THE PHONEME SYSTEM OF ADVANCED STANDARD COPENHAGEN

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1. Introduction.

The purpose of this paper is to give a phonetic and phonemic description of Advanced Standard Copenhagen (ASC). For this description I shall use a taxonomic procedure with two operationally defined levels between the phonetic transcription and the ultimate phonemes, viz. the levels of prephonemes and of phonemes (see section 2.2.).

1.1. What is ASC?

ASC (with a perhaps not too lucky term) is the language spoken by a large group of the younger generation in Copenhagen, whose language is normally considered to be a variety of Standard Danish. In many respects (see section 1.2.) it differs from what might to-day be called Conservative Standard Danish (CSD), the language described by Jespersen (9), Uldall (15), Martinet (11), and Hjelmslev (8); the language described by Rischel (this report, pp. 177ff.) is intermediate between CSD and ASC (see also Diderichsen (3), Hansen (5), and Andersen (1), where many phonetic observations on ASC and other varieties of Standard Danish are mentioned).

ASC is clearly different from both the Copenhagen dialect (sometimes termed "vulgar") and the language (sometimes termed "affected") spoken by the upper class in the northern parts of Copenhagen.

The analysis is based mainly upon my own speech. Thus it is hardly quite valid for ASC in general since probably every individual has his own phoneme system (sounds which in the language taken as a whole are free variants may in the speech of some individuals have such a distribution that they must be considered as belonging to different phonemes; the reason probably is that we learn some words from our parents, others from our playmates - who may use different phoneme-manifestations - etc.).

1.2. Some phonetic differences between ASC and CSD.

CSD and ASC can in general be considered as an older and a newer stage of the same language (Standard Danish). The effect of some of the phonetic changes from CSD to ASC are distributional limitations in ASC, and I shall therefore refer to the rules of section 4.1.1. in the following survey of the main phonetic differences between CSD and ASC.

(1) Whereas CSD has forms like nøden, nødden [ˈnøˑˀðn̩ ˈnøðˀn̩] 'the distress', 'the nut', stød-vocoids never appear before ð in ASC, i.e. both forms are pronounced [ˈnøðˀn̩] in ASC (cp. rule (6)).

(2) The voiced velar or postpalatal fricative [ɣ] (which according to Martinet (11) manifests a separate phoneme /q/) has merged with other phonemes (and in some cases, particularly after narrow vocoids*), with zero). Its velar variant, which in CSD occurs after back vocoids and [ʁ], has merged in ASC with the postvocalic manifestation of /v/ (in CSD the words låg [ˈlɔˑˀɣ] 'cover' and lov! [ˈlɔˑˀv ˈlɔˑˀy **)] 'promise' (imperative) are kept apart, whereas in ASC both are pronounced [ˈlɔyˀ]). Its postpalatal variant, which in CSD occurs after front vocoids and [l], has merged in ASC with the manifestation of /j/ (in CSD the words balje, galge [ˈb̥aljə, ˈg̊alɣə] 'tub', 'gibbet' do not rhyme, but they do in ASC: [ˈb̥æljə, ˈg̊æljə]). It should be noted that when the phonetic diphthongs arising by the change of CSD [ɣ] to ASC [ɪ̯] or [y̯] occur in stød-syllables, the stød is always on [ɪ̯] or [y̯], whereas [ɣ] in CSD can never have stød.

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*) In this paper the terms 'vowel-consonant' (used in a functional sense) and 'vocoid-contoid' (used in a phonetic sense) will be distinguished, as suggested by Pike (12).

**) In Rischel's broader transcription, phonetic [-ɪ̯ , -y̯] are rendered as [-i̯ , -u̯] .

The result is that these forms must be analyzed phonemi-
cally differently in CSD and ASC. E.g. according to Martinet
(11) the opposition between such forms as CSD leg [ˈlaɪ̯ʔ]
'game' and lag [ˈlaˑʔɣ] 'layer' involves phonemically vowel
length and the last phoneme, whereas the difference in vowel
quality is not considered distinctive. In ASC, on the other
hand, the words are pronounced [ˈlɑɪ̯ʔ] and [ˈlæɪ̯ʔ], i.e. the
only phonetic difference is in the vowel quality which must
then be phonemic.

(3)   The 'colouring' (i.e. opening and retracting) effect on
the vocoid of preceding [ʁ] is much stronger in ASC than in
CSD; the most important effect of this opening is that CSD /eː/
and /øː/ merge with CSD /ɛː/ and /œː/ after [ʁ] in ASC (e.g.
CSD tre, træ [ˈtʰʁeˑʔ, ˈtʰʁɛˑʔ] 'three', 'wood' are both
[d̥ˢʰʁɛˑʔ] in ASC, and CSD røbe, brøle [ˈʁøˑb̥ə b̥ʁœːlə] 'reveal',
'roar' have the same vocoid in ASC: [ˈʁœːb̥ə ˈb̥ʁœːlə])
(cp. rule (3a)).

(4) The contoid [ʁ] never occurs post-vocalically in ASC (cp.
Koefoed (10) and Andersen (2)). Corresponding to CSD-forms with
short or long /a/ or /ɔ/ plus /ʁ/ (e.g. CSD var, bort [ˈvɑʁ̥,
ˈb̥ɒʁ̥t] 'was', 'away'), ASC-forms always have pure vocoids
[ɑ(ː), ɒ(ː)] (e.g. ASC var, bort [ˈvɑ, ˈb̥ɒːd̥]). The ASC-vowels
ɑ and ɒ resulting from this change are short in word final po-
sition (except in the word far [ˈfɑː] 'father') and long in
all other positions, i.e. they do not participate in the
quantity-opposition (but cp. paragraph (5) below); CSD-forms
like båre, borre [ˈb̥ɒːʁə, ˈb̥ɒʁə] 'stretcher', 'cockchafer' are
both [ˈb̥ɒːɒ] in ASC.

    Corresponding to combinations of other vocoids +[ʁ] in CSD,
ASC has phonetic diphthongs ending in [ɒ̯] (see section
4.4.; cp. rule (2a)). When such forms are affected by stød, it
normally is on the vocoid in CSD (e.g. ser [ˈseˑʔʁ̥] 'sees'),
but in ASC it is always on [ɒ] (ser [ˈseɒ̯ʔ]) (cp. rule (2b)).
In unstressed syllables, CSD distinguishes between [əʁ ʁə ʁəʁ]
(CSD gnister, gnistre, gnistrer [ˈg̊nisd̥əʁ ˈg̊nisd̥ʁə ˈg̊nisd̥ʁəʁ]
'sparks', 'sparkle', 'sparkles'), whereas ASC maximally distingu-
ishes [ɒ ʁɒ] (ASC gnister, gnistre=gnistrer [ˈg̊nisd̥ɒ ˈg̊nisd̥ʁɒ]);

after vowels, ASC has only [ɒ] (CSD <u>tuer</u>,<u>ture</u>,<u>turer</u> [ˈthuːəʁ, ˈthuːʁə, ˈthuːʁəʁ] 'tufts', 'trips', 'gads about' are all pronounced [ˈd̥ˢhuːɒ] in ASC).

(5) Whereas the short /a/ in CSD has three bound variants ([ɑ] before or after [ʁ] (e.g. <u>var</u> [ˈvɑʁ]), [a-] otherwise before velars (e.g. <u>lang</u> [ˈla-ŋˀ] 'long'), [a] before dentals, labials and zero (e.g. <u>land</u>,<u>lam</u>,<u>da</u> [ˈlanˀ, ˈlamˀ, ˈd̥a] 'land', 'lamb', 'when')), the vocoids in e.g. <u>lam</u>,<u>lang</u> and <u>var</u> are identical in ASC ([ˈlɑmˀ, ˈlɑŋˀ,ˈvɑ]); this change has the effect that [ɑ] (but not [ɒ]) in ASC participates in the quantity opposition (e.g. ASC <u>lamme</u>,<u>larme</u> [ˈlɑmə , ˈlɑːmə] 'paralyse', 'make noise') (cp. paragraph (4) above and rules (4a) and (4b)).

(6) In CSD it is generally assumed that there is an allophonic variation between short [i] and [e], [y] and [ø] , [u] and [o] before /r/ (cp. Rischel in this report, p. 181); no such overlapping is found in ASC.

Because of these and other phonetic differences between ASC and CSD, the taxonomic analyses of Standard Danish do not apply to ASC.

2. <u>General approach</u>.

The present analysis has been highly influenced by the contributions to phoneme theory of Twaddell (14), Harris (6), and many others, but is not identical in approach to any of these.

It must be <u>emphasized</u>, however, that I do not consider this analysis (which most linguists will probably find out-of-day) superior in any way to generative phonology. On the contrary, an ordered set of rules will undoubtedly in many cases account for the <u>linguistic</u> data in a simpler way than my analysis does. Above all, this would be true for an over-all description of ASC.

I use a taxonomic procedure mainly in order to facilitate comparisons between the present analysis and the existing descriptions of other varieties of Danish which are all taxonomic.

Furthermore, I hope that this analysis with the operationally defined levels of prephonemes and phonemes will make the relation between phonetic and phonemic entities clearer than has sometimes been the case in Danish phonemics.

In this analysis, stress (section 3.) is handled before the establishment of the prephonemes (section 4.), whereas length and stød are handled afterwards (section 5.1.), although both stress, length and stød will turn out to be accents. The reason for this procedure is that phonetically vowel length and stød are clearly properties of one single sound and therefore cannot - within the framework of the present analysis - be extracted from the sound chain before the segmental entities of which

they are properties (i.e. the prephonemes) have been set up;
stress, on the other hand, is phonetically a property of the
syllable (involving problems of syllable boundary, etc.) and
may therefore be handled apart from length and stød.

2.1. Analytical criteria.

I use Harris' (6) distinction between phonemes and morpho-
phonemes; i.e. it is presupposed that there should be a one-one-
correspondence between a sound chain and a string of phonemes,
but a one-many-correspondence between a sound chain and a string
of morphophonemes (disregarding free variants in both cases).
E.g. the two words tre 'three' and træ 'wood' are both pro-
nounced [ˈd̥ˢʰʁɛ·ʔ] and are thus represented by the same chain
of phonemes (cp. section 1.2., paragraph (3)), but there is
commutation between compounds like trefod [ˈd̥ˢʰʁɛˌfoð ʔ] 'tripod'
and træfod [ˈd̥ˢʰʁæˌfoð ʔ] 'wooden foot'; i.e. the simplex words
tre and træ, although phonemically identical, are morphophonemi-
cally different.

In accordance with the taxonomic procedure used in this
paper no morphological or syntactic criteria will be used in
the analysis, and no morphophonemic description of ASC will be
given. In a generative procedure, on the other hand, morpholo-
gical criteria are basic prerequisites to phonological descrip-
tion.

Morphophonemically, the variety of Standard Danish de-
scribed by Rischel (this report pp.177ff.) and ASC are very si-
milar, and the reader is therefore referred to Rischel's paper
for morphological information also applying to ASC.

'Partial overlapping' is allowed for in the present paper,
i.e. the same sound can manifest different phonemes in different
phonemic environments (e.g. the sound [œ] can manifest either
ø or Œ, see section 4.1.).

The material is limited to isolated words, and the phoneme
manifestations (or other linguistic features) in connected
speech will not be discussed. Foreign words are excluded from
the material.

There is more than one kind of linguistic simplicity (cp.
Spang-Hanssen (13)). As already noted, I shall not take mor-
phological simplicity into account, but still both paradigmatic
and syntagmatic (or phonotactic) aspects of simplicity remain.
Reductions which seem fully justified from a paradigmatic point
of view may sometimes complicate the phonotactic description
substantially. No account of the phonotactics of ASC will be
given here, and I shall normally use the word 'simplicity' for
'paradigmatic simplicity' - but one must be aware of the problem.

2.2. Levels of analysis.

Our starting point is the phonetic transcription; it is
evident, however, that such a transcription presupposes some
linguistic analysis, including a segmentation of the continuous
flow of speech. But the problems involved in the phonetic
transcription will not be discussed here.

The phonetic transcription is, of course, a narrow one;
e.g. the initial aspirated plosives are transcribed [b̥ʰ d̥ˢʰ ɡ̊ʰ]
which is phonetically more correct than the normal transcrip-
tions [pʰ tʰ kʰ]. The consequence of this transcription is

that e.g. [b̥h] must be considered the manifestation of a cluster of prephonemes /bh/ (see section 4.3.) and not of a single pre-phoneme /p/ (e.g. in the word pande ['b̥hænə] 'pan', [b̥] is commutable with e.g. [g̊] (kande ['g̊hænə] 'can'), and [h] with e.g. [l] (blande ['b̥lænə] 'mix')).

This interpretation is consequently different from Hjelms-lev's (8), who reduces the prephoneme ? p to either hb or bh, etc. The well-known reduction of [ð] to a bound variant of /d̥/ (proposed by Uldall (15)) is for the same reason not possible in the present analysis.

The prephonemes are commutable units established by a clas-sificatory procedure starting from minimal sound segments. Mini-mal sound segments are the smallest parts into which the sound chain can be divided under the condition that each sound seg-ment be commutable with at least one other sound segment or with zero. The prephonemes are obtained by identifying the commutable minimal sound segments in different environments by means of both phonetic and systematic criteria. Sounds in com-plementary distribution are identified according to phonetic similarity (and pattern congruity), and sounds which occur in the same (or partially the same) environments but are never commutable are also identified. In the present phonetic tran-scription the number of sound symbols is not much greater than the number of prephonemes, and sounds that always occur as free variants are generally not distinguished; the practical pro-cedure for establishing the prephonemes is therefore mainly an identification of sound symbols in complementary distribution according to the phonetic similarity(and pattern congruity)of the sounds in question.

It should be noted that the existence of a minimal pair is here considered a sufficient, but not necessary, condition for establishing a phonemic opposition (e.g. the sounds [ø:] and [œ:] belong to different phonemes although no minimal pair can be found, see section 4.1.). Consequently, if I say that two sounds are 'commutable', this does not necessarily imply the existence of a minimal pair.

A prevowel is a prephoneme which can form a word by itself, or which is commutable with such prephonemes (section 4.1.).

A preconsonant is a prephoneme which can never form a syllable by itself (section 4.3.).

A weak precentral is a prephoneme which can form a syllable, but not a word, by itself, or which is commutable with such pre-phonemes (section 4.2.).

Syllabic and non-syllabic segmental entities (sounds, pho-nemes, etc.) are kept distinct throughout the analysis (e.g. ɒ ɒ̥ ; l l̥).

The phonemes are obtained by extracting the 'suprasegmental phonemes' - i.e. the accents - from the chain of prephonemes, and then reducing the remainder by means of the mentioned crite-ria of phonetic similarity, complementary distribution etc. (section 5.).

The ultimate phonemes (section 6.) are obtained by interpre-ting one phoneme as a group of successive ultimate phonemes. The criteria for this type of reduction are discussed in section 6.1.

3. Stress.

There are two phonemically distinct degrees of stress in ASC: strong and weak stress. Every word has one syllable with phonetically primary stress, i.e. phonemically with stress accent.

Phonetically secondary stress, e.g. in forgård [ˈfɒːˌg̊ɒ˙ʔ] 'forecourt', is only found in words which also have primary stress, and never before the syllable with primary stress, i.e. phonetically secondary stress is in bound variation with phonetically primary stress and can therefore be considered as phonemically strong stress, i.e. as stress accent.
When a word has more than two stressed syllables (in the phonemic sense)(i.e. phonetically more than one secondary stress), there is no phonemic difference in stress between these latter syllables (e.g. in slotsforgård [ˈslʌd̥sˌfɒːˌg̊ɒ˙ʔ] 'forecourt of a castle').

The relevance of strong and weak stress can be shown by commutation pairs like forgård [ˈfɒːˌg̊ɒ˙ʔ], forgår [fɒˈg̊ɒ˙ʔ] 'perishes', phonemically/ˈfɔrʔgɔr, fɔrʔgɔr/ *), the only phonemic difference being one of strong versus weak stress on the first syllable, i.e. one of presence versus absence of stress accent on that syllable.

(In foreign words we have oppositions like plastic, plastik [ˈb̥hlæsd̥iɡ̊ˌb̥hlæˈsd̥iɡ̊].)

Word and syllable are here taken as axiomatic entities.

In this paper stressed syllables are said to have stress accent, whereas the unstressed syllables have no stress accent.

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*) The length of the vowel ɒ is never phonemic in ASC. (The phonemic accent symbols ˈʔ and ː, placed before the syllable in question, are explained in section 5.1.3.)

4. From phonetic transcription to prephonemes.

4.1. Prevowels.

Five stød-vocoids appear as isolated words with different meanings in ASC, and they thus manifest different prevowels: [ˈiˑʔ, ˈɑˑʔ, ˈøˑʔ, ˈɔˑʔ, ˈɒˑʔ] i 'in (adverb)', ar 'cicatrice', ø 'island', å 'small river', år 'year'. A number of other stød-vocoids also occur in isolation but only as names of letters: [ˈeˑʔ, ˈɛˑʔ, ˈæˑʔ, ˈyˑʔ, ˈuˑʔ, ˈoˑʔ]; since they are commutable with the above-mentioned vocoids in other positions, they, too, manifest prevowels.

Two other stød-vocoids appear in ASC: [œˑʔ] is only found after ʁ- (frø 'seed', brøl 'roar', etc.) (and in foreign words before -n (obskøn 'obscene')); [øˑʔ] is excluded in these positions, and I therefore regard [œˑʔ] as a bound variant of the prevowel øˑʔ; [Œˑʔ] is found only before unstressed [ɒ], e.g. in the verb udgøre 'constitute', and there is commutation between [øˑʔ] and [Œˑʔ] (but only in quasi-minimal pairs like udkøre [ˈuðˌĝhøˑʔɒ] 'cart out', udgøre [ˈuðˌĝŒˑʔɒ]). I regard [Œˑʔ] as manifesting the prevowel Œˑʔ (the roots in which [Œː] - and in some types of compounds [Œˑʔ] - is found, are listed below in the present section).

The system of stød-prevowels in ASC is then:

iˑʔ	yˑʔ	uˑʔ
eˑʔ	øˑʔ	oˑʔ
ɛˑʔ	Œˑʔ	ɔˑʔ
æˑʔ	ɑˑʔ	ɒˑʔ

Long vocoids cannot form words by themselves in ASC; but in other positions they are commutable with stød-vocoids, and they are therefore manifestations of prevowels (e.g. [ˈsĝuːɒð, ˈsĝuˑʔɒð] skuret 'scoured (past ptc.)' versus 'the shed'). The following long vocoids can immediatly be shown to manifest different prevowels: [iː, eː, ɛː, æː, ɑː, yː, øː, uː, oː, ɔː, ɒː]. Two other long vocoids are found in ASC: [œː] only appears after ʁ- (røbe 'reveal') and before -n (høne 'hen'); [øː] does not appear in these positions, and [œː] can therefore be regarded as a bound variant of the prevowel øː. [Œː] is only found before unstressed [ɒ]; we have no minimal pairs for the opposition

[ø:]:[œ:] (but we have for [y:]:[ø:] and [y:]:[œ:]), but the
material clearly shows that the gap is accidental:

(1) [-y:ɒ] <u>dyre</u>,<u>fyre</u>,<u>hyre</u>,<u>lyre</u>,<u>myre</u>,<u>nyre</u>,<u>styre</u>,<u>syre</u>,<u>tyre</u>.
(2) [-ø:ɒ] <u>føre</u>,<u>høre</u>,<u>køre</u>,<u>møre</u>,<u>pløre</u>,<u>skøre</u>,<u>sløre</u>,<u>øre</u>.
(3) [-œ:ɒ] <u>døre</u>,<u>gøre</u>,<u>røre</u>,<u>smøre</u>,<u>snøre</u>.

The system of long prevowels is then:

i:	y:	u:
e:	ø:	o:
ɛ:	œ:	ɔ:
æ:	ɑ:	ɒ:

(Both the system and the mentioned manifestation rules corres-
pond exactly to those of the stød-prevowels.)

A few short vocoids can form words by themselves in ASC:
[ˈi ˈæ (ˈʌ)] <u>I</u> 'you' (plur.),<u>à</u> , (<u>og</u> 'and') (the last example is
dubious in stressed position); these are, therefore, manifesta-
tions of prevowels. Other short vocoids are commutable with
these and with each other:[e ɛ y ø u ɔ ɒ] and thus manifest
prevowels,too.

Two other short vocoids are found in ASC: [œ] and [œ] .
Except for the position before [-ɒˀ], never more than two of
the four short rounded front vocoids occur (in contrast), as
shown in the following table

	-N	-ɒ̣	-X
ʁ -	[œ]:[œ]		[y]:[œ]
X-	[ø]:[œ]	[y]:[œ]	[y]:[ø]

where 'N' means 'nasals' (before -ŋ only [ø] occurs) and 'X'
means 'other phonemes'.

I.e. if the position before[-ɒˀ] could be disregarded,
the number of prevowels in the short round front-series could
be reduced to 2, with the following manifestation rules:
y is manifested by [œ] in the context ʁ-N (e.g. <u>grynt</u>[ˈg̊ʁœnˀd̥]
'grunt'), by [ø] before -N when no ʁ precedes (e.g. <u>skynde</u> (<u>sig</u>)
[ˈsg̊ønə] 'hurry'), by [y] elsewhere (e.g. <u>syd</u> [ˈsyð] 'south');
ø is manifested by [œ] in the context ʁ-N (e.g. <u>grøn</u> [ˈg̊ʁœnˀ]
'green') and before -ɒ̣ (without stød) (e.g. <u>smør</u> [ˈsmœɒ̣]'butter'),

by [œ] after ʁ- when no N follows (e.g. <u>ryste</u> [ˈʁœsd̥ə] 'shake')
and before -N when no ʁ precedes (e.g. <u>skøn</u> [ˈsg̊œnʔ] 'beautiful'),
and by [ø] elsewhere (e.g. <u>kyst</u> [ˈg̊høsd̥] '<u>shore</u>').
(This reduction, with even simpler manifestation rules, would
be possible for the variety of Standard Danish described by
Martinet (11).)

But in ASC we have commutations like <u>dyr</u>, <u>dør</u>, <u>dør</u>
[ˈd̥yɐ̯ʔ, ˈd̥øɐ̯ʔ, ˈd̥œɐ̯ʔ] 'animal', 'dies', 'door', and we thus have
3 prevowels in this series: y, ø, œ; i.e. the above-mentioned re-
duction is impossible for ASC.

We cannot, however, completely avoid partial overlapping
in this series:

y is manifested as [y] (e.g. <u>syd</u> [ˈsyð]).

ø is manifested as [œ] after ʁ- (e.g. <u>ryste</u> [ˈʁœsd̥ə]),
as [ø] elsewhere (e.g. <u>kyst</u> [ˈg̊høsd̥]).

œ is manifested as [œ] before -N when no ʁ precedes (e.g.
<u>skøn</u> [ˈsg̊œnʔ]), as œ elsewhere (e.g. <u>smør</u>, <u>grøn</u> [ˈsmœɐ̯, g̊ʁœnʔ])
(cp. section 4.1.1., rule (5)).

Before ð, the following short rounded back vocoids are
found: [u o ɔ ʌ] (<u>gud</u>, <u>fodre</u>, <u>båd</u>, <u>od</u> [ˈg̊uð, ˈfoðʁ, ˈb̥ɔðʔ, ˈʌð]
'god', 'feed', 'boat', 'point'). [ɒ] is excluded in this position,
and I therefore regard [ʌ, ɔ, o] as manifesting respectively ɒ,
ʌ, and ɔ in the position before ð (i.e. the manifestations of
short prevowels before ð have the same quality as the corres-
ponding long prevowels).

The system of short prevowels is then

i	y	u
e	ø	ɔ
ɛ	œ	ʌ
æ	ɑ	ɒ

Each of the 36 prevowels that have hitherto been set up is
commutable with all the others, with one important exception:
there is no commutation between [ɒ] and [ɒ:]; these are bound
variants ([ɒ] appearing only in word final position (e.g. <u>vor</u>
[ˈvɒ] 'our') where [ɒ:] is excluded). Consequently there are
only 35 prevowels. [ɒ:] occurs in no position where short pre-

vowels are excluded, but [ɒ] occurs finally in monosyllabic
words where generally no long prevowels appear (except in one
word far [fɑ:] 'father'); it therefore seems preferable to ex-
clude ɒ: from the long prevowel system and to retain ɒ in the
short one, rather than vice versa.

4.1.1. Distributional limitations of the prevowels.

There follows a list of the main limitations in the distri-
bution of the 35 prevowels (in stressed position) (in these
rules 'long' means 'long or stød-').

I do not pretend that none of the combinations excluded
by the following rules ever occur in actual speech, but only
that if one of them does, it is an accidental variation of some
'permitted' combination. Some of the rules are not so absolute
as they might seem to be : e.g. rule (1d) might cover i as well,
if it were not for the word linje ['linjə] 'line'; and the
pronunciation brynje ['b̥ʁynjə] 'coat of mail' can in fact be
heard as a variant of the normal one ['b̥ʁænjə].

(1a)   Long prevowels are not found before [ŋ].

(1b)   ɒ is not found before [ŋ].

(1c)   i,y,u are not found before [ŋ] or [m].

(1d)   y is not found before [n].

(1e)   u is not found before [n]+contoid.

(2a)   ɑ,ɒ are not found before [p̞].

(2b)   Long prevowels are not found before [p̞].

(3a)   e,e: are not found after [ʁ].

(3b)   æ: is not found after [ʁ] except before [ð] (e.g.
              græde ['g̊ʁæ:ðə] 'cry').

(4a)   æ is not found before labials and velars except after
              [ʁ] (e.g. rem ['ʁæm?] 'strap').

(4b)   ɑ is not found before dentals except after [ʁ] (e.g.
              rat ['ʁɑð] 'steering wheel').

(5)   œ is only found before [-n, -m, -p̞?] (e.g. grøn 'green',
              drøm 'dream', dør 'door' ['g̊ʁœn?, 'd̥ʁœm?, 'd̥œp̞?]).

(6)   Stød-prevowels are not found before non-syllabic [ð].

(7a)   Short prevowels are not found before [ʁə].

(7b)   Short prevowels are not found immediately before an
              unstressed vocoid or a syllabic contoid.

It should be added that there is never commutation between
ɒ·?c and ɒc? (where c is a contoid) (e.g. ['sɒ̞ɒ·?m] and

['sɑ̰ɒmˀ] are free variants for <u>storm</u> 'gale').

(Some of these and other distributional limitations may
later (in section 6.) be used for a reduction of the inventory.)

<u>4.1.2. Prevowels in pretonic syllables.</u>

In weak syllables before the first stressed syllable in a
word no stød-vocoids and no long vocoids *) occur. The syllabics
in these syllables are short vocoids, but the rounded front
vocoids only occur in foreign words (like <u>dynamit</u> [d̥ynæˈmid̥]
'dynamite'). These unstressed short vocoids are identified with
the corresponding stressed ones of the same quality, i.e. mani-
festations of short prevowels.

The syllabic segments of unstressed syllables occurring
between two stressed ones in the same word can always be re-
cognized as manifestations of either short prevowels or weak
precentrals; in cases where both identifications are possible,
it does not matter which identification we choose because in
the final analysis the short prevowel and the weak precentral
in question will be identified as the same vowel, see section
5.2.

<u>4.2. Weak precentrals.</u>

In unstressed syllables after the last stressed syllable
in the word the following syllabic vocoids occur in native
words: [i, e, ə, ɒ, u] (e.g. in <u>hyppig</u> 'frequent', <u>madding</u> 'bait',
<u>hyppe</u> 'hoe', <u>hypper</u> 'hoes', <u>vindue</u> 'window' [ˈhyb̥i, ˈmæðeŋ,
ˈhyb̥ə, ˈhyb̥ɒ, ˈvend̥u]). (In foreign words also [æ,o,ɔ] occur,
e.g. in <u>kvota</u>, <u>cello</u>, <u>centrum</u> [ˈg̊hvoːd̥ˢhæ, ˈʃɛlo, ˈsɛnd̥ˢhg̊ɔm].)
Apart from [e] these vocoids are commutable (except [o] and [ɔ]
which are bound variants, [o] occurring only in open syllables
and [ɔ] only in closed ones). As [e] occurs only before [ŋ]
where none of these other vocoids is found, the possibility of
identifying [e] with some other vocoid should be considered;
but as it will be shown that [e] occupies a place in the 'weak
precentral-hierarchy' different from those of all the other
vocoids (see below), this identification will be avoided here.

Furthermore, five syllabic contoids occur in ASC: [l̩ m̩
n̩ ŋ̩ ð̩]   (e.g. in <u>mandel</u> 'almond', <u>lampen</u> 'the lamp', <u>manden</u>
'the man', <u>lakken</u> 'the lacquer', <u>huset</u> 'the house'
----

*) Except in a few foreign words of the type <u>maleri</u> [mæːlɒˈʁiˑˀ]
'painting'.

[ˈmænˀl̩, ˈlɑmb̥m̩, ˈmænˀn̩, ˈlɑg̊ŋ̩, ˈhu·ˀsð̥]). They never have stød.

[m̩] and [ŋ̩] are only found after [b̥] and [g̊], respectively, and are in this position in free variation with [n̩] . [m̩] and [ŋ̩] are therefore considered to be variants of [n̩].

[l̩, n̩, ð̩] are all commutable with each other and with the syllabic vocoids [i,ə,u,ɒ].

Now a hierarchy of the weak precentrals can be set up as follows:

occurring in unstressed posttonic syllables in native words	4th level:	u
never occurring after h; occurring after ð	3rd level:	e
never occurring in syllables with obligatory stød	2nd level:	i
never occurring in stød-syllables	1st level:	ə ɒ l̩ n̩ ð̩

The 'definition' of a level applies to all lower levels as well. Each level is fully specified by the definition of its own level and the negation of the definition of the level just below (the negation is formed by deleting the word 'never' if it occurs, and by inserting the word 'never' if it does not occur); e.g. the third level is defined as comprising the weak precentrals which 'never occur after h but occur after ð', and which 'occur in syllables with obligatory stød', and this can only be e (e.g. in maddingen [ˈmæðeŋˀn̩] 'the bait').

4.3. Preconsonants.

Initially, the following 13 commutable contoids occur:
[b̥,d̥,g̊,h,m,n,l,ʁ,j,f,v,s,ʃ].

[d̥ˢ] is only found before [h] where [d̥] is not found; [d̥ˢ] and [d̥] are therefore bound variants.

The plosives may be voiced, especially in intervocalic po-
sition, and the voiced nasals and fricatives are partly or whol-
ly devoiced after [h,f,s]; in neither of these cases is the
degree of voicing phonologically relevant.

Finally, the following ten stød-less commutable contoids
are found:[b̥,d̥,g̊,m,n,ŋ,l,ð,f,s] (final [ʃ] is only found in
foreign words). In utterance-final position these contoids are
often aspirated and devoiced. In intervocalic position in simple,
native words we find the same inventory as in final position.
(Intervocalically [ɾ] occurs as a stilistically conditioned
variant of d, i.e. in rapid colloquial speech.)

Furthermore, the following five stød-contoids occur in ASC:
[mˀ nˀ ŋˀ lˀ ðˀ] . They are commutable with each other and with
all the stød-less contoids.

By identifying phonetically identical final and initial
contoids we obtain the following eight preconsonants occurring
both initially and finally: b d g m n l f s . The follow-
ing five contoids occur only initially: h ʁ j v ʃ (but if
we include the foreign vocabulary, ʃ occurs both initially and
finally). The following seven contoids occur only finally: ŋ
ð mˀ nˀ ŋˀ lˀ ðˀ; there is no possibility of identifying
any of these with h- ʁ- j- v- or ʃ-.

4.4. The phonetic diphthongs.

A great number of phonetic diphthongs occur in ASC, all
ending in [-ɪ̯, -ʊ̯, -ɐ̯] or [-ɪ̯ˀ, -ʊ̯ˀ,- ɐ̯ˀ]. In one-syllable words
their first component is always a short stød-less vocoid, in
other word types also long vocoids and stød-vocoids occur in
this position. The vocoids occurring as the first component of
the diphthongs can be identified with the corresponding mono-
phthongal manifestations of prevowels.

It might seem natural to consider the last component as a
manifestation of a short prevowel and later to reduce the long
prevowels to combinations of two identical short prevowels. But
the parallelism between long prevowels and diphthongs implied
by this analysis is contradicted by the fact that no long pre-
vowels occur finally in one-syllable words (except in the word
far [fɑː]) whereas stød-less diphthongs do occur here (e.g. in tøj

'clothes', <u>hav</u> 'sea', <u>smør</u> 'butter' [ˈd̥ˢhæ̯ɪ, ˈhaɣ, ˈsmɑɐ̯]).
On the contrary, these stød-less forms correspond exactly to
combinations of short prevowels + certain preconsonants *)
as in <u>man</u> 'one', <u>til</u> 'to', <u>gud</u> 'god' [ˈmæn, ˈd̥ˢhel, ˈg̊uð].
We therefore consider the second components to be manifestations
of preconsonants, i.e. we identify -ɪ̯ with j- (belonging to the
preconsonant j), -ɣ̯ with v-(belonging to the preconsonant v),
and - ɐ̯ with ʁ-(belonging to the preconsonant r). We must then
recognize three further only-final preconsonants, i.e. - j?,
-v?,-r? (manifested as [- ɪ̯? -ɣ̯? -ɐ̯?]).

4.5. The inventory of prephonemes.

The inventory of prephonemes has now been found, viz.

35 prevowels:

12 stød-prevowels:

i·?	y·?	u·?
e·?	ø·?	o·?
ɛ·?	œ·?	ɔ·?
æ·?	ɑ·?	ɒ·?

11 long prevowels:

i:	y:	u:
e:	ø:	o:
ɛ:	œ:	ɔ:
æ:	ɑ:	

12 short prevowels:

i	y	u
e	ø	ɔ
ɛ	œ	ʌ
æ	ɑ	ɒ

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*) I.e. preconsonants which after the reductions in section
5.1. turn out as consonants able to occur immediately after
the vowel in syllables having the stød accent but not the
length accent.

<u>8 weak precentrals</u>:

ə ɒ l n ð i e u

<u>23 preconsonants</u>:

Initially and finally 11:

b d g m n l f s r j v

Only initially 2:

h ʃ

Only finally 10:

ŋ ð mˀ nˀ ŋˀ lˀ ðˀ rˀ jˀ vˀ

In total, <u>66 prephonemes</u>.

5. From prephonemes to phonemes.

5.1. Accents.

5.1.1. The stød accent.

There is never more than one stød in a syllable in ASC, and it can only be at one place in the syllable, namely on the syllabic vocoid if this is half-long, otherwise on the following (non-syllabic) sound. The stød is therefore considered as an accent belonging to the syllable as a whole. This means that mˀ, nˀ, ŋˀ, lˀ, ðˀ, rˀ, jˀ, vˀ are bound variants of m, n, ŋ, l, ð, r, j, v occurring in stød-syllables. (These eight consonants are the only phonemes found immediately after short prevowels in syllables having the stød accent, i.e. (after the reduction made in section 5.1.2.) immediately after the vowel in syllables having the stød accent but not the length accent (cp. section 4.4.).)

Half-long vocoids are now reduced to bound variants of long vocoids, conditioned by the occurrence in stød-syllables (v· and v: being in complementary distribution); this analysis is confirmed by the similarity of the manifestation rules for stød-prevowels and for long prevowels. But we must then restate ɒ: as a long vowel, cp. the opposition between ɒ and ɒ: in <u>vor</u> 'our', <u>vår</u> 'spring' [ˈvɒ ˈvɒ·ˀ].

5.1.2. The length accent.

The systems of long and short vowels now exhibit the same

number of units and the same pattern. We shall briefly discuss
the possibility of reducing the two systems to one by consider-
ing the long vowels as short vowels plus something else (the
remainder being an identical short vowel, h, or a length-
unit).*)

If we were to interpret the long vowels as consisting of
two identical short vowels, each of these would be commutable
with consonants or zero, but with no other vowels (because the
diphthongs were interpreted as a short prevowel plus a precon-
sonant), a situation which does not agree with the fact that
vowels and consonants belong to different categories. This
implies that if one vowel in such a two-vowel group is com-
mutated, the other vowel will enter into a paradigm comprising
the other vowels but no consonants (nor Ø), i.e. it will en-
tirely change its paradigm. This description seems highly
artificial and is therefore rejected.

If we consider the long vowels as consisting of a short
vowel + h, the phoneme h would be given a "normal distribution"
without increasing the number of phonemic elements. But the
phonetic description of /h/ would be highly complicated, so
this description, too, must be rejected.

To consider the long vowels as short vowels + length is
phonetically the most satisfying description, but length is
then a new phonemic entity which can be taken in several senses:
(1) as a segmental phoneme /:/ with a number of bound variants,
[æ] after /æ/ etc. /:/ is then commutable with consonants
and Ø (cp. that /:/ can never form a syllable by itself);
(2) as an entity characterizing the vowel, i.e. as a distinc-
tive feature extracted from the other distinctive features
which together constitute the vowel quality.

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*) This discussion belongs to the present section (5.1.2.)
   because length will turn out to be an accent. But it
   should be noted that a reduction of long vowels to two
   identical vowels or to short vowels plus h would belong
   to section 6. (after the phonemes have been established).

The difference between (1) and (2) is of theoretical but not of practical consequence in so far as the phonemic notation and the manifestation rules will remain the same; (3) as an entity characterizing the syllable, i.e. as an accent. This interpretation is supported by the fact that the length is often lost when the syllable becomes the first part of a compound. In this respect it behaves like the stød accent but unlike all segmental phonemes (the same loss of stød and length occurs in connected speech when a syllable loses its stress). I therefore choose solution (3), i.e. vowel length is accentual.

5.1.3. The accentual system of ASC.

No unstressed syllables can take the length accent.

The only unstressed syllables with obligatory stød are those with the weak precentrals e and u, whereas those with the weak precentral i can have facultative stød (e.g. in maddingen; vinduet; hyppige [ˈmæðeŋˀn̥ ˈvenḁuˀð̥ ˈhyb̥iˀə or ˈhyb̥iə]). This stød may be considered purely automatic, i.e. non-phonemic, according to the following rule: an unstressed syllable with the weak precentral e or u before an unstressed syllable with ə ɒ l n or ð̥ (i.e. the weak precentrals on the 1st level (section 4.2.))have obligatory stød; and an unstressed syllable with the weak precentral i has facultative stød under the same conditions. Now only stressed syllables can have phonemic stød, i.e. a stød accent; the stød and length accents therefore presuppose the presence of the stress accent, but not inversely (in the phonemic transcription, the symbol for the stress accent can therefore be omitted before syllables with length and/or stød accent).

According to this analysis there are four types of stressed syllables:

	long		non-long	
stød	ˀː [ˈmæˀn] /ˀː mæn/	man 'conjure'(imperative)	ˀ [ˈmænˀ] /ˀmæn/	mand 'man'
non-stød	ː [ˈmæːn(ə)] /ːmæn(ɛ)/ *)	mane 'conjure'	ˈ [ˈmæn] /ˈmæn/	man 'one'

Cp. the scheme of Ege (4.).

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*) The location of the syllable border is not considered here.

5.2. From weak precentrals to phonemes.

The weak precentrals in native words are ḷ ṇ ð̩ ə ɒ i e u (section 4.2.); the weak precentrals ɒ i e u are identified with the vowels ɒ i e u, the only difference being the absence versus presence of the stress accent. ə should not be identified with stressed æ or o because æ and o occur as weak precentrals commutable with ə in foreign words; nor should we identify ə with stressed ɔ or ɑ, because the weak precentral ɒ can vary in the whole range [ʌ-ɒ-ɑ]. Is it reasonable to identify ə with one of the other stressed vowels, i.e. y, ø, Œ, or ɛ ? The simplest solution is an identification with ɛ which permits us to state the rule that y, ø, Œ, i.e. the vowels of the rounded front series, are never found in un-stressed syllables in native words.

The remaining weak precentrals ḷ ṇ ð̩ cannot be identified with any of the other syllabic phonemes, i.e. the vowels; we shall not identify syllabic with non-syllabic phonemes, and ḷ ṇ ð̩ are therefore separate phonemes, i.e. weak centrals.

5.3. The inventory of phonemes.

The resultant phonemes of ASC are:

12 vowels

i	y	u
e	ø	o
ɛ	Œ	ɔ
æ	ɑ	ɒ

3 weak centrals

ḷ	ṇ	ð̩

15 consonants

Both initially and finally 11:
b d g m n l f s r j v

Only initially 2:

h ʃ

Only finally 2:

ŋ ð

In total, 3o phonemes plus 3 accents: stress, stød and length.

6. From phonemes to ultimate phonemes.

6.1. Criteria for the reductions.

To reduce the number of phonemes a further operation must be used, i.e. dissolving one sound into two simultaneous components each manifesting an ultimate phoneme. This presupposes, of course, that the sound is not commutable with the successive manifestation of the two ultimate phonemes.

If we make no complete analysis in distinctive features (or simultaneous components à la Harris), we are in lack of safe phonemic criteria telling us where to stop these reductions. I shall, therefore, make only few of these and only in cases where it leads to a clear simplification in the phonemic description of ASC as a whole and not only a decrease in the number of units. (It should be noted that 'Hjelmslev's Law', which says that a cluster xyz can only exist if also xy and yz exist in that language, is only found to appear as a tendency in ASC, and it can therefore not be used as a criterion telling us where to stop the reductions of the phoneme inventory.)

First, the criterion of "maximally differentiated allophones" is used; i.e. when particularly distinct pronunciations are required, e.g. in the presence of noise, some sounds (e.g. [l̩ n̩ ð̩]) can always be replaced by certain other sounds ([əl ən əð])(their "maximally differentiated allophones") which do not otherwise occur together. If the "maximally differentiated allophones" are groups of sounds where each sound is the normal manifestation of an already established phoneme, a clear simplification of the description as a whole can be obtained by analyzing the "maximally differentiated allophones" instead of the sounds in question (see below).

6.2. The reductions.

(1) <u>l̩ n̩ ð̩ to ɛl ɛn ɛð.</u>   [əl ən əð] are the "maximally differentiated allophones" of [l̩ n̩ ð̩] (only occurring in unstressed syllables and manifesting the phonemes l̩ n̩ ð̩). As [ə] is the normal manifestation of the vowel ɛ in unstressed syllables, and [l n ð] of the consonants l n ð, syllabic l̩ n̩ ð̩ are reduced to the ultimate phoneme groups ɛl ɛn ɛð (in unstressed syllables, i.e. occurring without the stress accent).

(2) <u>ɑː to ɑr.</u> Until this reduction is made ɑ is never found before r, and the word <u>far</u> [ˈfɑː] stands out as the only exception to the rule that no long vowels occur finally in monosyllabic words.   After the restatement, however, oppositions like <u>var, far</u> [ˈvɑ , ˈfɑː] are accounted for as /ˈvɑ /versus

/ˈfɑr/ . Furthermore, oppositions like p̲a̲k̲, p̲a̲r̲k̲ [ˈbhag̊,
ˈbhaːg̊] 'mob', 'park' are now /ˈbhag/versus /ˈbharg/ etc., so
that we can state the important rule that no long stød-less
vowels occur in monosyllabic words. Thus, in monosyllables
the length accent presupposes the presence of the stød accent,
but not inversely. After the present reduction , a is the
only vowel which never occurs in syllables with the length
accent. (It should be noted that (2) is not a reduction in
the proper sense, the number of phonemes and accents being
unchanged, but merely a simplification.)

(3) p̲ ̲t̲o̲ ̲ɔr̲. ɒ occurs with the length accent in stød syllables
only,*) and after the application of (2) ɒ and ɔ are the only
phonemes which never occur before r. After reduction (3), a
vowel phoneme with a peculiar distribution (ɒ) has disappeared,
and another vowel (ɔ) has been given a more normal distribu-
tion; the opposition v̲o̲r̲, v̲å̲r̲ [ˈvɒ ˈvɒˑʔ] which before (3)
involved both length and stød, is now /ˈvɔr/ versus /ʔvɔr/;
i.e. it involves only stød.

(4) ̲ʃ̲ ̲t̲o̲ ̲s̲j̲. In ASC as a whole, both [ʃ] and [sj] can be heard,
although [ʃ] is by far the most general pronunciation. Reduc-
tion (4) seems justifiable because j will be given a more
normal distribution without complicating the distributional
description of s.

6.3. The inventory of ultimate phonemes.

The system of ultimate phonemes in ASC is then:

11 vowels:

i	y	u
e	ø	o
ɛ	œ	ɔ
æ		ɑ

14 consonants:
Both initially and finally 11:

b d g m n l f s r j v

---

*) Cp. the reduction at the end of section 4.1.

Only initially, 1 consonant: h

Only finally, 2 consonants: ŋ   ð

In total, <u>25</u> ultimate phonemes plus <u>3</u> accents: stress, length and stød.

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