Toward the phonetic description of Faroese vowels

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The sounds of Faroese have been described by several scholars in the past. The most substantial contributions were made by the distinguished Faroese scholars Jens Chr. Svabo and Jakob Jakobsen. The vast linguistic material which Svabo collected is immensely valuable also from a phonetic point of view because of the adequate transcription he devised. Svabo's way of rendering the sounds of Faroese was imitated more or less successfully by those writing in Faroese in the first decades of the nineteenth century.[1]) Jakobsen, in his turn, founded the modern phonetic study of Faroese. The phonetic notation which he (in co-operation with Danish scholars) introduced,[2]) was almost universally accepted as the standard way of transcribing spoken Faroese, although various modifications have been suggested in more recent times. In later years there has been a growing interest in Faroese both on the part of Scandinavian philologists and outside this circle. It is symptomatic that W. B. Lockwood in his description of the sounds of the language[3]) has introduced the phonetic

1) Cp. Chr. Matras in Svabos færøske visehaandskrifter p. LXXIX (1939).
2) Færøsk anthologi (1891), see p. 439–44.
3) An Introduction to Modern Faroese p. 6 ff. (1955).

alphabet of the International Phonetic Association. — Finally, various simplified (partly structural) notations have been devised in recent years.

There certainly is a firm basis for the further study of Faroese pronunciation. But there are many unsolved problems, not the least concerning vowel quality.

From the point of view of *structural* analysis, the basic problem (in establishing the system of vowel phonemes) is that there is no direct congruity between the systems of long and short vowels. It immediately suggests itself to identify the vowels pairwise as bound variants of one set of phonemes ([i:] of *linur* and [ɪ] of *lint* representing one phoneme /i/, and similarly for other vowels), but as the long vowels exceed the short ones in number, the analysis poses intricate problems. It is not so that some of the long vowels evidently match the short ones in quality, whereas the remaining ones are phonetically "leftovers", and the analysis must probably involve a compromise between rather conflicting criteria. — In the glossematic analyses of the system by Marie Bjerrum and Povl Skårup[1]) long and short units are classified together if they alternate automatically under inflection, derivation, or composition (as [i:] and [ɪ] in the example given above), and consequently, several of the short vowels are interpreted as overlappings of two or more otherwise distinct units. If "phonetic realism" is considered to be the important issue (cp. Otmar Werner's analysis of the consonant system[2]), some of the variation must be considered morphophonemic, and it makes sense to pose a structural difference between *all* long and short vowels. The system of long vowels resembles the English system in that it is open to question which vowels are phonemic diphthongs (in addition to the diphthongs written *í/ý, ey, ei, oy*, which may be found both long and short, and com-

1) Acta philologica Scandinavica 25, p. 31–78 (1962).
2) Phonetica 9, p. 79–107 (1963).

binations of vowel plus written *v*). It is not just a question of structural doctrine, and it seems most reasonable to admit that there may be more than one valid solution, although some phonemic interpretations may be better motivated than others.[1]) It is not the aim of this paper to discuss the phonemic structure of Faroese but rather to touch upon the purely phonetic aspects of the problems just mentioned, i. e. the match of long and short vowels and the more or less diphthongal character of long vowels.

As for the short vowels it is a basic problem in Faroese as in several related languages whether these vowels are "lax" in contradistinction to the tense, long vowels. This problem is of less consequence in the half-open and open vowels as in *hetta, høgga* (outside Suðuroy), *hátta, hatta* (in Lockwood's IPA notation [ɛ, œ, ɔ, a]), but the more close vowels, which may be exemplified by *hitta, húski, hugga* are rather indeterminate in quality. Roughly speaking, they may be taken as a kind of i, y, u or as a kind of e, ø, o. Lockwood uses the IPA symbols for lax i, y, u, whereas Jakobsen treats the individual vowels differently.

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[1]) The Faroese vowel system set up by Kenneth G. Chapman: Icelandic–Norwegian Linguistic Relationships p. 131 f. (1962) represents an interesting effort to present the structural pattern in an economic way. It is, however, not clearly understood why the author has chosen just that analysis, and it seems to me rather problematic to use an apparently slightly arbitrary phonemicization of this kind as the basis of far-reaching comparative conclusions. To my knowledge no really convincing phonemic analysis of the vowels has as yet appeared. I wish to emphasize in this context that the broad transcription of Føroysk–donsk orðabók[2] (1961) cannot be judged as a strictly phonemic transcription, but rather as a kind of practical approximation. The present author has not published any phonemic analysis of Faroese vowels, but I wish to mention that in my opinion such an analysis will not lead to exactly the type of solution which the broad transcription in question may be said to reflect. It is thus somewhat beside the point when Wayne O'Neil in a review in Scandinavian Studies 34, p. 198 (1962) criticizes the presentation as not being "truly phonemic" (this is not said to express disagreement with his suggestions).

He writes [ɪ, ø, o] in stressed syllables and [ɪ, ȯ] (in some contexts [o]) in unstressed syllables. Marius Hægstad (who slightly modifies Jakobsen's notation in accordance with the Norvegia system)[1]) renders the stressed vowels in question as [*i, ẏ* (apparently also *ø*), u], and the unstressed ones as [*e, u̇*].[2]) Pierre Naert,[3]) who is not quite satisfied with Jakobsen's phonetic symbols, has expressed doubt as to whether the first vowel is an open i or a close e; he presumes that both types occur with a considerable variation both in opening (tongue-height) and tension, especially when the vowel is unstressed. As for the other two, viz. Jakobsen's [ø, o], Naert contends that the former is sometimes (in some dialects) an open y rather than ø, and that the latter is definitely u rather than o.

It seems to me somewhat disputable to make a distinction — on impressionistic grounds — between lax i and tense e occurring as more or less free variants of the same phoneme. A lax vowel may be expected to exhibit a considerable latitude of variation, and it is hardly possible to avoid arbitrariness if the choice of symbol is not made systematically. Naert prefers to have a variety of symbols at his disposal, expecting further phonetic research to clarify the picture, but it does not do justice to Jakobsen's notation (which is comparatively broad and as such adequate on most points) to accuse it of symbol poverty. It is certainly essential to arrive at an accurate description of the height of the tongue in the articulation of the short vowels in words like *hitta, húski, hugga,* and to determine both whether there are marked differences among these (which does not a priori seem very likely), and whether they differ markedly in articulation and acoustic quality from long e,

[1]) Vestnorske maalføre fyre 1350 II,2: andra bolken (1917).

[2]) On the problem of unstressed vowels, which is not considered here, see e. g. Björn Hagström in Fróðskaparrit 10, p. 76–109 (1961), Otmar Werner in Arkiv för nordisk filologi 79, p. 247–55 (1964).

[3]) Studier i nordisk språkvetenskap p. 23–33 (Lund 1958).

ø, o as in *seg, løg, so.* But it is difficult to discuss in a fruitful way whether the short vowels are sometimes slightly more lax than at other times. The concept of "laxness" still needs much clarification.

As for the long vowels, Faroese possesses a number of obviously diphthongal units with a second component resembling a, i, or u (cp. [ɔa, ɔi, ɔu] in *tá, doyð, ló*). The phonetic problems associated with these diphthongs can to some extent be separated from those of the other vowels, and they will not be treated in this paper. As for the remaining long units, the vowels in *seg, løg, so* are rendered by Jakobsen as diphthongs with a centralized second component: [eə, øə, oə]; Naert considers the first one to be more adequately symbolized as [eɛ], whereas he does not express disagreement on the other two. Lockwood, on the other hand, renders them all as monophthongs: [e:, ø:, o:]. The close vowels in *sig, suð* are invariably rendered as monophthongs: [ī, ū] or [i:, u:], but Jakobsen was aware of a tendency toward diphthongization even in these vowels (especially in word-final position or before a vowel). In a recent outline of Faroese pronunciation the present author[1]) described all long vowels (except the sporadic [a:], which is not considered in this paper) as slightly diphthongized in accordance with Jakobsen's findings, [i:, u:] being slightly closing, and the others opening.[2]) The auditory impression of glide in these vowels is, however, not very strong; in many instances there is no perceptible change in quality, and it is certainly appropriate to classify all these vowels as monophthongs with a tendency of glide in one or the other direction rather than diphthongs on a par with [ɔa, ɔi] etc. (the diphthongization is by no means stronger than the diphthongization of [e:] which may be heard in Eastern Norwegian, for example). Nevertheless, when pronounced

1) Føroysk-donsk orðabók² p. XIX (1961).

2) Unfortunately, the terminology used ("stigende", "faldende") is rather confusing, since it is mostly used about sonority.

very distinctly, the long vowels in Faroese strike a Danish ear as gliding in comparison with the Danish long vowels of very fixed quality. It remains to be investigated which factors contribute to this impression. The tendency of glide is clearly manifested only in certain environments (the specific problems associated with monophthongal vowel quality before [a] are not considered in this paper).

Such phonetic problems as those mentioned here are difficult to settle upon on an impressionistic (auditory) basis, and they are not quite easily solved by examining the articulation because of the inherent difficulties in registering the exact position and shape of the tongue in relatively open sounds (for exact measurements X-ray photography must be used). Problems of this kind are, on the other hand, eminently suited for acoustic investigation, and the present author has done some preparatory work to see if it is possible by this kind of approach to shed light on some of the points of indeterminacy or disagreement. The material hitherto analysed is rather restricted, and at present no safe acoustic generalizations about Faroese can be made. Nevertheless it seems to me worth while to present some of the data in order to scetch how the problems may be attacked in future investigation.

It may not be entirely superfluous to describe briefly the acoustic phonetic method which is suitable for this purpose, i. e. the spectrographic method.

The voice used in producing vowel sounds contains a large number of partial tones, the most important of which are located at frequencies between 200 cps. (Hertz) and 3–4000 cps. The cavities in mouth and nose resonate and thus reinforce the partials at particular frequencies, so that there is for each vowel a concentration of sound energy in particular frequency bands. The frequencies of these frequency bands or formants are most expediently measured on a sonagraph (the data given below were measured by means of the Key-Electric Sonagraph of the Institute

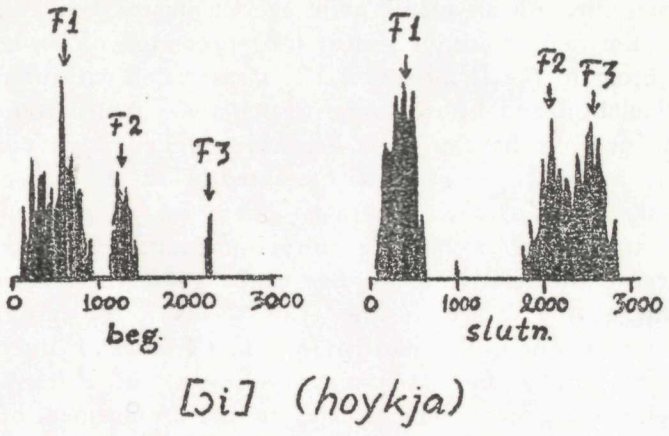

Fig. 1

of Linguistics and Phonetics of the University of Copenhagen).

Fig. 1 illustrates the "cross-section" type of spectrogram (also continuous spectrograms have been used). For the sake of clarity a diphthong with very different beginning and end has been chosen, viz. [ɔi] in *hoykja*. The first spectrogram is taken just in the beginning, the second towards the end of the diphthong. The x-axis displays frequency, the y-axis intensity of sound. The partials are seen as small spikes, and the formants, numbered from lowest to highest frequency, stand out as belts of high intensity. It is clearly seen that Fl is lowered, and F2—F3 are raised during the diphthong. It is known that most vowels can be defined sufficiently in terms of the frequency location of F1 and F2, and it is thus possible to arrange the vowels in acoustic charts with F1 and F2 as dimensions. As seen from Fig. 1 F1 is lowered when the tongue is raised, and F1 is thus an indirect measure of tongue-height. In order to have the vowels arranged in such a way that the charts can be compared with vowel charts based on articulatory and auditory findings, F1 must be

represented on an y-axis pointing *downwards* (see Fig. 2). For the same reason F2 must be represented on an x-axis pointing *to the left*, because F2 is associated with point of articulation and lip-rounding in such a way that unrounded front vowels have a high F2, and rounded back vowels have a low F2. — The data presented below are only given in the form of such diagrams. These are, of course, less exact than tables but are more immediately informative, because the relative location, i. e. the geometrical arrangement of the vowels in the chart seems to be more important phonetically than the absolute formant frequencies of the vowels. The latter may vary rather much from one person to another, whereas the mutual arrangement of the vowels is supposed to be fairly stable for different persons speaking with "the same" pronunciation (it is evident that this creates difficulties in the statistical processing of data from different persons).[1])

A further problem in formant measurements is that the acoustic quality of vowels, especially of short vowels, is strongly influenced by surrounding sounds, also in cases where the ear does not notice any appreciable difference. It seems fruitful to postulate the existence of a target position for each vowel type, the best approximation to which is obtained when the vowel occurs in the most neutral surroundings (ideally in isolation) and is spoken rather slowly (as in reading aloud).[2]) Vowels spoken under these ideal conditions are, therefore, the best kind of data at the initial stage of an acoustic investigation of formant frequencies. The sample material consists partly of "idealized" material, partly of material chosen more at random, and it is thus not altogether in accordance with the principle just mentioned, but in return it illustrates quite well the difference between the two kinds of data and the range of variation in natural (though not very fast) speech.

1) Cp. Peter Ladefoged: The Nature of Vowel Quality (Coimbra 1962).

2) A theory working with "target positions" has been proposed by Björn Lindblom: On Vowel Reduction (RIT Report 29, Stockholm 1963).

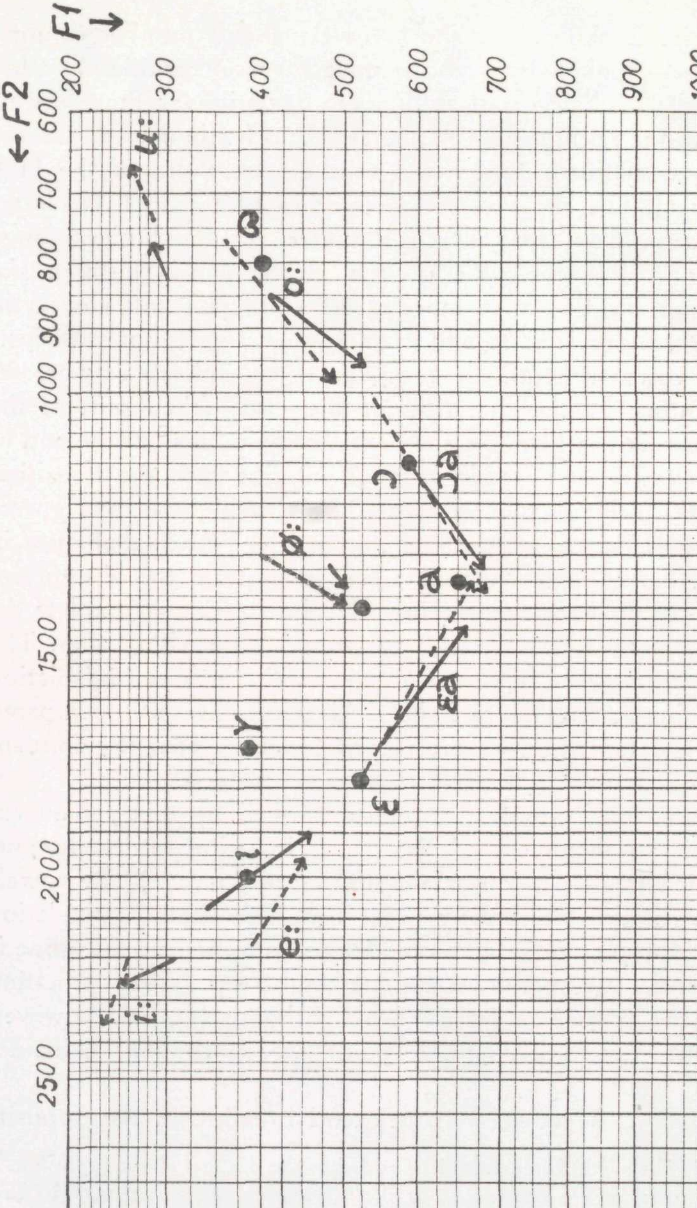
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Fig. 2

Fig. 2 shows the short vowels and a number of long vowels spoken by a young male Faroese (speaking a rather "neutral" dialect with no marked deviations in these vowels from the norm generally referred to in textbooks on Faroese pronunciation). The vowel symbols are those of the IPA system. The short vowels are indicated by dots. These represent, from the left to the right, in the highest range (about 400 cps.) the vowels in the words *hitta, húski, hugga,* in the next range (500—600 cps.) the vowels in *hetta, høgga,*[1]) *hátta,* and in the lowest range (about 650 cps.) the vowel in *hatta.* The long vowels are indicated by arrows pointing in the direction of the glide (the point of the arrow indicates a measurement made as close to the end of the vowel as possible without entering into the transition to the following consonant). The two highest vowels were spoken in the words *hita, hurðar,* the two medial ones in *eta, høka, hopa* ("recede"), and at bottom the diphthongs [ɛa, ɔa] in *hata, áta* are included because they complete the system of long vowels in relation to the short ones. The dotted arrows represent long vowels spoken in isolation (as in reciting the alphabet). All items have been compared with a repetition of the record to ensure that the formant values are fairly typical.

The long vowels [e:, ø:, o:] spoken by this person exhibit an increment of F1, i. e. a lowering of the tongue, which is almost comparable to that of [ɛa, ɔa].[2]) The vowels [e:, o:] do not directly point toward a central articulation of [ə]-type; to judge from the acoustic picture the glide is essentially a matter of tongue-height (cp. Naert's notation of the former as [eɛ]). The diphthongs [ɛa, ɔa], however, point toward a common point, which roughly coincides with short [a].

The close vowels [i:, u:] tend to glide in the opposite

[1]) The symbol [œ] should be added to the dot just above [a] in Fig. 2.

[2]) [ø:] of *høka* seems to be slightly anomalous, but it may be that this vowel is on the whole not quite comparable to [e:, o:].

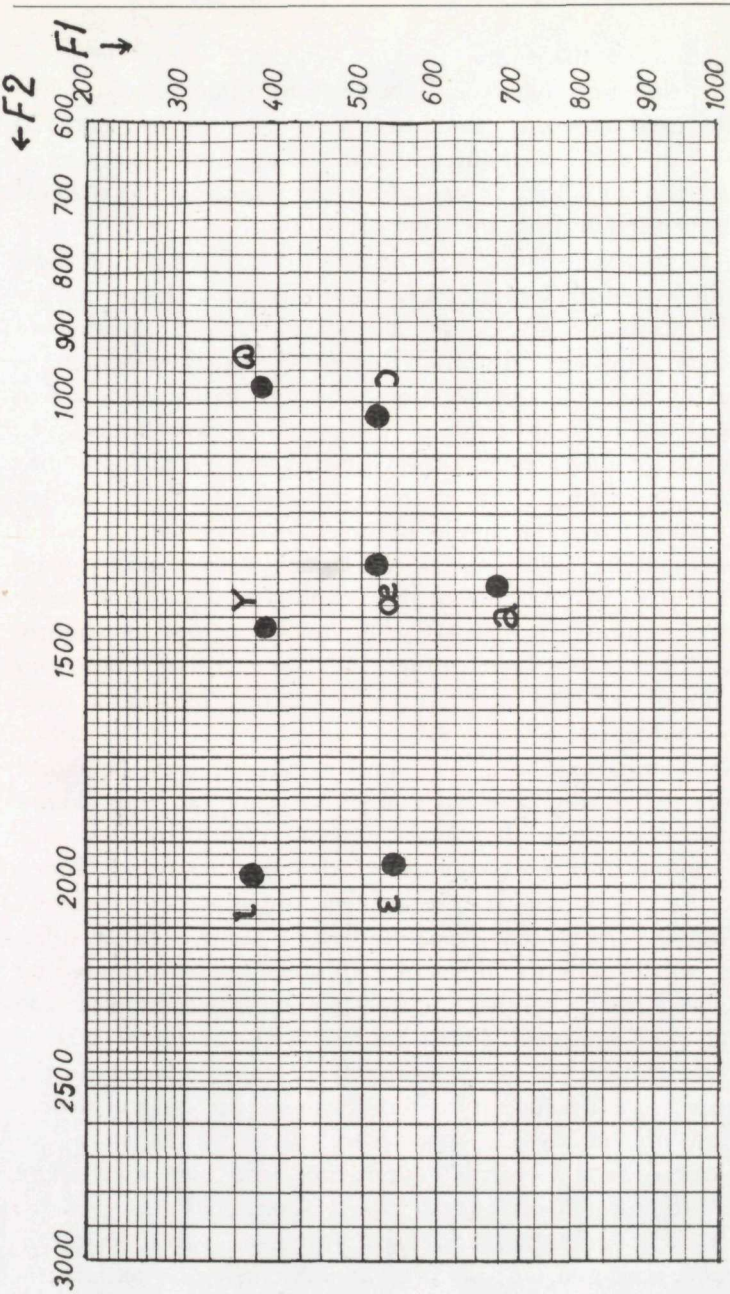
F1 →
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Fig. 3

direction of the more open vowels, but the glide is so slight that it is barely noticeable (notice that the frequency scale used is not linear). In other parts of my material they also occur without any trace of diphthongization.

As for the short vowels, it is surprising that [Y] is so far removed from [ø:] and [œ] (cp. Jakobsen's rendering of [Y] as [ø]). This may vary, however. Fig. 3 shows the short vowels spoken by another person (with a fairly similar pronunciation). The rounded front vowels [Y, œ] are here well on line vertically, and this person's [ø:] (which is not seen in the chart) moves along the line between these two vowel qualities, although it is always somewhat more open than [Y]. — The square form of this vowel chart is due to a certain centralization of the vowels. The dots do not in this case represent single occurrences of vowels in ideal environments but *average* values of vowels taken from different words. Because of the asssimilations with following (or preceding) consonants, the vowels appear as slightly less different from each other. It is obvious that a representation of selected occurrences as in Fig. 2 is in a sense more informative.

In comparing long and short vowels it may be worth while to consider the latitude of variation of both. Fig. 4 shows the unrounded front vowels spoken by the same person as in Fig. 3 (the rounded series are not included because the material is here deficient on some points). Every vowel is represented by a number of occurrences in different words. The examples of each vowel are surrounded by a closed line. The short vowels are indicated by dots, the long ones by small circles representing the *initial* quality of each vowel (which is probably of most interest for the comparison, because it represents the most distinct articulation of the vowel). The vowels [i:, ɪ, e:, ɛ, ɛa, a] are measured in the words: *rytur, sið, situr, vit, vitja; ikki, liggi, liggur, stykki, styttri; betra, esja, fedrar, seg, vera; elda, elta, eskja, gleddi, merkur, nevna, verra; maðurin, skjalið, slag, sæð, tað; alla, altíð, annað, kall, lagdir, valda, vatn.*

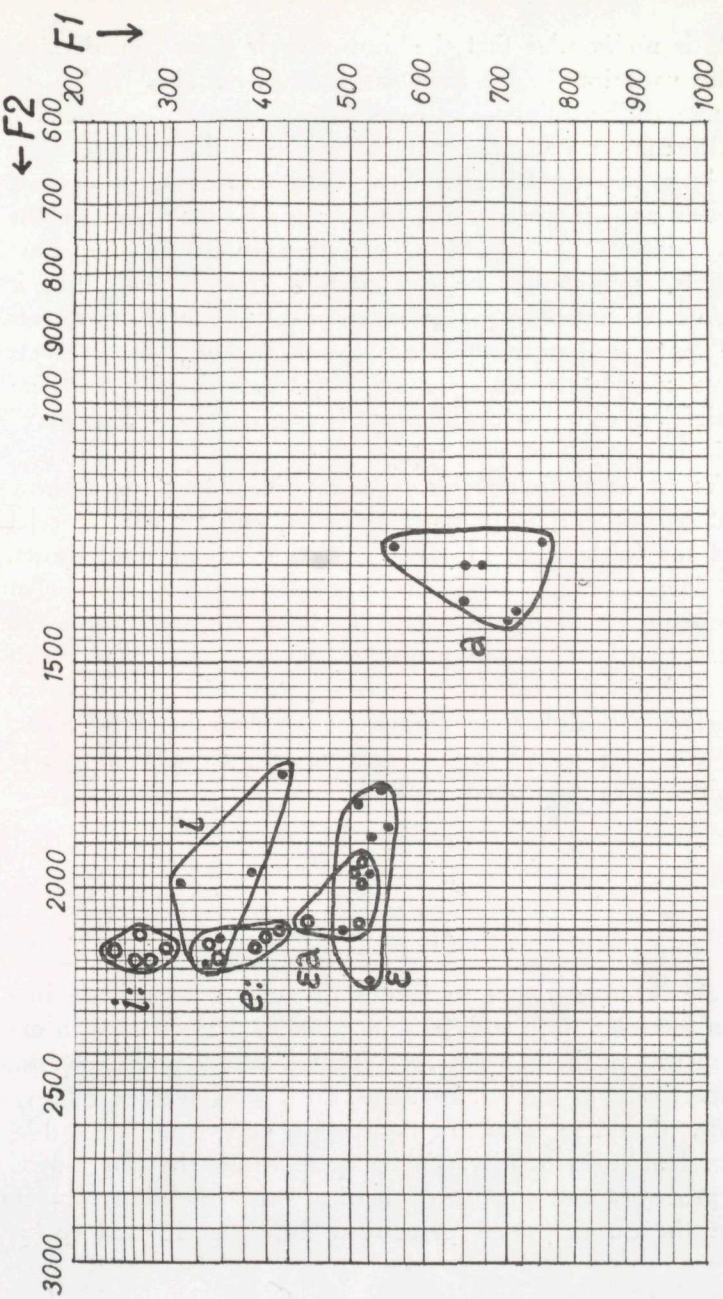
F1
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Fig. 4

It is no wonder that the short vowels show considerably more variation in F2 than the long ones. This is due, of course, to the influence of (especially) following consonants, which cannot exert the same influence on the initial quality of long vowels. Moreover, the environments of the short vowels are in these words more varied than those of the long vowels. The kind of variation found in the short vowels is as might be expected in "lax" vowels, but it should be noticed that some instances of the short vowels are quite similar to the long vowels. In Fig. 2 the two sets agree completely with respect to F2, and there is no clear indication of a basic difference between "tense" and "lax" articulation (all of this applies to *stressed* vowels only).

As far as F1 is concerned, both Fig. 2 and Fig. 4 show that [ɪ] and [e:] (init. part) coincide, and similarly for [ɛ] and the initial part of [ɛa]. According to the data shown in Figs. 2 and 3 there are 3 clearly distinct degrees of F1-raising in long as well as short vowels, but when these two systems are projected on each other, the result is a distinction of four degrees, since each short vowel represents a higher step in the series than the initial phase of the long vowel with which it is grammatically (etymologically) associated:

(1) i: — –
(2) e: — ɪ
(3) ɛa — ɛ
(4) – — a

There is no evidence in favour of making a basic distinction between [e:] and [ɪ] (not even if F3 is taken in account: F3 of the two vowels is located at 2780 and 2700 cps., respectively, as against 2950 cps. for [i:], all average values). This, of course, does not necessarily imply that [e:] and [ɪ] sound alike in quality. Taken as a whole, the long vowel is probably not normally identical with the short vowel, and the ear may well perceive a difference in quality (as

well as in quantity), though the long vowel does not in all cases sound as a glide. The relationship between long and short vowels can probably only be determined (on an acoustic basis) if we treat the long vowels as a kind of diphthongs, even though beginning and end may in several cases turn out to be alike.

ÚRTAK

Ljóðeyðkennini hjá føroyskum sjálvljóðum eru vandaliga skrásett av J. C. Svabo, Jakob Jakobsen og øðrum frøðimonnum. Kortini er nógv enn ógjørt viðvíkjandi lýsingini av ljóðvirðunum hjá teim ymsu ljóðunum og í samtíðarkanningini av ljóðskipanini. Høvundurin heldur, at høvuðsspurningurin er skyldskapurin millum long og stutt sjálvljóð. Eingin serstøk ljóðskipanarloysn er av longdarmunarspurninginum, og ljóðliga er enn ógreitt, hvørt stuttu sjálvljóðini eru lin ella bert ein lítlan mun meira opin enn longu sjálvljóðini, sum tey eru samfeld við, og hvørt øll long sjálvljóð eiga at verða mett sum gliðljóð til tað í ljóðvirði. Høvundurin hevur gjørt nakrar fyribils, ljómligar ljóðvirðiskanningar av sjálvljóðunum, sum tey verða borin fram miðskeiðis í Føroyum. Sannroyndin viðvíkjandi longum sjálvljóðum mótvegis stuttum, sum fyri ein part er løgd fram í greinini, fær ein at ætla, at ógvuliga stórur líkskapur er millum stuttu sjálvljóðini og fyrsta partin av longu sjálvljóðunum, sum hoyra til næsta stigið í ljóðskipanini (t. d. stutt *i* og langt *e*, stutt *e* og langt *a*). Eingin ivi kann heldur vera um, at málið hevur lyndi til tvíljóðing av teimum ikki-trongu, longu sjálvljóðunum (tað sæst á spektrogrommunum). Hini »reinu« tvíljóðini (ú, ý o. s. fr.) eru ikki viðgjørd í hesi grein.