SHE PHONED THE TEDDY BEER
An Investigation of Some Pronunciation Errors
Made by Norwegian Students of English

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<table>
<thead>
<tr>
<th>CONTENTS</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>PREFACE</td>
<td>1</td>
</tr>
<tr>
<td>ABBREVIATIONS</td>
<td>2</td>
</tr>
<tr>
<td>SYMBOLS AND CONVENTIONS</td>
<td>2</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>3</td>
</tr>
<tr>
<td>1. INTRODUCTION</td>
<td></td>
</tr>
<tr>
<td>Aim and scope</td>
<td>5</td>
</tr>
<tr>
<td>Error Analysis</td>
<td>7</td>
</tr>
<tr>
<td>Why study pronunciation?</td>
<td>8</td>
</tr>
<tr>
<td>Material</td>
<td>9</td>
</tr>
<tr>
<td>Informants</td>
<td>12</td>
</tr>
<tr>
<td>Analytical procedure</td>
<td>15</td>
</tr>
<tr>
<td>Categories of contrast</td>
<td>16</td>
</tr>
<tr>
<td>2. THE VOWEL CONTRASTS</td>
<td>22</td>
</tr>
<tr>
<td>/e/ - /æ/</td>
<td>22</td>
</tr>
<tr>
<td>/ʌ/ - /ɐ/</td>
<td>31</td>
</tr>
<tr>
<td>/əʊ/ - /au/</td>
<td>42</td>
</tr>
<tr>
<td>/əʊ/ - /æə/</td>
<td>52</td>
</tr>
<tr>
<td>3. THE USE OF POST-VOCALIC /r/</td>
<td>62</td>
</tr>
<tr>
<td>4. CONCLUDING REMARKS</td>
<td>70</td>
</tr>
<tr>
<td>APPENDICES</td>
<td>73</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>80</td>
</tr>
</tbody>
</table>
PREFACE

The present thesis on Norwegian students' pronunciation of English is the final result of work I have carried out as a graduate student at the University of Bergen. I would like to express my gratitude towards students and staff in the Department of English, where I have spent two interesting years. In the spring of 1992 I had the opportunity to study at the Department of Phonetics and Linguistics, University College London. I am indebted to Mr Michael Ashby for his help and guidance during my stay there, which turned out to be a great source of inspiration for me as a student of English. Also, I would like to thank the British Council for providing financial support. Professor Anna-Brita Stenström of the Department of English, University of Bergen, deserves special mention: without her efforts my stay in London would not have been possible. I wish to thank Senior Lecturer Anna K. Lysne, Department of English, for showing keen interest in my project and sharing her experience with me. I am very grateful to my fellow student Karen Christiansen who has proofread my manuscript, and to Martha Thunes for having helped me with the editing. Finally, special thanks to my supervisor, Professor Kurt Rydland, for his invaluable advice and encouragement during my work on this thesis.

Bergen, September 1993

Torill Irene Hestetræet
ABBREVIATIONS

Bg    Bergen
Bg77-8 Bergen 1977-8
Bg89  Bergen 1989
CV    Cardinal Vowel
EA    Error Analysis
EFL   English as a Foreign Language
EN    Eastern Norway
GenAm General American
H/V   Hardanger/Voss
IPA   International Phonetic Alphabet
NE    Norwegian English
Nh    Nordhordland
Rg    Rogaland
RP    Received Pronunciation
SEN   Standard Eastern Norwegian

SYMBOLS AND CONVENTIONS

The retraction symbol [;] is placed above vowels when it is used with the diacritic [ ], thus [ø] (=a lowered retracted [e]).

I follow Wells in stating lexical incidence in form of standard lexical sets, indicated by keywords in SMALL CAPITALS: "Thus 'the KIT words' refers to 'ship, bridge, milk...'; 'the KIT vowel' refers to the vowel these words have ... both may just be referred to as KIT." (1982:xviii).
LIST OF TABLES

Chapter 1
Table 1. Number of tokens for each vowel in original and revised test. 11
Table 2. Number of informants by geographical area and period of recording. 14

Chapter 2
Table 3. /e/ - /ə/. Number of informants by geographical district and category of contrast. 23
Table 4. Number and percentages of vowel sounds used for /e/ by geographical district. 28
Table 5. Number and percentages of vowel sounds used for /ə/ by geographical district. 31
Table 6. /ʌ/ - /ʊ/. Number of informants by geographical district and category of contrast. 32
Table 7. Number and percentage of vowel sounds used for /ʌ/ by geographical district. 37
Table 8. Number and percentage of vowel sounds used for /ʊ/ by geographical district. 40
Table 9. /ɔu/ - /au/. Number of informants by category of contrast and geographical district. 43
Table 10. Number and percentage of vowel sounds used for /ɔu/ by geographical district. 48
Table 11. Number and percentage of vowel sounds used for /au/ by geographical district. 50
Table 12. /iə/ - /eə/. Number of informants by geographical district and category of contrast. 54
Table 13. Number and percentage of vowel sounds used for /iə/ by geographical district. 58
Table 14. Number and percentage of vowel sounds used for /eə/ by geographical district. 60

Chapter 3

Table 15. Overall frequency of post-vocalic /r/ by geographical district. 63
Table 16. Number of informants by geographical district and relative frequency of post-vocalic /r/. 63
Table 17. Frequency of post-vocalic /r/ by geographical district and preceding vowel. 65
Table 18. Frequency of post-vocalic /r/ in different contexts. 66
Table 19. Number of students using post-vocalic /r/ in the individual words. 68

Chapter 4

Table 20. Number of informants by category of contrast and vowel pair. 71
1. INTRODUCTION

Aim and scope

1.1 The aim of this thesis is twofold: first, to analyse selected features of the pronunciation of English as produced by Norwegian first term students at English grunnfag;\(^1\) secondly, to investigate the possible impact of the students' Norwegian accents on their pronunciation of these features and to provide possible explanations for the students' mistakes. The features which will be studied are (i) the vowel pairs /e/ - /æ/, /ʌ/ - /u/, /ɔʊ/ - /au/ and /ɜː/ - /œə/, with particular emphasis on the phonemic contrast between the two vowels in each pair, and (ii) the use of post-vocalic /r/. A more detailed discussion of the aim and scope of the thesis will be given in sections 1.2 - 1.4 below.

1.2 The vowel contrasts to be studied were chosen because they are commonly considered to be difficult for Norwegians. In fact, many Norwegians seem to lack one or more of these contrasts in their pronunciation of English, thus using only one vowel for two English ones. A well-known example is the pronunciation of the vowel pair /ɔʊ/ - /au/ among newsreaders and commentators on Norwegian television and radio: both phonemes are often realized as [ou], so that the contrast between the two is missing. The spellings phoned and beer in the title of the thesis in fact represent pronunciations of found and bear occurring in my material.

The study of the vowel pairs involves an analysis of three different aspects of pronunciation: first, the presence or absence of the relevant phonemic

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\(^1\) Grunnfag is a one year undergraduate course at Norwegian universities. It can be taken separately, or as a component of a Bachelor's (cand. mag.) degree.
contrasts; secondly, the lexical distribution of the phonemes; and, thirdly, the students' phonetic realization of the phonemes concerned.

1.3 My decision to study the use of post-vocalic /r/ was motivated by the fact that many Norwegians appear to use this feature erratically. The principal model of pronunciation in Norwegian schools, RP, of course does not have post-vocalic /r/. Ideally, therefore, Norwegian pronunciation of English should be non-rhotic. However, this is not always the case, since NE is often variably rhotic or semi-rhotic: post-vocalic /r/ is pronounced in some cases, but not in others. A possible reason for this variable use of post-vocalic /r/ may be that Norwegian students of English are familiar with GenAm pronunciation, which is rhotic, both from teachers and through the mass media (like films and TV). Spelling is also a possible source of post-vocalic /r/ in NE. The variable use of post-vocalic /r/ in NE in all probability has no harmful effect on communication, but it may possibly disturb native speakers in extreme cases. Thus an RP-based NE pronunciation with frequent use of post-vocalic /r/ might sound odd to a native speaker of RP. In any event, it is desirable to examine the use of post-vocalic /r/ in order to understand how common it is and how it is used, that is, whether the variable use is haphazard or rule-governed.

In the analysis of the informants' use of post-vocalic /r/, the emphasis will be on its overall frequency and on its phonotactic and lexical distribution. The phonetic realization of post-vocalic /r/ will not be studied in detail, but a number of characteristic phonetic features will be mentioned.

1.4 An important aim of this thesis is to compare the informants' pronunciation to find out if there may be a connection between their native Norwegian accents and their pronunciation of the English vowels under investigation.
The informants represent five distinct geographical areas, each of which has its own characteristic accent. Four of the areas are situated in the south-west of the country (Bergen, Rogaland, Hardanger/Voss and Nordhordland), while the fifth is in the south-east. The largest groups come from Bergen and Eastern Norway. (See 1.8.)

The Bergen informants represent two different student generations: one group started their study of English in the late 1970's, the other in the late 1980's. The reason for studying different groups from Bergen is to find out if any changes occurred in Bergen students' pronunciation of English during the period concerned.

**Error Analysis**

1.5 In order to carry out the investigation, and to provide possible explanations for the students' mistakes, an overall theoretical framework is needed. Traditionally, learners' errors were looked upon as evidence of incompetence on the part of the learner. In the 1950's and 1960's, behaviourists explained learners' errors as the result of interference from the mother language. However, there are errors that cannot be explained by comparing the mother tongue and the target language; interference cannot account for all errors, a view that gave rise to Error Analysis (EA). Error Analysis will be the theoretical framework for this thesis, but it will only be applied to the vowels, since it seems unfruitful to try to explain why the informants use post-vocalic /r/ when at least part of the answer is already there in the spelling.

In EA errors are seen as providing information about the nature of the learner's language:

A learner's errors, then, provide evidence of the system of the language that he is using ... at a particular point in the course... They are significant in three different ways. First to the teacher, in that they tell him, if he undertakes a systematic analysis, how far towards the
goal the learner has progressed and, consequently, what remains for him to learn. Second, they provide to the researcher evidence of how language is learnt or acquired, what strategies or procedures the learner is employing in his discovery of the language. Thirdly (and in a sense this is their most important aspect) they are indispensable to the learner himself, because we can regard the making of errors as a device the learner uses in order to learn. (Corder 1981:10-11.)

The aim of EA, then, is to "systematically describe and explain errors made by the speakers of a foreign language" (Johansson 1975:10).

A key concept within EA is that of interlanguage (or according to Corder's terminology, idiosyncratic dialect). This concept has been used with several different meanings, but according to Ellis (1986:299) it refers to a learner's "systematic knowledge of a second language which is independent of both the learner's first language and the target language".

An Error Analysis involves three stages: (i) "recognition of idiosyncracy", (ii) "accounting for the learner's idiosyncratic dialect", and (iii) "explanation", the last one being the "ultimate object of EA" (Corder 1981:21-24).

Corder distinguishes between errors of performance, called mistakes, and errors of competence, called errors. This distinction will not be maintained here: the two terms will be used interchangeably, both referring to errors in general.

Why study pronunciation?

1.6 There are two main reasons for studying the pronunciation of English produced by Norwegians. First and foremost, pronunciation is important for communication. The sound system of a language is a medium of communication, and consequently it is through the chain of sound that meaning is conveyed. If the pronunciation produced by Norwegian learners of English deviates too much from that produced by native speakers, it might lead to misunderstandings that would impair communication. Mispronunciations do
not necessarily give rise to misunderstandings, as utterances will often be interpreted correctly on the basis of the discourse context. Nevertheless, mispronunciations may cause communication to be delayed. The importance of pronunciation in oral communication is stressed by MacCarthy (1978):

But it needs to be realised that the act of communication itself is interfered with or made difficult, to an extent often not appreciated, when the manner of communication is at fault. The extreme, but quite common, case is where comprehension of the (correctly formed) message to be conveyed is not achieved – in other words, communication simply fails to take place. Then there is the stage when the basic sense of a message does get through, but communication is slow, partial or delayed. (p. 8)

1.7 Another reason for studying Norwegians' pronunciation of English is that pronunciation has, in my opinion, been neglected in the teaching of English as a Foreign Language (EFL) in Norwegian primary and secondary schools. This neglect appears to result from the considerable emphasis traditionally placed on written English in Norwegian education. Although oral use of English actually has been given some priority in the last few decades, the pronunciation aspect of it appears to have been overlooked. Some teachers do not seem to be aware of the importance of pronunciation in communication and hence they do not pay sufficient attention to the students' mispronunciations. Hopefully, my thesis on Norwegian students' pronunciation of English might throw some light upon this neglected area within EFL.

Material
1.8 My material is taken from recordings made by the Department of English, University of Bergen. At the beginning of each term, from the autumn of 1977 until the spring of 1989, new students at English grunnfag took a short diagnostic language test (språkdiagnostisk prøve), which included pronunciation, gram-
mar and vocabulary. The pronunciation test forms the basis for my investigation. This test, which was recorded in a language laboratory, originally consisted of the reading of a short passage of prose containing 125 words and a word list of 26 individual items. Both the reading passage and the word list mainly contained monosyllabic and disyllabic words with which the students were assumed to be familiar. Some of the items in the word list turned out to be problematic for many students, and it was therefore replaced with a list of phrases and idiomatic expressions in 1980. The latter includes most items from the original word list, but a suitable context was added to minimize the risk of misunderstandings. For instance, beer was changed to a pint of beer (see appendix 1).

Shortly after the recordings took place, the taped specimens were analysed by teachers at the English Department and discussed with the individual students. The Department of English kindly placed these recordings at my disposal and allowed me to choose the appropriate informants for my investigation.

A recording situation in a language laboratory is a rather unnatural situation which tends to incite stress as well as a style characterized by a considerable degree of formality. Reading aloud, not to mention reading aloud a list of words, promotes to the "most formal style of all" (Wells 1982:26); that is, a style in which speakers monitor themselves, giving attention to the way they behave and speak. Consequently, the students may well have been nervous in the language laboratory, and therefore, made more errors than they would in casual, relaxed speech. This may have affected my findings. In free speech the

2 Stig Helge Johannessen used this pronunciation test as the basis for his hovedfug thesis at the University of Bergen in 1979 (Johannessen 1979). In his investigation of the pronunciation of English as produced by six Bergen and six Oslo informants, he analysed, auditorily, all vowels and all consonants. He used general RP as a model of pronunciation.
speakers themselves can control the choice of words and phrases, thus being able to avoid items that they find difficult and so steer clear of errors.\(^3\)

Listening to informants on a cassette recorder and not observing the informants directly clearly has its disadvantages. For example, it may lead to loss of linguistic information, such as whether a sound has lip rounding or not.

As the reading passage was composed to check the students' pronunciation in general and not with this investigation in mind, the number of tokens for each of the vowels to be investigated is rather low and smaller than desirable. This makes the analysis of the individual speaker difficult in that the passage, which was not constructed for EA specifically, does not cover all possible errors.\(^4\) Thus, no definite conclusions can be drawn and the results can only be considered as indicative. As shown in table 1 below, the number of tokens varies somewhat from the original to the revised test. For the most part, the

<table>
<thead>
<tr>
<th>Vowel</th>
<th>Number of tokens</th>
<th>Original test</th>
<th>Revised test</th>
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<tbody>
<tr>
<td>/e/</td>
<td>8</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>/æ/(^5)</td>
<td>7</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>/ʌ/</td>
<td>4</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>/ɒ/</td>
<td>7</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>/əu/</td>
<td>8</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>/au/</td>
<td>6</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>/iə/</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>/ɛə/</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

Table 1. Number of tokens for each vowel in original and revised test.

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3 Some investigations show that correct target language forms are used more frequently when EFL learners are reading word lists aloud than when they use free speech. This was the case when Dickerson (1975) examined the occurrence of /z/ in the speech of ten Japanese speakers studying English at university level (Ellis 1986:82).


5 Two occurrences of the auxiliary had have been left out in my analysis since they were found in a position where both a strong form /hæd/ and a weak form /həd/ could be used. The informants made use of both forms.
number of tokens is only slightly higher in the latter test, the exception being /ʌ/, which had only four occurrences in the original test, but as many as eight in the revised version.

Informants

1.9 The number of informants totals 42. All the informants, ten males and thirty-two females, were new students at English grunnfag at the time of the recording. Except for their sex, place of origin and Norwegian accent, no information about them is available. This is unfortunate since factors such as age and stay in an English-speaking country may provide useful information for the explanation of the students' errors. However, it can be assumed that the informants had studied English at school for eight years or more since this is the entrance requirement at Norwegian universities. Furthermore, it can be expected that English was the first university subject for most of the informants, as was generally the case throughout the period in question (1977-89).

On the basis of the entire material, informants were chosen from five different geographical areas. The recordings of these informants were all made between the autumn of 1987 and the spring of 1989 except for one group of students from Bergen, the recordings of whom were made in the period of the autumn of 1977 to the autumn of 1978. The reason for studying this earlier group is to indicate possible differences between Bergen students starting their grunnfag study at different periods.

Before the final selection of informants, all the recordings made in the periods from autumn 1977 to spring 1980 and from autumn 1987 to spring 1989 were listened to. Recordings with poor sound quality were excluded.

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6 This is no longer the case. Due to the restricted intake to English grunnfag introduced in 1991, a majority of new students now have taken one or two subjects before.
Norwegians with a native-like British or American accent, as well as non-Norwegians, were excluded from the data set. Nevertheless, several students with a number of distinctively American features have been included in the analysis since their pronunciation was neither native-like nor consistently American.

The individual informants from Bergen were selected by lot. As regards the other areas, including Eastern Norway, the number of potential informants was so low that it was necessary to use all the suitable informants.

No information is available about the students' general background, such as social class and residential area. This is unfortunate since the Norwegian accents involved are known to show considerable variation, much of which is socially determined. However, it is unclear whether this variation has any effect on the students' pronunciation of English (see 2.16).

1.10 The number of informants by geographical area and period of recording is set out in table 2. There are twenty informants from Bergen, ten from the late 1970's and ten from the late 1980's. Consequently, these two groups constitute half of the total number of informants.

The group of informants from Eastern Norway consists of ten students, the majority of whom come from what might be broadly described as the Oslofjord region: there are two from Oslo and two from Larvik, while Ullensaker, Svelvik, Kongsberg and Tjome are represented by one student each. All of these may be assumed to have some kind of Standard Eastern Norwegian (SEN) accent. The remaining two Eastern informants come from the upper parts of

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7 At the time of the analysis, I did not know the names of the informants, but later I was given access to their names. It then turned out that one of the EN informants was represented by two recordings in the material. Thus there are actually only nine EN informants, but ten EN recordings.

8 Davidsen-Nielsen (1977:47) defines SEN as “the pronunciation used by educated speakers in the eastern part of Norway”.

13
Hallingdal (Hol and Gol), and are likely to have accents that differ noticeably from SEN. My reason for including these two is that the number of potential informants from Eastern Norway was so low that it was necessary to use all those who were deemed suitable. As a consequence, my Eastern group covers a large geographical area. However, although the upper Hallingdal accents are noticeably different from those of the Oslofjord district, they are still of the Eastern Norwegian variety and are quite different phonologically from those of Western Norway.

<table>
<thead>
<tr>
<th>District</th>
<th>Period</th>
<th>No. of informants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bergen</td>
<td>1989</td>
<td>10</td>
</tr>
<tr>
<td>Bergen</td>
<td>1977-8</td>
<td>10</td>
</tr>
<tr>
<td>Eastern Norway</td>
<td>1987-9</td>
<td>10</td>
</tr>
<tr>
<td>Rogaland</td>
<td>1988-9</td>
<td>5</td>
</tr>
<tr>
<td>Hardanger/Voss</td>
<td>1988-9</td>
<td>3</td>
</tr>
<tr>
<td>Nordhordland</td>
<td>1988-9</td>
<td>3</td>
</tr>
</tbody>
</table>

Table 2. Number of informants by geographical area and period of recording.

The Rogaland group includes three informants from Stavanger and three from the Haugesund district (Haugesund, Karmøy and Vindafjord). Despite the fact that the Stavanger and Haugesund accents differ somewhat from each other, they have numerous features in common, such as the fully front realization [a] of the short /a/ in e.g. kaffi ‘coffee’, which set them apart from the other groups.

The last two groups, Hardanger/Voss and Nordhordland, are smaller than the others, each containing only three students. In the former, two students come from Voss itself and one from Ullensvang in Hardanger. Hardanger and Voss constitute one relatively homogeneous accent area. In the Nordhordland group, only one informant comes from the geographical district usually referred to by that name; this student was a native of the island of Fedje, which
is situated 50 kilometres, as the crow flies, north of Bergen. The two others come from the village of Vaksdal, 40 kilometres east of Bergen. Although Vaksdal is not usually considered part of the Nordhordland district, it belongs linguistically to this area and may be considered together with Fedje for the purposes of this investigation.

Analytical procedure

1.11 The recordings were analysed auditorily by means of a Tandberg TCR 5500 cassette recorder. Head phones were used during the analysis to reduce noise and to avoid distractions. During the analysis of the vowel pairs, the words in question were copied from the running text and onto another cassette, so that each word could be listened to separately. This made it easier to determine the vowel quality, and, by implication, to decide whether the students possessed the vowel contrast under investigation. The value of each vowel was written down in IPA notation and plotted onto the vowel chart by marking the appropriate articulatory areas.

The analysis of the informants' use of post-vocalic /r/ was less detailed, and consisted mainly of noting the presence or absence of /r/ in the various phonetic contexts present in the data. Non-English realizations of /r/ were also noted.

After the main analysis, some of the recordings were listened to once more to check that the transcriptions were satisfactory. Generally, there was agreement between the analyses, but in cases of minor deviations between the first and the second transcription, the latter was chosen, since experience undoubtedly has sharpened my ear.

During my stay in London in the spring of 1992 three actors from The National Theatre were kind enough to make tape recordings of the diagnostic test (original version). All the actors, two males and one female, are speakers of
RP. These recordings, together with recordings of the Cardinal Vowels read by Daniel Jones (1956), and of the sounds of the IPA read by John Wells and Susan Ramsaran (1987)\(^9\), were often consulted to ensure that my auditory impression of the informants' vowels was correct.

The vowel chart, based on Daniel Jones' Cardinal Vowel System, has been used here, in spite of its shortcomings. According to Clark and Yallop (1990), the main objection to the Cardinal Vowel System is that it mixes auditory and articulatory properties. Nevertheless, as a technique for the description of vowels the system works very well, and is currently used in many areas of phonological research. An auditory analysis can never be completely objective, and it could be argued that the findings presented in this thesis should have been tested by means of an acoustic analysis. The main reason for not doing so is the time limit imposed upon a *hovedfag* thesis.

Categories of contrast

1.12 It is necessary to explain in some detail the criteria used in deciding whether the informants possessed the phonemic contrasts under investigation. In general terms, an informant may be considered as having a given contrast if he or she makes consistent or near-consistent use of acceptable phoneme realizations and, besides, has a satisfactory lexical distribution of both phonemes.

A central issue within the decision making process is what constitutes acceptable realizations of English phonemes, e.g. /əʊ/ and /au/. The answer depends on one's model of pronunciation. My original intention was to analyse

\(^9\) I found it more convenient to use Daniel Jones's recording since this presents the Cardinal Vowels in numerical order, i.e. by their degree of opening: CV1 is followed by CV2, CV2 by CV3 etc. Wells and Ramsaran's vowels, on the other hand, are presented according to their degree of "frontness": front [i] is followed by central [ɪ] and by back [u̯]; then comes [ɪ] followed by [u̯] etc. What is more, Wells and Ramsaran include some vowels that originally were not among the Cardinal Vowels.
the informants' use of the vowels under investigation with reference to general or mainstream RP as described by Gimson (1989) and Wells (1982). However, it became evident that it was necessary to adopt a somewhat more liberal view of what constitutes acceptable phoneme realizations.

Broadly, I have accepted as entirely satisfactory such realizations as may be said to fall within RP or Near-RP\textsuperscript{10} accents. For example, [ɔu] as well as [ɤu] and [ɔu] have been classified as satisfactory realizations of /ɔu/. Similarly, considerable latitude was allowed concerning the students' pronunciation of the starting points of /iə/ and /eə/, as long as the two were kept apart; thus [iə] was recognized as an acceptable realization of /iə/. A number of American-based pronunciations were also accepted, provided they did not interfere with the phonemic contrasts as such. For example, [i]+[ɛ] (or [i] + [ɹ]) for /iə/ in a word like beer has been classified as acceptable, even though it cannot be considered as a realization of (Near-)RP /iə/.

Another American-based pronunciation, namely [ɑːl] for /ɒ/ in LOT\textsuperscript{11} words, caused problems. In GenAm the [ɑːl] of LOT is phonemically /ɑː/\textsuperscript{12}, which corresponds to RP /ɑː/ in BATH words. Consequently, the GenAm vowel of LOT is different from that used in RP. The reason for not accepting [ɑːl] in LOT is its interference with an RP-based phonemic system: for example [ɑːl] for /ɒ/ in the word clock would give the pronunciation [klæk], which by an RP speaker would probably be interpreted as the word clerk. Thus a native speaker of British English would generally take [ɑːl] to be a realization of the phoneme

\begin{itemize}
\item \textsuperscript{10} Wells (1982:297) defines Near-RP as "any accent which, while not falling within the definition of RP, nevertheless includes very little in the way of regionalisms which would enable the provenance of the speaker to be localized within England...".
\item \textsuperscript{11} I follow Wells (1982:xviii) in stating lexical incidence in form of standard lexical sets, indicated by keywords in small capitals.
\item \textsuperscript{12} American phoneticians write the LOT vowel in GenAm as /ɑː/, without length marks, claiming that the vowel is long only in certain contexts, such as when it is followed by a sonorant. Wells, on the other hand, uses length marks in his transcription of the phoneme in Accents of English (1982) and in Longman Pronunciation Dictionary (1990), and I have adopted the latter convention.
\end{itemize}
/ɑː/, as used in BATH words, whereas an American would not. The BATH vowel in GenAm is of course /æ/; the LOT and BATH vowels are not merged.

1.13 In theory, it is easy to decide if a given phonemic contrast, e.g. /əʊ/ - /au/, is present or absent with the individual informants. The contrast is clearly present with those informants who have one hundred per cent acceptable realizations for both phonemes and who use both phonemes correctly in the vocabulary. Equally clearly, phonemic contrast is absent with those who consistently use the same sound for both phonemes. Between these extremes, however, there is a continuum, a grey area, involving all sorts of combinations between acceptable and non-acceptable usage, both in respect of phonetic realization and lexical distribution. For example, a student may have a majority of acceptable realizations of both phonemes of a vowel pair, but occasional examples of a non-acceptable realization, e.g. a long [æ] for /au/ in about. Also, an informant may have sporadic instances of incorrect lexical distribution of one (or both) phonemes of a pair, e.g. using /au/ for /əʊ/ in the word goat.

The classification of the informants with regard to the presence or absence of contrast is made more difficult by the low number of tokens for each phoneme. Nevertheless, some sort of categorization of the material is necessary for a presentation of the findings. It was found convenient to distinguish the following five categories, each of which will be explained below.

1. Full contrast
2. Inconsistent contrast
3. Blurred contrast
4. Doubtful contrast
5. No contrast

Full contrast. An informant is classified as possessing full contrast between the phonemes of a vowel pair if the respective phonemes are consistently
acceptable, and the lexical distribution of both phonemes is correct throughout the recording.

_Inconsistent contrast._ An informant is classified as having inconsistent contrast if the recording generally shows acceptable realizations and correct lexical distribution of both phonemes, but also contains sporadic (see 1.14) instances of (a) non-acceptable vowel sounds such as [œː] for /ʌ/ and [əu] for /œu/ (or /au/) and/or (b) incorrect lexical distribution, such as the use of /œu/ for /au/ or vice versa.

_Blurred contrast._ An informant is classified as having blurred contrast if the recording generally indicates acceptable realizations and correct lexical distribution of both phonemes, but also shows several instances (see 1.14) of non-acceptable sounds and/or incorrect lexical distribution.

_Doubtful contrast._ An informant is classified as having doubtful contrast if the recording shows a high frequency (see 1.14) of non-acceptable vowel sounds and/or wrong lexical distribution, but also contains sporadic instances of acceptable realizations and correct lexical distribution.

_No contrast._ An informant is classified as having no contrast if the recording shows the same sound for both phonemes, that is, all the sounds concerned are phonetically so similar that they must all be said to be realizations of the same phoneme.

1.14 All categories, except that of no contrast, present problems in respect of classification and delimitation. For instance, some informants have correct lexical distribution of /ʌ/ and /ɒ/, but sometimes their realization of /ʌ/ is distinctly rounded (=[œː]), which has not been classified as acceptable. Thus they have contrast between /ʌ/ and /ɒ/, but, due to the non-acceptable [œː], it has not been considered as a fully satisfactory one. Only informants with
acceptable realizations as well as correct lexical distribution have been classified as having full contrast between vowel pairs.

Owing to the low number of tokens, it was difficult to delimit the dividing-lines between the categories of inconsistent, blurred and doubtful contrast. Terms like sporadic and high frequency have been used in the definitions. These terms are vague, and a further explanation of the criteria for classification is therefore necessary. An informant has been classified as having inconsistent contrast if the number of errors constitutes up to c.10% of the tokens; in practice that means one instance of wrong lexical distribution or non-acceptable sound per vowel pair. Moreover, an informant has doubtful contrast if the number of errors constitutes 60% or more of either one of the phonemes in the vowel pair or of both. Anything between inconsistent and doubtful contrast has been classified as blurred contrast. In the case of /ʌ/, which has only four tokens in the original version, one error corresponds to inconsistent contrast, two to blurred, and three to doubtful contrast. It must be emphasized that in order to carry out a fully reliable classification of this kind, the number of tokens of each vowel pair should have been much higher than is the case in this material.

Phonemic contrast is a relative concept. In this thesis the view is taken that contrast as such is more important than native-like (Near-)RP phoneme realizations, on the grounds that the listeners (native speakers) will adjust to the phonetic realizations as long as contrast is present, and the phonetic realizations of phonemes are within the articulatory area of their (Near-)RP counterparts. Contrast can be maintained even with sounds that are recognizably non-English. The process of adjusting on the part of native speakers is referred to as normalization by Clark and Yallop (1990):

"As language users ... we are able, with only a very small speech sample from an individual, to normalize to the vowel system of that speaker... a New Zealander distinguishes catch from ketch, and so does a Londoner, but they do so in different ways,
with a different contrast of vowel quality. Thus normalization reflects the general principle that phonological distinctiveness is a matter of relative contrast within a system rather than a matter of absolute or universal phonetic values..." (p. 246.)

Normalization, in my opinion, applies to EFL as well as to different accents of native English, and, to some extent, accounts for why native speakers of English very often have little difficulty in understanding even quite marked foreign accents.
2. THE VOWEL CONTRASTS

2.0 Each vowel contrast will be dealt with separately, the order of treatment being /e/ - /æ/, /ʌ/ - /ɒ/, /ɔu/ - /au/ and /ɪə/ - /eə/. For each pair, I first give a general overview and a tabular survey of the main findings. This is followed by a detailed discussion of the analysis of the vowels, arranged by geographical district and categories of contrast. Finally, the different geographical groups will be compared to one another, and an attempt will be made to explain the various errors made by the students.

/e/ - /æ/

2.1 The following vowel sounds have been considered as acceptable realizations of /e/ and /æ/:

/e/: [e], [ɛ], [ɛ] and [ɛ]. The general RP realization of /e/ "tends to be closer to C[e] ... than to C[e]" (Gimson 1989:106) and may be written [ɛ]. It has been found natural to accept all monophthongal sounds in the general area of cardinal [e], including lowered and retracted forms (= [ɛ ɛ]). Two isolated examples of [ɛ] have also been accepted, as a diphthongized realization of /e/ can be heard in advanced RP.

/æ/: [æ], [ɚ] and [ɚ] and [ɚ]. The general RP realization of /æ/ is [ə], except before the lenis consonants /b, d, g, ɹ, m, n/, where it is lengthened to [ə]

12Gimson (1989:108). The feature of length has not been treated in any depth since there is only one token of a potentially long [ə] in the material, namely in the word bad. However, lengthened realizations of /æ/ in bad will be mentioned in the discussion.
2.2 Table 3 gives the number of informants by geographical district and the kind of contrast made between /e/ and /æ/. It is clear from table 3 that there are major geographical differences as regards the presence and absence of this contrast. As many as twelve informants (c.29%) have been classified as having doubtful and no contrast and, not unexpectedly, they all come from Bergen. Twenty-two students (c.52%) have been allocated to the categories of full and inconsistent contrast; of these only two are Bg informants. The rest of the Bg students have blurred contrast. Thus the /e/ - /æ/ contrast clearly presents problems for the students from Bergen, but not to those from the other geographical areas. Broadly, this is in accordance with the findings of Rugesæter (1993), who reports that 42% of twenty-six students of English at Bergen College of Education, the majority of whom came from Bergen, had no distinction between /e/ and /æ/, "said and sad being homophonous" (p. 18). However, I have found that the [ç]-type vowel some of the Bg students use for /e/ in fact differs somewhat in phonetic quality from the [æ] used for /æ/, but not enough to make up a phonemic contrast.

<table>
<thead>
<tr>
<th>Type of contrast</th>
<th>Bg89</th>
<th>Bg77-8</th>
<th>EN</th>
<th>Rg</th>
<th>H/V</th>
<th>Nh</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full</td>
<td>-</td>
<td>1</td>
<td>8</td>
<td>4</td>
<td>1</td>
<td>-</td>
<td>14</td>
</tr>
<tr>
<td>Inconsistent</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>Blurred</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>8</td>
</tr>
<tr>
<td>Doubtful</td>
<td>6</td>
<td>5</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>11</td>
</tr>
<tr>
<td>None</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>6</td>
<td>3</td>
<td>3</td>
<td>42</td>
</tr>
</tbody>
</table>

Table 3. /e/ - /æ/. Number of informants by geographical district and category of contrast.
2.3 The categories of full and inconsistent contrast are not represented among the Bg89 informants, and neither is that of no contrast. The students are spread over the two categories of blurred and doubtful contrast, three having been allocated to the former and as many as seven to the latter.

The four students having blurred contrast all have examples of an unacceptable retracted [e] sound, ([e]), in DRESS words, a sound that is intermediate between /e/ and /æ/, but closer to /æ/. This [e] cannot be considered as an acceptable realization of either /e/ or /æ/. Two of the students have this sound in TRAP words as well. Further, three informants have a few occurrences of wrong lexical distribution, using /æ/, realized as [æ], in DRESS words. The fourth student has one instance of an [æ]-type vowel (= [\textbackslash e]) in the word *went*.

Three of the six students that have been assigned to the doubtful contrast category, which is the prevalent category in the Bg89 group, generally use [e] for /e/. Two of them also use /æ/ (= [\textbackslash æ]) in some DRESS words and thus have a few occurrences of wrong lexical distribution. The other three students have a majority of wrong lexical distribution, using /æ/ (= [\textbackslash æ]) for /e/, but also have examples of [e] for /e/. Only one of the six students has a few examples of an acceptable [e] for /e/. One informant uses an [æ]-type vowel in *very*.

2.4 Acceptable realizations. The realization of /e/ is [e] among those who have examples of acceptable realization and correct use of this phoneme. However, one student has a diphthongized [æ], written as [æ\textbackslash æ], in smell. /æ/, on the other hand, is mainly realized as [æ], but some instances of [æ] have also been noted.

All the students use a lengthened [æ]-type vowel in the word *bad*, except for two students in the blurred contrast and one in the doubtful contrast category. These have a short vowel in *bad*. One of the students from the blurred contrast category uses long [æ;] for /æ/ in *bad*. 
2.5 In this group, one informant has been classified as having full contrast between /e/ and /æ/ and one student as having inconsistent contrast, using [픽] for /e/ once.

Two students fall into the blurred contrast category, both having examples of [픽] in DRESS words, one of them also in a TRAP word, but they generally have acceptable realizations for both /e/ and /æ/. One of them has a couple of instances of wrong lexical distribution, using /æ/ (=/[æ]/) in DRESS words.

The predominant category among the Bg77-8 informants is that of doubtful contrast, five students having been allocated to this group. Generally, these students use [픽] for /e/, and some occasionally use it for /æ/ as well. Occurrences of wrong lexical distribution, involving the use of /æ/ (=/[æ]/) in DRESS words, have also been noted. All the students in this category use /æ/ (=/[æ]/) for /e/, some of them frequently and some of them only sporadically. Among these, two use /æ/, realized as lengthened [æ:], both in bed and bad; the two words are thus homophonous, both having [æ:].

The last student among the Bg77-8 informants has been placed in the no contrast category. This speaker consistently uses [æ] both in DRESS and in TRAP words. Consequently, all the sounds must be said to belong to the /æ/ phoneme. This is commonly thought of as being typical of "Bergen English".

2.6 Acceptable realizations. The acceptable realizations of /e/ in the Bg77-8 group have been noted as [픽], with occasional instances of [e], [픽] and [픽]. /æ/, on the other hand, is generally realized as [æ], the only exception being [픽]. One of the occurrences of [픽], found in the word back, was heard as being somewhat lengthened.

All the Bg77-8 students use a lengthened vowel in bad. One of them also has a long vowel in matter.
Eastern Norway

2.7 As many as eight of the EN informants have been classified as possessing full contrast between /e/ and /æ/, thus making up the predominant category in this group.

The two remaining EN students have been allocated to the inconsistent and blurred contrast categories, respectively. Generally, their realization and use of the phonemes are acceptable, but the former has one example of a non-acceptable sound [a] in said, while the latter has one instance of wrong lexical distribution, using /æ/ (= [æ]) in pleasure; he also uses an [o]-type vowel in went.

2.8 Acceptable realizations. For the most part, /e/ is realized as [e], but, to my ear, the recordings also show examples of more open as well as centralized realizations, which I have written as [œ], [ɛ], [ɨ]. Generally, the realization of /e/ was heard as being closer among the EN informants than among the two Bg groups. As a rule, /æ/ is realized as [æ], but one informant twice used a raised [œ]. The vowel in bad was lengthened in all occurrences of the word.

Rogaland

2.9 Four out of the six Rg informants possess full contrast, having acceptable realizations and correct lexical distribution of /e/ and /æ/.

The other two students have been classified as having inconsistent contrast. One of them uses [œ] in hadn’t; this may be considered a realization of /e/ (with incorrect lengthening), and is, therefore, an example of wrong lexical distribution. The other student has one example of the non-acceptable [ɨ] for /e/.

2.10 Acceptable realizations. The realization of the /e/ phoneme varies among the Rg informants. Predominantly, it is realized as [e], but other variants, such
as [e], [ɛ] and [ɶ], have also been noticed. Another variant is [e̞], which is diphthongized. In general, /æ/ is realized as [æ], but there are also a few examples of [ɶ]. All the students have a long vowel in *bad*. One student also has what sounds like a half-long [æ] in *black*, *jacket* and *hadn’t*.

**Hardanger/Voss**

2.11 In this group, one informant has been classified as having full contrast between /e/ and /æ/. Another student has inconsistent contrast, using [ɛ] for /e/ once. The third student has been assigned to the blurred contrast category, since this speaker has a few instances of the intermediate [ɛ] in DRESS words in addition to an [ɶ]-type vowel in *very*.

2.12 Acceptable realizations. In the H/V group of informants the prevalent realization of /e/ is [ɛ], but there are other realizations as well, such as [e] and [ɶ]. As regards /æ/, its realizations are mostly [æ], with occasional instances of a somewhat raised variant, [ɶ]. All the occurrences of the vowel in *bad* are lengthened.

**Nordhordland**

2.13 All the Nh informants have been classified as having inconsistent contrast between /e/ and /æ/, one student using /æ/ (= [æ]) in a DRESS word and the other two having one instance each of [ɛ] for /e/. Such good performance of English is atypical of Nh English; in my opinion speakers of the Nh and Bg accents seem to have the same problems as regards the contrast between /e/ and /æ/.

2.13.1 Acceptable realizations. The recordings show variation in the Nh informants’ realization of /e/. [ɛ] is most frequently used, but there are also
examples of [æ] and [œ] as well as [œ]. For the most part, the /æ/ phoneme is realized as [æ], but quite a few occurrences of a lowered [æ], written as [œ], have also been noted. Two of the informants have a lengthened vowel in bad.

**Comparison and explanation**

**Errors for /e/**

2.14 Table 4 sets out the number and percentage of vowel sounds used for /e/. It clearly shows that use of [œ]-type vowels as well as [æ] for (Near-)RP /e/ is very frequent among the informants from Bergen. /e/ presents no problems of importance for the other geographical groups.

<table>
<thead>
<tr>
<th></th>
<th>Bg89 No</th>
<th>Bg77-8 No</th>
<th>EN No</th>
<th>Rg No</th>
<th>H/V No</th>
<th>Nh No</th>
<th>Total No</th>
</tr>
</thead>
<tbody>
<tr>
<td>[æ]-type</td>
<td>23 29</td>
<td>26 33</td>
<td>77 96</td>
<td>47 98</td>
<td>20 83</td>
<td>21 88</td>
<td>208 62</td>
</tr>
<tr>
<td>[œ]-type</td>
<td>33 42</td>
<td>32 40</td>
<td>- -</td>
<td>1 2</td>
<td>3 2</td>
<td>2 8</td>
<td>77 23</td>
</tr>
<tr>
<td>[æ]</td>
<td>21 27</td>
<td>22 28</td>
<td>1 1</td>
<td>- -</td>
<td>- -</td>
<td>1 4</td>
<td>45 13</td>
</tr>
<tr>
<td>Others</td>
<td>2 2</td>
<td>- -</td>
<td>2 3</td>
<td>- -</td>
<td>1 4</td>
<td>- -</td>
<td>5 2</td>
</tr>
<tr>
<td>Total</td>
<td>79* 100</td>
<td>80 100</td>
<td>80 100</td>
<td>48 100</td>
<td>24 100</td>
<td>24 100</td>
<td>335 100</td>
</tr>
</tbody>
</table>

Table 4. Number and percentages of vowel sounds used for /e/ by geographical district.

*One word is missing in one of the Bg89 recordings.

[œ]-type for /e/

2.15 It is clear from table 4 that this type of error is highly frequent among the Bg students, but not among the other informants. The Bg89 and Bg77-8 students use an [œ] sound in 42% and 40% of the tokens of /e/, respectively. The use of [œ] constitutes a serious problem, not only because of its high frequency, but also because it affects the contrast between /e/ and /æ/, [œ]-type vowels being closer to /æ/ than to /e/.
2.16 Obviously, the high percentage of occurrences of [œ]-type vowels in the Bergen groups is caused by language transfer from their native Bergen accent. Unlike most other Norwegian accents, the Bergen accent lacks the contrast between short [œ]-type (as in hest 'horse') and [æ]-type vowels (as in vært 'been'). As stated by Egil Pettersen (1964), the educated/conservative (dannet) Bergen accent has a vowel resembling cardinal [œ], which is, on phonetic grounds, best analysed as /æ/, while the broad Bergen accent has [æ]. In extra broad speech, its quantity may be lengthened to [æi], as in ['bærjen ] 'Bergen' and [hæst] 'horse'.

The textbook used in English phonology at grunnfag level at Norwegian universities, English Phonetics by Davidsen-Nielsen, correctly points out that speakers from the Bergen area "do not distinguish between /e/ and /æ/" in Norwegian (Davidsen-Nielsen 1977:95). However, it does not make clear how the contrast between the two is lost, i.e. which sound Bergen speakers use for these phonemes. Thus it lacks the information that Bergen speakers should be careful to not use [œ] or [æ] for /e/ in their English.

The occurrence of [œ] in the other groups may be explained by lack of stability in the students' use of the target language. Learners' use of the target language is "usually unstable" since there is "invariably continuing improvement" (Richards 1974:11).

[æ] for /e/

2.17 The use of [æ] for /e/, too, is more frequent among the Bergen informants than among the others. There seems to be no difference between Bg89 and Bg77-8, the percentage being 27% for the former and 28% for the latter. The use

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13 Pettersen (1964:71). Pettersen's transcriptions are written in Norwegia, the phonetic alphabet constructed by the Norwegian phonetician Johan Storm (1836-1920), but they have been transliterated into IPA by using Helge Sandøy's list of corresponding symbols (Sandøy 1985:307).
of [æ] in DRESS words is less frequent than [ɛ], but still causes problems since
the contrast between /ɛ/ and /æ/ is disturbed by it. Frequent use of [æ] in
DRESS words may lead to absence of contrast between /ɛ/ and /æ/, as with one
of the Bg77-8 informants (see 2.5).

2.18 The occurrence of [æ] for /ɛ/ can be explained in two ways. If it is found
only occasionally with an informant, it can be accounted for as a vocabulary
problem. The speaker possesses contrast between the phonemes in question,
but does not know which phoneme to use in specific words, i.e. he/she does
not know their lexical distribution. One EN and one H/V informant show
examples of this, using /æ/ for /ɛ/. But if the occurrence of [æ] for /ɛ/ is more
frequent, as with three of the Bg informants, it is, in all probability, caused by
language transfer: the broad Bergen accent has no [ɛ]-type vowel, only [æ] (see
2.16), and the latter is therefore employed for English /ɛ/ as well.

Other errors for /ɛ/

2.19 Two Bg89, one EN and one H/V student have isolated examples of an [ø]-
type vowel in went or very. Due to its low frequency, this is not an error of any
importance, but even so, it is undesirable. Its most likely explanation is
assimilation, the rounding of the lips for [w] being maintained for [ɛ] and
resulting in [ø]. The v in very should not be rounded, as it represents the labio-
dental fricative [v], but many Norwegians overgeneralize and use the labio-
velar [w] instead.

Errors for /æ/

2.21 Table 5 gives the number and percentage of the various vowel sounds used
for /æ/ by geographical district. It will be seen that the /æ/ phoneme does not
involve difficulties for any of the geographical groups. However, a few errors
have been noted. The most important is the use of [ɛ] for /æ/ in the Bergen groups, five of a total of eight occurrences being in hadn’t. All the informants who use [ɛ] for /æ/ also have examples of [ɛ] for /e/. The occurrence of the former may be explained by lack of stability in the use of the target language (see 2.16).

<table>
<thead>
<tr>
<th></th>
<th>Bg89 No</th>
<th>Bg77-8 No</th>
<th>EN No</th>
<th>Rg No</th>
<th>H/V No</th>
<th>Nh No</th>
<th>Total No</th>
</tr>
</thead>
<tbody>
<tr>
<td>[æ]</td>
<td>66</td>
<td>94</td>
<td>66</td>
<td>94</td>
<td>69</td>
<td>100</td>
<td>284</td>
</tr>
<tr>
<td>[ɛ]</td>
<td>4</td>
<td>6</td>
<td>4</td>
<td>6</td>
<td>-</td>
<td>-</td>
<td>8</td>
</tr>
<tr>
<td>[e]</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>70</td>
<td>100</td>
<td>70</td>
<td>100</td>
<td>69*</td>
<td>100</td>
<td>293</td>
</tr>
</tbody>
</table>

Table 5. Number and percentages of vowel sounds used for /æ/ by geographical district.

*One word is missing in the text

/ʌ/ - /ʊ/

2.23 The following vowels have been recognized as satisfactory realizations of /ʌ/ and /ʊ/.

/ʌ/: [ɨ], [a] and [ʌ]. [ɨ] is the general RP realization of the /ʌ/ phoneme (Gimson 1989:110). Further, the use of [a] and [ʌ] has been accepted, the former since it is found in the speech of Londoners, the latter since its quality is not very different from [ɨ], which is the realization used in conservative RP.

/ʊ/: [ʊ], [ɔ] [ɔː] and [ʊə]. [ʊ] is the RP realization. The other three, [ɔ], [ɔː] and [ʊə], differ somewhat from the typical RP value, but have been included since their quality, which is not too different from that of [ʊ], does not have any impact on the phonemic contrast between /ʌ/ and /ʊ/.
2.24 Table 6 shows the number of informants by geographical district and the type of contrast made between /ʌ/ and /ʊ/. It can be seen that the great majority fall into the two categories of inconsistent and blurred contrast; accounting for thirty-six students (=c. 86%). Only three students possess full contrast, while another three have been classified as doubtful. Thus the general pattern is that most students make some sort of contrast between /ʌ/ and /ʊ/, using acceptable sounds and correct phonemes in many or most words; however, the majority have problems both with phonetic realization and lexical distribution. Geographically, the informants seem to be distributed fairly evenly over the range from full to doubtful contrast. There is an interesting difference between Bg89 and Bg77-8: the earlier group seems to master /ʌ/ and /ʊ/ better than the later, but this difference may be caused by the low number of tokens of /ʌ/ in the Bg77-8 group (see 2.27, footnote).

<table>
<thead>
<tr>
<th>Type of contrast</th>
<th>Bg89</th>
<th>Bg77-8</th>
<th>EN</th>
<th>Rg</th>
<th>Ha/Vo</th>
<th>Nh</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full</td>
<td>-</td>
<td>2</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Inconsistent</td>
<td>2</td>
<td>2</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>6</td>
</tr>
<tr>
<td>Blurred</td>
<td>7</td>
<td>6</td>
<td>9</td>
<td>5</td>
<td>1</td>
<td>2</td>
<td>30</td>
</tr>
<tr>
<td>Doubtful</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>None</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>6</td>
<td>3</td>
<td>3</td>
<td>42</td>
</tr>
</tbody>
</table>

Table 6. /ʌ/ - /ʊ/. Number of informants by geographical district and category of contrast.

Bergen 1989

2.25 No Bg89 informants possess full contrast between /ʌ/ and /ʊ/. Two students have been classified as having inconsistent contrast, since they generally use acceptable realizations of both phonemes. However, one of them has one occurrence of a front-type, slightly rounded vowel [ɛ:] for the /ʌ/
phoneme, while the other student has one example of wrong lexical distribution, using /ʌ/ (= \(\text{i} \)) in a LOT word. [\(\text{æ}\)] is, of course, not an acceptable realization of /\(\ell\)/; it resembles Norwegian /\(\text{o}\)/ as in nett 'nut', but was heard as being more open and centralized.

The prevalent category among the Bg89 informants is that of blurred contrast, seven students having been classified under this category. Of these, six have one or more instances of wrong lexical distribution, either using /ʊ/ (= [\(\text{u}\)]) in the STRUT or /\(\ell\)/ (= [\(\text{e}\)]) in the LOT set. Three students have one instance each of a non-acceptable sound [\(\text{æ}\)], two of them for /\(\ell\)/ and the other for /ʊ/. The sound [\(\text{æ}\)] was heard as being intermediate between /\(\ell\)/ and /ʊ/, and therefore it cannot be said to be a satisfactory realization of either. Three informants in this category have a few instances of a non-acceptable [\(\text{ai}\)], resembling the GenAm phoneme /\(\text{ai}\)/, for the phoneme /ʊ/. Finally, three students have occasional occurrences of /\(\ell\)/ realized as the non-acceptable [\(\text{æ}\)].

One student has been classified as having doubtful contrast, using /\(\ell\)/ (= [\(\text{e}\)]) in four LOT words, as well as having sporadic instances of the non-acceptable sounds [\(\text{æ}\)] for /\(\ell\)/ and [\(\text{ai}\)] and [\(\text{æ}\)] for /ʊ/.

2.26 Acceptable realizations. For the most part, the Bg89 students realize /\(\ell\)/ as [\(\text{æ}\)], a vowel which, to my ear, sounds more back than that of mainstream RP. A few realizations resemble that of RP [\(\text{\}i}\)], while others are front, being very similar to cardinal [\(\text{a}\)], but still acceptable realizations of /\(\ell\)/. One of the informants in the inconsistent contrast category was found to have one instance of [\(\text{æ}\)] for /\(\ell\)/, which must be said to be non-acceptable, as it is likely to interfere with the /\(\text{æ}\)/ phoneme.

Generally, /ʊ/ is realized as [\(\text{\}i}\)] by the Bg89 informants. The exceptions are sporadic instances of [\(\text{\}i}\)], [\(\text{\}e}\)] and centralized [\(\text{\}i}\)] as well as of a less rounded [\(\text{\}e}\)] and a diphthongized [\(\text{\}io}\)], the last-mentioned being found in the word watch.
Bergen 1977-78

2.27 Two informants in the Bg77-8 group have been classified as possessing full contrast between /ʌ/\(^{14}\) and /ɒ/, while another two have inconsistent contrast. The latter have sporadic instances of wrong lexical distribution, using /ʌ/, realized as [ʌ], in LOT words.

Six students have been placed in the blurred contrast category, four of them having sporadic instances of intermediate [ʌ] as well as of wrong lexical distribution, using /ɒ/ (=ɔ) in STRUT or /ʌ/ (=ʌ) in LOT words. The other two students have one occurrence each of the non-acceptable [æː] for /ʌ/, in addition to a few instances of wrong lexical distribution of the same type as the other four informants.

No instances of the American-like [ʊ] for /ɒ/ have been identified in the Bg77-8 group.

2.28 Acceptable realizations. Mostly, the realizations of /ʌ/ and /ɒ/ among the Bg77-8 informants are similar to those observed in Bg89, the most frequent types being [ʌ] and [ɔ] respectively. A notable exception is that [ʌ] was heard as the only realization of /ʌ/, there being no front or RP-like realizations. Also, the word watch was frequently noted as having a diphthongized vowel [ɔʊ]. A somewhat lengthened [ɔ] was found for /ɒ/ in a few cases.

Eastern Norway

2.29 In this group, one informant has been classified as possessing full contrast between /ʌ/ and /ɒ/. No students have inconsistent contrast, but as many as nine informants in the Eastern group have been placed in the blurred contrast category. Six of them occasionally use the American-like [ʊ] in LOT words, and

\(^{14}\) The number of tokens of /ʌ/ in the recordings from the 1970's is only four (see table 1). The Bg77-8 students, therefore, were more difficult to classify than the other groups, and the low number of tokens may have affected my results.
four of these also have a few occurrences of wrong lexical distribution, either
/ʊ/ (=[ɔ]) for /ʌ/ or /ʌ/ (=[ʌ]) for /ʊ/, or both. Furthermore, three of these six
informants use the non-acceptable [æ]-type sound for /ʌ/, one of them also
having an instance of the intermediate sound [ʌ] in a STRUT word. The last
three EN informants also have occurrences of non-acceptable sounds for /ʌ/
as well as for /ʊ/, the examples being [æː], [ø] and [æ] for the former and [ŋ] for
the latter. In addition, one of them has a couple of instances of wrong lexical
distribution, using /ʊ/ (=[ɔ]) in the STRUT set.

2.30 Acceptable realizations. The realizations of /ʌ/ vary between [ə], RP-like [ø]
and [ʌ], the last being the most frequent. /ʊ/ was generally realized as [ɔ], but
occurrences of the less rounded [ɔː], diphthongized [ɔʊ] in watch, half-close [ɔ]
and RP-like [ʊ] were also noted.

Rogaland

2.31 Among the Rogaland informants, none are classified as having full contrast,
but one student has inconsistent contrast. This informant generally has correct
lexical distribution and acceptable realizations of /ʌ/ and /ʊ/, but has one
example of wrong lexical distribution, using /ʊ/ (=[ɔ]) in the STRUT word up.

The remaining five informants have been placed in the blurred contrast
category. Two of them use the intermediate sound [ʌ] in STRUT words and,
besides, have one instance each of wrong lexical distribution, using /ʌ/ (=[ʌ])
instead of /ʊ/. Another two informants occasionally use [æː] for /ʌ/, one of
them also having an example of wrong lexical distribution, /ʊ/ (=[ɔ]) being
used in hung. The fifth student has two instances of [ɑ], one in brother and the
other in o’clock, along with one occurrence of wrong lexical distribution in
shocking.
2.32 Acceptable realizations. All of the Rg informants realize the /ʌ/ phoneme as [ʌ], a realization that is more back than that of RP, but nevertheless, acceptable. A front realization [a] was found only once.

As in the other groups, /ɔ/ is mostly realized as [ɔ], with occasional instances of a long [ɔː], a less rounded [ɔː] and the RP-like [o]. Four of the students use [ɔ⁰] for the vowel in watch.

Hardanger/Voss

2.33 No informants in this group have been classified as possessing full contrast between /ʌ/ and /ɔ/, but one student has been placed in the inconsistent contrast category. This speaker generally has acceptable realizations and correct lexical distribution of /ʌ/ and /ɔ/, but has one occurrence of a non-acceptable sound, heard as [uː], in sorry.

The second student has blurred contrast, having two examples of incorrect lexical distribution, using /ʌ/ (= [ʌ]) in LOT words. The third H/V informant has been allocated to the category of doubtful contrast on the grounds that he uses /ɔ/ (= [ɔ], [ɔ]) in as many as four STRUT words, and, besides has three examples of the non-acceptable [æ] for /ʌ/.

2.34 Acceptable realizations. The typical realization of /ʌ/ in the H/V group is [ʌ]. Generally, the /ɔ/ phoneme is realized as [ɔ], with sporadic instances of [ɔː] and [o]. Two of the informants have the realization [ɔ⁰] in watch.

Nordhordland

2.35 The categories of full and inconsistent contrast are not represented in this group, but two of the Nh informants have been placed in the blurred contrast category. They occasionally use [æ] type vowels for /ʌ/, and have examples of incorrect lexical distribution, /ɔ/ (= [ɔ]) for /ʌ/, and/or /ʌ/ (= [ʌ]) for /ɔ/.
The third Nh informant has been classified as belonging to the *doubtful contrast* category. This speaker uses [a] in the majority of the LOT words and also has one occurrence of wrong lexical distribution, using /ʌ/, realized as [æ], for /ɒ/. The vowel in *watch* was heard as being diphthongized: [ɑʊ].

2.36 *Acceptable realizations.* Two Nh informants realize /ʌ/ as [ʌ], while the third has the characteristic RP realization [æ]. As regards /ɒ/, the realization is mainly [ɔ], but occasional examples of [ɔ], [ɔ] and [ɔ̞] have been noted.

**Comparison and explanation**

**Errors for /ʌ/**

2.37 Table 7 gives the number and percentage of vowel sounds used for /ʌ/, as specified for each geographical area. It will be noted that the great majority of the occurrences of /ʌ/ are realized in an acceptable manner, the types [æ], [a] and [ʌ] constituting 78% of all occurrences. But there are several error types,

<table>
<thead>
<tr>
<th></th>
<th>Bg89</th>
<th>Bg77-8</th>
<th>EN</th>
<th>Rg</th>
<th>H/V</th>
<th>Nh</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>%</td>
<td>No</td>
<td>%</td>
<td>No</td>
<td>%</td>
<td>No</td>
</tr>
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<td>[æ]</td>
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<td>32</td>
<td>80</td>
<td>43</td>
<td>55</td>
<td>38</td>
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<tr>
<td>[a]</td>
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<td>11</td>
<td>3</td>
<td>8</td>
<td>12*</td>
<td>16</td>
<td>3</td>
</tr>
<tr>
<td>[ʌ]</td>
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<td>3</td>
<td>3</td>
<td>8</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
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<td>[o]/[ɔ]</td>
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<td>5</td>
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<td>1</td>
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<td>100</td>
<td>40</td>
<td>100</td>
<td>78*</td>
<td>100</td>
<td>48</td>
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</tbody>
</table>

Table 7. Number and percentage of vowel sounds used for /ʌ/ by geographical district

* Two occurrences of [ɔ] have been included under [æ*].

† Two words are missing in the recordings.
indicating that the students are uncertain of the pronunciation of /ʌ/. There seem to be no differences as regards geographical area.

[ɔː] for /ʌ/

2.38 [ɔː] is not recommended as a realization of /ʌ/, simply because it does not exist in (Near-) RP. The use of front rounded [ɔː] seems to be distributed fairly evenly over the groups of informants, the percentages varying from 6 to 16. Thus [ɔː] is not very frequent in any of the groups, but still constitutes a quite prominent feature.

There are thirty-two examples of [ɔː] in the material. In nineteen of these, [ɔː] is found before a nasal, suggesting that [ɔː] is more likely to occur before a nasal than in other contexts. However, the material is too limited to reach a reliable conclusion on the matter.

2.39 The use of [ɔː] for /ʌ/ in NE is difficult to explain, since there is no apparent reason for /ʌ/ to be associated with Norwegian /ø/. RP /ʌ/ has a phonetic counterpart in the Norwegian /ɑ/, when it is realized as [a], as in hatt 'hat', and it could easily be replaced by [a] and still be considered an acceptable pronunciation. Norwegian short /ɑ/=[a] is certainly closer to RP /ʌ/ than is Norwegian short /ø/ (=œ or the like). Norwegian short /ɑ/ is realized as [a] in all accents represented in the material, except for the Bg and Nh accents, where it is [a] (Sandøy 1987, Rundhovde 1965). In theory, therefore, /ʌ/ should not pose problems for the EN, Rg and H/V informants, but possibly for the Bg and Nh students. Nevertheless, the predominant English spelling of /ʌ/ =u is, by Norwegians, not readily associated with a Norwegian vowel consistently spelt a as in hatt. The lack of correspondence in English versus Norwegian in the spelling of phonoetically very similar sounds (RP [ã] =u vs Norwegian [a] =a) could well act as an effective barrier against the use of Norwegian [a]-like
vowels for English /ʌ/. After all, one should bear in mind that the majority of Norwegians learn English through written texts, and spelling is therefore bound to exert considerable influence on pronunciation. An obvious example of this is the common NE pronunciation of salmon [sælmən].

[ʌ] for /ʌ/

2.40 Table 7 shows that the use of [ʌ] for /ʌ/ is infrequent, and thus does not constitute a major problem among any of the groups of informants. But it is a serious error due to its interference with the contrast between /ʌ/ and /ɒ/, [ʌ] being intermediate between the two. The occurrence of [ʌ] for /ʌ/ may be explained by intralingual interference and lack of stability: it is found neither in the target language nor the mother tongue, and it is used only occasionally. Intralingual interference refers to "items produced by the learner which reflect not the structure of the mother tongue, but generalizations based on partial exposure to the target language" (Richards, 1974:6). Some instances of [ʌ] may be due to influence by the o in the spelling (as in something), but this does not account for the occurrence of [ʌ] in the word hung.

[o] or [o] for /ʌ/

2.41 [o] or [o] for /ʌ/ is used by informants from all groups, but not very often. Frequent use of [o ɔ] may lead to lack of contrast between /ʌ/ and /ɒ/. Being an example of wrong lexical distribution, the use of [o ɔ] for /ʌ/ is a vocabulary problem; in words like other, brother, something and somebody it is also a spelling pronunciation. As many as thirteen (=65%) out of twenty occurrences of [o] or [o] for /ʌ/ are represented in writing by o (the remaining seven = u). This suggests that vocabulary problems with /ʌ/ are partly due to spelling.
Other errors for /ʌ/

2.42 One informant uses [ai] for /ʌ/ in the word brother. The same informant also has one example of [ai] for /ɔ/, and it is possible that it is influenced by GenAm /ai/ as used in LOT words, except that in this case it has been used in a wrong word. One informant uses [æ] for /ʌ/ in hung. This is either a slip of the tongue or a vocabulary problem, the speaker simply not knowing which phoneme to use.

Errors for /ɔ/

2.43 Table 8 shows the number and percentage of vowel sounds used for /ɔ/ by geographical district. It is evident that the majority of the examples of /ɔ/ are realized as half-open [o]; this vowel is classified as acceptable in this thesis, even though it is noticeably different from RP [o]. The most frequent errors are [ʌ] and [ai].

<table>
<thead>
<tr>
<th></th>
<th>Bg89 No</th>
<th>Bg89 %</th>
<th>Bg77-8 No</th>
<th>Bg77-8 %</th>
<th>EN No</th>
<th>EN %</th>
<th>Rg No</th>
<th>Rg %</th>
<th>H/V No</th>
<th>H/V %</th>
<th>Nh No</th>
<th>Nh %</th>
<th>Total No</th>
<th>Total %</th>
</tr>
</thead>
<tbody>
<tr>
<td>[ɔ]</td>
<td>5</td>
<td>6</td>
<td>2</td>
<td>3</td>
<td>7</td>
<td>8</td>
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<td>-</td>
<td>18</td>
<td>5</td>
</tr>
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<td>[ɔ]</td>
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<td>58</td>
<td>83</td>
<td>65</td>
<td>72</td>
<td>47</td>
<td>87</td>
<td>22</td>
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<td>19</td>
<td>70</td>
<td>274</td>
<td>77</td>
</tr>
<tr>
<td>[o]</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>[ʌ]</td>
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<td>8</td>
<td>11</td>
<td>5</td>
<td>6</td>
<td>3</td>
<td>5</td>
<td>2</td>
<td>7</td>
<td>3</td>
<td>11</td>
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<td>9</td>
</tr>
<tr>
<td>[ʌ]</td>
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<td>[æ]</td>
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<td>-</td>
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<td>70</td>
<td>100</td>
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<td>27</td>
<td>100</td>
<td>27</td>
<td>100</td>
<td>358</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 8. Number and percentage of vowel sounds used for /ɔ/ by geographical district.
[ʌ] or [æː] for /ɒ/

2.44 Informants from all the geographical districts occasionally use [ʌ] for /ɒ/, the percentage ranging from 5 (Rg) to 12 (Bg89). Thus, using [ʌ] or [æː] for /ɒ/ appears to be only a minor problem. Since [ʌ] will be perceived as /ʌ/, not /ɒ/, the use of [ʌ] is a vocabulary problem, originating from insufficient knowledge among the students regarding the lexical incidence of /ʌ/ and /ɒ/.

[ʌː] for /ɒ/

2.45 A few occurrences of [ʌː] for /ɒ/ were found with informants in both Bg groups; such forms may affect the contrast between /ʌ/ and /ɒ/, and, as mentioned in 2.40, they probably result from intralingual interference and lack of stability.

[ai] for /ɒ/

2.46 [ai] for /ɒ/ is common in the Bg89, EN and Nh groups, and is also represented among the Rg informants. The use of [ai] for /ɒ/ is undoubtedly due to GenAm influence, since [ai] is the vowel used in LOT words in GenAm. However, if [ai] is mixed with (Near-)RP, it may disturb the contrast between /ʌ/ and /ɒ/. The difference between the two Bg groups is interesting: [ai] for /ɒ/ is not found among the Bg77-8 informants, which may indicate that the use of [ai] for /ɒ/ became more frequent in the English of Bergen students during the 1980's.

Other errors for /ɒ/

2.47 [ʊ] and [uː] for /ɒ/ were used once each in the word sorry, and [æː] once in soft. These errors must be seen as isolated examples of either slips of the tongue or the student not knowing which sound to use.
/əu/ - /au/

2.48 The following realizations of /əu/ and /au/ have been recognized as acceptable:

/əu/: [əu], [əu], [əu], [œu] and [œu]. The general RP realization is [œu]. [œu], [œu] and [œu] are acceptable since vowels very similar to them are found in conservative RP (Gimson 1989:134). [œu] has, even if it is rounded, been acknowledged since it is within the articulatory area of /əu/, as has [œu] since it resembles the typical realization in RP.

/au/: [au], [au] and [au]. The starting point of /au/ varies considerably in RP, mainstream RP currently embracing "a range from a retracted front [a] to an advanced back [o]" (Wells 1982:292). Therefore realizations like [au], [au] and [au], all of which occur among the informants, have been considered acceptable.

2.49 The principal findings with regard to the presence of the contrast /əu/ - /au/ are summarized in table 9. It is clear that the prevalent categories are those of full and inconsistent contrast. Twenty informants, i.e. about half of the students, are classified as belonging to these two categories, each being represented by eleven students. As many as seventeen informants have been assigned to the blurred contrast category, which implies that nearly half of the students have some problems with the use of /əu/ and /au/. Owing to the low number of informants, little can be inferred from the findings, but the table indicates a few interesting points as regards differences between the various geographical groups. First, the blurred contrast category is over-represented among the informants from Western Norway compared to the EN group (15 out of 32 =47% as opposed to 2 out of 10 =20%). Secondly, it is striking that four out of the five informants that have doubtful contrast come from Bergen, two from Bg77-8 and two from Bg89. My findings, therefore, suggest that the students from Western Norway, especially those from Bergen, have more
problems with the contrast between /œu/ and /au/ than those from Eastern Norway.

Somewhat unexpectedly, no students have been classified as having no contrast. Thus Rugesæter (1993) claims that as many as 19% of his informants had no general distinction between /œu/ and /au/. However, some of his 19% may correspond to students that have been allocated to the categories of doubtful/blurred contrast in this study.

<table>
<thead>
<tr>
<th>Type of contrast</th>
<th>Bg 89</th>
<th>Bg 77-8</th>
<th>EN</th>
<th>Rg</th>
<th>Ha/Vo</th>
<th>Nh</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>11</td>
</tr>
<tr>
<td>Inconsistent</td>
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<td>3</td>
<td>3</td>
<td>1</td>
<td>-</td>
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<td>9</td>
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<tr>
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<td>3</td>
<td>2</td>
<td>1</td>
<td>17</td>
</tr>
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<td>1</td>
<td>-</td>
<td>-</td>
<td>5</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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</tr>
<tr>
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<td>10</td>
<td>10</td>
<td>6</td>
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<td>42</td>
</tr>
</tbody>
</table>

Table 9. /œu/ – /au/. Number of informants by category of contrast and geographical district.

**Bergen 1989**

2.50 In this group two out of ten informants have been classified as having full contrast. No students have inconsistent contrast.

The predominant category among the Bg 89 informants is that of blurred contrast, six students falling into this category. All of them have a majority of acceptable realizations of /œu/ and /au/, but five have at least one instance of a non-acceptable, intermediate sound [œu] for /œu/. Of these five, one twice uses [œu] for /au/\(^{15}\), three have sporadic instances of wrong lexical distribution, using /au/ (=[œu]) for /œu/, and one incorrectly uses the vowel [æ:] for /au/ in

\(^{15}\) [œu] cannot be considered as an acceptable realization of either the /œu/ or the /au/ phoneme because it is intermediate between the two.
the first occurrence of the word *about*. The sixth student that has *blurred contrast* has three examples of /ɔu/ (=[øʊ]) in MOUTH words.

Finally, two informants have been allocated to the *doubtful contrast* category. These two use an [ɑʊ] type vowel for /ɔu/ as well as for /au/, but also have a few instances of acceptable realizations for both phonemes. Further, one of them has an instance of faulty lexical distribution, using /ɔu/ (=[ʊ]) for /au/ in the first instance of the word *about*.

2.51 Acceptable realizations. All the Bg 89 informants realize /ɔu/ with a rounded starting point of the type [o], sometimes with noticeable centralization, [ø]. The latter type sounds somewhat lowered from the half-close position in a few cases (=[ɨ]). The predominant realization of /au/ has a back-type starting point [ɑ], but quite a few instances of a retracted front [a], written [a], have also been heard.

*Bergen 1977-8*

2.52 In this second group from Bergen two informants have *full contrast* between /ɔu/ and /au/. Three have *inconsistent contrast* with acceptable sounds throughout, but with a few occurrences of wrong lexical distribution: one student uses /au/ in a GOAT word, while the other two make use of /ɔu/ in words of the lexical set MOUTH.

Three informants have been classified as possessing *blurred contrast*, having one or two instances of the intermediate [ɑʊ]. All of them also have one or two occurrences of wrong lexical distribution, either /au/ (=[ʊ]) for /ɔu/ or /ɔu/ (=[øʊ]) for /au/ or both.

Two informants have been placed in the *doubtful contrast* category. One of them has as many as eight occurrences of the intermediate sound [ɑʊ], three for /ɔu/ and five for /au/. The other informant only has two instances of [ɑʊ], but
has five instances of wrong lexical distribution of /œu/ (=[œu]) and /au/ (=[au]);
it is therefore uncertain whether this speaker actually makes a contrast or not.

2.53 

Acceptable realizations. The realization of /œu/ in the Bg77-8 group is similar
to that of Bg89, generally having a rounded starting point close to cardinal [o].
In addition, most of the informants sometimes realize /œu/ with a rounded and
centralized starting point [ö], thus varying between [œ] and [öu]. One student
has a more central, but still rounded, starting point, [œ]. Moreover, a couple of
students have a realization of /œu/ whose starting point, to my ear, sounds
more open than that of [œ] and [ö], namely [œ]. As regards /au/, the realiza-
tion varies between [œu] and [au], which have retracted front and back starting
points respectively, the latter being the more frequent.

Eastern Norway

2.54 In the EN group five informants have been classified as having full contrast
between /œu/ and /au/; this is accordingly the predominant category among
the informants from Eastern Norway.

Three informants have been placed in the inconsistent contrast category. Two
of these have one instance of wrong lexical distribution each: one of them uses
/au/ in a GOAT word, while the other makes use of /œu/ in a MOUTH word. The
third uses the phonemes correctly, but has one occurrence of a non-acceptable
sound, namely a long [œu] for the diphthong in the word about.

Finally, there are two students in the EN group having blurred contrast
between /œu/ and /au/: both have occasional instances of an intermediate [œu]
sound, and besides, have a few occurrences of wrong lexical distribution, using
/au/ (=[au]) in some GOAT words.
2.55 Acceptable realizations. The /ɔu/ phoneme has several different realizations among the EN informants, varying from [ɔu] and [ɔu] to [ʊu], [ɔu] and [ɔu]. The starting point of the vowel written [ɔu] was heard as having a certain degree of lip rounding. Additionally, a few instances of a half-open, centralized starting point [ʌ] as well as a lowered [ʊ] have been found in the EN group.

/au/ is mainly realized with a retracted front starting point, [a], but a few students seem to have a back [ə] instead. A front-like starting point [a] was found as well in a few cases.

Rogaland

2.56 In the Rg group, which consists of six informants, one student has full contrast between /ɔu/ and /au/. Another student has been allocated to the inconsistent contrast category, having one example of a non-acceptable sound for /ɔu/, namely [u:] in the word so.

Three informants in the Rogaland group have blurred contrast. Two of them have sporadic instances of [əu], one using it for /au/ and the other for /ɔu/; the latter also has a few instances of wrong distribution, using /ɔu/ (= [ɔu]) in MOUTH words. The third student has a few occurrences of incorrect lexical distribution and, besides, has a non-acceptable sound [æ] in shouted.

The last Rg informant has been classified as having doubtful contrast between /ɔu/ and /au/. This speaker shows variation between [əu] and [u] in MOUTH words, having two examples of the former and four of the latter. The use of [əu] is probably due to influence from Scottish English, since this speaker also has examples of /r/ realized as an alveolar tap [r] in poor, sorry and wire, and frequently uses post-vocalic /r/. The reason for allocating this informant to the doubtful contrast category is that [əu], when not used consistently, may be interpreted as /ɔu/ by native speakers of (Near-)RP, and [əu] in MOUTH must therefore be considered as non-acceptable.
2.57 Acceptable realizations. There is variation in the realization of /ɔu/ among the Rg informants. The most common form is [ɔʊ] which has a rounded starting point. Other variants include [ɔu], [ɔu], [œu] and [öu].

/au/ is mainly realized with a back starting point [a], but there are also occurrences of realizations with a retracted front [a].

Hardanger/Voss

2.58 Of the three H/V speakers, one possesses full contrast between /ɔu/ and /au/. The two others have blurred contrast, both having a few instances of [ɔu] for /au/ and/or /ɔu/. Moreover, one of them has one occurrence of wrong lexical distribution, using /ɔu/ (=|ou]) in a MOUTH word.

2.59 Acceptable realizations. The typical realizations of /ɔu/ and /au/ are [ɔu] and [au], respectively. Occasional realizations include [œu] for /ɔu/ and [œu] for /au/. In addition, one of the informants generally has a centralized starting point [ö] in his realization of the /ɔu/ phoneme.

Nordhordland

2.60 None of the Nh informants has full contrast between /ɔu/ and /au/, but two students have been classified as having inconsistent contrast. Of these, one has an isolated example of wrong lexical distribution, using /au/ (=|au]) for /ɔu/ in the word coat. The other uses the phonemes correctly, but has one occurrence of a non-acceptable sound [a:] for /au/ in about.

The third student in the Nh group has been placed in the blurred contrast category, since this speaker has one instance of the intermediate sound [u-] as well as a non-acceptable sound [u] in the word so. Otherwise the phonemes are used correctly and with acceptable realizations.
2.61 **Acceptable realizations.** For the most part, the realization of /ɔu/ among the Nh informants is [ɔʊ]. However, several instances of more open starting points, [ʊ] and [o], as well as three cases of a distinctly centralized [ö], were also heard. /au/ shows fluctuation between a retracted front and a back-type starting point, that is, [a] and [a].

**Comparison and explanation**

**Errors for /ɔu/**

2.62 Table 10 shows the number and percentage of vowel sounds used for /ɔu/ by geographical district. It will be seen that the greater number of the occurrences of /ɔu/ have acceptable realizations of various kinds (c.87%). The percentage of satisfactory sounds is somewhat lower for the Bg informants than for the other groups. It is lowest for Bg89 (c.75%), the reason being a higher percentage of the intermediate [ɑʊ] sound among these students.

<table>
<thead>
<tr>
<th></th>
<th>Bg89</th>
<th>Bg77-8</th>
<th>EN</th>
<th>Rg</th>
<th>H/V</th>
<th>Nh</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>%</td>
<td>No</td>
<td>%</td>
<td>No</td>
<td>%</td>
<td>No</td>
</tr>
<tr>
<td>[ɔʊ]</td>
<td>-</td>
<td>-</td>
<td>8</td>
<td>10</td>
<td>3</td>
<td>6</td>
<td>-</td>
</tr>
<tr>
<td>[ɔʊ]-type</td>
<td>60</td>
<td>75</td>
<td>64</td>
<td>80</td>
<td>57</td>
<td>71</td>
<td>42</td>
</tr>
<tr>
<td>[ɔʊ]-type</td>
<td>-</td>
<td>-</td>
<td>5</td>
<td>6</td>
<td>1</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>[ʊ]</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>4</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>[ʊ]</td>
<td>14</td>
<td>18</td>
<td>7</td>
<td>9</td>
<td>3</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>[ʊ]</td>
<td>6</td>
<td>7</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>-</td>
</tr>
<tr>
<td>[ʊ]</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
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<td>100</td>
<td>80</td>
<td>100</td>
<td>48</td>
<td>100</td>
<td>24</td>
</tr>
</tbody>
</table>

Table 10. Number and percentage of vowel sounds used for /ɔu/ by geographical district.
[au] for /ɔu/

2.63 The use of [au] for /ɔu/ is more frequent with the Bg students than it is in
the other groups, the percentages being 18 for Bg89 and 9 for Bg77-8, as
opposed to 2-4 for the other groups. [au] used for /ɔu/ is a serious problem
since it affects the contrast between /ɔu/ and /au/.

It seems to me that the occurrence of [au] for /ɔu/ is caused by the students
not being certain about the difference between /ɔu/ and /au/, a contrast which
is not found in Norwegian. They aim at pronouncing /ɔu/ the way they have
heard it pronounced in English, but they are not always successful in doing so,
managing to hit the bull's-eye only in some of the cases. Thus a possible
explanation of the use of [au] for /ɔu/ may be lack of stability in the students
use of the target language as well as intralingual interference.

[au], [au] for /ɔu/

2.64 The use of [au] and [au] for /ɔu/ is not a problem of any importance due to
its low frequency, but if it is frequent it may clearly lead to lack of contrast
between GOAT and MOUTH words. Since [au], [au] = /au/, their use in GOAT is a
vocabulary problem, resulting from the students having insufficient knowledge
of the lexical distribution of /ɔu/ and /au/.

Errors for /au/

2.65 Table 11 shows the number and percentage of vowel sounds used for /au/
by geographical district. The great majority (c.79%) of its occurrences are
realized in an acceptable way. The most frequent errors are [ou ɔu au], all of
which are likely to be perceived as /ɔu/, and the intermediate vowel [au]. The
two types appear most frequently among the Bg and H/V informants.
<table>
<thead>
<tr>
<th></th>
<th>Bg89</th>
<th>Bg77-8</th>
<th>EN</th>
<th>Rg</th>
<th>H/V</th>
<th>Nh</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>%</td>
<td>No</td>
<td>%</td>
<td>No</td>
<td>%</td>
<td>No</td>
</tr>
<tr>
<td>[au]</td>
<td>11</td>
<td>18</td>
<td>22</td>
<td>37</td>
<td>47</td>
<td>78</td>
<td>7</td>
</tr>
<tr>
<td>[au]</td>
<td>35</td>
<td>58</td>
<td>21</td>
<td>35</td>
<td>10</td>
<td>17</td>
<td>18</td>
</tr>
<tr>
<td>[au], [oʊ]</td>
<td>4</td>
<td>7</td>
<td>9</td>
<td>15</td>
<td>-</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>[au]</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>[au]</td>
<td>9</td>
<td>15</td>
<td>8</td>
<td>13</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>[au], [əʊ]</td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>2</td>
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<td>60</td>
<td>100</td>
<td>60</td>
<td>100</td>
<td>60</td>
<td>100</td>
<td>36</td>
</tr>
</tbody>
</table>

Table 11. Number and percentage of vowel sounds used for /au/ by geographical district.

2.66 The use of [ou], [ʊ] for /au/ is represented in all the groups except EN and Nh, the percentage varying from 6 to 15. Using [ou], [ʊ] for /au/ is a serious mistake since it affects the distinction /ɔu/ - /au/; it can be explained as a vocabulary problem, but also perhaps as a spelling pronunciation since all the MOUTH words in the material are represented in the spelling by ou or ow, both of which suggest a diphthong with a rounded starting point to Norwegians.

Many Norwegians learn German as their second foreign language at school. In the German language there is also an /au/ phoneme and it bears considerable similarity to its RP counterpart. It is represented in writing by au, as in Haus 'house'. According to experienced teachers of German phonology at the University of Bergen, Norwegians do not have problems with the pronunciation of German /au/. It would be interesting to carry out an experiment in which informants would have to read sentences including /au/ in both English and German to see if there are any differences in the way they pronounce /au/ represented by au and /au/ represented by ou, ow in spelling. If English /au/ frequently came out with a rounded starting point and German /au/ was
pronounced consistently as [au], it could be taken as evidence that the use of [ou], [øu], [œu] and the like for RP /au/ is a spelling pronunciation.

[œu] for /au/

2.67 The frequency of [œu] for /au/ is highest among the Bg and H/V informants. The use of [œu] disturbs the contrast between /œu/ and /au/ because English speakers will be uncertain as to which phoneme it represents, and is probably caused by lack of stability in the target language. But the question arises as to whether there are any features in the Bg and H/V accents that make the occurrence of [œu] more probable. In the matter of the Bergen accent the answer may be positive. In this accent the realization of the short /a/ phoneme is nearly fully back. This may influence their pronunciation of RP /au/, making its starting point sound nearly fully back, and therefore give the impression that it is a bit rounded. According to Lisker (1989), backing and rounding often have the same auditory effect. If this is so, pronouncing /au/ as [œu] may be caused by interference from the mother tongue, also called language transfer. This explanation could account for [œu] being more frequent among the Bergen informants, but does not account for the use of [œu] among informants from the other geographical districts.

Of the words containing [œu], some appear to have it more frequently than others. [œu] is used in boat by eight students, in coat by six, in about by eight (two of whom used [œu] in both occurrences), in shower by four and in shouted by five students. In the remaining words only one or two students have occurrences of [œu]. Especially boat and about strike one as causing problems for the informants. A possible explanation may be that [œu] is somewhat rounded

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16 Lisker holds that "the rounding feature also leaves its trace in the resonance pattern, and... its effect is somewhat like that of tongue backing" (1989:24). On the basis of this statement, Lisker carried through an auditory experiment in which 22 American students of linguistics and senior linguists/phoneticians, not trained in the British tradition, had to label Jones's eighteen cardinal vowels. 50% of the back unrounded vowels were judged to be rounded.
due to the preceding bilabial consonant [b]. Similarly, the use of [əʊ] in *shower* and *shouted* may be due to rounding after [ʃ]. However, the material is too small to draw safe conclusions.

/ɪə/ - /ɛə/

2.68 The following sounds have been considered as acceptable realizations of /ɪə/ and /ɛə/:

/ɪə/: [ɪə], [ɨə], [ɪə²] (or [i]+[u]) and [iə²] (or [i]+[ʊ]) \(^{17}\). [ɪə] is the RP realization (Gimson 1989: 142). [ɨə], [ɪə²] (or [i]+[u]) and [iə²] (or [i]+[ʊ]) have been considered as acceptable since they do not interfere with the contrast /ɪə/ - /ɛə/ (see 1.12).

The students frequently use an [ɛə]-type sound for /ɪə/ (as well as for /ɛə/); the [ɛə]-type vowel is intermediate between /ɪə/ and /ɛə/, but closer to /ɪə/, and it could be argued that it should be accepted as a realization of /ɪə/ since its phonetic quality is not very different from [ɪə]. However, to my ear, [ɛə] lacks the characteristic [ɪ] quality of RP /ɪə/. To investigate the matter further, I carried out a small experiment. From the material, fifteen examples of words containing [ɛə] spoken by four informants were copied onto a separate cassette. The words concerned were several examples of *bears*, *beers*, *hairs* and *hears*, all spoken as [bɛə] and [hɛə]. A native speaker of English was then asked to listen to these sequences and decide whether she interpreted them as *bears* and *hairs* or as *beers* and *hears*. The outcome of the experiment was that eight out of the fifteen tokens with [ɛə] were interpreted as NEAR words (irrespective of

---

\(^{17}\) All the NEAR and SQUARE WORDS in the material have an /r/ in the spelling; and, in the students' pronunciation, /ɪə/ and /ɛə/ are often accompanied by a post-vocalic /r/, generally in the form of /r/-colouring of [a] (= [aə]), but sometimes as a separate segment [i] ([i][i][u]). The use of post-vocalic /r/ will be disregarded in the discussion of /ɪə/ and /ɛə/ in 2.69ff since it will be treated separately in chapter 3. It may be mentioned here that post-vocalic /r/ was used in 47 out of 178 tokens of NEAR (=c.26%) and in 55 out of 200 of SQUARE (=c.28%).
whether NEAR or SQUARE words were intended), two as SQUARE words, while
the remaining five were classified as uncertain. This appears to indicate that at
least some speakers of English will for the most part interpret [eə] as /iə/, but,
on the other hand, partly confirms my impression that [eə] is phonetically
intermediate between the typical RP realizations of /iə/ and /eə/. It seems
justified, therefore, to treat [eə] as non-acceptable. It should be added that [eə]
is not only used for /iə/, but frequently occurs for /eə/ as well. As far as the
presence of contrast between /iə/ and /eə/ is concerned, it probably does not
matter whether [eə] is considered as acceptable or not.

/eə/: [eə] and [eə] (or [ɛ]+[ɪ]). [eə] is the RP realization of /eə/ (Gimson 1989:
144). Only RP-like realizations, with and without the use of post-vocalic /r/,
have been considered as acceptable, since other sounds interfere with the
contrast between /iə/ and /eə/.

2.69 Table 12 shows the number of informants by geographical district and
category of contrast. It can be seen that no informants have been allocated to
the categories of full and inconsistent contrast. /iə/ - /eə/ is the only vowel pair
where this is the case. The prevalent category is that of doubtful contrast, which
together with the no contrast category accounts for 95% of the students. The
predominance of doubtful contrast may partly be due to the smallness of the
material, as a larger material may have given different results. However, my
results are in accordance with those of Rugesæter (1993), who found that 65%
of his informants had no distinction at all between /iə/ and /eə/. There seems
to be no differences as regards geographical district; on the contrary, problems
with the contrast /iə/ - /eə/ appear to be a nationwide phenomenon.
<table>
<thead>
<tr>
<th>Type of contrast</th>
<th>Bg89</th>
<th>Bg77-8</th>
<th>EN</th>
<th>Rg</th>
<th>H/V</th>
<th>Nh</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Inconsistent</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Blurred</td>
<td>1</td>
<td>1</td>
<td>10</td>
<td>5</td>
<td>1</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Doubtful</td>
<td>6</td>
<td>7</td>
<td>10</td>
<td>5</td>
<td>1</td>
<td>3</td>
<td>32</td>
</tr>
<tr>
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<td>4</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
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<td>10</td>
<td>10</td>
<td>6</td>
<td>3</td>
<td>3</td>
<td>42</td>
</tr>
</tbody>
</table>

Table 12. /iə/ - /eə/. Number of informants by geographical district and category of contrast.

**Bergen 1989**

2.70 All the Bg89 students have been classified as belonging to the categories of doubtful and no contrast; there are six in the former group and four in the latter. The categories of full, inconsistent and blurred contrast are not represented.

Four of the students that have doubtful contrast generally use an [eə]-type diphthong both in NEAR and SQUARE words, a sound which is intermediate between /iə/ and /eə/, although a little closer to /iə/. Three of the four also have instances of acceptable realizations of /iə/ (=iə). Another three of the four students have instances of incorrect lexical distribution since they use /iə/ (=iə ə) in SQUARE words. The other two informants having doubtful contrast in most cases use /iə/ (=iə ə), both for /iə/ and /eə/, thus having so many occurrences of wrong lexical distribution that a contrast between the two phonemes is probably absent. In addition, the [eə] sound is found twice with each of these two students, once in a NEAR and three times in SQUARE words.

The four informants that have been classified as having no contrast all consistently use the intermediate diphthong [eə], or variants phonetically similar to it, both in NEAR and SQUARE words.
2.71 Acceptable realizations. The recordings show very few occurrences of acceptable realizations of the /iə/ phoneme among the Bg89 informants, but, as mentioned in 2.70, examples of [iə ə] have been noted. There are no acceptable realizations of /eə/, that is [eə], the Bg informants using [iə ə] or the intermediate [eə] in all SQUARE words.

Bergen 1977-8

2.72 None of the Bg77-8 students have full or inconsistent contrast between /iə/ and /eə/, but one informant has been classified as having blurred contrast. This speaker mostly shows acceptable realizations and correct use of both /iə/ and /eə/, but also has a few occurrences of intermediate [eə], both in NEAR and SQUARE words.

The prevalent category in the Bg77-8 group is that of doubtful contrast, which comprises seven students. Five of them generally use [eə]-type diphthongs both in NEAR and in SQUARE words, but also have examples of [iə] in both sets; in NEAR, [iə] must be seen as a correct realization of /iə/. One of the five students has one occurrence of an acceptable realization, [eə], of the /eə/ phoneme. The last two informants having doubtful contrast for the most part use [iə], but sometimes [eə], both in NEAR and SQUARE words. Since all the seven students either generally use [iə] or [eə] in both lexical sets they are unlikely to have a phonemic contrast between /iə/ and /eə/.18

The contrast between /iə/ and /eə/ is absent with two of the informants. Both of them use [eə]-like diphthongs in all NEAR and SQUARE words.

2.73 Acceptable realizations. The acceptable realizations of /iə/ among the Bg77-8 students are [iə], [iə ə] and [iə]. Satisfactory realizations of /eə/ are rare in this

---

18 Two of the seven students in the doubtful contrast category have one example each of an [ə]-like sound in the word hear.
group, but [eə] was found three times with one informant and once with another.

**Eastern Norway**

2.74 All the EN informants have been classified as having *doubtful contrast*. The majority use [eə] both in NEAR and SQUARE words, but also have one or more instances of correct use of [iə] in NEAR. Some use [iə] in SQUARE words as well. One student in fact has both [iə] and [eə], but since she often uses [eə] incorrectly and has only one example of [iə], in addition to having instances of [eə] both in NEAR and SQUARE words, it is very doubtful if she maintains a phonemic contrast between /iə/ and /eə/. Another student also has sporadic instances of acceptable realizations of both /iə/ (= [iə]) and /eə/ (= [eə]), but a majority of [eə] sounds for both /iə/ and /eə/. A third student alternates between diphthongized [ɛə] and the monophthong [ɛɪ], both in NEAR and SQUARE words, but at the same time has two satisfactory realizations of /iə/.

2.75 *Acceptable realizations.* Among the EN informants, the few acceptable realizations of /iə/ are mostly [iə], but occasional examples of [iə] occur, too. As regards /eə/, only two students realize it satisfactorily as [eə] and [ɛə] in a few cases.

**Rogaland**

2.76 One Rg student has *blurred contrast* between /iə/ and /eə/; this speaker generally has acceptable realizations and use of both phonemes, but also has occurrences of a non-acceptable [ɛə] diphthong both in NEAR and SQUARE.

Five of the six Rg informants have *doubtful contrast* between /iə/ and /eə/. Four of them mainly use [ɛə]-like diphthongs both in NEAR and SQUARE, but
there are also sporadic instances of [ə] in SQUARE words\textsuperscript{19}. The fifth informant has a majority of [ə]-like sounds, using them for both /ə/ and /eə/.

2.77 Acceptable realizations. Those Rg students that exhibit examples of acceptable realizations of /ə/ all realize it as [ə]. There is only one occurrence of an acceptable realization of /eə/, that is [ɛə].

Hardanger/Voss

2.78 One H/V student has been classified as having doubtful contrast. This speaker uses [ɛə] in all NEAR words, except hear, and uses it frequently in SQUARE words as well, but has three instances of correct use and realization of /eə/. The vowel in hear was noted as [ɛə].

The contrast between /iə/ and /eə/ is absent with the other two H/V informants. Both of them mainly use [ɛə]-type diphthongs, but one example of a monophthong [æ] has also been registered. Phonetically these sounds are so similar that the two students must be classified as having no contrast.

2.79 Acceptable realizations. There are no acceptable realizations of /iə/ among the H/V informants, but the student having doubtful contrast has three examples of an acceptable realization [æ] of the /eə/ phoneme.

Nordhordland

2.80 All the Nh informants have been classified as having doubtful contrast. They all generally use non-acceptable [ɛə]-type diphthongs as well as the diphthong [æ] both in NEAR and SQUARE words, but also have a few occurrences of correct usage and acceptable realization of /iə/. One student has a couple of instances

\textsuperscript{19} One student has an [ə]-type vowel in the word hear.
of an acceptable realization of /ɛə/, but still has a majority of [ɛə]-like sounds for both /iə/ and /ɛə/.

2.81 Acceptable realizations. The few acceptable realizations of /iə/ and /ɛə/ among the Nh informants are [iə] and [ɛə] respectively, with starting points of /iə/ that, according to my ear, are occasionally raised or lowered.

Comparison and explanation

Errors for /iə/

2.82 Table 13 sets out the number and percentage of vowels used for /iə/ by geographical district. It is apparent from the table that all the geographical groups have problems with /iə/, but Bg and H/V more so than the others. There is not a single instance of [iə] with the H/V students. It will be seen that [ɛə] is by far the most common error, the percentages ranging from 40 among the EN informants to as high as 93 among the H/V students.

<table>
<thead>
<tr>
<th></th>
<th>Bg89 No</th>
<th>Bg89 %</th>
<th>Bg77-8 No</th>
<th>Bg77-8 %</th>
<th>EN No</th>
<th>EN %</th>
<th>Rg No</th>
<th>Rg %</th>
<th>H/V No</th>
<th>H/V %</th>
<th>Nh No</th>
<th>Nh %</th>
<th>Total No</th>
<th>Total %</th>
</tr>
</thead>
<tbody>
<tr>
<td>[iə(iəɪ ɪəɪ)]</td>
<td>17</td>
<td>34</td>
<td>15</td>
<td>30</td>
<td>24</td>
<td>48</td>
<td>15</td>
<td>50</td>
<td>-</td>
<td>-</td>
<td>7</td>
<td>47</td>
<td>78</td>
<td>37</td>
</tr>
<tr>
<td>[iə(iəɪ ɪəɪ)]</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>6</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>[ɛə(ɛəɪ eəɪ)]</td>
<td>33</td>
<td>66</td>
<td>30</td>
<td>60</td>
<td>20</td>
<td>40</td>
<td>14</td>
<td>47</td>
<td>14</td>
<td>93</td>
<td>8</td>
<td>53</td>
<td>119</td>
<td>57</td>
</tr>
<tr>
<td>[iə]-type</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>4</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>7</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>[ɛə(ɛəɪ eəɪ)]</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>4</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>[iɪ (iɪ)]</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100</td>
<td>50</td>
<td>100</td>
<td>50</td>
<td>100</td>
<td>30</td>
<td>100</td>
<td>15</td>
<td>100</td>
<td>15</td>
<td>100</td>
<td>210</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 13. Number and percentage of vowel sounds used for /iə/ by geographical district.
[eə] for /ɪə/

2.83 [eə] is the most frequent error for /ɪə/. It was used in 119 out of 210 occurrences of /ɪə/ (=c.57%). It is a serious error both because it is so frequent, and because it affects the /ɪə/ - /eə/ contrast. A possible explanation for the use of [eə] is that it is a spelling pronunciation: the students take [e] to be the starting point of /ɪə/ since there is usually an e in the spelling. All the NEAR words in the material are represented in writing by eer or ear. It could also be that /ɪə/ and /eə/, being unfamiliar and foreign sounds, are perceived as one single sound, namely [eə], whose starting point is a sound not too different in quality from Norwegian /eː/ as found in tre ‘tree’. If this is so, then this is an example of intralingual interference: the informants produce items based upon partial exposure to the target language. They do not replace an English sound with a Norwegian sound, but with a sound intermediate between the two.

The phonemic symbol /eə/ for the RP pronunciation, which is [ɛə], may be unfortunate since it suggests a starting point [e] to Norwegians. /eə/ is a better symbol.

[eə] for /ɪə/

2.84 [eə] for /ɪə/ was only used twice and thus does not constitute a major problem. Its occurrence may be explained as a vocabulary problem caused by the students not having a fully satisfactory knowledge of the lexical distribution of /ɪə/ and /eə/.

[iː (iː)] for /ɪə/

2.85 The use of [iː] for /ɪə/ occurs twice in hear (=[hiː] 1x, [hiː] 1x) and once in beer ([biː]), and must be seen as examples of language transfer from Norwegian /iː/ as in smil ‘smile’.
Errors for /eə/

2.86 Table 14 gives the number and percentage of vowel sounds used for /eə/ by geographical district. The use of the acceptable realization [eə] is rare; its average percentage is below 10, its highest percentage only 20, and it is absent with theBg89 students. All geographical groups have problems with /eə/. As for /iə/, it will be seen that the most frequent error is the intermediate [eə]: it accounts for about 80% of the errors with most groups, except for Rg, which has a correspondingly high percentage of [iə] for /eə/.

<table>
<thead>
<tr>
<th></th>
<th>Bg89</th>
<th>Bg77-8</th>
<th>EN</th>
<th>Rg</th>
<th>H/V</th>
<th>Nh</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>%</td>
<td>No</td>
<td>%</td>
<td>No</td>
<td>%</td>
<td>No</td>
<td>%</td>
</tr>
<tr>
<td>[eə]</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>8</td>
<td>5</td>
<td>17</td>
<td>3</td>
</tr>
<tr>
<td>[eə]</td>
<td>40</td>
<td>80</td>
<td>31</td>
<td>78</td>
<td>40</td>
<td>80</td>
<td>15</td>
</tr>
<tr>
<td>[iə]</td>
<td>10</td>
<td>20</td>
<td>5</td>
<td>12</td>
<td>6</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100</td>
<td>40</td>
<td>100</td>
<td>50</td>
<td>100</td>
<td>30</td>
</tr>
</tbody>
</table>

Table 14. Number and percentage of vowel sounds used for /eə/ by geographical district.

[eə] for /eə/

2.87 [eə] for /eə/ is a serious mistake due to its very high frequency and its interference with the contrast between /iə/ and /eə/. For the most part, the occurrences of /eə/ in the material are represented in writing by are or air, so the use of [eə] for /eə/ cannot be a spelling pronunciation. The most likely explanation, therefore is that it is caused by intralingual interference (see 2.83).

[iə] for /eə/

2.88 The use of [iə] constitutes another common error for /eə/. This type has been identified with all the groups except the H/V and Nh groups, the percentage of [iə] ranging from 12 (Bg77-8) to 33 (Rg). The use of [iə] for /eə/
can hardly be accounted for as a vocabulary problem, since the students are
apparently not aware of the contrast between /iə/ and /eə/. Thus its existence
must be explained by lack of stability in the informants' use of the target
language: the students operate with a continuum of sounds for /eə/ and /iə/,
which for the majority range from [iə] to approximately [εə]; it is therefore
unavoidable that they should sometimes produce [iə] for /eə/. The absence of
[iə] with H/V and Nh, then, may be accidental.
3. THE USE OF POST-VOCALIC /r/

3.1 In the analysis of the students' use of post-vocalic /r/ the emphasis will be on the overall frequency and the phonotactic and lexical distribution (see 1.3). The phonetic realization of post-vocalic /r/ will not be studied in detail, but a number of characteristic phonetic features will be mentioned.

*Linking* /r/, as in *hear it* and *after all*, does not count as post-vocalic /r/, and has therefore been excluded from the analysis. Accordingly, students that have been listed as having no instances of post-vocalic /r/ may have examples of linking /r/.

**Overall frequency**

3.2 Table 15 shows the overall frequency of post-vocalic /r/ by geographical district. It clearly indicates that the frequency of post-vocalic /r/ is most frequent among the EN informants, closely followed by the the Rg, H/V and Nh groups, and least frequent with the Bg77-8 group. The differences are quite striking.

The use of post-vocalic /r/, then, differs somewhat among the different geographical groups. The Bg77-8 group has the lowest frequency and the EN group the highest. It may be that the influence from American English has increased during the 1980's. In my opinion, it is reasonable to believe that young people were more exposed to American English in the 80's than in the 70's; after all, the amount of American films did not become smaller. Spelling, too, makes it difficult for the students to decide when the letter r should or should not be pronounced. In addition, the difference between e.g. a diphthong [ɔə] and r-coloured [ɔə] is not very easy to hear for the untrained ear. It is only by making young students aware of the problem that they may learn when to
use /r/, regardless of whether British or American English is used as the model of pronunciation.

<table>
<thead>
<tr>
<th>Bg89 % x/r/</th>
<th>Bg77-8 % x/r/</th>
<th>EN % x/r/</th>
<th>Rg % x/r/</th>
<th>H/V % x/r/</th>
<th>Nh % x/r/</th>
<th>Total % x/r/</th>
</tr>
</thead>
<tbody>
<tr>
<td>49/280</td>
<td>17/250</td>
<td>8/81</td>
<td>29/168</td>
<td>26/84</td>
<td>26/84</td>
<td>26/237/1146</td>
</tr>
</tbody>
</table>

Table 15. Overall frequency of post-vocalic /r/ by geographical district.

3.3 Table 16 gives the number of informants by geographical district and relative frequency of post-vocalic /r/. The students' use of /r/ has been calculated as the per cent of possible occurrences, and each student has been placed in one of six different percentage categories. It will be seen from the table that the majority, twenty-three students, use post-vocalic /r/ in 1-20% of its possible occurrences. All geographical districts have the highest number of informants in this category.

<table>
<thead>
<tr>
<th></th>
<th>Bg89</th>
<th>Bg77-8</th>
<th>EN</th>
<th>Rg</th>
<th>H/V</th>
<th>Nh</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>8</td>
</tr>
<tr>
<td>1-20%</td>
<td>7</td>
<td>7</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>23</td>
</tr>
<tr>
<td>21-40%</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>41-60%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>61-80%</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>81-100%</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>6</td>
<td>3</td>
<td>3</td>
<td>42</td>
</tr>
</tbody>
</table>

Table 16. Number of informants by geographical district and relative frequency of post-vocalic /r/.

Eight students do not use post-vocalic /r/ at all. Their use corresponds to that in RP, which does not have post-vocalic /r/. The rest of the informants are distributed fairly evenly over the other categories, the only exception being that
as many as three out of ten EN students have a frequency of post-vocalic /r/ as high as 61-80%. This suggests that post-vocalic /r/ is more likely to occur among EN students than among students from the other geographical groups.

**Phonotactic distribution**

3.4 To find out whether the use of post-vocalic /r/ is rule-governed or not, it was decided to investigate if there are any phonotactic positions in which post-vocalic /r/ is particularly likely to occur. The frequency of post-vocalic /r/ has been studied in relation to the nature of the preceding vowels and the context following /r/, either a consonant or, in the case of utterance-final /r/, a pause.

3.5 Table 17 sets out the frequency of post-vocalic /r/ by geographical district and preceding vowel. It will be seen that there is no decisive influence from the quality of the preceding vowel on the use of post-vocalic /r/. However, the table indicates some interesting points. In the material as a whole the use of /r/ is more frequent after [a] than after /ə/. Among the Bg89, H/V and Nh students there is a greater tendency to use /r/ after [ə] than after /ə/. There is a similar, but less marked, tendency among the Rg and EN informants, but not with the Bg77-8 group. The Nh informants use /r/ after [a] and /ə/ only.

3.6 Table 18 shows the frequency of post-vocalic /r/ in three different contexts: in utterance-final position, before alveolars and before non-alveolars. Pre-
consonantal /r/ includes both word-medial /r/ followed by a consonant and word-final /r/ (ie. not utterance-final) followed by a word starting with a consonant, as in *dare to*. The reason for considering alveolars and non-alveolars separately is to investigate if the *place of articulation* of the following consonant has any impact on the use of post-vocalic /r/, that is, if the presence of an alveolar consonant tends to favour the use of /r/, which is itself alveolar.
<table>
<thead>
<tr>
<th>After</th>
<th>Bg89</th>
<th>Bg77-8</th>
<th>EN</th>
<th>Rg</th>
<th>H/V</th>
<th>Nh</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>x/r/ total</td>
<td>%</td>
<td>x/r/ total</td>
<td>%</td>
<td>x/r/ total</td>
<td>%</td>
<td>x/r/ total</td>
</tr>
<tr>
<td>/ɔː/, /ɔː/, /əː/</td>
<td>34 180</td>
<td>19</td>
<td>12 160</td>
<td>8</td>
<td>31 180</td>
<td>26 108</td>
<td>26 54</td>
</tr>
<tr>
<td>/ɔː/</td>
<td>8 70</td>
<td>11</td>
<td>6 60</td>
<td>10</td>
<td>18 70</td>
<td>26 8 42</td>
<td>19 3 21</td>
</tr>
<tr>
<td>/ɑː/</td>
<td>5 20</td>
<td>25</td>
<td>2 20</td>
<td>10</td>
<td>6 20</td>
<td>30 3 12</td>
<td>25 1 6</td>
</tr>
<tr>
<td>/ɔː/¹</td>
<td>2 10</td>
<td>20</td>
<td>1 10</td>
<td>10</td>
<td>2 10</td>
<td>20 4 6</td>
<td>67 3 33</td>
</tr>
</tbody>
</table>

Table 17. Frequency of post-vocalic /r/ by geographical district and preceding vowel.

¹ All informants use [ɔː] in poor.
<table>
<thead>
<tr>
<th></th>
<th>Bg89</th>
<th>Bg77-8</th>
<th>EN</th>
<th>Rg</th>
<th>H/V</th>
<th>Nh</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>x/r/</td>
<td>%</td>
<td>x/r/</td>
<td>%</td>
<td>x/r/</td>
<td>%</td>
<td>x/r/</td>
</tr>
<tr>
<td><strong>Utterance-final</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>All contexts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After /æ/</td>
<td>23</td>
<td>21</td>
<td>9</td>
<td>100</td>
<td>36</td>
<td>33</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>110</td>
<td></td>
<td>100</td>
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<td>110</td>
<td></td>
<td>66</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After /ɑ ɑː ɑː/</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>/r+/alveolar</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All contexts</td>
<td>18</td>
<td>15</td>
<td>10</td>
<td>90</td>
<td>33</td>
<td>28</td>
<td>15</td>
</tr>
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<td></td>
<td>120</td>
<td></td>
<td>90</td>
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<td>120</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After /æ/</td>
<td>2</td>
<td>18</td>
<td>2</td>
<td>20</td>
<td>12</td>
<td>30</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>40</td>
<td></td>
<td>20</td>
<td></td>
<td>40</td>
<td></td>
<td>24</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After /ɑ ɑː ɑː/</td>
<td>11</td>
<td>14</td>
<td>8</td>
<td>70</td>
<td>21</td>
<td>26</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>80</td>
<td></td>
<td>70</td>
<td></td>
<td>80</td>
<td></td>
<td>48</td>
</tr>
<tr>
<td>/r+/non-alveolar</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All contexts</td>
<td>7</td>
<td>12</td>
<td>2</td>
<td>50</td>
<td>11</td>
<td>18</td>
<td>7</td>
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<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After /æ/</td>
<td>3</td>
<td>8</td>
<td>1</td>
<td>30</td>
<td>6</td>
<td>15</td>
<td>-</td>
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<tr>
<td></td>
<td>40</td>
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<td>30</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After /ɑ ɑː ɑː/</td>
<td>4</td>
<td>20</td>
<td>1</td>
<td>20</td>
<td>8</td>
<td>25</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td></td>
<td>20</td>
<td></td>
<td>20</td>
<td></td>
<td>12</td>
</tr>
</tbody>
</table>

Table 18. Frequency of post-vocalic /r/ in different contexts.
As can be seen from table 18, after [ə] there is no difference in the frequency of utterance-final and pre-consonantal /r/ before non-alveolars, the average percentage being 25 for both. Pre-consonantal /r/ before non-alveolars, on the other hand, is markedly less frequent; the average percentage is as low as 7. This suggests that the frequency of post-vocalic /r/ after /ə/ is indeed influenced by phonotactic distribution, /r/ being more likely to appear in utterance-final position and before alveolars than before non-alveolars. However, it is important to point out that sounds that can be classified as alveolars in RP may, due to language transfer, be pronounced as dentals by Norwegians, as the Norwegian counterparts of RP alveolars like /t/ and /l/ vary from being dental (EN) to being post-dental or pre-alveolar (Western Norway). Thus, the difference in the frequency of pre-consonantal /r/ before alveolars and before non-alveolars may be coincidental, and not caused by alveolars having a place of articulation close to that of post-alveolar /r/. Alternatively, the use of /r/ could be favoured by dentals/post-dentals as well as by alveolars. After all, Norwegian [t s l] are closer to [ʃ] than to the non-alveolars represented in my material ([b (InputStream 1993)]).

3.7 In the case of /r/ after /aː: əː/, there are very few tokens and that is the reason for treating them together. Thus it is difficult to generalize, but alveolars do not seem to favour the use of post-vocalic /r/ after /aː: əː/, on the contrary, it is somewhat more frequent after non-alveolars in the group as a whole. There are some geographical differences, but, again, due to the smallness of data it is hard to draw any conclusions.

*Lexical distribution*

3.8 Table 19 indicates the number of students using post-vocalic /r/ in each of the words in the material. The words are listed in order of descending
frequency of /r/. As expected, items at the top of the list end in -[ə]; this is in accordance with the above findings (see 3.4). In fact, in eight out of the ten words in which ten students or more use a post-vocalic /r/, the /r/ is preceded by [ə]. This is a result of the fact that post-vocalic /r/ is more likely to occur when it is preceded by [ə]. An interesting point, however, is that some words ending in -[ə] come near the bottom of the list. This suggests that there might be a tendency for /r/ to occur more often in some words than in others. A possible explanation of the low frequency in other (other birds) and over (over the) may be that /r/occurs next to the non-alveolar /θ/ and, in the case of other , it is followed by a /b/ as well.

<table>
<thead>
<tr>
<th>beer</th>
<th>17</th>
<th>barking</th>
<th>9</th>
<th>heard</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>chair</td>
<td>14</td>
<td>dare</td>
<td>9</td>
<td>early (80’s)</td>
<td>5</td>
</tr>
<tr>
<td>bear</td>
<td>13</td>
<td>bird</td>
<td>8</td>
<td>shirt</td>
<td>4</td>
</tr>
<tr>
<td>early</td>
<td>13</td>
<td>clearly</td>
<td>8</td>
<td>heard</td>
<td>3</td>
</tr>
<tr>
<td>watchers</td>
<td>13</td>
<td>pleasure</td>
<td>8</td>
<td>her (2nd x)</td>
<td>2</td>
</tr>
<tr>
<td>hair</td>
<td>12</td>
<td>started</td>
<td>8</td>
<td>hear (70’s)</td>
<td>1</td>
</tr>
<tr>
<td>shower</td>
<td>12</td>
<td>her</td>
<td>7</td>
<td>other</td>
<td>1</td>
</tr>
<tr>
<td>wire</td>
<td>11</td>
<td>birds</td>
<td>7</td>
<td>over</td>
<td>1</td>
</tr>
<tr>
<td>here</td>
<td>10</td>
<td>repairs</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>poor</td>
<td>10</td>
<td>matter</td>
<td>6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 19. Number of students using post-vocalic /r/ in the individual words.

Realization

3.9 The phonetic realization of post-vocalic /r/ has not been given priority in this thesis, but a few comments will be given. Realizations of post-vocalic /r/ may be seen as a continuum stretching from a devoiced, post-alveolar fricative [ɹ], via the post-alveolar approximant [ɹ] to r-coloured vowels, and it is often very difficult to draw the line between them. Generally, post-vocalic /r/ was
heard as being represented by r-colouring, e.g. by [♂], as in beer [bɪər], but examples of the two other types have also been noted.

However, a few other realizations have also been registered: some of the students have a noticeably retroflex realization [ɾ], and quite a few use a flap [ɾ], though mostly as a linking /ɾ/. This might be seen as language transfer, as a flap is found in many Norwegian accents, like Eastern Norwegian. In Bergen, Rogaland, Hardanger/Voss as well as among some Nŋ speakers the Norwegian /ɾ/ phoneme is represented by the uvular fricative [ʂ]. Only one informant, a Bg77-8 student, has an example of [ʂ]; she uses it once in the word dare. Another informant, from Eastern Norway, uses retroflex plosives, [t] and [d], in shirt and heard. This must also be taken to result from language transfer, since rt and rd in the spelling (as in ert 'pea' and gardin 'curtain') regularly corresponds to [t] and [d] in many Eastern Norwegian accents.
4. CONCLUDING REMARKS

My results seem to yield a varied account of how the informants deal with the /æ/-/ɛ/, /ʌ/-/ʊ/, /ɒ/-/ʌ/ and /ɔ/-/ɔ/ contrasts. It might be expected that either a contrast is present with an informant, or it is not. However, the situation appears to be more complicated than that. Even students who have a good command of a vowel contrast occasionally produce intermediate sounds that interfere with the contrast.

Table 20 sums up the number of informants allocated to the individual categories of contrast for each vowel pair. It is evident from the table that all vowel pairs present problems for the students, but the /ɪɔ/-/ɛɔ/ contrast more so than the others. As many as 40 informants (=c. 95%) have been assigned to the categories of doubtful and no contrast, frequently using an [ɛɔ]-type vowel for both phonemes. There are no geographical differences; the problem appears to be a nationwide phenomenon. My findings are in agreement with those of Rugesæter (1993), and seem to be in keeping with the results of Handeland (1987) and Johannessen (1979) as well, even if the latter two did not concentrate on vowel contrasts. Handeland, who investigated RP vowels in the speech of 505 Norwegian students of English at Agder College, found that the error frequency for /ɪɔ/ and /ɛɔ/ was 54% and 52%, respectively (1987:33), and that, for both phonemes, the great majority of these mistakes were realized as [ɛɔ]. Johannessen (1979) found similar results.
Table 20. Number of informants by category of contrast and vowel pair.

<table>
<thead>
<tr>
<th>Category of contrast</th>
<th>/e/-/æ/</th>
<th>/ʌ/-/o/</th>
<th>/ou/-/au/</th>
<th>/ʊ/-/ɔ/</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full</td>
<td>14</td>
<td>3</td>
<td>11</td>
<td>-</td>
<td>28</td>
</tr>
<tr>
<td>Inconsistent</td>
<td>8</td>
<td>6</td>
<td>9</td>
<td>-</td>
<td>23</td>
</tr>
<tr>
<td>Blurred</td>
<td>8</td>
<td>30</td>
<td>17</td>
<td>2</td>
<td>57</td>
</tr>
<tr>
<td>Doubtful</td>
<td>11</td>
<td>3</td>
<td>5</td>
<td>32</td>
<td>51</td>
</tr>
<tr>
<td>None</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>Total</td>
<td>42</td>
<td>42</td>
<td>42</td>
<td>42</td>
<td>168</td>
</tr>
</tbody>
</table>

As expected, problems concerning the /e/ - /æ/ contrast can be localized to Bergen. All the twelve students having doubtful and no contrast between /e/ and /æ/ come from Bergen; they frequently use an [ɛ]-type vowel, some of them also [æ], for RP /e/. Thus the Bergen accent undoubtedly has an impact on the Bergen informants’ pronunciation of the /e/ - /æ/ contrast. Johannessen (1979) found that 25% of the occurrences of /e/ were pronounced as [ɛ] among his Bergen informants.

Rugesæter (1993) lists the number of students that possess all phonemes investigated and specifies how many have a loss of two, three or more phonemes. However, due to different methods of classification, some of the students that he has listed as having "All phonemes represented" (1993:21) could have been allocated to several of my categories. Also, it is not entirely clear what is meant by his category "All phonemes represented". My results indicate that generally, and partly due to the scarcity of the material, the situation is too complex to decide whether a contrast is present or not with an informant. There are no clear-cut answers to the question of contrast.

Let us summarize the main types of explanations of the informants’ errors. *Language transfer* clearly accounts for the use of [ɛ] and [æ] for /æ/ among the Bg informants. Next, the occurrence of e.g. [ɔ] for /ʌ/ and [ou] for /au/ may be
ascribed to the phenomenon of spelling pronunciation. The high frequency of an [æ]-type sound for both /ɪə/ and /ɛə/ can be explained as intralingual interference, since [æ] is a sound which is found neither in the English nor in the Norwegian language.

Mostly, the informants' English is variably rhotic or semi-rhotic. The material is too small to draw definite conclusions about the use of post-vocalic /r/, but there is a tendency for it to be more frequent after [ə] than after other vowels; and also, after [ə] /r/ occurs more frequently in utterance-final position and in front of alveolars than before non-alveolar consonants. Nevertheless, these are only tendencies, and the main conclusion that can be drawn from my material appears to be that the informants' use of post-vocalic /r/ is to a large extent arbitrary and haphazard.

The shortage of tokens has made it difficult to reach reliable conclusions. Therefore it would have been interesting to carry out an investigation, in which the number of tokens were extended considerably, with recordings both at the beginning and the end of English grunfag. Only then would it be possible to give a plausible account of the students' command of the contrasts as well as of the developmental route they take.
The Diagnostic Test

William went to bed very early that evening. He was sorry he couldn't have a bath, not even a shower. He hung his black jacket and his red shirt over the back of a chair. He hadn't heard from Jane since he sent her the wire. He didn't dare to call, but he had talked to her brother on the phone. He had said something about a missing coat. Could she have found out so soon? Would he be sued? Somebody shouted, and a dog started barking. It was quite near. This was shocking. He could hear it clearly. He looked at his watch, and saw that it was only eight o'clock. 'Poor boy,' thought Will. After all it didn't matter.

Word List, Original Version

a boat, a little kitten, about, bad, bear, bed, beer, bird, birds, choke, Dick, eyes, hair, hear, heard, ice, joke, pleasure, races, thick, raises, this, tick.

Word List, Revised Version

1 go by boat 12 a steep rise
2 a little kitten 13 a funny joke
3 up and about 14 Look here!
4 major repairs 15 Have you heard?
5 a Russian bear 16 with pleasure
6 a thick voice 17 the usual thing
7 a pint of beer 18 boiled rice
8 blue eyes 19 grey hair
9 an early bird 20 a bad smell
10 two other birds 21 cheap fuel
11 soft ice 22 weight watchers
Appendix 2

Tokens of Vowels, Original Version

<table>
<thead>
<tr>
<th>/e/</th>
<th>/æ/</th>
<th>/ʌ/</th>
<th>/ɒ/</th>
</tr>
</thead>
<tbody>
<tr>
<td>bed (2x)</td>
<td>back</td>
<td>brother</td>
<td>dog</td>
</tr>
<tr>
<td>pleasure</td>
<td>bad</td>
<td>hung</td>
<td>not</td>
</tr>
<tr>
<td>red</td>
<td>black</td>
<td>somebody</td>
<td>o'clock</td>
</tr>
<tr>
<td>said</td>
<td>hadn't</td>
<td>something</td>
<td>on</td>
</tr>
<tr>
<td>sent</td>
<td>jacket</td>
<td>matter</td>
<td>shocking</td>
</tr>
<tr>
<td>very</td>
<td>that</td>
<td></td>
<td>sorry</td>
</tr>
<tr>
<td>went</td>
<td></td>
<td></td>
<td>watch</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>/ɔu/</th>
<th>/əu/</th>
<th>/ɪə/</th>
<th>/əʊ/</th>
</tr>
</thead>
<tbody>
<tr>
<td>boat</td>
<td>about (2x)</td>
<td>beer</td>
<td>bear</td>
</tr>
<tr>
<td>choke</td>
<td>found</td>
<td>clearly</td>
<td>chair</td>
</tr>
<tr>
<td>coat</td>
<td>out</td>
<td>hear (2x)</td>
<td>dare</td>
</tr>
<tr>
<td>joke</td>
<td>shouted</td>
<td>near</td>
<td>hair</td>
</tr>
<tr>
<td>only</td>
<td>shower</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>so</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

Tokens of Vowels, Revised Version

<table>
<thead>
<tr>
<th>/e/</th>
<th>/æ/</th>
<th>/ʌ/</th>
<th>/ɒ/</th>
</tr>
</thead>
<tbody>
<tr>
<td>bed</td>
<td>back</td>
<td>brother</td>
<td>dog</td>
</tr>
<tr>
<td>pleasure</td>
<td>bad</td>
<td>funny</td>
<td>not</td>
</tr>
<tr>
<td>red</td>
<td>black</td>
<td>hung</td>
<td>o'clock</td>
</tr>
<tr>
<td>said</td>
<td>hadn't</td>
<td>other</td>
<td>on</td>
</tr>
<tr>
<td>sent</td>
<td>jacket</td>
<td>Russian</td>
<td>shocking</td>
</tr>
<tr>
<td>smell</td>
<td>matter</td>
<td>somebody</td>
<td>soft</td>
</tr>
<tr>
<td>very</td>
<td>that</td>
<td>something</td>
<td>sorry</td>
</tr>
<tr>
<td>went</td>
<td></td>
<td></td>
<td>watch</td>
</tr>
</tbody>
</table>

watchers
<table>
<thead>
<tr>
<th>/ɑʊ/</th>
<th>/ɑʊ/</th>
<th>/ɪə/</th>
<th>/ɛə/</th>
</tr>
</thead>
<tbody>
<tr>
<td>boat</td>
<td>about (2x)</td>
<td>beer</td>
<td>bear</td>
</tr>
<tr>
<td>coat</td>
<td>found</td>
<td>clearly</td>
<td>chair</td>
</tr>
<tr>
<td>go</td>
<td>out</td>
<td>hear</td>
<td>dare</td>
</tr>
<tr>
<td>joke</td>
<td>shouted</td>
<td>here</td>
<td>hair</td>
</tr>
<tr>
<td>only</td>
<td>shower</td>
<td>near</td>
<td>repairs</td>
</tr>
<tr>
<td>over</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>phone</td>
<td>so</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Tokens of Post-Vocalic /ɹ/, Original Version

- barking
- bear
- beer
- bird
- birds
- chair
- clearly
- dare
- early
- hair
- hear
- heard
- her (1st x)
- her (2nd x)
- matter
- near
- over
- pleasure
- poor
- shirt
- shower
- started
- wire

Tokens of Post-Vocalic /ɹ/, Revised Version

- barking
- bear
- beer
- bird
- birds
- chair
- clearly
- dare
- early
- early
- hair
- heard
- heard
- her (1st x)
- her (2nd x)
- here
- matter
- near
- other
- over
- pleasure
- poor
- repairs
- shirt
- shower
- started
- watchers
- wire

75
Appendix 3

Specimens of phonetic transcription of relevant tokens.
Vowels and postvocalic /ɹ/

Student No. B4 spring term 1989 Bg89

William went [ə] to bed [ɛ] very [ɛ] early that [æ] evening. He was sorry [ɔ] he
couldn't have a bath, not [ɔː] even a shower [au]. He hung [ʌ] his black [ɛ]
jacket [æ] and his red [ɛ] shirt over [ou] the back [æ] of a chair [ɛə]. He hadn't
[ɛ] heard from Jane since he sent [ɛ] her the wire. He didn't dare [ɛə] to call, but
he had talked to her brother [ʌ] on [o] the phone [au]. He had said [ɛ]
something [ʌ] about [au] a missing coat [ou]. Could she have found [au] out
started /ɹ/ barking. It was quite near [ɛə]. This was shocking [ɛə]. He could
hear [ɛə] it clearly [ɛə]. He looked at his watch [au], and saw that it was only
[ou] eight o'clock [au]. 'Poor boy,' thought Will. After all it didn't matter [æ].

1 go [ou] by boat [oʊ] 12 a steep rise
2 a little kitten 13 a funny [ʌ] joke [ou]
3 up [o] and about [au] 14 Look here [ɛə]!
4 major repairs [ɛə] 15 Have you heard?
5 a Russian [ʌ] bear [ɛə] 16 with pleasure [ɛ]
6 a thick voice 17 the usual thing
7 a pint of beer [ɛə] 18 boiled rice
8 blue eyes 19 grey hair [ɛə]
9 an early bird 20 a bad [æ] smell [ɛ]
10 two other [ʌ] birds 21 cheap fuel
11 soft [ʌ] ice 22 weight watchers [au] /ɹ/

76

1 go [QU] by boat [QU]
2 a little kitten
3 up [O:] and about [AU]
4 major repairs [SH] /r/
5 a Russian [O:] bear [SH] /r/
6 a thick voice
7 a pint of beer [O:] /r/
8 blue eyes
9 an early /r/ bird /r/
10 two other [SH] birds
11 soft [O] ice

12 a steep rise
13 a funny [O:] joke [QU]
14 Look here [IO] /r/!
15 Have you heard /r/?
16 with pleasure [O]
17 the usual thing
18 boiled rice
19 grey hair [SH] /r/
20 a bad [AE] smell [E]
21 cheap fuel
22 weight watchers [O] /r/
Student No. A14 spring term 1989 Rg

William went [ɔ] to bed [ɛ] very [ɛ] early /r/ that [æ] evening. He was sorry [ɔ] he couldn't have a bath, not [ɔ] even a shower [au] /r/. He hung [ʌ] his black [æ] jacket [æ] and his red [ɛ] shirt over [ou] the back [æ] of a chair [ɔə] /r/. He hadn't [æ] heard from Jane since he sent [ɛ] her the wire /r/. He didn't dare [ɛə] /r/ to call, but he had talked to her brother [ʌ] on [ɔ] the phone [ou]. He had said [ɛ] something [ʌ] about [au] a missing coat [ou]. Could she have found [au] out [au] so [u] soon? Would he be sued? Somebody [ʌ] shouted [au], and a dog [ɔ:] started barking /r/. It was quite near [ɛə] /r/. This was shocking [ʌ]. He could hear [ɔ] it clearly [ɔ] /r/. He looked at his watch [ɔ:], and saw that it was only [ou] eight o'clock [ɔ]. 'Poor /r/ boy,' thought Will. After all it didn't matter [æ] /r/.

1 go [ou] by boat [ou]
2 a little kitten
3 up [a] and about [au]
4 major repairs [ɛə]
5 a Russian [ʌ] bear [iɔ]
6 a thick voice
7 a pint of beer [iɔ]
8 blue eyes
9 an early bird
10 two other [ʌ] birds /r/
11 soft [ɔ] ice
12 a steep rise
13 a funny [ʌ] joke [ou]
14 Look here [iɔ] /r/
15 Have you heard?
16 with pleasure [ɛ] /r/
17 the usual thing
18 boiled rice
19 grey hair [ɛə]
20 a bad [æ] smell [ɛ]
21 cheap fuel
22 weight watchers [ɔ] /r/

78
William went [æ] to bed [æ] very [ɛ] early that [æ] evening. He was sorry [ɔ] he couldn't have a bath, not [ɔ] even a shower [oʊ]. He hung [æ] his black [æ] jacket [æ] and his red [æ] shirt over [oʊ] the back [æ] of a chair [ɛ]. He hadn't [æ] heard from Jane since he sent [ɛ] her the wire. He didn't dare [ɛ] to call, but he had talked to her brother [o] on [o] the phone [oʊ]. He had said [æ] something [æ] about [oʊ] a missing coat [oʊ]. Could she have found [oʊ] out [oʊ] so [oʊ] soon? Would he be sued? Somebody [eɪ] shouted [oʊ], and a dog [o] started barking. It was quite near [ɛ]. This was shocking [ɔ]. He could hear [ɛ] it clearly [ɛ]. He looked at his watch [oʊ], and saw that it was only [oʊ] eight o'clock [ŋ]. 'Poor boy,' thought Will. After all it didn't matter [æ].

a boat [oʊ], a little kitten, about [oʊ], bad [æ], bear [ɛ], bed [æ], beer [ɛ], bird, birds, choke [oʊ], Dick, eyes, hair [ɛ], hear [ɛ], heard, ice, joke [oʊ], pleasure [ɛ], races, thick, raises, this, tick.
REFERENCES


