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Changing Pronunciation but Stable Social Evaluation?

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Abstract
The study of phonetic variation and change in sociolinguistics predominantly focuses on 'the vernacular' or at least on speech occurring in spontaneous conversations. While such studies are obviously vital to understand the patterns of change in a speech community, it is also desirable to understand how patterns of variation and change develop in a 'prestige' standard language which may function as a model for normative language. In order to study on-going sound change in standard spoken Danish and their socio-linguistic consequences, the paper investigates the production of a series of front vowels in the news broadcasts of the national Danish radio, DR, arguably the model for the 'best' language to the majority of speakers of Danish. The study focuses on changes in the production of two vowel variables, the short (a) and long (æ:), by studying their position in the vowel space relative to neighboring vowels as well as relating these results to the realization of (a) and (æ:) as observed in sociolinguistic interviews. These variables are of particular interest because they have been discussed as emblematic of substandard pronunciation for generations, and because the social evaluation of the raised variants may be changing considerably in the present.

Changing Pronunciation but Stable Social Evaluation?

Jacob Thøgersen and Nicolai Pharao

1 Introduction

Danish is remarkable in its richness of vowels with five levels of height in the front and back vowels, rounded as well as unrounded front vowels, phonemic vowel length and 'stød'. The mid-low unrounded vowels have received particular attention in Danish sociolinguistics (e.g., Brink and Lund 1975, Gregersen and Pedersen 1991, Maegaard et al. 2013). These vowels, the (æ:) and (a) variables, are also the topic of this paper in which we investigate how they have changed in radio news readings, arguably the most standardized of all styles of spoken Danish, over a period of 6 decades.

Brink and Lund (1975) showed that standard Danish at the beginning of the 19th century had only one pronunciation of the /a:/ and /a/ phonemes, [ɑ:] and [ɑ] respectively. During the 19th century both the /a:/ and the /a/ underwent a front-back split which led to conditioned allophony. Following this we get (ɑ:)/(ɑ) before labials and velars and (æ:)/(a) in other contexts, with the reservation that an /r/ in the immediate context can lead to the (ɑ:)/(ɑ) allophone even before, e.g., coronals, *Randers* [a town], *Anders* [male given name] (Brink and Lund 1975:67ff).

When the split first emerged it was largely a front-back split, but over time the (æ:) raised from [a:] to [æ:] to today roughly [ɐ:] in the standard pronunciation. The (a) have gone through the same raising but delayed about a century, so that the contemporary standard pronunciation of (a) is roughly [ɛ], and the (a) and (æ:) are distinguished by height as well as length. Figure 1 shows the raisings diagrammatically. Please notice that the signs for the vowel variables do not correspond perfectly with IPA but are shifted up somewhat to accommodate to the Danish vowel system which is heavily populated in the front high area.

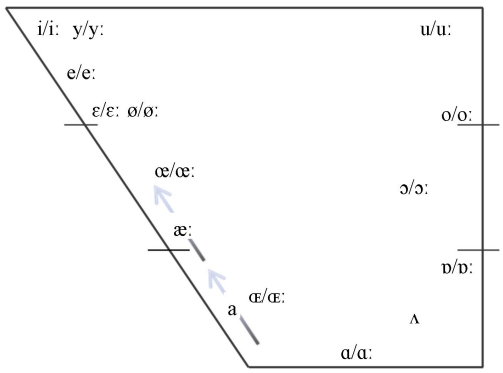


Figure 1: Danish vowels with the raisings of (a) and (æ:). Adapted from Grønnum (2005).

In popular perceptions the raised pronunciation of (a) and (æ:) are, disparagingly, known as 'flat a'. Danish sociolinguists who have analyzed the a-raisings, have typically focused on the raising of (a) to the height of (æ:), looking for mergers in height between the two (i.e., Jørgensen 1980, Gregersen and Pedersen 1991, Maegaard et al. 2013).

A further note of introduction is needed and will become relevant when we turn to popular discourse on 'flat a'. Both the (a) and (æ:) (as well as the (ɑ) and (ɑ:)) are typically represented by "a" in orthography. The letter "æ" typically corresponds to the vowel (ɛ); the most common way of describing the 'flat a' in popular discourse is to say that a speaker's "'a' sounds like an 'æ'." Below, we will see some examples of mock spelling of "a" as "æ" to indicate that the pronunciation of (a)/(æ:) is considered inappropriately high.

2 The Rise of the 'Flat a'

For at least a century, pronunciation of (æ:) and (a) has acted as an important, and apparently very stable, shibboleth of the Copenhagen urban dialect. This dialect had, what was considered, undue raising of the vowels. The first awareness of this raisings which we have been able to find, is from satirist Fritz Jürgensen, 1818–1863, who in a cartoon depicted the speech of a young Copenhagen woman impressed by the charm of a man with the words: "*Gud! Caveline! hørte Du hvad han sæh?*," ["Oh my god, Caroline, did you hear what he just said?"] (Jürgensen 1919:fig.18). The sociolinguistic observation of Jürgensen, apart from the pronunciation of *Caroline*, is apparent in the spelling of *sagde* [sæːə] as *sæh* [sɛː].

The raising was noticed also by the speech therapists of the day. Forchhammer (1895:29) mentions "*the more* [e]-*like* [pronunciation of (a) and (æ:)] *we normally have in Danish, and which is particularly noticeable in the 'københævnske'*." Notice that Forchhammer here also uses a satirical spelling to indicate the (a)-raising, spelling *københavnske*, ["the Copenhagen dialect"], with "æ" instead of "a".[1] Forchhammer points out also that the [e]-like pronunciation "*deviates from the 'purer' pronunciation* [ɑ]", indicating a negative view on the raising (ibid.:35, authors' translations and modifications of Forchhammer's phonetic transcription). The a-raisings were the cause not just of ridicule but also of rage. In 1940 philologist Brøndum-Nielsen wrote in a letter to the editor that: "*it is our sincere wish that the Scandinavism of our times may help eradicate the terrifyingly increasing* [e:]-*pronunciation* [in *gade*, *glade*…], *a stinky fungus in the language*" (quoted from Jacobsen 1973:176, authors' translation).

Well into the 1970s speech therapists considered a-raising as pathological and potentially a sign of deep-rooted psychological problems. Analyzing the Copenhagen dialect of a young man, Vangaard (1970:82–83) describes his (æ:)-pronunciation as "distorted" ["*fordrejet*"], and concludes that because of this vowel and his other Copenhagen dialectal features, he was "*unable to speak in a relaxed way or express any emotional impulses*" (see also Kristiansen's 1990 analysis of speech therapists pathologization of the Copenhagen dialect).

These non-linguist descriptions do not distinguish between short (a) and long (æ:) (or indeed even (a) and (ɑ)) but tend to conflate the vowel with the letter "a". As a consequence, it is impossible to tell from contemporary descriptions whether the Copenhagen raising was a case of stable variation or a case of gradual change. Without any fixed references, e.g., IPA symbols, we have no way to tell. We will return to the question of stable variation vs. change-in-progress below.

As mentioned the sociolinguistic literature on Danish has tended to focus on the short (a) variable, and assume that the (æ:) have remained relatively stable around [ɛ] for decades. For example, Gregersen (2009) gives two working definitions of the 'flat a' realization of (a). On the one hand it is "[e]-like", on the other hand that it "resembles the long a", (æ:). By the second definition, 'flat a' is a merger in terms of height of (a) and (æ:). Working with auditorily based classification from this or similar definitions, Brink and Lund (1975) described both (a) and (æ:) as raising over a century-long period and spreading from the Copenhagen vernacular, Jørgensen (1980) proclaimed that "the flat a will prevail" because he found that it was more frequent for younger speakers in Copenhagen to display a merger in height between (a) and (æ:), and because he assumed that this merger would spread from there like most other Copenhagen based features have spread. On the other hand Gregersen and Pedersen (1991:123, 167–169) found no indication of a continuation of the raising of short (a) in their apparent time study of the Copenhagen vernacular, and Maegaard et al. (2013:21) conclude that: "[t]he analysis [of (a)-variation] across time and space suggests that the use of [ɛ] is in decline. This is contrary to the public belief that the use of 'flat a' is increasing, especially in Copenhagen". This lead Maegaard et al. to adopt a wave model where (young, working class) Copenhagen speakers spearheads innovations which spread to the rest of the country like ripples in water. The current innovation in Copenhagen, according to Maegaard et al., is not an increase in use of [ɛ], but rather a decrease. The question we want to address in the rest of this paper is what happened to the 'flat a' diachronically in the Danish standard language as represented in the national broadcast media. Did it "prevail" as Jørgensen would have it, or is it disappearing? By addressing this question we will also be addressing the question of stable variation vs.

[1]This is a slightly peculiar example since the (a) in *københavnske*, due to the following labial, would have been pronounced [ɑ].

change-in-progress, and indirectly we will be addressing the interplay between language attitudes (the strong condemnation of 'flat a') and language change. We believe also that the history of the 'flat a' is interesting as a case of 'sociolinguistic change' (Coupland forthc.). The notion of sociolinguistic change denotes a development where we do not simply witness linguistic change against a backdrop of social significance which remains more or less stable, but a development where the social order is changing along with the linguistic. Coupland proposes *vernacularisation* as a process in which the social significance, e.g., the hierarchies, of linguistic varieties is in flux along with the varieties themselves. In order to investigate (a) and (æ:) pronunciation diachronically in the standard language, we turn now to the Danish National Broadcasting Corporation.

3 Denmark's Radio — the BBC of Denmark

The Danish National Broadcasting Corporation, *Danmarks Radio* (DR), was founded in 1925, then under the name of *Statsradiofonien* [The State Radiophony], and maintained a broadcast monopoly until the late 1980s. Even though there are now competing broadcasters, both private and public, one could argue that the DR still maintains a semi-monopoly since it is the only broadcaster which is 100% state funded. When the DR was established, it was explicitly modeled on the public service model of broadcasting laid down by the BBC in Britain. This is apparent in the broadcast ideals set down by the government: "*A state institution was created, free from speculation, advertising and private interests, an institution intended solely to serve country and people and to act as a link to the outside world*" (Prime minister Thorvald Stauning reminiscing the foundation of the DR on its 15th anniversary, Breidahl and Rée 1940:5f, authors' translation). Furthermore, the DR "*was established to connect with all households in the country and in fact with millions of households outside the borders of the country*" (ibid.:5). It is easy to see from the quotes the potential for nation-building and education which the politicians of the day saw in state-funded and monopolized broadcasting. The newly invented radio broadcasting's potential (and responsibility) for language standardization was not overlooked either. Agha (2003) and Mugglestone (2007) document in detail the instrumental role which the BBC played in disseminating English standard pronunciation (RP) to the wide public. And Schwyter (2008) analyses the deliberateness with which this disseminatory role was taken on by the BBC. The BBC Advisory Committee on Spoken English was aware of itself as a linguistic role-model, and was convinced that their behavior would be copied by the British public. If the BBC upheld 'high' standards, the state of English would 'improve', if it faltered the state of spoken English would deteriorate:

> No one would deny the great advantage of a standard pronunciation of the language, not only in theory, but in practice. Our responsibilities in this matter are obvious, since in talking to so vast a multitude, mistakes are likely to be promulgated to a much greater extent than was ever possible before. There is now presented to any who may require it, an opportunity of learning by example. (The BBC's first managing director, John Reith (1924), quoted from Schwyter 2008:221.)

As Bell (1983:29) notices: "In many countries, the language of broadcast news is regarded as the embodiment of standard speech", and so also in Denmark where the DR has always had a focus on 'proper' language in particular in 'serious' programs like the news. To this day, the DR, according to its language editors, views 'proper' language as a sign of 'credibility.' That is, the DR believes that using standard pronunciation marks the speaker as credible and the content as serious; using non-standard language like urban or rural dialect features marks the speaker as unreliable and the content as less serious, e.g., entertaining or satirical.

The DR's ambition to be a linguistic role-model has had the socio-linguistic consequence that the DR is today widely accepted in the public as proponents of 'the best' spoken Danish (cf. Bell 1983 for examples of other countries in which this is the case and theorizing about the reasons for this perception). Furthermore, the public expects and demands the DR to have this role. In interviews regarding attitudes towards English language use in Denmark, one of the authors received several narratives like this regarding the role of the DR:

> I [don't think] we need to have a very pure language. No, I don't think so. But at the same time I think it needs to be more pure when the language is official and when it is the Radio News or the TV News [*Radioavisen og TV-avisen*]. If it starts to get too fancy there, the hair in the back of my neck stand in end. (Thøgersen 2007:237, authors' translation.)

Apart from expressing the view that the language of the news needs to be 'purer' than everyday language, the informant's two examples "*Radioavisen*" and "*TV-avisen*" are also interesting. These are not just any radio and TV news programs; these are the names of the radio and TV news on the DR main channels — *the* news. This emphasizes the extraordinary role the news programs of a broadcast monopoly have in a 'standard language culture' (Milroy 2001) as beacons of 'proper' language.

Previous studies, of course, have also used media (i.e., radio) recordings in longitudinal studies of pronunciation change in standard languages in societies in which "broadcast news [is adopted] as a working definition of the standard language" (Bell 1983:29). Most notably Hans Van de Velde (1996, Van de Velde et al. 1996, 1997) used radio recordings in studies which traced changes in standard Dutch pronunciation from the 1930s to the 1990s.

3.1 Flat a in Denmark's Radio

Given the aura of correctness which surrounds the DR (and especially its news programs), and given the aura of outright disgust which surrounded the 'flat a', it should come as no great surprise that 'flat a' has been condemned in the official language manuals of the DR throughout its history.

The very first language manual published by the language committee of the DR, Albeck (1942:4), names as its very first rule "A [(a),(æ:)] *must be kept in adequate distance from* æ ([e],[e:])". It then gives a list of potential (or pseudo) mergers, *glade*/*glæde* ["happy"/"happiness"], *Hale*/*Hæle* ["tail"/"heels"] (with [æ:]/[e:]) and *Palle*/*Pelle* [two male given names], *kalder*/*kælder* ["call"/"celler"] etc. (with [a]/[e]).[2]

Sixty-six years later, Skyum-Nielsen (2008:355f.) mentions similar problems with vowels and potential for mergers: "*Especially among the young Danes there is a terrifying instability in the use of vowels. Many vowels are uttered as if it meant nothing if they hit home or miss completely*." "*The A pollution*", as he calls it, "*occurs when an a-sound* [(a),(æ:)] *is pronounced as æ* ([e],[e:])"

»Vil De prøve at sige A!« Tegning af Herluf Jensenius til Berlingske Tidende august 1962. Tekst: »Medarbejderne i radio og TV skal have undervisning i bedre sprogbrug. – Af en forventet meddelelse i den danske radio: – Dæ der klæges en del over speakernes flæde udtæle æ' det danske sprog, vil programdirektør Dæhlerup snærest foretæge en undersøgelse...«

'Would you care to say A' "Employees in radio and TV must be trained in better use of the language. This from an anticipated announcement in the Danish radio: 'Since quite a lot of complaints are made about the announcers' pronunciation of Danish, director Dahlerup will conduct an investigation as soon as possible.'"

Figure 2: Cartoon drawing from Berlingske Tidende, 1962, cited from Skovmand (1975:317).

The phenomenon of a-raising and its inappropriateness in media language was (and to some extent still is) commonly recognized. If it was not, jokes could not be made about it as in Figure 2. No-

[2]Incidentally two of the members of the language committee were Johannes Brøndum-Nielsen who wrote about the "fungus in the language" and Viggo Forchhammer, brother and colleague to Georg Forchhammer who wrote about "the [e]-like pronunciation which deviates from the 'purer' pronunciation". Among the other members of the committee were the minister of cultural affairs and representatives of the DR.

tice again that "æ" is used to mock the raised pronunciation of (a)/(æ:).

From the consistency of the descriptions it would seem that the phenomenon is a case of stable variation, e.g., age-grading, in which there are two pronunciation targets for the (a) and (æ:), a lower, standard pronunciation, and a raised sub-standard pronunciation particularly prevalent among young Copenhagen speakers and possibly mostly in informal situations. As to the acceptance of raised (a)/(æ:) in the formal standard of news readings, the case is clear: they are not acceptable.

To reiterate, for more than a century (1890s–2000s) commentators have noticed that something was wrong with the (a) and (æ:), especially among the young in Copenhagen. They were 'flat'. Throughout the history of the National Broadcasting Corporation, 'flat a' has been stigmatized and proscribed against in the prestige norm. The question that remains is how the news readers have responded? Have their (a) and (æ:) raised, or has the proscription held the raisings in check?

4 Method

The remainder of this paper will be focused on analyzing whether the 'flat a' has in fact been in constant variation in the language of the spoken media or whether it has been in a state of change-in-progress. Socio-linguistically, there is no question that the 'flat a' which Skyum-Nielsen (2008) condemns is 'the same' as the one Albeck (1942) and her predecessors condemned, i.e., it shares similar linguistic properties and it is associated with the same social evaluations. What is less evident is whether the two's 'flat a's' are also phonetically the same phenomenon or whether the boundaries between 'flat' and 'normal' are constantly shifting. As we have seen the popular definition of 'flat a' is remarkably stable in describing them as "a sounding like æ", i.e., that the variables (a) and (æ:) approach [e] and [e:] too much. We have also seen that the sociolinguistic interest has focused on short (a)→[e], i.e., an overlap in height between (a) and (æ:). Here both definitions will be explored. We will look at mergers in quality between (a) and (æ:), between (a) and (ɛ) and between (æ:) and (ɛ).

Data for the analysis comes from radio news readings spanning six decades, 1956–2010, a total of approximately 43 news programs (at times it can be hard to tell whether a tape contains fragments of one or several programs). In total the sample contains approximately 7 hours of speech from approximately 41 individual speakers of which 5 are women (again it can be hard to tell whether a speaker in two different programs is the same or not when little information save the broadcasting date is preserved). Most of the speakers sound like they are middle aged ≈ 40–60 years old. The speech samples were transcribed and manually segmented at the word level. For the study only the actual news readings is used, not, e.g., interviews and reports. We choose to focus on these passages where the speaker performs "the voice of the DR" in order to keep the context constant as far as possible. Furthermore, reading style generally induces maximum attention to speech and therefore the most formal style the speaker can muster (Labov 1972). Oftentimes in sociolinguistics, which tends to be more interested in the vernacular, this is considered disqualifying for reading passages. For this study which is explicitly interested in the formal standard, it is not.

A semi-automatic method was applied in which all words containing the vowels in question, (a), (æ:), (ɛ), or one of a number of reference vowels in stressed position, were found automatically. The reference vowels were the other front unrounded vowels, (i:), (e), and the lowest and highest back vowels (ɑ), (ɑ:) or (u).[3] The decision as to whether a word contained one of the vowels was based on standard pronunciations as given in a word list. A Praat (Boersma and Wenink) script searched the pronunciations. In words that matched the criteria, i.e., contained one of the vowels in stressed position, the vowel's position was first estimated from its position in the word. For example the word *Denmark*, contains six sounds, the (ɛ) is the second, so the first estimate is that the (ɛ) is located from 1/6 into the word until 2/6 into the word. As a refinement of this esti-

[3]No distinction was made between (u) and (u:), between (ɛ) and (ɛ:) and between (e) and (e:) because of the relative scarcity of data. That means that the variable (u), (ɛ) and (e) includes both long and short vowels. For the more frequent (ɑ)/(ɑ) and (i)/(i:) we had enough data to separate the two. Post hoc analyses of the (ɛ) and (ɛ:) does not indicate large differences in height between the long and short vowel.

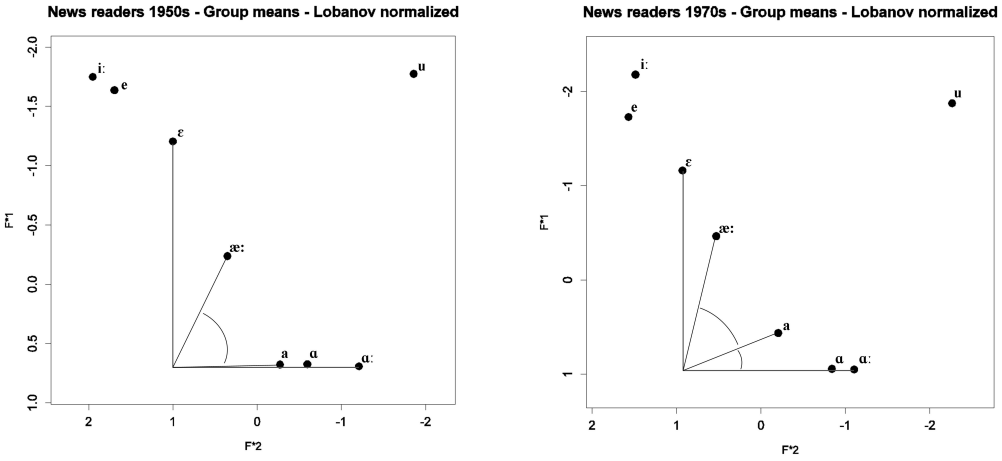
mation, the sound intensity in the estimated location and immediate surroundings was measured, and the vowel midpoint was hypothsized to be in the most intense time frame.[4] All measure points (≈7.200) were manually verified and corrected. The correction procedure involved hearing whether the script had found the right vowel and whether the midpoint measure point was in a problematic point, i.e., whether there was background noise, whether Praat could track formants etc. Formants 1, and 2 were then automatically measured with standard settings in Praat (5 formants under 5000 Hz for men and under 5500 Hz for women). Following this the formants were normalized with the Lobanov method and plotted using the NORM suite (Thomas and Kendall).

In this study we are concerned with the linguistic output presented to the listener, not with speech patterns of individual announcers. Thus, while the data allow for both trend studies as well as a mini panel study (since some announcers recur across decades), we will be treating their vowels as tokens of speech from a generalized news reader, 'the voice of the DR.' Hence, we will only be looking at normalized group means per decade of recording. This allows us to ask: What is the model for 'best' pronunciation which at any given time is disseminated to the general public? And is this model changing?

5 Results

In Figures 3-5 the location of the (a) and (æ:) are plotted against the reference vowels. To make it easier to appraise the changes, guidelines are drawn vertically from (ɛ) and horizontally from (ɑ:). These guidelines thus show the (a) and (æ:)'s position relative to the next vowel up in the system and to the lowest vowel. Angles are drawn, again to make it easier to see changes in the location of the vowels. Due to space constraints only the group means of three decades are plotted. The intermediary decades fall, as expected, between the decades plotted here.

It is evident from the plots that the (a) raises markedly, from being a low front vowel with the same height as (ɑ:) in the 1950s, to being a mid-high front vowel in the 1990s. It is also evident that the (æ:) undergoes much the same development. Apparently the relation between the two do not change much—they get only a little closer—the large change is in the two sociolinguistically salient vowels in relation to the rest.



Figures 3 and 4: Vowel locations in news readers 1950s and 1970s.

[4]We have later obtained better results with this procedure if we measure intensity in a low-pass (< 1000 Hz) filtered sound file.

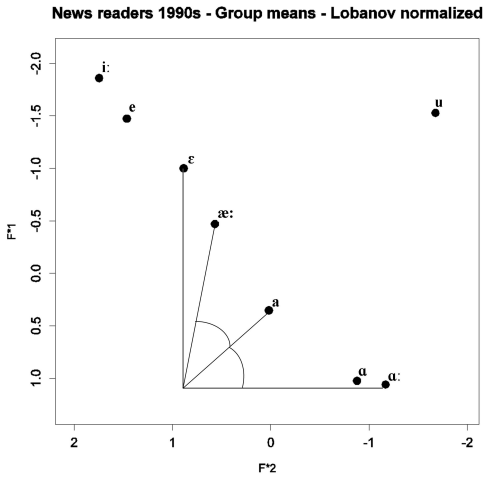


Figure 5: Vowel locations in news readers 1950s.

A fundamental question is whether these changes in the vowel space lead to new mergers. As we have seen, the popular discourse on the subject of the vowel changes indicated that mergers were imminent; potential mergers and the confusion of (a)/(æ:) with (ɛ)/(ɛ:) is the common way to describe the changes. When looking at the vowel plots, merging of the vowel qualities do seem potential as the phonemes approach each other.

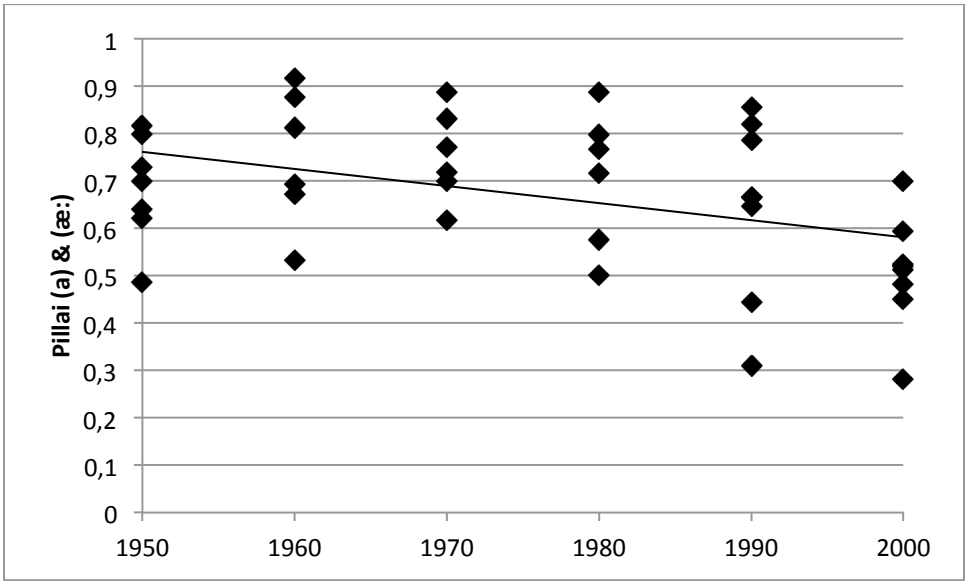


Figure 6: Pillai scores and p-values for vowel-pair (a) and (æ:).

In order to gauge whether the vowel changes lead to mergers, we adopt Hall-Lew's (2010; Hay, Warren and Drager 2006) method of evaluating the separation between distributions of tokens of vowel-pairs using MANOVA. We measure the degree of separation between vowel-pairs, (a) and (æ:), (a) and (ɛ) and (æ:) and (ɛ), by comparing their F1 and F2 measures to find the degree to which the vowel-pairs are discrete or overlapping. For each speaker and each vowel-pair we obtain a p-value which indicates whether the vowel distributions are statistically significantly different (MANOVA, $p<.05$). We also compute each speaker's Pillai score which is a measure of the degree to which the distributions overlap. A high Pillai score indicates a high degree of separation;

a low Pillai score indicates a high degree of overlap. It is important to note that these measures only measure (midpoint) formant values. The (æ:) and (a) vowels are distinguished not just by height but also by length. Likewise, it may be that potential mergers are in fact distinguished by formant dynamics, i.e., gliding. In other words the MANOVA measures speak only of mergers in terms of height, not mergers proper.

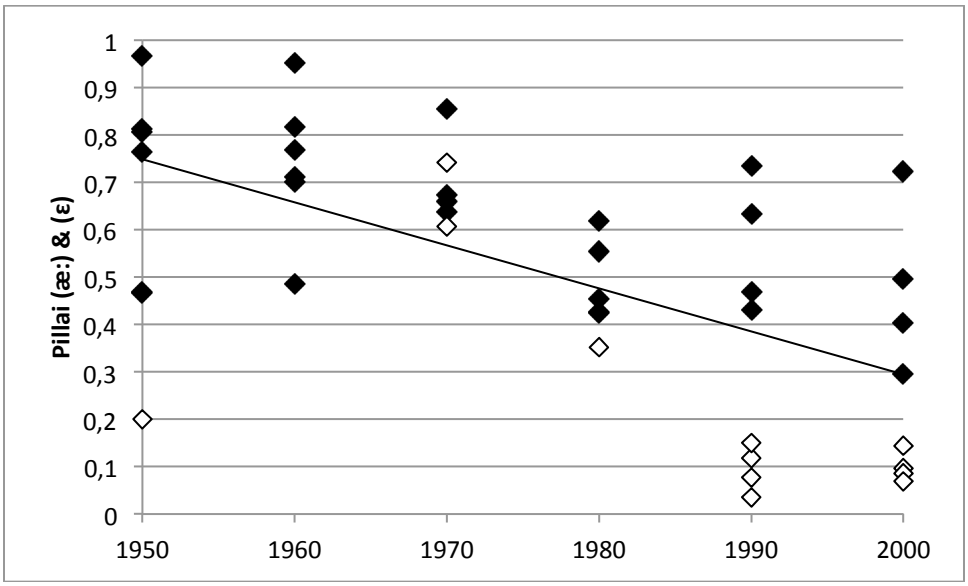


Figure 7: Pillai scores and p-values for vowel-pair (æ:) and (ɛ).

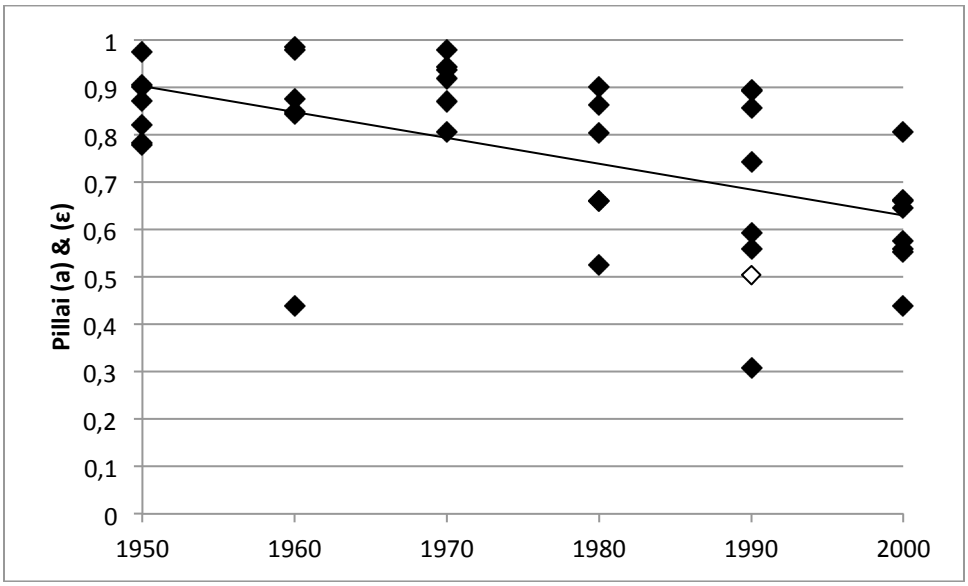


Figure 8: Pillai scores and p-values for vowel-pair (a) and (ɛ).

Figures 6–8 show the Pillai scores and p-values for each speaker and each of the three vowel-pairs in question. Each dot represents one speaker. The solid dots represent significant differences ($p<.05$), the open dots represent non-significant differences. The line shows the general trend.

For all three vowel-pairs, the tendency is for less clear separation over time, i.e., the degree of overlap between the vowel distributions' formant values increase over time. However, only for the vowel-pair (æ:)/(ɛ) do a sizable proportion of the speakers, about 50%, show non-significant differences in the distributions of tokens, and only the speakers in the later decades. Interestingly no speaker in the sample has overlap in quality between (a) and (æ:). Remember that merger in terms of height between these two vowels is the standard sociolinguistic definition of 'flat a'.

In answer to the question of whether language proscriptivism has succeeded in holding the vowel change of (a) and (æ:) in check, the results indicate a resounding "no". The (a) and (æ:) have raised quite markedly against the official proscriptivism. On the other hand proscriptivism against 'flat a' has been remarkably constant, even in spite of these quite dramatic phonetic changes. We are led to conclude that the vowel qualities defined as 'flat' appear to change along with the phonetic changes. Albeck's (1942) 'flat a' is presumably Skyum-Nielsen's (2008) 'standard' (or possibly even conservative) (a) and (æ:). Albeck on the other hand, would probably hear Skyum-Nielsen's 'flat a' as (ɛ)/ (ɛ:).

6 (a)'s in News Readings and in Everyday Life

These results from news readings seem clear: The previously stigmatized 'flat a' is today fully accepted in even the most formal standard language. Why, then, is Danish sociolinguistics less unequivocal? As will be recalled from above, Jørgensen (1980) prophesized that the 'flat a' would prevail, but Maegaard et al. (2013) found evidence to suggest the opposite, i.e., that the 'flat a' has all but disappeared from the Copenhagen dialect. In conclusion we would like to propose our explanation of why changing generations of Danish sociolinguists have described the developments so differently. It is an explanation with potentially large ramifications for longitudinal studies of language change.

We saw above that the main trend of change across the decades is a fall in F1 for the (a) and (æ:) and thus a raising away from the low back (ɑ). Figure 9 shows the same change in a slightly simpler graph in which only F1 is plotted. In this graph, the data are unnormalized Hertz measurements, and only the male speakers are plotted; squares give the means for (æ:), diamonds give the means for (a) and triangles give the means for (ɑ). In the graph, the F1 means from the news readings are compared to the results of a previous sociolinguistic study at the LANCHART center (Appel and Wolter 2012). This study was based on sociolinguistic interviews with 10 middle class male speakers, 6 of whom were re-recorded in the 2000s, and the means from the 60 year olds in the 2000s are therefore the same individuals as the 40 year olds in the 1980s-recordings. These means thus represent speakers who are comparable to the news readers age-wise speaking their vernacular.

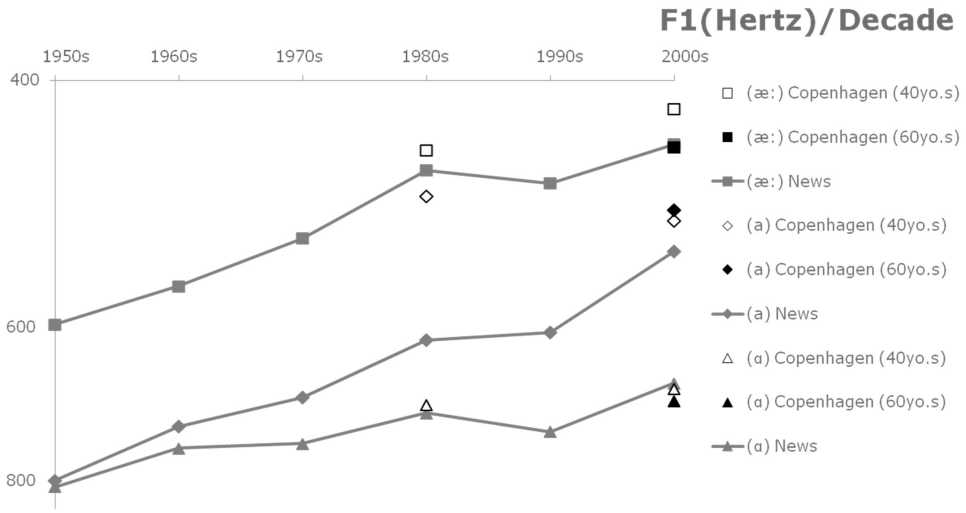


Figure 9: Developments in F1 measurements, male news readings and Copenhagen speakers.

The graph suggests a dramatic change in pronunciation of especially the (a) vowel in news readings compared to spontaneous Copenhagen. In the 1980s, i.e., the time when Jørgensen heard 'flat a' in abundance, the (a) of the 40 years old Copenhageners was markedly higher than the one of the news readers, and in fact almost as high as the (æ:), both their own and the news readers'. The Copenhagen speakers thus had a 'flat' a by the sociolinguistic definition, an (a) as high as one's (æ:). In the 2000s the same Copenhagen speakers and the ones who are a generation younger have slightly larger difference between their (a) and (æ:), consistent with the hypothesis that 'flat a' is on the decline. However, a much larger difference between the 1980s and the 2000s is how (a) is pronounced in the formal standard of the news. The news readers of the 2000s pronounce (a) markedly higher than the news readers of the 1980s and almost as high as what is found in the data from the sociolinguistic interviews. This leads us to conclude that the formal standard has integrated the formerly stigmatized phonetic variant [ɛ]. In doing so the variation in the (a) is (in the process of being) neutralized. So we may conclude with Jørgensen (1980) that the 'flat a' prevailed, in the sense that the raised variant has become prevalent, *and* with Maegaard et al. (2013) that it is disappearing, because a phonetic variable of immense social significance has effectively disappeared. The (a) raising which we have documented here can be construed as a case of 'sociolinguistic change' in which not only the vowels' place of articulation is gradually changing, but so is their social significance: [ɛ] is no longer the marked substandard pronunciation, but 'normal', whereas [a] is today the marked, i.e., 'old-fashioned' or 'posh', pronunciation.[5]

This interpretation rests on the assumption that one reason why linguists in the 1980s heard more (a)'s as 'flat' than did linguists in the 2000s when raised (a) is today the norm and not substandard, lies in the changes which the formal standard of the news reading has gone through. If one is born in the 1950s, as Jørgensen was, one's ear for unmarked pronunciations may be attuned to the standard one heard in the 1950s and 1960s. If one is born in the 1980s or 1990s, as the listeners working with Maegaard et al. were, one's intuition for unmarked pronunciations have been built four or five decades later when the (a) of the standard was markedly higher. The results here seem to indicate that it is difficult, even with formal training, to overcome this intuitive feel for marked and unmarked pronunciations. If one has the news readings of the 1990s or 2000s as a baseline, one does not hear a Copenhagen speaker either in the 1980s or 2000s as markedly deviant. If, on the other hand, one has the news readings of the 1950s or 1960s as baseline, one hears both of these groups as having markedly raised (a) pronunciation. An open question is the degree to which these hypothetical baselines are formed in one's formative years as opposed to being renegotiated over time or adjusted to one's interlocutor.

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[5]Anecdotally, we see this among our students who do not immediately recognize 'flat a's' the way students 20 years ago would have. We see it also in popular descriptions in which 'flat a', which was previously unequivocally synonymous with raised (a)/(æ:) is taking on new meanings for some speakers, e.g., as dialect markers or even as standard pronunciation.

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