

**PHONETICS LABORATORY
DEPARTMENT OF GENERAL LINGUISTICS
LUND UNIVERSITY**



**WORKING
PAPERS**

17 · 1978

THE PROSODY OF NORDIC LANGUAGES
Symposium 14 - 16 June 1978
Abstracts

**PHONETICS LABORATORY
DEPARTMENT OF GENERAL LINGUISTICS
LUND UNIVERSITY**



**WORKING
PAPERS**

17 · 1978

THE PROSODY OF NORDIC LANGUAGES

Symposium 14 - 16 June 1978

Abstracts

Previous numbers and contents

WP 1	1969	KERSTIN HADDING MINORU HIRANO TIMOTHY SMITH	Electromyographic study of lip activity in Swedish CV:C and CVC: syllables
		KURT JOHANSSON	Försök avseende vokaltransitions riktning och dess betydelse för "plats"distinktion nen bland tonande klusiler
WP 2	1970	MONA LINDAU	Prosodic problems in a generative phonology of Swedish
WP 3	1970	GÖSTA BRUCE	Diphthongization in the Malmö dialect
		EVA GÅRDING	Word tones and larynx muscles
		KURT JOHANSSON	Perceptual experiments with Swedish di- syllabic accent-1 and accent-2 words
WP 4	1971	ROBERT BANNERT	Hat das Deutsche zugrundeliegende stimmhafte Spiranten?
		EVA GÅRDING	Laryngeal boundary signals
		KARIN KITZING	Contrastive acoustic analysis of vowel phonemes, pronounced by some North German and South Swedish high school pupils (A summary)
		SIDNEY WOOD	A spectrographic study of allophonic variation and vowel reduction in West Greenlandic Eskimo
WP 5	1971	MICHAEL STUDDERT- KENNEDY KERSTIN HADDING	Auditory and linguistic processes in the perception of intonation contours
		ANDERS LÖFQVIST	Some observations on supraglottal air pressure
WP 6	1972	ROBERT BANNERT	Zur Stimmhaftigkeit und Quantität in einem bairischen Dialekt
WP 7	1973	GÖSTA BRUCE	Tonal accent rules for compound stressed words in the Malmö dialect
		EVA GÅRDING PER LINDBLAD	Constancy and variation in Swedish word accent patterns
WP 8	1973	EVA GÅRDING	The Scandinavian word accents
WP 9	1973	PHONETIC SYMPOSIUM	Postgraduate students Stockholm - Lund
		SIDNEY WOOD	Speech tempo

- | | | |
|------------|---|--|
| | PETER KITZING
HANS-ERIK
RUNDQVIST
EWA TALO | Fundamental frequency of the voice in continuous speech. - Preliminary report on a device for determining mean and distribution of frequencies |
| | ANDERS LÖFQVIST | On the control of aspiration in Swedish |
| | MAGNÚS PÉTURSSON | Etude glottographique de quelques consonnes islandaises |
| WP 13 1976 | ANDERS LÖFQVIST | Closure duration and aspiration for Swedish stops |
| | | Oral air pressure in the production of Swedish stops |
| WP 14 1976 | GÖRAN SONESSON | Au sujet des fondements de l'analyse phrastique par Per Aage Brandt. Compte rendu |
| | THORE PETTERSSON | Polsk fonologi i generativ tappning |
| WP 15 1977 | MILAN BÍLÝ | Coreference rules described in terms of functional sentence perspective |
| | EVA GÅRDING | Vergleichende Studien zur Prosodie schwedischer Dialekte |
| | MAGNÚS PÉTURSSON | L'aspiration des occlusives après [s] |
| | HANS RANDLER | Identification test concerning isolated disyllabic Swedish accent 1 and accent 2 words |
| | SIDNEY WOOD | A radiographic analysis of constriction locations for vowels |
| | ROBERT BANNERT
ANNE-CHRISTINE
BREDVAD-JENSEN | Temporal organization of Swedish tonal accents: The effect of vowel duration in the Gotland dialects |
| WP 16 1978 | | Studies in general linguistics dedicated to Bertil Malmberg on the occasion of his 65th birthday |

Nos. 3, 7 and 8 are out of print. A revised version of no. 8 has been published as Travaux de l'Institut de Linguistique de Lund XI, CWK Gleerup, Lund, 1977.

Correspondence concerning this series should be addressed to:

Sidney Wood
Phonetics Laboratory
Lund University
Kävlingeåvägen 20
S-222 40 LUND
Sweden

This number of the Working Papers contains the abstracts and summaries of papers to be presented or discussed at the symposium The Prosody of Nordic Languages, June 14-16 1978.

Since the symposium is being sponsored by the Nordic Cultural Foundation, we have included Finnish among the Nordic languages, thus giving the word "Nordic" a geographical rather than a linguistic interpretation.

Two of the abstracts represent project work in prosody based on the London-Lund corpus of spoken English.

The abstracts appear in alphabetical order but in the symposium the papers will be grouped into four categories:

Text and Sentence Prosody
Word Prosody
Prosodic Systems
Interference

(See list of members and titles at the end.)

The papers will be published in a forthcoming issue of the Travaux de l'Institut de linguistique de Lund.

With thanks to the authors, and, for financial and other support, to the Nordic Cultural Foundation and the Department of Linguistics at Lund University.

Lund in April, 1978

Eva Gårding

Robert Bannert

Gösta Bruce

Kristján Árnason: Quantity, stress and the syllable in Icelandic

An analysis of quantity in Modern Icelandic is suggested, where length of vowels is predictable on the basis of the form of the postnuclear consonantism within the syllable. Vowels are short before two or more consonants, but long otherwise. Considerations of simplicity of the length rule lead to a definition of the stressed syllable in Icelandic which can be called 'final maximalistic'. Thus hestur is analyzed with two postnuclear consonants in the first syllable, but vasi with one, giving a simple environment for the length rule. This runs counter to the tendency, attested in many languages, to favour open syllables. It is suggested that stress is responsible for this ontogenetically, and that the phonological axiom can be stated as the stressed syllable.

Two or more consonants following a stressed vowel belong to the stressed syllable/as that does not lead to a coda where a p, t, k or s is followed by a j, v or r. Thus one gets nepfi with a long first vowel. This constraint can be accounted for in terms of a hierarchy of 'strength' or 'adherence' of consonants.

In addition to giving a relatively simple model of the situation in Modern Icelandic, this analysis seems to supply a good basis for a historical and comparative explanation of the synchronic situation. The Icelandic situation can be said to be typically Scandinavian (excluding Danish), with syllabic quantity basic and segmental length derived.

But some phenomena can be found in Modern Icelandic which don't fit entirely into the model. This can be taken as indication that later development has disrupted the system described above. Or it might be taken to show that the model is a panchronic abstraction but does not reflect synchronic facts. (This latter interpretation would lead to scepticism concerning the form of modern linguistic argumentation, fundamentally based on the notion of simplicity and logical beauty.)

Gösta Bruce and Eva Gårding
A PROSODIC TYPOLOGY FOR SWEDISH DIALECTS

Background

A typology for dialectal manifestations of Swedish accents based on Meyer's classical collection of bisyllabics in statement intonation (1937) was proposed by Gårding (1970). Four categories were singled out depending on the number and location of pitch peaks. Later, in a new prosodically more complex material, covering the four dialect categories, it was shown how the pitch patterns could be generated by a set of rules representing both word and sentence prosody (Gårding and Lindblad 1973). This model was modified and elaborated by Bruce (1977) who made systematic use of the notion of focus (sentence accent) in an analysis of Stockholm Swedish.

Goal

In this paper (a report of work sponsored by the Humanistic Research Council) we compare pitch contours of speakers representing the four dialect types in a material in which the following variables have been controlled: word accents, sentence accent and sentence intonation (statement / question). The dialects will be called East (2A, prototype Stockholm), West (2B, prototype Göteborg), South (1A, prototype Malmö) and Central (1B, prototype Dalarna). The labels 1A etc. refer to Gårding's original classification and map (1973). In a somewhat abstract form our results are as follows. (At present only the statements have been analysed.)

Results

Word accents. All accents can be described as High Lows with a difference in timing between accent I and accent II. In all four dialects the High of accent I precedes that of accent II, but the absolute timing of the accents varies according to dialect. East has an early timing for both accents closely followed by West. South comes later and Central latest.

Sentence accent. The so-called double-peaked accent II of East and West is the result of a High manifesting sentence accent and separated from the word accent. For East the High is independent of position, for West the High has a separate manifestation only in sentence final position. In other positions it is superimposed on the first accent High following after focus. In Central the sentence accent gives mainly an Extra High and in South an Extra Low to the word accent.

Model. In its present state the generative model for the tonal prosody of our dialects looks as follows. Sentence intonation is accounted for by a baseline-topline construction common to all the dialects. The topline is a straight line connecting successive maxima of a phrase. The baseline connecting successive minima is determined correspondingly. The word and sentence accent commands insert Highs and Lows with reference to the baseline-topline. From our results follows that observed pitch contours typical of statements in the four dialect areas, can be generated by one common sentence intonation command, similar accent commands with different timings of the Highs and different sentence accent commands. In this way, the well known dialectal variation in Swedish intonation can be described as resulting primarily from a difference in sentence accent distribution and manifestation.

MODELS FOR THE ASSIGNMENT AND INTERPRETATION OF PROSODY IN SWEDISH

Two models will be presented, one showing how the speaker assigns the prosodic features of quantity, stress and tonal accent in accordance to the grammatical structure of the utterance, the other how the listener uses these prosodic features for the identification of the grammatical structure.

The Grammar of Prosody

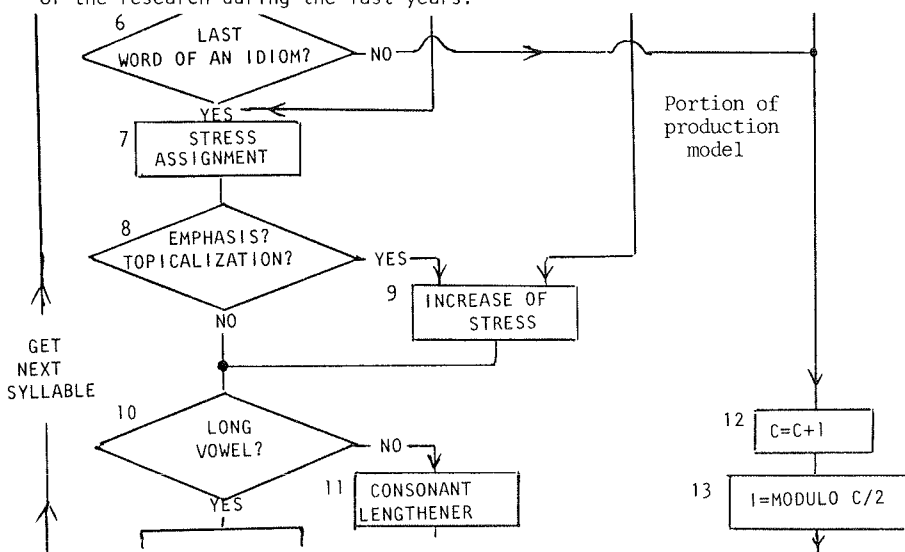
The repertoire of grammatical features communicated by prosody is a small one. It consists of the following categories with opposing features: stem and suffix morphemes, compound words and idioms (as opposed to unmarked syntagms), content words (vs. function words and particles), rheme and theme function (topicalization), and emphasis. This restricted number of categories is, moreover, communicated only incompletely: not consistently, often optionally and always in a allusive manner. Prosody has a subsidiary communicative function; the overwhelming part of the contents is channelled by the sequences of segments.

Scandinavian Particularities

Essential for the understanding of the communicative function of prosody in Swedish (as well as in several other Nordic languages of Germanic origin) are the facts that (1) tonal accent signals a syntactic relation to the subsequent elements of the sentence (stem-to-suffix relationship, compounding) while (2) stress signals a syntactic relation to the preceding elements of the sentence (particle-to-content-word relationship or idiomatization).

The Models for Speaking and Listening

The models are represented as flow parts. They can be regarded as algorithms for the language users with choices, decisions and processes. The computer reference is, however, purely metaphorical. These models can be traced by hand. They can serve as basis for more comprehensive models (e.g. including sentence intonation) or, after an elaboration of details, hypothetical models for experiments. They may also be starting-points for a discussion on a terminological and conceptual integration of the numerous, partly analogous systems for prosodic description of Swedish which are the results of the research during the last years.



Stig Eliasson

SWEDISH QUANTITY REVISITED

Quantity in Swedish is a structurally complex phenomenon and the phonological analysis of it is correspondingly difficult. Under one of the analyses proposed, it involves, among other things, the following features:

1. Quantity in Swedish is a consequence of stress.
2. The grammatical frame unit for the description of quantity in Swedish is, by and large, the morpheme.
3. Long consonants at the phonetic level correspond to consonant clusters at the phonological level in this language.
4. Swedish quantity is, for the most part, predictable by general rules.

In recent years, there has appeared a number of reactions to this proposal, which are often quite interesting and insightful. In this paper, we will examine some of these discussions, especially in regard to how the analysis of quantity should be integrated into a total grammar of the language and in regard to the role played by certain allegedly universal constraints on morpheme structure.

I. Geographical distribution

The special North Norwegian circumflex toneme occurs in the districts of Salten, Lofoten and the southern parts of Vester-ålen in the county of Nordland.

II. The contour of this toneme

is different from that of the circumflex accent in Trøndelagen and in parts of Sweden. In those areas the tonal curve is two-peaked, whereas the circumflex of the North-Norwegian dialects has a level pitch almost throughout the word with only a slight rise at the beginning and a slight fall at the end. This is fairly easily audible, and it is confirmed by mingograms. Nor is the stress curve two-peaked. Thus, North Norwegian words pronounced with circumflex cannot be classified as disyllables.

III. Origin and distribution

The North Norwegian circumflex originates in apocope of disyllables with toneme 2 (accent grave). Word contraction does not lead to circumflex. In some areas in the districts of Salten the suffixed def.art. of the neuter gender (-/e/) may also be apocopated. If the indefinite form of the noun is monosyllabic with toneme 1, the shortened def. form too obtains toneme 1 (accent acute).

IV. Analogy

Analogical loss and acquisition of circumflex seems only to occur in verb forms. The rules for this kind of tonal transition differ somewhat from one dialect to another, and may be determined by phonological, morphological, or syntactic factors.

V. Disappearance of the circumflex toneme

In the dialect of the town of Bodø in Salten the circumflex has already disappeared. The same tendency is obvious also in villages in Vesterålen and the westernmost islands of Lofoten. When the circumflex is abandoned, it is either replaced by toneme 1 (acc. acute), or the apocopated final vowel is restored.

Knut Fintoft, Per Egil Mjaavatn, Einar Møllergård and
Brit Ulseth
Department of Linguistics
University of Trondheim

TONEME PATTERNS IN NORWEGIAN DIALECTS

Introduction

The purpose of the present investigation is to trace the F_0 -curves in as many dialects as possible and to categorize the different realizations of the tonemes. The results are based on analyses of about 40 000 curves registrated for about 1000 persons from about 450 different places.

Method

The investigation has been restricted to disyllabic words of the type $/(K(K)) V:KV/$. The informants read a list of tonemic pairs embedded in the same sentence.

The recordings were sent through a Pitchmeter and F_0 -tracings and duplex oscillograms were displayed on a mingograph. For each word both the time and the F_0 have been measured by hand at 7 points on the curve within $/V:KV/$. By means of these measurements the curves have been normalized in time and frequency, and it is thus possible to give average curves for each place. The dialects in respect to the relative position of the maxima and minima of the F_0 -curves can thus easily be compared.

Results

It turns out that when moving from one area to another the toneme patterns change gradually and quite often the pattern for toneme 1 and toneme 2 changes differently. In this way the different categories occur.

A rough categorization is based on the number and the relative position of the peaks within $/V:KV/$. The main categories are found in the following regions:

1. Eastern Norway with a variant in Trøndelag, 2. Nordland and Southern Troms, 3. Western Norway (from Romsdal to Sunnhordaland) and 4. Rogaland. Between the regions there is a transition area. In Agder the picture is rather complex. In parts of Troms, in Finnmark, and at places around Bergen we have found no difference between the toneme curves.

Albert Lange Fliflet

ABOUT THE RELATIONS BETWEEN CONSONANT LENGTH
AND WORD STRUCTURE IN NORWEGIAN AND SWEDISH

Fundamental statements

Hearing and kinesthetics, confirmed by acoustic measurements, make clear that in N(orwegian) as well as in S(wedish) Standard Pronunciation, single voiceless stops and fricatives, and sporadically voiced stops too, may be articulated with striking length and intensity. This applies to the position after a long vowel (/V:/), after a diphthong, and after a short vowel (/V/) + a liquid or a nasal, in stressed syllables. After a /V:/ my lists provide examples of greater, in part much greater, consonantal than vocalic length. In S this /V:/ may sometimes even be heard as having only the duration - though not the lax tension - of a /V/: "flyta" > "flytta", "visa" > "vissa". This I have not observed in N. - After a sonorant consonant I have found a N occurrence of a stop (t) as much as 2 1/2 times as long as the sonorant (n).

Restrictions

1. The phenomenon described applies - to the extent mentioned - only to simple words, not to compounds. This implies that the place of the "syllable boundary" sounds far more clearly marked in e.g. "på-tår", "an-tal(1)" than in "våte, våta", "kante, kanta".
2. The geographically conditioned variations are remarkable; many N and S dialect areas lack the phenomenon. For instance, two N areas (one Southern and one Midland) of the three that have preserved the ancient quantity in one of the two combinatory types /V̥C/ and /V:C/ before a vowel, seem to exhibit no morphologically conditioned pronunciation diversity of the kind discussed here; both types, e.g. "åte" and "på-tår", manifest themselves as more or less identical with the corresponding Standard N compound type.

Conclusions

1. The phonemically unsatisfactory popular S and N rule "short consonant after a long vowel" is not adequate phonetically either.
2. The traditional S and N assumption that the first of two consonants succeeding a short stressed vowel is longer than the second, and primarily stretchable, has no general validity. In fact, the length relations of the consonants involved are determined by their phonetic qualities.

Thorstein Fretheim
Linguistics Department
University of Trondheim

THE ROLE OF ACCENT ATTENUATION IN DESCRIPTIONS OF EAST NORWEGIAN SENTENCE INTONATION

The purpose of this paper is to demonstrate the importance of recognizing two distinct functionally significant kinds of accentuation in S.-E. Norwegian. Any ACCENT UNIT of a Norwegian utterance (i.e. the stretch of utterance from one accented syllable to the next) is either ATTENUATED or UNATTENUATED. The former lacks the rising tone characteristic of the E.N. word accents, but the difference between Acc 1 and Acc 2 is maintained, as the realization of the accented syllable is virtually the same for attenuated and unattenuated accent groups.

Attenuation combined with successive lowering of the pitch of the accented syllables in the utterance is probably the most important indication of falling intonation in E.N. The tonal profile of the last unattenuated syllable (the FOCUS) plays a minor role in this respect. The intonation is falling in (1), where 'a' stands for 'attenuation' and '1' and '2' for the respective word accents.

- (1) a. ²Ikke ^{a1}flere ^{a1}bønder ¹nå | \ ' | - . | - . | - |
b. ²Ikke ^{a1}flere ^{a2}bø¹nnere ¹nå | \ ' | - . | \ . | - |

I. Gå is the only accented word in the question of (3). It is the focus of (3), and the corresponding anaphoric phrase of the answer to (3) will normally act as utterance TOPIC. At the same time the intonation of the answer should be falling. (4) and (7) are therefore appropriate answers. (5) is not. (6) sounds peculiar because kan is FOCALIZED (last unatt. accent).

- (3) Kan jeg gå nå? (4) Ja. Det ^{a1}kan du.
(5) Ja. ??Det kan du.
(6) Ja. ?Det kan du.
(7) Ja. Det kan du ^{a1}godt.

Attenuation after the topic means falling intonation and in addition shift of focus from the modal verb to the topic.

II. The importance of intonation as an indicator of the scope of adverbial operators will be demonstrated. Which of the two underlined constituents of (8) is bound by også?

(8) Han kjøpte også edamerost.

The results of a perception test will be presented.

III. Intonation cannot change the fact that the cleft sentence of (9) presupposes the truth of (10).

(9) Det er den sykdommen som heter emfysem.

(10) Den sykdommen heter emfysem.

However, (11) presupposes (10) only if one or both of the accentable words heter and emfysem of the relative clause is either unaccented or accented but attenuated.

(11) Jeg tror det er den sykdommen som heter emfysem.

(11') Jeg tror det er den sykdommen som heter emfysem.

If all accent units are unattenuated, the presupposition is 'filtered out'. This is what happens in (11").

(11") Jeg tror det er den sykdommen som heter emfysem.

THE PREDICTABILITY OF SWEDISH WORD
STRESS (AND WORD ACCENT)

4,000 multisyllabic Swedish words taken in unbroken sequence from a Swedish-English school dictionary were assigned stress patterns by means of a supralinguistic technique in which

- rules and units are primarily based on man and only in the second place on language,
- two main rules, each with one by-rule, oppose one another up to the point where production of a well-formed immediate sub-unit is feasible,
- rules are basic and causative as well as descriptive,
- immediate sub-units connect with rules in a cause-and-effect pattern,
- immediate sub-units are organized in matrices,
- the features in such isu matrices represent every level concerned.

Word-stress assignment is based on the stress-carrier isu. This unit is defined as a syllable with initial and final boundaries based on the judgment of the listener (perceptual safety margin). Misleading communication is blocked by a Formative Rule (main rule II), while main rule I, the Maximum Contrast Rule, tends to assign the word stress that will yield a maximum of word-internal contrast between stresses.

The stress-carrier matrix contains the following features relevant to stress assignment:

- associated meaning (semantic and/or functional),
- stress bandwidth (outside which one or more other features will change),
- segment sequence (variable within perceptual safety limits),
- segment quality (paradigmatic dimension including vowel quality).

In the Stockholm dialect and at the slower rate of speech employed during the development of a word, an internal active- $\emptyset$ stress carrier appears in +grave words. This accounts for the strong sentence-type stresses present in such words.

In this investigation, the impractical 4-degree stress scale was replaced by a fully operational 6 + $\emptyset$ scale.

Predictability for word-stress pattern was found to be 98 %. Exceptions were status loan words and words subjected to historical interference.

Thea Hackman

Dept. Phonetics, U.C.L.

RHYTHM IN FINNISH AND ENGLISH

Background

Finnish and English vary especially with regard to the interplay between syntax and prosody. Acoustic analysis of the interaction between two languages where rhythm functions so differently, can throw light on differences in phonological and pragmatic patterning. The definition of rhythm being used is: the temporal patterning of sounds in speech, i.e. of stress and quantity. The purpose of the investigation is threefold: to establish with phonetic analysis, whether, how, and to what extent Finns consistently deviate rhythmically when speaking English; to establish the consequences and the relative importance of the rhythmic deviances in perception; and finally, to make constructive suggestions to Finns learning English, about how to avoid or overcome the important problems.

Method

Duration is taken as the primary acoustic correlate of rhythm, but also fundamental frequency where appropriate. The material being selectively analyzed is a hundred assorted English statements and questions, recorded by 24 Finnish teenagers. This is being compared with corresponding recordings of English teenagers; promising aspects are being followed up by analysis of supplementary material. It is intended to investigate all aspects of rhythmic deviance: I am presently concentrating on reduction phenomena, specifically the presence, extent and location of compression in segments where they are increased in number in the same context.

Results

The relatively longer duration of one vowel, and the reduction even to the point of elimination of other vowels; for instance; will result in the longer vowel being perceived as stressed in English, while the phonological opposition of quantity in Finnish limits freedom of manifestation on this parameter. Lack of reduction seems like prolongation of a vowel beyond the length anticipated by a native English speaker, which encourages him to perceive stress, with concomitant perceptual difficulties. Consequently, it is important for Finns studying English to be made aware of the use of vowel reduction, and to practice it.

Göran Hammarström

FUNDAMENTAL ASPECTS OF PROSODEME
AND CONTOUREME

1. Terminology. In studies of intonation too many (often insufficiently defined) terms have been used: fundamental frequency, pitch, pitch contour, pitch pattern, intonation, intonation contour, tone, tonal pattern, toneme, melody, prosody, prosodic system etc.
2. Among functionally defined units, prosodeme and contoureme are particularly important (see my paper in *Phonetica* 10, 1963 pp. 194-202 and my book Linguistic units and items). Between the variants of the prosodemes and the variants of the contouremes there is a "mutual conditioning of variants" (M.C.V).

Antti Iivonen

IS THERE INTERROGATIVE INTONATION IN FINNISH?

University of Helsinki

Problem and background

Partly contradictory results concerning the possible interrogative intonation in Finnish have been presented earlier:

1. (Kallioinen 1968:) Intonation which (in formally unmarked utterances) indicates question is not distinctive, but only expressive, i.e. expressive nucleus (rising pitch, increasing stress, increasing duration) indicates surprise, final rise indicates kind appeal.
2. (Mirvonen 1970:) General and particular questions (and imperatives, too), which also are marked formally as questions, are consistently characterized by a high initial pitch (actually F_0 has been measured). It is distinctive and forms part of the communicative system of Finnish (appeal to the listener). The final falling pitch is identical for questions and neutral breath-groups (= statements).

The partly different results described above seem to be explainable on the basis of the differences in the 1) concept of intonation, 2) a priori assumptions concerning the realization and localization of the interrogative prosodic features within the utterance structure, and 3) utterances used.

Material

For further elucidation of the problem following types of material will be treated: 1) isolated neutral simple sentences produced in studio (first read, then unloaded from the memory), 2) radio broadcast utterances, 3) child speech, 4) interview speech gathered in Helsinki for socio-dialectal studies (conducted by Prof. M. Paunonen), 5) Finnish utterances produced by foreigners.

Preliminary results

Instrumental registrations did not reveal any indisputable regularity between a high initial F_0 (or intensity peak) and neutral utterances which are marked as questions by a question word or by a word ending with the suffix /-ko/ or /-kö/ (i.e. material type 1). It rather appears that the high initial F_0 or intensity peaks are connected with speaking effort and rhematic or contrastive stress. The initial F_0 and intensity peak levels seem to have a loose mutual correlation. Listening of more spontaneous utterances seems to indicate that there is a potentially realizable connection between interrogative function and high initial, high over-all, or rising final pitch depending on different connotations and pragmatic purposes.

- I thank Reijo Aulanko, Mannu Kaskinen and Terttu Nevalainen for collaboration.

Matti Koponen

Department of Phonetics and General Linguistics

University of Jyväskylä, Finland

THE INFLUENCE OF THE SPEAKER'S MOTHER TONGUE ON THE SIGNALLING OF WORD BOUNDARIES IN A FOREIGN LANGUAGE

This report deals with glottalization in Finnish and English.¹ Glottalization may occur in English both word-initially and word-medially in front of a syllable beginning with a vowel, whereas in Finnish it is possible only at a morphotactic word boundary.

It appears that the difficulties connected with glottalization are ultimately linked to the fact that the category of the word in Finnish differs morphophonematically from that in English. Although various function words (prepositions, articles, etc.) are free morphemes preceding their head words in English, the corresponding elements in Finnish are suffixed to the head words. Thus the semantic content of a *morphophonological word* differs considerably in the two languages. It is very likely that the need for signalling word boundaries in synthetic languages (e.g. Finnish) is different from that in analytic languages (e.g. Germanic languages), since the concept of the word differs in the linguistic processes of the speakers.

Preliminary results show that Finns indicate lexical boundaries phonetically far more frequently in the pronunciation of English than English speakers. Variation in the assignment of linking, glottalization and pauses in the pronunciation of English by Finnish speakers does not correlate with the constituent structure of English. Similar differences may also appear between Finnish and Swedish. Accordingly, typical pronunciation errors by a Finn are, for instance, *I'm ?only ?eight years ?old* pro *I'm₁only₂eight years₃old* and *ett ?öl* pro *ett₁öl₂* in Swedish.

Attention will be focused on psycho-acoustic aspects of glottalization in the future. Electroglottography will be included, and Swedish will be compared with Finnish and English.

¹My thanks are due to Dr. Jaakko Lehtonen (Dept. of Phonetics and General Linguistics, University of Jyväskylä, Finland) for his valuable help during the preparation of the paper.

Ilse Lehiste, "Polytonicity in the area surrounding the Baltic Sea"

The paper re-examines the evidence for the existence of a Sprachbund around the Baltic Sea characterized by polytonicity. Jakobson (1931) included the Scandinavian languages, some North German dialects, North Kashubian, Lithuanian, Latvian, Livonian and Estonian in this Sprachbund. It appears that the north German dialects with stød-like features are outside of the territory, and that North Kashubian has lost its (presumed) tonal character. Lithuanian continues its inherited polytonicity. Latvian and Livonian have exercised considerable mutual influence on many aspects of their respective structures, including their prosodic systems. Latvian differs from Lithuanian in two basic respects: accent in Latvian is fixed on the first syllable in contrast to the free accent of Lithuanian, and Latvian has developed a third tone in addition to the two inherited tones which it shares with Lithuanian. Both developments appear to be due to contact with Livonian. On the other hand, Livonian has developed a system of tonal oppositions; one of the newly developed tones in Livonian is identical with the Latvian third tone, which arose in Latvian through contact with Livonian. Recent experimental studies of Estonian indicate that Estonian, too, may be developing a tonal component as part of its prosodic system. Evidence from production suggests a stød-like reduction in intensity in certain overlong syllable nuclei, and evidence from listening tests indicates that fundamental frequency plays a significant part in the identification of prosodic patterns realized over disyllabic sequences. No developments of this kind are discernible in Finnish, which appears to be relatively immune to influence from other languages spoken around the Baltic Sea. The conservative influence of Finnish is suggested as a factor in the preservation of an older quantity system in Finland-Swedish.

Jaakko Lehtonen
Department of Phonetics and General Linguistics
University of Jyväskylä, Finland

ON FACTORS AFFECTING THE PITCH LEVEL OF SPEECH

Contrary to the rich data on the fluctuation of fundamental frequency of voice or intonation in human speech, very little information is available on the different average pitch levels or 'keys' of voice. Theoretical discussion can be found in phoniatric literature or in the field of speech education but the data, if any, are usually based on subjective impressions only. A method making use of modern digital techniques has been constructed in the phonetic laboratory of the University of Jyväskylä. The method enables a quick and easy measuring of the mean fundamental frequency of longer stretches of speech.

In this paper, the method of measuring the mean pitch level will be introduced, and various factors affecting the regulation of the pitch-key will be discussed. At least three different factors account for the differences in the pitch level of an individual speaker: (1) established norms of linguistic behaviour, (2) the social role of the speaker, and (3) his/her actual attitude, like anxiety or uncertainty, towards the situation or the subject matter under discussion. Preliminary findings seem to indicate, for instance, that

— in Finnish a lower pitch level is used in more formal or interactively more neutral or remote linguistic situations (e.g. reading a paper aloud, discussing in a foreign language) while a higher key is chosen in a more informal situation (e.g. when speaking or discussing spontaneously in the mother tongue). In English the rules for pitch-key seem to be different, which in part explains the communicative difficulties of a Finn in a foreign language.

— the use of pitch level to emphasize social roles seems to be different, depending on the educational level or, to some extent, the social class of the speaker.

Per Linell

THE INTERACTION OF STRESS AND QUANTITY IN SWEDISH

In my paper I intend to comment on a couple of currently influential proposals concerning the phonological interpretation of stress and quantity in Swedish.

Stress should, in my opinion, be regarded as a fairly abstract phonological category pertaining to phonetic prominence. On one hand it has several different semantic and grammatical functions, on the other hand it has several phonetic realizations (intensity, F_0 -contours, quantity, elaboration/reduction of segmental structure). Considering word level phonology only, we can say that stress is structurally superordinate to word tone and quantity, rather than the other way around. The latter two could be looked upon as subordinate phonological contrasts with the function of subcategorizing strings with stressed syllables.

The main part of my contribution will be devoted to the phonological interpretation of quantity. The classical structuralist solution maintains that length is distinctive for vowels (Elert 1970, Bannert 1974, Witting 1977). The most well-known generative analysis (Eliasson & La Pelle 1973), on the other hand, argues that length distinctions in both vowels and consonants are phonologically irrelevant and can be predicted from stress plus a postulated contrast between non-geminated and geminated consonants. Recently, a phonetic theory based on the notion of articulatory gestures has been proposed by Öhman (1978). Öhman makes the same assertions as Eliasson. I shall argue that though such an analysis is theoretically possible provided that certain ad hoc assumptions are made, data concerning, e.g., the production and perception of Swedish vowels, slips of the tongue, interference in the pronunciation of foreign languages, language acquisition etc, indicate that the analysis under consideration lacks psychological validity and that length in vowels is phonologically relevant in Swedish.

Anders Löfqvist

LARYNGEAL ARTICULATION AND JUNCTURES IN THE PRODUCTION OF SWEDISH
OBSTRUENT SEQUENCES

The production of voiceless obstruents requires precise temporal control and coordination of several articulatory systems: the tongue, the lips and the jaw are engaged in the formation of the constriction or occlusion, the soft palate is elevated in order to seal off the entrance to the nasal cavity and prevent air from escaping, and the glottis is abducted in order to prevent vibrations of the vocal folds.

Previous studies of Swedish obstruents have shown that the temporal coordination of the oral release and the adduction of the vocal folds controls the amount of aspiration after the release in voiceless stops. In clusters of voiceless obstruents the glottis has been found to behave in a manner predictable from the aerodynamic requirements for the production of fricatives and the presence or absence of aspiration in stops. Thus, peak glottal opening occurs during the fricative in sequences of stop + fricative or fricative + stop, whereas in sequences of two stops peak glottal opening occurs during the first or second member of the sequence depending on whether the second is aspirated or not. In all obstruent clusters studied thus far only one opening gesture of the glottis has been noted during the whole cluster. The present investigation is an extension of earlier work and examines laryngeal articulation in sequences of obstruents with different types of junctures intervening between the members of the sequence.

Registrations comprised photoglottogram for information on glottal movements, oral egressive air flow and intraoral pressure for information on oral articulations and the signal from a larynx microphone.

Preliminary results indicate certain changes in laryngeal articulation during the sequences which can be associated with different types of junctures. Specifically, two distinct glottal abduction gestures were found in those instances where a word boundary separated the obstruents in the sequence. Again, these changes appear to be related to the aerodynamics of obstruent production.

Anders Löfqvist and Peter Kitzing

LARYNGEAL AERODYNAMICS AND THE CONTROL OF PROSODIC PHENOMENA IN SPEECH

The control mechanisms for fundamental frequency and intensity in speech are not completely understood, witness the recent debate on the relative importance of laryngeal and respiratory factors in the regulation of fundamental frequency. Most of the evidence presented in that debate suggests that laryngeal mechanisms are more important for F_0 control but at the same time different sensitivity of the larynx to aerodynamic variations at different F_0 levels is an open possibility. Current views on intensity control imply both active variations in subglottal pressure and variations in glottal resistance.

The Swedish word accents provide suitable material for studies of prosodic control in speech. An earlier investigation of subglottal pressure during the production of words with different word accents suggested differences in respiratory activity for the two accents. These differences appeared, furthermore, to depend on the dialect of the speaker and were tentatively related to the variations in fundamental frequency manifesting the accent distinction.

The present paper presents some preliminary results of a more comprehensive study of laryngeal aerodynamics and the control of fundamental frequency and intensity in speech.

Recordings of air pressure below and above the glottis were made using a miniature transducer system with two pressure sensors placed in a flexible catheter which was introduced through the nose and placed in the respiratory tract with one sensor below and the other above the vocal folds. Air flow was recorded simultaneously using a standard Fleisch pneumotach system. The pressure drop across the glottis and the transglottal air flow were used for calculations of glottal resistance.

Preliminary results show a close agreement between fundamental frequency and glottal resistance, i.e. glottal resistance increases with increasing fundamental frequency. The variations in subglottal pressure associated with the accent distinction were largely reproducible from the earlier investigation.

Per Egil Mjaavatn
Department of Linguistics
The University of Trondheim

ISOGLOSSES OF TONEME CATEGORIES COMPARED WITH ISOGLOSSES OF TRADITIONAL DIALECT GEOGRAPHY

Introduction

Can toneme categories be used as dialect markers in the same way as apokope, vowel- and consonant quality?
Norwegian dialects are traditionally often divided into four main areas; Eastern Norwegian, Western Norwegian, the dialects of Trøndelag and Northern Norwegian. An accoustical analysis of Norwegian tonemes indicates that the fundamental frequency patterns may be grouped in the same way.

Results

If we ignore toneme 2 and only examine the distribution of toneme 1-varieties, these may be divided into three groups:

1. The curve of toneme 1 falls off from a maximum in the stressed vowel.
2. The maximum of the curve is in the unstressed vowel.
3. There are two maxima - one in the stressed vowel and one in the unstressed vowel.

The distribution of these three fundamental frequency patterns of toneme 1 covers approximately the same areas as Western-Norwegian, Eastern Norwegian and the dialects of Trøndelag respectively. Northern Norwegian dialects have in toneme 1 words a fundamental frequency pattern with one maximum in the stressed syllable. Thus the dialects differ clearly from the Trøndelag dialects.

If we go into detail concerning the moment of the fundamental frequency maximum in toneme 1 and add the shape of the toneme 2 curves, we will find common borders with a lot of traditional isoglosses e.g. in Setesdalen, Sunnhordaland, Northern Rogaland, Romsdal and northern parts of Gudbrandsdalen.

In this way the isoglosses of the toneme categories seem to give an interesting supplement to the traditional dialect geography.

Bent Jul Nielsen

Some cases of interdependence between the accent system and the vowel system in Jutlandic dialects.

1. It seems to be a necessary condition for the replacement of stød by a parasite consonant as acc.1-manifestation in long vowels that the vowel in question is 1^o close, 2^o slightly diphthongized (closing). This is the case both in the area in which the parasite occurs in /ɪ, ȳ, ū/ only (P+p, see map below; the parasite-areas π are disregarded here) and in the one in which it also appears in /iə, yə, uə/ (area p). Conversely, when the parasite is once established, it is able to prevent those cases of vowel-merging which might arise from this above-mentioned diphthongization or from re-monophthongization of the ə-diphthongs. These mergings, however, take place under the condition acc. 2.

2. Illustration.

The common N.Jutl. vowel system (outside the P+p+π areas).

Long vowels	Acc. 1-manifestation	Acc.2-manifestation
/ɪ, ȳ, ū/	[ʊɪ?, ʏʏ?, ɔu?]	[ʊɪ:, ʏʏ:, ɔu:]
/iə, yə, uə/	[i?ə, y?ə, o?ə]	[iə, yə, oə]
/ē, ȓ, ȕ/	[e?, ø?, o?]	[e:, ø:, o:]
/Ē, æ, ȕ/	[ɛ?, æ?, ɔ?]	[ɛ:, æ:, ɔ:]
/ā/	[a?]	[a:]

Certain combinations of short vowel and consonant.

/e/+j/	/ɛ/+j/	[(ei?)]	[(ei?)]	[(ei:)]	[(ei:)]
/ø/+j/	/œ/+j/	[(øʏ?)]	[(øʏ?)]	[(øʏ:)]	[(øʏ:)]
/o/+w/	/ɔ/+w/	[(ow?)]	[(ow?)]	[(ow:)]	[(ow:)]

Alternative vowel systems (only manifestations and only the first part of the long vowel system are recorded).

Area P	Area p ¹	Area p ²
Acc.1-manif.	Acc.1-manif.	Acc.1-manif.
[ʊɪg, ʏʏg, ɔu ^w g]	[ʊɪg, ʏʏg, ɔu ^w g]	as p ¹
[i?ə, y?ə, o?ə]	[eʊgə, øʏgə, ɔwə]	
[ei?]	[ei?]	
[øʏ?]	[øʏ?]	as p ¹
[ow?]	[ow?]	
Acc.2-manif.	Acc.2-manif.	Acc.2-manif.
[ɪ:, ȳ:, ɔu:]	[ɪ:, ȳ:, ɔu:]	[ɪ:, ȳ:, ɔu:]
[iə, yə, oə]	[eɪə, øʏə, ɔwə]	[e:ə, ø:ə, ɔ:ə]
[eɪ:]	[eɪ:]	
[øʏ:]	[øʏ:]	as p ¹
[ow:]	[ow:]	

3. Phonemic interpretation of the alternative systems.

a. The [ʊɪg, ʏʏg, ɔu^wg]-complexes may be interpreted everywhere in area p+P as manifestations of /ɪ, ȳ, ū/ in acc. 1-syllable, the parasite being a positional variant of the stød. The corresponding acc.2-manifestations are [ɪ:, ȳ:, ɔu:].

b. The [eʊgə, øʏgə, ɔwə]-complexes may be interpreted as manifestations of /iə, yə, uə/ in acc.1-syllable, being opposed to both /ɪ, ȳ, ū/ in acc.1-syllable and /eɪə, øʏə, ɔwə/. The corresponding acc. 2-manifestations, on the contrary, will always be identical with one of the other sound-series already present within the pattern, i.e. the three diphthong-phonemes are absent under the condition acc. 2.



Magne Oftedal

Nordic Accent Patterns in Scottish Gaelic

Most Scottish Gaelic dialects have two types of word accents (the term accent is here used loosely). There is a phonological distinction between, on one side, /¹fiex/ 'raven' and /¹aran/ 'bread' and, on the other hand, /²fiex/ 'debt' and /²aram/ 'on me'. The difference is, in some dialects, a difference of stress. The main stress is on the first vowel in both kinds of words, but the second vowel has more prominence in type 2 than in type 1. In other dialects it may be a difference of quantity: the second vowel is longer in type 2 than in type 1. Other dialects again may be analysed as having a distinction of syllabicity: words of type 1 are dissyllabic, while words of type 2 are monosyllabic. This latter distinction is also in conformity with the historical origin of the distinction: /¹fi-ex/ was a dissyllable with hiatus, /¹aran/ was an ordinary dissyllable, while /²fiex/ was a monosyllable with a diphthong and /²aram/ had developed from orm, with a secondary or svara-bhakti vowel.

Some dialects, however, and precisely those dialects which have been influenced most by Norse, have a tonal distinction between the two types of words. Moreover, the actual pitch movement is strikingly similar to that of southwest Norwegian. We may, if we wish, describe these dialects as having word tones of a Scandinavian type (although other descriptive techniques may also be used).

The probability (and possibility) of Norse influence in the accentual development of these dialects will be discussed, with reference also to some phonetically similar features of Modern Welsh (where it is much less likely that there has been Norse influence).

Bengt Oreström, Department of English, Lund

INTERRUPTION AND INTERRUPTED SPEECH

Introduction

A basic notion in linguistic interaction is that of turn-taking, ie the participants alternate to speak. Turn-taking can be said to be one criterion of conversation, without turn-taking no conversation. A model for the exchange of speaking-turns in conversation is presented by Sacks, Schegloff & Jefferson (Language 50, 1974). They note that "overwhelmingly, one party talks at a time".

Aim

Although the passing of the turn from one speaker to another is generally a smooth process, this is seldom, if ever, the case throughout a whole conversation. Four types of 'unsmooth speaker-shift' were set up and tested: CUT OFF, OVERLAP, PARALLEL, and SIMULTANEOUS START. Further, how do the speakers react when they face interruption and joint talking. Two paralinguistic features, loudness and tempo, were selected to study this.

Material and Method

Three auditiely analysed and orthographically transcribed texts of conversational English were examined (The London-Lund Corpus of Spoken English). I collected all instances of 'unsmooth speaker-shift', recorded variation in loudness and tempo, and related this to the speakers.

Results

At the present stage, results have been obtained for only one conversation. Of the total number of speaker-shifts more than 1/3 were unsmooth ones. Of these SIM. STARTS and OVERLAPS were the most common. A participant who switched from listener to speaker before the current had stopped talking tended to deliver his utterance in a quicker or louder manner compared with his "normal" loudness and tempo. Also, these two features were occasionally employed by the current speaker as a technique for "defending" his right to continue.

Magnús Pétursson

The Intonation of the Simple Declarative Sentence in Icelandic

In this paper, which is the first scientific and experimental contribution to the study of Icelandic intonation, the intonation of simple declarative sentences has been examined. The sentences were constructed in such a way that each of the accents could be emphatically stressed. It is shown that the number of accents in the sentence modifies the intonation curve, if the sentence has more than four accents. However, it can be said that this type of sentence can be described by means of the so-called "hat model". This model seems to be current in the germanic languages.

The intonation of sentences in which one of the accents is made emphatic resembles a small hill in a flat landscape. The emphasis is realised phonetically by greater duration of the accented vowel and by higher fundamental frequency. Sometimes the duration of the whole word increases.

Surprising is the frequently observed increase of the fundamental frequency on the last syllable of the word. This increase remains unexplained and here it is necessary to undertake a new investigation.

The intonation of Danes speaking English

Contrastive analysis of Danish and English intonation is in its infancy. Assessment of foreign accent when Danes speak English has led to subjective labelling, according to which narrow voice span and monotonous intonation are judged as indicators of hesitancy, apathy and sombre Scandinavian gloom. Is this mother tongue interference or underdog interlanguage? Text-books on the two languages are relatively unhelpful, in that the same prosodic features (eg pitch movement up or down, isochrony) are held to operate in each language, often in tandem with the same grammatical features. On the other hand it is easy to demonstrate that the languages exploit prosody in different ways: for instance, Danish modal particles (da, nok, endelig, etc) often correspond to pitch movement in English.

In order to develop more adequate theoretical and empirical descriptions of Danish learners' needs in the realm of prosody, error analysis has been undertaken of tapes of authentic communication situations (interviews with "natives"), and where prosodic features can be studied in conjunction with other linguistic levels - particularly phonetic and syntactic - and with discourse functions. The research is being done within the framework of 'Projekt i fejlanalyse, intersprogsstudier og kontrastiv lingvistik' ("PIF") at the English Department, Copenhagen University, which has assembled a large, representative corpus of the written and spoken English of Danes in formal education in the Copenhagen area. In the pilot phase of the project, error identification was carried out on two fronts, general impressions (of pitch, modulation, variation, rhythm and tempo) and isolated prosody errors, for which there are twenty categories, some of which however are only relevant when the informant is reading a text aloud. Among the tricky issues are choice of the model (only standard British English?), error as a matter of degree, analyst reliability, and the weighting of factors which contribute to Danish accent.

K. Ringgaard

THE DISTRIBUTION OF STØD AND TONAL ACCENT
IN DANISH DIALECTAL AREAS

It is commonly accepted that the distribution of stød/no-stød and acc.1/acc.2 in the Scandinavian languages is so alike that it is evidence of a genetic relationship.

In my paper this way of reasoning is carried on to the dialectal level. I try to show that the two areas Western Danish (Northern Jutlandish (stød)-Southern Jutlandish (tonal acc.)) and Eastern Danish (Sealandic (stød) - Scanian (Tonal acc.)) deviate respectively in the same way from the overall accentual system, so that each of them must be regarded as one coherent dialectal area as to accents.

It must be admitted, however, that my information from Scanian in this respect is rather scant, which is very unfortunate. Therefore it is suggested that Scandinavian dialectologists take more interest in dialectal distribution. The usefulness of distributional maps is shown by cases where they have been the means of deciding in stød discussions.

In a glottochronological spirit the above-mentioned dialectal similarity is taken as evidence of long unity, or in other words as evidence that the split between tonal dialects and stød dialectals is rather late.

Further details from the Jutlandic rules are mentioned. Some well-known arguments are taken up once more. And the conclusion is that the introduction of the stød is later than assumed by most Danish language historians to-day.

Aino Sallinen-Kuparinen
Teachers' College
University of Jyväskylä, Finland

HOW DOES A FINN SPEAK?

Observations on some phonetic variables in spoken Finnish¹

This report deals with observations on the speech behaviour and speech communication by Finnish pupils attending vocational schools and college. Attention is focused on the linguistic and paralinguistic codes.

Tasks requiring short oral descriptions of cartoons and the reading of written texts of varying degrees of linguistic complexity were administered. A description will be given of the factors relating to the differences by means of some parameters of speech, such as pitch level, the rate of articulation (syllables per second), and the duration and frequency of pauses (longer than 0.2 sec.). Some parameters will be set against observations in other languages.

Preliminary results indicate that (1) the rate of articulation in reading is lower and the use of pauses is almost significantly greater with pupils attending vocational schools, whose education is not verbally oriented; (2) there are more differences in sex roles regarding the use of pitch level in vocational schools than in colleges.

It appears that the differences between the groups and the types of texts produced are in part explicable by sociological factors and textual roles and other variables of the speech situation.

¹ I wish to thank Dr. Jaakko Lehtonen (Department of Phonetics and General Linguistics, University of Jyväskylä) for his useful remarks concerning my study.

Ebba Selenius

STUDIES IN THE DEVELOPMENT OF THE 2-ACCENT SYSTEM IN FINLAND-SWEDISH

Problem

What traces of Sweden's 2-accent system are left in the Finland-Swedish of coastal areas between Stockholm and Helsinki (Helsingfors)?

Methods

The same methods of testing were used in Stockholm, East Åboland (Kimito), West Nyland and Helsinki. Informants were partly allowed to talk freely, partly asked to give one-word answers to questions unknown to them beforehand. One-word accentuation (the same words for all informants) was specially investigated instrumentally and with groups of listeners.

Results

In West Nyland the 2-accent system is intact and phonematic. Pitch contours are of the same type found in Central Swedish: one-peaked accent 1, two-peaked accent 2, and the distribution of accent is the same in all essentials. Resemblances between word- and phrase-contours, use of a fixed accent pattern in phrases, word-groups, compounds, simple di- and trisyllables (particularly with accent 2) were striking.

In East Åboland the same pitch contours appear as in West Nyland, but are confused by speakers. Acc. 2 has become generalized at the expense of acc. 1, and the contour of acc. 2 is often distorted: dominant second pitch-peak, often not until the last segment, even in compounds.

In Helsinki there is only one word-accent, which I confirmed by Kloster Jensen's self-testing method. The single pitch-peak (followed by a marked fall and a low trailing pitch) is placed earlier than in any other Swedish-speaking area (a generalized acc. 2 contour which has lost its second peak?) The unusually unstable accentuation, speakers' attitudes, emotions and complexes, are of socio- and psycholinguistic interest.

Anna-Brita Stenström, Department of English, Lund

INTONATIONAL PATTERNS IN QUESTIONS AND ANSWERS IN ENGLISH CONVERSATION

Aim

The aim is to give a prosodic and paralinguistic description of questions and answers as they occur in English face-to-face conversation, especially concerning

- whether there is agreement with rules and generalizations given in handbooks on English intonation
- what other meanings divergent patterns convey

But since question form does not necessarily imply question function and vice versa, the first step was to decide what utterances acted as question and question/answer units, which was possible only by close consideration of contextual and situational features as well.

Method

Three auditiely analysed and orthographically transcribed texts of conversational English were examined (The London-Lund Corpus of Spoken English). In order to get a general view of all features characteristic of the questions and answers in the conversations I used specially designed 'feature slips' where all markings of syntax, prosody, and paralanguage were registered, together with appropriate characteristics of context and situation. Furthermore, I was able to check the meaning of certain doubtful utterances by listening to the actual tape-recordings.

Results

As was expected, a great number (20 %) of the total amount of formal questions did not function as questions but as assumptions, expressions of opinion, etc. On the other hand, a certain number of declarative statements, most of which had falling tone, functioned as questions. Approximately 25 % of the utterances with question form were not followed by a reply, ie they were not parts of units.

False starts, reformulations, cut-off questions, complex, and compound questions were common. In several cases question/answer units were interwoven with other questions and answers.

'Normal' intonational patterns were predominant, especially as far as Wh-questions were concerned, but divergent patterns were frequent. What happened when the patterns of intonation did not agree with established rules will be further discussed in the paper.

ON TONAL ACCENT IN HUNGARIAN SWEDISH

Problem area

The Swedish tonal accent is difficult to master, both in the perception and in the production of Swedish speech, for immigrants to Sweden whose native language is Hungarian (as well as for numerous other immigrant groups). Neutralization, random accentuation, and over-use of accent 2 are frequent symptoms in speech production. The present paper deals with some attempts at describing this area of difficulty, drawing on ideas and material developed by Gösta Bruce (Swedish word accents in sentence perspective, Lund 1977).

Procedures

- (1) 8 Hungarian immigrants in Sweden (Stockholm/Uppsala area) and 7 Hungarian students of Swedish in Budapest took the test described in Bruce 1977:111 ff. (synthetic versions of the phrase INGA malmer, which is interpretable either as a woman's name or as 'no ores', depending on the tonal contour).
- (2) 10 Hungarian students of Swedish in Budapest produced four utterances containing INGA malmer and inga MALMER (emphasis and tonal contours varied) before and after a short period of practice. The number of acceptable attempts and the number and type of deviations was tabulated.
- (3) 7 immigrants in Sweden produced six samples of the same sentences as in (2), but without a practice session, spontaneously and in imitation. Evaluation as in (2).
- (4) Tape-cuttings from sample productions and imitations selected from 4 of the speakers in (3) were evaluated by 7 Stockholm speakers, 7 non-Stockholm speakers, and 7 Hungarian students of Swedish in Budapest (= the group in (1)).

Results

Hungarian listeners generally fail to distinguish between tonal accents out of focus in (1). There is a weak but negative correlation between Bruce's Swedish group and Hungarian immigrants in the case of Bruce's slow gradient stimuli. "Extreme" stimuli provide a weak, positive correlation.

In the speech of both Hungarian students and immigrants, accent 1 is more acceptable than accent 2, and emphasis on INGA is easier than emphasis on MALMER in (2) and (3). No effects of the practice session in (2) were noticeable, nor were there any clear differences between production and imitation in (3).

Judging a Hungarian speaker's intention in (4) proved to be a difficult task, for Swedish and Hungarian judges alike.

AN INVESTIGATION OF VARIOUS ASPECTS OF DANISH INTONATION

Nina Thorsen, Institute of Phonetics, University of Copenhagen

Abstract

The relationship between linguistic stress and fundamental frequency, and the intonation contours, in short declarative, interrogative, and non-terminal sentences in Advanced Standard Copenhagen Danish are established on the basis of acoustical analyses of recordings by four subjects.

There is a close and simple relationship between stress and fundamental frequency (F_0): a stressed syllable and all succeeding unstressed syllables within the same simple sentence constitute a tonal unit with a relatively low stressed syllable followed by a high-falling tail of unstressed syllables. This unit is termed a stress group. The difference between declarative, non-terminal, and interrogative sentences is first and foremost a difference between the course of F_0 through the stressed syllables: in declarative sentences the stressed syllables form a smoothly slanting slope. In statement questions the stressed syllables have the same (high) F_0 , i.e. a "flat" contour. Other types of questions and non-terminal clauses have slopes in between these two extremes.

Perception experiments on parts of the corpus, involving 14 listeners, have shown that utterances which differ only in their intonation contours can be identified with rather great certainty as being either declarative, non-final, or interrogative, in complete accordance with the actual course of F_0 , and further, that the vital information about the intonation contour, i.e. sentence type, is contained in the last stressed syllable, which is only to be expected, since this is the point where different contours are most widely separated.

A material which is to shed light on the tonal manifestation of emphasis for contrast and emotive emphasis is presently being analyzed. A cursory investigation of this material seems to indicate that, in comparison with the "neutral" case, the "emphatic" syllable is raised considerably in frequency, and at the same time the fundamental frequency variation in the neighbouring stress groups is radically reduced, the more so the more emphatic the syllable in question is.

Brit Ulseth
Department of Linguistics
University of Trondheim

STRESS AND TONEME AS USED BY NATIVE TRONDHEIM SPEAKERS -
A SOCIOLINGUISTIC STUDY

Introduction

In Trondheim as in the rest of Trøndelag there is a tendency to pronounce words like avis ("newspaper") and generation ("generation") with stress on the first syllable and with toneme 2 -["a'v:is] and ["gen:eraʃu:n]. This pronunciation is often regarded as non-standard Norwegian, as opposed to [a'vi:s] and [genera'ʃu:n] which is considered to represent standard Norwegian, spoken by the upper social stratum.

The purpose of the present investigation was to study how native Trondheim speakers use stress and toneme in words of the type mentioned above, and to relate these linguistic variables to the sociologic variables sex, age, profession, education, economy, political sympathy, and attitude to use of dialect.

Method

50 adults of both sexes born and grown up in Trondheim were randomly chosen. The material was elicited through an interview of about half an hour with each informant and through two types of word lists and a questionnaire. The informants were interviewed by a person speaking the Trondheim/Trøndelag dialect. The setting was informal, mostly the informant's living-room.

The topics of conversation were meant to be the same for all the interviews, but even so the sample of data naturally differs from one informant to the next. This set of data and the data provided by the word lists have first been separately analyzed and then analyzed as a whole. The two sets of linguistic data have been studied in relation to each of the sociologic variables mentioned above.

Results

40 informants tended to use one of the standards. 10 informants used different standards in the two sets of data, and 6 informants (3 of whom were among the former) used different standards in the two types of word lists.

As other sociolinguistic investigations have shown the women used more standard forms than the men did. - For the women age, political sympathy, profession, and attitude to use of dialect seemed to be the more important sociologic variables. For the men political sympathy, economy, education, and profession seemed to be the more dominant variables.

VANVIK, Arne

Some Remarks on Norwegian Prosody

The author is chiefly concerned with Standard Eastern Norwegian and will deal with the stress system, the toneme system and the length system. All three systems involve a binary opposition. An utterance falls into a number of syllables. These syllables are either stressed or unstressed. The stress system is basic and includes all syllables. It is found in all Norwegian dialects. The toneme system is lacking in some Northern and Western dialects. In the tonemic dialects the toneme system is superimposed on the stress system, but it does not include all syllables. Toneme presupposes stress, not vice versa. Tonemic opposition can only occur between sequences of one stressed syllable + one or more unstressed syllables. Auditory observation as well as fundamental frequency curves disprove the old view that isolated stressed monosyllables have the same tonetic realization as toneme 1.

It seems realistic to work with long and short vowel phonemes, but not long and short consonant phonemes. Contoid length can be varied freely without changing a word into another, while this is impossible with vocoid length.

S.Zetterlund, L.Nordstrand, O.Engstrand, C.Wallén, S.Öhman

ANALYSIS AND SYNTHESIS OF INTONATION AND PROSODY

New methods for the analysis and synthesis of acoustic speech signals have been developed within the project Linguistic Behaviour at the Department of Linguistics Uppsala University.

These methods make it possible to manipulate the fundamental frequency contour, the durations, intensities and spectral contents of individual segments. In the paper these methods will be demonstrated with examples from Swedish.

S.E.G. Öhman

ON THE EXPLANATION OF INTONATIONS AND THEIR MEANINGS

Intonation has like any other constitutive element of the expressions of speech, a physical mechanical (or phonetic) aspect and a psychic teleological (or semantic) aspect. The explanation of an intonation should therefore be twofold:

- 1) explaining in what the essence of the acoustic structure of the intonation consists
- and
- 2) explaining the purpose to which it is used in the language game.

In the paper a gesture theory for the physical mechanical aspect of the explanation will be proposed. For the psychic teleological explanation a certain language game concept will be suggested. The latter seems to make it possible to develop a natural, semantic explanation model that contrasts rather sharply with the current association semantics (*aliquid stat pro aliquo*). Many examples from Swedish, produced by means of LPC-synthesis will be given.

PARTICIPANTS AND CONTRIBUTIONS

The contributions have been grouped into the following categories:

Text and sentence prosody T
 Word prosody W
 Prosodic systems S
 Interference I

1) Árnason Kristján	Þaskoli Íslands Reykjavík	Quantity, stress and the syllable in Icelandic	W
Bannert Robert	Inst f lingvistik Lund		
Basbøll Hans	Nordisk Institutt Odense	Boundaries and readjustment rules in a generative grammar of Danish	T +
Bird Barbara	Britisk Institutt Oslo		
Bredvad-Jensen Anne-Christine	Inst f lingvistik Lund		
Bruce Gösta	Inst f lingvistik Lund	A prosodic typology for Swedish dialects	S
Elert Claes- Christian	Inst f lingvistik Umeå	Models for the assignment and interpretation of prosody in Swedish	S
Eliasson Stig	Inst f lingvistik Uppsala	Swedish quantity revisited	W
Elstad Kåre	Inst f lingvistik Tromsø	The North Norwegian circum- flex toneme	W
Fintoft Knut	Lingvistisk Insti- tutt, Trondheim	Toneme patterns in Norwegian dialects	S
Fliflet Albert Lange	Fonetisk Insti- tutt, Bergen	About the relations between consonant length and word structure in Norwegian and Swedish	W
Fretheim Thorstein	Lingvistisk Insti- tutt, Trondheim	The role of accent attenuation in descriptions of East Norwegian sentence intonation	T
Goës Alvar	Inst f lingvistik Stockholm	The Predictability of Swedish Word Stress (and Word Accent)	W
Gårding Eva	Inst f lingvistik Lund	see Bruce	
1) Anward Jan	Inst f lingvistik Uppsala		

Hackman Thea	Dept Phonetics London	Rhythm in Finnish and English	I
Hadding Kerstin	Inst f lingvistik Lund		
Hammarström Göran	Dept of Linguis- tics, Clayton Australia	Fundamental aspects of proso- deme and contoureme	S
Hoel Thomas	Lingvistisk Insti- tutt, Oslo		
Hutters Birgit	Inst f fonetik Köpenhamn		
Hyltenstam Kenneth	Inst f lingvistik Lund		
Iivonen Antti	Avd f fonetik Helsingfors	Is there interrogative into- nation in Finnish?	T
Johansson Kurt	Inst f lingvistik Lund		
Kitzing Peter	Talvårdsavd, Allm sjukhuset, Malmö	see Löfqvist	
Kjeldsen Søren Beatrice	Nordisk Insti- tutt, Odense		
Koponen Matti	Fonetiska Inst Jyväskylä	The influence of the speaker's mother tongue on the signalling of word boundaries in a foreign language	I
Lahti Lea-Liisa	Inst f nordiska språk, Jyväskylä		
Laulainen Maarit	Grundskolan i Vaajakoski		
Lehiste Ilse	Dept of Linguis- tics, Ohio, USA	Polytonicity in the area sur- rounding the Baltic Sea	S
Lehtonen Jaakko	Inst f lingvistik Jyväskylä	On factors affecting the pitch level of speech	T
Lindblad Per	Inst f lingvistik Göteborg		
Lindblom Björn	Inst f lingvistik Stockholm	Final lengthening in speech and music	T +
Linell Per	Inst f lingvistik Uppsala	The interaction of stress and quantity in Swedish	W

Lyberg Bertil	Inst f lingvistik Stockholm		
Lysne Anna Kalve	Engelsk Institutt Bergen		
Löfqvist Anders	Inst f lingvistik	Laryngeal articulation and junctures in the production of Swedish obstruent sequences	T
		Laryngeal aerodynamics and the control of prosodic phenomena in speech	W
Malmberg Bertil	Inst f lingvistik Lund		
Mjaavatt Per Egil	Lingvistisk Institutt Trondheim	Isoglosses of toneme categories compared with isoglosses of traditional dialect geography and see Fintoft	S
Møllergård Einar	Lingvistisk Institutt Trondheim	see Fintoft	
Nauclicr Kerstin	Inst f lingvistik Lund		
2)			
Nielsen Bent Jul	Inst f dansk dialektforsk- ning, Köpenhamn	Some cases of interdependence between the accent system and the vowel system in Jutlandic dialects	W
Nordstrand Lennart	Inst f lingvistik Uppsala	see Zetterlund	
Oftedal Magne	Keltisk Institutt Oslo	Nordic accent patterns in Scottish Gaelic	S
Oreström Bengt	Engelska insti- tutionen, Lund	Interruption and interrupted speech	T
Pamp Bengt	Dialekt- och ort- namnsarkivet, Lund		
Pettersson Thore	Inst f lingvistik Lund		
Pétursson Magnús	Phonetisches Institut, Hamburg	The intonation of the simple declarative sentence in Icelandic	T
Phillipson Robert	Roskilde Univer- sitetscenter Roskilde	The intonation of Danes speaking English	I
2)			
Nettelblatt Dalby Ulrika	Inst f lingvistik Lund		

Prohovnik Barbara	Inst f lingvistik Lund		
Ringgaard Kristian	Nordisk Institut Århus	The distribution of stød and tonal accents in Danish dialectal areas	W
Sallinen- Kuparinen Aino	Jyväskylän Univer- sitet, Jyväskylä	How does a Finn speak? Obser- vations on some phonetic variables in spoken Finnish	I
Selenius Ebba	Inst f nordisk filologi Helsingfors	Studies in the development of the 2-accent system in Finland- Swedish	S
Stenström Anna- Brita	Engelska insti- tutionen, Lund	Intonational patterns in questions and answers in English conversation	T
Stroud Christopher	Inst f lingvistik Lund		
Svartvik Jan	Engelska insti- tutionen, Lund		
Svensson Bengt	Inst f lingvistik Umeå	On tonal accents in Hungarian Swedish	I
Thavenius Cecilia	Engelska insti- tutionen, Lund		
Thorsen Nina	Inst f fonetik Köpenhamn	An investigation of various aspects of Danish intonation	T
Thorsen Oluf M	Inst f fonetik Köpenhamn		
Ulseth Brit	Lingvistisk Insti- tutt, Trondheim	Stress and toneme as used by native Trondheim speakers - A sociolinguistic study and see Fintoft	W
Vanvik Arne	Fonetisk Insti- tutt, Oslo	Some remarks on Norwegian prosody	W
Wigforss Eva	Inst f lingvistik Lund		
Ylönen Marjatta	Högskolornas språk- central, Jyväskylä		
Zetterlund Staffan	Inst f lingvistik Uppsala	Analysis and synthesis of intonation and prosody	T
Öhman Sven	Inst f lingvistik Uppsala	On the explanation of intona- tions and their meanings and see Zetterlund	S

+ abstract not submitted

TRAVAUX DE L'INSTITUT DE LINGUISTIQUE DE LUND
PUBLIÉS PAR BERTIL MALMBERG ET KERSTIN HADDING

- I *Carl-Gustaf Söderberg*. A Typological Study on the Phonetic Structure of English Words with an Instrumental-Phonetic Excursus on English Stress. 1959.
- II *Peter S. Green*. Consonant-Vowel Transitions. A Spectrographic Study. 1959.
- III *Kerstin Hadding-Koch*. Acoustico-Phonetic Studies in the Intonation of Southern Swedish. 1961.
- IV *Börje Segerbäck*. La réalisation d'une opposition de tonèmes dans des disyllabes chuchotés. Étude de phonétique expérimentale. 1966.
- V *Velta Rūķe-Draviņa*. Mehrsprachigkeit im Vorschulalter. 1967.
- VI *Eva Gårding*. Internal Juncture in Swedish. 1967.
- VII *Folke Strenger*. Les voyelles nasales françaises. 1969.
- VIII *Edward Carney*. Hiss Transitions and their Perception. 1970.
- IX *Faith Ann Johansson*. Immigrant Swedish Phonology. 1973.
- X *Robert Bannert*. Mittelbairische Phonologie auf akustischer und perzeptorischer Grundlage. 1976.
- XI *Eva Gårding*. The Scandinavian Word Accents. 1977.
- XII *Gösta Bruce*. Swedish Word Accents in Sentence Perspective. 1977.



Liber