Because 'do' denotes a more general substance than 'log' does. man can be used for a specific man, the man in the brown coat, but you can't use man in a brown coat for an arbitrary man. A phoneme that denotes a substance s can be used for an allophone r, if $s > r$. red can be used for carmine, but not vice versa.

L3. Corollary. The law of Substitution

If a language system has two signs $\underline{\underline{u}}^{ak}$ and $\underline{\underline{v}}^{k}$, then $\underline{\underline{v}}^{k}$ can be used as a substitute for $\underline{\underline{u}}^{ak}$, but not inversely.

This is a consequent of the law of specification and the rule R1.

man can be substituted for policeman, but not vice versa.

he can be substituted for the long man, but not vice versa.

do can replace log, dog can replace poodle, and so on.

L4. Corollary. The law of Pronominalization

If a language has pronouns, then the substances of those pronouns must be so general that they are easily specified to the thing meant.

he denotes more persons than the long man we saw yesterday does and can therefore be used instead of it. The more specific a pronoun is, the more difficult it will be to use it.

L5. Corollary. The law of Selectional Restriction

If two signs are so used, that one of them speaks about the substance of the other, then this sign must be easy to construe in such a way, that its substance is more general than the substance spoken about. If not, the language user perceives a violation against a selectional restriction, and will have difficulties in understanding the construction.

*The horse scattered. horse speaks about the substance that is scattered. But this substance is a set of individuals, while the horse denotes a single individual. a set of individuals $>$ a single individual. It is difficult to construe the horse so that it contains a set of individuals. We perceive a violation against a selectional restriction.

The Swedish bordsben, table-leg, is easier to construe than benbord, legtable, because a table $>$ its leg, and the first part of the compound word is used to speak about the substance of the second part. It is difficult to see what leg $>$ table refers to.

L6. The law of Completeness

Given a thing meant, there is always a sign in a language system, that can be used for the thing meant.

This law is a consequence of the law of specification, and that we try to

use the system we have. The law of Specification means that a limited system can be put to an unlimited use. We use our language to cover the whole purport.

You can speak about all colours in a language with four, eight, twelve, . . . colour words. What you can't do is separate the colours.

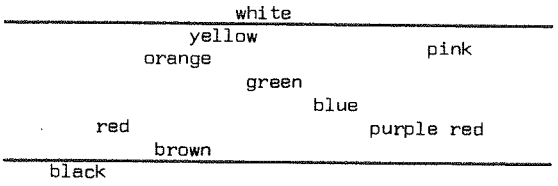
Say you want to speak about your father's mother. The English language lacks a word for this concept, which in Swedish would be rendered as farmor. But an Englishman can use grandmother to denote the person, in spite of the word's being too general. grandmother > father's mother.

L7. Corollary. The law of Expansion

*If a system is seen as an expansion of a simpler system, then the signs in the simpler system will change their denotation when we expand this system to the more complex one.*

If you have two language systems, $\left\{\frac{x}{y}, \frac{z}{w}, \ldots\right\}$ and $\left\{\frac{x}{y}, \frac{z}{w}, \ldots, \frac{a}{n}, \frac{c}{m}\right\}$, differing in that the first system lacks some signs that are contained in the second system, then the second system can be seen as an expansion of the first one. As both systems are complete, L6, they can be used to denote the same things. A consequence of this is that the signs $\frac{x}{y}, \frac{z}{w}, \ldots$ in the second system only denote a part of that which the same signs denote in the first system.

Let us have a look at how a colour system can be constructed out of simpler systems. The purport can be rendered as a coloured area:




The most simple language system has just two colour words:

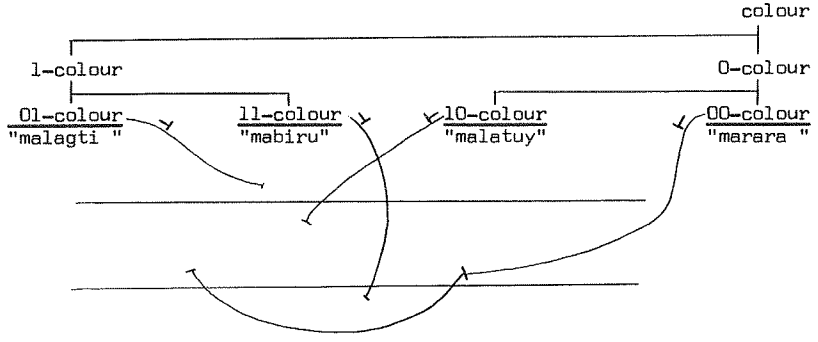
$$\underset{u}{\text{1-colour}}\ \underset{u}{\text{0-colour}} \cdot \underset{u}{\text{1-colour}} \succ \text{white, colourless (white and black)},$$

(colour)

$$\underset{v}{\text{0-colour}} \prec \text{red, coloured.}$$

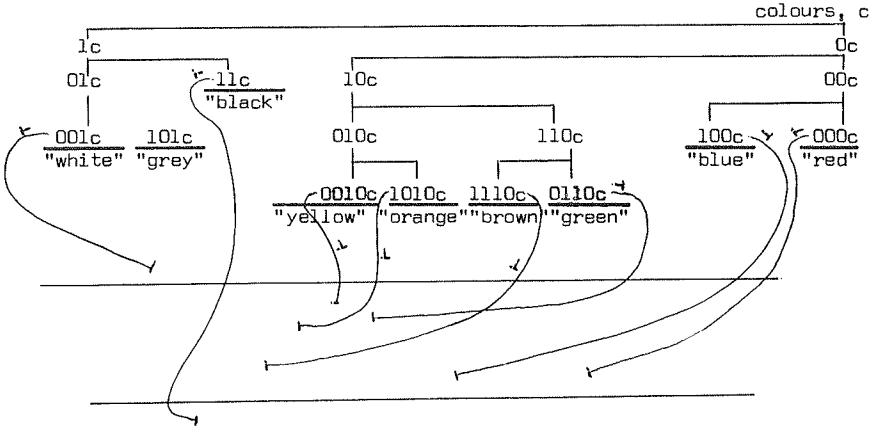
That is, the area is divided in two parts – a colourless part (white, grey, black), and a coloured part, "red".

This system may be augmented by dividing the colourless area into white and black, and the coloured area into red and yellow. The Philippine language of Hanunóo has this system:



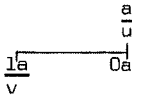

(i.e. 01-colour "malagti " = white, light tints of other colours, 11-colour "mabiru" = black, dark tints of other colours, 10-colour "malatuy" = yellow, light green, and light brown, 00-colour "marara?" = red, maroon, orange. [Leech 1974]). In order to make room for yellow, red has been divided. It is no longer the whole coloured area.

Tzeltal has a colour system with one more word in it. 10-colour has been divided into yellow and green, in 010-colour and 110-colour. yellow no longer covers the green area. Plains Tamil divides 00-colour into red and blue, Nez Perce divides 110-colour into green and brown. And so on. The English system is:

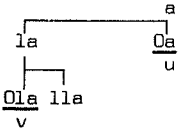


L8. Corollary. The law of Incomplete Systems

If there is no sign for a value, then another sign is used to denote what would have been denoted by the value if it had been significative.

In 


$\frac{a}{u}$ is used to denote, what a sign $\frac{0a}{y}$ should have denoted, had it existed.

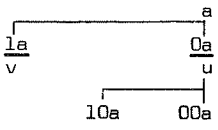
In 


one of the signs $\frac{01a}{v}$ and $\frac{0a}{u}$ must be used metaphorically to denote what a sign $\frac{11a}{y}$ should have denoted had it existed.

Every language system contains gaps, which have to be covered by the signs that exist. How a substance is divided by a language system depends on which expressed values there are in the system.

L9. Corollary. The law of Stepwise Construction

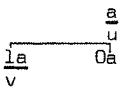
When a child learns a language system, he will step for step modify the system he has already learnt.



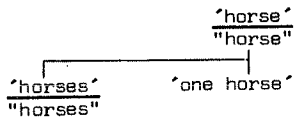

If the child learns a sign $\frac{10a}{w}$, then $\frac{0a}{u}$ will change its value to $\frac{00a}{u}$ as a consequence.

If a child uses dog for both dogs and horses, but learns to use horse to denote the horses, then he will as a consequence use dog only to denote dogs.

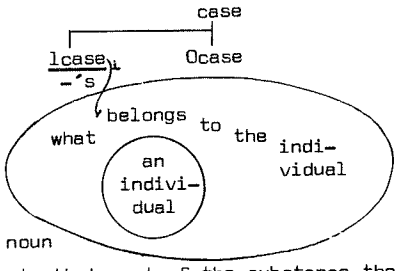
L10. Corollary. The law of Paradigm

If a language contains a paradigm like 


then $\frac{a}{u}$ will be used for that part of the substance that is not denoted with $\frac{1a}{v}$.




The existence of 'horses' "horses" in the language system is an indirect way to specify the substance of horse.



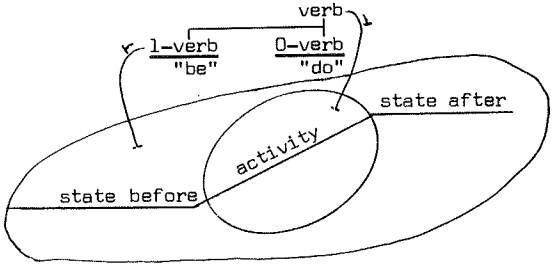

The base form of the noun will not be used to denote that part of the substance the genitive denotes.

L11. The law of Partition

If a language contains two signs $\frac{ak}{u}$ and $\frac{ck}{v}$, $a \neq c$, and if these two signs denote the substances y and z, $\frac{ak}{u} \rightarrow y$ and $\frac{ck}{v} \rightarrow z$, then $y \neq z$.

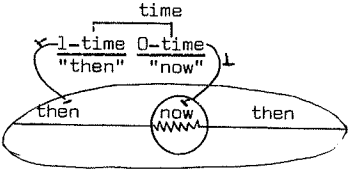
i.e. two signs in a paradigmatical relation to each other denote different substances when they are used in the same situation.

cat and dog are perceived as different animals, there is no animal that is both cat and dog. To walk is not to run, red is not yellow, long is not short, man is not woman, child is not adult, and so on.



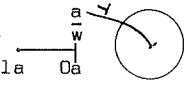
L12. Corollary. The law of Opposition

If there are two signs $\frac{\text{la}}{u}$ and $\frac{\text{Oa}}{v}$ in the language system, then they denote different substances.



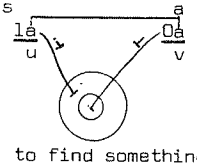

L13. Corollary. The law of Structuring

A language system is able to structure a purport.

If a language contains 

, then there is just one word for la and Oa, i.e. $\frac{\text{a}}{w}$.

The language does not force us to divide the substance of a.

If another language has 

, then it forces us to divide the substance of a in order to be able to use the two signs $\frac{\text{la}}{u}$ and $\frac{\text{Oa}}{v}$.

The language forces us to find something in the substance that divides it into two parts.

L14. The law of the Prototype

A denominated substance can in most cases be specified to a prototypical instance.

i. e. in most substances there is a part that is perceived as the most typical instance of the substance. There is an ideal substance. A substance  contains a prototype  .

A specific red colour is perceived as the most typical red colour, the prototypical redness. We have a platonic idea horse, a horse-prototype. We know what a bird looks like - and it is not much like an ostrich. We have a clear conception of what a democratic society looks like. It is a socie-

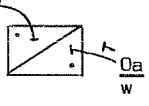
ty with a parliament, a capitalistic economy, newspapers owned by individuals, and so on. That is, a society like England, Sweden, USA, India, to a lesser degree like Mexico, Thailand, Brazil, and definitively not like the Soviet Union, Cuba, DDR.

The prototypical nouns are the names, the prototypical adjective stands for a quality, the prototypical verb for an activity, the prototypical adverb for a circumstance. The concrete nouns are the most typical nouns, more typical than the abstract nouns. Verbs for activities are more typical than verbs for states. In a syllable the prototypical part is the vowel. In a sentence it is the verb.

You can go through substance after substance and find a prototypical part of it. It is more difficult to find a substance without a prototype in it.

L15. The law of Maximal Contrast

> When a substance is divided by a language system, the prototype is taken as prototype for one of the parts, and a new prototype is created for the other part in such a way that the two prototypes are maximally apart.

If we have $\underline{\underline{a}}$  (the point marks the prototypical part for a) and divide it in $\underline{\underline{la}}$ and $\underline{\underline{Oa}}$, then $\underline{\underline{Oa}}$ has the same prototype as $\underline{\underline{a}}$, and a new prototype is created for $\underline{\underline{la}}$ in the opposite corner: $\underline{\underline{la}}$ 


In a coloured area

yellow
orange green
red brown blue red

the prototypical part is the red colour. If the area is divided, the new prototypical part is yellow, i.e. the colour most distant from the red colour.

In the system of vowels:

i y u
e o
a

the prototypical part is a.
The new prototypical part created in a division is i. That is, the vowel most distant from a.

L16. Corollary. The law of Hierarchy

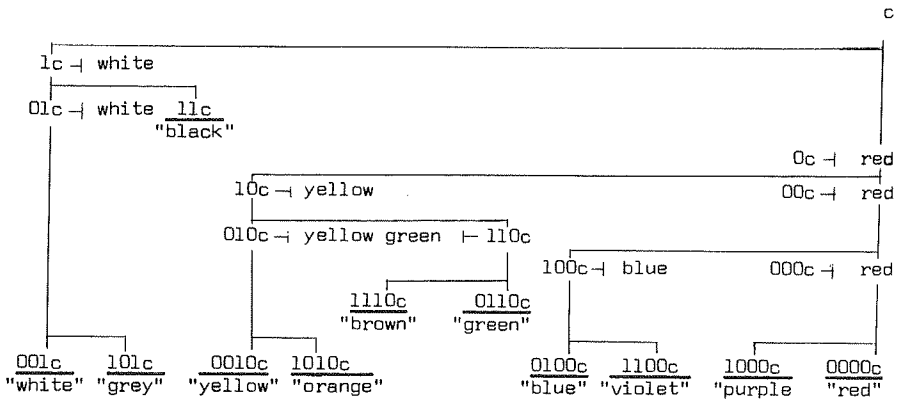
In many cases there is a natural order in which to divide a purport.

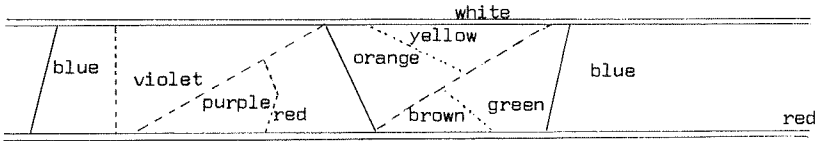
This is a consequence of the law of the Prototype, and the law of Maximal Contrast. As long as each division creates a prototype and a maximal contrast, there will be a natural order in which to divide the purport.

According to Berlin and Kay 1969 there is a natural order in which to divide the colours. Berlin and Kay's order is:

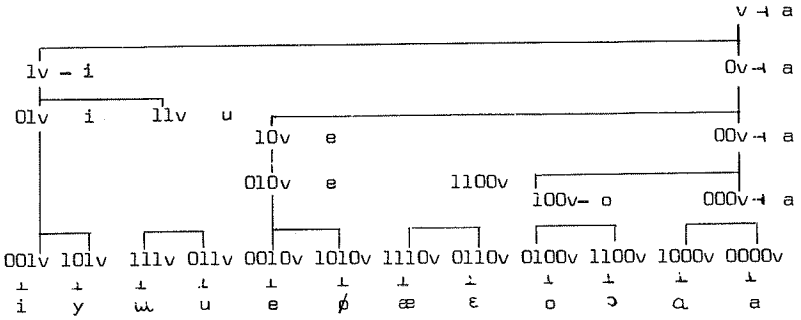
[white / black] ⟶ [red] ⟶ [green / yellow] ⟶ [blue] ⟶ [brown] ⟶ [purple / pink / orange / grey]

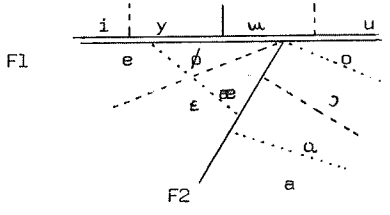
For any two colour categories [x] and [y], [x] ⟶ [y] means that if a language contains y, it must also contain x. See Leech 1974, p. 235. By using the law of the Prototype, and the law of Maximal contrast we arrive at the following value system: (the vertical order is Berlin and Kay's order)



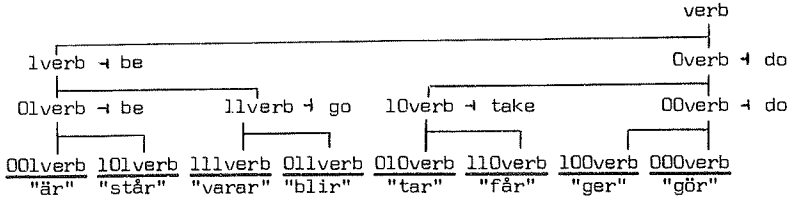



The same procedure applied to a vowel purport will give:




It is a little bit more difficult to apply the procedure to abstract systems, as the verbs:




or something like that. But there are better methods.

L17. The law of Value Likeness

It is sometimes possible, for some persons, to perceive a likeness between two different substances denoted by values that have the same place in their respective systems.

You can sometimes recognize values, in spite of their different substances. The perhaps most striking example of this is the photisms, auditions colorée. In hearing e some persons perceive a yellow colour, in hearing i a white colour, in hearing a a red colour, and so on:

| white | grey | black | yellow | orange | brown | green | blue | violet | purple | red |
|---|---|---|---|---|---|---|---|---|---|---|
| 001 | 101 | 11 | 0010 | 1010 | 1110 | 0110 | 0100 | 1100 | 1000 | 0000 |
| i | y | u | e | ø | æ | ɛ | o | ɔ | ɑ | a |

See for example Bos 1929, and references quoted there.

Most people are able to perceive a likeness between verbs and colours:

| är | står | varar | blir | tar | får | ger | gör |
|---|---|---|---|---|---|---|---|
| 001 | 101 | 111 | 011 | 010 | 110 | 100 | 000 |
| yellow | orange | brown | green | blue | violet | purple | red |

We have also sound symbolisms like yellow, in Swedish vit, blå, grön.

L18. Corollary. The law of Markedness

It is possible to perceive a likeness between 0a and 0c, 1a and 1c.

It is unnecessary to dwell upon the importance of this phenomena.

I have illustrated how the model can be used by giving some laws. It is easy to give more laws. But the reader can do that by himself.

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# LINGUISTIC ASPECTS OF BILINGUAL APHASIA

Barbara Prohovnik

## Introduction

The study of aphasia in bilinguals (here used to refer to people with command of more than one language) is of potential interest in discovering what bilingualism implies in terms of brain functioning, and what role is played by relations of cerebral dominance for language. Most of the discussion in this area has been devoted to comparisons in the rate and manner of dissolution and recovery of the patients' languages, and to speculations on possible factors contributing to differences found. In a comprehensive review of the literature Paradis (1977) has categorized the modes of recovery, summarized the hypotheses proposed to account for differential modes, discussed relevant studies on lateralization, and devoted considerable space to clarifying different conceptions of the possible types of bilingualism.

From the point of view of linguistic theory, there are at least two questions to be asked in the study of bilingual aphasia:

1) To what extent do structural differences among the languages of the bilingual contribute to differences in recovery patterns?

2) What does the study of aphasia in bilinguals tell us about the processing mechanisms underlying use of more than one language?

The first question has been raised by Goldstein (1948) and by Luria (1960), among others, and will be taken up in section 2. The second question will be the main topic of this paper. In order to try to provide a starting-point for answering this question, I have studied a number of individual case reports, with the aim of documenting the specific descriptions of the patients' linguistic performances. Many of the case reports are fragmentary, based on only a very short time post-trauma (less than one month), second-hand reports, or otherwise unreliable. In citing the literature I have only included those reports in which some descriptive mention of the patient's language appears, other than that he/she could or could not speak or comprehend a given language.

Linguistic relevance

The kinds of differences dealt with in most reports and reviews are global: The patient is reported to speak one language better than another language or not at all, or it is reported that he can or cannot comprehend one or more of the disturbed languages. Reports are almost always in terms of degrees of disturbance, according to the type of aphasia, so that the patient is seen as making more errors of a particular type in one language than in another. Only one patient (Albert and Obler, 1975, see below) has been reported as having different aphasic symptoms in one language than in another (Broca's aphasia for English, Wernicke's aphasia for Hebrew). If there are differences in aphasic patients' abilities to use their languages which are directly relatable to structural differences among the languages, these have not been described in sufficient detail to establish their existence (but see section 2). This is a central question, then: It may be the case that bilingual aphasics do not differ in any interesting linguistic way from healthy bilinguals or from monolingual aphasics.

The apparent lack of structurally related differences in bilingual aphasics may stem from different factors:

1) The closer the aphasic's disturbances are to the phonetic or the semantic level, the more general and universal the defects are likely to be, because of the dependence of these levels on common human characteristics - the auditory and articulatory apparatus and cognitive structures, which are assumed to be less closely related to the structures of particular languages than to properties of human beings in general.

2) Related to this is the fact that phonetic and semantic feature distortions may so affect the total output as to make it uninterpretable: On the one hand, comprehension of single lexical items may often be intact in agrammatic patients, but the effect of syntactic disturbances and phonological defects make the relative contribution of this kind of comprehension ability difficult to assess. On the other hand, a disturbance of sentence or word semantics may distort the assessment of an otherwise intact syntactic organization. These factors complicate the description of the patient's abilities, and therefore the comparison of them.

3) A third related factor is the lack of a uniform technique for describing the linguistic aspects of the disorders, and this is due on the one hand to the difficulties inherent in the aphasic disorders, but also

to the lack of agreement on the appropriate questions to ask and observations to make. This in turn is a consequence of our limited understanding of aphasia in general. Paradis (1977) rightly suggests that standardization of reports is essential for purposes of comparison, and that any report should include "at least the following information: Patient identification, age, sex, occupation, level of education; for each language, the age at which it was acquired, the way in which it was learned (at school, as a medium of instruction or as a second language, with direct or indirect method, from the environment with or without formal instruction and of what kind of instruction, whether reading or writing was learned and when), and the time until which it was used; the cause of the aphasia; a description of the aphasic symptoms and of the pattern of recovery; and, when available after autopsy or during surgery or from brain scans or other tests, the neuroanatomical findings". While this is already a monumental list of requisites for the clinician, it is still not enough for linguistic purposes, because the form and content of the description of aphasic symptoms is not specified. Until a uniform method for linguistic description is worked out, we may not be able to correctly assess whether or not observations about bilingual aphasics really have anything interesting to add to linguistic science. In the meantime, we can ask in what areas of linguistic performance interesting differences might be likely to be found; we can also speculate, for the time being, on the significance of negative results. This might help us in the future to ask linguistically more relevant questions.

## Specific problem areas

### 1. Phonological systems

One aphasic syndrome which affects phonological systems is that called phonetic disintegration (Alajouanine's term, cf. Shankweiler and Harris, 1972) or apraxia of speech (Darley). This is a phonological disturbance not due to dysarthria (impairment of the speech-producing musculature or its immediate ennervation), and it is characterized by great variation and unpredictability of occurrence of segmental errors. Consonants are most affected, particularly fricatives, affricates and some consonant clusters, more than vowels. Lack of evidence to the contrary, and the feature-based nature of this disorder suggests that it affects all languages equally.

The emphasis by structural phonemicists on the language-particularity of phonemes does not seem to be supported by reports on bilingual aphasics. I have seen no reports of a particular phoneme being "lost" in one language while a corresponding one is preserved in another. Minkowski (1964) reports difficulties with a particular phoneme (/r/ and /r/-combinations); he does not note that this is particular to any of the patient's languages, and since it is unusual for the ability to use a single phoneme to be disrupted, it may be that this patient had premorbid difficulties with this particular sound, or that other segments were not as saliently distorted. Luria (1977) bases his analysis of Wernicke's aphasia on an inability to interpret speech phonemically (but see Blumstein, Baker & Goodglass, 1977); if the phonemic system of each language were as particular to it as he suggests, we would expect that there might be some differences among languages for (mild) Wernicke's aphasics, but this does not seem to be the case.

As to generative analyses of dialect differences related to rule-ordering differences, aphasic disturbances seem to be so gross as to disallow the possibility of testing potential correlates of these features of the grammar. On the other hand, there is a syndrome related to prosodic organization which may be related to this problem, called the "foreign accent" syndrome. Monrad-Krohn reports on a Norwegian woman whose language problem consisted of a foreign, German-sounding accent, which caused her considerable anguish in Nazi-occupied Norway, and which she could not control. Whitaker (Leeds, 1975) has reported on several similar cases, referred to the Mayo clinic because of their involuntary "foreign accents". This problem is not directly related to aphasia in bilinguals, however, as these patients were monolinguals, and the nature of the prosodic factors contributing to the "foreign accent" has not been extensively described. Prosodic interference has been reported, however, in bilingual aphasics. Ovcharova (cited in Paradis, p. 77) reported on a patient who spoke Bulgarian with a Turkish accent. Stengel and Zelmanovicz (1934) - one of the most carefully documented reports in the literature - report on a patient with severe dysarthric, together with aphasic disturbances. The patient's speech was extremely difficult to reproduce graphically, due to the dysarthric disturbances, and difficult to interpret because of the degree of mixture of Czeck and German, lexically, morphologically and even at the syllable level. Paraphasic and agrammatic symptoms were impossible to attribute to one language, and this extended to the "Sprach-

melodie, in der die Worte und Sätze produziert wurden". This report has often been cited as indicating that Czeck intonation was used for German sentences, but as far as I can see, German intonation patterns were reported to be used for Czeck utterances as well. This seems to indicate a relative independence of the prosodic pattern of intonation relative to the segmental or lexical content. Another patient, reported on by Albert and Obler (1975), spoke a fluent paragrammatic Hebrew "with a smattering of Humgarian", and interference from English, while she was reported to be non-fluent and agrammatic when speaking English. It is unfortunate that this patient's speech was not recorded on tape, not only because it was unique, but because it would have provided a possibility of comparing what seemed to be opposing prosodic disturbances for the two languages. In English, the patient produced no spontaneous speech, and her output was described as hesitant and effortful, whereas in Hebrew such a "press of speech" was found that the investigator had to interrupt her. What prosodic influence did the "smattering" of (native) Hungarian have on the paragrammatic Hebrew speech?

The general clinical impression of most fluent aphasic speech, even almost totally unintelligible jargon, is that the intonational structure of the patient's utterances is relatively - and sometimes quite strikingly - intact. Can clear differences in the intonation of jargon-producing bilingual patients be discerned? These and other reports on different "accents" need to be much more carefully documented. Identifying particular accents is difficult even for the trained observer, and unless they are supplemented by objective phonetic description, reports may reflect more about the observer's previous experience and expectations than the actual phonetic output (Bannert, personal communication). There has been some interest in a possible bilateral representation for prosodic features (cf. van Lancker, 1972); if the right hemisphere is involved in the preservation of seemingly adequate intonational structure, is this language-specific? Preservation of word-level prosody has been noted by Hécaen et al. (1966) whose French-Vietnamese speaking patient - reported as a "crossed" aphasic, that is, right-handed and right-dominant for language - was found to have retained all six Vietnamese tones, although the method for testing this was not stated. At the sentence level, this patient's speech was reportedly relatively fluent in Vietnamese, but with many hesitations and self-corrections, while in French they report that speech was not fluent, difficult, with many breaks and repetitions of syllables. It is not

clear exactly what the differences were, in that the fluent Vietnamese was characterized as having so many breaks; it may be that the differences were more due to segmental timing difficulties in French, giving an impression of greater fluency in the native language, or, the preservation of tones in Vietnamese may have contributed to the impression of fluency. Here is certainly a need for precise phonetic description. Voinescu et al. (1977) also report a correct "speech flow" despite breaking off because of word-finding and phonetic difficulties; they note that there was no abnormality for "primary accent" [sentence-stress ?]. Their patient apparently had correct syllable stress in all four of his languages, which included Greek, Romanian, Russian and German, as well as correct "syntagmatic correlation and grammar usage". This is one of the few (perhaps the only) studies in which an objective measure related to fluency was attempted: They checked response time per total number of words spoken (in a structured interview) and on this basis did not find any differences in fluency among the languages. The percentage of word-finding stops was similar for all the languages, as was the reduced communicative content of the speech.

To summarize, one phonological area in which there seems to be some possibility of establishing structure-related differences among the languages of aphasic bilinguals is prosody. On the whole, however, the evidence seems to indicate that the difficulties which appear, even when there is differential recovery, appear for all languages in a similar manner, except when one language has features (tones, particular phonemes) that another lacks, and these are preserved. If this is true, this means that established phonological systems are, in processing terms, the same.

## 2. Writing systems

Although not directly related to language-specific processing mechanisms, differences in the use and accessibility of different types of writing systems can cometimes be an indicator of the nature of the linguistic impairment. Where the languages of the patient are represented in radically differing types of script, as in the case of Lyman, Kwan & Chao's (1938) patient who spoke Chinese and English, differences in the (in)ability to use one or another type of script may be related to the type of aphasia: One type of script makes demands on one kind of processing to a greater extent than another. This patient had a left parieto-occipital tumor,

which was removed, and his difficulties were limited mostly to writing and reading. In English, when the patient could not recognize the whole word at one try, he frequently spelled out the word, and could then retrieve the whole. For Chinese, the disturbance was greater, and the possibility of spelling out as a strategy was not available. During recovery, the patient began to make some use of drawing the Chinese characters in the air, which often helped him to recognize the form of the word. In this case, where the problem was one of visual interpretation of linguistic units, a language-specific difference was clear, but this was a question of the phonological basis of the English alphabetic system of representation as opposed to the non-phonetic, morphological representation of Chinese representation. There were no differences in speech processing.

These differences are related to the reports of differing ability among (monolingual) aphasic patients in using the phonetic-based (katakana and hirogana) Japanese writing systems, as opposed to the "ideographic" kanji system (cf. Sasanuma and Fujimura, 1973; Sasanuma, 1977). That the differences in ability to use one or the other system are related to the degree of disturbance in phonological processing in general, as opposed to differences in the internal representation of a particular language, is shown by the case of Watamori and Sasanuma (1976), a bilingual (English-Japanese) patient, who "initially manifested equally severe impairment in both English and Japanese involving all language modalities with moderate impairment of reading and auditory comprehension and severe impairment of oral production and writing". Therapy was conducted in English (in Japan): "auditory and reading comprehension improved almost simultaneously in both English and Japanese. In contrast, oral language production and writing abilities improved markedly only for the treated language (English)". The differences in writing performance may be ascribed on the one hand to the therapy conditions, but also are related to the mode of representation: At first, the patient produced correct, but meaningless kana (phonetic-based) symbols; after nine months, the patient began to be able to write kanji symbols in response to pictures, and these too were correct in form but not appropriate in meaning. After 14 months, the patient began to write the correct forms. Differences in oral production were almost certainly due to the effect of therapy as the recovery of phonemes was parallel for both languages (despite their different phonological structure) and clearly related to monolingual recovery patterns.

Perhaps the most famous case of differences among languages in terms of reading ability alone is that of Hinshelwood, 1902, who believed in separate anatomical storage for different languages. His patient was primarily alexic (in English), with some deficit in auditory comprehension. Surprisingly, the patient could read Greek with no difficulty, Latin with slight difficulty, and French worse than Latin but still better than English. (He also read musical notes as fluently as before.) In spontaneous speech in English, word-finding difficulties were noted. After three months there was marked improvement in his reading, and in his speech: "Sometimes he spoke very fluently, but now and again he was at a loss for the proper word". Unfortunately, only reading aloud was tested for the languages other than English; there is no mention of whether auditory comprehension, writing, or reading comprehension was differentially disturbed in the various languages, nor is there any report on differences in speaking.

Luria also reports on a similar case involving ability to write French and Russian, and this is a reason for his suggesting that structural differences may play a role in recovery (Luria 1960).

### 3. Morphology and syntax

It is in these areas that we would expect to find the linguistically most interesting differences. Unfortunately, it is also here the linguistic analysis of the patient's deficits are most difficult to document.

Because of the complexity of the morphological and syntactic systems, it is particularly important that objective measures be developed. One danger is that the clinician's hypotheses about the reasons for the disturbances in the different languages may bias what he hears, and consequently what he reports. The unusual facts (from a linguistic point of view) noted by Krapf (1957) may be a case in point: Krapf's report deals with psychiatric factors in bilingual aphasic recovery. His first patient was reported to have a "grave reduction" of English (his first language) during the first few weeks, especially during the visits of his domineering mother. When English began to be recovered, Krapf noted a general preference for words of Latin origin rather than those of Saxon origin, and he reports that the patient "had a much greater difficulty in finding those words in Spanish [second language] which have feminine gender than those with masculine gender". About his second patient, Krapf makes the following remarks:

> he was manifestly incapable of finding words in Spanish [second language, learned when he began a new life in South American at age 50] when speaking with his wife or the nurses and when speaking on subjects of 'primary vital necessity'. He was moreover almost equally aphasic for German [first language] when conversing with the physician or with other men and when the conversation touched on more general and abstract themes. When he was put in a situation which required him to communicate with his wife and his physician at the same time, he became frankly anguished, with a great motoric disquiet and copious sweating and became in these two languages so paraphasic that it was almost impossible to make out what he wanted to say. In this situation, the grammatical structure of his language remained completely latin, even when he was using germanic words, which contrasted clearly with his manner of speaking when he was alone with his wife. [emphasis added]

Krapf's psychoanalytic orientation and his belief in a regression theory of aphasia need not have distorted his observations of his patients' linguistic performance; on the contrary, his unusual point of view could be useful in drawing to attention facts which might otherwise be overlooked. The problem is that in absence of any examples, we have no way of independently judging the linguistic validity of the observations, in particular, of interpreting what was meant by "latin grammatical structure", and in establishing the accuracy of the observation regarding gender. It may also be asked how much of the second patient's difficulties with words of "primary vital necessity" were due to the facts that the patient was 50 years old when he began to learn Spanish and that he used primarily German, rather than Spanish, in his home. Similarly, it has been reported that monolingual aphasics have more difficulty with abstract, especially non-picturable words than with concrete, picturable ones (Gardner & Zurif, 1975; Richardson, 1975; Goodglass, Hyde & Blumstein, 1969), and it may be that conversations with the physician (in German) were more likely to show this difference than conversation with the nurses.

The so-called "telegram style" speech of agrammatic patients has been reported in many languages, and seems to be related more to the nature of the impairment than to specific languages. Indeed, the fact that the "telegram-style" characteristic of patients with anterior lesions has been described by French, German, Italian, Russian, Swedish, and English-speaking neurologists, among others, testifies to its universality. One impor-

tant question relates to several studies of the rate and order of recovery of specific grammatical morphemes: Studies of this kind have been done in English (cf. Goodglass, 1976, for a review), and it is likely that similar studies for monolinguals of other languages would give comparable results. No systematic study of this kind has been done for bilingual aphasics.

Mixing of words and inflections of different languages has been reported in several instances (cf. Paradis, p. 77-78 for review), in speaking, repetition tasks, and in writing. Of the 16 cases cited by Paradis, (including one deaf-mute reported by Leischner, who mixed in writing), I have studied 13, and none of these give enough documentation to make any systematic study. Of interest, however, is the fact that, according to L'Hermitte et al., interference is rare in predominantly expressive patients. This is corroborated by Paradis' summary: Of the 16 cases cited, one is diagnosed as motor aphasia with alexia and agraphia (Minkowski 1927 - mixed German words and phrases with Swiss dialect; this patient spoke only agrammatic German for the first five months, and it was only after more than a year that Swiss-German began to be as good as German, at which time the interference gradually disappeared), a second as motor aphasia (Weisenburg & McBride, 1935), a third also as motor aphasia (Stengel & Zalmanowicz, 1933 - this patient also had considerable anomia, see above) and a fourth with motor aphasia (L' Hermitte et al. 1966 - the interference here was limited to the temporary "disappearance of the spesific prosody of Hungarian" related to agrammatism).

But it must be noted that whether there actually is a predominance of mixing of language elements in non-anterior, as opposed to predominantly Broca-type patients, cannot be determined on the basis of this data alone: At first glance, it would seem that the predominantly motor (anterior) aphasics make up roughly a third of all the cases reported. But, as Paradis has pointed out these numbers are in fact meaningless, because the classifications used are not at all uniform, and because so many cases were reported only because of their unusualness.

An unusual case is that of Ovcharova (1968, cited by Paradis)

> whose spoken Turkish [first language] was almost unimpaired but who spoke Bulgarian with a Turkish accent and used Turkish word order and grammatical structures. Moreover, this patient often replaced Bulgarian with Turkish phrases. Interestingly, whereas in the patient's spoken language, interference was undirectional, in his written lan-

> guage, interference was reciprocal. He would substitute some Bulgarian (Cyrillic) letters in his Turkish writing, which was the more impaired. (Paradis, p. 77)

There are some apparent differences between the morphological and syntactic levels: Minkowski=(1964) reports that in German (first language) for his patient (a professor of psychology in South America) "Vocabulary and grammatical forms were satisfactory but more or less reduced, particularly for a man of his high culture" and that syntax was "almost normal" in German but very defective in Spanish and French. Here again, lack of examples makes this finding difficult to interpret. Word-finding was defective in all the languages, but moreso in the latter two, although naming of objects was not apparently very different. There were no problems in reading aloud or silently in German or Spanish. Voinescu et al. (1977) report that gender, number, case, tense, person endings were almost constantly correct and free of interference, (Greek, Romanian, Russian, German), whereas word order was normal with the exception that the patient sometimes used Romanian-like structures in German. Different correct forms for negation were used in all four languages. In cases where there is interference at the morphological level, this is not generally true of the syntactic level (e.g., Stengel & Zalmanowicz, 1933) but this observation is misleading, because the syntactic level is so disturbed as to make comparison impossible.

4. Semantic organization

Differences among the languages of the bilingual aphasic in word-finding are among the most commonly cited. This is not so surprising, since inability to find a word is one of the easiest deficits to notice and to describe, and since word-finding difficulties are often found in connection with most kinds of aphasic disorders, to some degree. There are different types of word-finding difficulties, however. Benson (1977) has outlined five different forms of anomia: 1) word production anomia: The patient seems to know the word, but not be able to initiate its production, or the patient seems to know about the word, but not to have its phonological form accessible, 2) word selection anomia ("brain dictionary anomia"): The patient can often describe the function of the referent, may use the name in circumlocution, and can often point to objects he/she can't name, 3) semantic anomia: The patient does not usually give a functional descrip-

tion, and does badly on recognizing objects named by the experimenter, 4) category specific anomia: e.g., for colors, body parts, hospital or illness-related terms - the patient may lack names in a specific category or be better in a certain category than in general, 5) modality specific anomia, where naming difficulties are related to a specific modality (tactile, visual, auditory, etc.) which is not often classified as aphasic. More research specifically directed to differences in these terms among the languages of bilingual aphasics might yield a source of data relevant to the compound/coordinate/subordinate distinctions. Smirnov & Faktorovich (1949) report on a patient with differential recovery, who after two years named objects "easily in Russian and quite satisfactorily speaks this language". There were apparently "no traces of sensory or amnesic aphasia" at this time for Russian. In Turkmenian, however, the patient "struggles to name". Promoting did not help, and the patient repeated incorrectly. Ladinsky and Mracek (1958) report use of different strategies for different languages: When speaking Bulgarian and Greek, (his first languages) he used Czech ($L_3$) for words he couldn't produce, but when speaking Czech he used circumlocutions.

It should be noted that there can be discrepancies between the patient's ability to name objects ("confrontation naming"), his ability to recognize correct names and reject false cues, and the presence or lack of word-finding difficulties in spontaneous and evoked speech. One of the ingenious tests for recognition ability was developed by Pitres (1895) and his coworkers. Their patient apparently had no comprehension at all of his premorbid languages, except for some French words. They presented him with cards on which were printed the names of several referents, in the different languages he knew. After some time, the patient noticed that the same concepts appeared in different languages and was able to divide the cards into appropriate groups; after a few weeks of training he was able to read the words which, prior to this test, he had not been able to do.

## Conclusion

While very little can be concluded on the basis of the evidence so far collected on aphasia in bilinguals, several important questions can be raised for future research.

1) Until there is evidence to the contrary, the negative data suggest that when established phonological systems are disrupted, the disrup-

tion affects all available languages in the same way. If a language's phonological system is in one respect inherently more difficult for an aphasic (allows more consonant clustering in syllable structure, for example), then in absolute terms we might expect slightly more simplification in that language than in another, when the patient has a phonological disturbance, but we would not expect different segments to be difficult in different languages.

2) While at first glance we might expect more highly inflectional languages to be more affected by agrammatic disturbances than less highly inflected ones, it appears that the information-load on these grammatical markers is similar whether they are morphologically bound or not. Testing for both comprehension and production is needed to establish this.

3) If it is true that mixing of language units occurs more frequently in patients with posterior lesions (although not exclusively, and see Paradis (1977) for discussion of the related problem of switching), to what should this be attributed? Might this have to do with language structure or with a reduction in the posterior aphasic's ability to attend to the internal structure of his utterances?

4) No studies have documented the use of word order in bilingual aphasics. Is SVO the most preferred order? Some differences have been reported among different kinds of aphasics according to the percentage of subject and object deletions, insertion of superfluous lexical material, and the use of pronouns. Are there language-related differences? (Tsvetkova & Glozman, 1975)

5) Finally, there is a need for testing the effects of different distortions in the output of aphasics - particularly, but not only in the area of prosody - on what investigators "hear". Aphasic speech, like the speech of very young children or foreigners is not only often difficult to interpret, but may also become easier with practice. Even with objective standardized tests, the results may depend in part on how much time the investigator has been able to spend on listening to the particular patient - and in the case of the bilingual aphasic in particular, on how native-like the investigator's competence is in the languages tested. A particularly fluent second-language speaker may suffer considerable loss in comprehension in the presence of noise, as compared to a non-native. Data on the observer should be reported in studies of bilingual aphasics.

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# THE CONCEPT OF SEMILINGUALISM

Christopher Stroud

## Introduction

Hansegård (1968) presents a hypothesis that in particular bilingual language learning situations, some individuals will fail to attain a necessary minimal linguistic competence and that this state has adverse consequences for their total intellectual and emotional development. A new term coined for this state is semilingualism.

The purpose of this paper is to elucidate a number of points, the understanding of which is a necessary prerequisite for any deeper discussion of Hansegård's hypothesis. The points under discussion concern the concept of semilingualism, the theoretical presuppositions of the concept, argumentative technique, and scientific method used to establish the concept.

There are a number of reasons for carrying out a theoretical study of this type, rather than trying to find empirical evidence that substantiate or refute the hypothesis. One reason is that there is very little examination of the theoretical assumptions underlying the concept of semilingualism in the literature. As we shall see, it is a very complex concept that can be researched on several different levels, and it is obviously desirable to keep these complexities in mind when using it. The concept of semilingualism is also interesting from the point of view of bilingual research as such. In this context it can be seen as a logical extension of the research paradigm as such, in that it depends upon the conceptual framework and methods of reasoning of traditional bilingual research to solve one of its classical problems - that of the relationship of bilingualism to cognition. Another reason for a theoretical study of semilingualism is the widespread applicability the concept has had, with consequences both in the fields of immigrant language problems and second language learning in general.

Naturally, I cannot go into any one of these subjects in very great depth in an essay of such limited scope as this. It is best to view this essay as a programme for a larger project of research, rather than an answer to any of the questions it poses.

Points of critique

Various types and degrees of criticism can be levelled against the present concept of semilingualism. From a scientific point of view it may be illuminating to consider the following points:

a) Clarity of the concept, i.e. what is involved in the concept? Is it one concept or many?

b) Questions pertaining to the theoretical presuppositions of the concept. By theoretical presuppositions I have in mind the relationship between language and thought, the conception of the language learner and the language learning task, and the general research paradigm within which it is possible to formulate such a concept.

The strongest type of criticism would be to show that the theoretical presuppositions are wrong. A weaker type of criticism that is compatible with both the correctness and incorrectness of the hypothesis would be to show that there is only a limited amount of evidence or none at all for the presuppositions. This more modest goal is the aim of this essay.

c) Assuming the truth of the theoretical presuppositions we can further analyse the argumentation technique involved and question the legitimacy of Hansegård's reasoning.

d) Lastly, we could examine the scientific method used, i.e. the selection of facts that are deemed relevant to the hypothesis and the criteria used to delimit the concept of semilingualism.

In this essay, the main emphasis falls on points a) and b).

All of the above points address themselves to the degree of validity of results, measured against some implicit norm of research or scientific standard. Another type of criticism has to do with considerations that have often been thought to be external to scientific standards and thus - under such a conception of the philosophy of science - do not directly have to do with validity, but more with moral justification.[1] It could be interesting to place Hansegård's research in a larger socio-economic and political perspective and with this framework examine

a) the formulation of problems, types of questions asked, empirical material used and the solutions obtained

b) the criteria of applicability for scientific results

c) the formulation and dissemination of results.

To the extent that the scientific criticism of semilingual research is justified, the socio-economic points above do have a certain interest.

What is semilingualism?

Hansegård (1977, p. 42) defines semilingualism as the unfavourable linguistic (and psychological) consequences of an early deprivation of the native language. These unfavourable consequences are listed in six points, where the first three are said to relate to the particular linguistic system in question and the last three to relate to the linguistic ability of the speaker.[2] These six points constitute criteria for knowing a language for Hansegård and are:

1) the size of the store of words that can be understood or used actively

2) degree of automaticality, i.e. the extent to which the understanding of the language and the production of speech proceed without delay, hindrance or conscious planning

3) correctness (or 'system adherence'), i.e. the ability of the speaker to correctly and in accordance with the rules of the language understand and produce the linguistic elements of the language

4) the ability to create and innovate in the language

5) the control of the intellectual, emotional and directive functions in the language

6) the richness vs. poorness of individual meanings in the language[3] (Hansegård 1968, p. 97, my translation).

In Hansegård's view, a supposedly bilingual speaker is semilingual if he shows deficiencies on the above points when compared with a monolingual speaker of the relevant language. Also attributable to Hansegård is the statement that deficiencies on point 5 are a direct consequence of deficiencies on point 6.[4]

The criteria that Hansegård uses to specify semilingualism are both linguistic and psycholinguistic as should be apparent from the list. They rest upon a pretheoretical idea of language mastery. Each of the above points needs to be developed in much greater detail to be of any practical use.

The first point I want to treat is whether they delimit one and the same concept of semilingualism. A second point that I will touch on concerns their validity or justification in their present context of use.

The concept

I believe it is possible to find three different senses of semilingualism that differ as to the relation between language and thought that they assume and thus differ in their range of potential application.

Semilingualism 1 (SL1). This is the most superficial sense of semilingualism. It refers solely to the linguistic system competence of the speaker as is delimited by the first three points above: A speaker may have a small store of words, speak haltingly and deviate from the standard. He is then semilingual if these deficiencies can be found in one language and doubly semilingual if the deficiencies are found in both languages.

As SL1 is not of direct relevance for the wider concepts of semilingualism I will only mention a few points that concern the criteria and refer to Loman (1974) for a more extensive discussion.

a) The relevant situation is a bilingual one. It is therefore highly questionable of what value a comparison of the size of the lexicon with a monolingual speaker will be. What aspects of the vocabulary should we compare? How do we deal with situational and contextual appropriacy? And what is meant by the notion 'size of the store of words'? In any measure of the lexicon we need to include more than just a simple word count. How are we to treat the various lexical extensions that are possible? Is this point covered by 4) and does it conflict with Hansegård's ideas on point 3)? How do we handle area and degree of coverage of lexical items?

b) The norms that underlie the criterium of system adherence are specified on the system of the monolingual-monocultural speaker.[5] In general, they assume the relevancy of the compound-coordinate distinction as a goal for bilingual learning (see below p. 166 f.).

c) It is not obvious what the relation between linguistic competence and fluency of speech is. At present there is no satisfactory linguistic processing model that can be used as a theoretical framework for such criteria.

Apart from these facts, these criteria are unsatisfactory in their total disregard of sociocultural context.

Semilingualism 2 (SL2). This sense of semilingualism refers to the observation that a speaker may experience difficulty in expressing himself intellectually and emotionally in a language. As language can be taken to

facilitate interaction with a certain type of linguistic environment, this may hinder the intellectual development of the child.

This second sense of semilingualism is independent of, though not incompatible with, the linguistic system-competence sense of semilingualism. It is possible (Hansegård 1968, p. 98 ff.) for a speaker to have a mastery of the system in the first three points but still be classed as semilingual in our second sense. Also the opposite case is possible. A speaker may have a small store of words e.g. but express himself well in the language. We have then the following possibilities:

| SL1 | SL2 |
|---|---|
| yes | no |
| yes | yes |
| no | yes |
| no | no |

The expressive difficulties may be in one or both the bilingual's languages; they may concern all functions in both languages or some functions in each language. The criteria for SL2 are basically (subjective assessments of) the existence of deficiencies on points 4–6 above. Recent Canadian research (Cummins 1976) have used various psychometric measures. The reduction of function that is assumed to account for the low results on verbal IQ and low scholastic achievement is explained in this context as due to the balance effect (Macnamara 1966), i.e. the learner is said to pay for his increasing competence in L2 with a reduction in L1 competence. Reduced function is thus a consequence of reduced competence in L1 and L2.

I think that the same criticism of disregard for socio-cultural context is applicable here (see p. 166 f.) as in the case of SL1.[6]

Semilingualism 3 (SL3). This is the strongest interpretation of the three. Here language development is taken to play an integral role in cognitive development, not just a facilitating role. Without language, no cognition. The criteria for this sense is the same as for SL2, and SL3 stands in the same relation to SL1 as does SL2. The criteria themselves, as well as the methods for determining the criteria can be critisized on the same grounds as those for SL2.

It should be obvious that SL2 and SL3 are incompatible (at least as they are presented here – see below p. 165 for further discussion) – we either have the one or the other.

An interesting practical-pedagogical point is that people working with immigrant children often take the first set of criteria - those that delimit linguistic competence - as indicators of the third sense of semilingualism. This is a justifiable reaction as these are the easiest observable criteria. People that have talked about semilingualism have neglected to tell people how to diagnose it, from which a very 'safe' practice has grown up that treats all immigrants as 'potential' semilinguals until proven otherwise.

So far then, we have seen that there are three possible senses of the concept of semilingualism depending upon the relation of thought to language that we assume. In delimiting these three senses we have assumed that the criteria themselves - although not scientifically articulated - are at least coherent. As we saw when discussing the lexicon in the context of SL 1, this principle may contradict or overlap with other criteria. Obviously, if we can show that the criteria themselves are internally contradictory we should be able to find many more senses of semilingualism.

In the following section I will discuss only concepts 2 and 3 and will start by sketching a research background from which they can be seen to be logical consequenses.

## Bilingualism and cognition

Some of the central conceptual ingredients of this paradigm are - from the linguistic side - those pertaining to two pure languages in contact, the measurement of the amount of interference between them, the phenomenon of code switching and the construction of models for co-existent systems. On the psychological side we have research on dominance vs. subordination, the balance effect of two systems and the problem of bilingualism and cognition.

The relationship between bilingualism and cognition is of special interest for our purposes. When discussing the effect of two languages on cognition, I think we can take cognition to cover any one of the following points:

a) Language learning structures and processes: How does having to cope with two languages influence language learning ability, e.g. types and amount of interference, readiness to reorganize the phonological, syntactical and lexical levels, rate of acquisition etc.? How can we relate these questions to the prevailing conception of LAD (Language Acquisition Device)?

b) Cognitive operations: How does bilingualism influence intellectual functions such as dealing with arithmetical tasks, various types of concrete and formal operations in Piaget's sense? (See below on intelligence.)

c) Language and culture specific coding: Here we can interest ourselves in Whorfian subtleties, problems of translation, cultural empathy etc.

d) General cognitive development: This point subsumes most of the above points but treats them from a developmental perspective. Here we find questions pertaining to the general scholastic, intellectual and emotional advantages and disadvantages of a bilingual learning situation. In most studies this point has been treated in conjunction with (e).

) Intelligence: Most studies on bilingualism and cognition have reformulated this question in psychometric terms as whether or not bilingualism affects IQ. To quote Macnamara on this point (1970, p. 34):

> 'In that form it [the question] is almost trivial. A large number of factors influence IQ without having any direct bearing on what we intuitively recognize as intelligence'

A large number of factors have somewhat confused the issue as to whether bilingualism has positive or negative effects on intelligence as measured on tests of this type, among which the most important for our purposes are:

1) Bilingual sampling techniques: Subjects are not representative of the population but are e.g. chosen on the basis of their surnames.

2) Nature of monolingual control groups: The bilingual and monolingual groups have not been matched for variables such as SES (Socio-Economic Status), sex or age.

3) Test type: Verbal tests on bilinguals' L2 standardized on monolingual speakers of L2 etc.[7]

4) Nature of problem choice; evaluation and interpretation of results: What do the tests actually measure? What are the norms and values against which the tests are interpreted? What explanation is given for the results obtained.[8]

Prior to the Peal and Lambert study (1962), the effects of bilingualism on cognitive functioning as measured by tests of verbal intelligence were found to be unfavourable. Peal and Lambert hypothesised that these unfavourable results were a consequence of methodological defects in the test

design, more specifically in the sampling techniques and control of the relevant variables (points 1 and 2). They therefore used a balance measure[9] to sample bilinguals and controlled for SES, sex and age. The result was a higher score on tests of verbal intelligence for the bilingual group than for the monolingual control group. Other studies following the Peal and Lambert lead have obtained similar results. Bilingual groups matched on the above variables and on non-verbal intelligence have scored better than monolinguals on tests of divergent thinking, i.e. verbal originality (Cummins and Gulustan 1974), cognitive flexibility (Balkan 1970), which involved a restructuring of a perceptual situation,[10] and syntactic reorganisation of verbal material (Ben Zeev 1977).

There are two innovations in test design that differentiate the more recent studies from the earlier ones. The most obvious difference is the use of a balance measure. It has been suggested by Macnamara (1966) that this measure biases the test results by selecting only subjects who are proficient in language learning to the exclusion of the others. This accusation has been met by Lambert and Anisfeld (1969) who point out that the measures also allow children who have a low level of competence in the two languages to enter the sample - the only requirement being that they are balanced. Cummins (1976) has also examined the extent to which the exclusion of non-balanced (i.e. more dominant in one language) individuals biases the results. He examined the verbal and non-verbal intelligence of the non-balanced subjects and found their score to be insignificantly lower on these measures (which means that the balanced bilinguals' scores were insignificantly higher). Cummins also points out that the balance criteria are very lenient, allowing a ratio of 5:3. The only conclusion we seem to be able to draw here is that the balance measures do not bias the results.

The other important innovation in the later studies (besides matching for SES) is that the more recent groups were of high SES whereas earlier studies had used bilinguals from low SES. High SES bilinguals often have the socially dominant language as their first language, whereas low SES bilingual speakers tend to have the socially subordinate language as theirs - as is the case for immigrants and guest workers. As we shall see later this fact can be related to points 2, 3 and 4 above in a natural way.

Now, I think that there are basically two ways of explaining away the contradictory results found in a comparison of earlier and later studies. These are what I will henceforth call the bilingual paradigm explanation

and the sociolinguistic explanation respectively. I don't know which is the correct or better solution, but I believe that they are both worth working with. I will start by sketching the bilingual paradigm explanation. The sociolinguistic explanation can be found on p. 166 ff.

The bilingual paradigm explanation

This is the pidgeon hole in which we can put Hansegård, Cummins and presumably also Lambert.

Their explanation is in all relevant respects a psycholinguistic explanation. Due to the early deprivation of the native language (Hansegård) or alternatively due to the subtractive social conditions[11] in which speakers of a subordinate L1 have to learn L2, these individuals will fail to attain a minimal linguistic competence, or alternatively, a native-like competence in any of their languages. This explanation is given with the background assumption that learning to cope with one language is difficult enough for low SES speakers,[12] so that the difficulties involved in coping with two languages (whatever they may be) is well nigh impossible for the cognitive apparatus of the child to surmount, unless the optimal environmental and instructional conditions are present. Under these latter conditions even children with learning difficulties may succeed in becoming bilingual.[13] Otherwise, adverse cognitive consequences follow from not attaining this necessary level of linguistic competence. To quote Cummins (1976) on these points:

> " . . . in bilingual learning situations where the child fails to overcome difficulties in coping with two languages the research evidence suggests that the bilingual learning experiences might have a negative effect on his cognitive functioning, at least insofar as this functioning involves language" (my emphasis) (p. 23)

The functioning that involves language are described as follows

> " . . . difficulties in coping with two languages are likely to adversely affect a bilingual child's expression of his intelligence and consequently his interaction with an increasingly symbolic environment"

This is mainly because

> "an inadequate grasp of the language of instruction may be less intellectually satisfying and consequently may not promote intellectual curiosity"

Although we are told that a child may experience difficulties with a language over a "prolonged period of time", we are not told what these difficulties are. Great emphasis is placed on social influence and the language instruction environment for coping with two languages, while the estimation of the child's own cognitive coping mechanisms is low. It also appears as though Cummins identifies adverse cognitive consequences within the context of formal schooling and requisite level of linguistic competence in relation to the norms of the school: One gets the impression that it is only within the confines of formal education that intellectual stimulation is possible. It is interesting to note that Cummins ignores many other plausible explanations for the school difficulties of low SES bilingual children in favour of a language solution.

Another point that should be clear by now is that Cummins assumes a relatively strong relationship between language and thought as a mediating factor between low SES and intellectual difficulties.

Note that if we replace all mention of bilingual speakers with monolingual low SES restricted code speakers, we get a lucid summary of Bernstein's central points. If we follow out this analogy we can find many interesting parallels in the observations made with respect to restricted code speakers and low SES bilinguals. For example, restricted speakers manage relatively well in the earlier stages at school - as they are in possession of socialisation patterns that orientate them towards concrete operations. This is not the case when formal operations are reached as they lack the necessary elaborated code. (For extensive criticism of Bernstein, see Dittmar 1976).

I have treated Cummins in greater detail than Hansegård here because his views are explicit and easy to work with. This is not the case with Hansegård. I believe, however, that most of what I have said with regard to Cummins is also valid for Hansegård.

To conclude this section I will sketch some relevant aspects of the language and thought controversy and examine some questions of interest for the language learning conception presupposed by Cummins and others.

The statement of the strongest view on the relationship between language and thought can be found in Vygotsky's (1962) work. This is the view that Hansegård has adopted. Hansegård's criteria of semilingualism are essentially derived from Vygotsky's theory, as is his view of general linguistic development and the important role played by language in concept formation.

For Vygotsky, the disappearence of egocentric speech is in fact the internalization of speech to become verbal thought. The word is the unit upon which the child builds and develops his primitive concepts - a process that involves many stages and that is completed first at puberty. Not only verbal thought, however, but all aspects of the child's character and personality development are intimately tied up with speech. A closer study of Vygotsky will show that Hansegård's concept of semilingualism is a logical consequence of this view of language and cognition. As language under this conception is an integral part of all kinds of psychological functions - or the source of psychological functions - it is obvious that should language disappear, so should everything that depends upon language. This is semilingualism in its third sense.

In another context (quoted in Cummins 1976), Vygotsky deals with the effects of multilingualism in children. Here, he states that two languages may have adverse cognitive consequences due to interference and conceptual confusion between the two languages. This appears related to the compound-coordinate distinctions found in discussions of bilingual systems organisation.

A weaker relationship between language and thought can be found in the school of thought that takes Piaget as its point of departure. Here the development of language is considered to be an extension of earlier established cognitive structures, or sensori-motor schema. Cognitive development proceeds essentially independently of language through three universal stages - the pre-operational, the concrete-operational and the formal-operational. Language is thought to be neither a sufficient nor necessary condition for the development of thought.

Bloom (1970), in her study of child language, hypothesizes that children form new concepts and develop cognitively, before they can express this development in the appropriate linguistic form, often using old categories to express new functions. (She also found, however, that in some cases linguistic development preceeded cognitive development resulting in what Piaget calls pseudostructures. What the actual function of these structures is is unclear, although it has been hypothesized that they may function algorithmically and facilitate cognitive development.)

Furth and Youniss (1975) in their study of the cognitive development of deaf children found that they follow exactly the same developmental stages as hearing children, although their performance at the higher lev-

els is slightly lower. They attribute this to lack of social interaction due to lack of language and not to lack of language as such.[14]

Cummins (1976) cites Vygotsky, Piaget and Furth as theoretical support for his view that bilingualism may have both positive and negative consequences, and that the negative consequences are a result of retarded linguistic development (i.e. lack of native-like competence). As we have seen above, there is an essential difference between Piaget and Vygotsky, in that Piaget's conception of language as a facilitating instrument for thought is not incompatible with the standpoint that cognitive development can proceed without language. However, Cummins attempts to minimize the differences between the two by pointing to various facts that would seem to make Piaget's conception compatible with Vygotsky's. At the present stage of research, however, it is just as legitimate to maximize the differences between the two in the hope of finding crucial cases in which they differ. At present, any choice of theory cannot be made on anything but an arbitrary basis. To attempt to derive support for the view that retarded linguistic development leads to retarded cognitive development by citing studies conducted on deaf children and applying the results to immigrant children is begging the question. It is to assume from the outset that language is bound to have certain effects on cognition: i.e. we assume that immigrant children's problems depend on lack of native-like competence.

The statement by Vygotsky on the effects of multilingualism on children cannot as it stands be taken as evidence for Cummin's view either. Vygotsky doesn't treat lack of native competence but confusion of two systems. Of course, there is a certain ambiguity in the use of the phrase 'lack of native competence'. It can be taken to mean a 'quantitative lack' (as in Cummins) or a 'qualitative lack' (as in the compound-coordinate sense).[15]

What are the assumptions of the language learner and the language learning task that underlie this hypothesized lack of linguistic competence, whether it be in the qualitative sense or the quantitative sense? This point is not very often treated in discussions of this type.

The assumption that the language learner should have difficulties in coping with two languages simultaneously under certain societal conditions implies a certain standpoint on what language learning strategies and procedures the learner has available, the limits of these strategies and procedures and their context-dependence, i.e. their dependence on cer-

tain conditions for their satisfactory functioning. It also implies a certain conception of the mechanics of the language learner; i.e. what information he can use and cannot use to arrive at his grammar, what constitutes minimal information to build a grammar etc. Lastly, it implies the establishment of two completely separate homogeneous systems with minimal interference as the only acceptable criterion of language learning success in a bilingual situation.

Some questions that need to be asked and answered concerning the strategies are:

1) How does the learner acquire the strategies?

This involves the nature of the strategies; whether they are specific to the domain of language learning or whether they can be reduced to general perceptual or cognitive strategies. It also involves the question to what extent they are a gift from above or develop from within.

2) How are the strategies modified by already having one language or simultaneously acquiring two?

The child is in the process of reorganizing his system on all levels during a very long period of time. It is plausible to hypothesize that the processing of each level may provide relevant information to the processing of another level, i.e. lexical information may influence phonological processing. The same thing may happen between two languages that are being learnt simultaneously (see Lambert 1970).

According to Ervinn-Tripp (1970, p. 316) the relative ease with which an adult learns vocabulary in a second language may be a function of the recency of lexical processing. The adult is continually reorganizing his vocabulary in the native language and has these strategies relatively available. A child is working with a much more differentiated array of strategies from the adult. From this we can conclude that this would minimize his difficulties with language.[16]

Concerning the mechanics of the language learner, we need to research the question of necessary information in greater detail. We know e.g. that the language learner does not have access to negative information - he does not know a priori what constitutes a non-sentence of a language. In a bilingual language environment, need we assume that he must have access to information relevant to the separation of two language systems to succeed in doing it? This last point seems pertinent to discussions of compound and coordinate bilingualism. These terms refer to the semantic or-

ganisation of two systems - an organisation that can be traced back to either the situation in which they were learnt or the age at which they were learnt. The compound system implies a fused system with negative cognitive consequences due to conceptual confusion. That this is a linguistic abstraction that need not have any psychological validity is an often stated fact, but that the abstraction is often assumed correct in principle is apparent from much work (Hansegård 1968 is a typical example of this assumption). These concepts are questionable, however, since the development of a research paradigm that allows a more insightful treatment of heterogeneity. The static and homogeneous system concept implicit in the compound-coordinate distinction is at present a subject of discussion (see Labov 1971, Bailey 1973). It is thus difficult to apply linguistic concepts to the psychological organisation of systems and psychological criteria of language learning.

To get a complete picture of the language learning process we also need to study the acquisition of sociolinguistic or communicative competence. These studies are still in a very initial phase. They are, however, very relevant for the sociolinguistic explanation.

## The sociolinguistic explanation

Now, to return to our second presumptive explanation of the research results cited on p.161. What I have termed the sociolinguistic explanation examines the background assumptions in formal tests and other means of evaluation that attempt to reduce questions of cognitive inequality within a given social framework to questions of language (see point 4 p. 159). We can ask whether our evaluations and measures give us what we intend them to - the effects of linguality on cognition - or whether there is a bias somewhere that gives us evaluations of something quite different. Although I claim no expertise on these matters, I want to argue that the formal tests measure the extent to which the bilingual children conform to the value norms implicit in standard language use, which is the language of school and academic and social advancement, and that they measure a sociolinguistic concept rather than a cognitive concept. While this is not an original thought, it bears repetition, especially in the context of bilingual research.

We can of course discuss the validity and reliability of tests from a psychometric viewpoint. What I will do here, however, is look at them

from a sociolinguistic viewpoint. More specifically, we can study tests of verbal intelligence, non-verbal intelligence and linguistic competence on three points, which, following Wolfram 1976, we can call

1) testing as a social occasion
2) task bias
3) linguistic items.

## Testing as a social occasion

This point involves two main aspects a) The tests operate basically on the output of socialisation patterns to test date, b) Taking the test involves a social interaction between the test administrator and the testee.

It would be interesting to examine the extent and type of socialisation patterns that prepare children for test situations to various degrees by simulating the types of activities that are needed in a test situation. Wolfram cites the method of word definition carried out by parents as a case in point. A 'middle-class' word definition may be more in accord with the requirements of a future test task, providing more relevant information and relating it to a relevant frame of reference for the child than a 'lower-class word definition'.

When constructing the test, the test administrator assumes that the testee can enter the test frame and carry out the test tasks according to the implicit rules of the game. The test frame has in turn been constructed from a model of the subjects' action alternatives and the reactions expected from specified situational influences. It is obvious that these models may not be valid for subjects from different social and cultural groups.

## Task bias

In constructing test tasks the assumption is that the testees will interpret the tasks and respond to the tasks in a uniform manner - there is one correct interpretation and one correct answer that accords with the symbolic environment of the standard speaker.

To interpret the task the testee needs to share the comprehension of sentence meaning, presuppositions and implications of the modal group. These points may not be shared.

Also the responses may differ in various ways. If asked to repeat a

question verbatim, the child may answer the question or paraphrase the question. Related to this aspect is the general method for obtaining the answer. According to Meier (1972):

> "Middle class children, because of their familiarity with certain key phrases and styles (conditional responses) short cut the process and succeed in producing right answers even though they do not carry out the 'logical thought' implied by the question. They get it right for the wrong reason. The bright lower class child, who cannot fall back on a lifetime of familiarity with certain language, picture or word association patterns is dependent on the real ingenuity to make the logical connections"

Linguistic items

The areas of bias in linguistic test items can involve a number of discrepancies between the linguistic system of the testee and the language of the test. In language development tests and tests of verbal intelligence there are a number of items that deal with articulatory development, auditory discrimination, grammatical development and vocabulary acquisition.

It seems obvious that without a comprehensive description of the phonological alternatives available to the group or individual being evaluated, it is hardly possible to judge their performance realistically in comparison with the norms of the standard on which the tests are based, at least as far as auditory discrimination and articulatory development is concerned. With regard to vocabulary items, it is clear that they can be directly biased against non-standard speakers in a number of ways. This items may be culture-specific (in the Peabody Picture Vocabulary Test, 26 % of the vocabulary items were found to be culture-specific (Roberts 1970)), or they may be familiar to the testee although not recognized as such due to the pronunciation of the examiner or because the items referred to are known under other names in the variety the testee speaks.

In other words, it is necessary to undertake an examination of the sociolinguistic and sociocultural biases in tests of this type (or in any evaluation situation) before they are administered to non-standard speakers and before we can be sure that the bilingual paradigm explanation is a fruitful line of research. (For further remarks on evaluation problems see Brière 1973 and Teitelbaum 1977.)

Summary

In this paper I have attempted to sketch the framework of research in which semilingualism can be placed and tried to put the concept into perspective by pointing to the lack of evidence for the theoretical presuppositions it rests on. Many interesting questions remain for research.

I have also outlined an alternative explanation as a basis for a more detailed exploration.

Notes

1 For an opposite point of view, see Karl Mannheim (1936).

2 Hansegård uses de Saussures terms langue and langage where I have used linguistic system and linguistic ability respectively. His use of langage is not quite in accord with the way Saussure uses it in Cours. Hansegård seems to mean general linguistic ability or gift of language (språkgåva) which is a literary quality.

3 Individual meanings are characterized on p. 37-40 (Hansegård 1968) as emotional non-criterial (connotational) definitional characteristics of words/concepts. Individual meanings are determined by the total experience of an individual, i.e. situations where he has heard the word, ending or syntactic construction. One of the losses a child deprived of his native language suffers is depth of individual meanings. This results in superficial and unnuanced emotional experiences in later life. Obviously, emotional overtones tend to change or fade away even for a monolingual speaker. We also gain emotional overtones in later life, both in our native language and a second language. (For the origin of the concept of individual meaning in this sense, see Vygotsky 1962.)

4 See Vygotsky 1962 and Hansegård 1977.

5 Hansegård gives two examples of non-standard lexical items that he considers deviant a) smygbjörnar (bears that hide in forests), b) småblandningar (small children in a class-room).

6 For a more extensive coverage of concepts related to my SL1 and SL2 - although emphasizing slightly different aspects, see Skutnabb-Kangas 1975.

7 For further discussion, see Skutnabb-Kangas 1975.

8 For similar criticism in the context of Bernstein's theory, see Dittmar 1976.

9 The balance measure used by Peal and Lambert was made up of
a) a word association test in each language (used to calculate a ratio)
b) a word detection test in English and French
c) the Peabody Picture Vocabulary Test
d) a subjective self-rating measure
For further discussion of tests of bilingual competence and some of the difficulties, see Teitelbaum (1977).

10 See Cummins (1976) for a further presentation of these investigations.

11 Subtractive conditions refer to the societal conditions that force a child to acquire his L2 competence through a reduction in his L1 competence - Macnamara's (1966) balance effect. These are the conditions where a low SES subordinate language speaker has to acquire the dominant high SES language with low teacher expectations, low self-confidence, identity conflicts and 'rootlessness'. He is subjected to compensatory programmes in L2 while L1 is ignored. His development in L2 is compared with monolingual speakers of L2. The opposite conditions on all the above points are termed additive conditions (see Lambert 1975).

12 To quote Cummins (1976:18) "Although it is not difficult to appreciate that the addition of a second language might well exacerbate the problems which lower SES speakers are reported to experience in coping with just one language . . ." (my emphasis). However, Cummins doesn't believe that low SES is the only cause.

13 Reported in Lambert et al. (1970).

14 To quote Furth and Youniss (1975:174) ". . . one can gather that regarding formal operations, deaf people are again in a position not unlike hearing people from an impoverished social environment. If culture and life habits do not generally foster attitudes of curiosity and intelligent initiative, formal thinking is not as likely to occur as in a more favourable environment" (p. 175) "In conclusion, it seems that not-withstanding the tremendous importance of the linguistic medium . . . its absence in developing individual does not in itself lead to serious intellectual shortcomings". . . . "it powerfully illustrates the subordinate role of all symbol in the developing structures of thinking".

15 In actual fact, these two senses of 'lack of linguistic competence' are not necessarily distinct.

16 The hypothesis of chronological development is relevant to the discussion of when a child best learns a second language. Ervinn-Tripp points out that it depends on what aspect of the language we are most interested in. For example, an idiomatic phonology is best acquired first when a certain level of cognitive maturity has been reached. Ervinn-Tripp is talking about formal learning contexts. A number of other factors are relevant for a nuanced discussion of this question.

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# TONGUE RETRACTION IS NOT SO USEFUL AFTER ALL

Sidney Wood

According to a century-old tradition in phonetics, small adjustments of tongue fronting or retraction provide an active and useful means of modifying vowel quality. However, acoustic theory does not support this tradition in every case. Stevens (1972) has demonstrated that spectral sensitivity to constriction location perturbations is not continuous along the vocal tract. His experiments with simple tubes indicated that when the anterior (palatal) portion, the mid (velar) portion (with lip-rounding) or the posterior (pharyngeal) portion are constricted vowel spectra are hardly affected by moderate displacement of the constriction location within those regions.

This can also be seen by studying three-parameter model nomograms (Fant 1960, Stevens and House 1955) which show that there are in fact four such regions where vowel spectra are relatively insensitive to location perturbations - along the hard palate and in the lower pharynx for spread-lip [i-ɪ]-like and [ɑ-æ]-like vowels, and along the soft palate and in the upper pharynx for rounded [u-ʊ]-like and [o-ɔ]-like vowels. The same four regions were deduced from a spectrographic study of eskimo vowels (Wood 1971) and X-rayed vowel articulations confirm that these regions are exclusively used for vowels in speech (Wood 1977).

Advancing and retracting palatal and velar vowels means that the constriction is displaced along the hard and soft palates. Theoretically, this should yield but little spectral advantage since these are two of the four regions mentioned above. Three model experiments were designed to repeat Steven's experiments, this time to test the sensitivity of vowel spectra to perturbations of the constriction location in natural human vocal tract configurations. Mid-sagittal vocal tract profiles were systematically modified by retracting the tongue body from palatal [i] and [ɛ]-like configurations and by advancing the tongue body from a velar [u]-like configuration. The resonances of each new configuration were found by sweeping a line electric analogue (LEA at the Royal Institute of Technology, Stockholm, by courtesy of Gunnar Fant), Fig. 1.

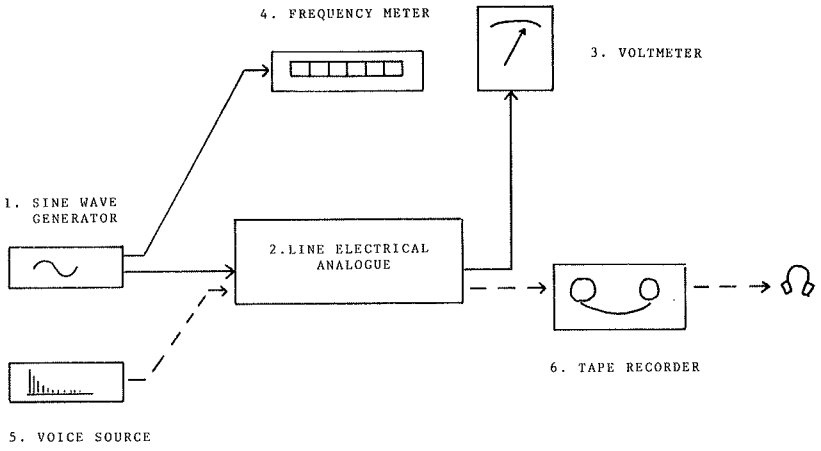


Fig. 1. The configuration to be measured is set upon the analogue (2). A sine wave from the generator (1) is passed through the analogue to a voltmeter (3). Voltage maxima occur at resonance frequencies which can be read off from the frequency meter (4). For monitoring and recording synthetic vowel qualities, a voice spectrum from a voice source (5) passes through the analogue to a tape recorder (6).

The tongue body was retracted 5 mm in 1 mm steps from palatal [i]-like and [ɛ]-like configurations. This amounted to 20 mm retraction of the constriction along the domed roof of the mouth. Finally, the tongue was advanced 6 mm in 2 mm steps from a velar [u]-like configuration. This amounted to 20 mm advancement of the constriction along the soft palate. The degree of constriction was kept constant in each experiment (cross-section area at the constriction 0.65 $cm^2$ for [i] and [u], 2.6 $cm^2$ for [ɛ] so the only variable was the constriction location with consequent modifications to the front and back cavities.

The modification of the [i] profile is illustrated to the left in Fig. 2. A similar modification was made for the [ɛ] configuration. The range of movement represents retraction from a prepalatal constriction through midpalatal to postpalatal. X-rayed vowel articulations confirm universal language-specific preferences for either the prepalatal or midpalatal posi-

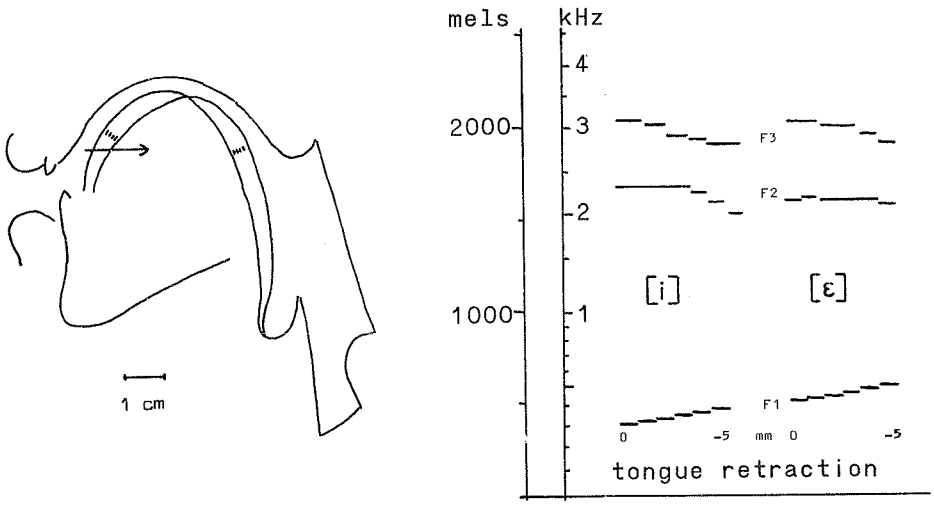


Fig. 2. Retraction of the tongue along the hard palate from palatal [i] (left). A similar modification was made for [ε]. Spectral consequences of these modifications (right).

tions in speech (Wood 1977). The spectral consequences of the modifications are given to the right in Fig. 2.

$F_3$ fell continuously in both [i] and [ε] for each retracted step. This is why the prepalatal [i] of say Swedish or Russian sounds sharper than the midpalatal [i] of English (Fant 1960) and why Swedish [e] and English [i] sound alike to Swedes. $F_2$ was hardly affected by retraction through the prepalatal and midpalatal locations and did not begin to fall until the end of each series. It fell appreciably in the last two (postpalatal) steps from [i] and had just started to fall at the last step from [ε]. $F_1$ rose gradually. The trend of these results is predictable from the pressure and volume velocity standing waves and from the energy distributions (Chiba and Kajiyama 1941, Fant and Pauli 1975). The consequences of widening the prepalatal part and narrowing the postpalatal part are (i) contrary and largely self-cancelling for F1, (ii) negligible for F2 and (iii) cumulatively negative for F3 (on account of the latter's prepalatal volume velocity node and velar pressure node).

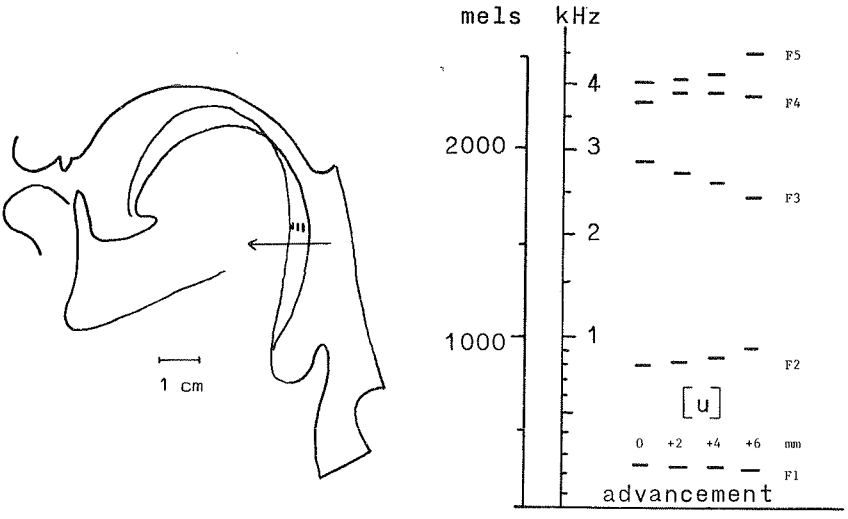


Fig. 3. Advancement of the tongue along the soft palate from velar [u] (left) and the spectral consequences (right).

The lack of change in $F_2$ from the prepalatal to midpalatal locations is expected from Stevens's finding. The postpalatal location is apparently beyond the region where formant frequencies are relatively insensitive to variation of the constriction location. $F_2$ changes rapidly when the constriction is retracted beyond the midpalatal position and would require considerable articulatory control in a monophthong. In actual speech vowel constrictions occur only fleetingly in this region, either during transitions to or from adjacent consonants or during diphthongs where the main information is in the gliding formant.

The modification of the [u] constriction and the spectral consequences are given at Fig. 3.

The main result of advancing the tongue body along the soft palate was that $F_3$ fell sharply, a cumulative consequence of widening the upper pharynx where F3 of an [u]-like configuration has its largest pressure maximum and a considerable excess of potential over kinetic energy and simultaneously narrowing the postpalatal region. Where F3 has a pressure node and

an excess of kinetic energy. $F_2$ was hardly affected by advancing the constriction at the posterior end of the soft palate, which agrees with Stevens's finding. $F_2$ began to rise when the constriction was near the middle of the soft palate and it had risen about 120 Hz when the constriction was advanced to the front end. This is within the range of $F_2$ variation found in natural speech for [u]-like vowels.

Although it has been known for many years that the conceptual basis and assumptions of the traditional model were largely false, the implications have not yet been fully drawn. At first attention turned away from articulation and towards the composition of the acoustical signal and to the reactions of listeners to acoustical cues. But it is still highly relevant to ask what the speaker is doing when he produces those acoustical cues that we now know the listener needs. It is especially important in view of the growing interest in articulatory programming and the motor control of speech. Analysis of X-ray films (Wood 1977) showed that for the articulation of vowels the tongue aims to narrow the vocal tract at one of the four regions mentioned above, a simpler task than had hithertoo been envisaged. The tongue musculature was found to be admirably situated for creating the four constrictions and the sphincter function of the palatoglossi and the pharyngeal constrictors ensure the accuracy of all but the palatal manoeuvres. The experiments reported above confirm that vowel spectra are relatively insensitive to location perturbations in those regions. Not only is voluntary displacement of the constriction location physiologically unlikely, there is little spectral advantage to be gained from doing it anyway.

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