Univerzita Hradec Králové

Pedagogická fakulta

BAKALÁŘSKÁ PRÁCE

2015 Jiří Heger

Univerzita Hradec Králové
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Katedra anglického jazyka a literatury

Stratifikace anglické společnosti a její jazykové charakteristiky

Stratification of English Society and its Language Characteristics

Bakalářská práce

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Studijní program: B7310 Filologie
Studijní obor: Cizí jazyky pro cestovní ruch – anglický jazyk
Cizí jazyky pro cestovní ruch – ruský jazyk
Vedoucí práce: PhDr. Jan Comorek, Ph.D.

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Zadání bakalářské práce

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Název závěrečné práce:	**Stratifikace anglické společnosti a její jazykové charakteristiky**
Název závěrečné práce AJ:	Stratification of the English society and its language characteristics

Cíl, metody, literatura, předpoklady:
Cílem práce je prozkoumat sociální vrstvy v současné anglické společnosti a zmapovat jejich jazyk a jeho vybrané specifické rysy jako typický společenský marker.

Garantující pracoviště:	Katedra anglického jazyka a literatury, Pedagogická fakulta
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Datum odevzdání závěrečné práce: 6. 1. 2015

Prohlášení

Prohlašuji, že jsem bakalářskou práci zpracoval samostatně a s pomocí uvedených zdrojů.

V Hradci Králové dne:

.....

Jiří Heger

Poděkování

Děkuji panu PhDr. Janu Comorkovi, Ph.D. za zapůjčení vybavení nezbytného k zaznamenání zvukového projevu rodilých mluvčích i za odbornou pomoc v průběhu zpracování této práce. Velký dík patří také paní Mgr. Jitce Kühnové, Ph.D. a panu Ing. Jiřímu Matyskovi, za pomoc se statistickým zpracováním naměřených dat, bez kterých by tuto práci nebylo možno realizovat. Za pomoc s finální opravou textu děkuji slečně Krupa Patel, M.D. i všem zúčastněným mluvčím, kteří laskavě souhlasili s nahráním jejich řečového projevu a následným zpracováním pro potřeby této práce.

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Anotace

Heger, Jiří. Stratifikace anglické společnosti a její jazykové charakteristiky. Hradec Králové: Pedagogická fakulta Univerzity Hradec Králové, 2015. 157 s. Bakalářská práce.

Bakalářská práce se zabývá prozkoumáním sociálních vrstev v současné anglické společnosti z hlediska jazykového. Je rozdělena do několika dílčích částí, kde se pro ucelený pohled na problematiku zabývá historií a vývojem jazyka na území Spojeného Království Velké Británie a Severního Irska, tak i faktickými materiály sloužícími k upřesnění současného stavu sociálních vrstev a jejich společenského markeru.

Klíčová slova: stratifikace, sociální třída, varianty angličtiny, RP, výslovnost, akcent, dialekt, formant, spectrogram, Praat, statistická analýza, standardní deviační elipsa

Abstract

Heger, Jiří. Stratification of English Society and its language characteristics. Hradec Kralove: Faculty of Education,University of Hradec Králové, 2015. 157 pp. Bachelor Thesis.

This thesis deals with the investigation of social classes in a present-day English society from the language point of view. It is divided into several sub-sections into a comprehensive view of the history and development of the English language on the grounds of the United Kingdom of Great Britain and Northern Ireland whilst at the same time will try to specify the factical situation of the English society and its social marker.

Key words: stratification, social class, English variations, RP, pronunciation, accent, dialect, formant, spectrogram, Praat, statistical analysis, standard deviational ellipse

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1.1 United Kingdom's social class system

1.1.1 Introduction

In this chapter I would like to present the aim of this thesis in greater detail and also give an outline on what the United Kingdom's and in particular what the English social class system looks like and how we can define it.

There is a general consensus on what the English social class system appears to be and a number of methods exist how we can differentiate and subsequently distribute speakers of the English language into the classes of this system. A number of methods of how linguists carry out their research are depicted in Wells' Accents of English. Pioneering phoneticians such as Labov, Trudgill or Fischer shared in their socio-economic research certain characteristic features. For example, Wells states that Labov in his work followed a mathematical formula which he based on occupation, education and income. Trudgill then went in this case even further. To the previously mentioned social dimensions he also added housing, locality and even father's occupation[1, pp. 16-17]. As a result of the gathered data they were able to place correspondents into one of the social class categories. Of course, the whole process of stratifying society is much more complex than that.

Another very important marker is without doubt the speaker's accent. Accent is closely related to pronunciation. Phoneticians frequently set up a list of words and phrases that contains sounds of the International Phonetic Alphabet(IPA for short) and tell the speakers to read it. According to the way each speaker pronounces these words linguists are then able to distinguish amongst varieties of English and yet again decide not only which social class the speaker belongs to but also to determine his geographical placing. This proves especially convenient in a branch of linguistics that deals with criminology – Forensic Linguistics.

To give you a better example of what phonetic research may look like I shall quote a section from Well's Accents of English: An Introduction, Volume 1.

> *In a pioneering study, Fischer (1958) found that among children in a New England village boys tended to [n] in '-ing', while girls tended to [ŋ]. Among English adults in Norwich the same pattern appeared within each social class: the percantage of non-RP [n] forms found by Trudgill (1974a: 94) was as (7)*[1, p. 19]*:*

(7)

Class	Middle middle	Lower Middle	Upper working	Middle working	Lower working
Men	4	27	81	91	100
Women	0	3	68	81	97

In this work I will use a different technique however. The aforementioned phoneticians relied mainly on their senses and on known facts based on descriptive linguistics when trying to assess the speaker's dialect and his or her social status. I on the other hand in the age of modern technologies will use the specially designed software – PRAAT that allows me to measure the frequencies of their vocal tract. The principle, however, remains the same. I set up a list of words and sentences that consisted of three parts: 1. Vowel sounds, 2. Consonant sounds and 3. Pronunciation in fast and slow speech. I am going to ask my correspondents to read the text for me, as it comes natural to them, whilst recording them. The list also contains the basic data set similar to that of Labov or Trudgill, that is the formula based on place of birth, date of birth, occupation and education. By measuring each speaker's specific vocal frequency of vowel sounds and comparing it with his or her socio-economic background I hope to be able to define the speaker's social status and more importantly, clarify who in today's England is a true bearer of the so called Received Pronunciation*.

* Received Pronunciation is a standard accent for the learning of British English pronunciation.

1.1.2 Sociolinguistics

> *A person's social position is reflected in the words and constructions he uses, as well as in the way he pronounces them*[1, p. 13].

> *The rise of urbanization is connected with an increase in social stratification reflected in linguistic variation*[2, p. 8309].

A field of linguistics that is concerned with language and social classes is called sociolinguistics. Idiolect on the other hand is primarily concerned with the speech of individuals. According to Labov's social stratification we can divide this system into 3 main categories: 'Upper class, Middle class, Lower or Working class' with their further extensions into 'Lower, Middle and Upper class' for each of the above mentioned except for the Upper class that consists of the wealthiest families in the United Kingdom many of which are titled aristocrats[3, URL]. Even though the class system is widely studied in academia no definition of the word *class* is universally agreed upon[4, URL].

In reference literature we can often come across an illustration in the form of a two-dimensional triangle called 'The pyramid of standardization'. Nonetheless it is recommended to view this triangle as a three-dimensional pyramid. At the apex of the pyramid stands RP which represents almost zero regional variation amongst speakers of upper class. The horizontal axis at the bottom of the triangle represents regional variation and the vertical axis social variation[1, p. 14]. These lines show us correlation between geographical and social variations that is speakers at the bottom will exhibit a great deal of accent differences having a lower level of education, wealth and influence while speakers reaching towards the tip of the pyramid will show the opposite[5, p. 127].

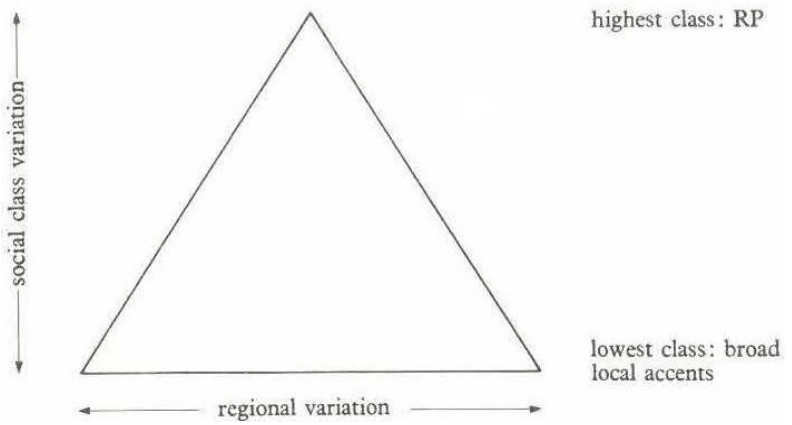

Figure 1.1 The pyramid of social standardization

1.1.3 English varieties in the United Kingdom

Across the British Isles we may encounter a number of dialects each possessing a distinctive accent. We already know the relationship between accent and pronunciation but it is also important to define the terms dialect and accent for further ease of orientation. Accent is only related to pronunciation which is determined by the regional or social background of the speaker[6, URL]. Dialects on the other hand differ not only by their distinctive accent but they also have characteristic grammar and vocabulary that is different to the literary accepted pattern of language of culture in which they exist[7, URL].

For illustrative purposes I am going to briefly go through the main varieties across the British isles as they are described in Svartik's & Leech's English – One Tongue, Many Voices[5, pp. 124-144].

- **Received Pronunciation**(RP) is by other words the accepted way of pronunciation in England. It is also known as the Oxbridge accent or BBC English. RP is used as a reference pronunciation in terms of transcription for dictionaries. This accent is typical for the south of England and perhaps some areas in Wales.
- **Cockney** this dialect is characteristic for the working class in the East End of London. It emerged by the early 17th century and it is also known as rhyming slang*. Typical features include aitch-dropping which means dropping initial [h] so that words like *hear* and *ear* sound the same. Nowadays mostly young people in London use it.
- **Estuary English** according to John Wells, Estuary English is a name given to a form of English which spreads in and around London and primarily in the southeast of England[8, URL]. It is influenced both by Cockney and RP English so that we can find similar phonological features of both mentioned in it.
- **The North** Svartik states that nearly half of England's population speaks with some kind of Northern accent. There are two major dialects - Scouse, distinctive for Liverpool and Geordie for the Newcastle area.

* Rhyming slang is a form of a word play. Certain rhymes acquire new meanings e.g. dustbin lids = kids.

Among many other features in the north are tendencies to use pure long vowels instead of diphthongs of RP.

- **The West Country** The dialect found in the counties Devon and Somerset is called The West Country. By no means the most striking feature of this dialect is its preservation of the postvocalic [r] sound as in *car* [kɑːr] vs. RP *car* [kɑː].
- **English in Wales** Both English and Welsh are spoken in Wales. Around one fifth of the population of Wales cca 2.8 million uses Welsh that belongs to Celtic languages. In the Welsh government both English and Welsh are equal. Even though Welsh speakers are readily understood by the majority of United Kingdom's population there are some features that are different from the literary accepted English language. The invariant interrogative forms e.g. *You are laughing, is it?* but for most cases it is still the most noticeable different pronunciation.
- **Scottish varieties** Similarly to Wales the predominant language used in Scotland is English. There is, however, another dialect that is widely spoken in the homes of the north-west and above all in the Western Isles known as Gaelic. This dialect is spoken by some 80 000 speakers out of five million in total. In the parts of the Scottish Lowlands the Scots dialect is spoken by the vast majority of inhabitants who are not Gaelic. Most Scots can therefore speak both languages the traditional dialect and English or only by one of them. Interestingly enough there are a few speakers in Scotland who use the standard British pronunciation – RP.
- **English in Ireland** There are two official languages spoken in Ireland, Irish and English. The firstly mentioned Irish is closely related to the Gaelic dialect and belongs to the same branch of Celtic languages. Sometimes also called Gaelic or Irish Gaelic. The earliest recorded use of English in Ireland dates back to the mid-thirteenth century. To give an example of one of the interesting traditional Irish English features the Irish form has no expressions for words *yes* and *no*. Instead a full positive or negative form of an answer is used i.e. *Are you feeling well? – I am.* or *Is it difficult? – It is not.*

1.2 Forming of English language

In this chapter I would like to give some insight into how English language was formed from the historical point of view. In my opinion if we want to examine and stratify English society we should take a look in the past and search for what cultures and influences helped to shape English language as we know it today just as well as the English society.

> *We cannot understand what a language is until we know its history. More than for most subjects, history is the key to language, because the very fabric of a language – its vocabulary, its grammar, its spelling and so on – is a living record of its past*[5, p. 13].

1.2.1 The invasion of Angles, Saxons and Jutes

Forming of the English nation and the start of the English language itself we can trace back to the arrival of the Germanic tribes in particular of the Jutes, the Saxons and the Angles. They sailed across the North Sea from places in Europe which are now known as Denmark and Germany. This all happened around the 5th century AD. At that time the original inhabitants were of Celtic origin. Most of them were pushed by the invaders to the North and West to places where we can now find Scotland, Wales and Ireland.

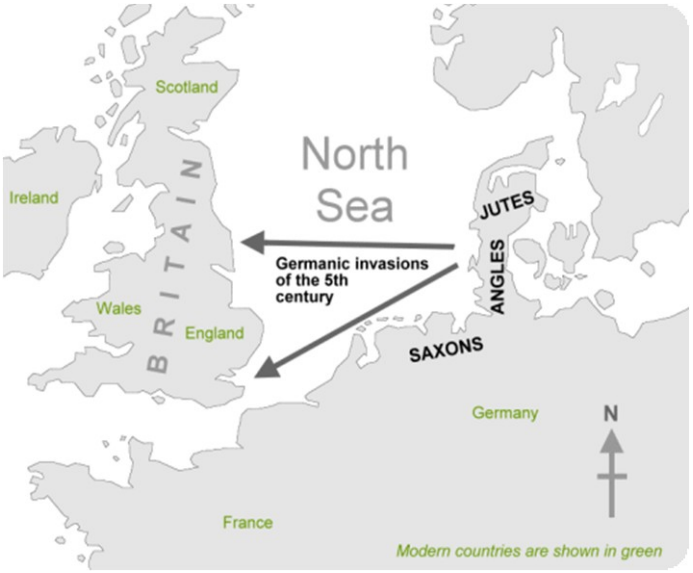

Figure 1.2 The Germanic invasion

The Angles came from "Englaland" and their language was called "Englisc" from which the words "England" and "English" are derived. Since these times we can differentiate English language into 3 main categories and 2 subcategories each of which has its own typical features or innovations that occured in that time period[9, URL; 10, p. 11].

Those categories are Old English dating from 450 – 1100 AD, Middle English dating from 1100 – 1500 AD and Modern English which we can divide into two subcategories Early Modern English (1500 – 1800) and Late Modern English (1800 – Present day)[9].

1.2.2 Tudor period

In the beginning of the Tudor times English language was still spoken in a number of different ways. In that time there were still reminders of the Saxons, Angles and Jutes. The "correct" form of English that educated people and upper social classes spoke later had not developed yet. Until the Tudor times lords and peasants spoke alike. The main change came during the Tudor period where English language became more specified in a number of ways. Since the times of the great poet Geoffrey Chaucer in the mid-fourteenth century where English language was a mixture of both south Midland and south-eastern English, London English had become accepted as the standard form of English. With the introduction of the printing press to England, it was foremost printing that introduced this new form of "correct" English to the literate public. We should also note that by the 17th century half of the population could read and write[10, p. 85].

Figure 1.3 The Chandos Portrait of William Shakespeare

Not many people in the English history had such an impact on language and cultural life like the world's famous poet, playwright and actor William Shakespeare. He was born in Stratford-upon-Avon where he was attending local grammar school. During the Tudor period English schools were gradually introducing the new form of "correct" English into their curriculum so it is without a doubt that Shakespeare himself was influenced by it. Later on his plays were popular both by the educated and uneducated people[10, p. 85].

1.2.3 The Industrial Revolution

The industrial revolution first started in the 19th century in Great Britain. The first signs of this revolution came about with the invention of a steam engine and new demands such as a greater call for goods, more money, labour, new power and better transport which led to revolutionise Britain's industry[11, URL].

More importantly, this is a milestone in English history that gave birth to the English class system as we know it today. In particular three big social classes had arisen – the upper class, the middle class and the working class. The working class however were not in a good position due to the new machinery that began to replace their jobs. This resulted in a greater number of unemployed people who in order to provide their families with food were forced to have recourse to crime or watch the members of their families go hungry. Stealing food was badly punished in these days as the upper and middle class were becoming more and more afraid of the lower working class[10, pp. 121-123].

Figure 1.4 Late 19th century London – the working class.

2 COLLECTION OF DATA

In order to carry out adequate research in any field one must prepare a good plan of setting up and collecting his or her data beforehand.

2.1 Data collection method

In this part I had to decide what kind of data I would have to collect and also how I would analyse them after the data collection is completed. For this reason I had to consult my next steps with the head of my thesis PhDr. Jan Comorek, Ph.D. and also be inspired by works that have been carried out by phoneticians in the past. After the dataset was finished it was necessary for me to take off to England and physically record correspondents in public places using a recording device I was kindly provided with by the department of English language and literature.

2.1.1 Setting up dataset

The first step in the process of data collection was to obtain a valid set of results which I could then run for further analysis. For this purpose I looked at formulas of some of the pioneering phoneticians namely Labov, Trudgill and Fischer that were roughly laid out in Wells' Accents of English[1, pp 13-18]. I knew from the start it will be difficult to gather all the pieces of social background information I would need. After all I was just a stranger asking questions which required the personal details of the subjects whilst recording them at the same time. As one of the correspondents, Luke, correctly noted: "It's quite hard to get talking to English people as they are fairly isolated and living in their own world". This was true in some cases but fortunately for me I came across quite a few people who were open to help me with my project.

Secondly I needed a list of words and phrases that I prepared for the people to read. Preferably a list containing all the sounds of the English language that are displayed in the international phonetic alphabet. For this reason I followed a scheme of Marc Hancock's English Pronunciation in Use[12] for all the expressions stated in the textbook were supplemented with additional phonological breakdown.

2.1.2 The list of vowel and consonant sounds

1. **The vowel sounds**

Buy, bye, plane, plan, meet, met, carrot, cabbage, wine, win, car, care, note, not, Sun, full, June, shirt, short, toy, town.

2. **The consonant sounds**

Back, pack, rice, rise, Down town, few, view, gate, Kate, sheep, jeep, cheap, flies, fries, some, sun, sung, Arthur's mother.

3. **Pronunciation in fast and slow speech**

It occured to me that Terry hadn't been in touch for ages, so I thought I ought to phone him. Well, just then there was a ring on the front door and there he was.

You couldn't give me a lift could you?

I asked her for the best tickets they'd got left.

… I already had cutlery and cups and saucers, and my brother gave me some new plates and bowls. I had to get quite a lot of furniture, too. I didn't need a new bed, but I bought a nice old wooden table and some chairs for the sitting room …

Name:

Birthplace:

Date of birth:

Occupation:

Level of Education:

Primary education Secondary education Higher education

2.2 Overview of the correspondents

Recorded by: Jiří Heger

Place: United Kingdom of Great Britain and Northern Ireland, Czech Republic

Date: 5. 11. 2011 – 16. 11. 2011

London 5. – 7. 11. 2011

Name	Birthplace	Birthdate	Occupation	Level of Education
1. William	Buckinghamshire	30 +	-	-
2. Annette	New Zealand	30 +	-	-
3. Yan	Glasgow	30 +	Gallery Attendant	-
4. Ben Jordan	USA, the West	30 +	Manager of street musicians	-
5. Frank Bryant	Penzance, Cornwall	12. 12. 1981	Student	University Degree
6. Claudia	London	30 -	-	-
7. Carrie Lesley	Hertfordshire	23. 8. 1989	AVIVA	Higher education

Great Yarmouth 7. – 10. 11. 2011

Name	Birthplace	Birthdate	Occupation	Level of Education
8. Vincent Brown	Lowestoft	30 +	Fitness Trainer	-
9. Ellie	Great Yarmouth	15. 12. 1978	Dancer	Higher education
10. Louisa	Botswana	20. 3. 1986	Dental Nurse	University Degree

Table 2.1 Overview of the correspondents - London and Great Yarmouth

Cambridge 10. 11. 2011

Name	Birthplace	Birthdate	Occupation	Level of Education
11. Symon	Bridgewater, Somerset	16. 2. 1991	Cambridge Student	University Degree
12. Maya	Devon	30 -	Cambridge Student	University Degree
13. Maddie	London	30 -	Cambridge Student	University Degree
14. Ellie	Canterbury	30 -	Cambridge Student	University Degree
15. Florence	Derby	30 -	Cambridge Student	University Degree
16. William Beasley	Leicester	30 -	Cambridge Student	University Degree
17. Joshua Gardener	Leicester	30 -	Cambridge Student	University Degree
18. Michael	London	30. 10. 1986	Cambridge Student	University Degree
19. Jade	Nottingham	1. 9. 1991	Cambridge Student	University Degree

All the students mentioned above are studying to a degree level at the University of Cambridge, England.

Norwich 18. 11. 2011

Name	Birthplace	Birthdate	Occupation	Level of Education
20. Steve	Yorkshire	30 +	Book seller	-
21. Robert	London(raised in Norwich)	30 +	Book seller at the market	-
BBC's Eastern headquarters in Norfolk				
22. Ursula	South Africa	30 -	BBC assistant	University Degree
23. Chat with Ursula				
24. Luke	England	30 +	BBC	Higher Education
25. Chat with Luke	England	30 +	BBC	Higher Education

Table 2.2 Overview of the correspondents – Cambridge, Norwich and BBC's Eastern headquarters in Norfolk

Great Yarmouth 11. – 13. 11. 2011

Name	Birthplace	Birthdate	Occupation	Level of Education
26. Nicole	Great Yarmouth	2. 8. 1993	Call centre worker	Higher Education
27. Lauren	Great Yarmouth			
28. Tom Blackwell	London, Brixton	16. 7. 1990	-	Secondary Educ.
29. Chat with Tom Blackwell				
30. Janushka	Sri Lanka	8. 11. 1982	Medical Doctor	University Degree
31. Damian	Sri Lanka	24. 7. 1981	Accountant	University Degree

Norwich 14. 11. 2011

Name	Birthplace	Birthdate	Occupation	Level of Education
32. Brian	Waymouth	7. 1952	Fundraiser	Higher Education
33. Steve Ferry	Norwich	16. 11. 1970	Company Director	University Degree
34. Neil	Norwich	2. 4. 1993	Work placement at MOCO	Higher Education
35. Catherine Starling	Norwich	3. 3. 1984	P.R. and Program Coordinator	University Degree

London Stansted 14. 11. 2011

36. Robin	Bishop's Stortford	-	Shop Assistant	-
37. Ollie	Hertfordshire	1992	Shop Assistant	-

Hradec Králové, Czech Republic 16. 11. 2011

38. William T. Drakeford	South Carolina, USA	-	University Lecturer	University Degree
39. Krupa Patel	Newham, London	30 -	Medical Doctor	University Degree

Table 2.3 Overview of the correspondents – Great Yarmouth, Norwich, London Stansted and Hradec Králové

3 ANALYSIS AND RESULTS

In the practical part of this thesis I shall introduce software that was used for analysis and in the latter the analysis with the results itself.

3.1 Choosing phonemes

It is generally recommended that for studies in the phonetic or phonological field are perhaps the most suitable phonemes vowels. The reason for this is that when we pronounce vowels we make our vocal folds vibrate which causes a resonance that travels through vocal tract with no obstructions to the sound wave while we exhale thus they are quite easily indentifiable on a spectrogram for further examination. Also, there is a more socially significant variation in the pronunciation of English vowels than in consonants[2, p. 8310].

English language system recognizes 12 vowels: [iː] [ɪ] [ʊ] [uː] [e] [ə] [ɜː] [ɔː] [æ] [ʌ] [ɑː] and [ɒ]. For the purposes of my work I chose to study only the short vowels and in particular those vowels that are displayed in table 3.1:

[ʌ]	Sun	[s**ʌ**n]
[æ]	Plan	[pl**æ**n]
[e]	Met	[m**e**t]
[ɪ]	Cabbage	[ˈkæb**ɪ**dʒ]
[ɒ]	Not	[n**ɒ**t]
[ʊ]	Full	[f**ʊ**l]
[ə]	Carrot	[ˈkær**ə**t]

Table 3.1 List of short vowel sounds

3.2 Formants

We can define formants as resonance vibrations of the vocal folds, more specifically – their peaks. In a spectrogram they are depicted by dark shades of grey or black and under normal circumstances they are forming so called formant structure as shown in Figure 3.1.

To map the colour of human voice we need to measure all 6 formants of the spectrum but to specify the position of a vowel in a phonemic vowel diagram as shown in Figure 7. we only need two formants. Formant 1(F1) that is associated with the pharyngeal cavity and Formant 2(F2) which reflects values for the front of the oral cavity[14,URL].

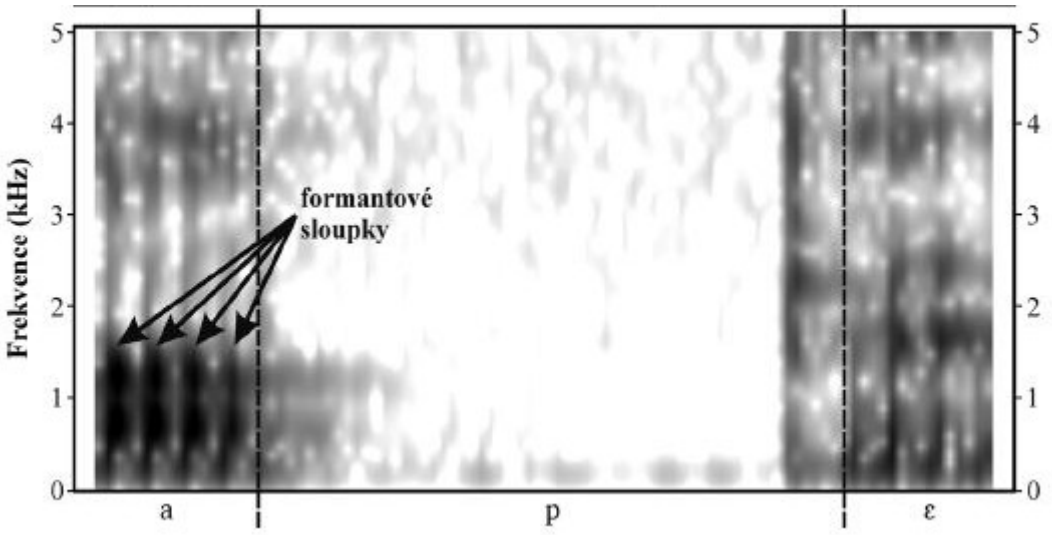

Figure 3.1 Formant structure

3.3 Spectrogram and oscillogram

In order to view and study human voice or any sound given we use an oscillogram for viewing the sound wave and spectrograms for viewing the amplitude.

Amplitude then refers to the loudness of components. It is displayed in a spectrogram by shading. The components with the highest amplitude values are shown in dark shades of grey or black. Components with lower amplitude values are then shown in lighter shades of grey with white signifing very low

amplitude or silence. In this way a spectrogram is 3 dimensional. It shows time on a horizontal axis, frequency on the vertical axis and amplitude by shading.

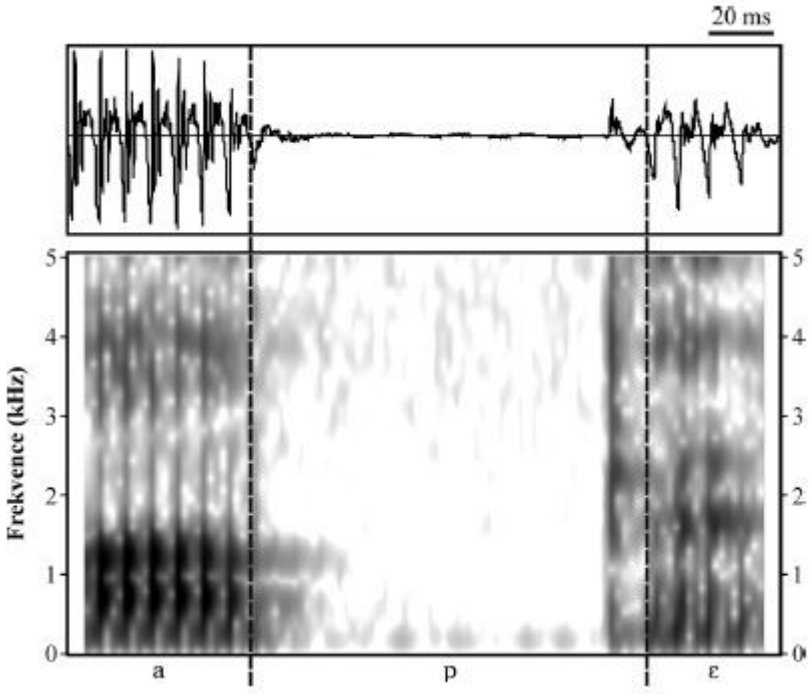

Figure 3.2 Spectrogram and oscilogram

3.4 Applied software

3.4.1 Praat settings

In order to display the oscilogram and spectrogram I chose to work with a computer program called Praat in version 5. 3. 76. This software is regularly updated and can be downloaded for free via internet (www.praat.org)[15,URL]. As a source of reference I used the book Fonetická segmentace by Pavel Machač and Radek Svartik[13] and especially instructional videos on the internet that demonstrated how to navigate through Praat were very useful to me. They will be listed in the reference section.

The program Praat enables me to view a spectrogram of the human voice and to measure peaks of the human vocal tract also known as Formants. However this program is capable of doing much more than that. It can display i.e. pitch, intensity etc. and I have yet to discover its other functions.

To get the best results it was crucial to first adjust the program's settings. Since the male and female voices differ on so many levels I had to set different values any time I switched between the two genders. Doc. Skarnitzl, the head of the Department of Phonetics at the Philosophical Faculty of the Charles University in Prague, on the department's internet page* clearly states that PRAAT itself is an imperfect program that makes mistakes but since manual reading the data would take such a great deal of time we can minimize PRAAT's inaccuracy by adjusting some settings[16, URL].

In the following lines I will introduce adjustments that I made in the program's settings. In 'Spectrum => Spectrogram settings' I changed values for Dynamic range from 35.0 dB(default) to 30.0 dB for the soft noises are no longer displayed and formants are displayed more distinctively. In Formant => Formant settings' I set the value in 'Maximum formant' for females 5500 Hz and for males to 5000 Hz. To display formants I could either choose between clicking on 'Query => Log 2' which would display values for Time 1, Time 2 and the first 3 formants or clicking on 'Formants => Formant listing' which would open up a window with Time_s and the first 4 formants. Those values I would then copy and simply paste into Microsoft Excel for further analysis.

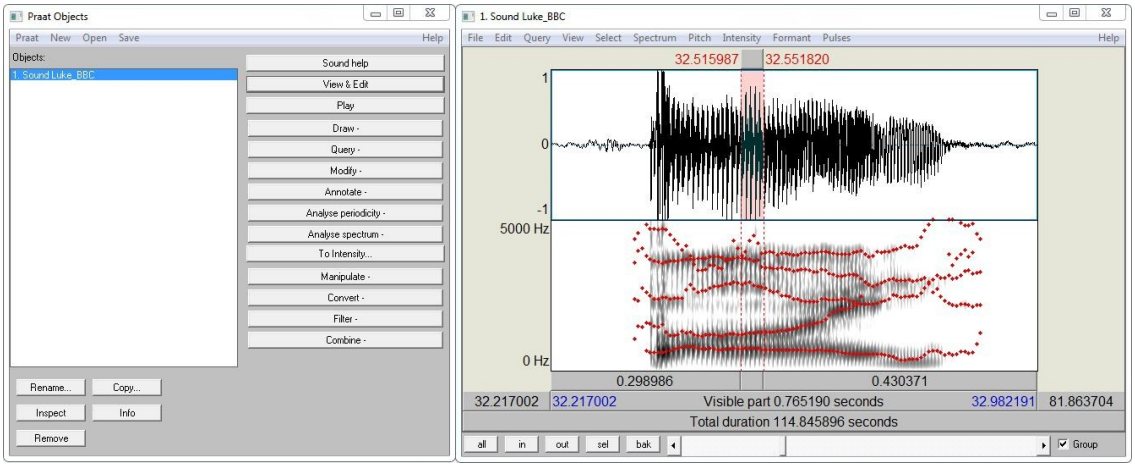

Figure 3.3 Praat v. 5. 3. 76.

* http://fu.ff.cuni.cz/

3.4.2. Plotting formants in Microsoft Excel

After acquiring formants in Praat was finished it was necessary to place them in a table in some type of a spreadsheet application. For this reason it was decided to use a 2007 version of Microsoft Excel for Windows 7.

The type of values that had to be added to the table were on the horizontal axis the times T1(the beginning of measurement), T2(the end of measurement) followed by values for formant 1(F1) and formant 2(F2). On the vertical axis the name of a subject followed by measured vowel symbols. As soon as the completion of the data was finished I could then proceed to the next step which was plotting of measured formant values in a scatter plot. If the previous steps were completed successfully then after putting values in reverse order final diagrams should roughly resemble the phonemic vowel diagram. In some cases it wasn't quite so but it is estimated that the cause of this were the background noises during the actual recordings.

Luke BBC	T1	T2	F1	F2
ʌ	46.8667	46.8667	643	1199
æ	35.7036	35.7036	693	1433
e	37.634	37.634	612	1928
ɪ	39.7645	39.7645	393	1924
ɒ	45.7841	45.7841	581	1029
ʊ	48.0723	48.0723	390	891
ə	38.7915	38.7915	548	1458

Table 3.2 Formant values for Luke BBC

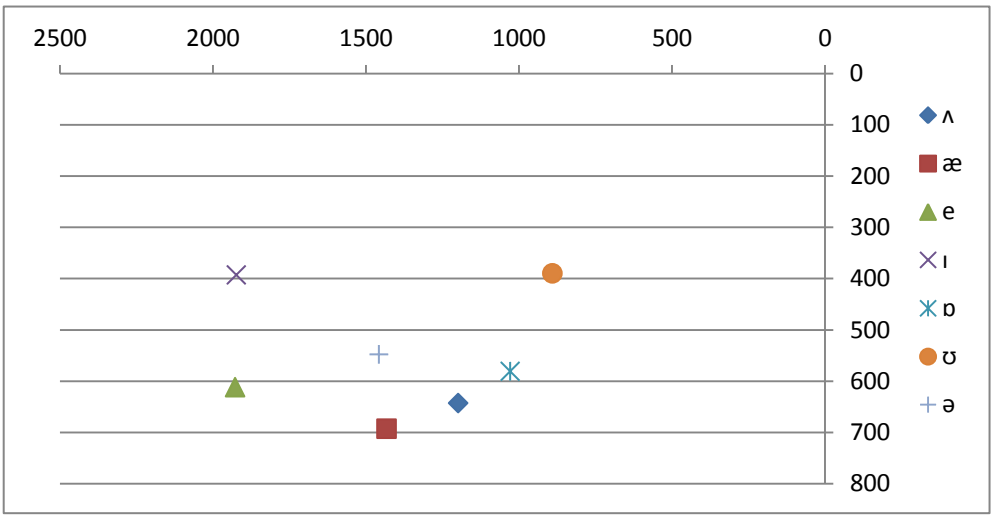

Table 3.3 Phonemic vowel diagram for Luke BBC

3.4.3 RStudio in use for statistics

For the actual statistical analysis a freeware computer software was used - RStudio developed by RStudio, Inc. This program is available to download at www.rstudio.com. It is an extended version of a popular R program widely used for statistical measurements[17,URL]. The reason for using this program is its actual extension in a form of a package specially designed by Santiago Barreda, Assistant Professor at the Department of Linguistics, UC Davis. for phonetic research[18,URL]. The package is called phonTools and among its many functions can be used to facilitate the organization, display, and analysis of the sorts of data frequently encountered in phonetics research and experimentation*;[18,URL].

3.5 The statistical analysis

In the process of the statistical evaluation 3 different approaches for the analysis were discussed. At first it was planned that after gathering the data in the form of voice recordings we would choose, based on our approximations, an etalon that is a speaker who according to us represents RP social class. This was done by choosing "Luke" a presenter from the BBC as the base for comparing with other speakers. The next step would be to find a reliable statistical method that would show us how much other correspondents differ from Luke in terms of measured formant values and also to set a tolerance curve. This tolerance would draw a line between speakers who fit in it and therefore speak with an RP accent and those who do not meet the requirements hence are not bearers of the accepted pronunciation.

The biggest problem right from the beginning with this method was the lack of the necessary data. Altogether there are 39 speakers who only read the dataset once. If we wanted to use this method of comparison for a valid analysis we would need at least 50 speakers from all the counties across England and have our etalon Luke to read each of the words at least a hundred times. This would be the minimum, but the general rule here is the more data the better. Of course in terms of actual realization, such a collection would be of extreme difficulty to get someone to read so many times and for the given time travel

* Software available at http://www.santiagobarreda.com/rscripts.html [18, URL]

all the counties and meet so many people. For this reason it was decided to choose a different methodology. Yet it still has got to be noted that even the different statistical method bears its flaws and in its end result is inconvenient for the lack of data.

By using RStudio and its extensional package phonTools a standard deviational ellipse was designed. By other words it is a tolerance curve that runs into infinity from which we used 95% of its value with a parameter stdev=1.96 as a means to set our tolerance deviation. By this logic everyone who fits in this curve uses and speaks with the Received Pronunciation and the rest who do not meet this tolerance parameter uses and speaks a different sort of accent and probably dialect just as well. For illustration purposes symbols with our former etalon Luke are highlighted in a different coloration.

3.6 The results of the analysis

In the following I shall introduce the overall results that were conducted in RStudio using the earlier mentioned statistical analysis – standard deviational ellipse. Each of the vowel sounds will have its own evaluation in a form of a given devational ellipses and the final conclusion will be further discussed in chapter 4. Discussion on findings.

For tables 3.4 to 4 the values for both axis F1 and axis F2 are presented in units of frequency that is kilohertz(kHz). The symbols that are not part of the inner ellipses are labelled with names and place of origin of those participants who did not meet the tolerance requirements. In contrast to that all the unlabeled symbols forming part of the inner ellipses did meet the tolerance requirements hence signifying participants with RP accent or similar. For illustrational purposes our etalon – Luke news presenter from the BBC, according to our opinion is a prime example of the British English correct pronunciation, will be set apart from the others by dark coloration.

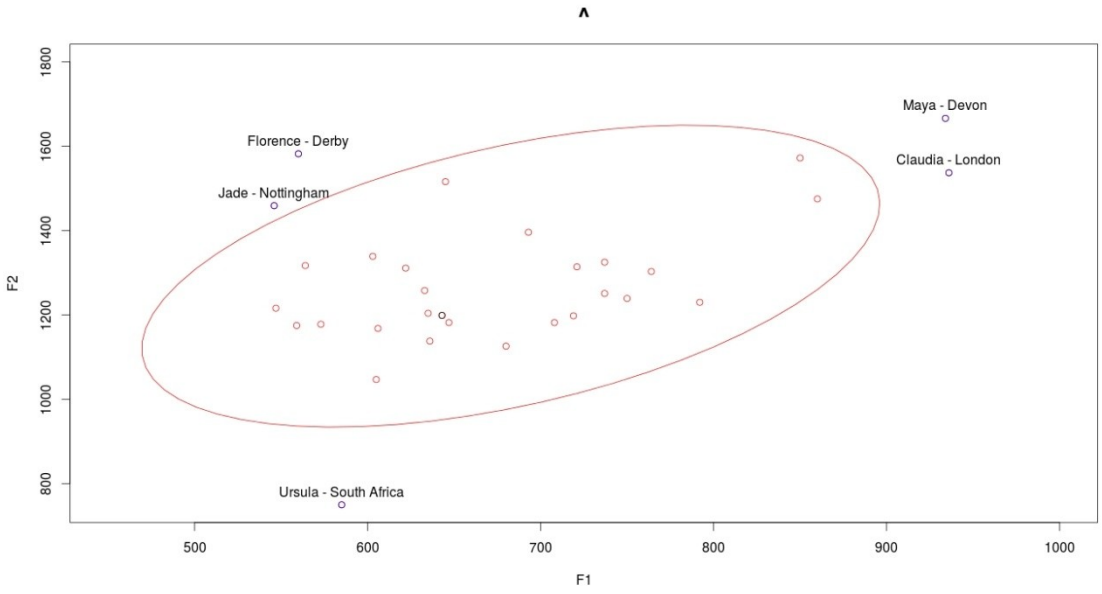

Table 3.4 Standard deviational ellipse for the vowel [ʌ]

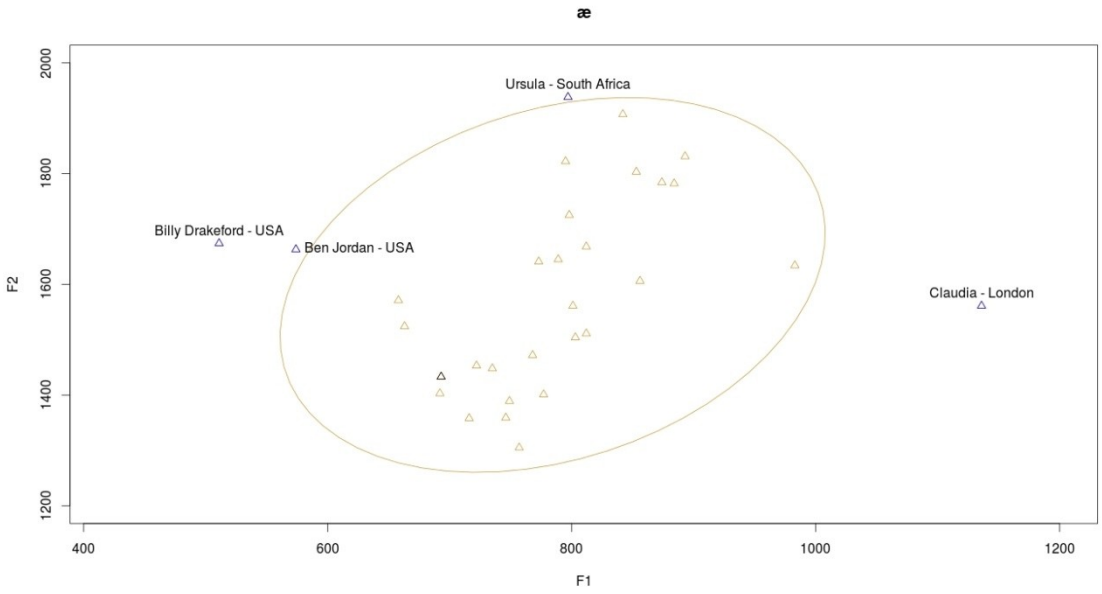

Table 3.5 Standard deviatonal ellipse for the vowel [æ]

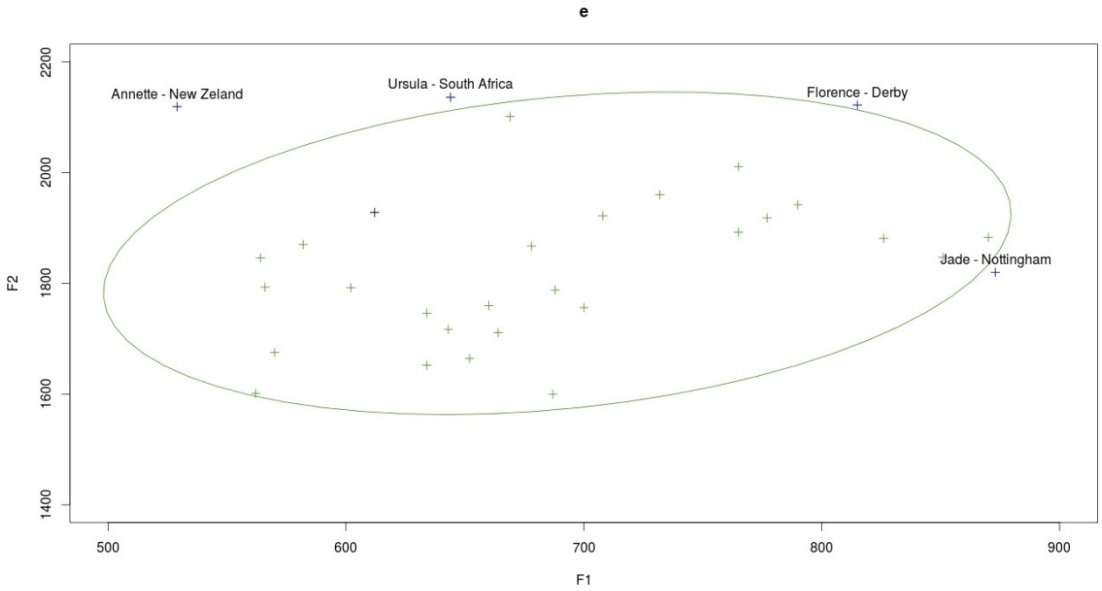

Table 3.6 Standard deviational ellipse for the vowel [e]

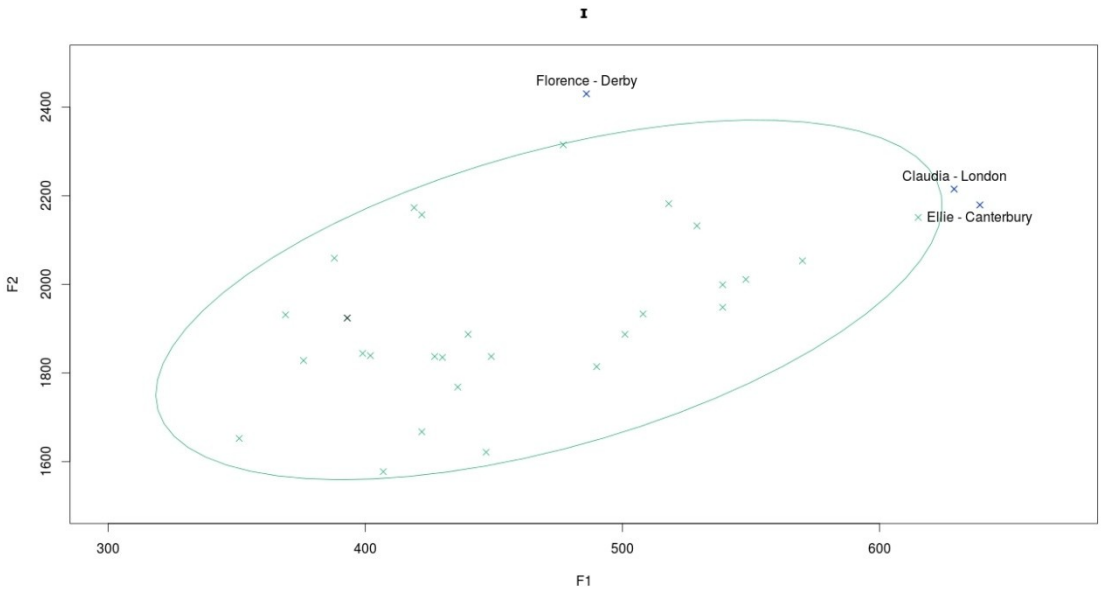

Table 3.7 Standard deviational ellipse for the vowel [ɪ]

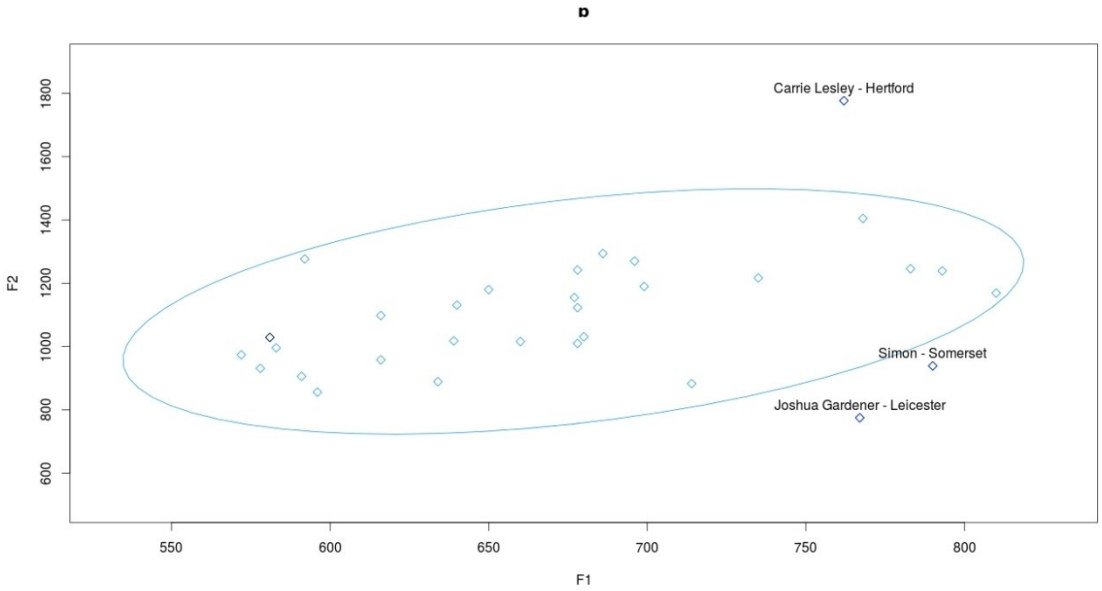

Table 3.8 Standard deviational ellipse for the vowel [ɒ]

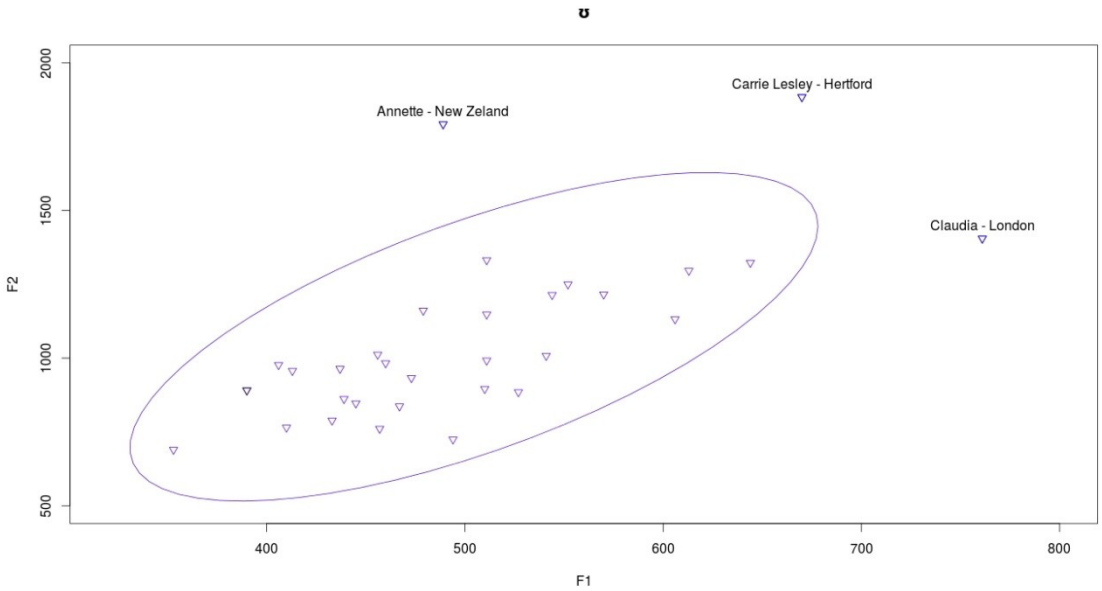

Table 3.9 Standard deviational ellipse for the vowel [ʊ]

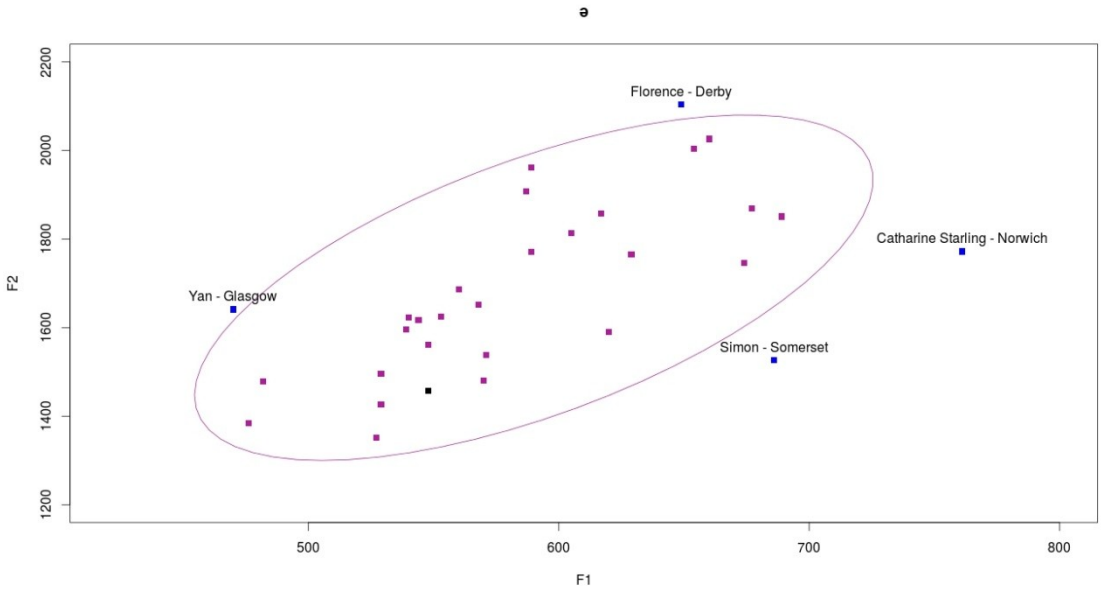

Table 4 Standard deviational ellipse for the vowel [ə]

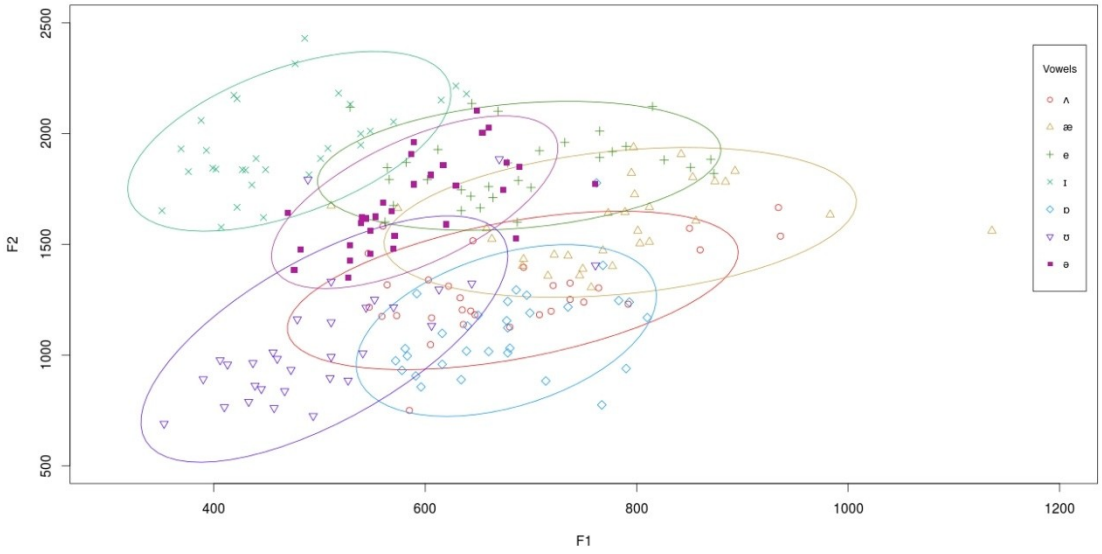

Table 4.1 Final cluster for all of the vowel sounds

4 DISCUSSION ON FINDINGS

In the opening chapter an outline of past phonetic reasearch was given along with the aim of my own phonetic exploration. In this chapter I shall return to that point and discuss the final outcome.

From the tables 3.4 – 4 it is appearent who met the given criteria to be recognized as a speaker of received pronunciation and who did not meet the criteria and so is very likely a speaker with a different accent and probably a different dialect also. In our criteria it was not intended to follow the traditional consensus in search for typical phonological features of recognized dialects. Even though the socio-economic dimensions were acquired they were of little significant importance to the final evaluation. These were rather a means as to clarify whether there is a direct link between the measured variables and the socio-economic dimensions or whether there is not. The most important part here were the measured values for formants F1 and F2 which further specified the position of chosen vowels in a phonemic vowel diagram. Due to the lack of gathered data we were then forced to let go of the original idea of comparing participants to our chosen etalon and change the concept into a new one by creating a tolerance curve in a form of a standard deviational ellipse.

The overall results are in alphabetical order as follows:

- For the vowel sound [ʌ] these correspondents did not meet the criteria: Claudia[London], Florence[Derby], Jade[Nottingham], Maya[Devon], Ursula[South Africa]
- For the vowel sound [æ] these correspondents did not meet the criteria: Claudia[London], William Drakeford[USA], Ben Jordan[USA], Ursula[South Africa]
- For the vowel sound [e] these correspondents did not meet the criteria: Annette[New Zeland], Florence[Derby], Jade[Nottingham], Ursula[South Africa]
- For the vowel sound [ɪ] these correspondents did not meet the criteria: Claudia[London], Ellie[Canterbury], Florence[Derby]
- For the vowel sound [ɒ] these correspondents did not meet the criteria: Joshua Gardener[Leicester], Carrie Lesley[Hertford], Simon[Somerset]

- For the vowel sound [ʊ] these correspondents did not meet the criteria: Annette[New Zealand], Claudia[London], Carrie Lesley[Hertford]
- For the vowel sound [ə] these correspondents did not meet the criteria: Florence[Derby], Simon[Somerset], Catharine Starling[Norwich], Yan[Glasgow]

From the above mentioned we can clearly see that according to our readings the next fourteen English native speakers: Annette from New Zealand, Claudia from London, William Drakeford from the USA, Ellie from Canterbury, Florence from Derby, Joshua Gardener from Leicester, Jade from Nottingham, Ben Jordan from the USA, Carrie Lesley from Hertford, Maya from Devon, Simon from Somerset, Catharine Starling from Norwich and Yan from Glasgow are not speaking in Received Pronunciation.

In some regards it is not surprising that i.e. the speakers from the United States of America were not using RP when reading the text. The same applies to Yan who comes from Scotland or Annette from the New Zealand. Even when we look at some speakers coming directly from England lack of RP usage should not be surprising for counties Norfolk(home to Catharine Starling) or Hertfordshire(home to Carrie Lesley). However what might be more surprising is the fact that in the list also occurred students of the famous Cambridge University, more specificaly the students of arts, history, law or social sciences. Oxford and Cambridge university students come most frequently from upper class and upper middle class families and it is well known that the two British leading universities are given a badge ‚of the top notch' in terms of prestige and the use of RP as the representative accent. There is a number of possible explanations to that question. In my opinion the geographical location may have a bigger impact on the way you talk than perhaps the social class your parents belong to thus the different pronunciation. Also it could be the imperfection of a used recording device, background noises that influenced the recording, the imperfection of a used program, an error in the program during analysis, an ongoing illness a sore throat e.g. and last but not least of course the human factor.

On the same note should you listen carefully to Florence, a Cambridge university student from Derby based on a mutual agreement of independent observers she could also be a good representative candidate for the RP. The very same applies for Claudia from London. Her geographical location is almost a predisposition for the use of RP and just like in the previous case her English accent very much resembles the standard accent. Perhaps it is then again for the above mentioned reasons why she did not comply with our requirements. Although in her case it was more than obvious that the background noises caused by the train might have greatly influenced the recording.

On the contrary another fact that is very surprising are the speakers that should be on the list but are not. Let us name just a few examples Frank Penzance from Cornwall, Steve from Yorkshire judging from his geographical location although his pronunciation seemed to show the opposite or Thomas Blackwell who according to me is a prime example of a cockney representative. Seeing he was also born in Brixton London which is within the sound of the bells of St Mary-le-Bow in the City – a traditional test for cockneydom the chances for my hypothesis here even increase. There are also other speakers we could speculate about whether they do or do not belong onto our list of RP representatives but according to this study and its goal, the results are firmly set and shown.

The overall outcome of this study based on the evaluated data can be presented in such a way that Received Pronunciation as a base model of the standard English accent is not conditioned by one's social background, even though it has its indisputable effects, but rather by geographical location where one was born and became of age. This fact can be further supported by the great number of speakers whose parents are not native English speakers but whose children that is the second and third generation use Received Pronunciation on a daily basis as a natural way of communication.

5 CONCLUSION

Based on the used literature and previous field works of other phoneticians it was estimated that the way we speak and in particular the way we pronounce words and link words together to form meaningful sentences, is to a certain extent conditioned by our social background. For that reason it was an absolute necessity to ask our participants for their personal details thus fill in the social dimensions for every one of them. In previous times where applied technology was not as sophisticated as it is in the present day researchers had to rely heavily on their senses, expert proficiency and the use of already recognized reference literature.

For that reason I take this study as a form of an update to the previously mentioned studies, using technologies of a modern age in contrast with our own instincts and critical assessments. It should be noted that the conditions for the actual recordings play a huge role and therefore should be the same for everybody as it was pointed out in the case of Claudia from London. It is also necessary to mention that if we are to conduct a statistically valid analysis we would need a minimum of 50 speakers for each of the English counties and in the case of our model representative for the given dialect or accent at least a hundred voice recordings for every single sound that we study.

My conclusion from this work is as follows. Based on the presented results in chapter 4. Discussion on findings, English native speakers that use Received Pronunciation as their natural accent do not necessarily come from upper class and upper middle class of England's socio-economic class system.

However due to the fact that a lot of outer interferences can still be the cause of errors in our voice analysis which will without a doubt lead to inaccurate results and misconclusions I am positively inclined to still be relying on our own critical assesment and instincts. For this very reason the final outcome in my study might not be of 100% accuracy and perhaps a research project on a more larger scale should be carried out.

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ADDENDUM

A Praat – vowel spectrograms

A.1 Annette [New Zealand]

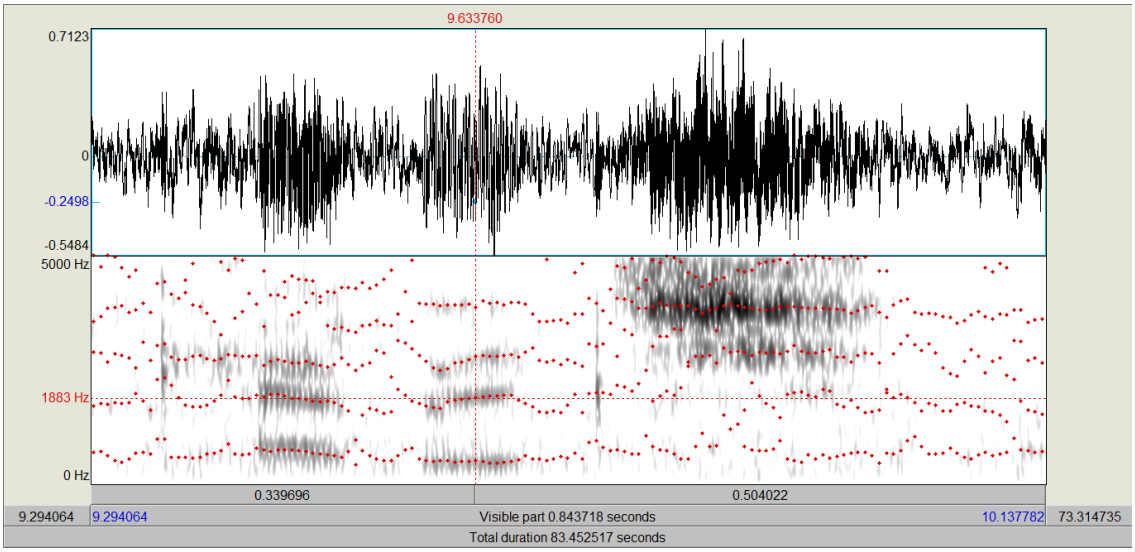


Figure A.1 Cabbage [ɪ]

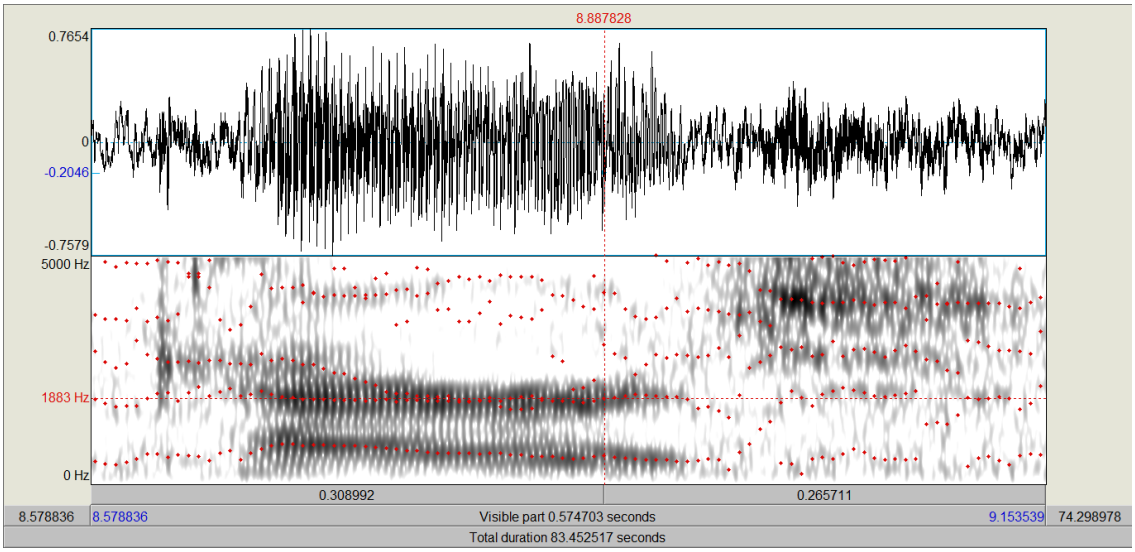


Figure A.2 Carrot [ə]

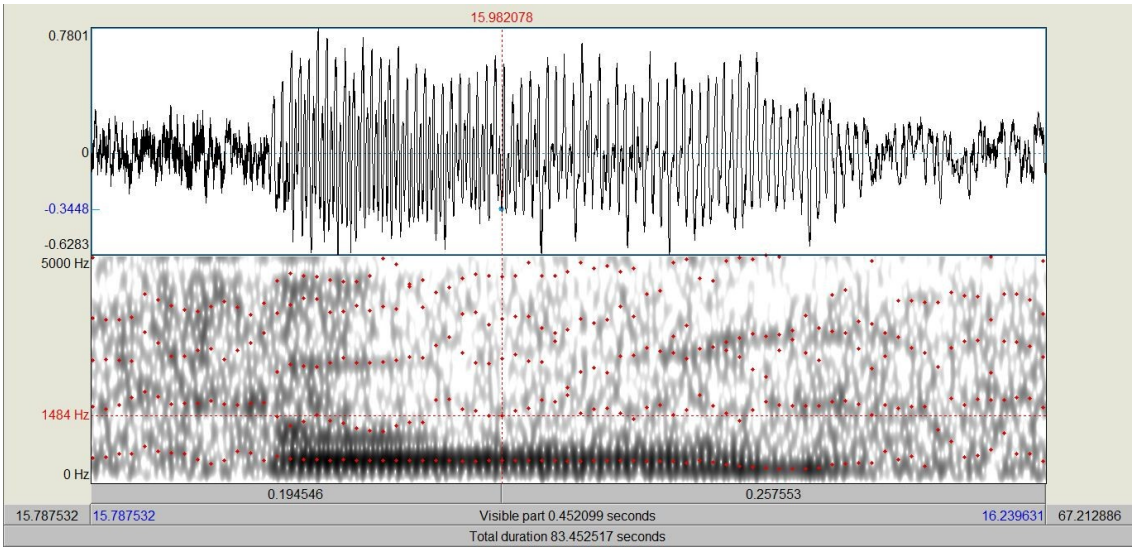


Figure A.3 Full [ʊ]

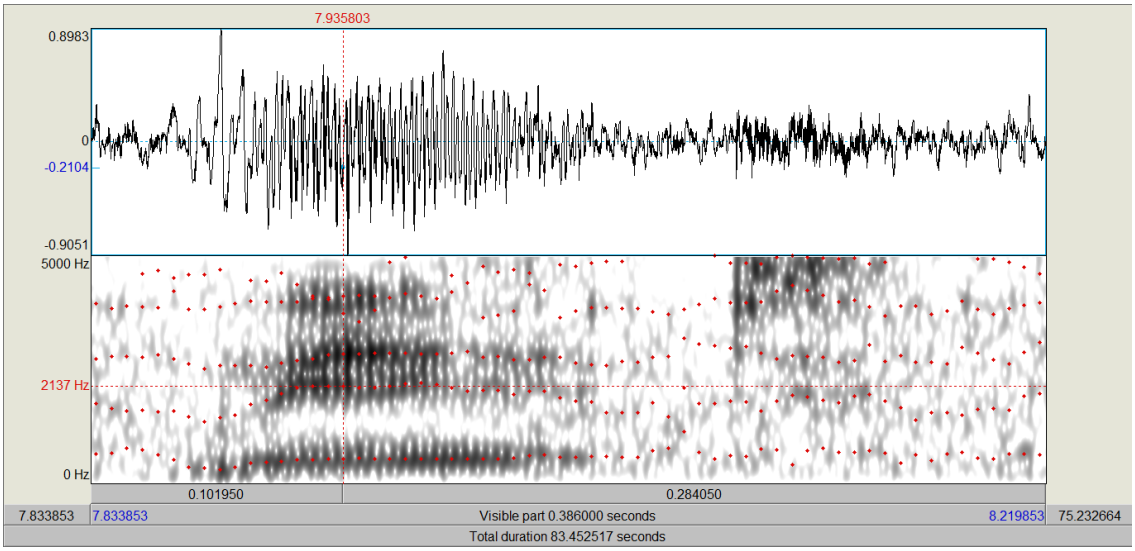


Figure A.4 Met [e]

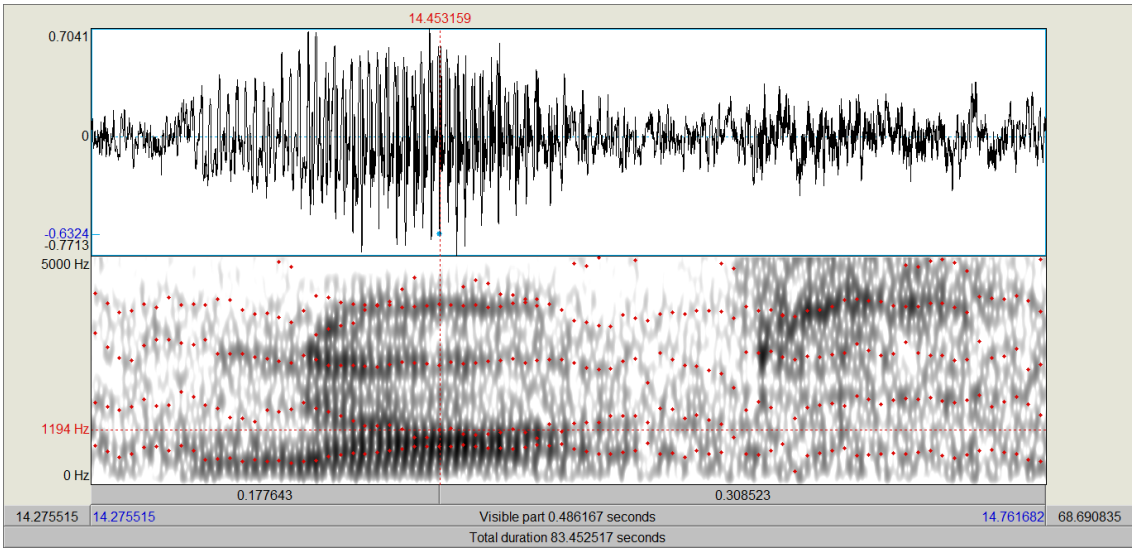


Figure A.5 Not [ɒ]

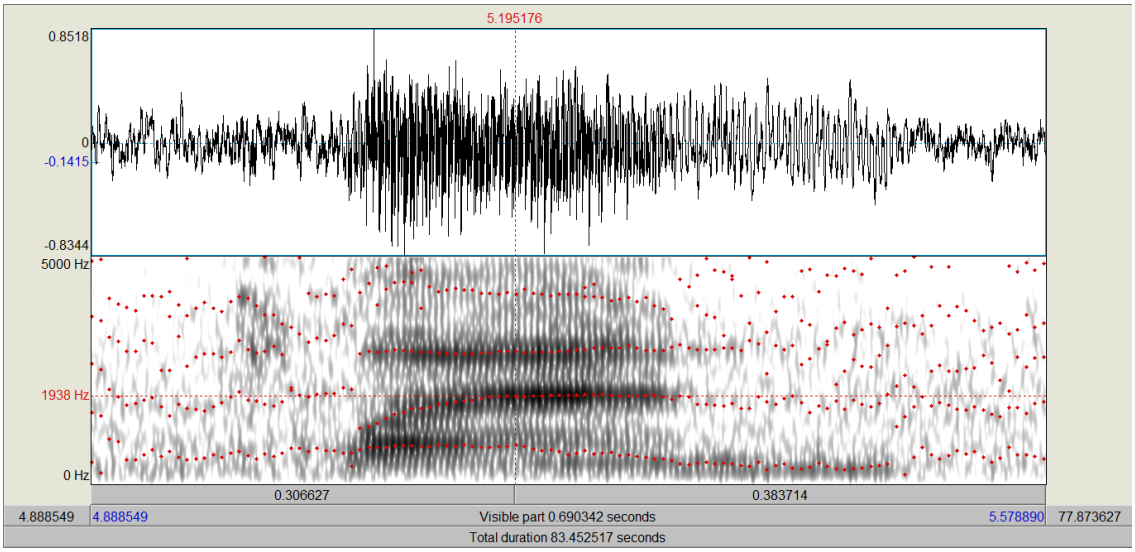


Figure A.6 Plan [æ]

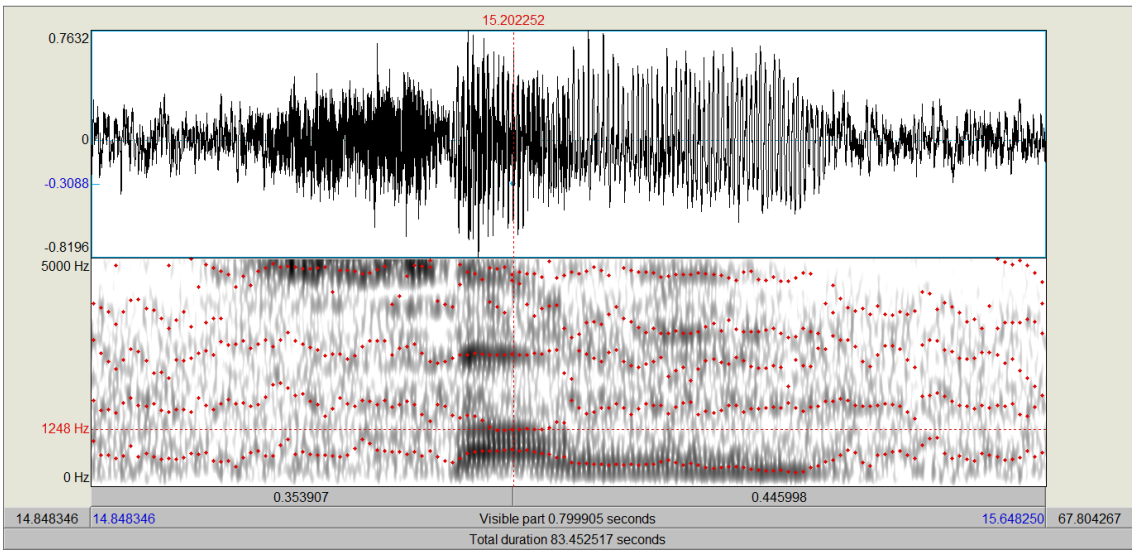


Figure A.7 Sun [ʌ]

A.2 Benjamin Jordan [USA]

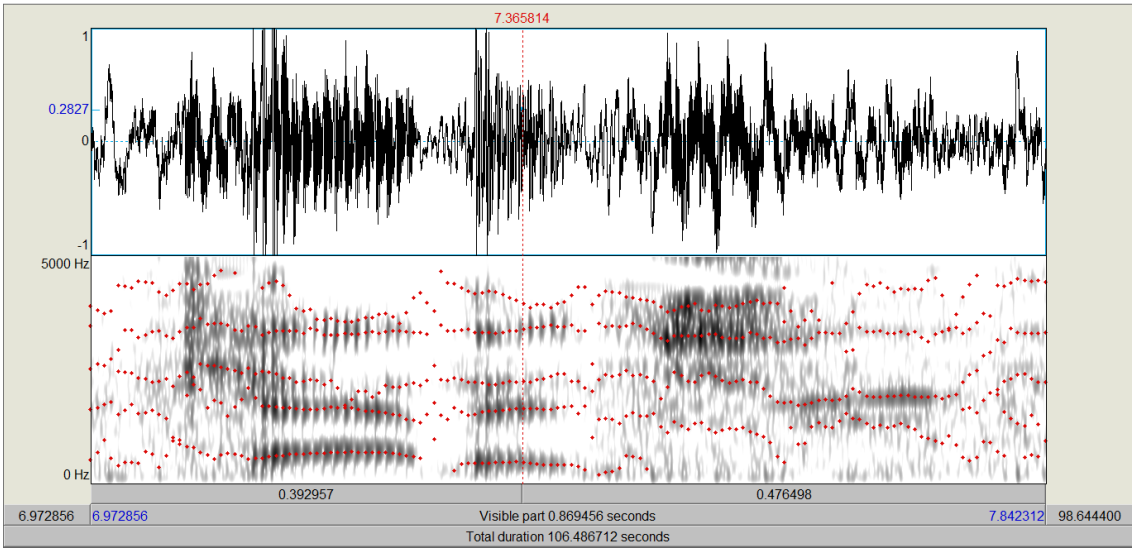


Figure A.2.1 Cabbage [ɪ]

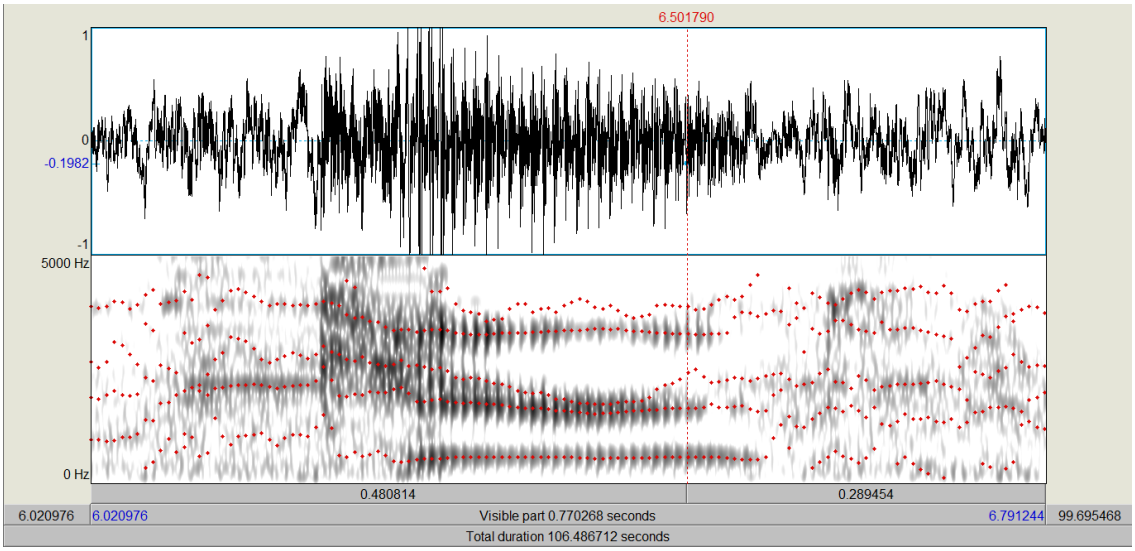


Figure A.2.2 Carrot [ə]

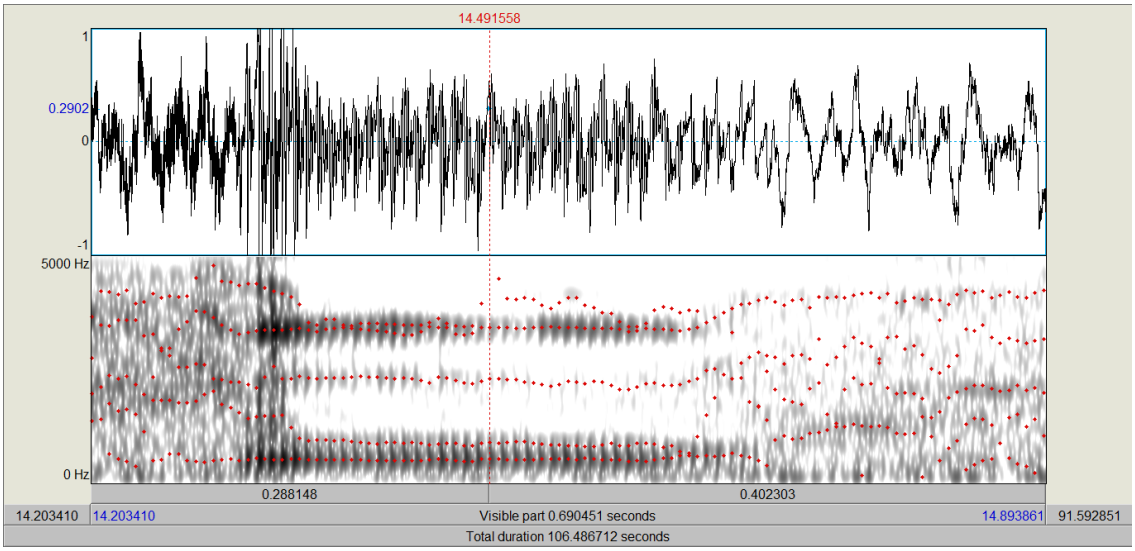


Figure A.2.3 Full [ʊ]

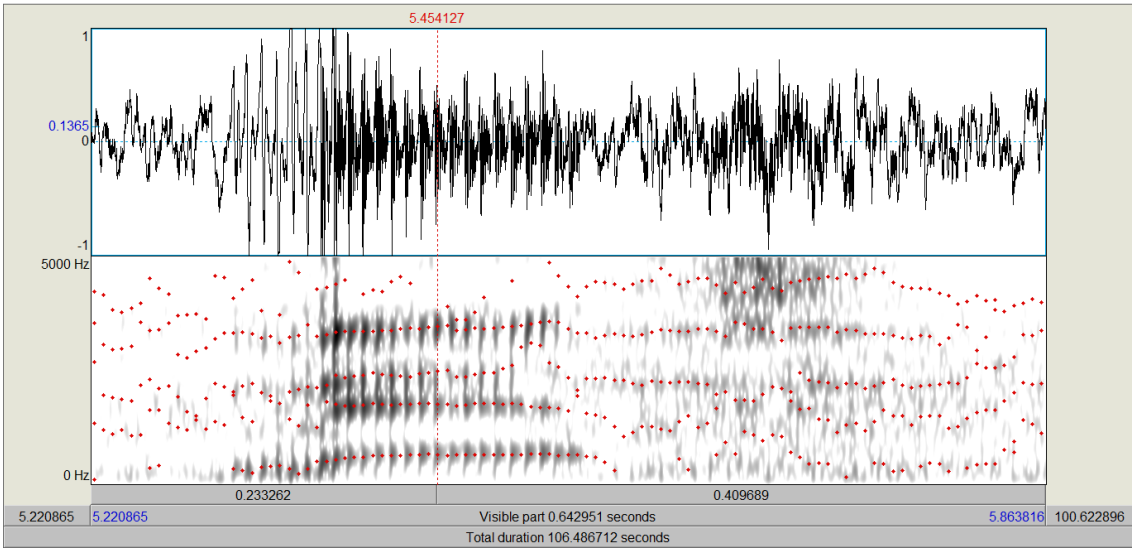


Figure A.2.4 Met [e]

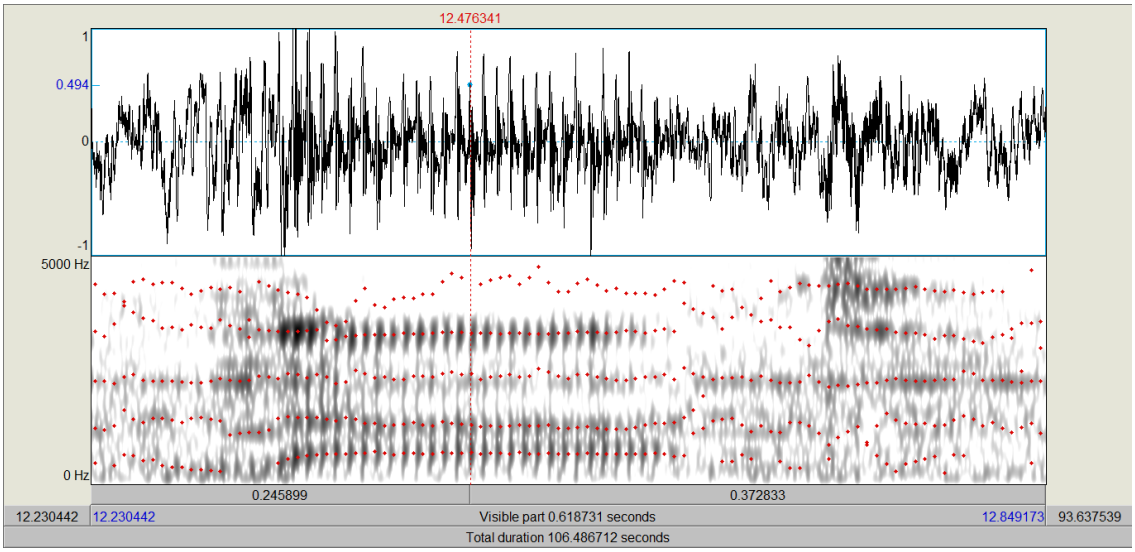


Figure A.2.5 Not [ɒ]

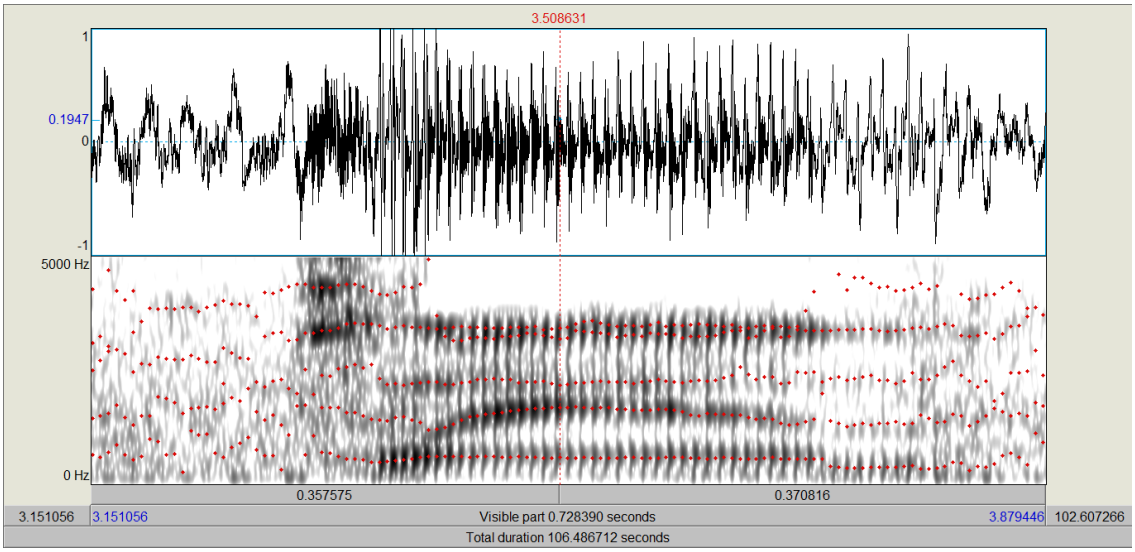


Figure A.2.6 Plan [æ]

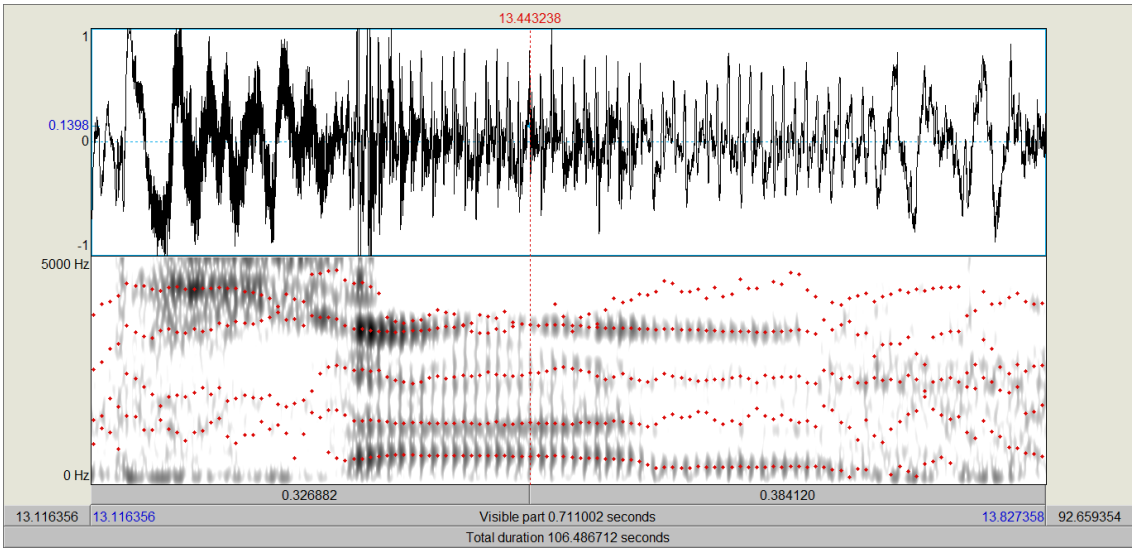


Figure A.2.7 Sun [ʌ]

A.3 Brian [Dorset, England]

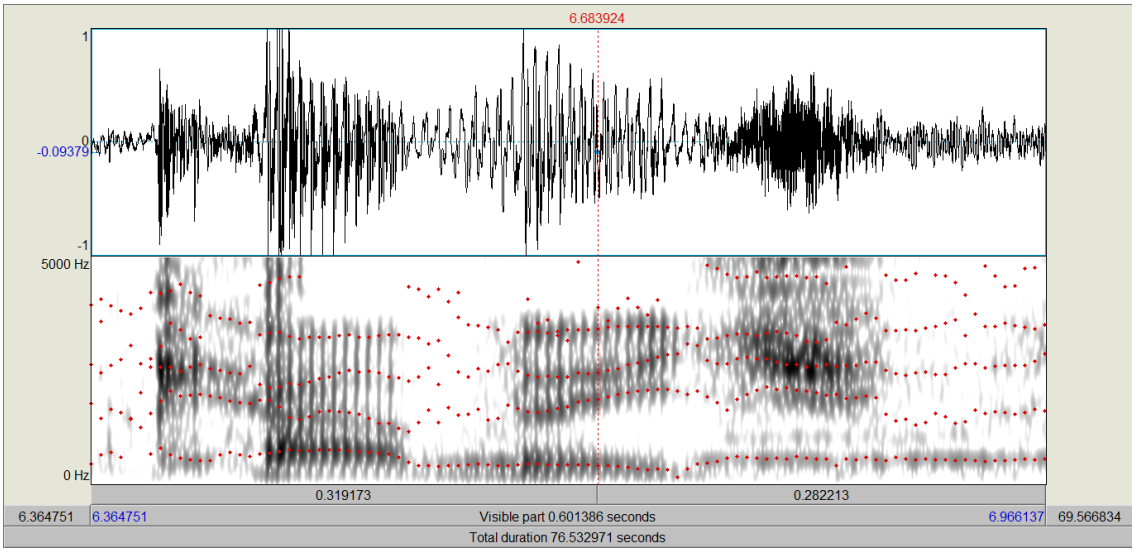


Figure A.3.1 Cabbage [ɪ]

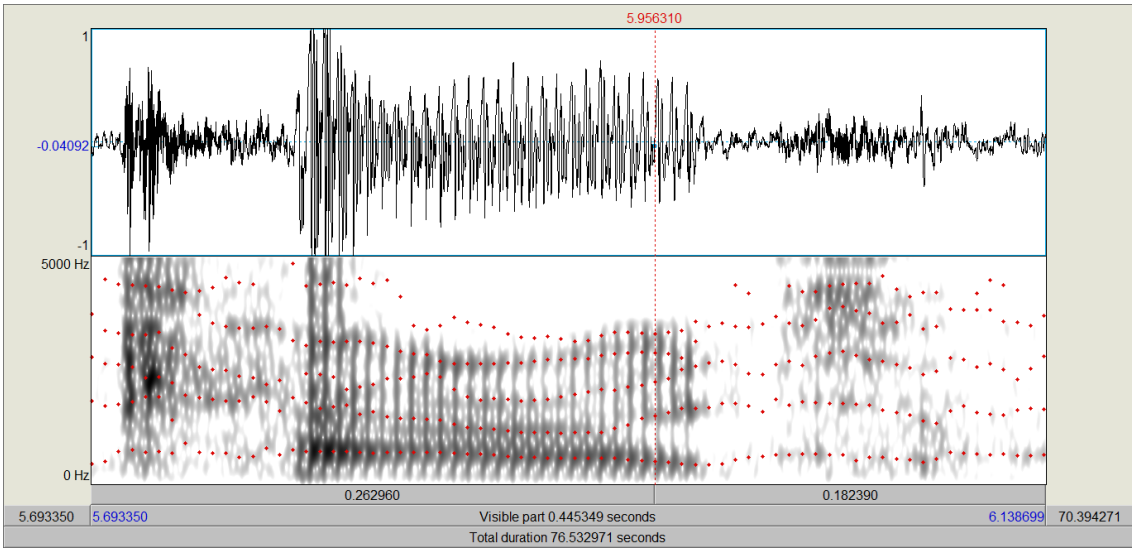


Figure A.3.2 Carrot [ə]

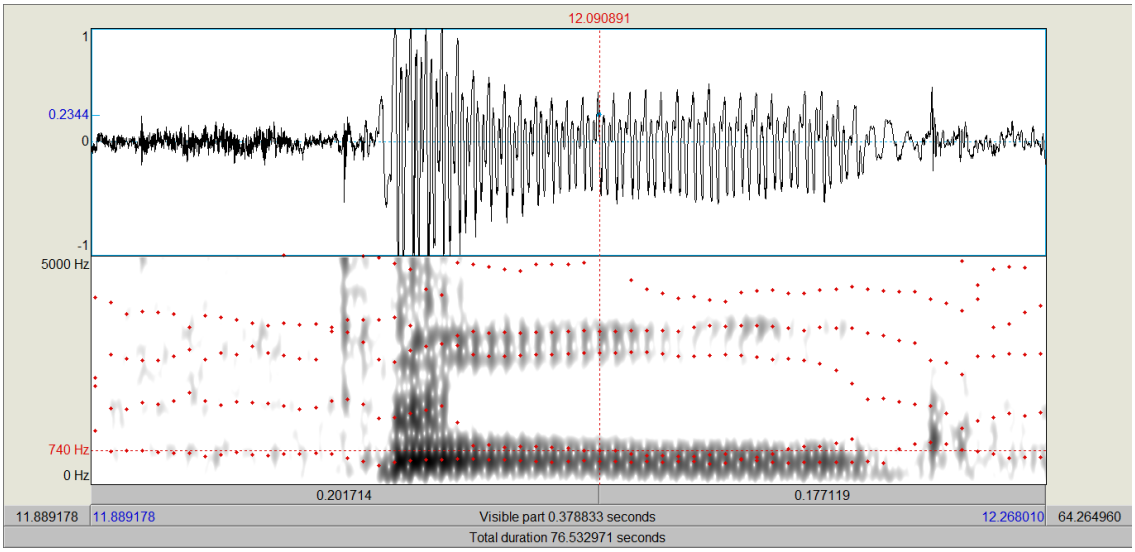


Figure A.3.3 full [ʊ]

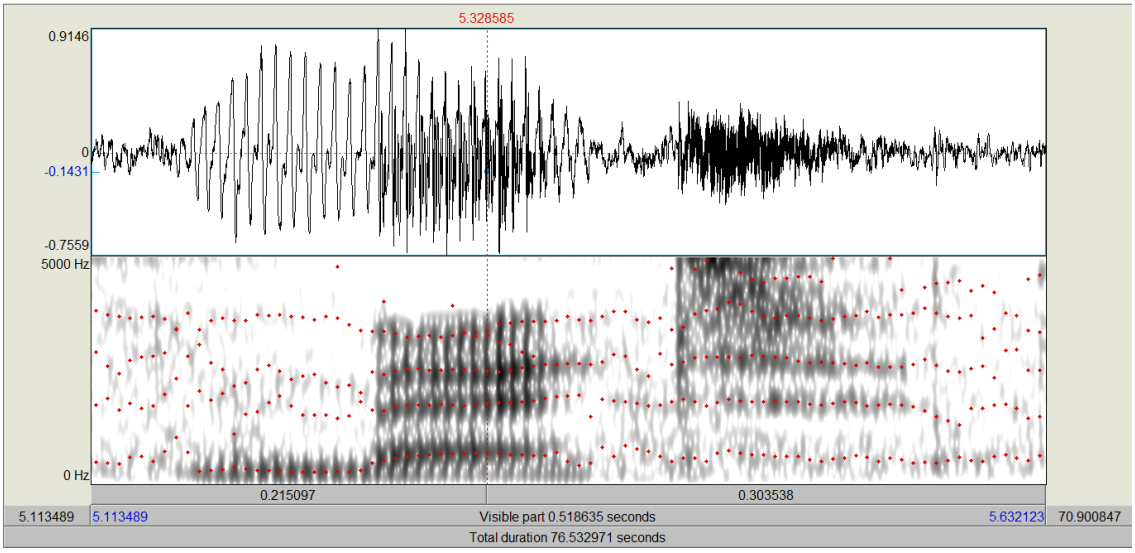


Figure A.3.4 Met [e]

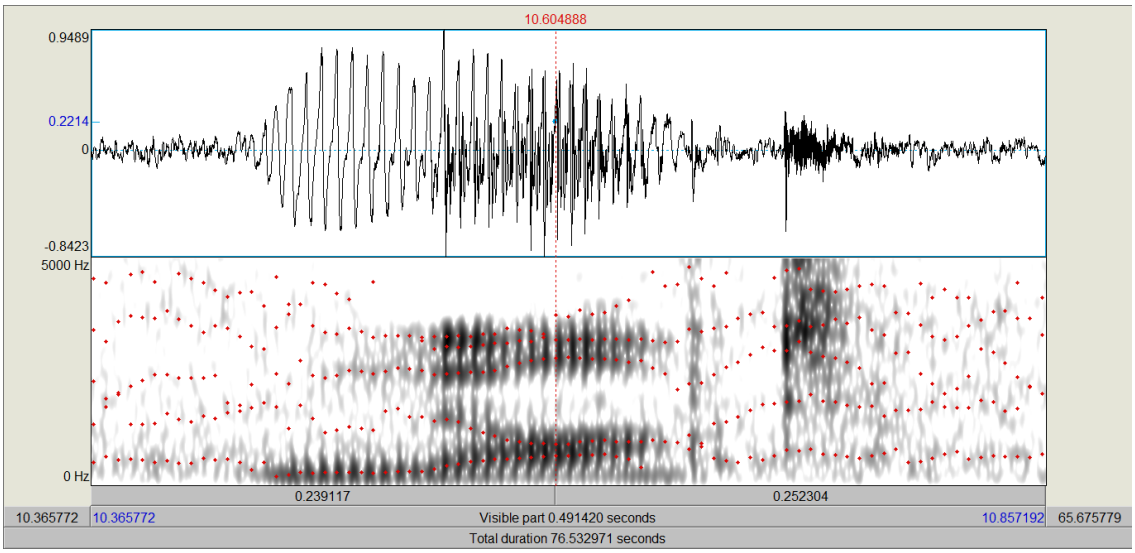


Figure A.3.5 Not [ɒ]

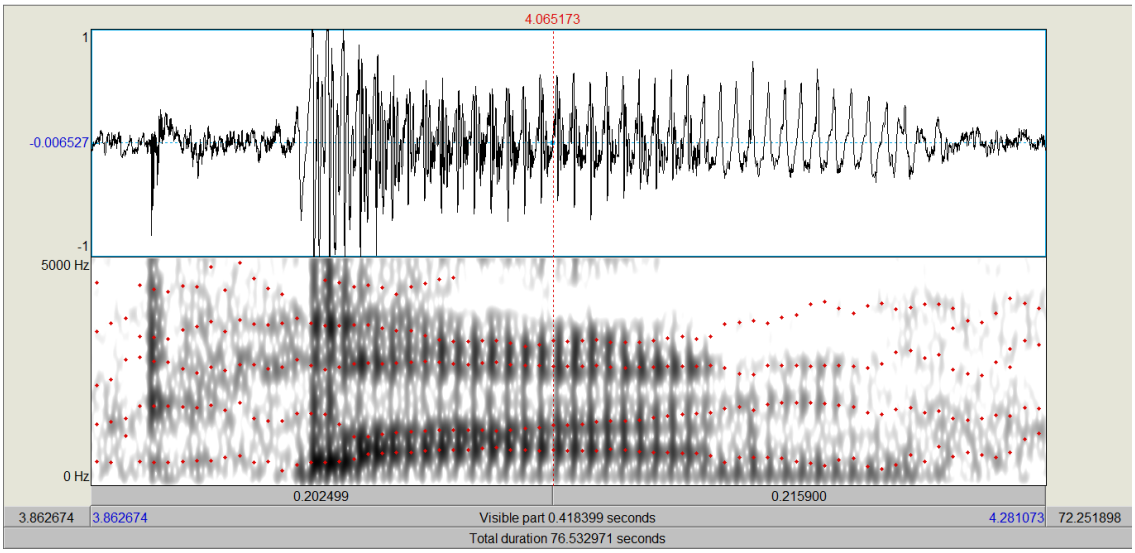


Figure A.3.6 Plan [æ]

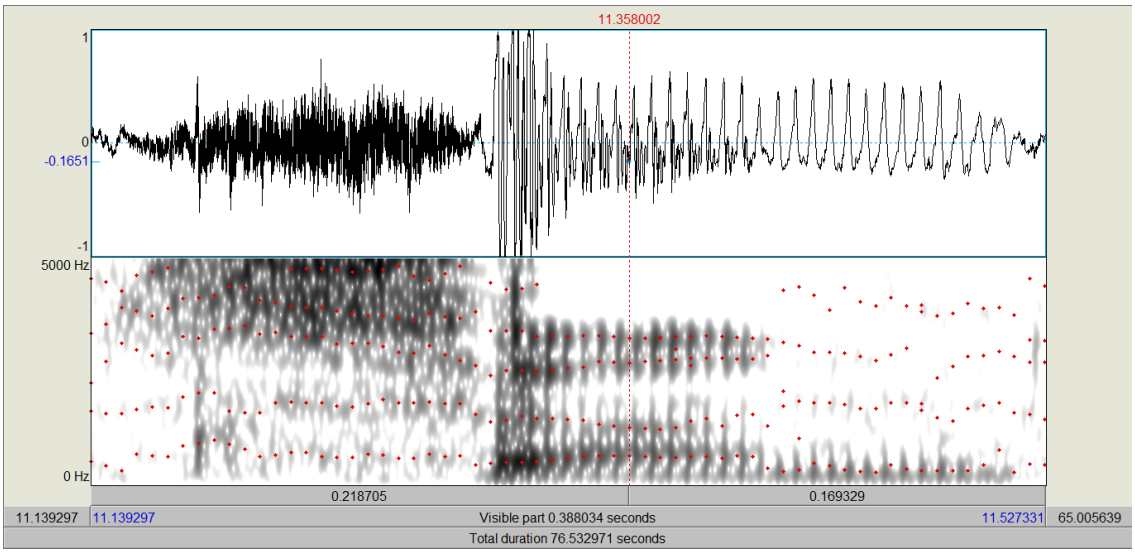


Figure A.3.7 Sun [ʌ]

A.4 Carrie Lesley [Hertfordshire, England]

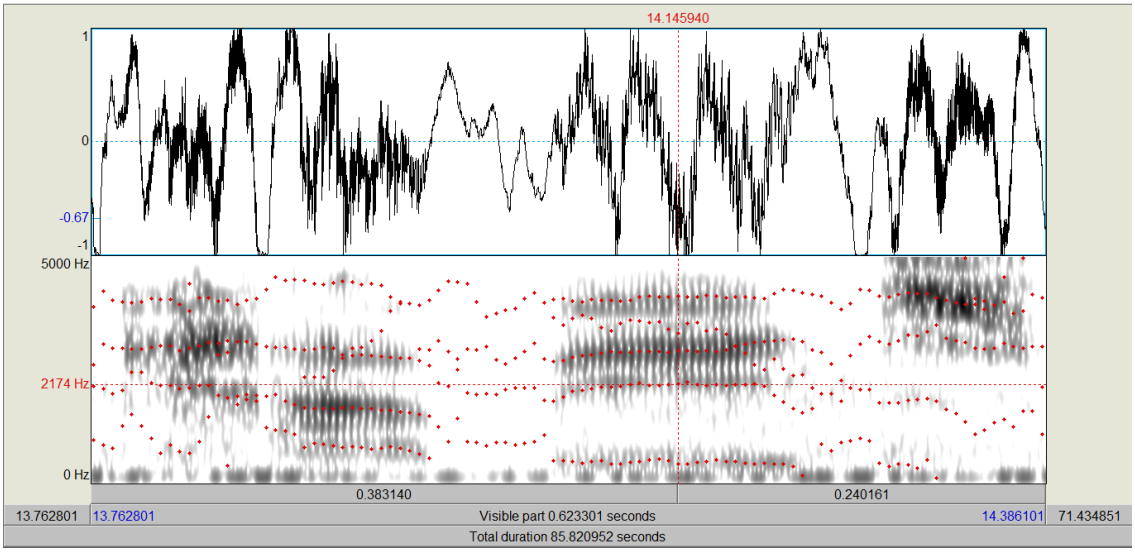


Figure A.4.1 Cabbage [ɪ]

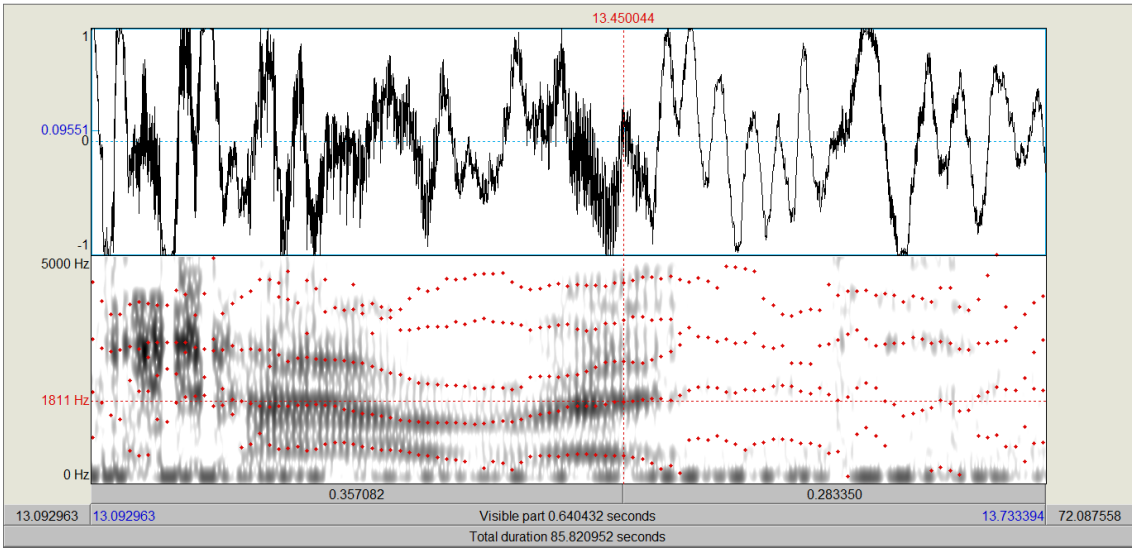


Figure A.4.2 Carrot [ə]

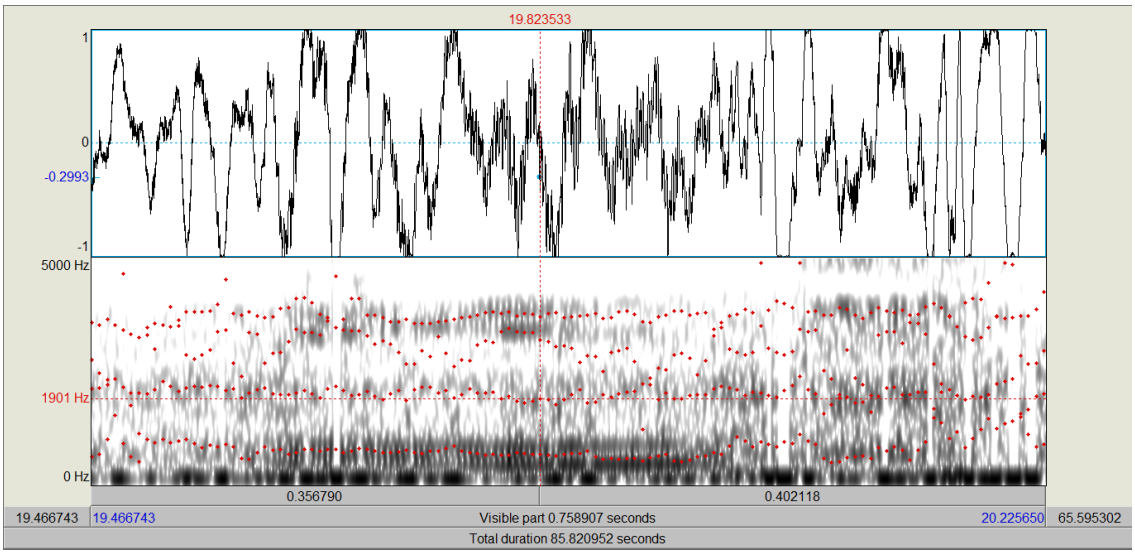


Figure A.4.3 Full [ʊ]

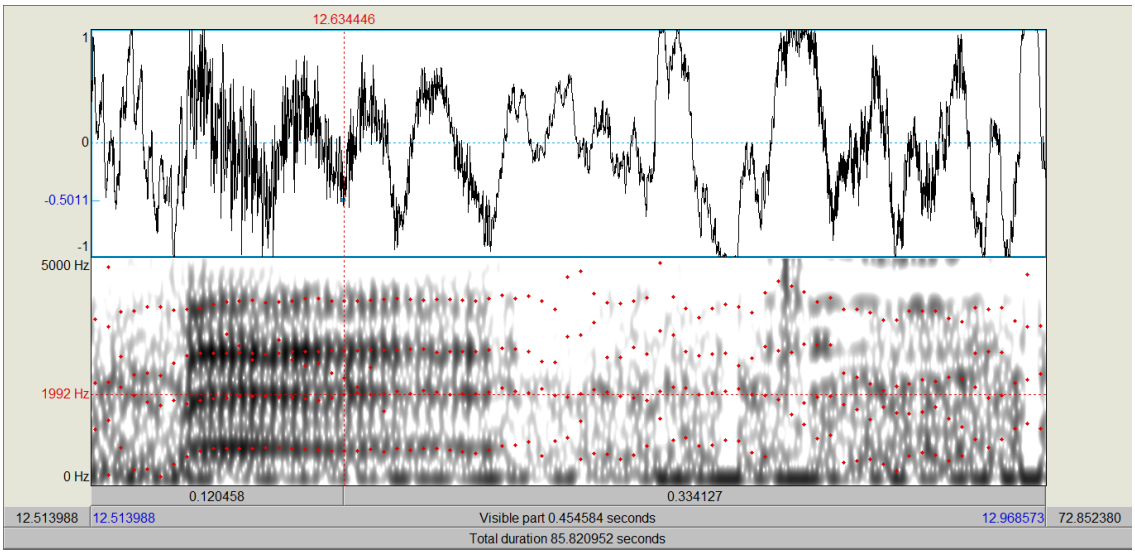


Figure A.4.4 Met [e]

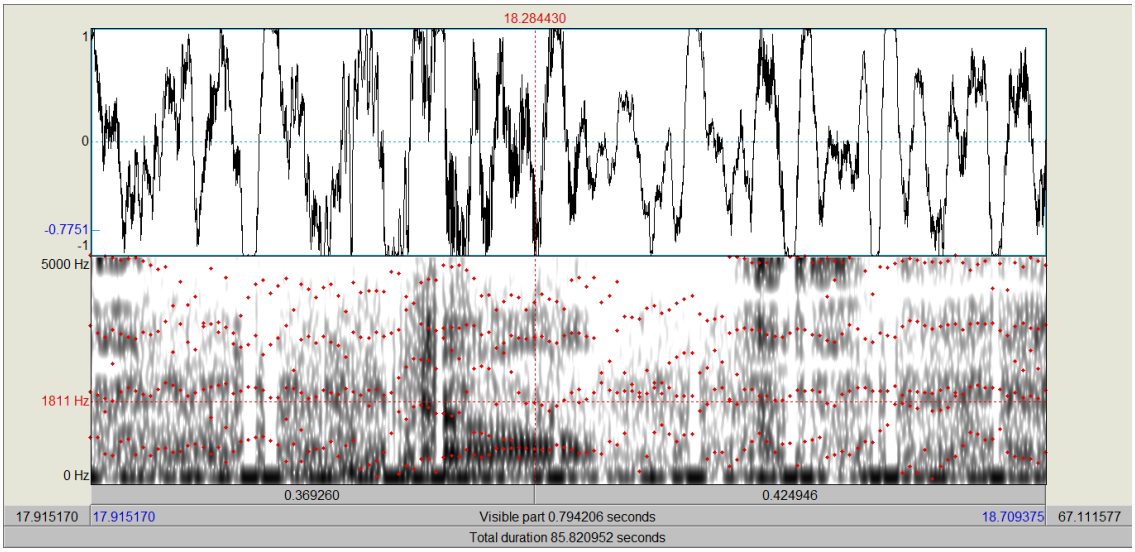


Figure A.4.5 Not [ɒ]

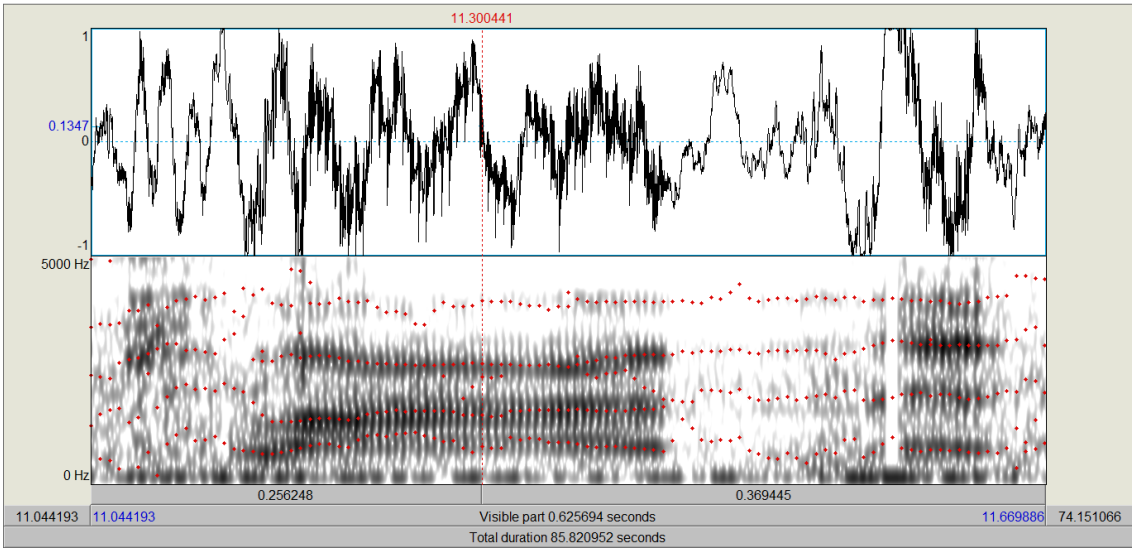


Figure A.4.6 Plan [æ]

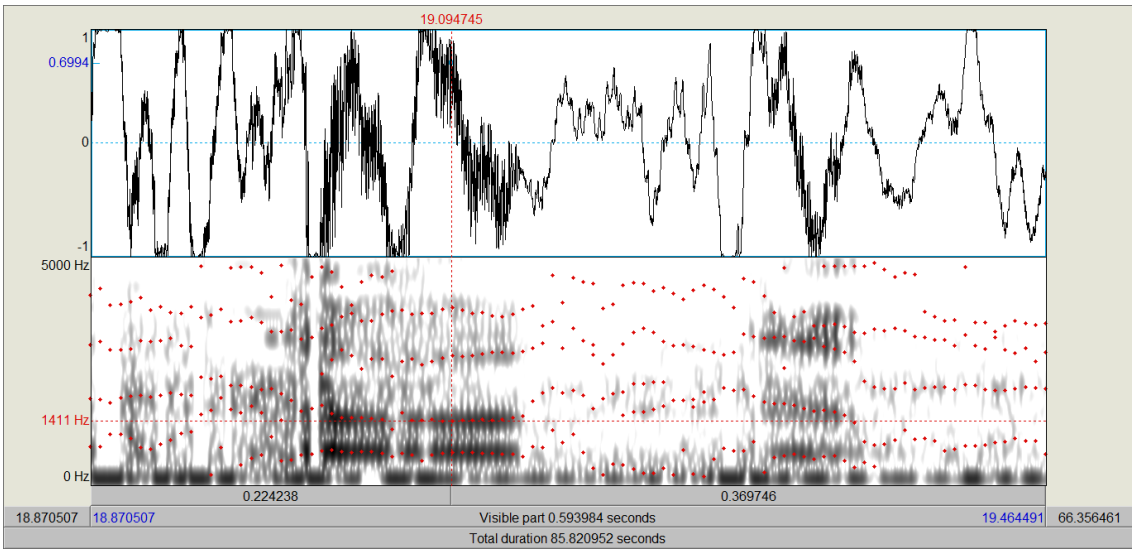


Figure A.4.7 Sun [ʌ]

A.5 Catherine Starling [Norfolk, England]

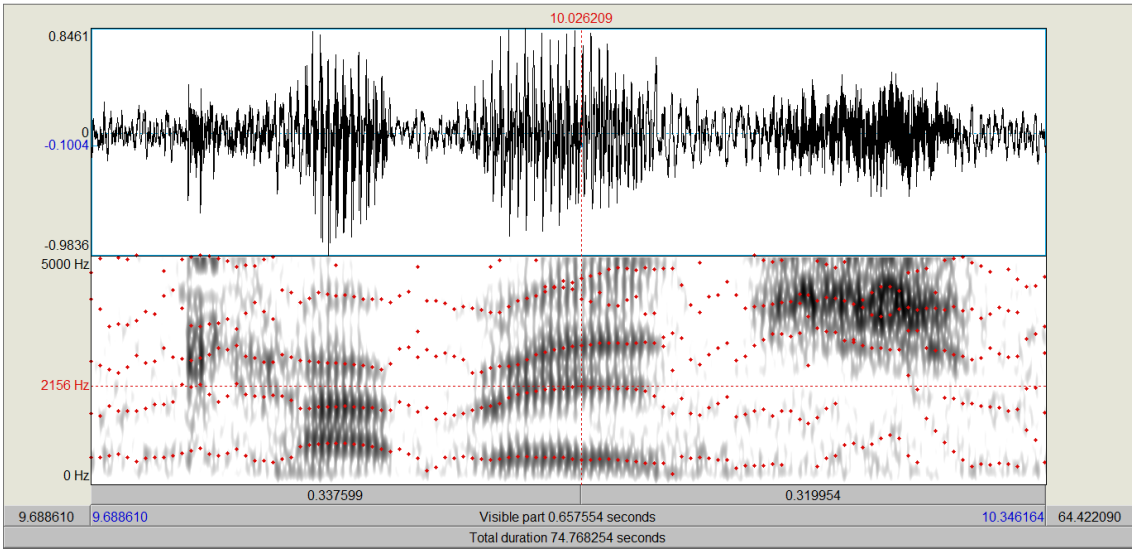


Figure A.5.1 Cabbage [ɪ]

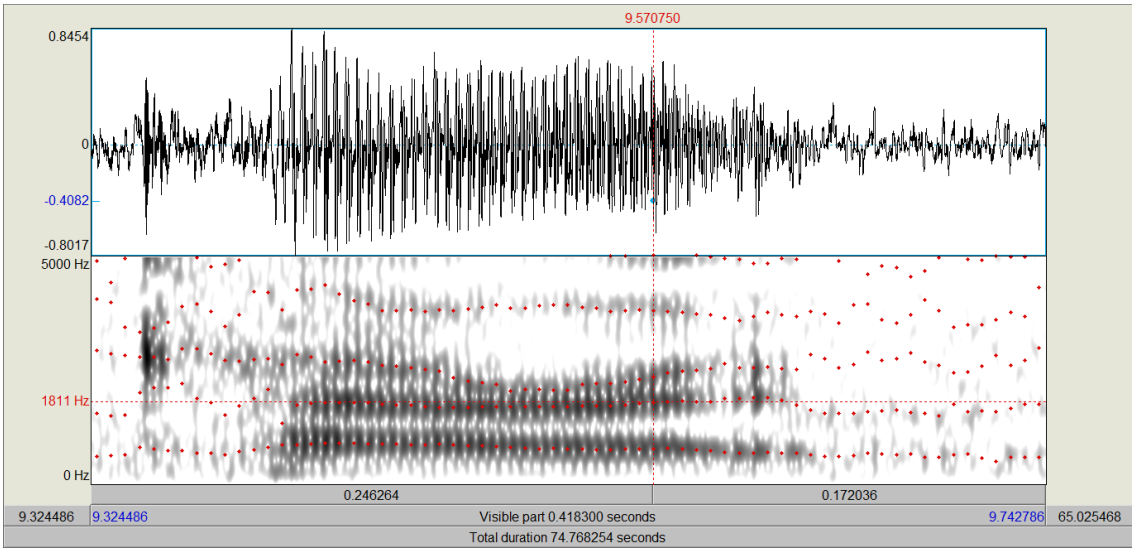


Figure A.5.2 Carrot [ə]

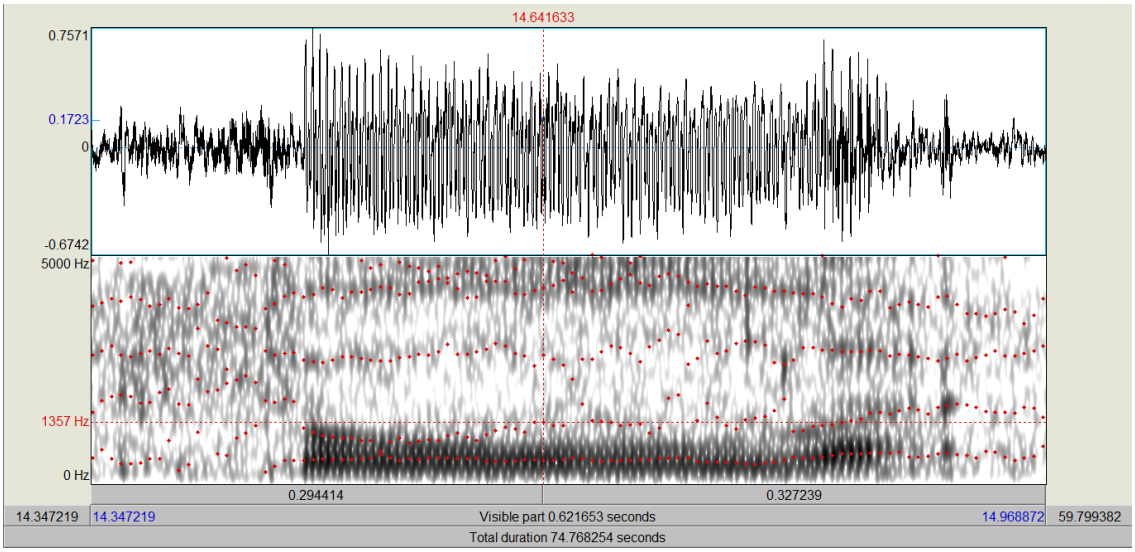


Figure A.5.3 Full [ʊ]

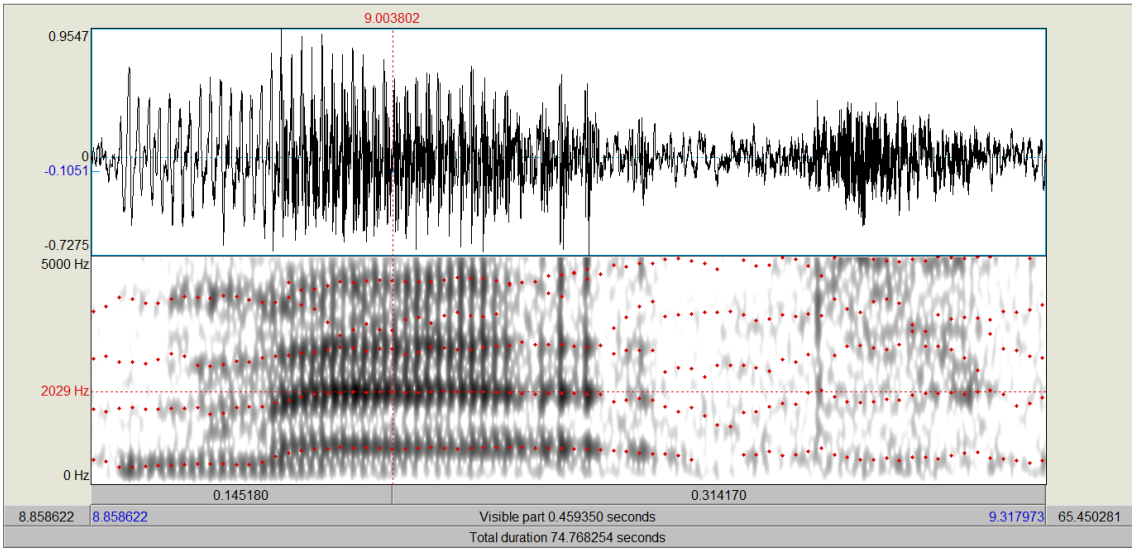


Figure A.5.4 Met [e]

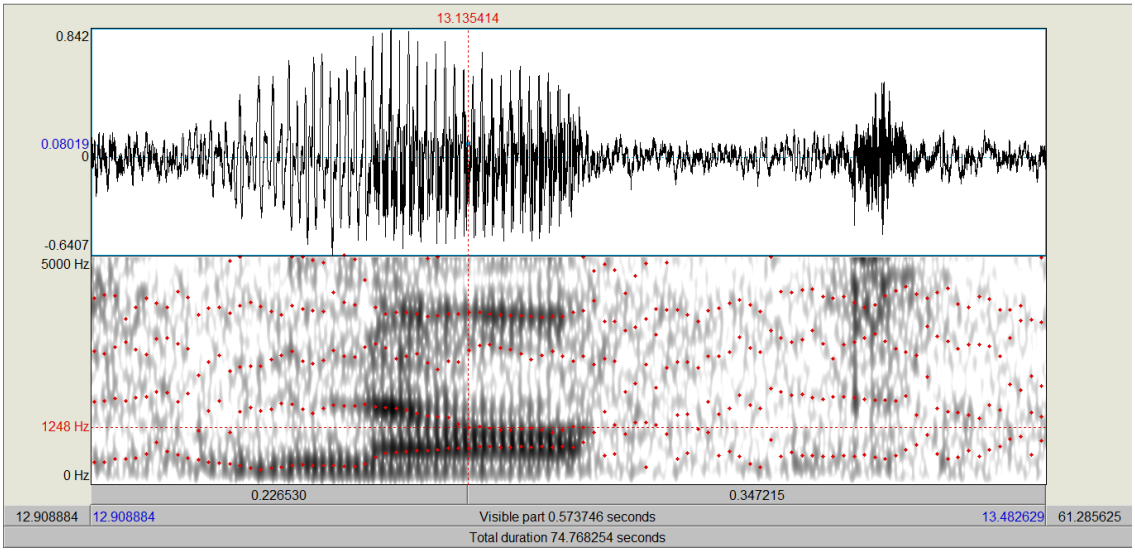


Figure A.5.5 Not [ɒ]

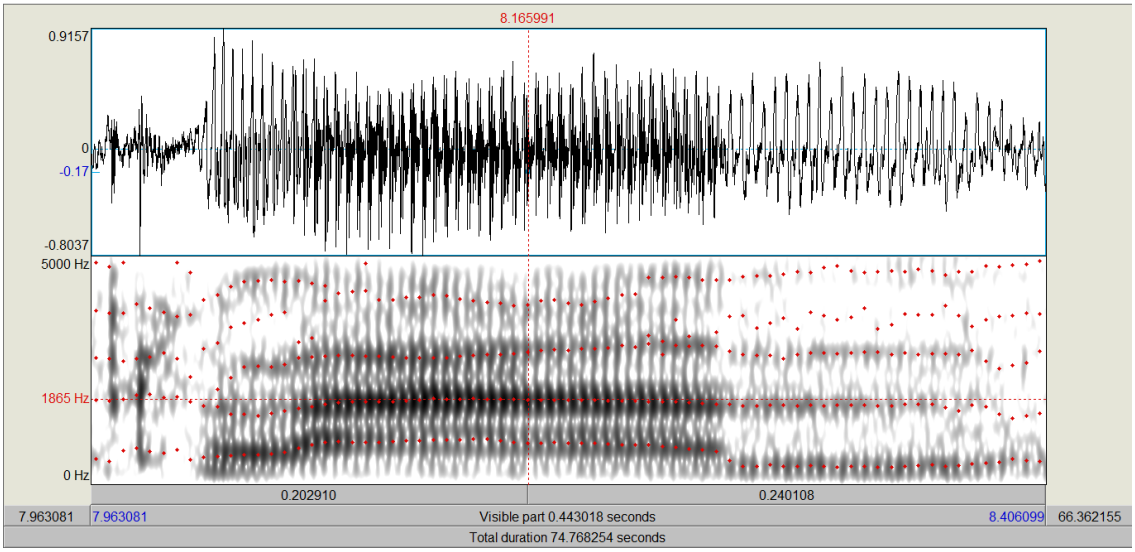


Figure A.5.6 Plan [æ]

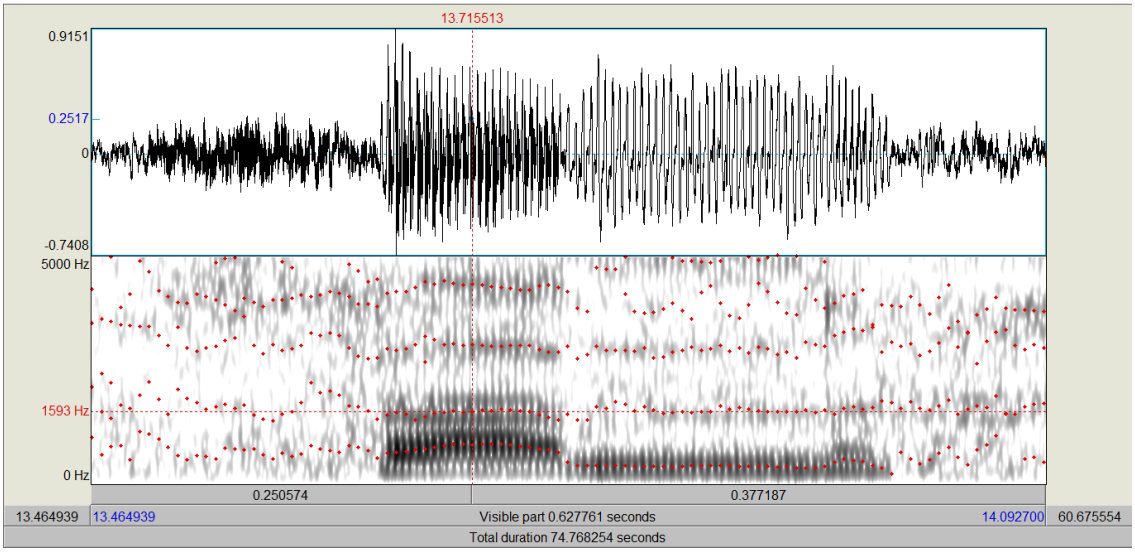


Figure A.5.7 Sun [ʌ]

A.6 Claudia [London, England]

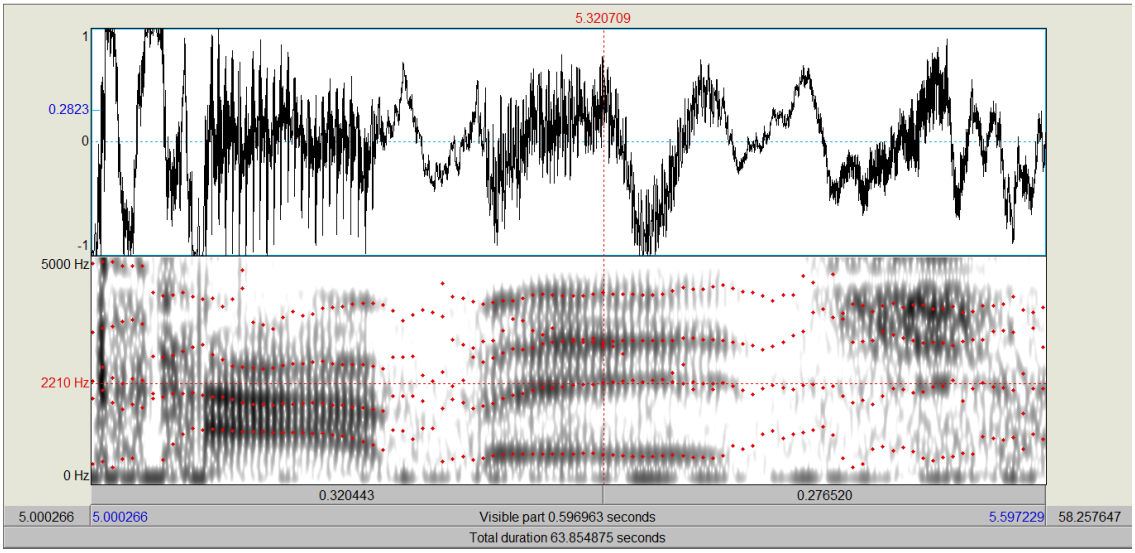


Figure A.6.1 Cabbage [ɪ]

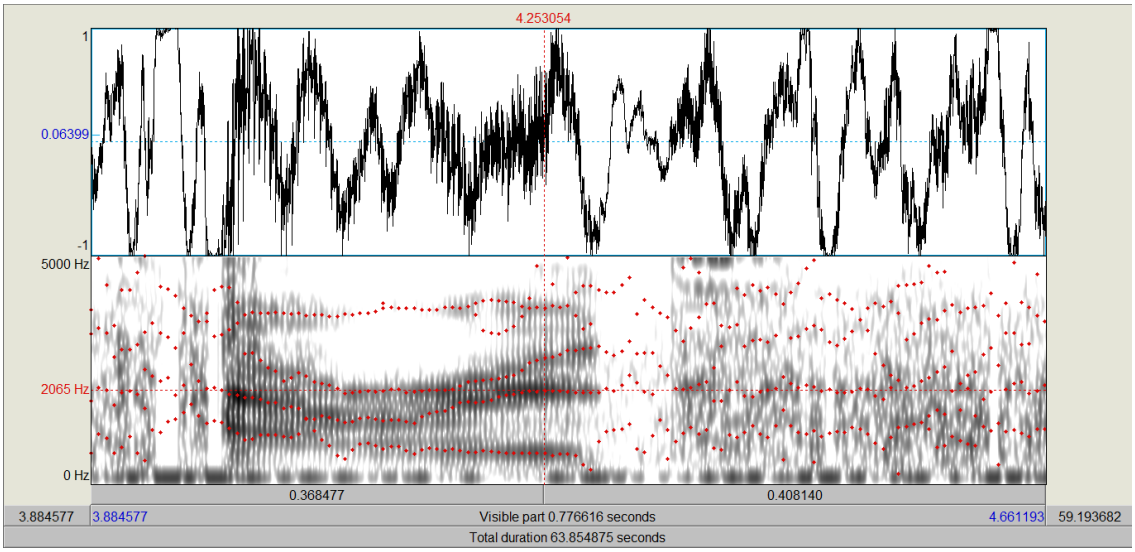


Figure A.6.2 Carrot [ə]

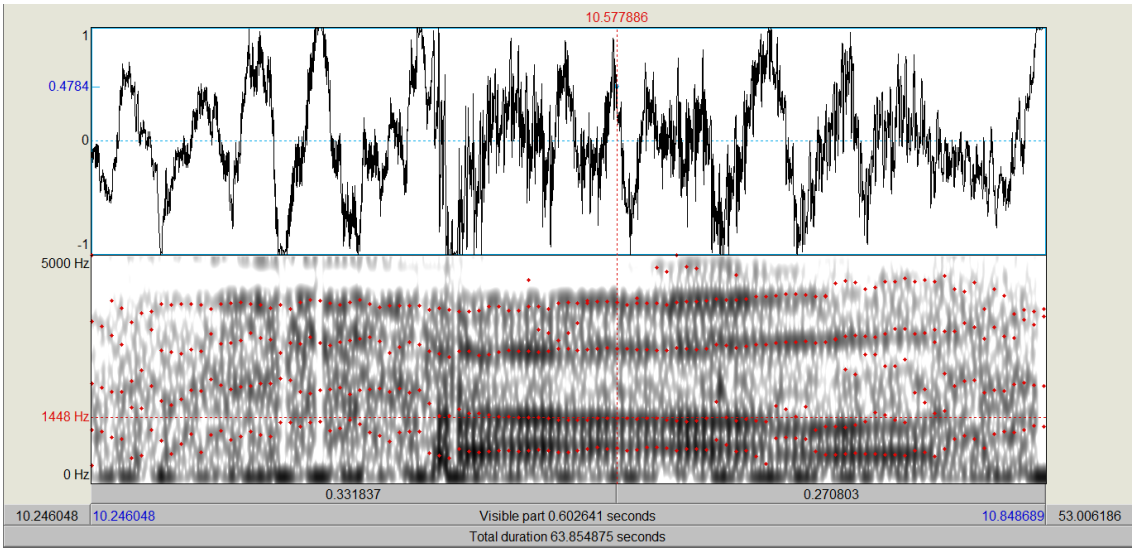


Figure A.6.3 Full [ʊ]

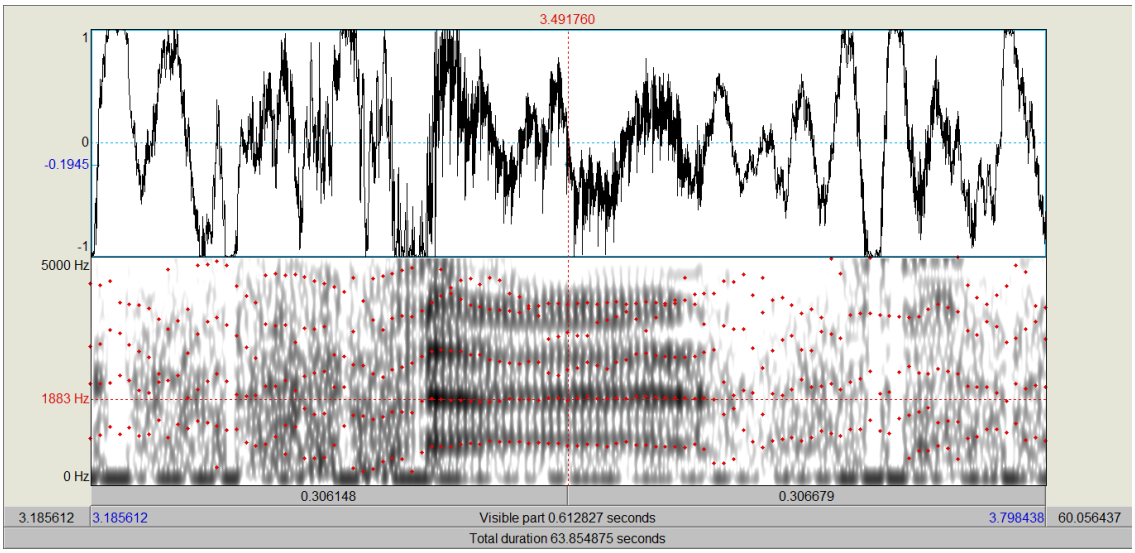


Figure A.6.4 Met [e]

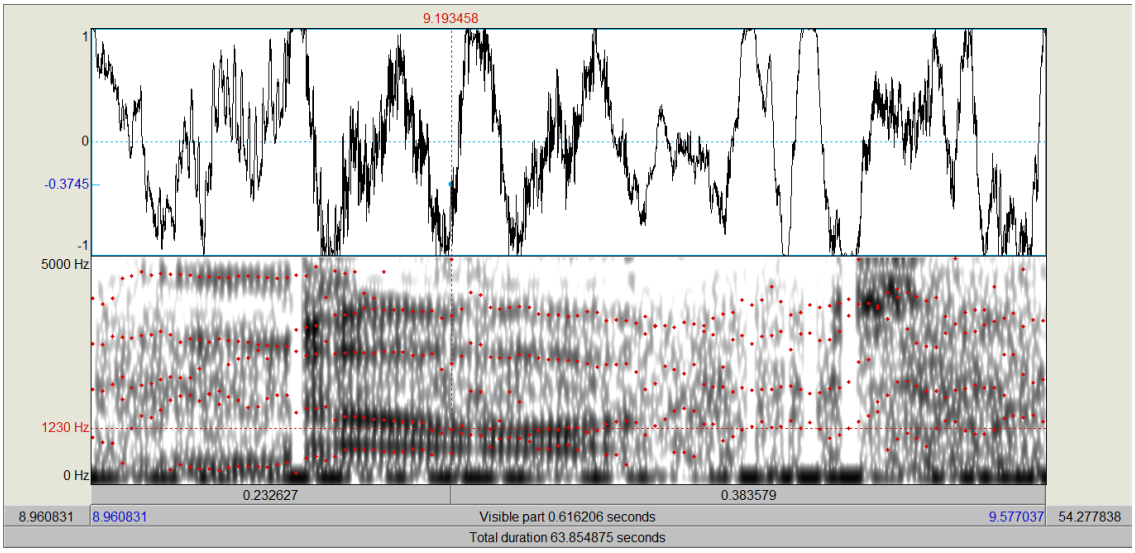


Figure A.6.5 Not [ɒ]

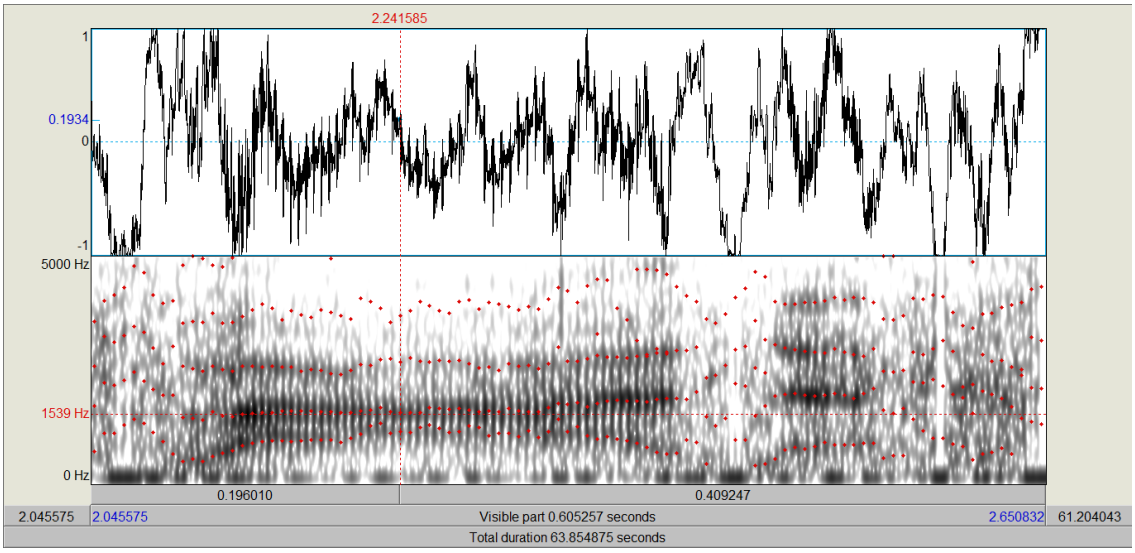


Figure A.6.6 Plan [æ]

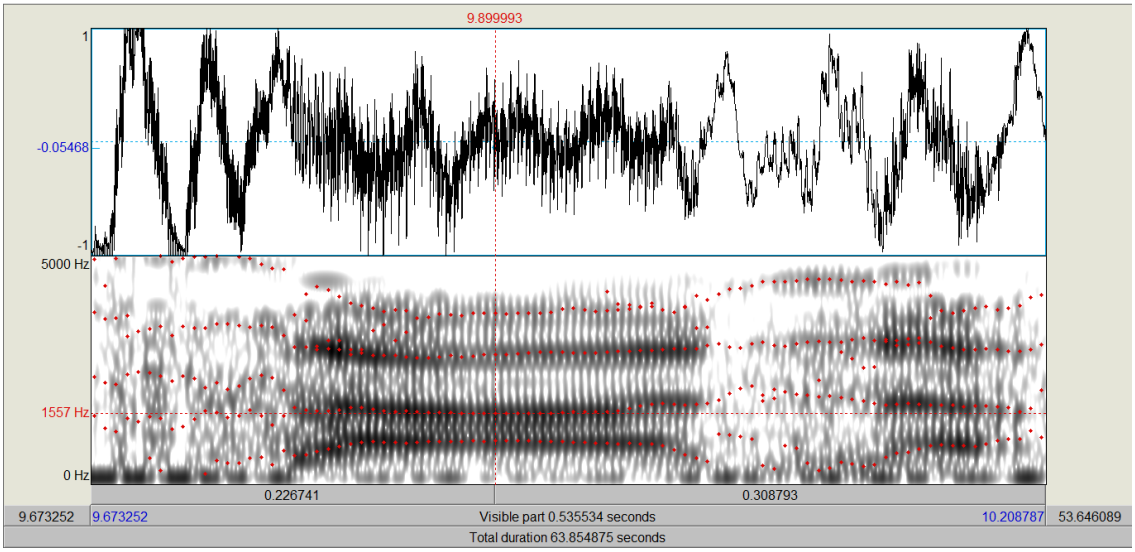


Figure A.6.7 Sun [ʌ]

A.7 Ellie [Kent, England]

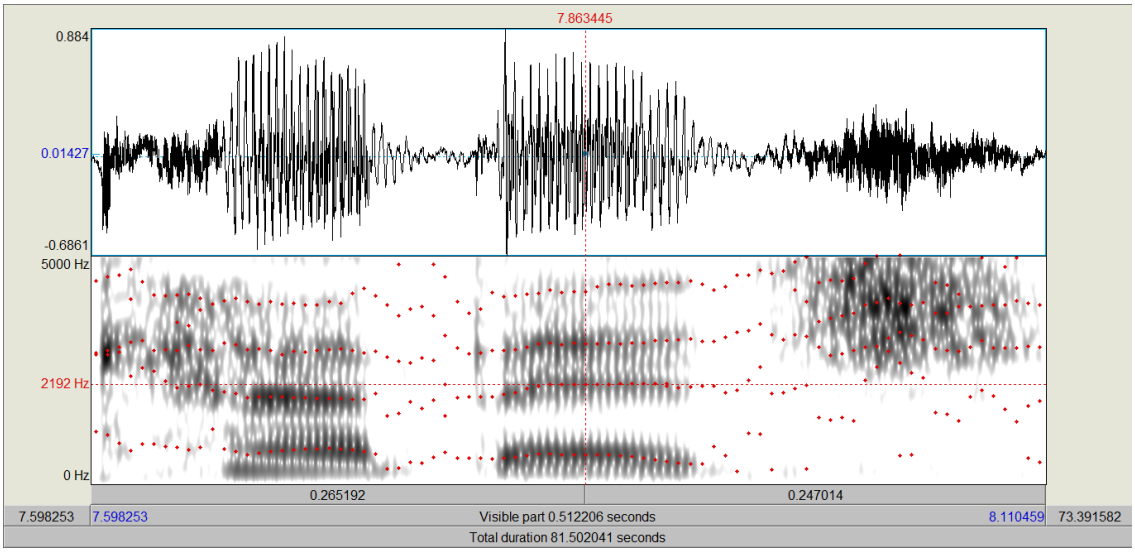


Figure A.7.1 Cabbage [ɪ]

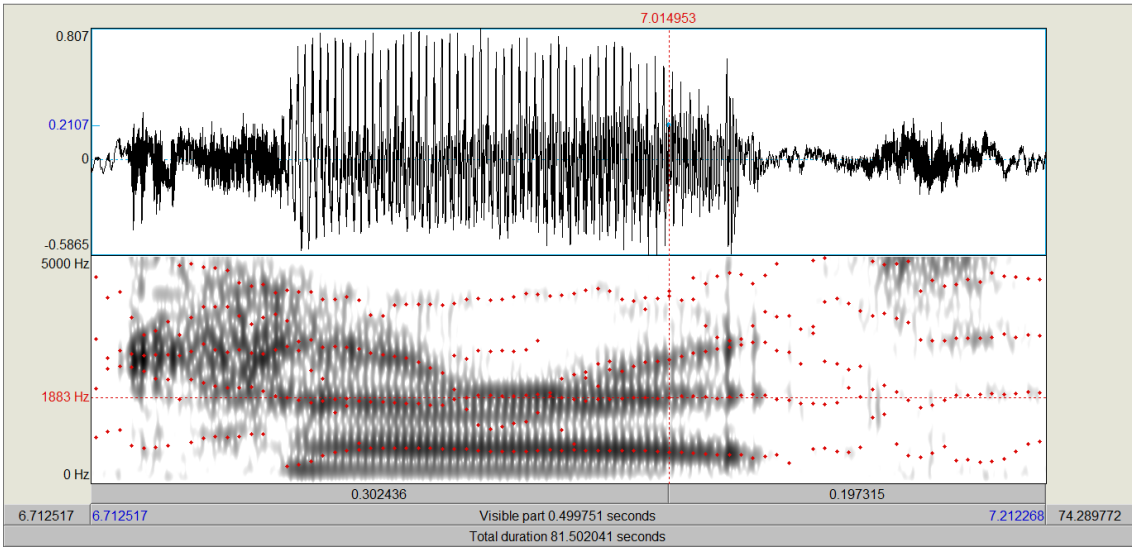


Figure A.7.2 Carrot [ə]

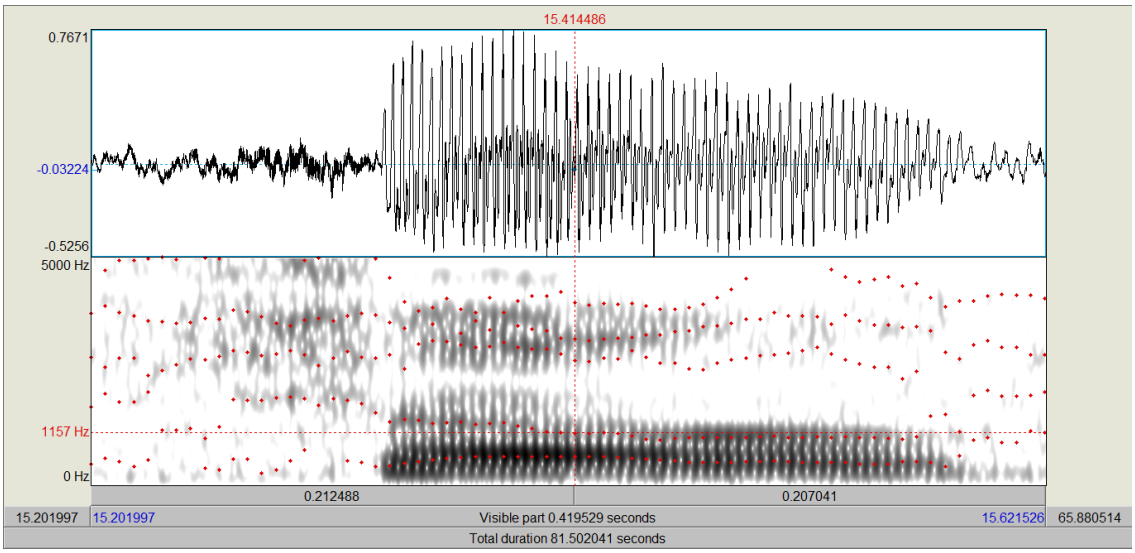


Figure A.7.3 Full [ʊ]

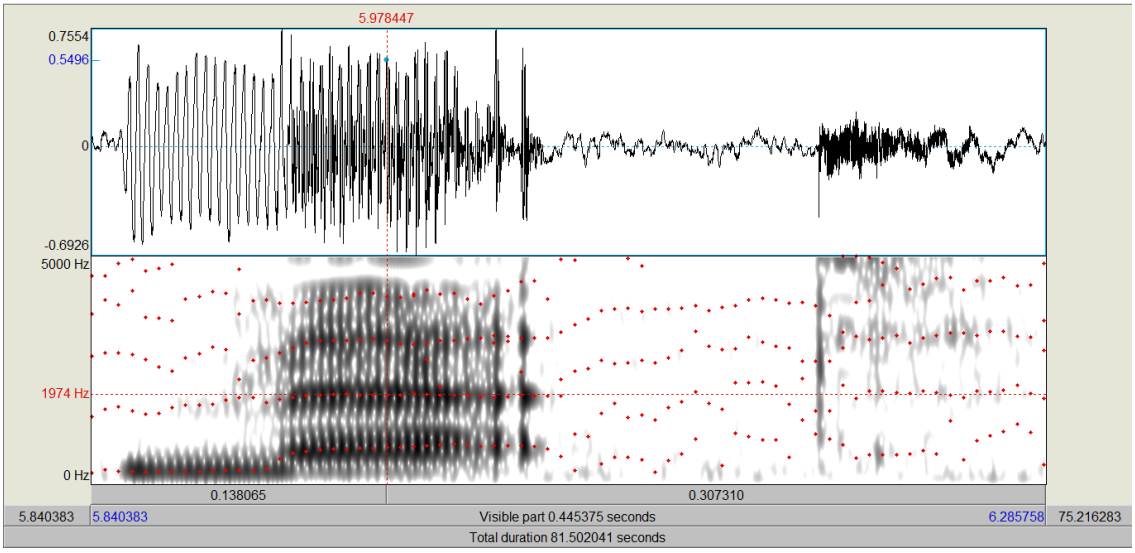


Figure A.7.4 Met [e]

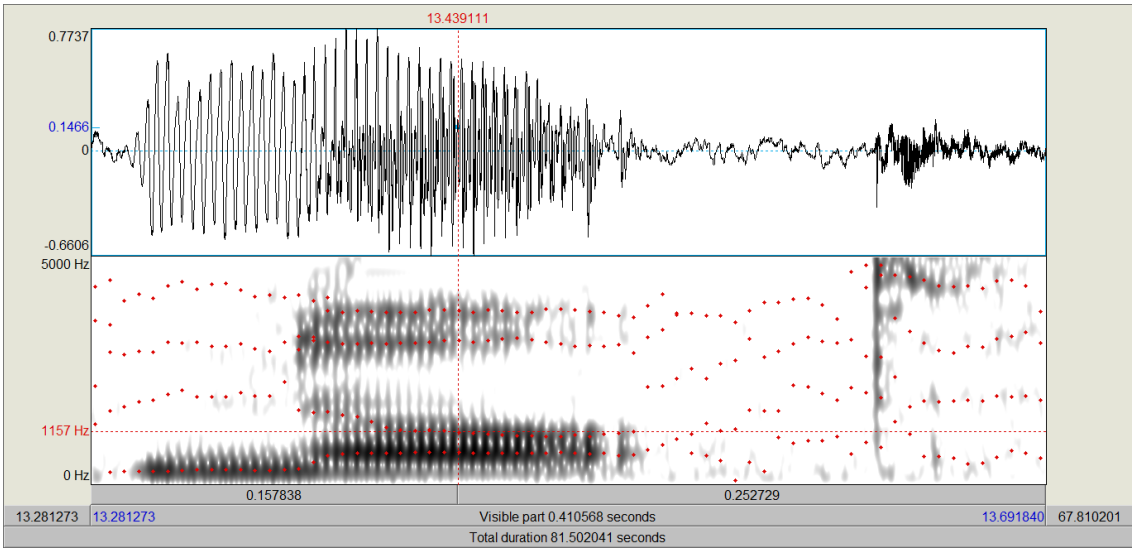


Figure A.7.5 Not [ɒ]

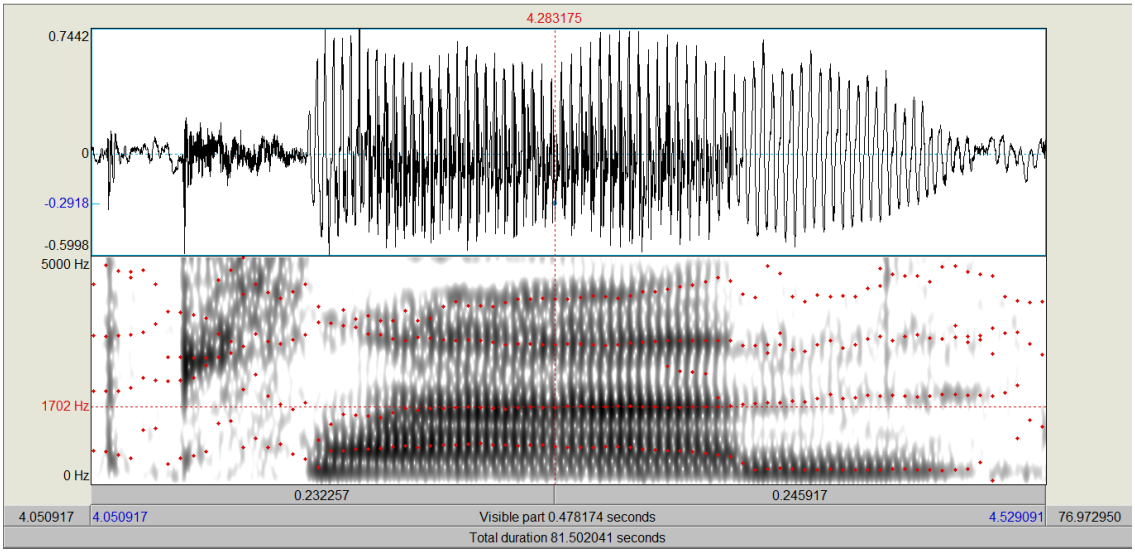


Figure A.7.6 Plan [æ]

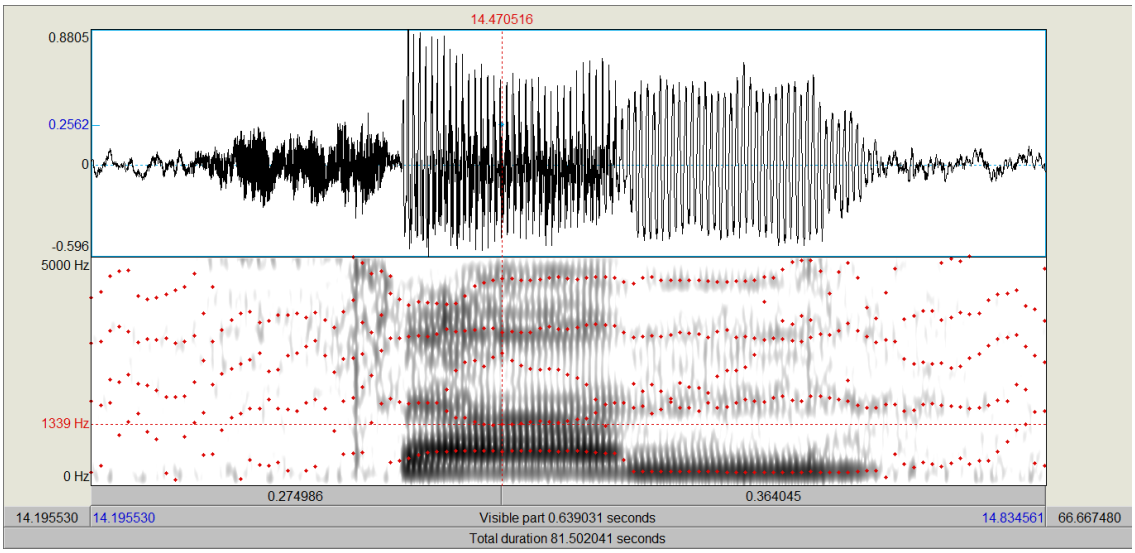


Figure A.7.7 Sun [ʌ]

A.8 Florence [Derbyshire, England]

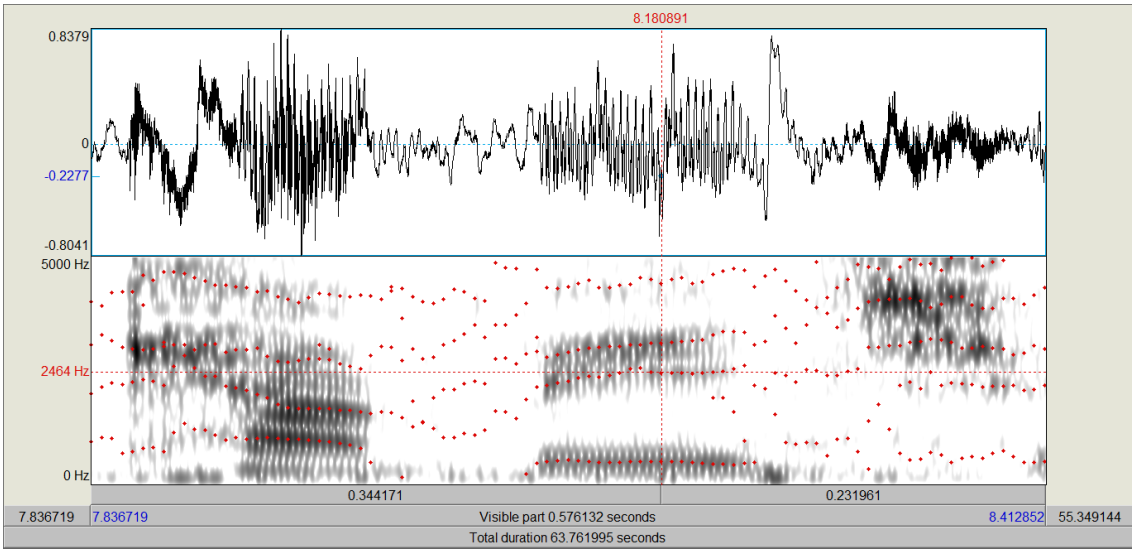


Figure A.8.1 Cabbage [ɪ]

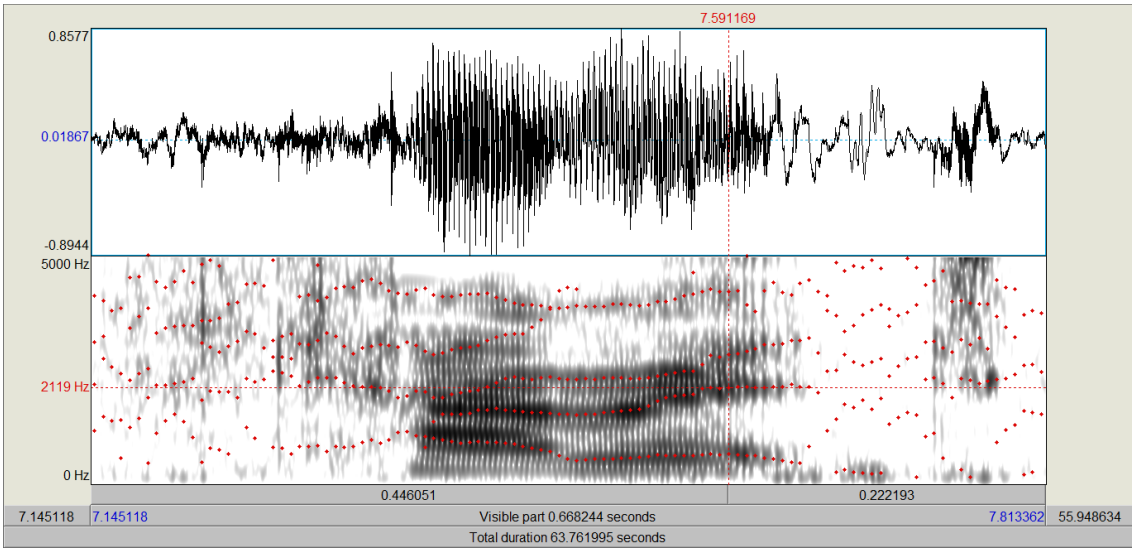


Figure A.8.2 Carrot [ə]

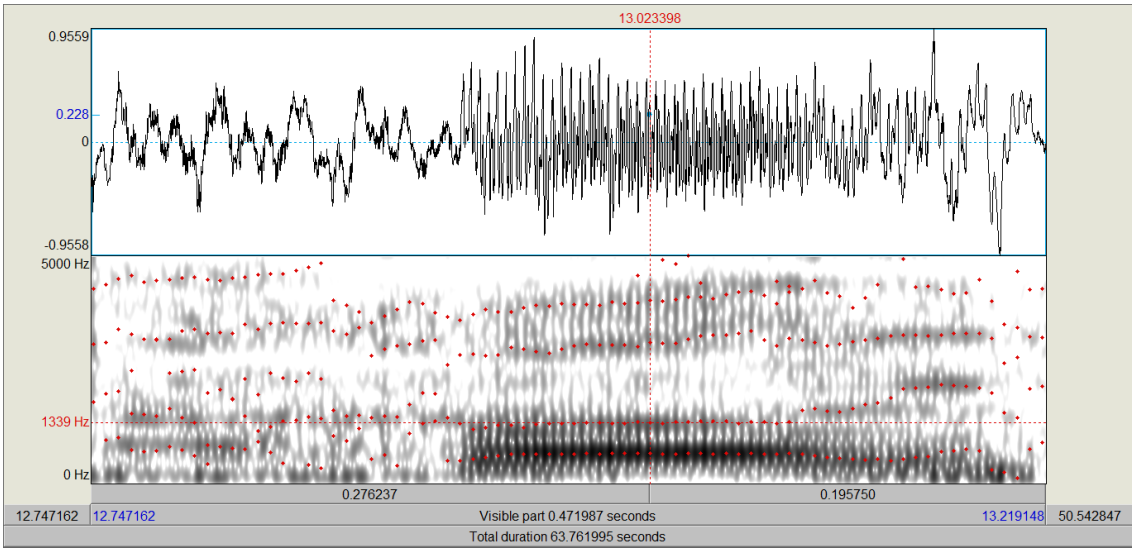


Figure A.8.3 Full [ʊ]

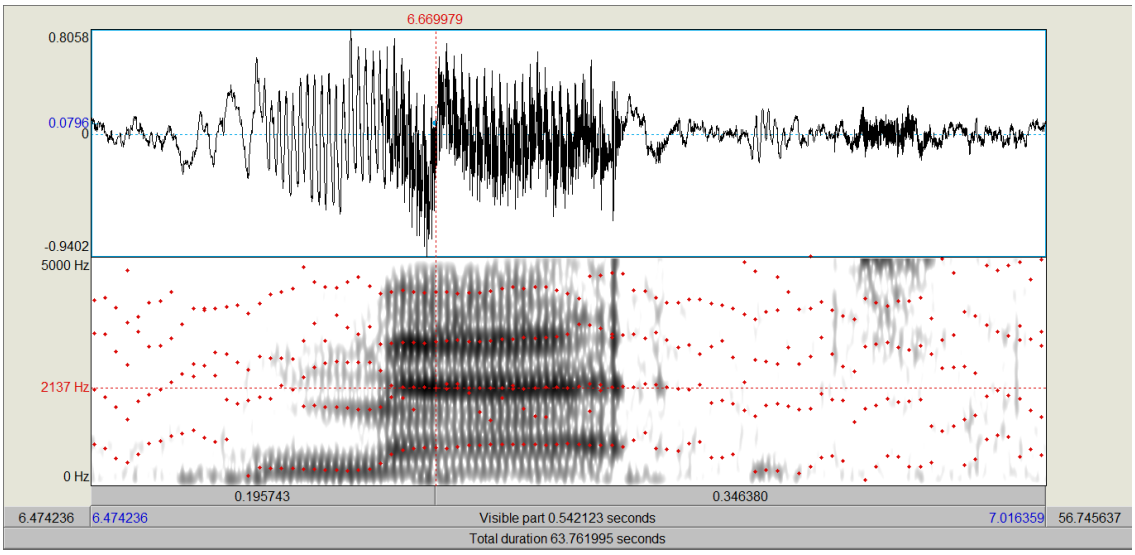


Figure A.8.4 Met [e]

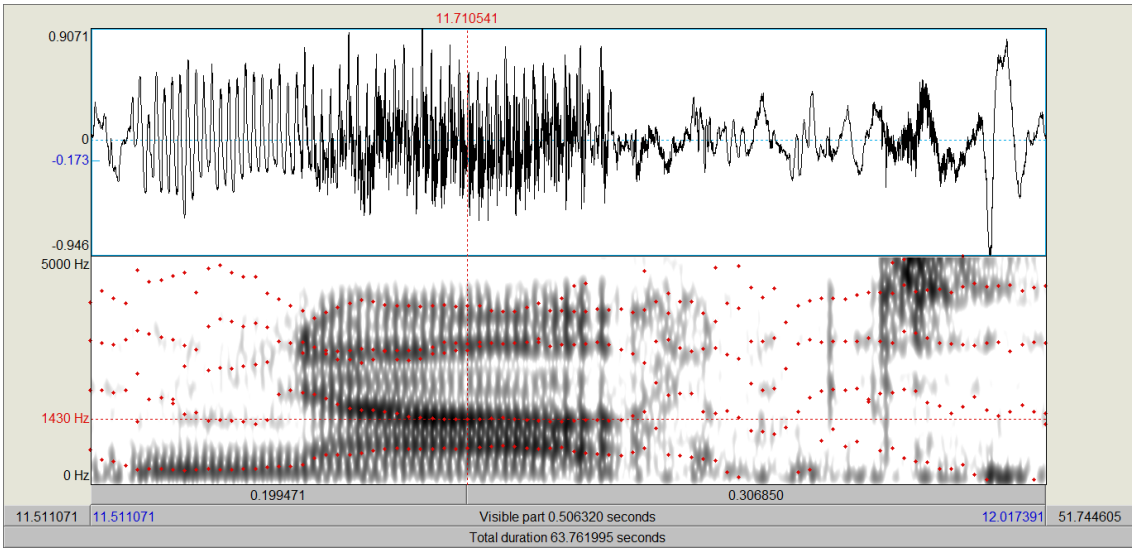


Figure A.8.5 Not [ɒ]

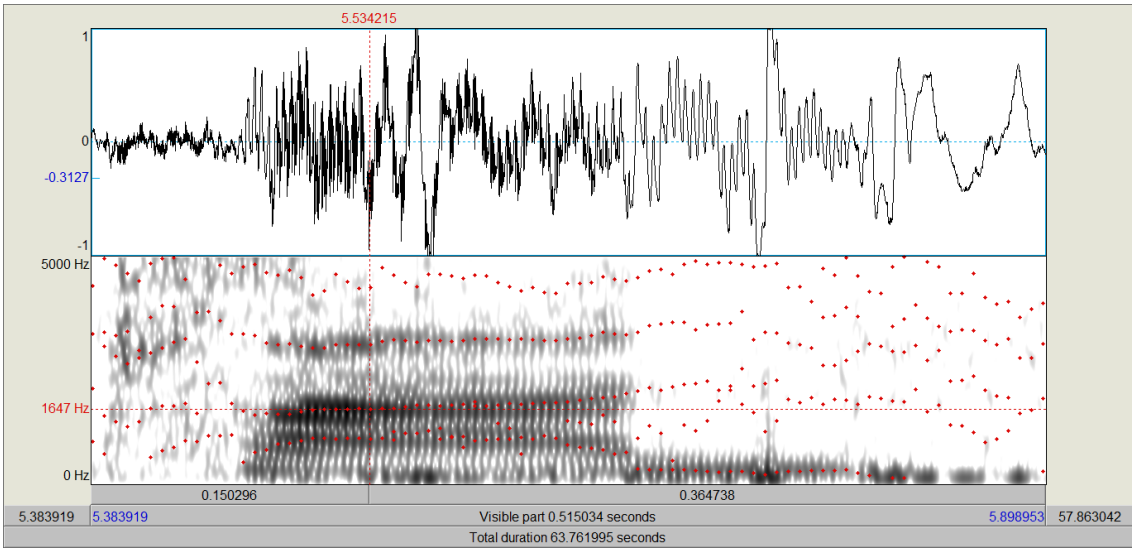


Figure A.8.6 Plan [æ]

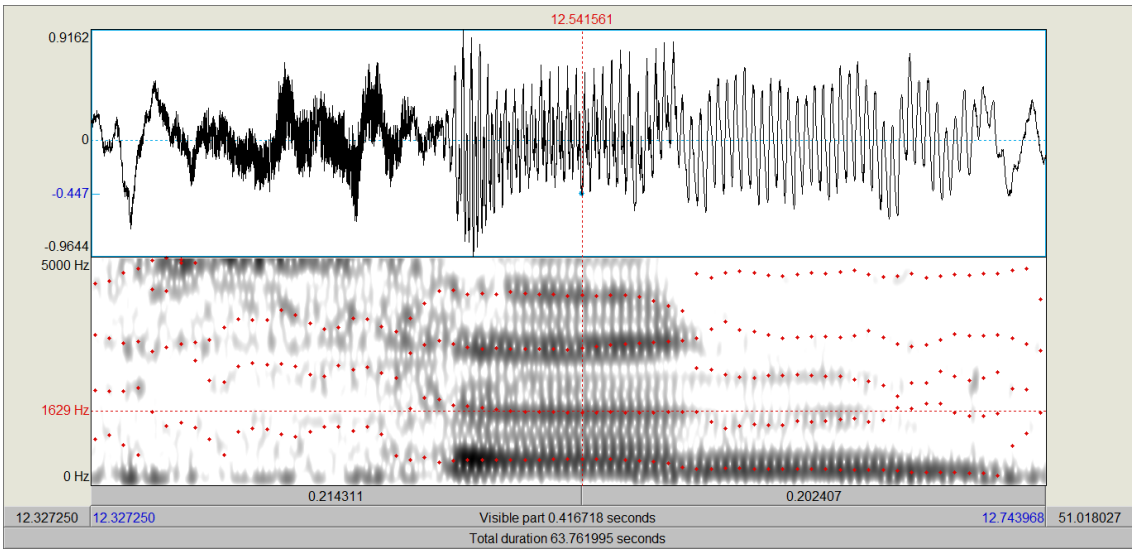


Figure A.8.7 Sun [ʌ]

A.9 Frank Bryant [Cornwall, England]

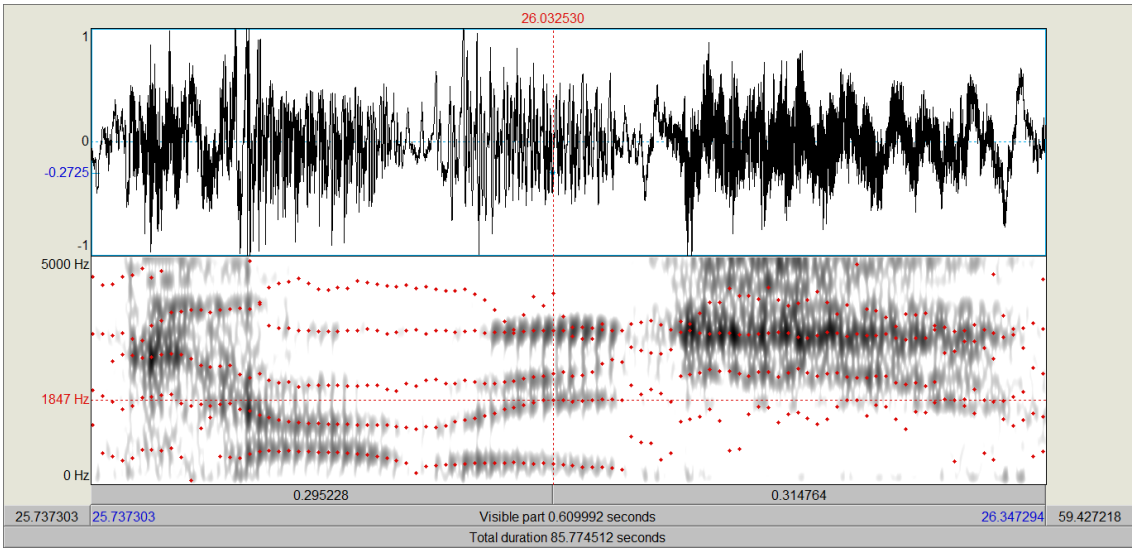


Figure A.9.1 Cabbage [ɪ]

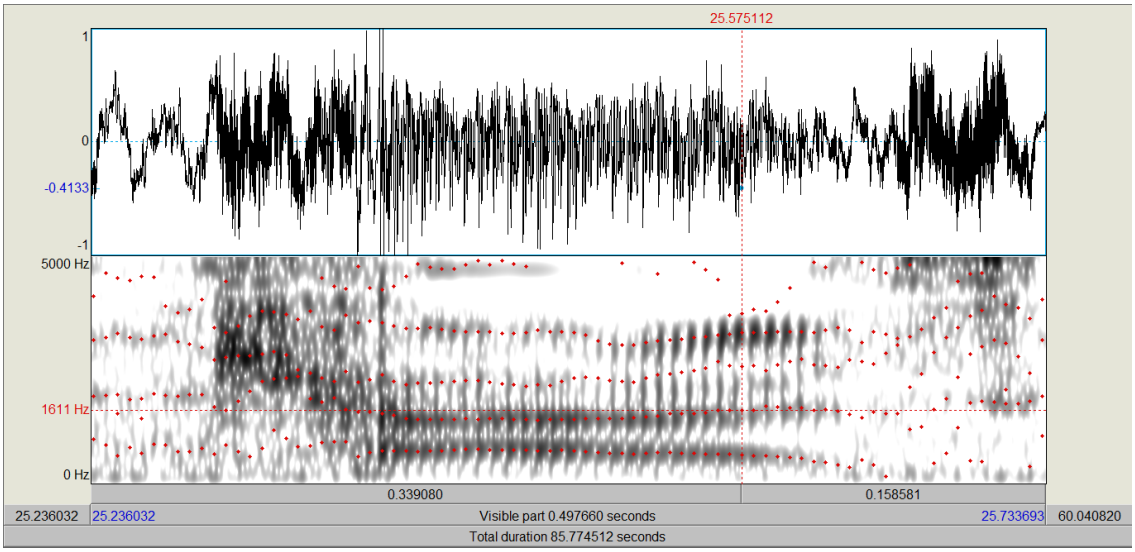


Figure A.9.2 Carrot [ə]

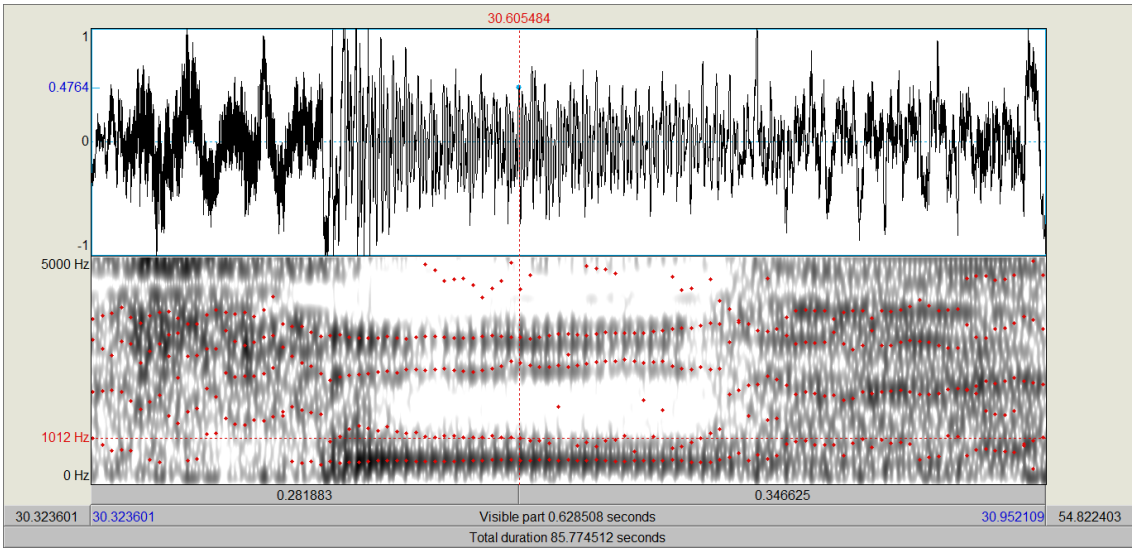


Figure A.9.3 Full [ʊ]

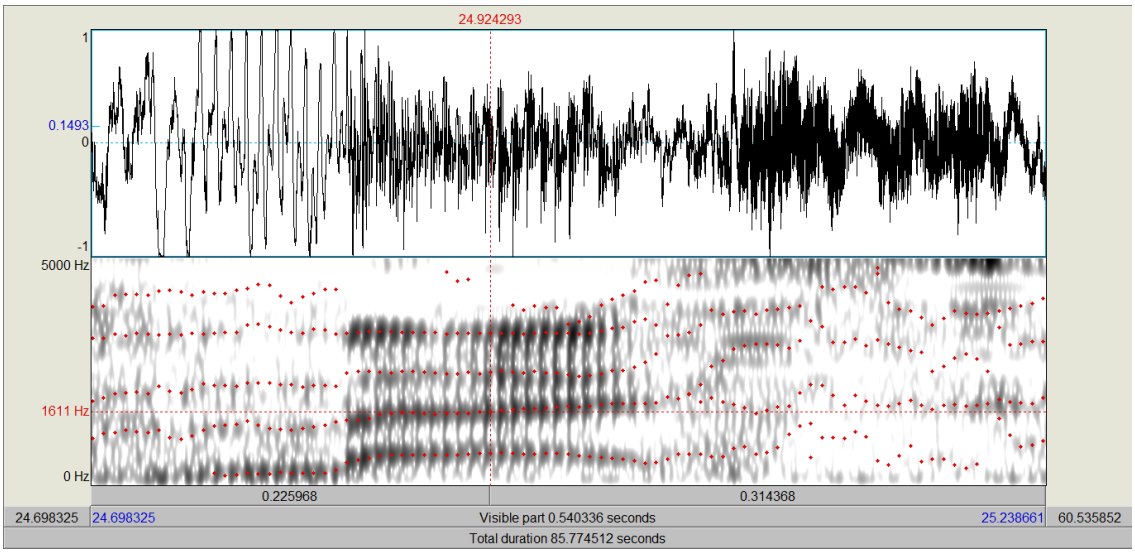


Figure A.9.4 Met [e]

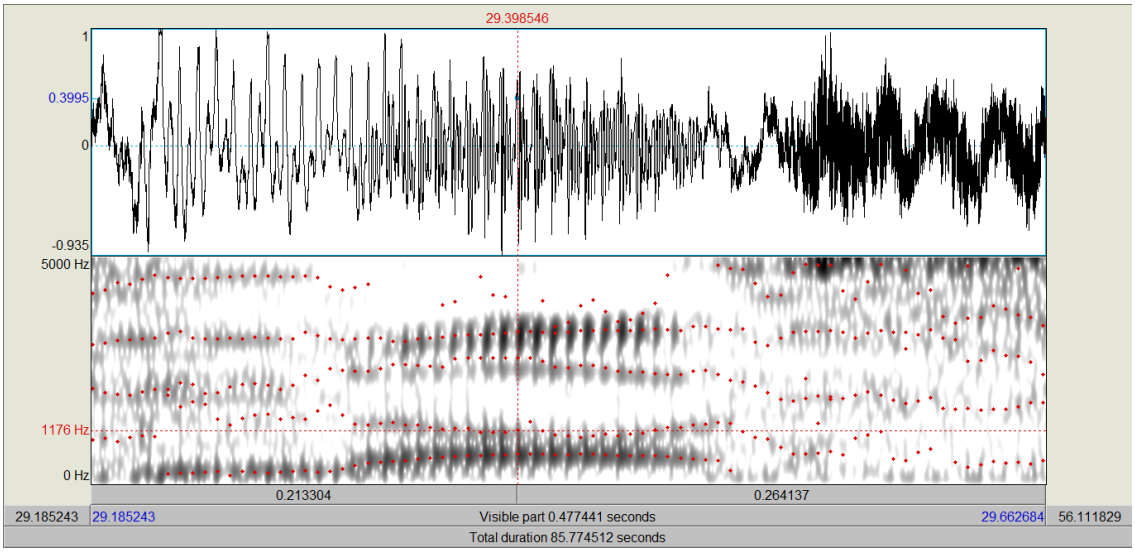


Figure A.9.5 Not [ɒ]

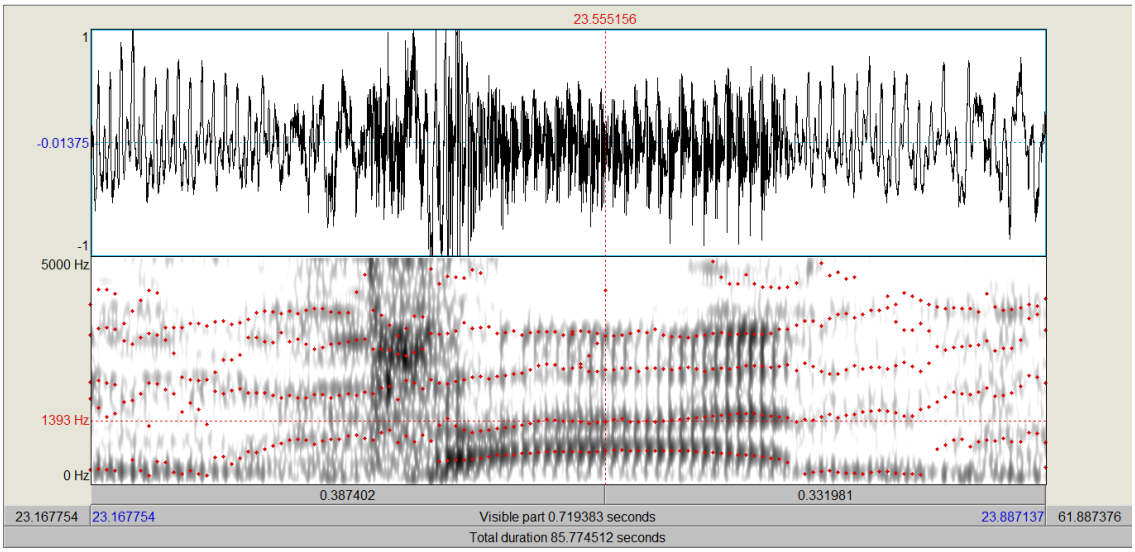


Figure A.9.6 Plan [æ]

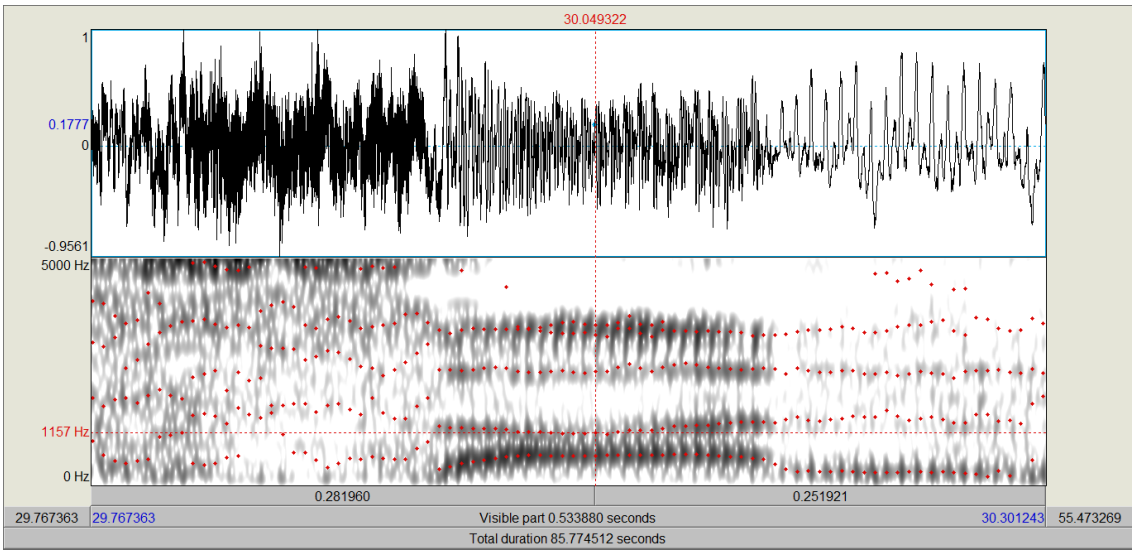


Figure A.9.7 Sun [ʌ]

A.10 Jade [Nottinghamshire, England]

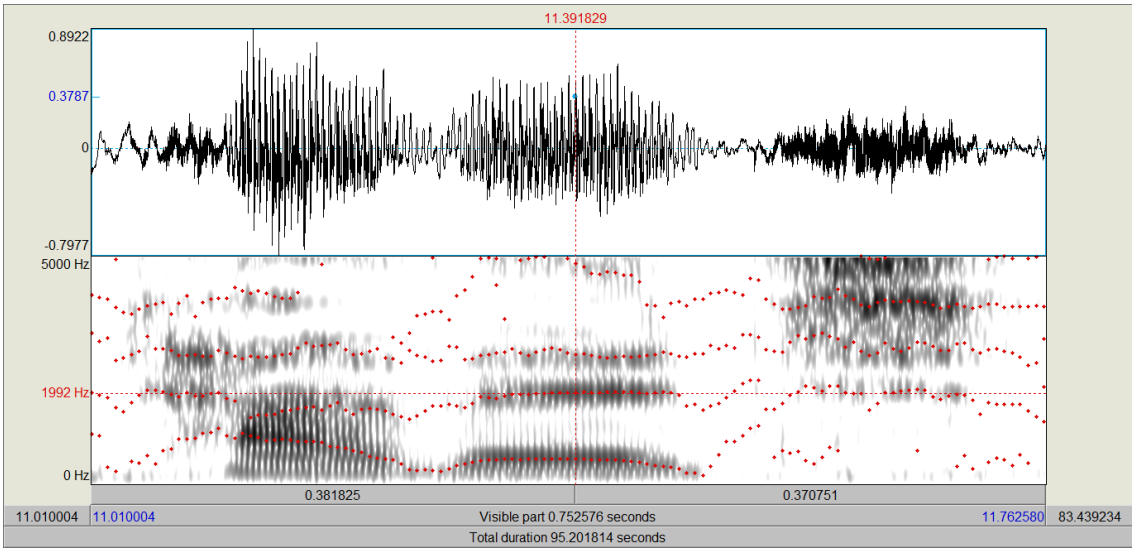


Figure A.10.1 Cabbage [ɪ]

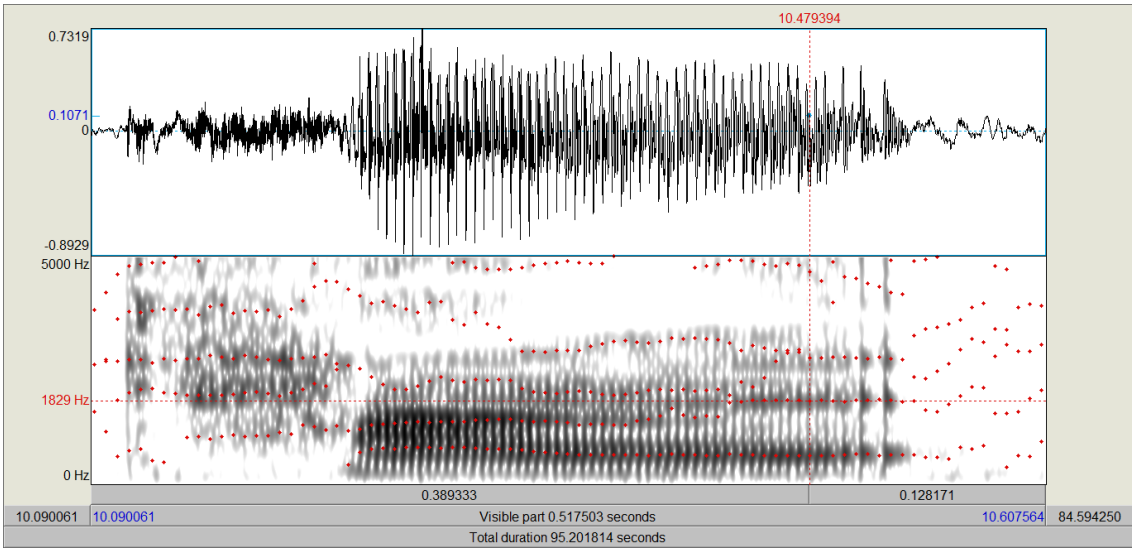


Figure A.10.2 Carrot [ə]

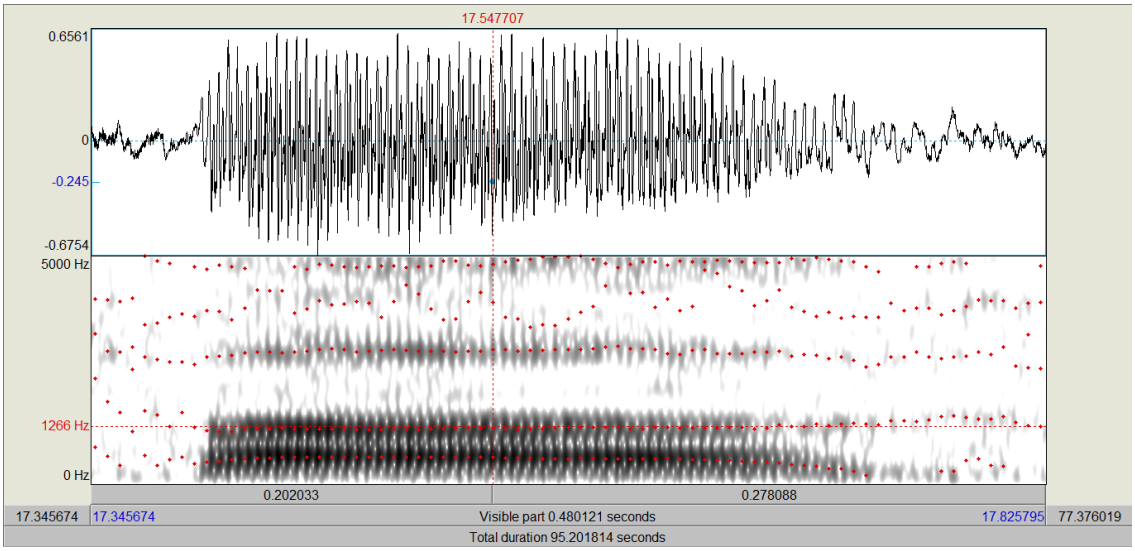


Figure A.10.3 Full [ʊ]

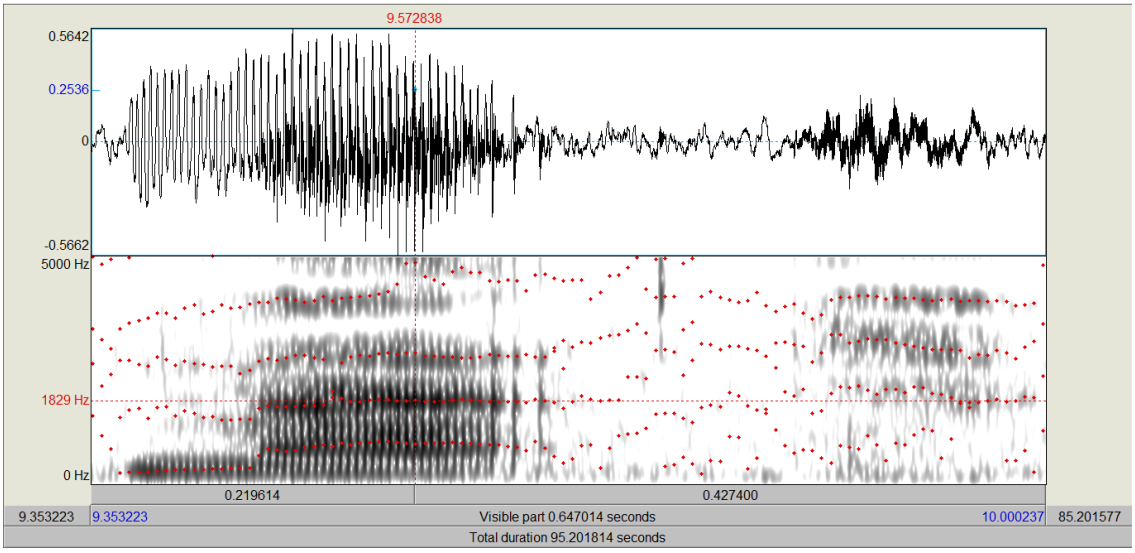


Figure A.10.4 Met [e]

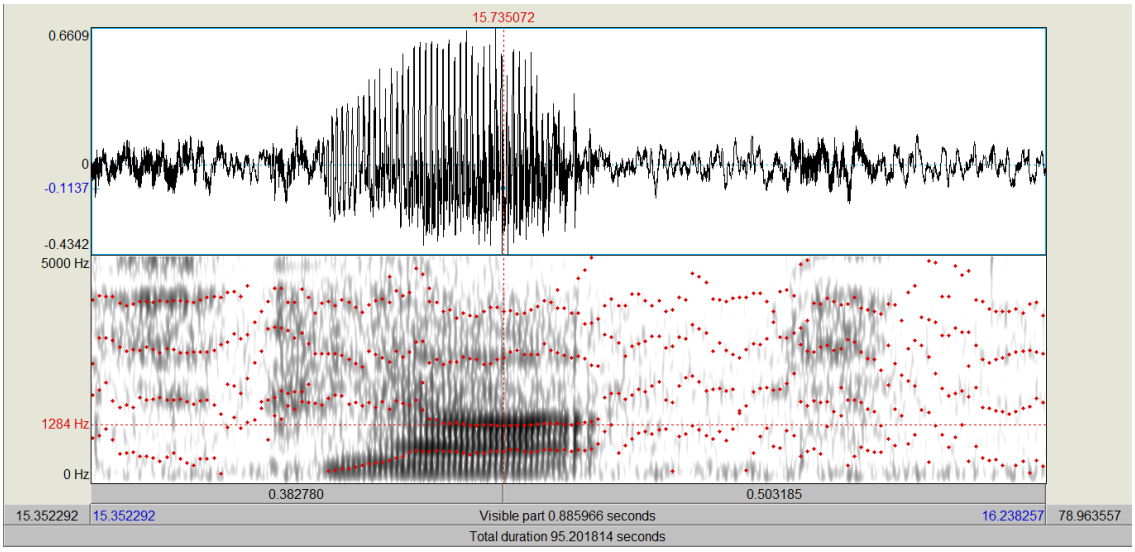


Figure A.10.5 Not [ɒ]

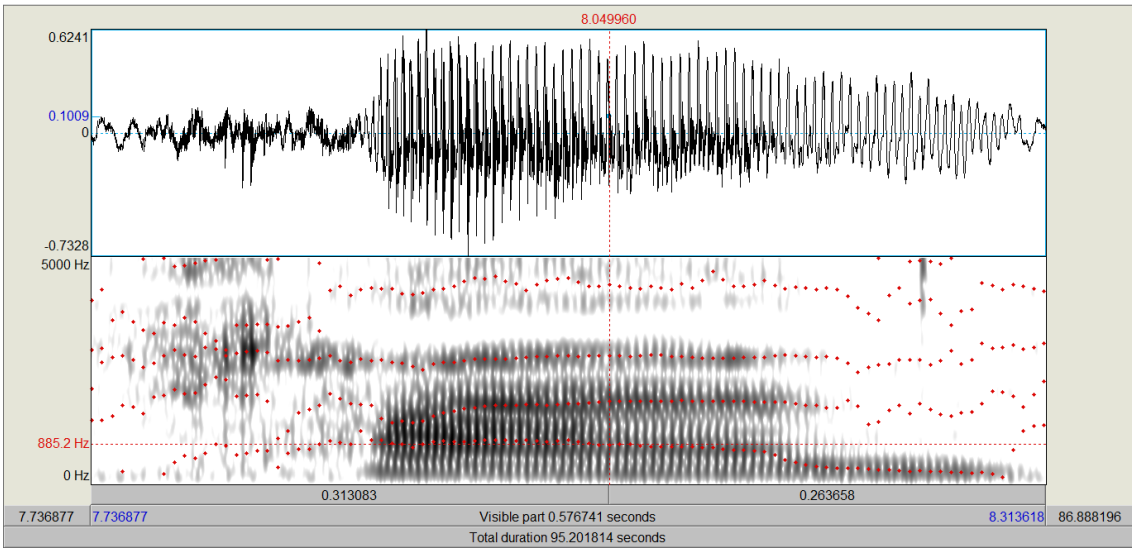


Figure A.10.6 Plan [æ]

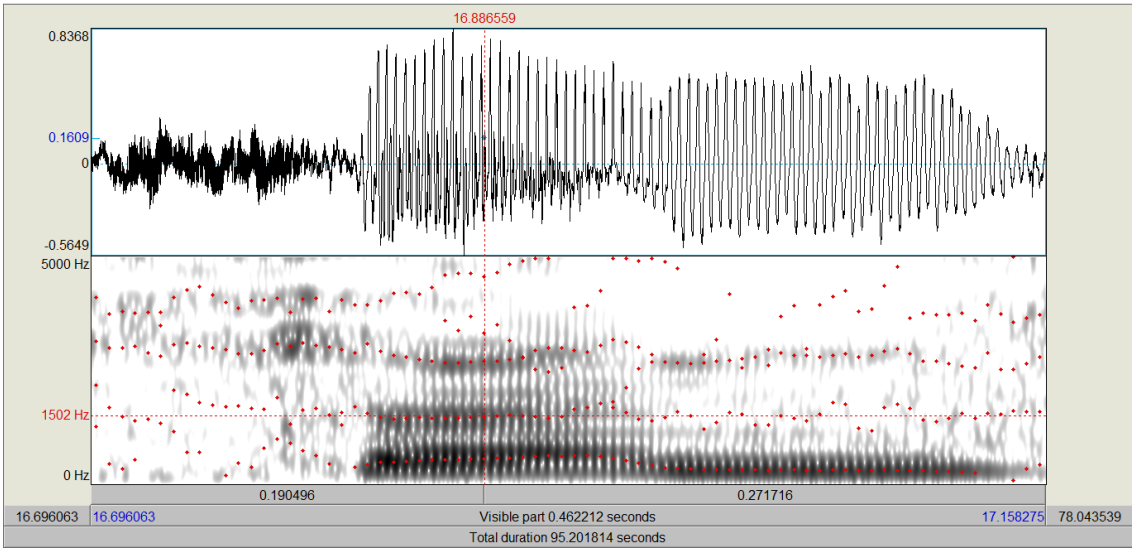


Figure A.10.7 Sun [ʌ]

A.11 Joshua Gardener [Leicestershire, England]

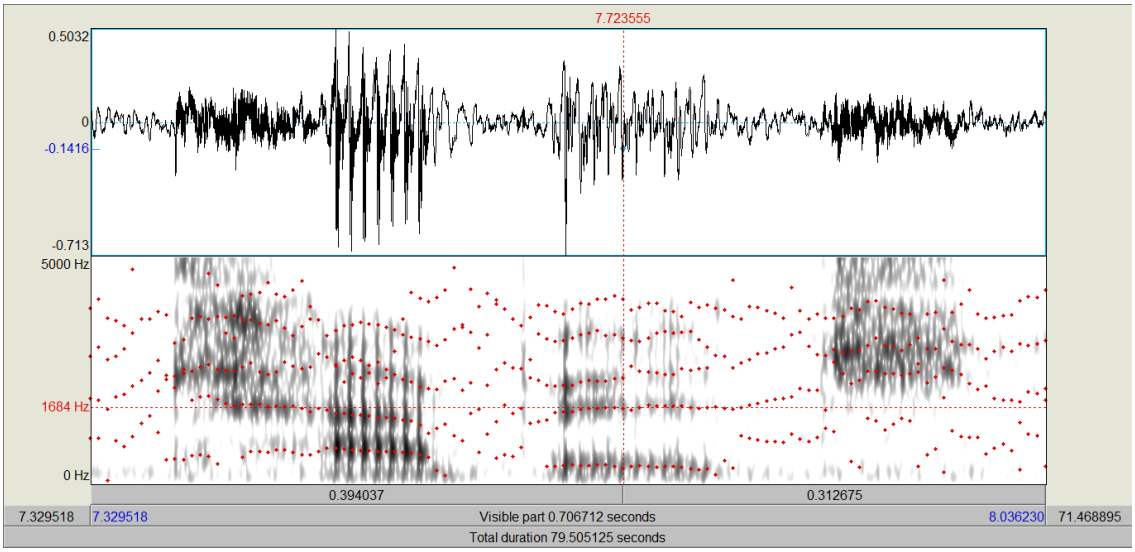


Figure A.11.1 Cabbage [ɪ]

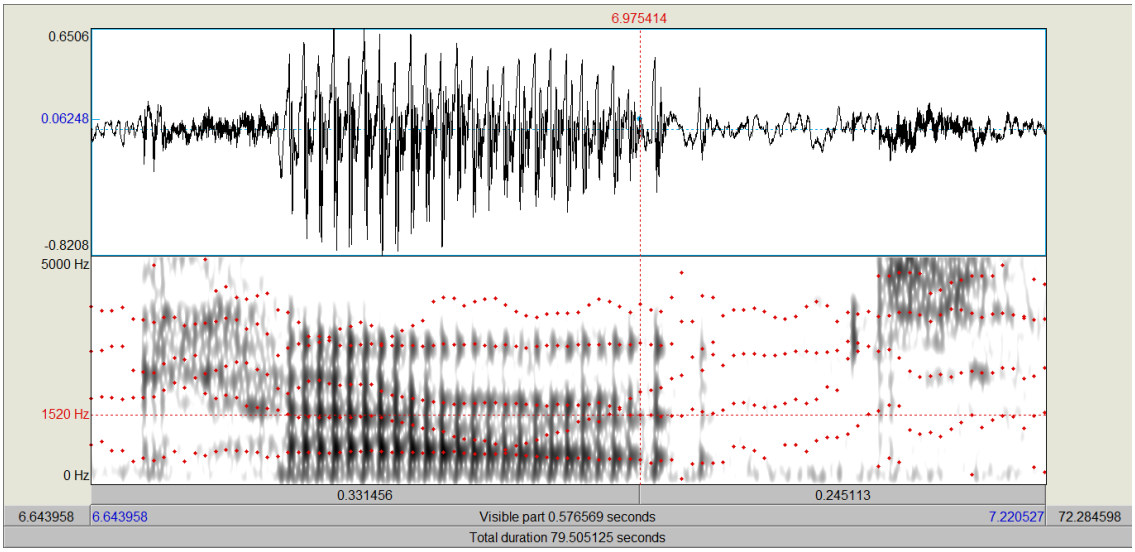


Figure A.11.2 Carrot [ə]

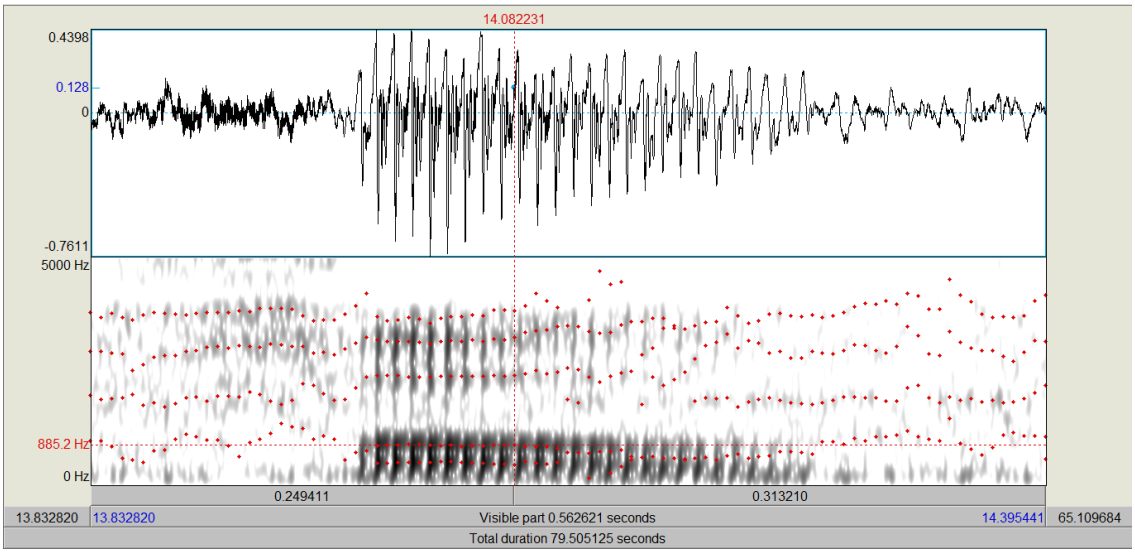


Figure A.11.3 Full [ʊ]

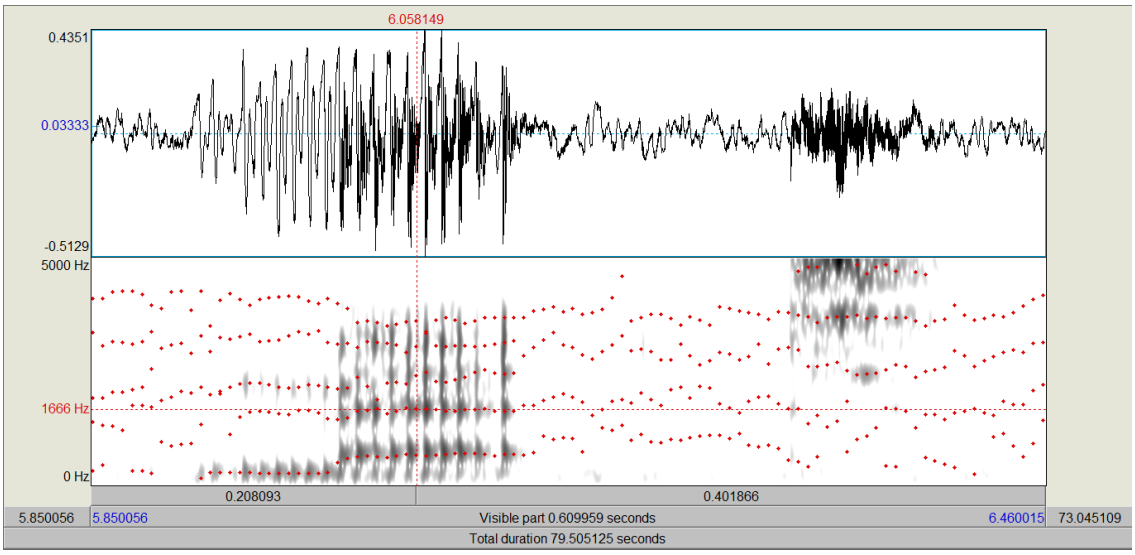


Figure A.11.4 Met [e]

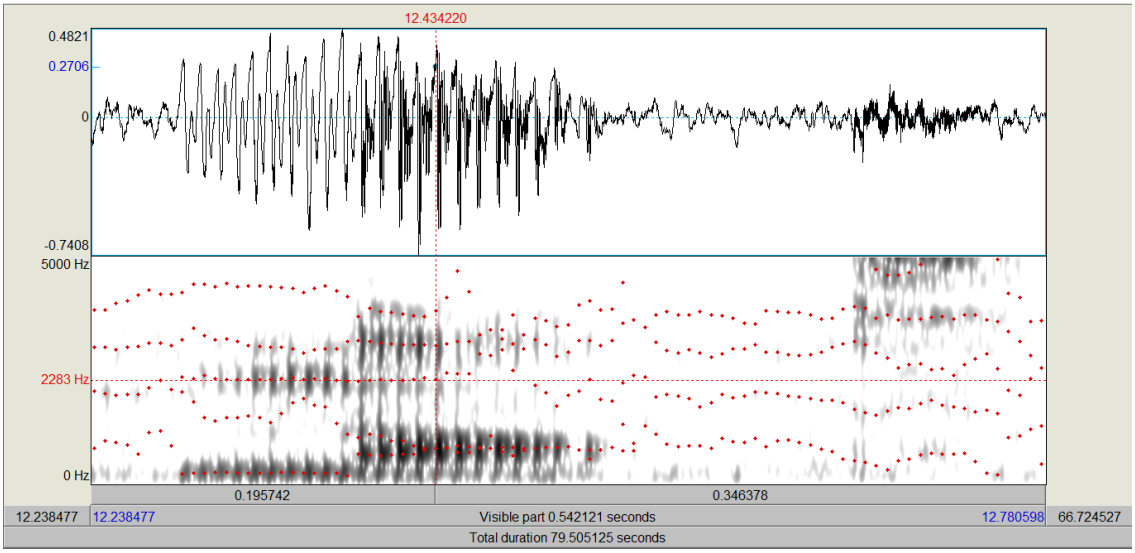


Figure A.11.5 Not [ɒ]

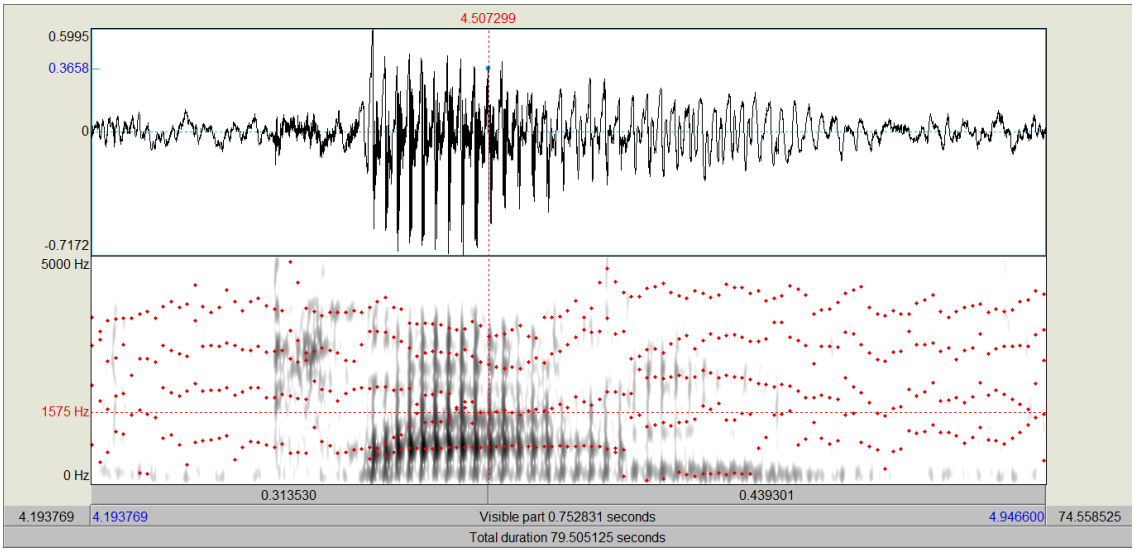


Figure A.11.6 Plan [æ]

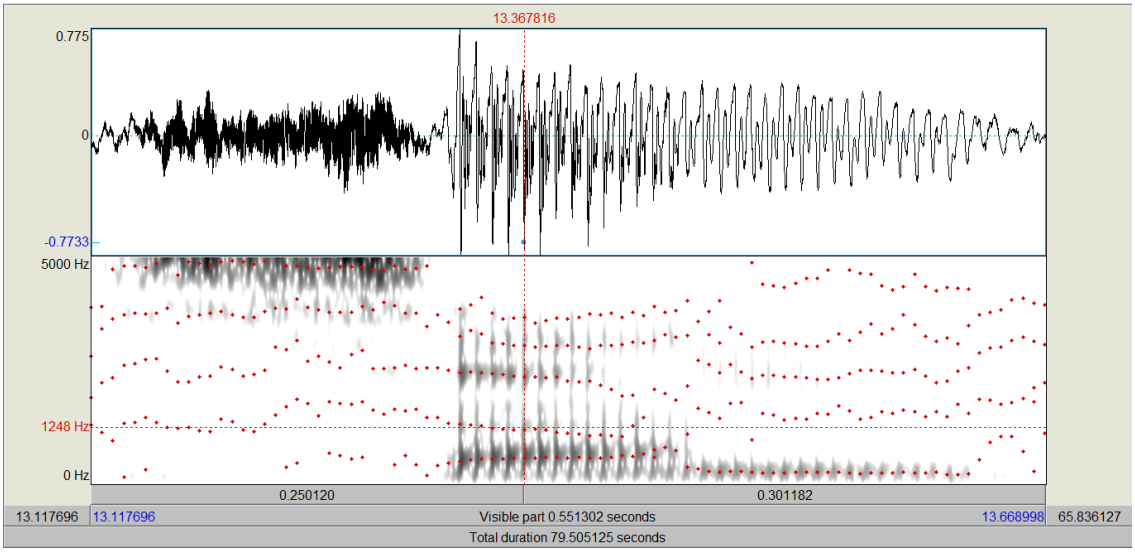


Figure A.11.7 Sun [ʌ]

A.12 Krupa Patel [London, England]

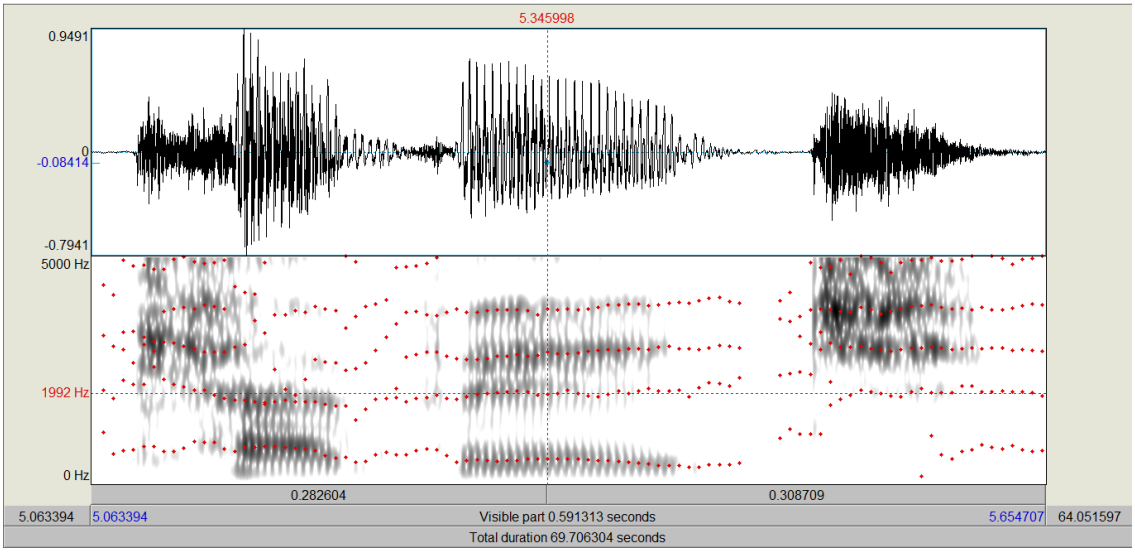


Figure A.12.1 Cabbage [ɪ]

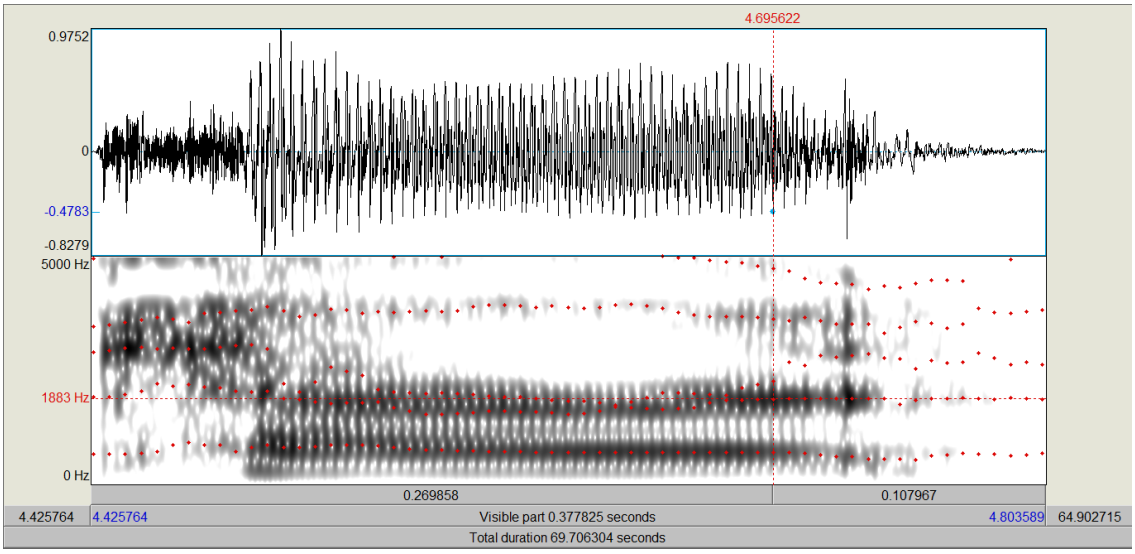


Figure A.12.2 Carrot [ə]

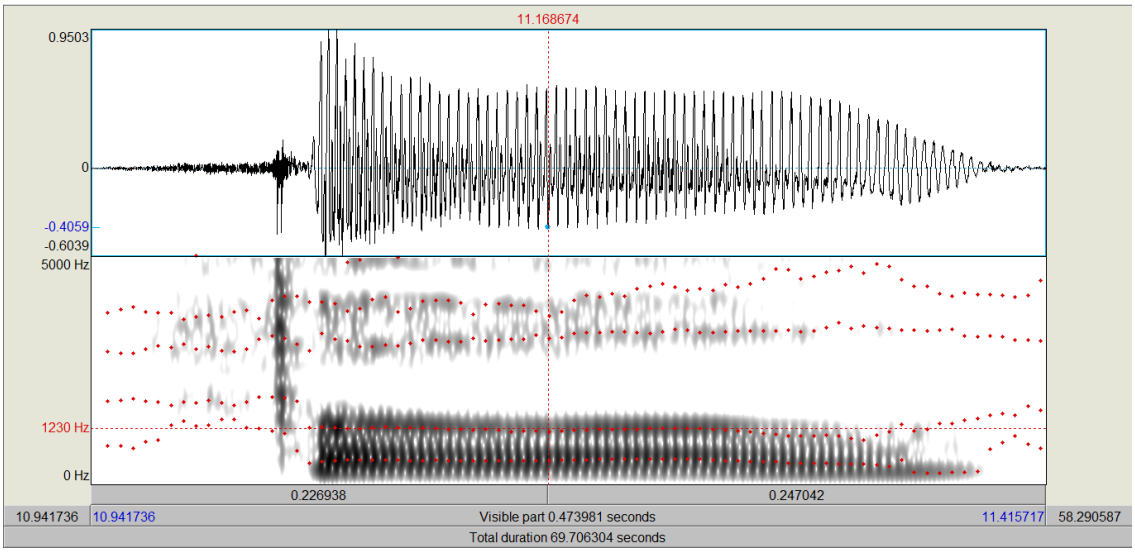


Figure A.12.3 Full [ʊ]

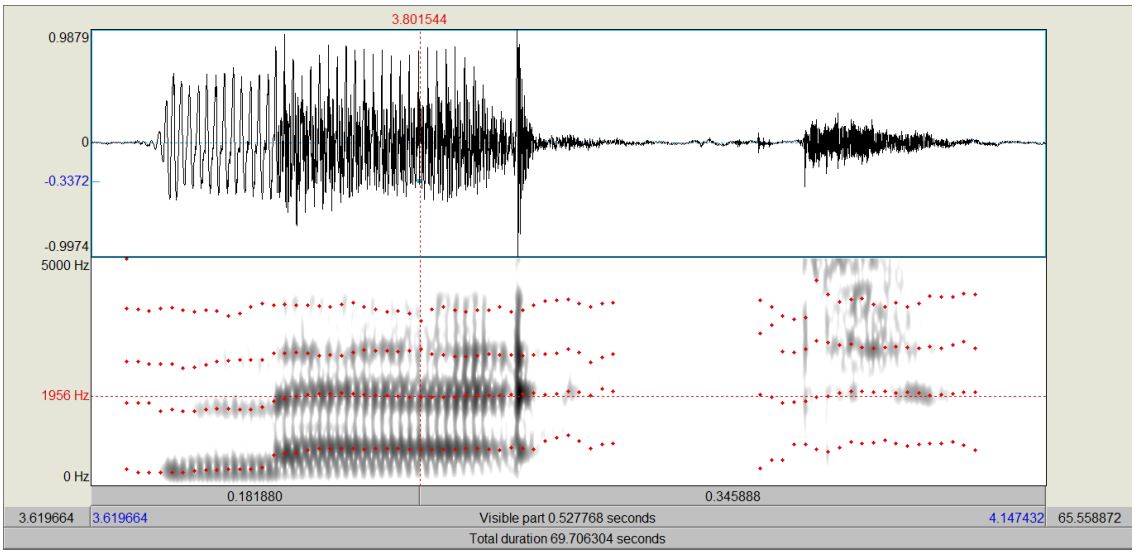


Figure A.12.4 Met [e]

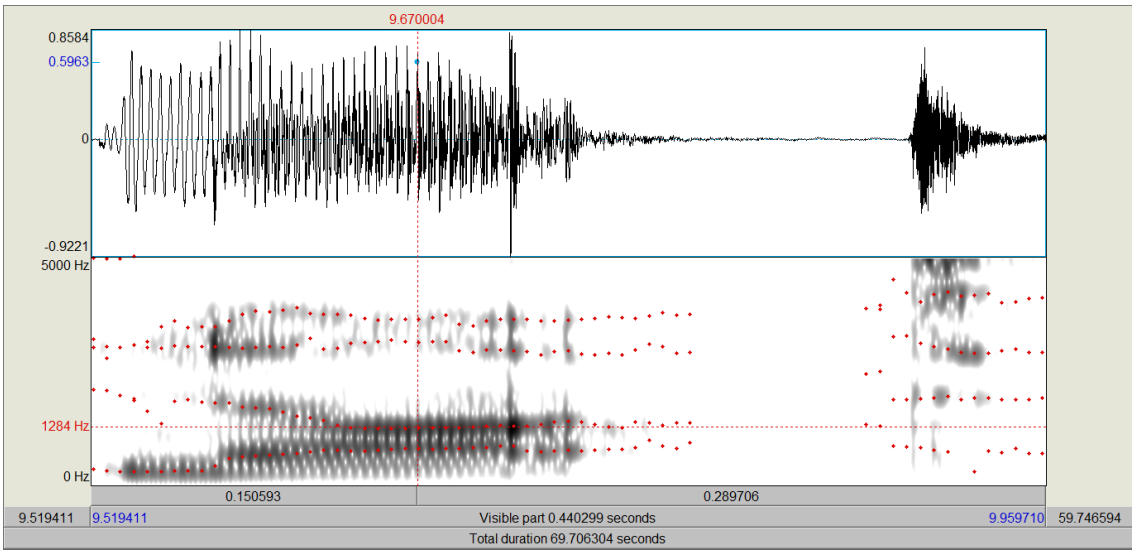


Figure A.12.5 Not [ɒ]

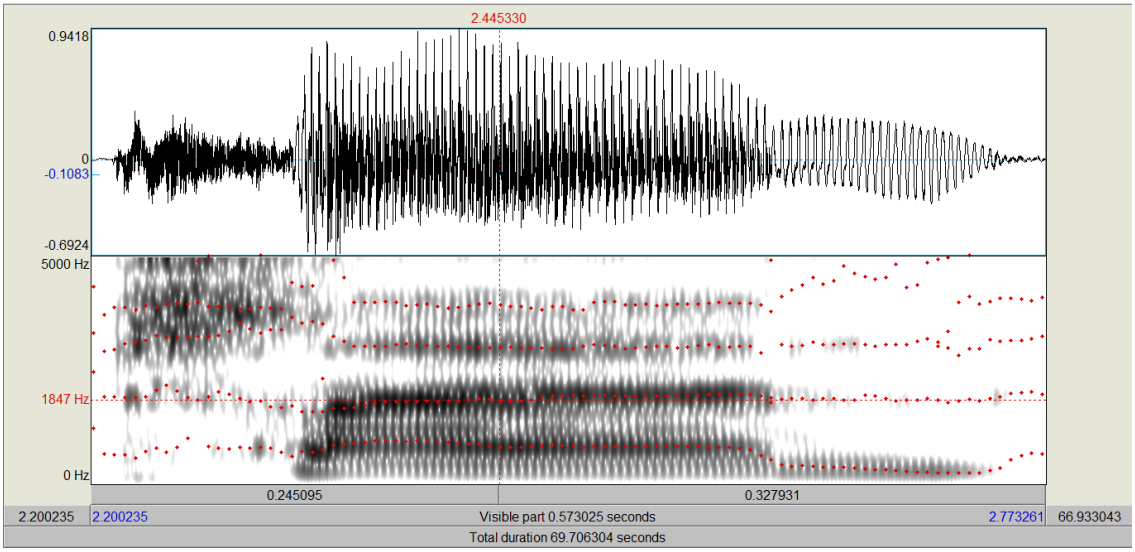


Figure A.12.6 Plan [æ]

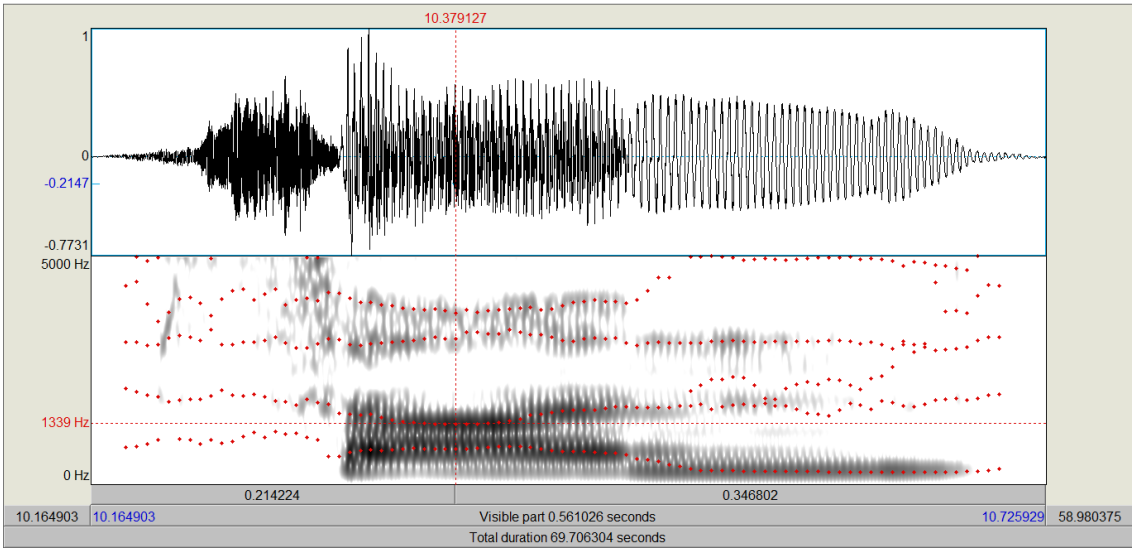


Figure A.12.7 Sun [ʌ]

A.13 Lauren [Norfolk, England]

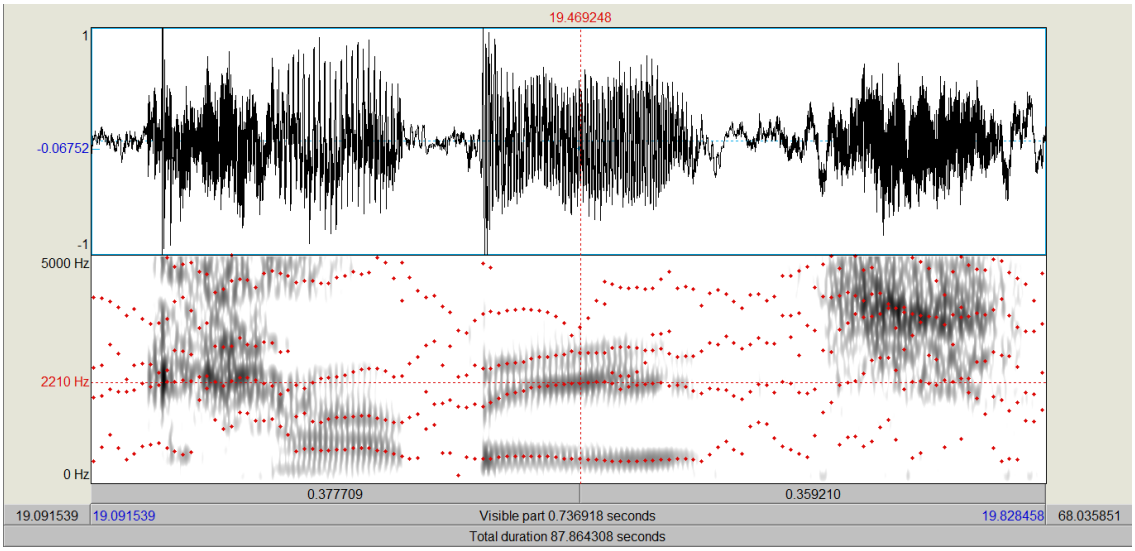


Figure A.13.1 Cabbage [ɪ]

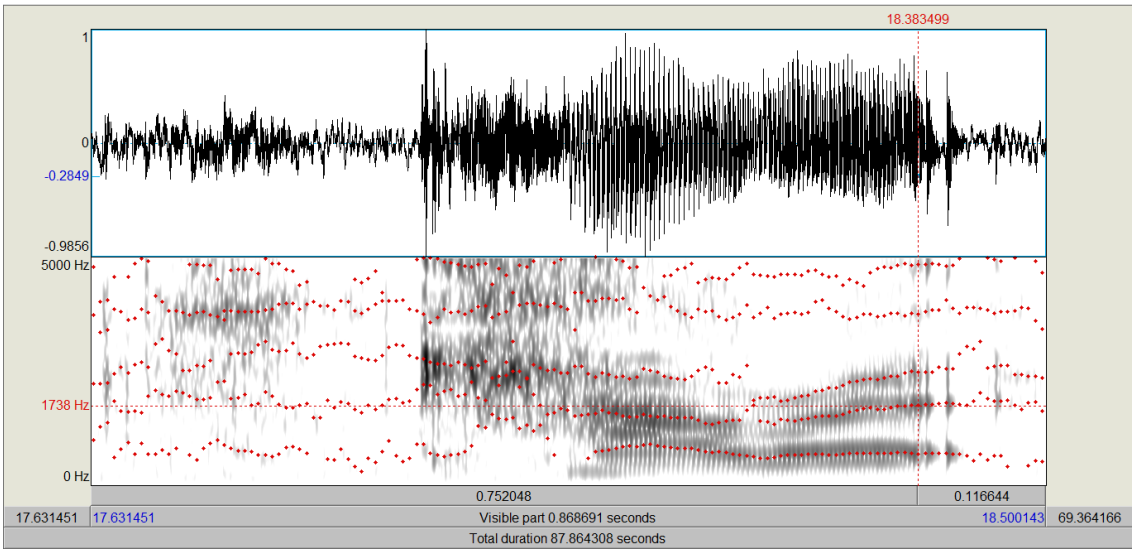


Figure A.13.2 Carrot [ə]

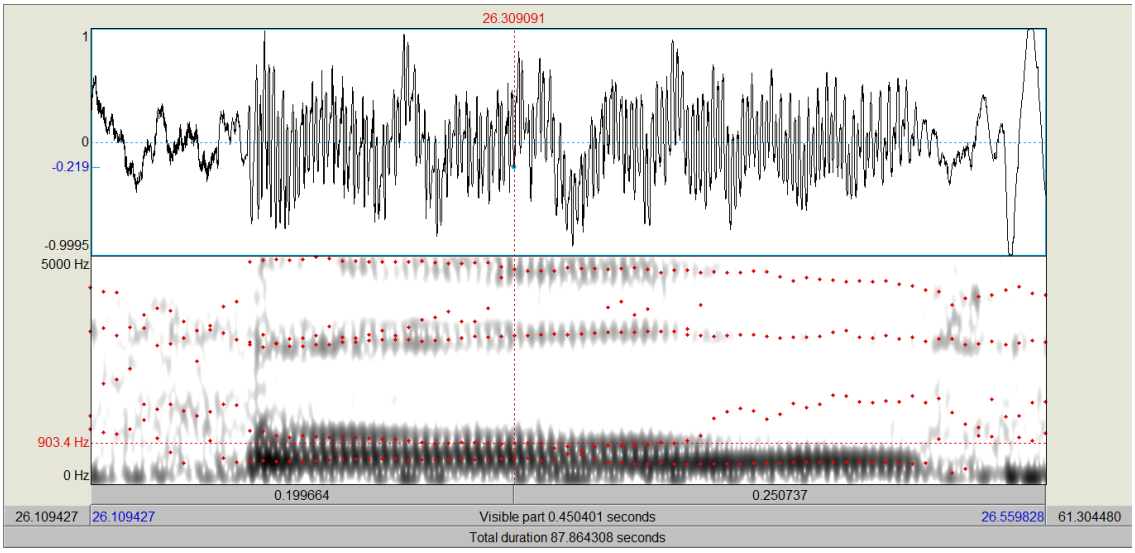


Figure A.13.3 Full [ʊ]

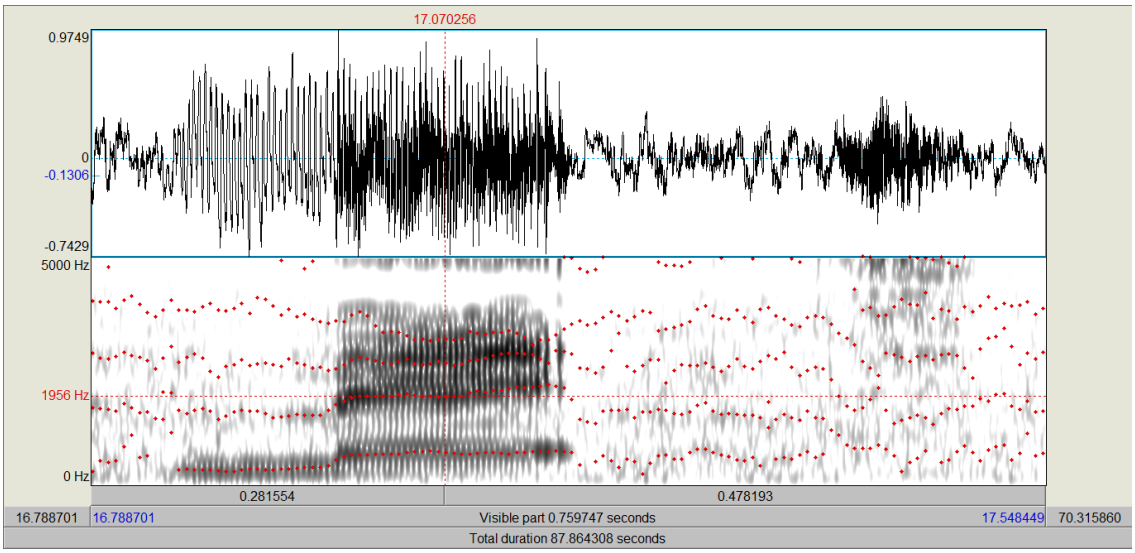


Figure A.13.4 Met [e]

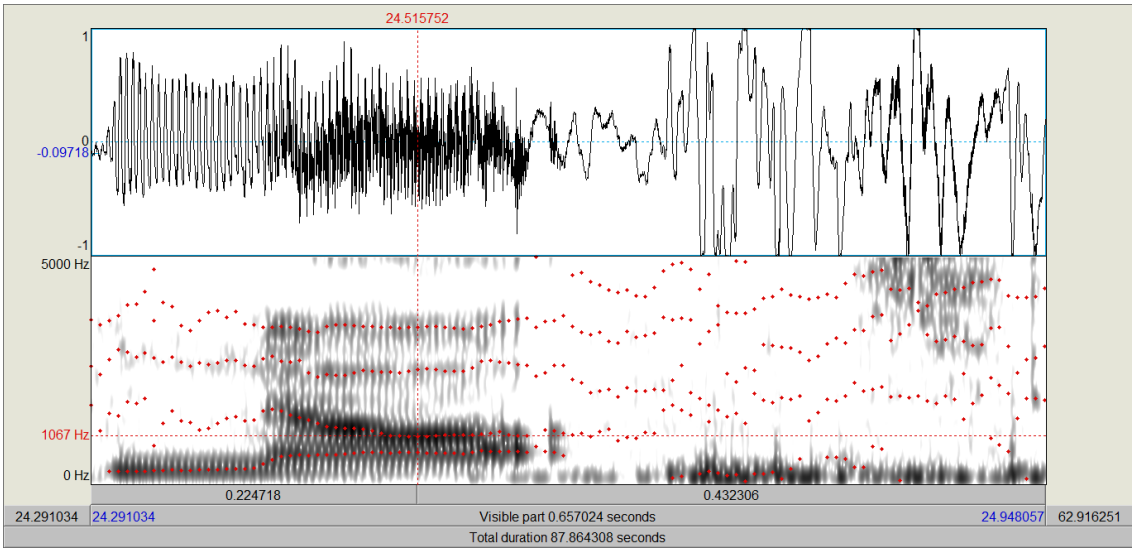


Figure A.13.5 Not [ɒ]

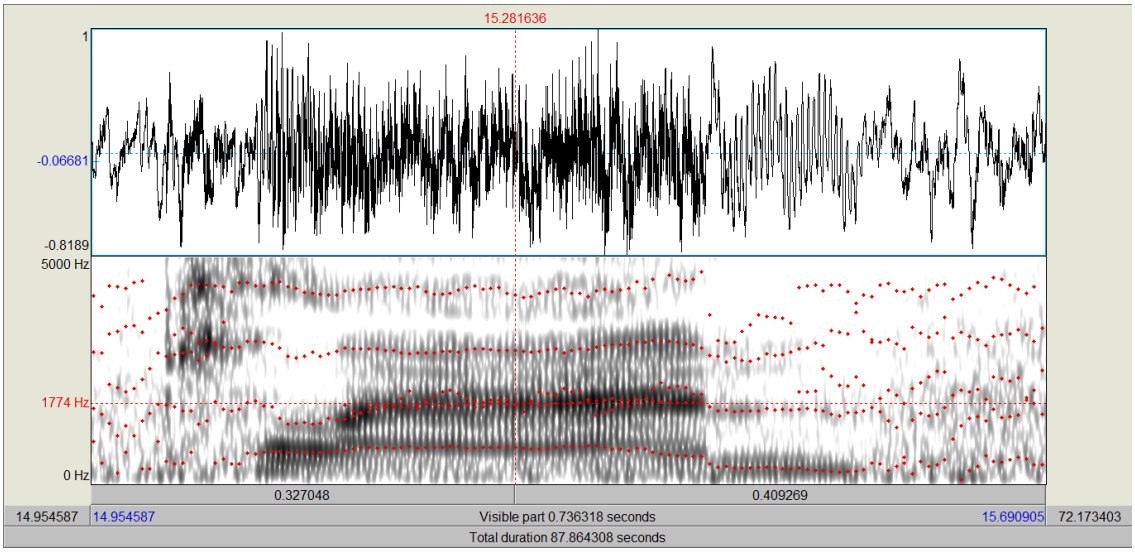


Figure A.13.6 Plan [æ]

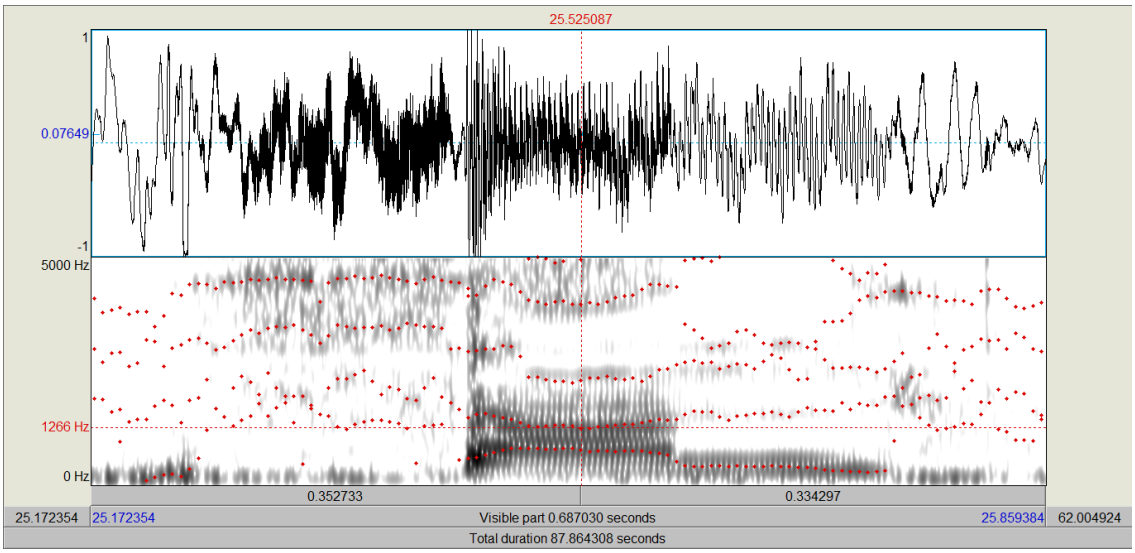


Figure A.13.7 Sun [ʌ]

A.14 Luke, BBC [England]

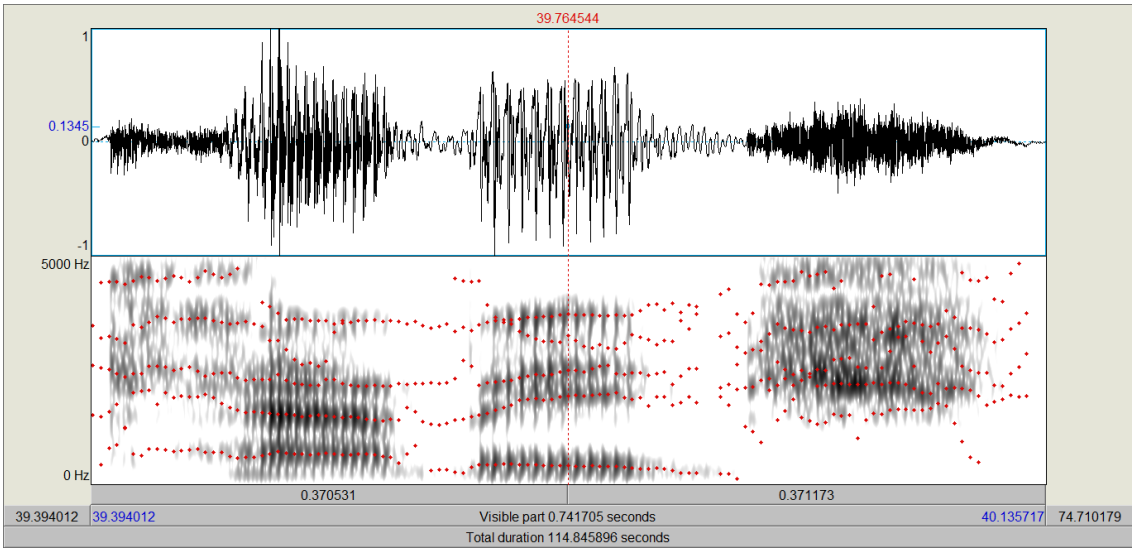


Figure A.14.1 Cabbage [ɪ]

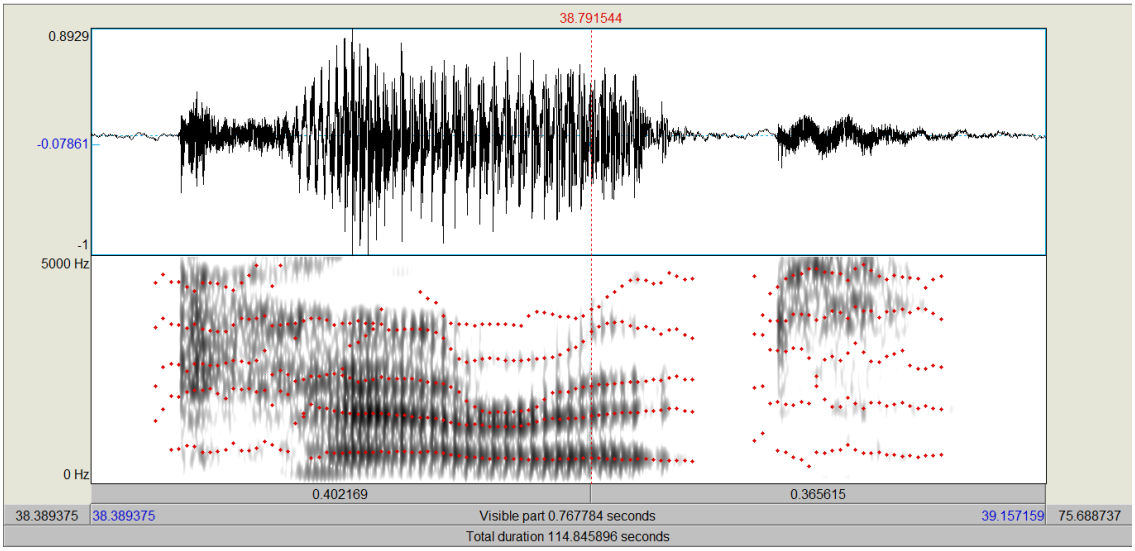


Figure A.14.2 Carrot [ə]

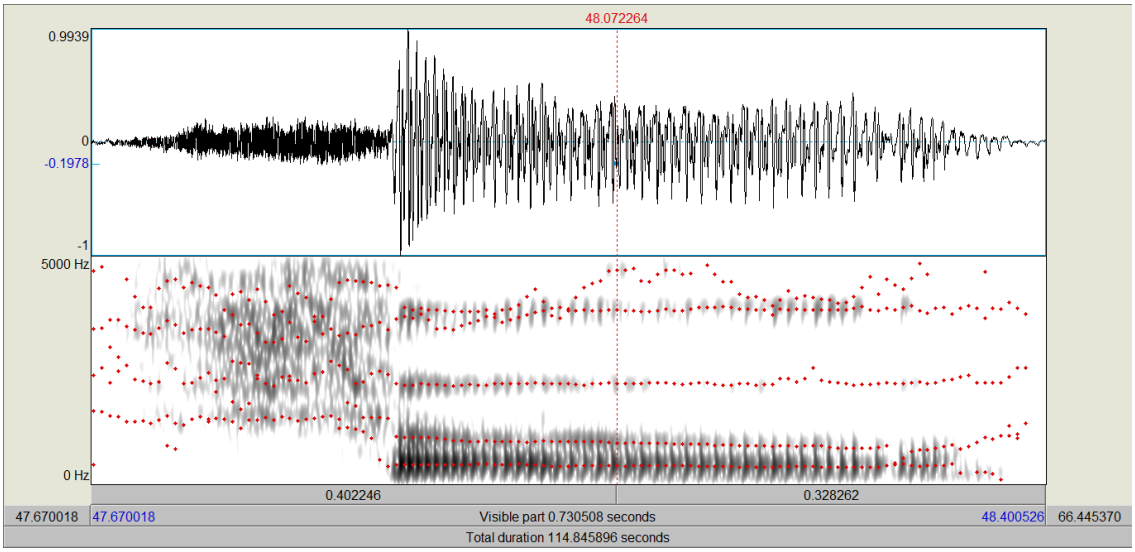


Figure A.14.3 Full [ʊ]

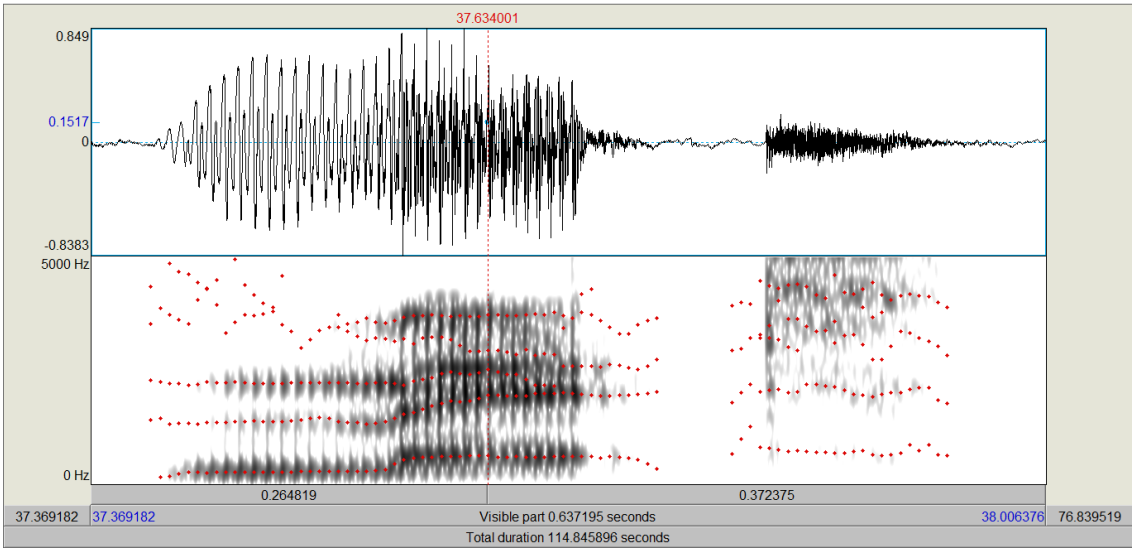


Figure A.14.4 Met [e]

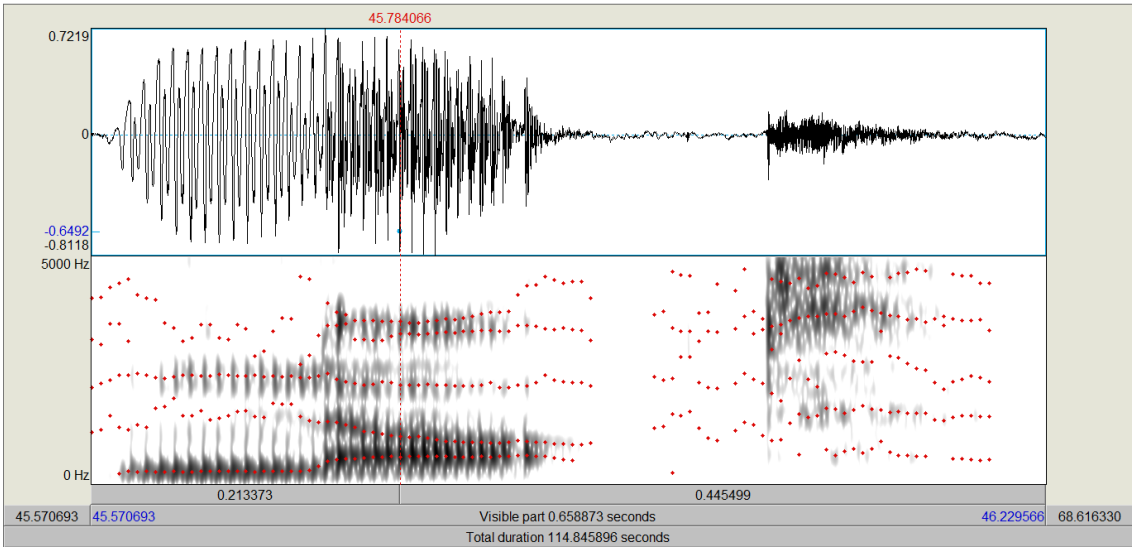


Figure A.14.5 Not [ɒ]

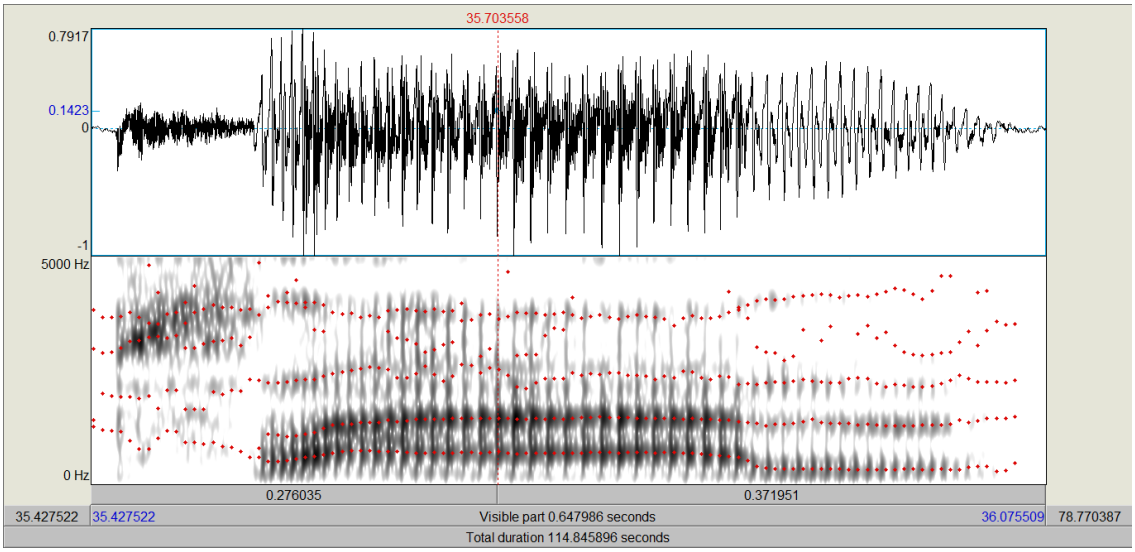


Figure A.14.6 Plan [æ]

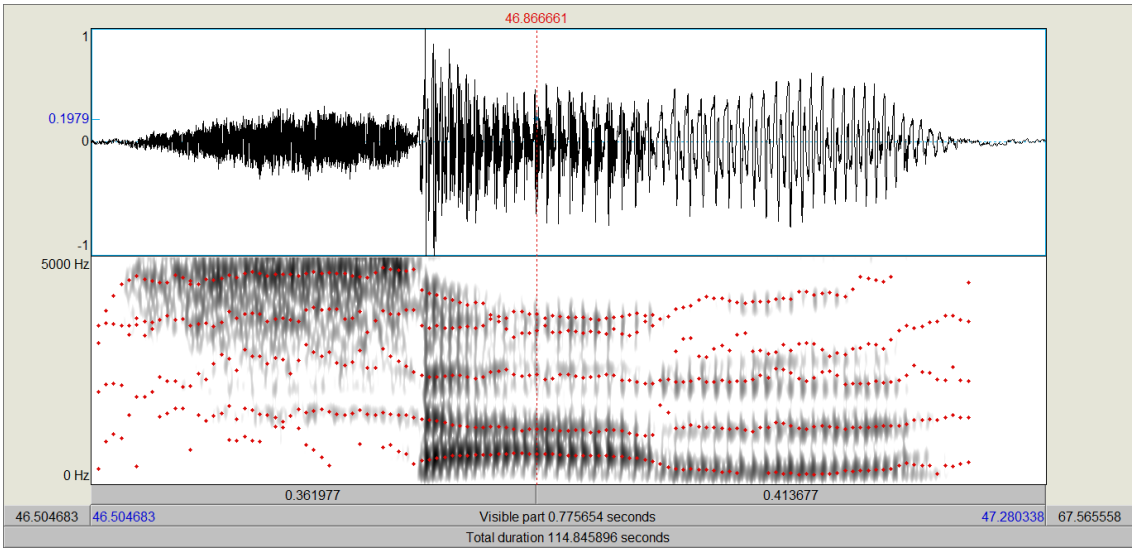


Figure A.14.7 Sun [ʌ]

A.15 Maddie [London, England]

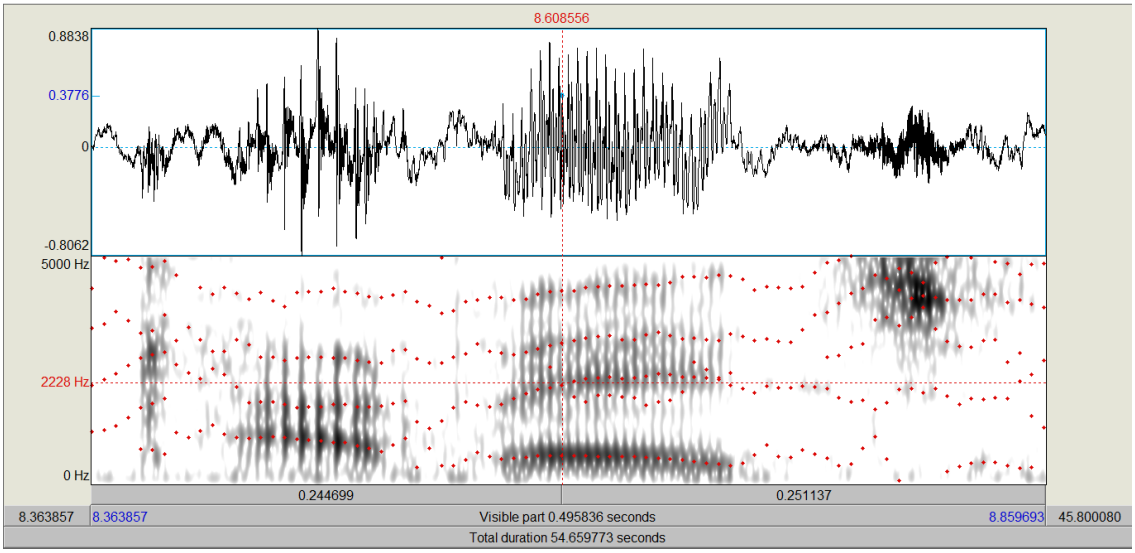


Figure A.15.1 Cabbage [ɪ]

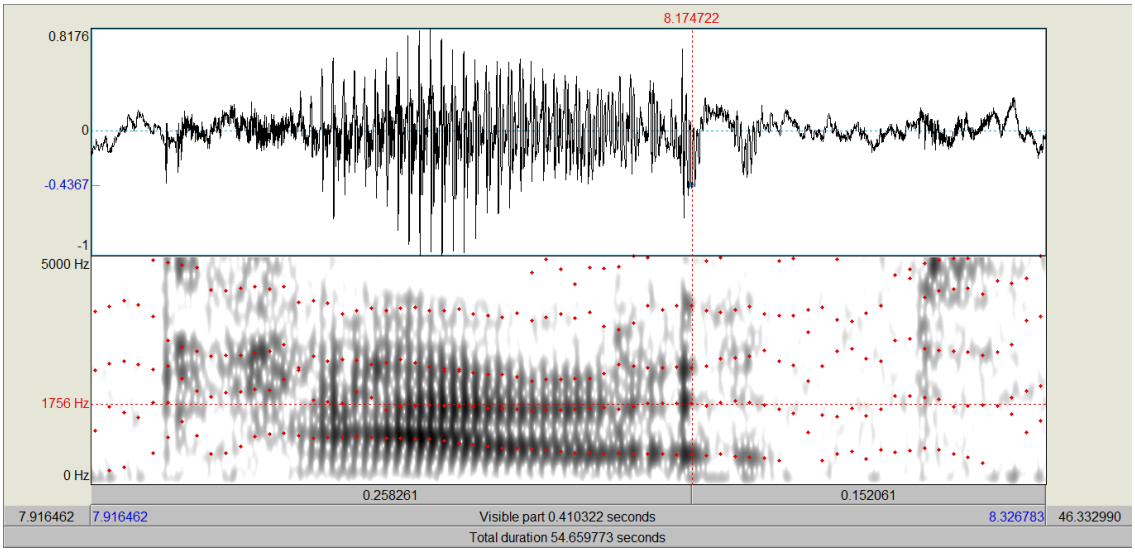


Figure A.15.2 Carrot [ə]

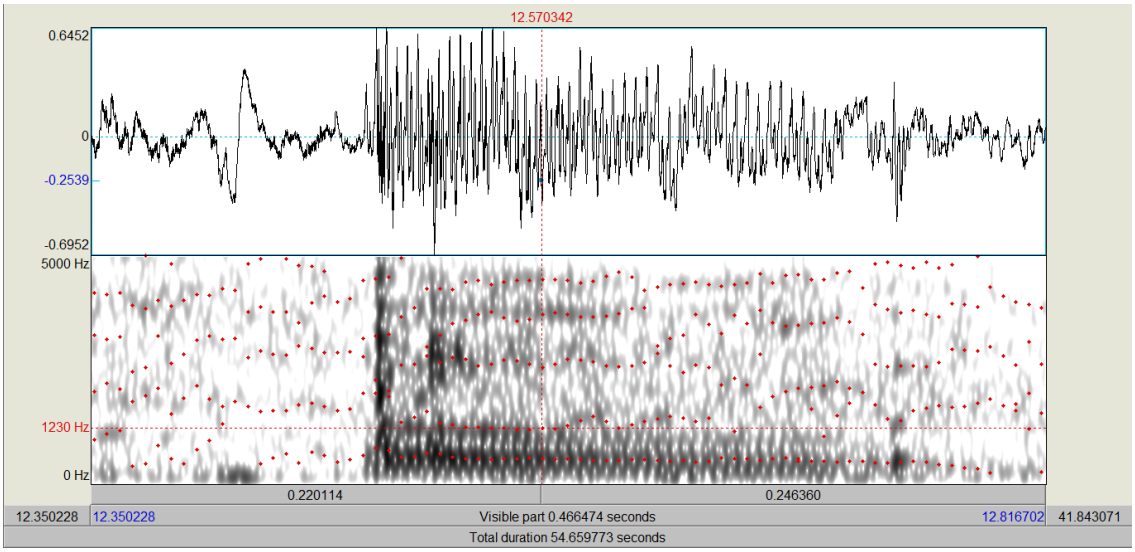


Figure A.15.3 Full [ʊ]

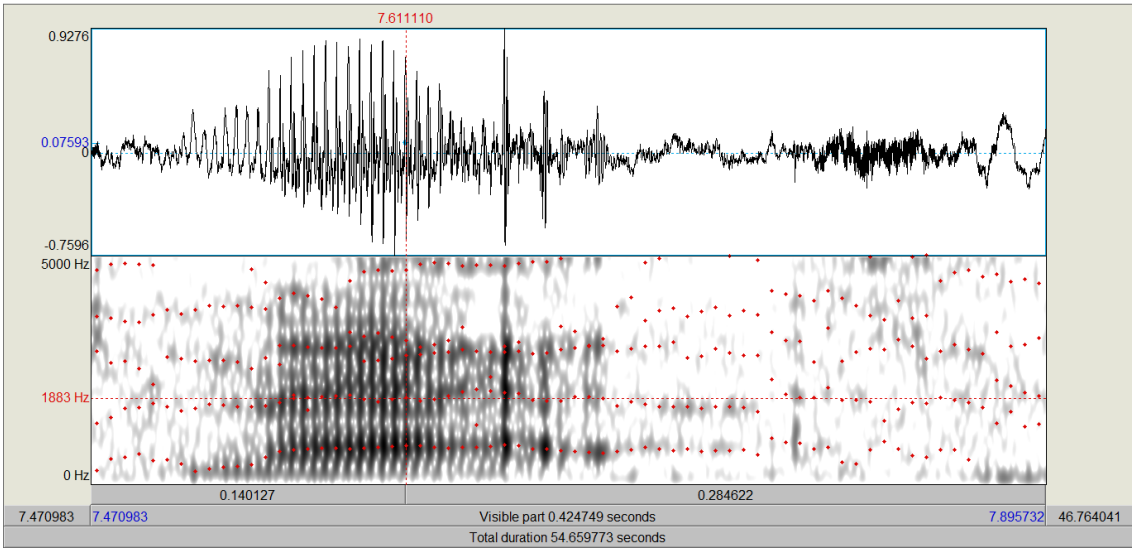


Figure A.15.4 Met [e]

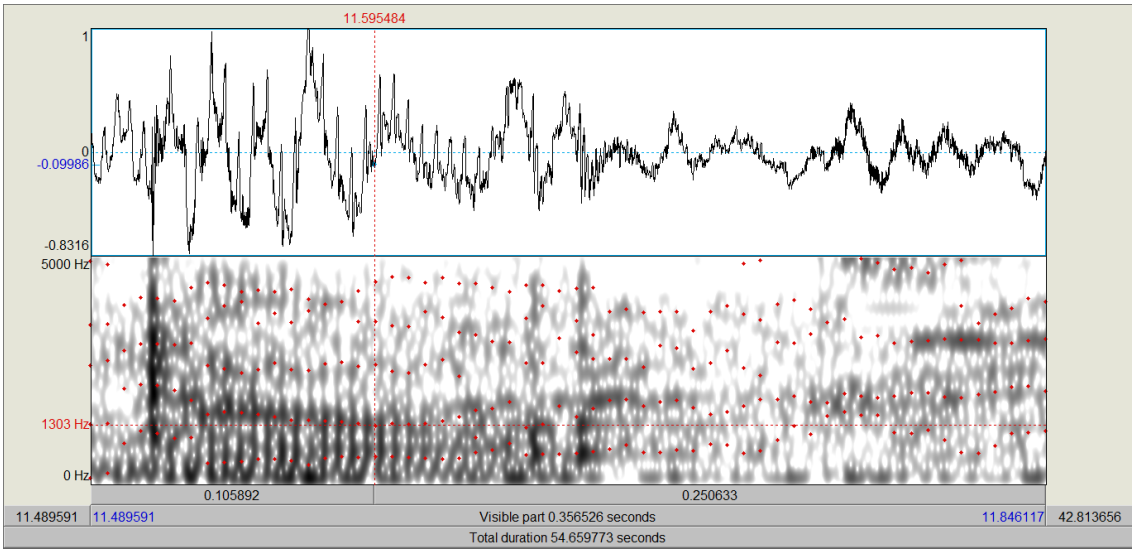


Figure A.15.5 Not [ɒ]

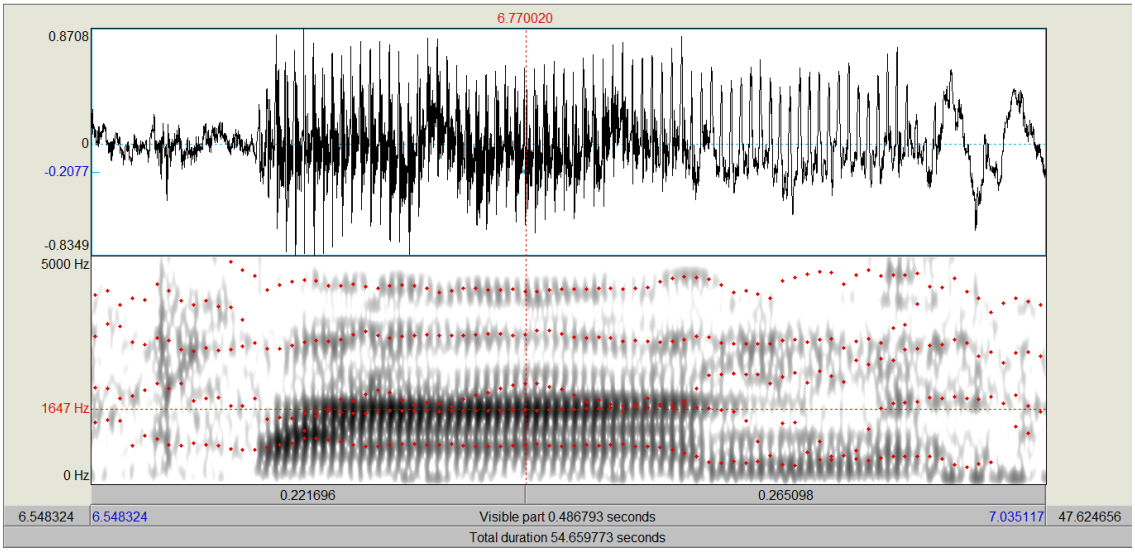


Figure A.15.6 Plan [æ]

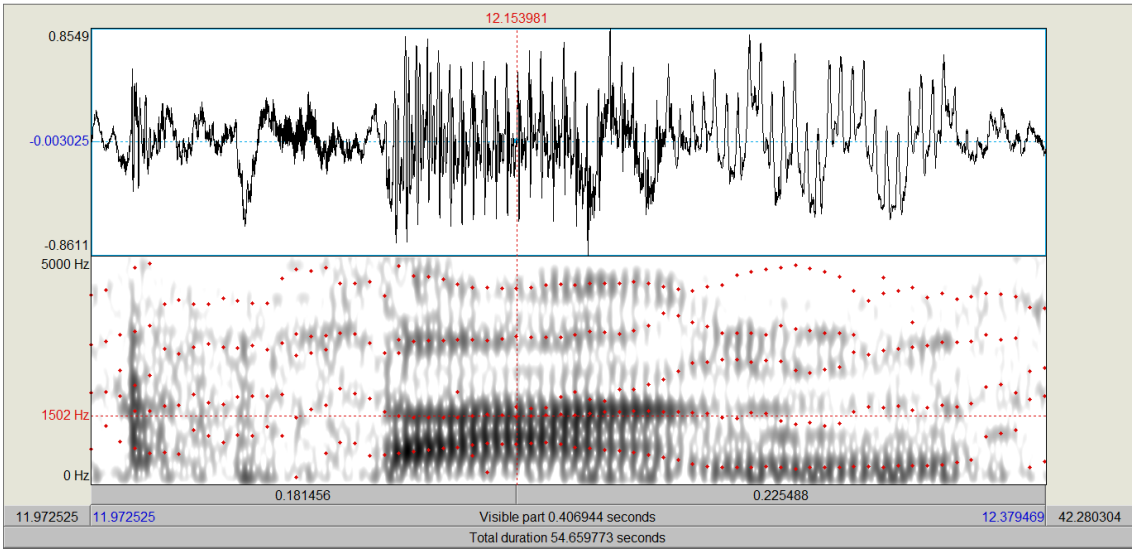


Figure A.15.7 Sun [ʌ]

A.16 Maya [Devon, England]

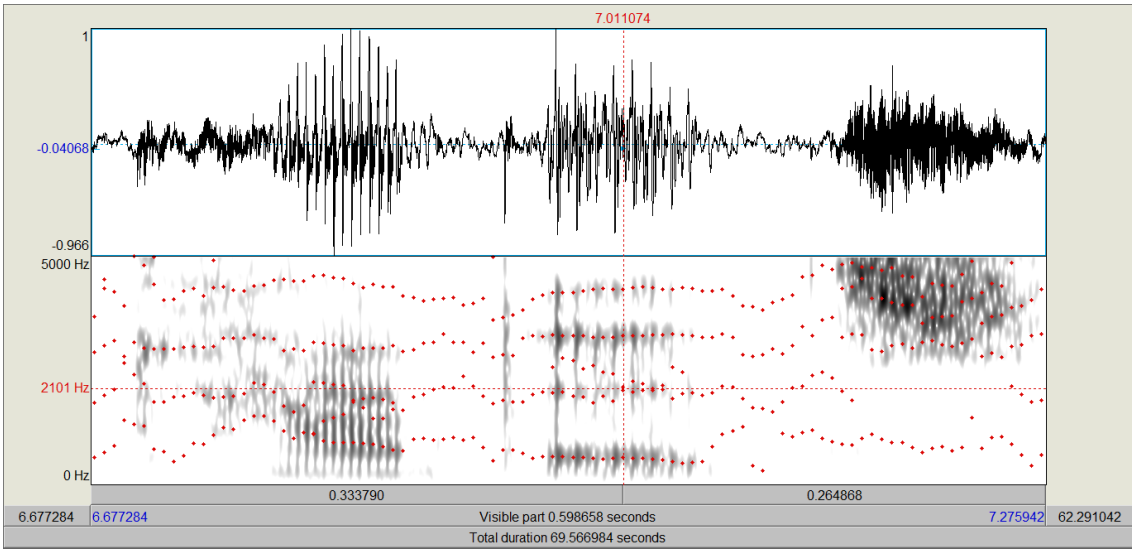


Figure A.16.1 Cabbage [ɪ]

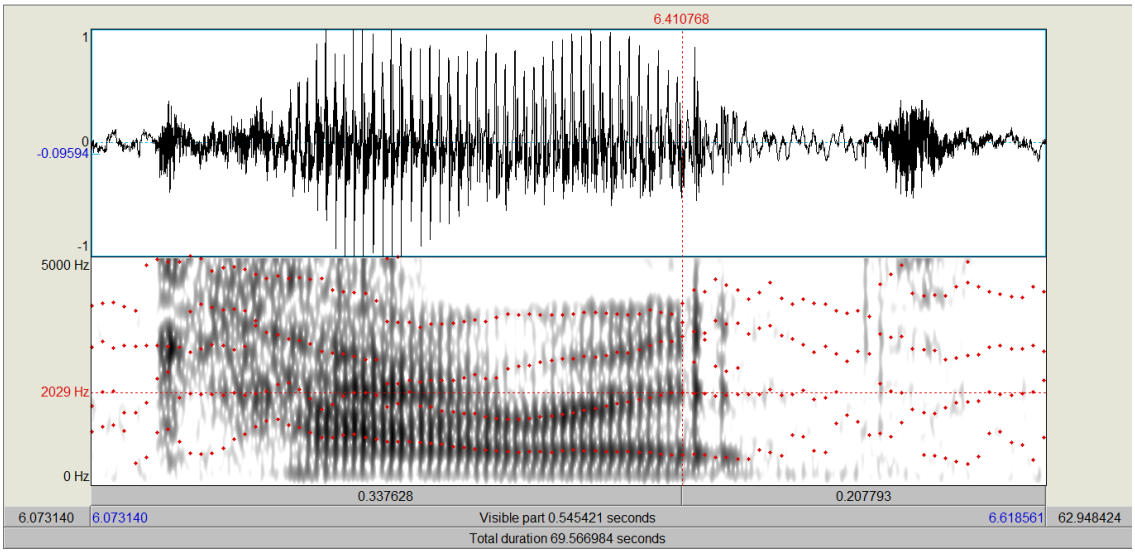


Figure A.16.2 Carrot [ə]

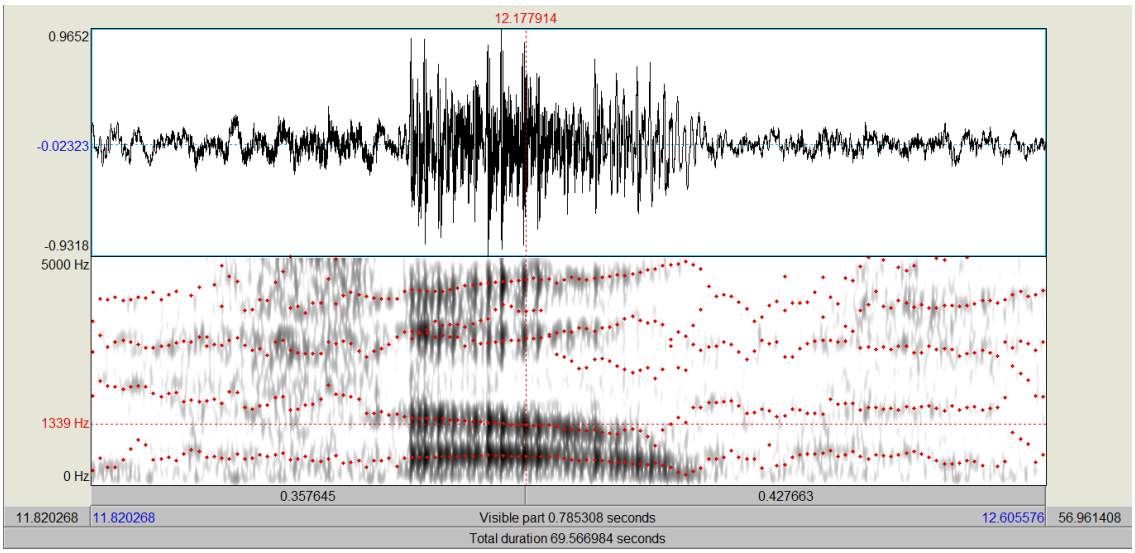


Figure A.16.3 Full [ʊ]

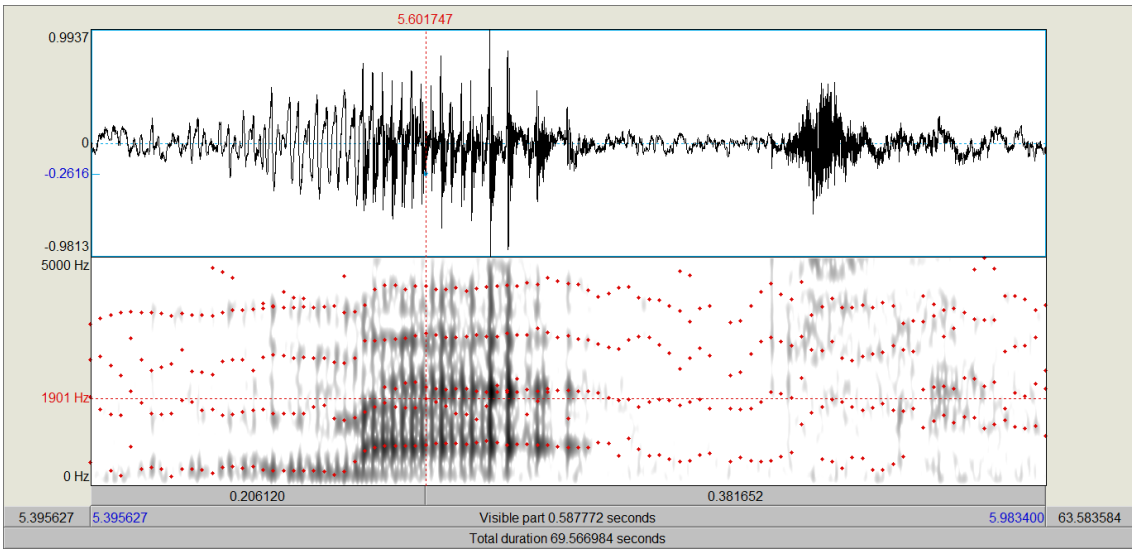


Figure A.16.4 Met [e]

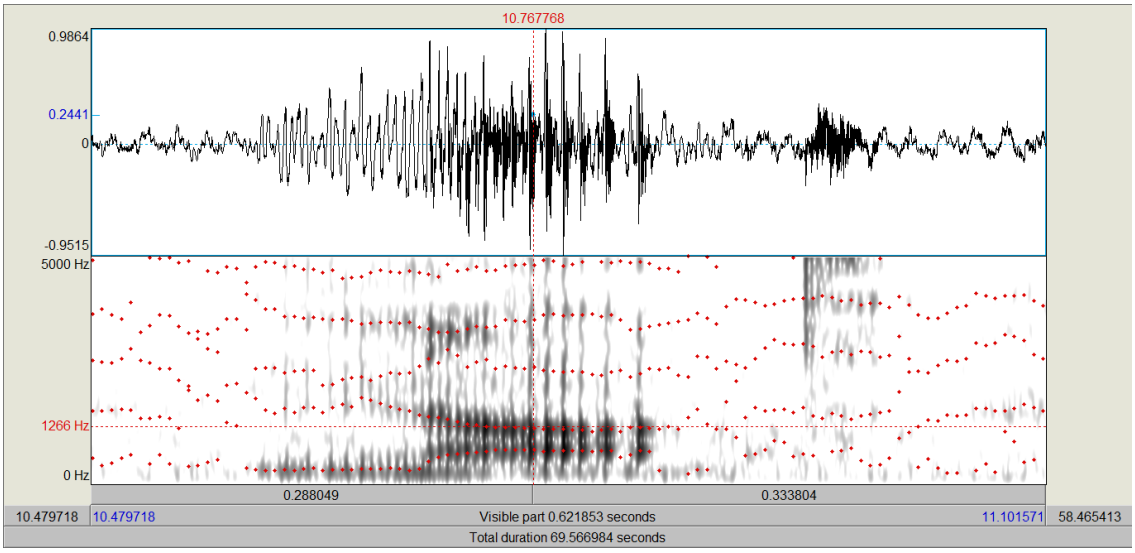


Figure A.16.5 Not [ɒ]

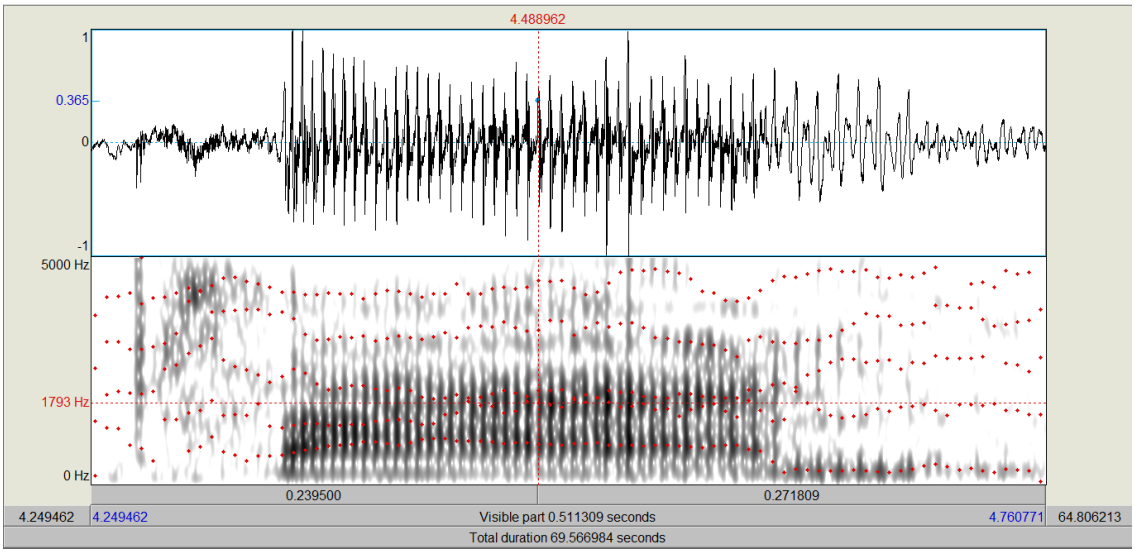
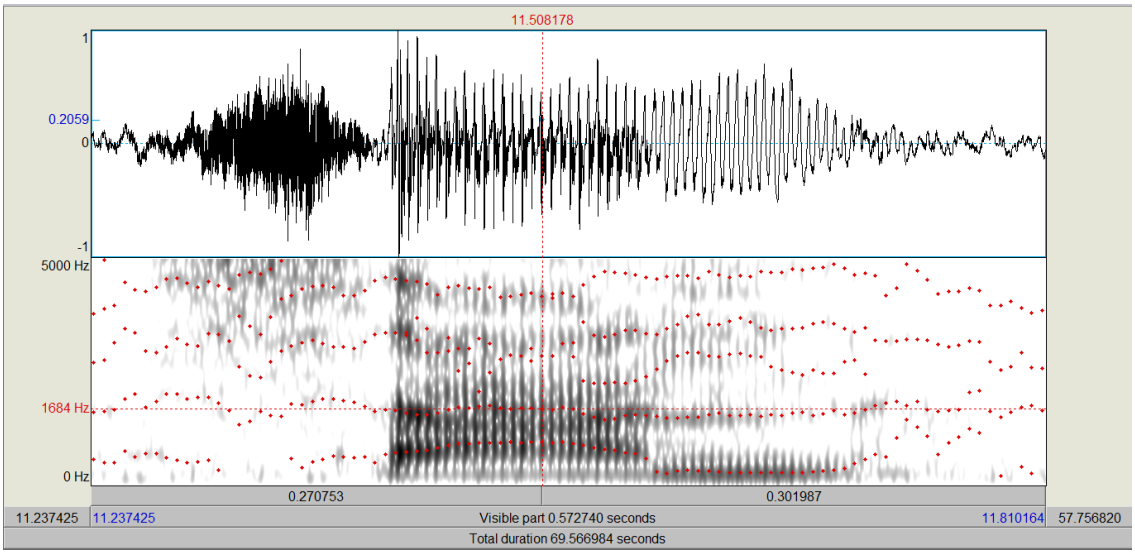


Figure A.16.6 Plan [æ]


11.508178
1
0.2059
0
-1
5000 Hz
1684 Hz
0 Hz
0.270753
0.301987
11.237425
11.237425
Visible part 0.572740 seconds
11.810164
57.756820
Total duration 69.566984 seconds

A.16.7 Sun [ʌ]

A.17 Michael [London, England]

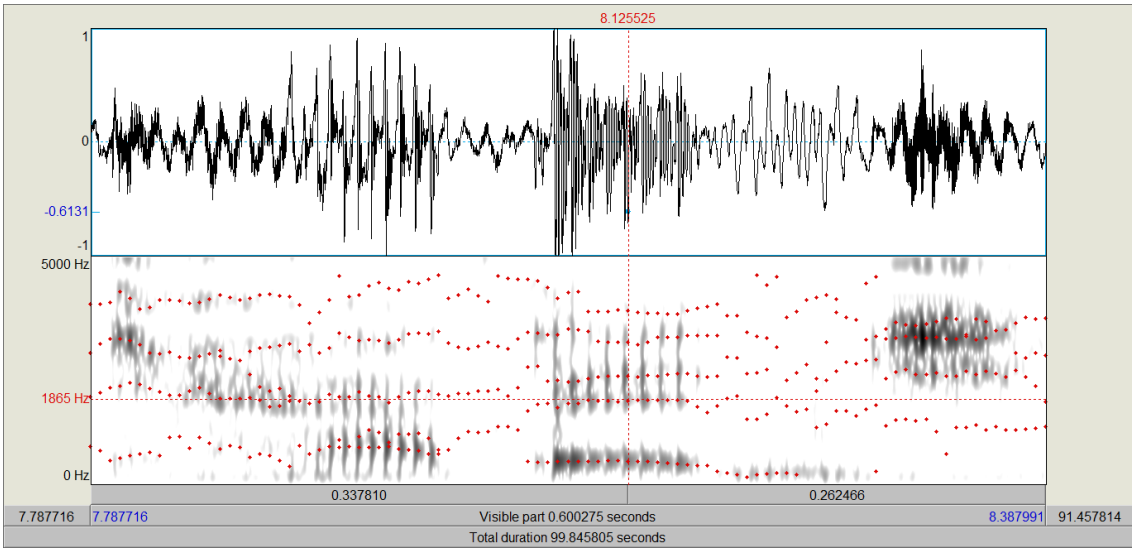


Figure A.17.1 Cabbage [ɪ]

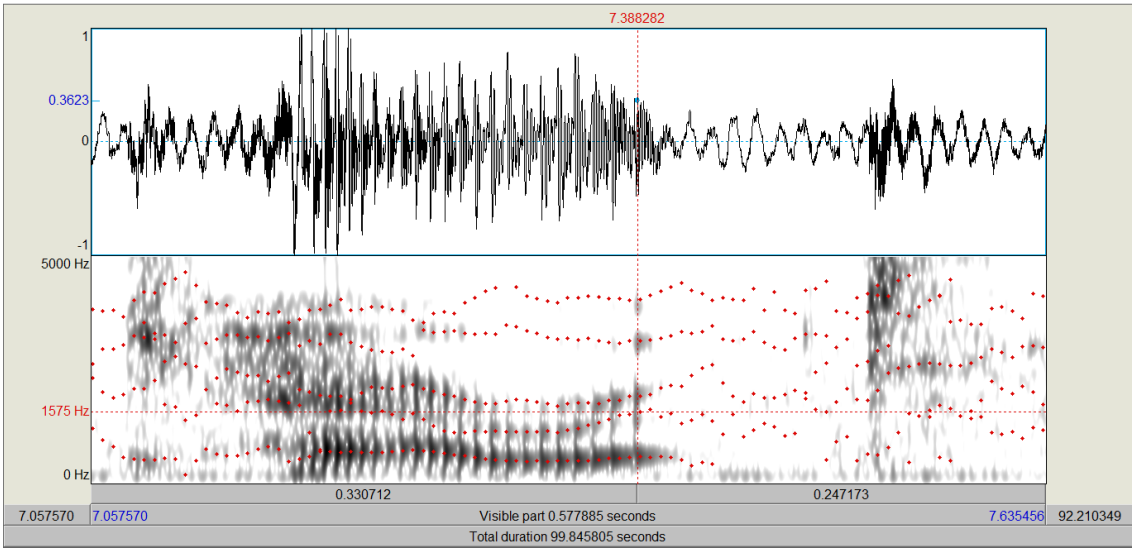


Figure A.17.2 Carrot [ə]

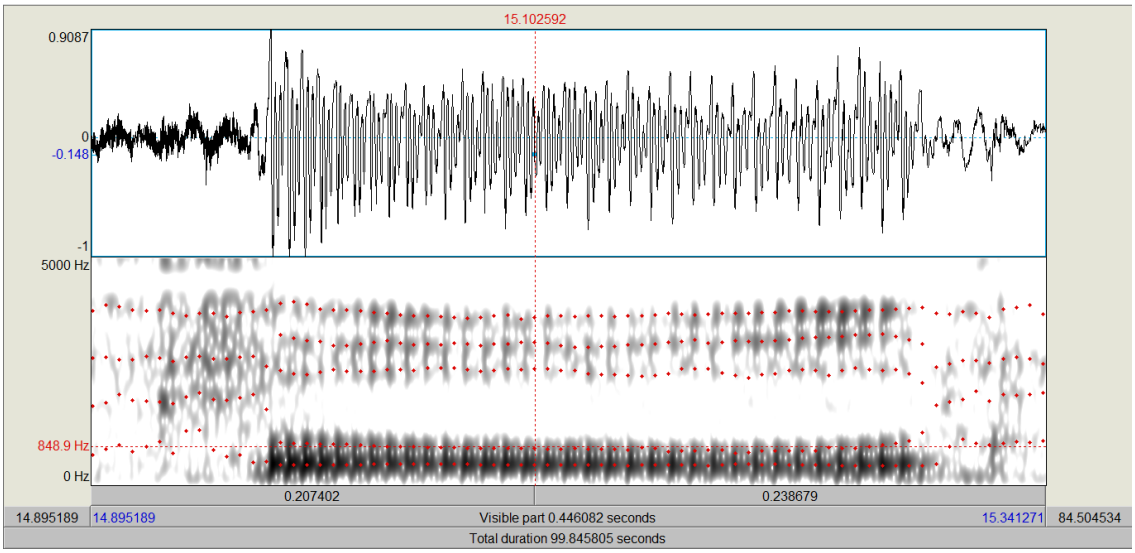


Figure A.17.3 Full [ʊ]

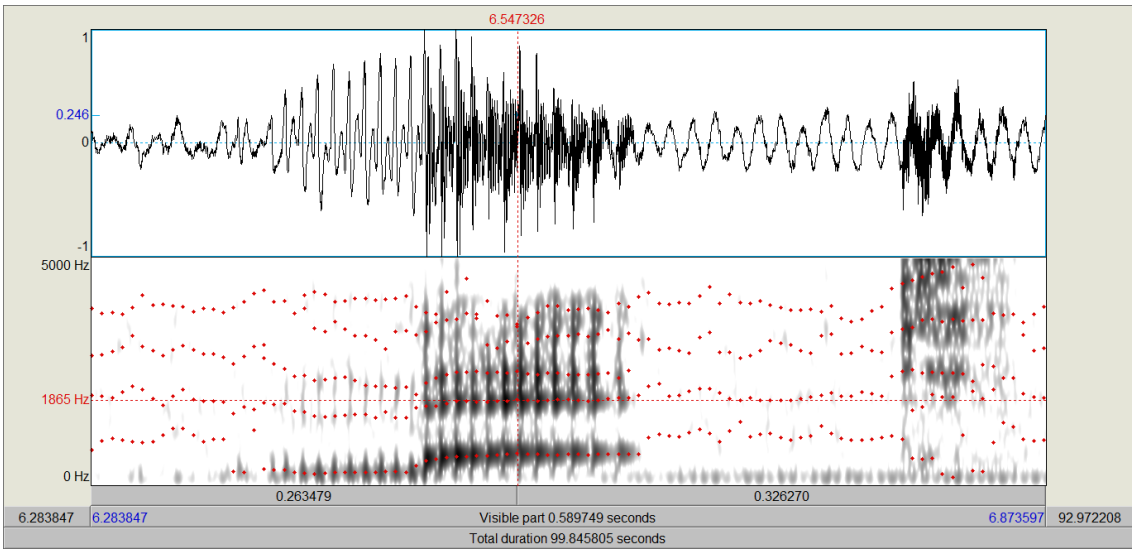


Figure A.17.4 Met [e]

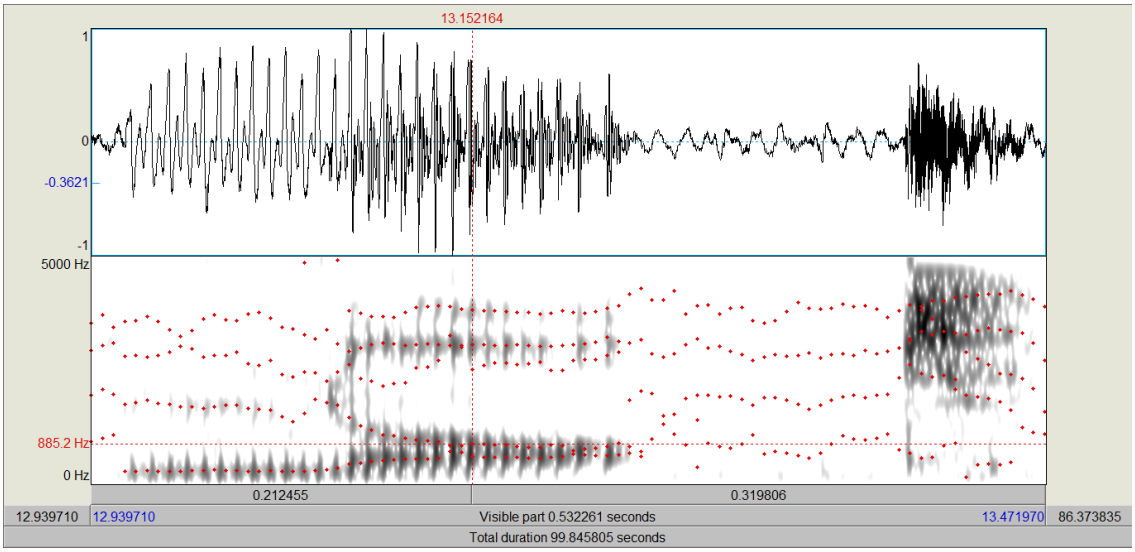


Figure A.17.5 Not [ɒ]

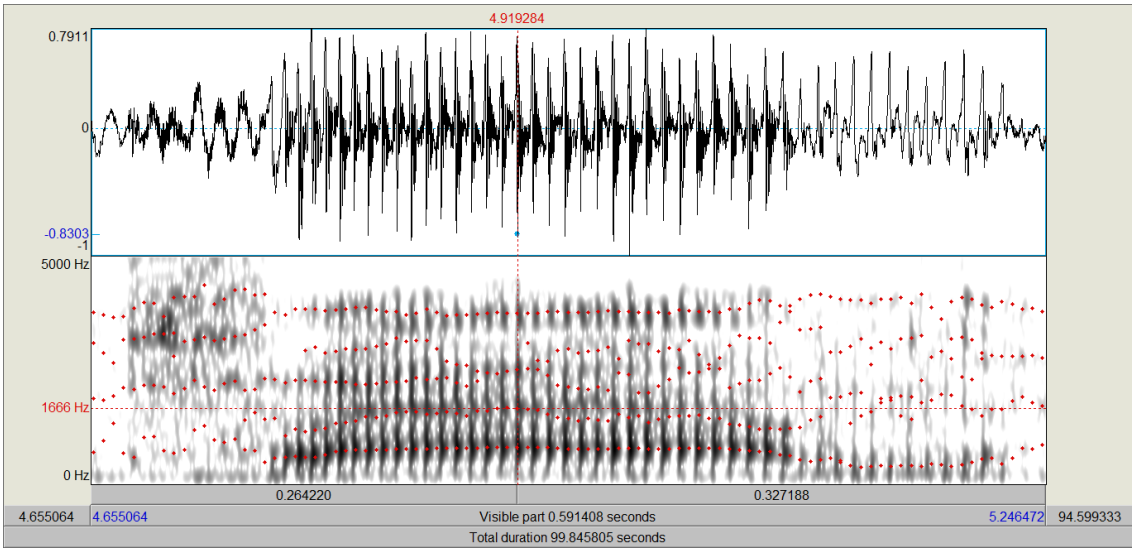


Figure A.17.6 Plan [æ]

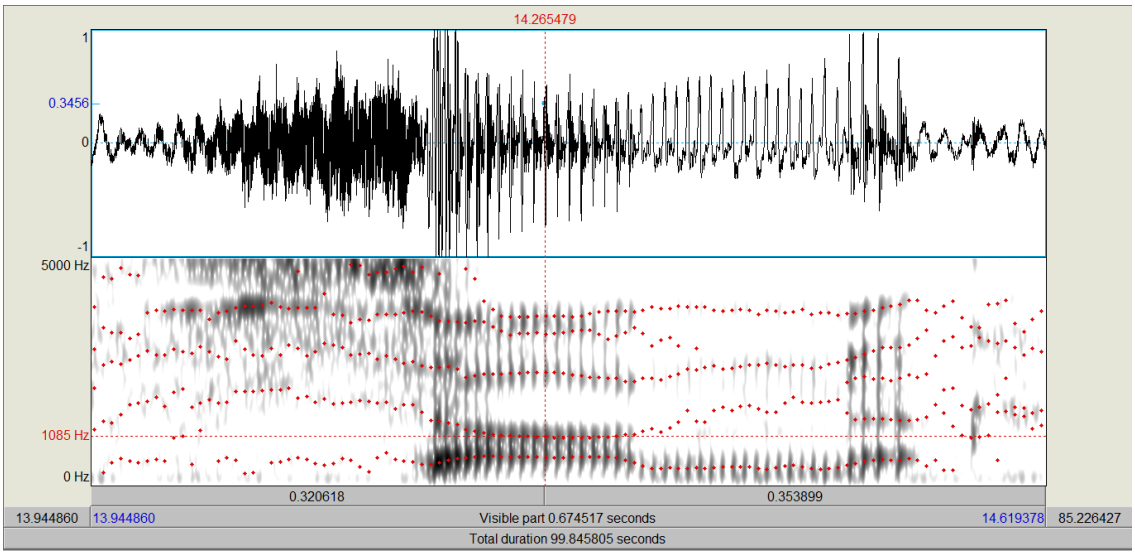


Figure A.17.7 Sun [ʌ]

A.18 Neil [Norfolk, England]

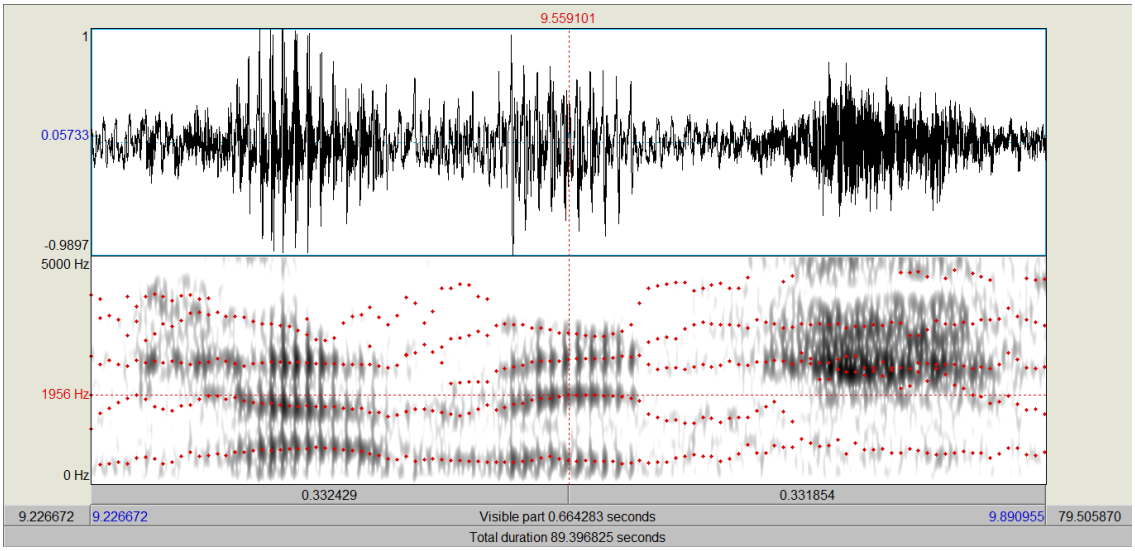


Figure A.18.1 Cabbage [ɪ]

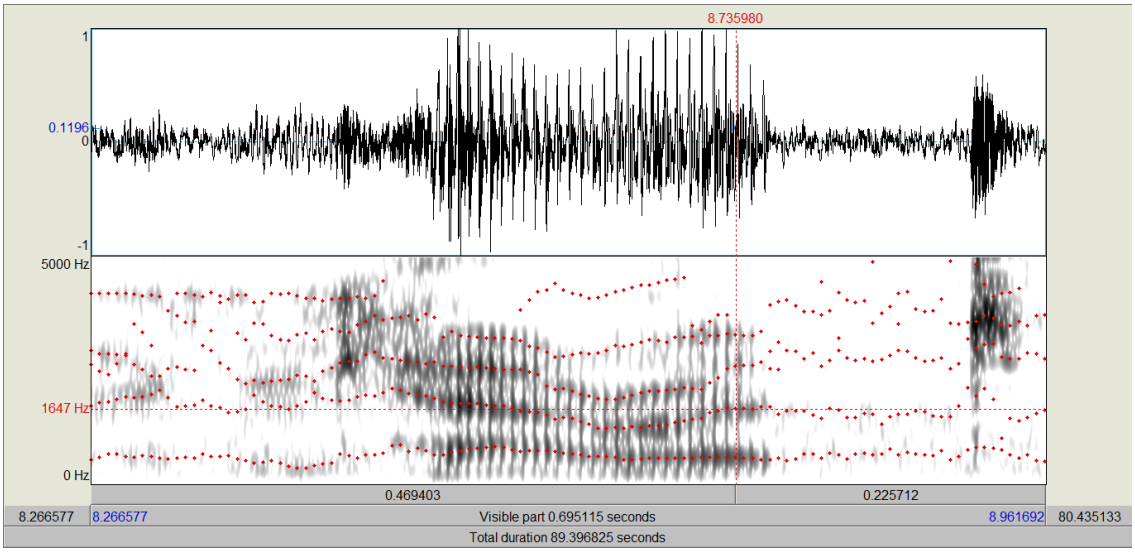


Figure A.18.2 Carrot [ə]

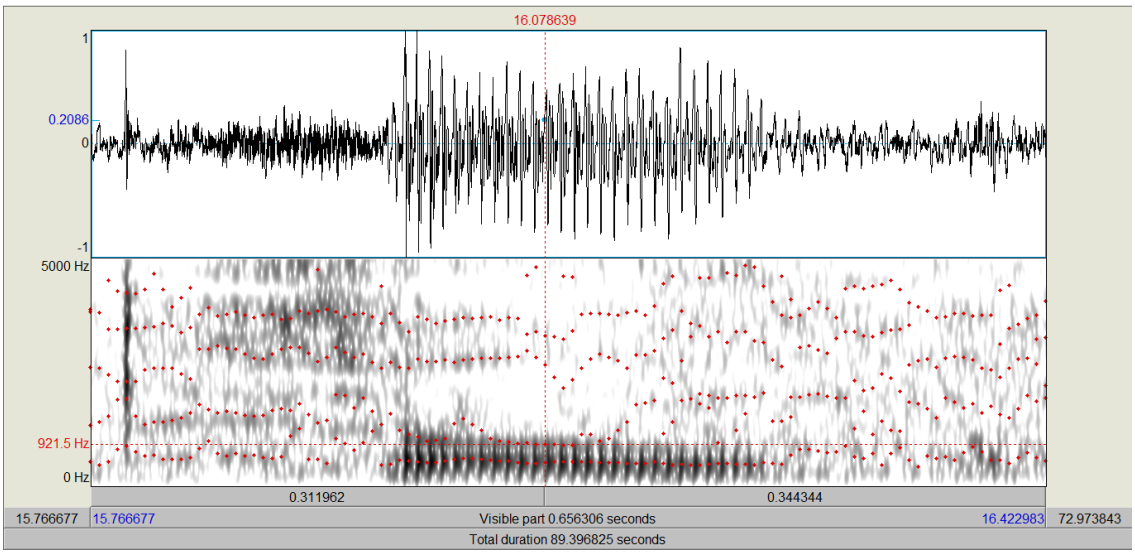


Figure A.18.3 Full [ʊ]

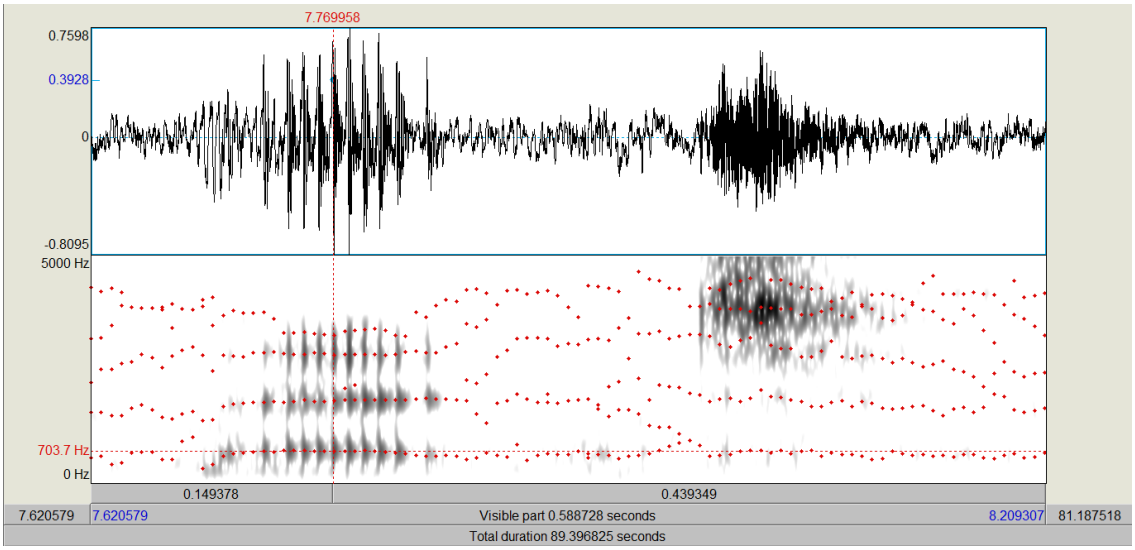


Figure A.18.4 Met [e]

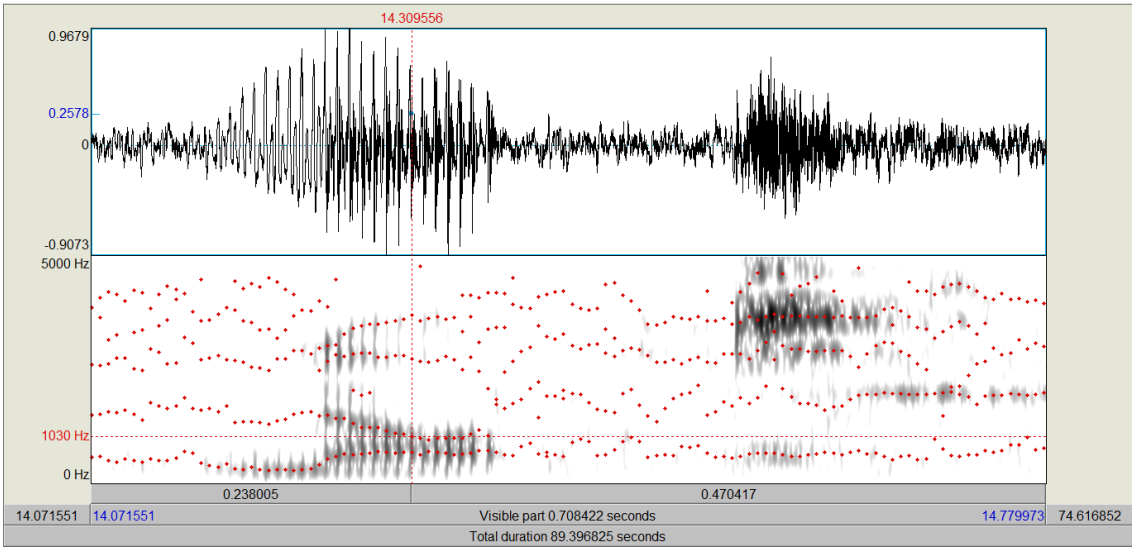


Figure A.18.5 Not [ɒ]

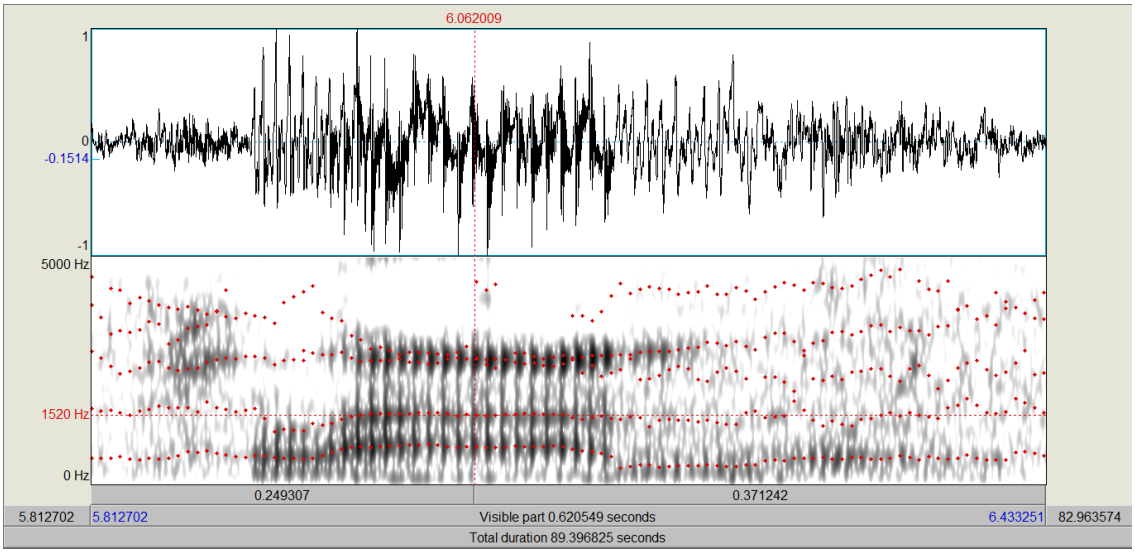


Figure A.18.6 Plan [æ]

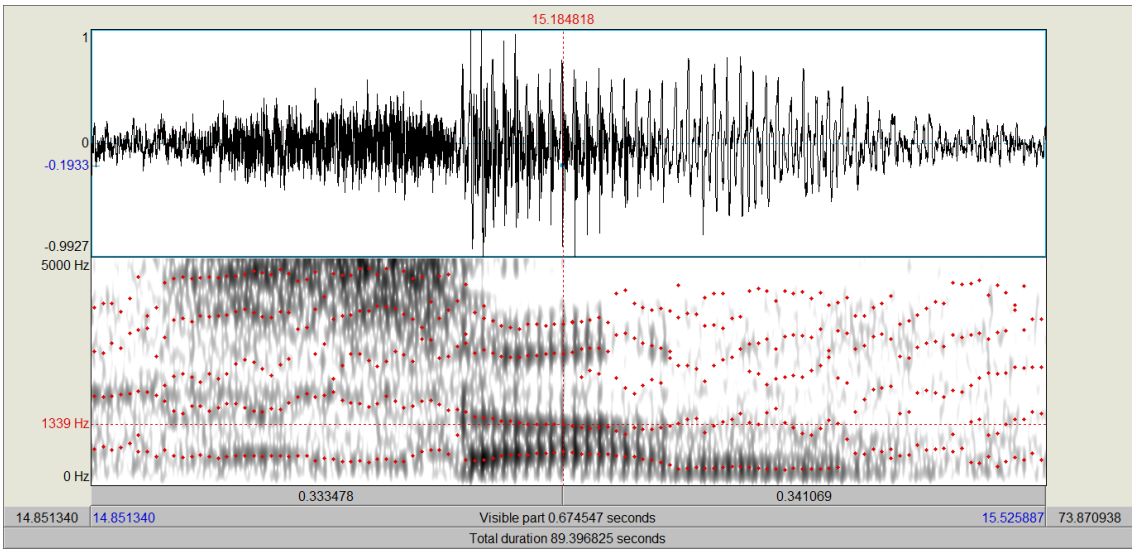


Figure A.18.7 Sun [ʌ]

A.19 Nicole [Norfolk, England]

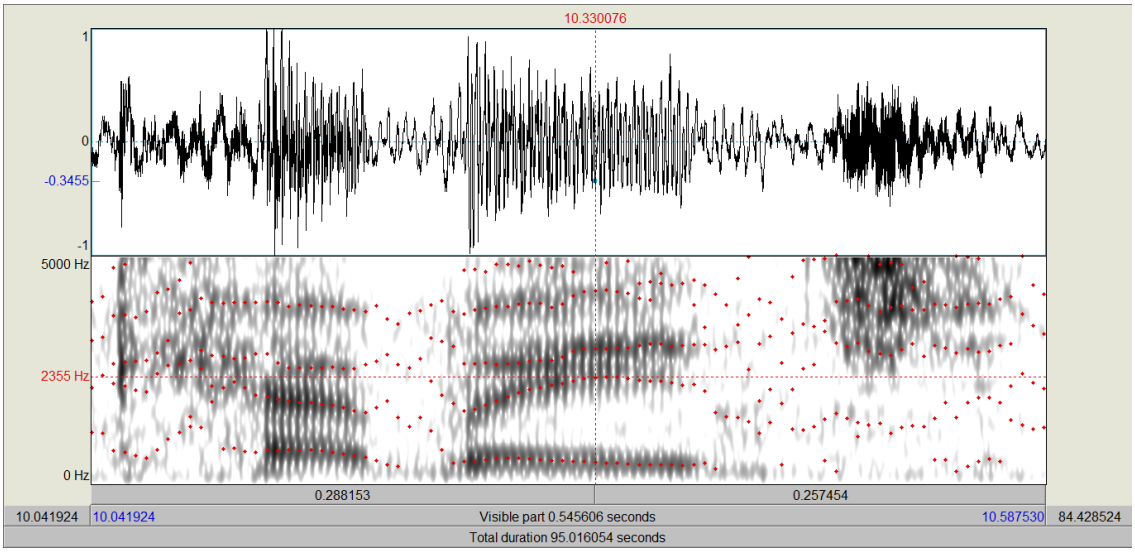


Figure A.19.1 Cabbage [ɪ]

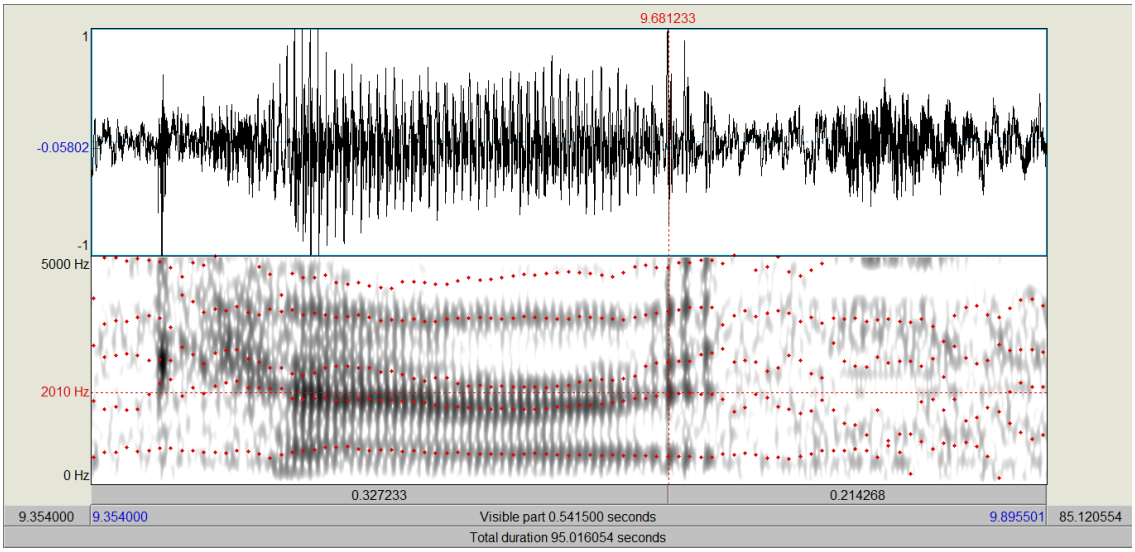


Figure A.19.2 Carrot [ə]

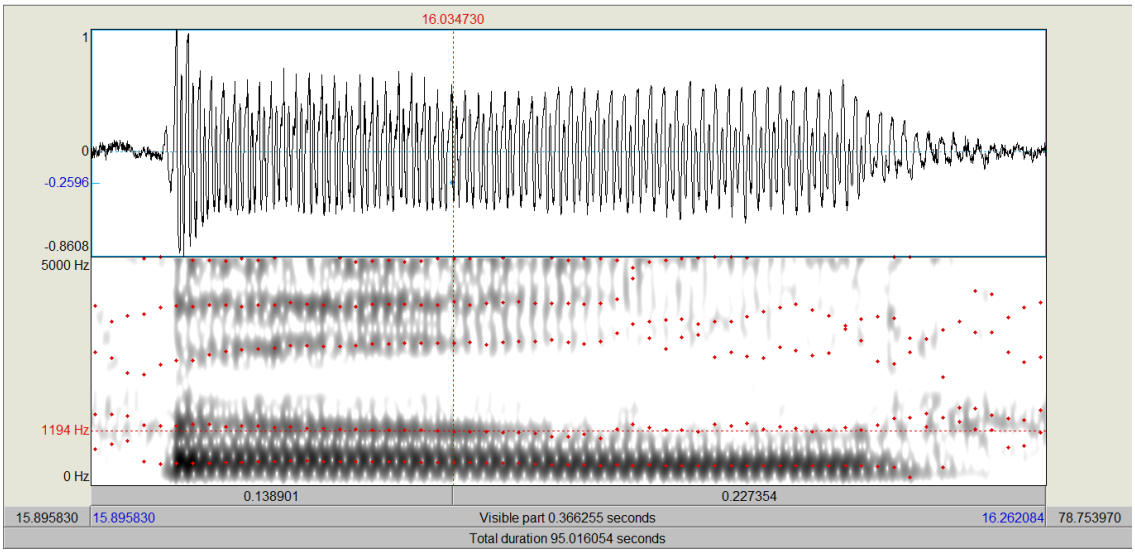


Figure A.19.3 Full [ʊ]

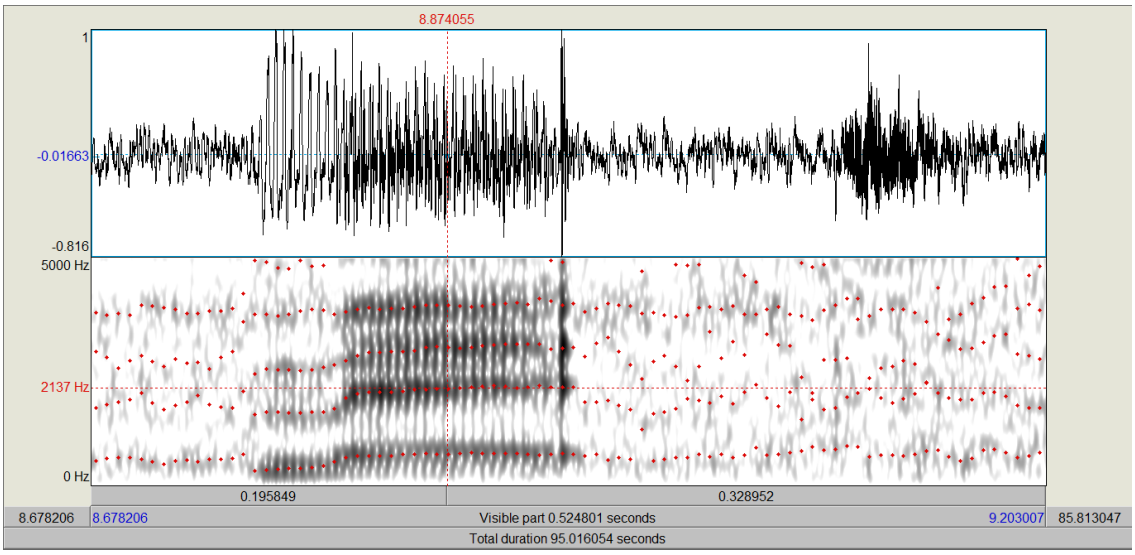


Figure A.19.4 Met [e]

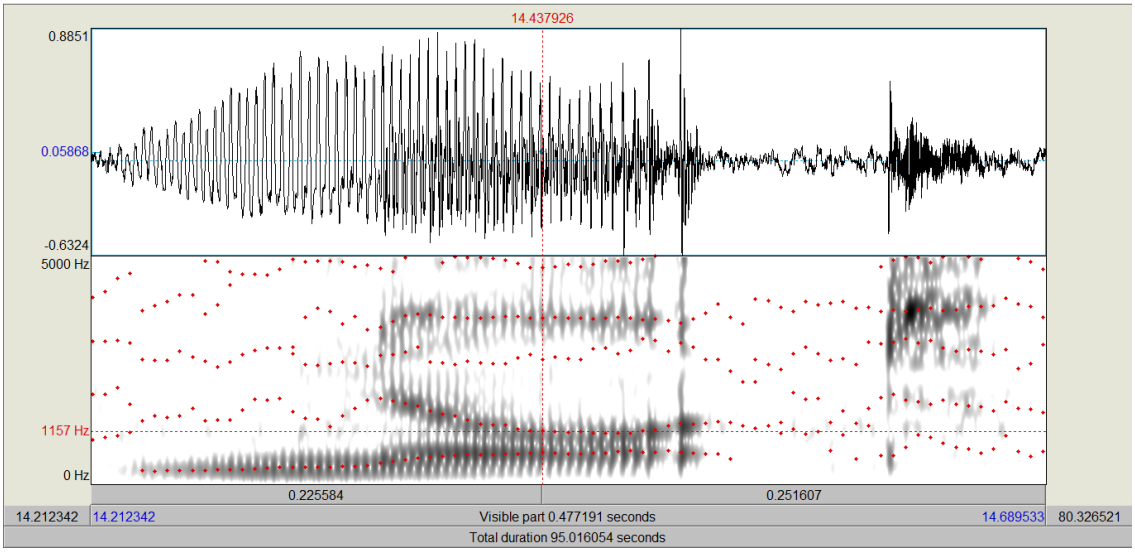


Figure A.19.5 Not [ɒ]

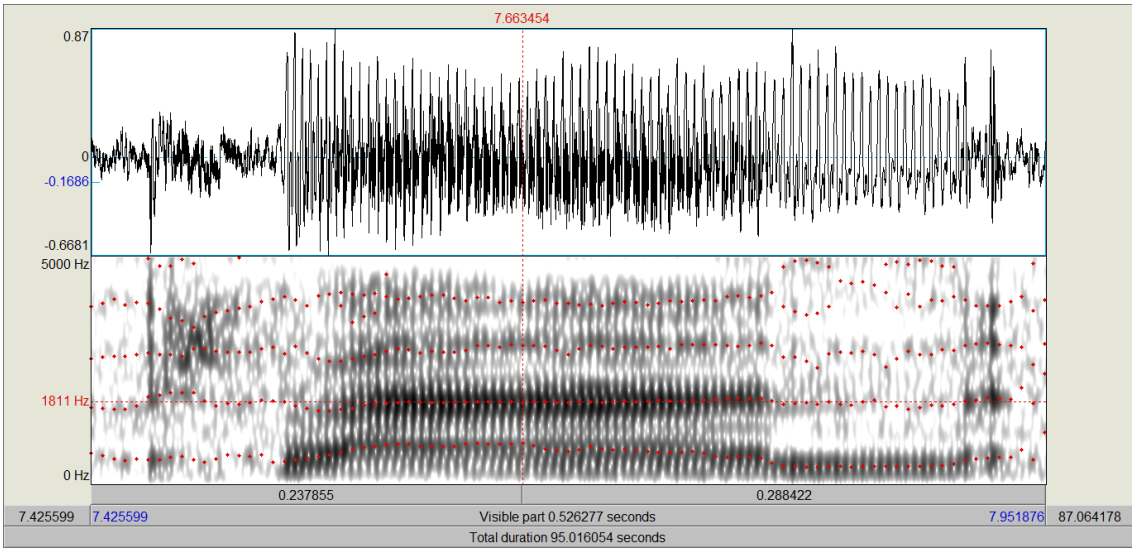


Figure A.19.6 Plan [æ]

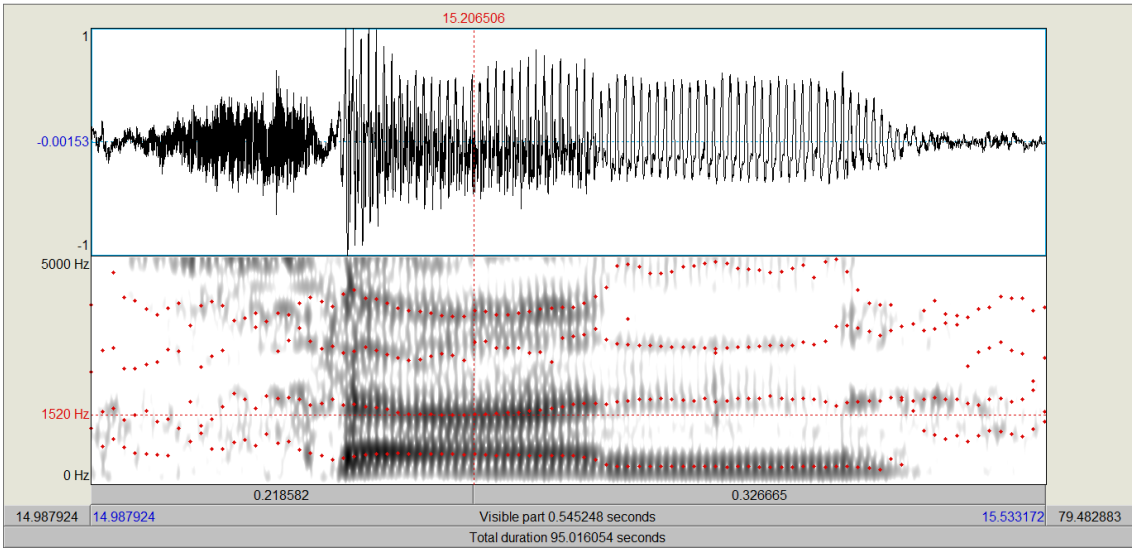


Figure A.19.7 Sun [ʌ]

A.20 Ollie [Hertfordshire, England]

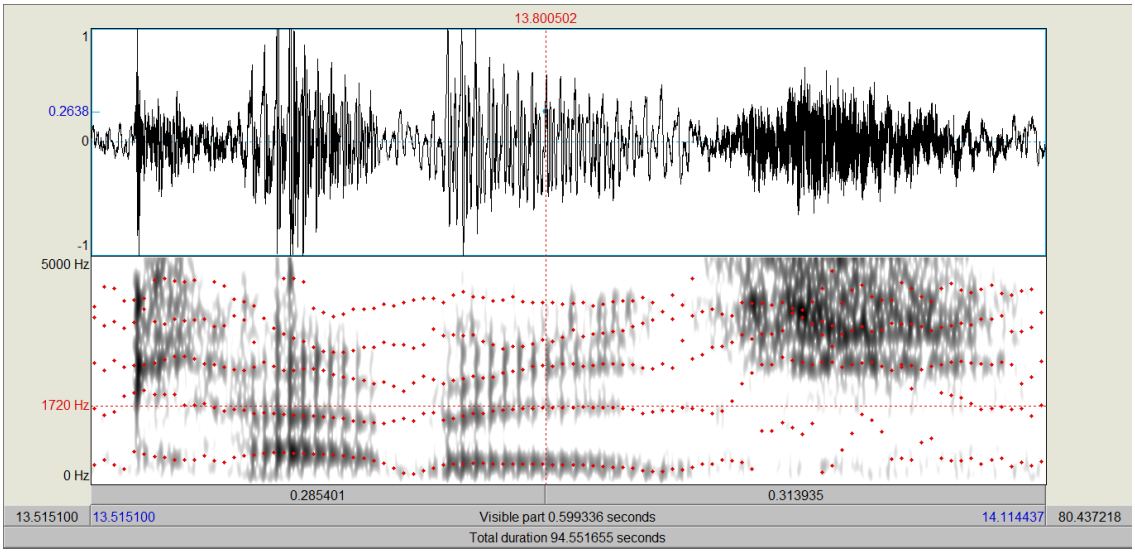


Figure A.20.1 Cabbage [ɪ]

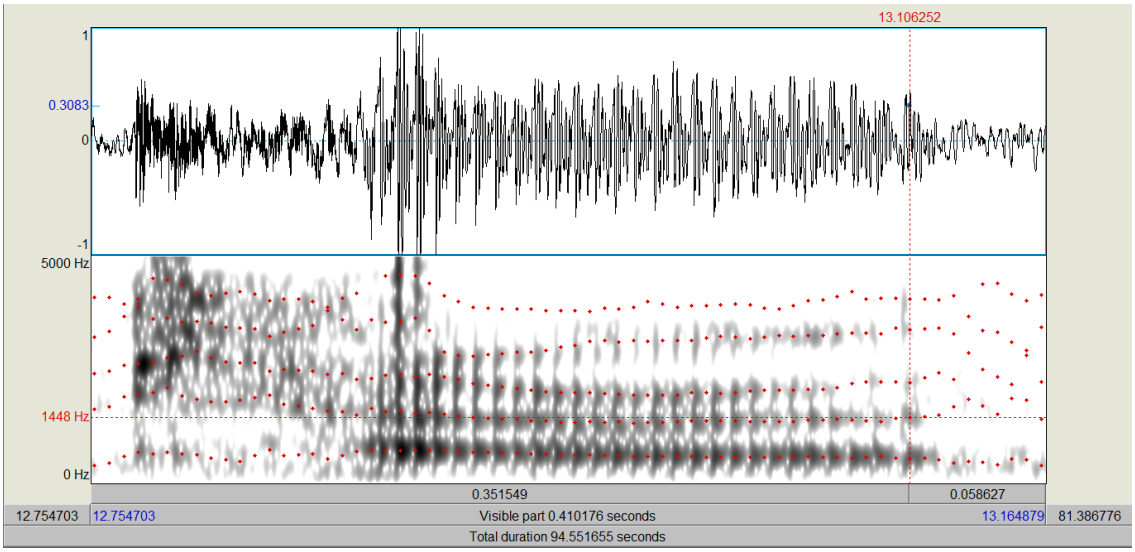


Figure A.20.2 Carrot [ə]

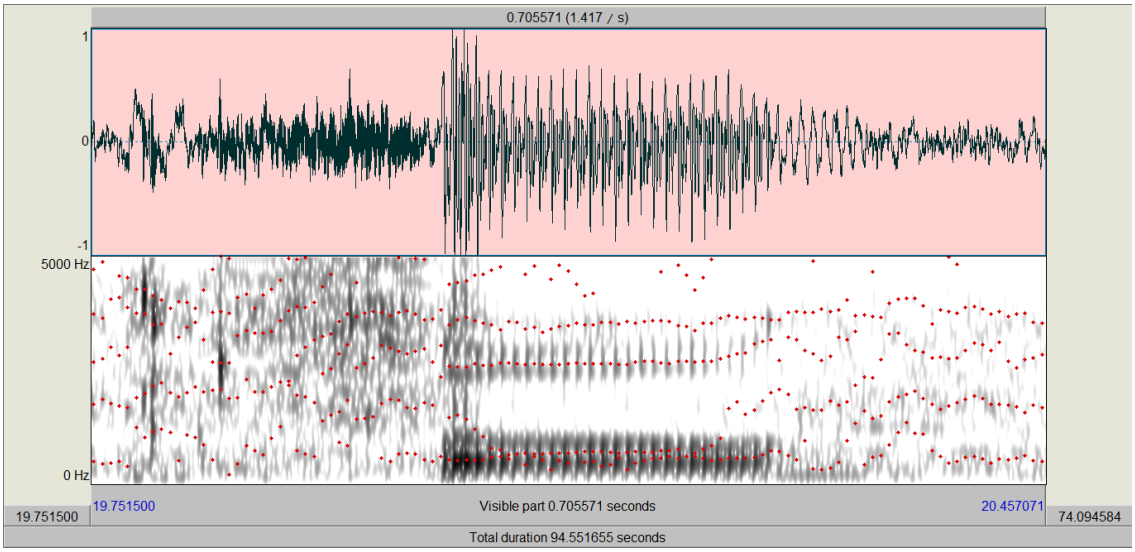


Figure A.20.3 Full [ʊ]

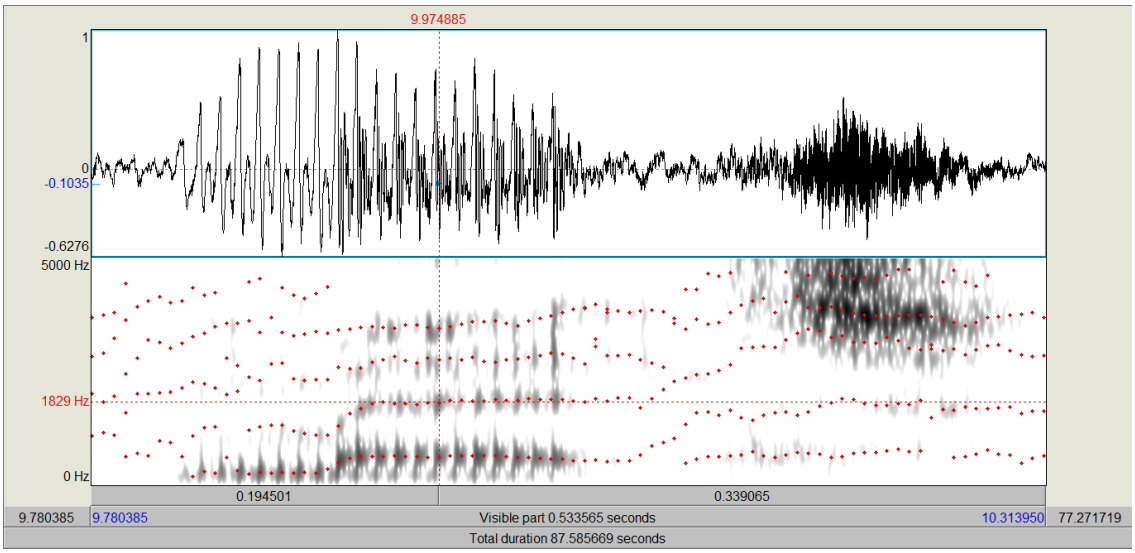


Figure A.20.4 Met [e]

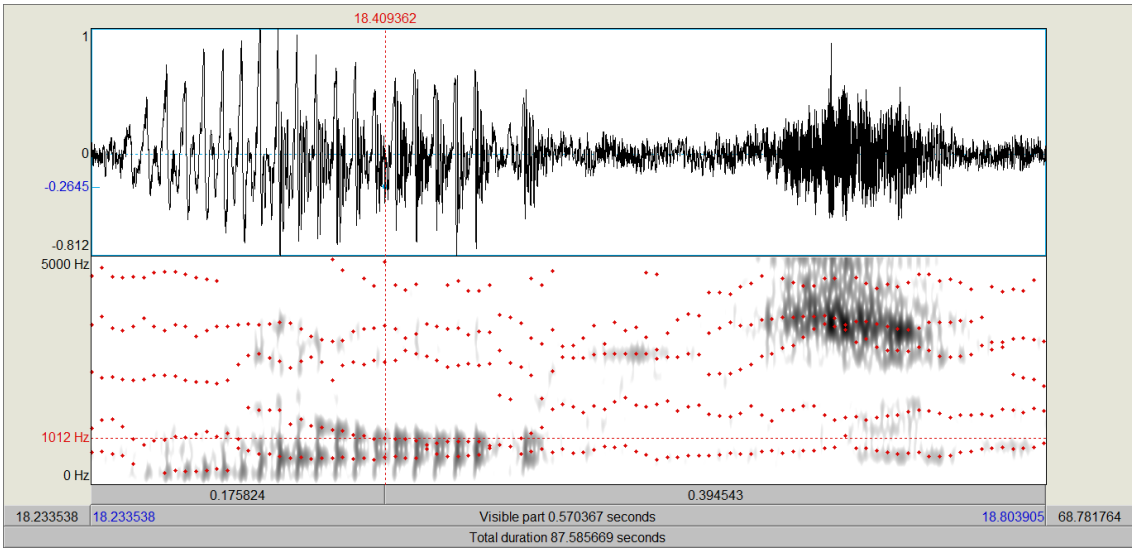


Figure A.20.5 Not [ɒ]

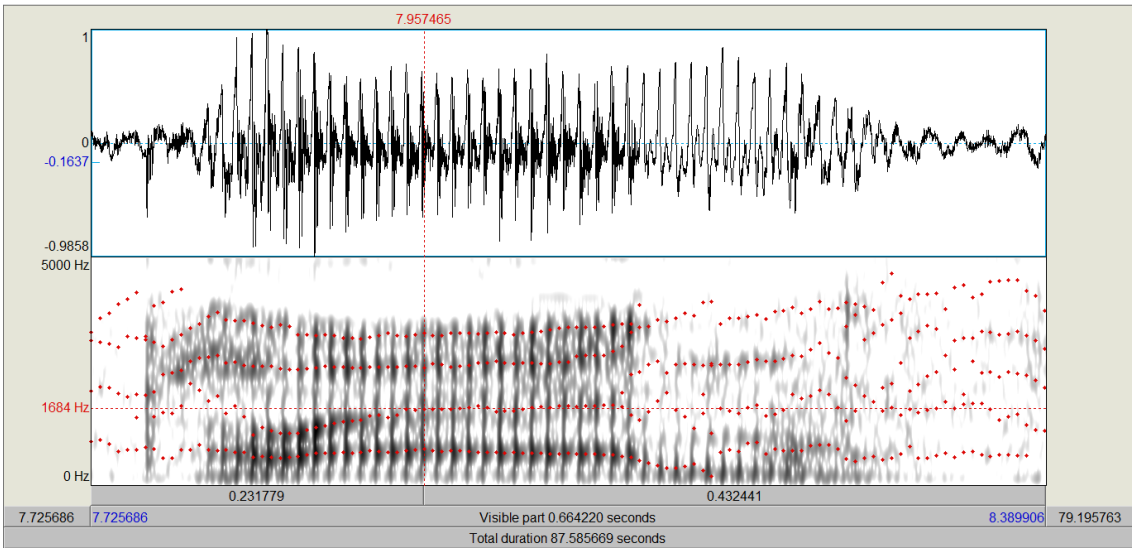


Figure A.20.6 Plan [æ]

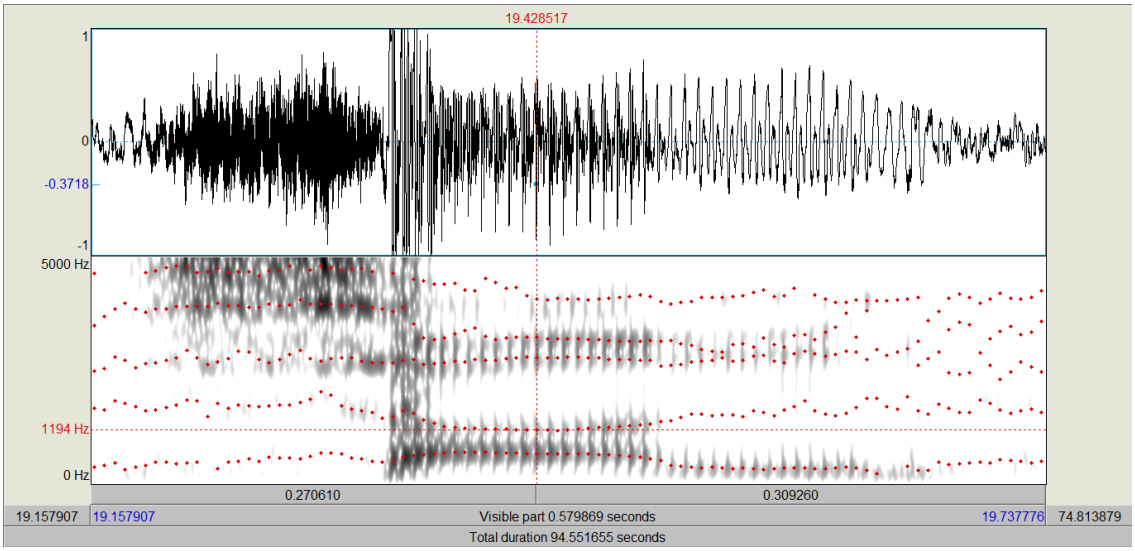


Figure A.20.7 Sun [ʌ]

A.21 Robert [Norfolk, England]

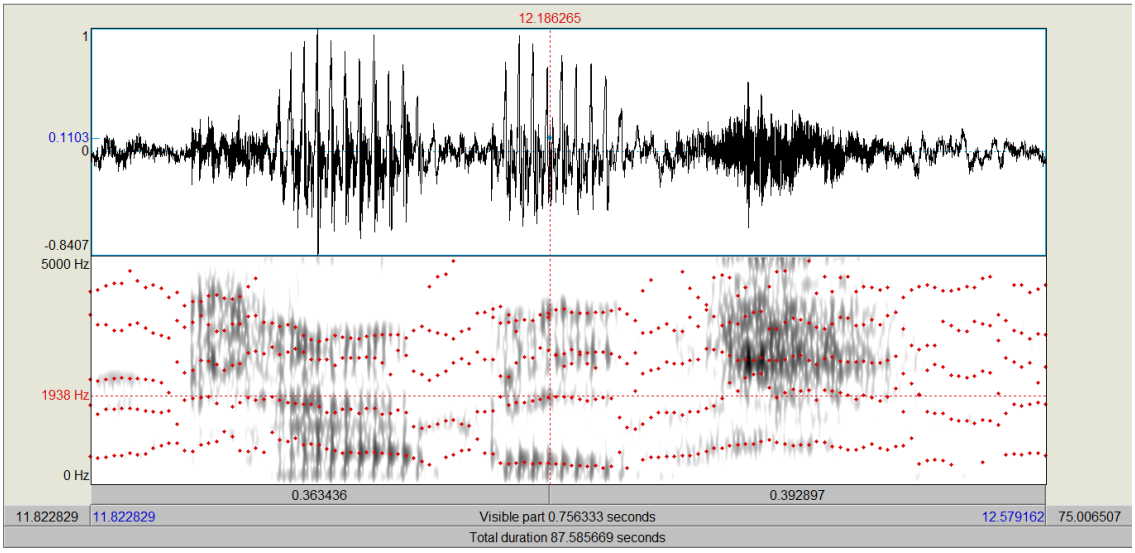


Figure A.21.1 Cabbage [ɪ]

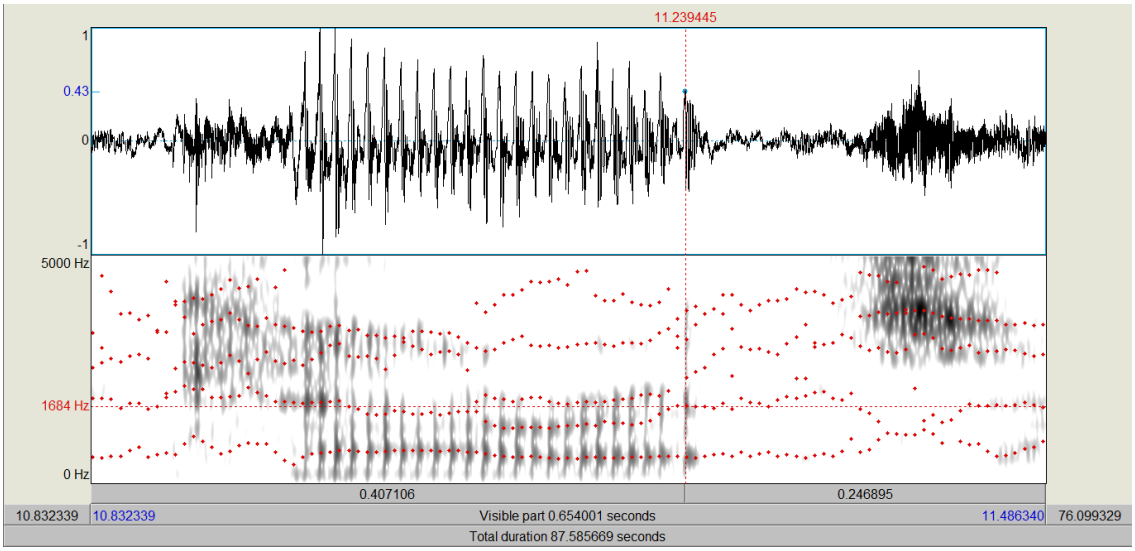


Figure A.21.2 Carrot [ə]

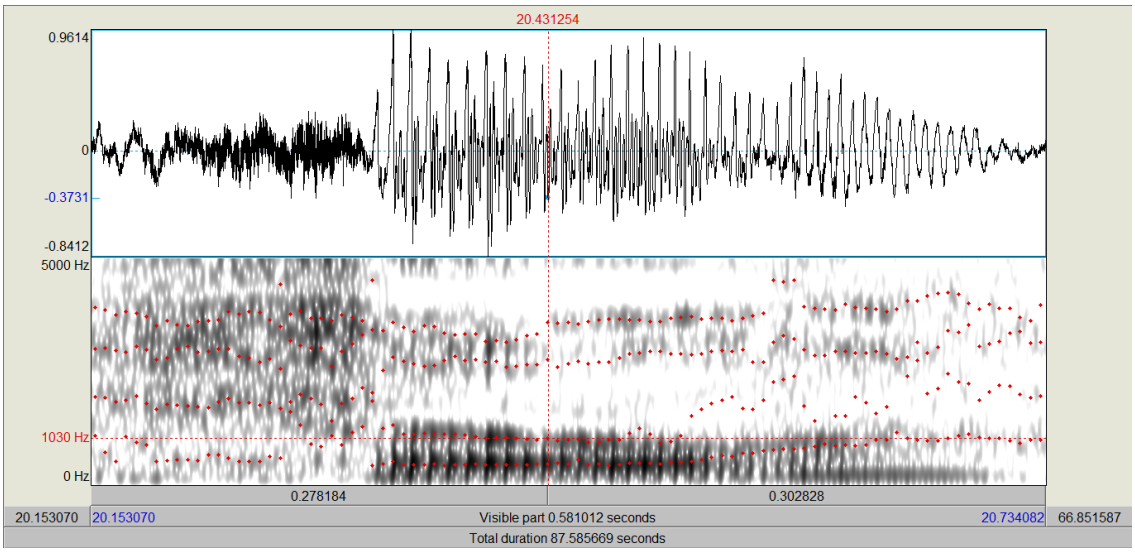


Figure A.21.3 Full [ʊ]

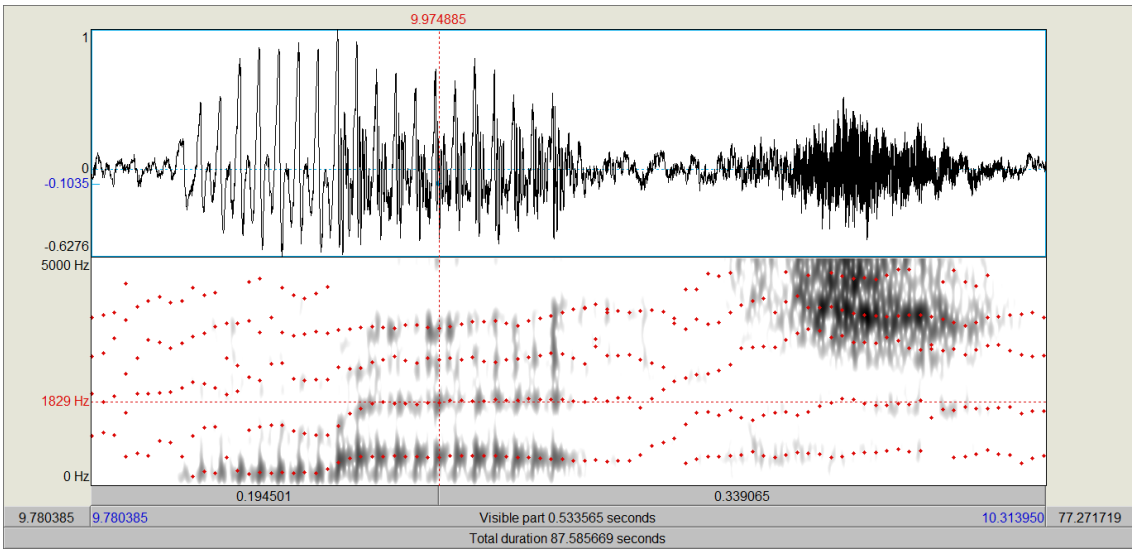


Figure A.21.4 Met [e]

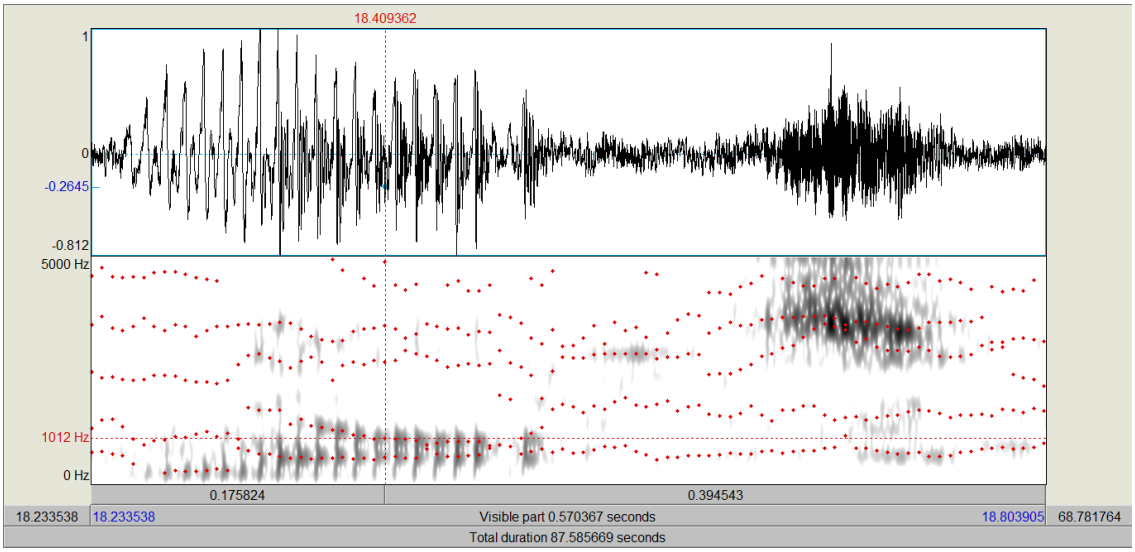


Figure A.21.5 Not [ɒ]

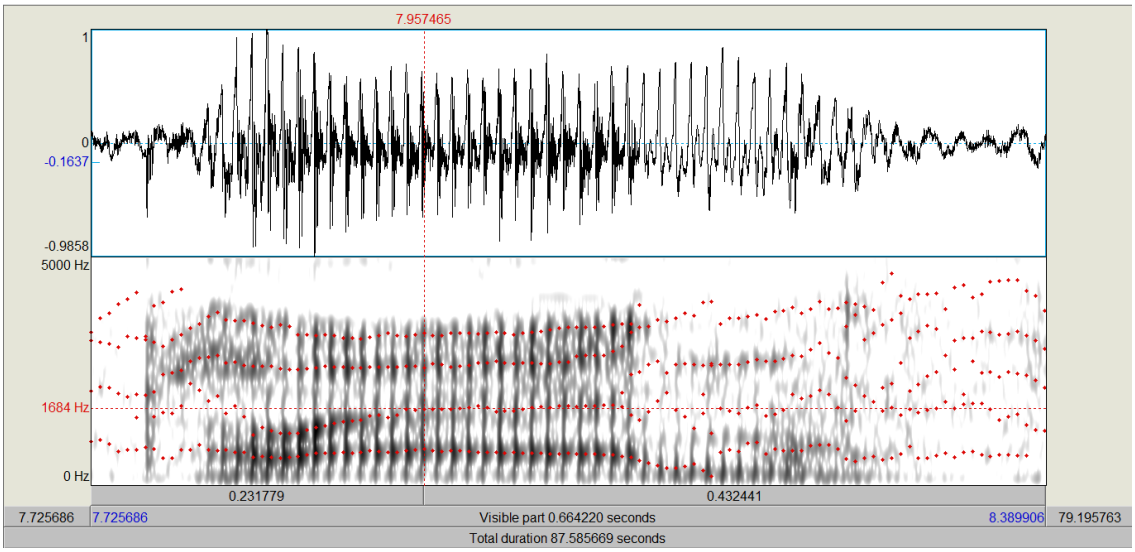


Figure A.21.6 Plan [æ]

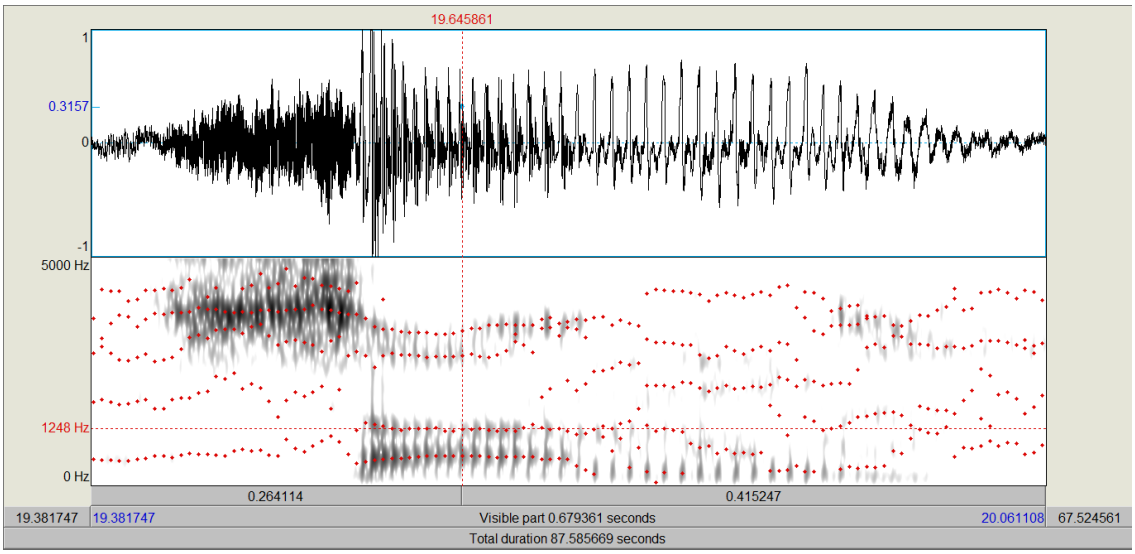


Figure A.21.7 Sun [ʌ]

A.22 Robin [Hertfordshire, England]

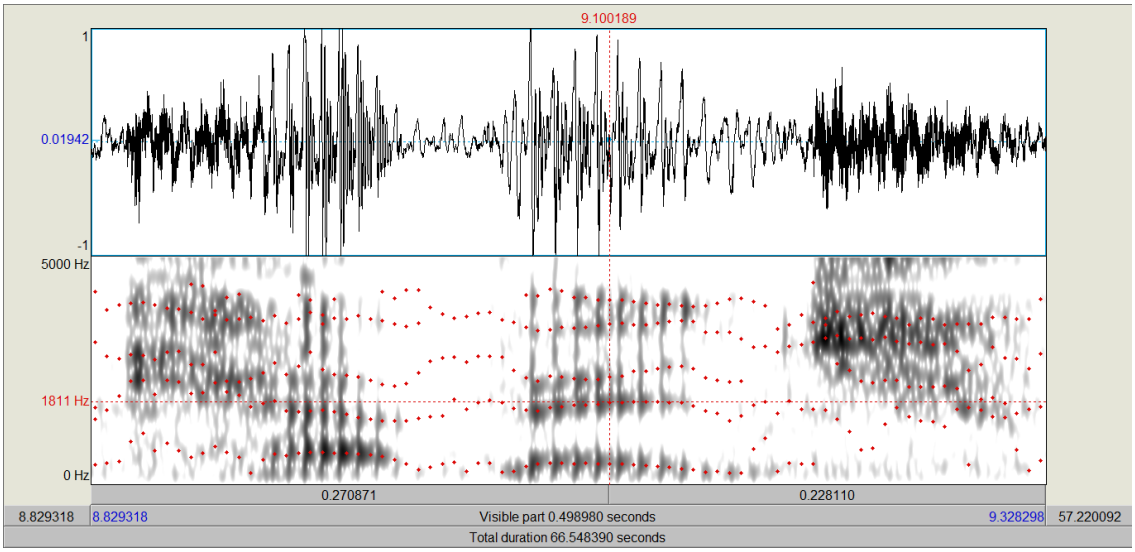


Figure A.22.1 Cabbage [ɪ]

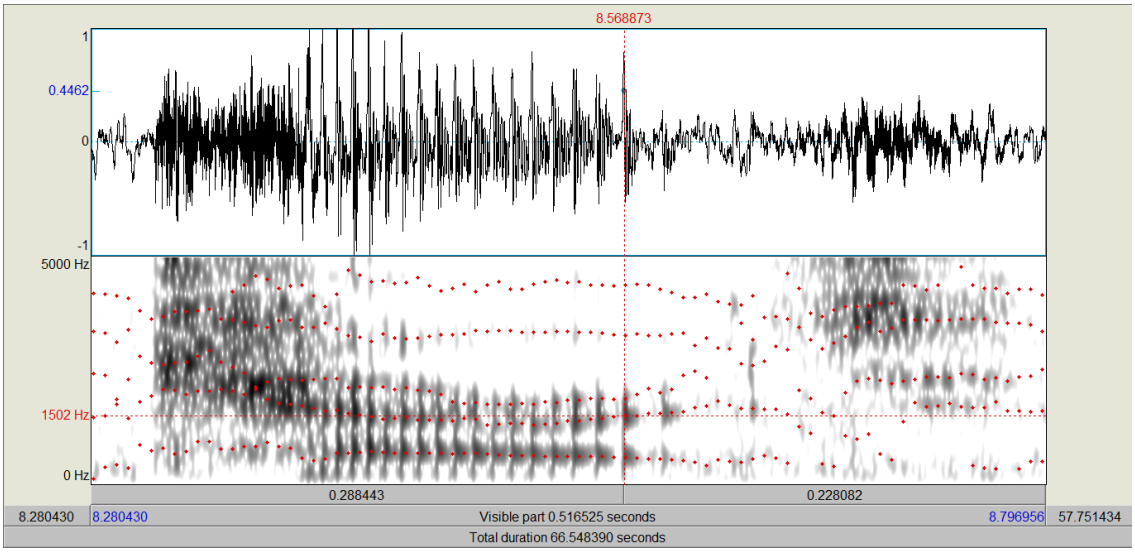


Figure A.22.2 Carrot [ə]

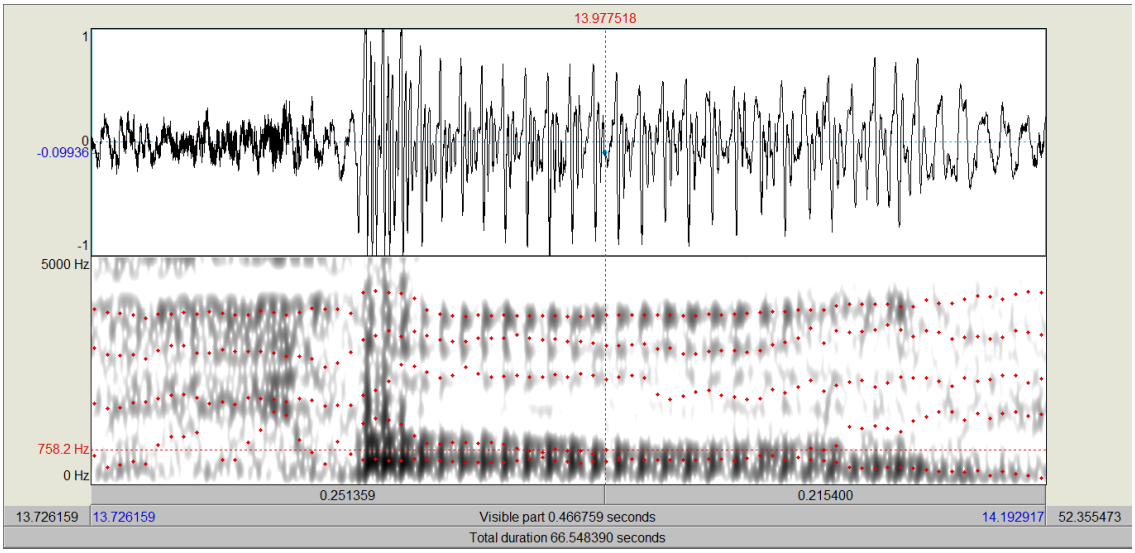


Figure A.22.3 Full [ʊ]

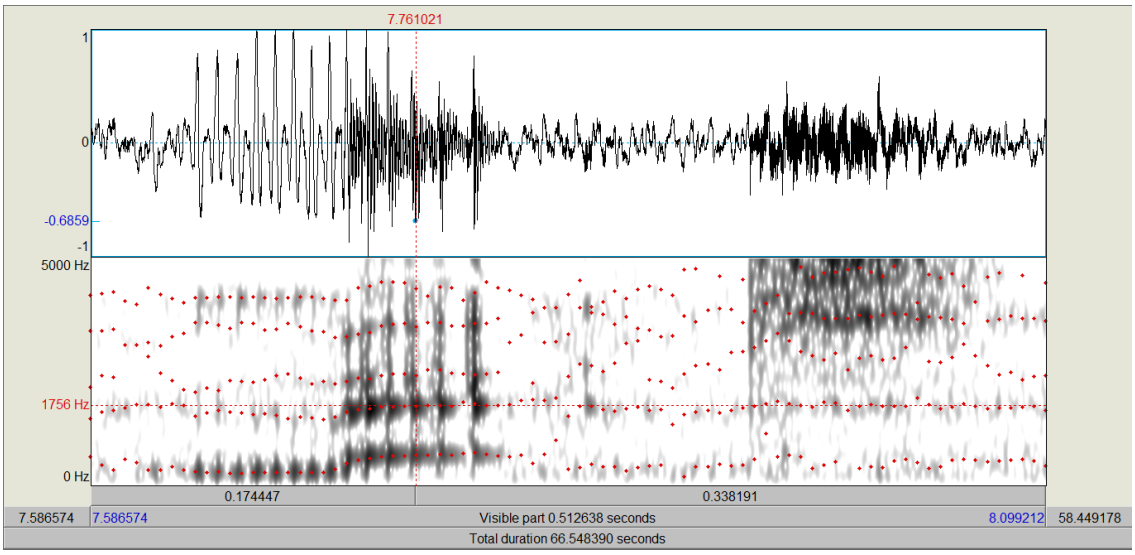


Figure A.22.4 Met [e]

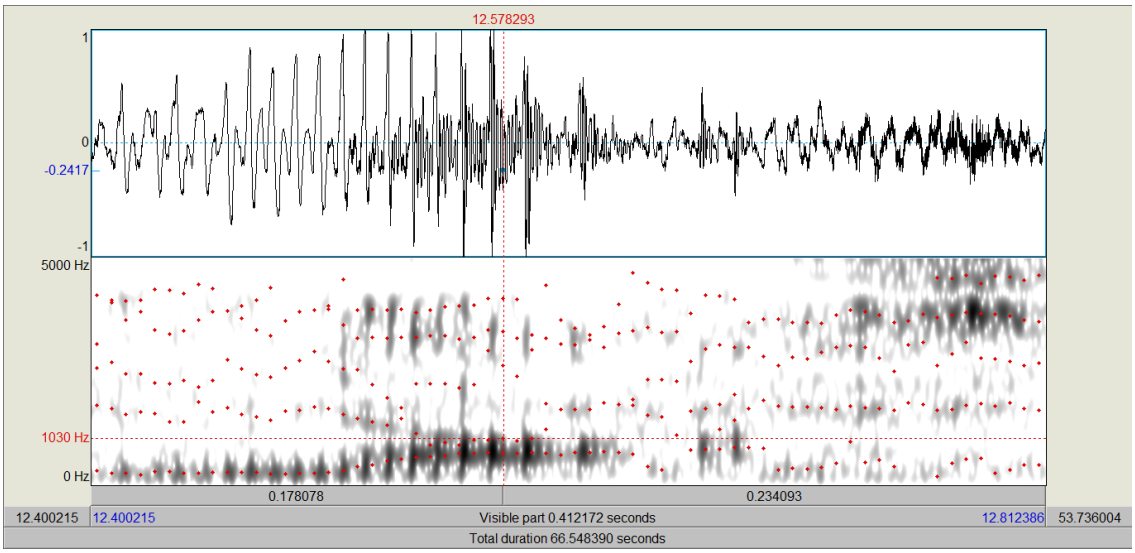


Figure A.22.5 Not [ɒ]

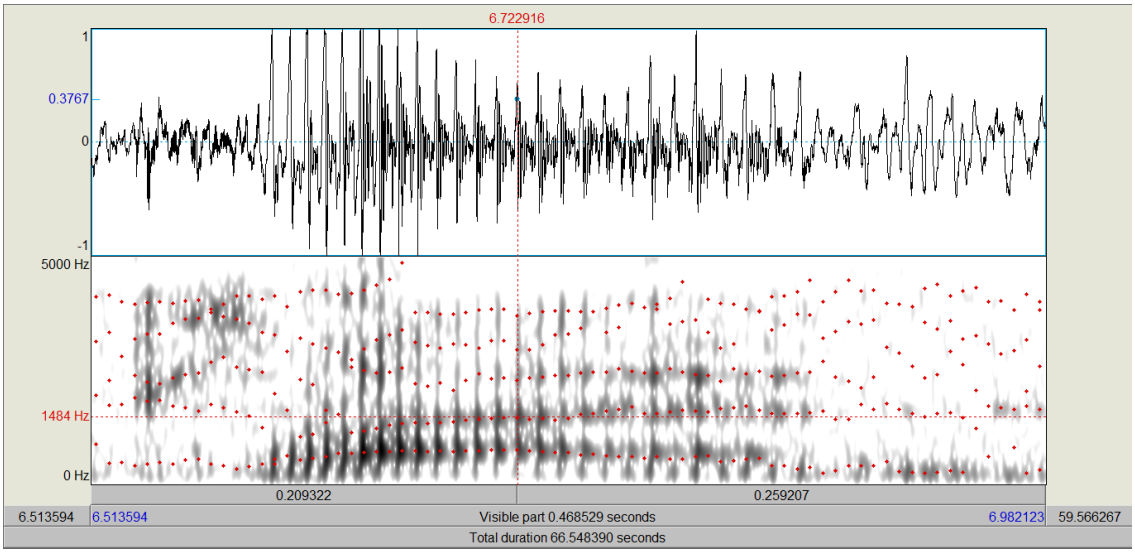


Figure A.22.6 Plan [æ]

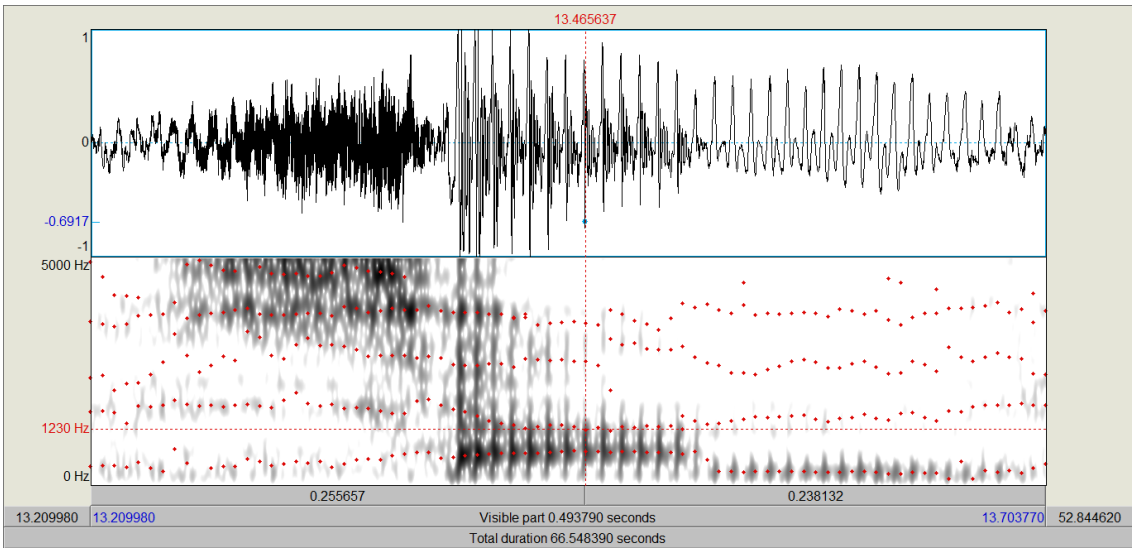


Figure A.22.7 Sun [ʌ]

A.23 Steve Ferry [Norfolk, England]

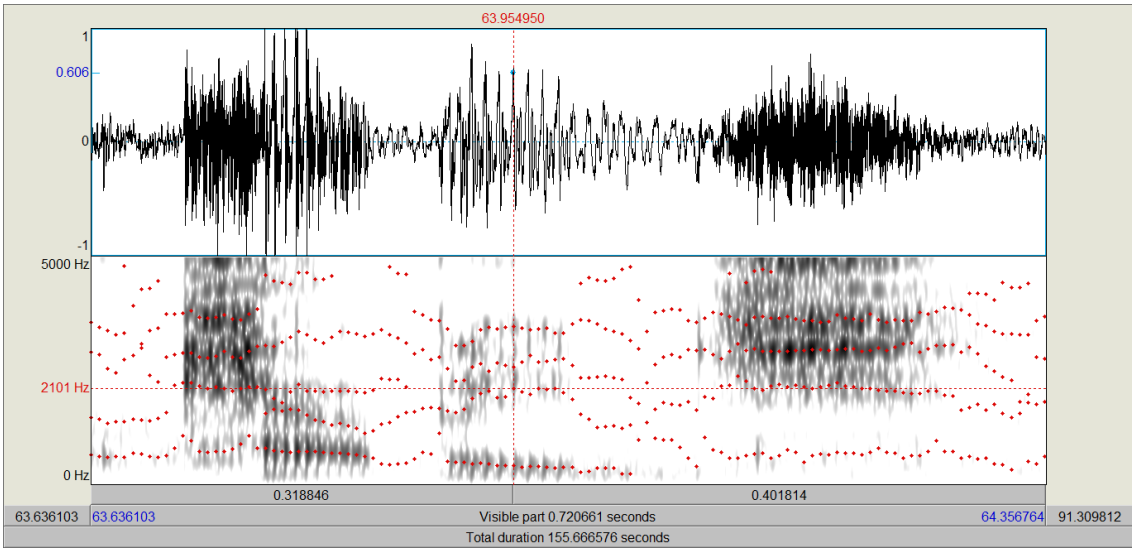


Figure A.23.1 Cabbage [ɪ]

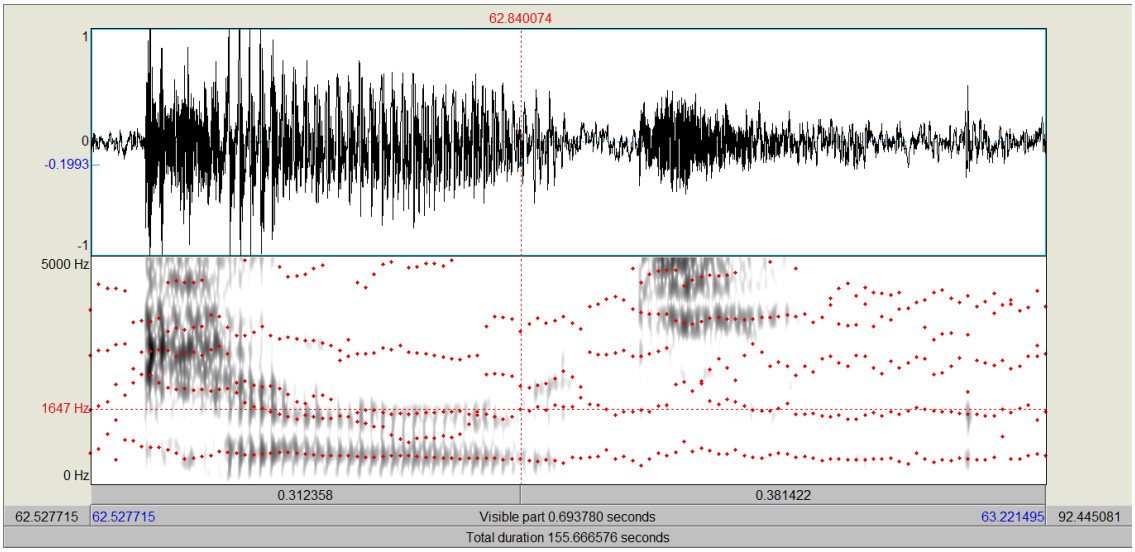


Figure A.23.2 Carrot [ə]

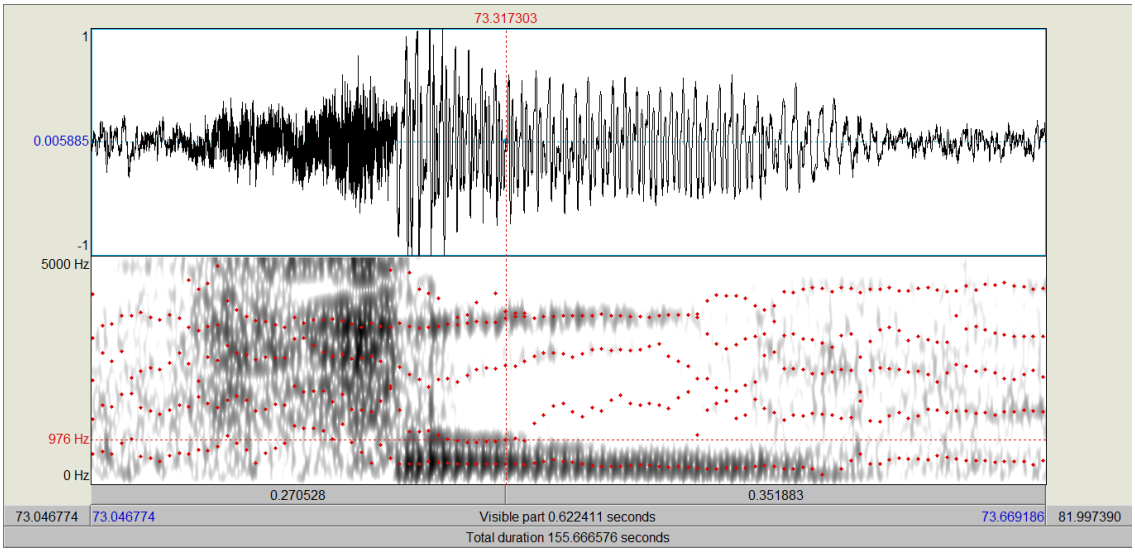


Figure A.23.3 Full [ʊ]

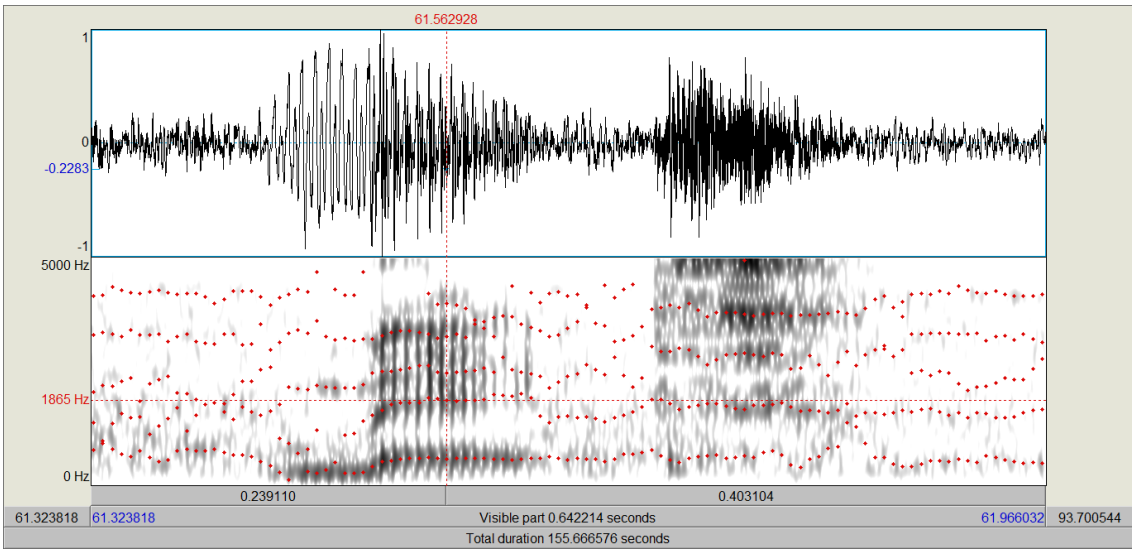


Figure A.23.4 Met [e]

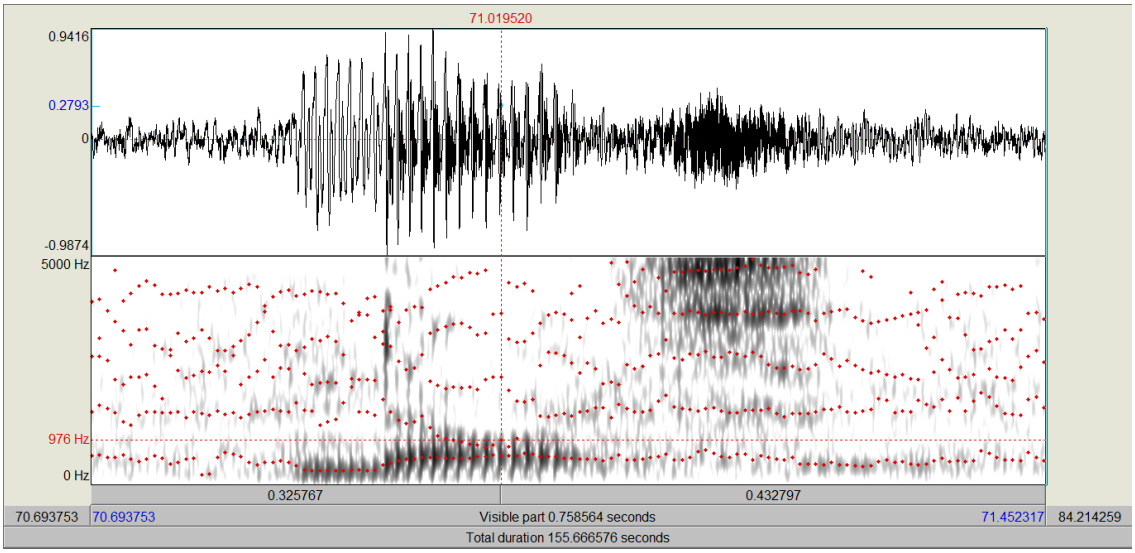


Figure A.23.5 Not [ɒ]

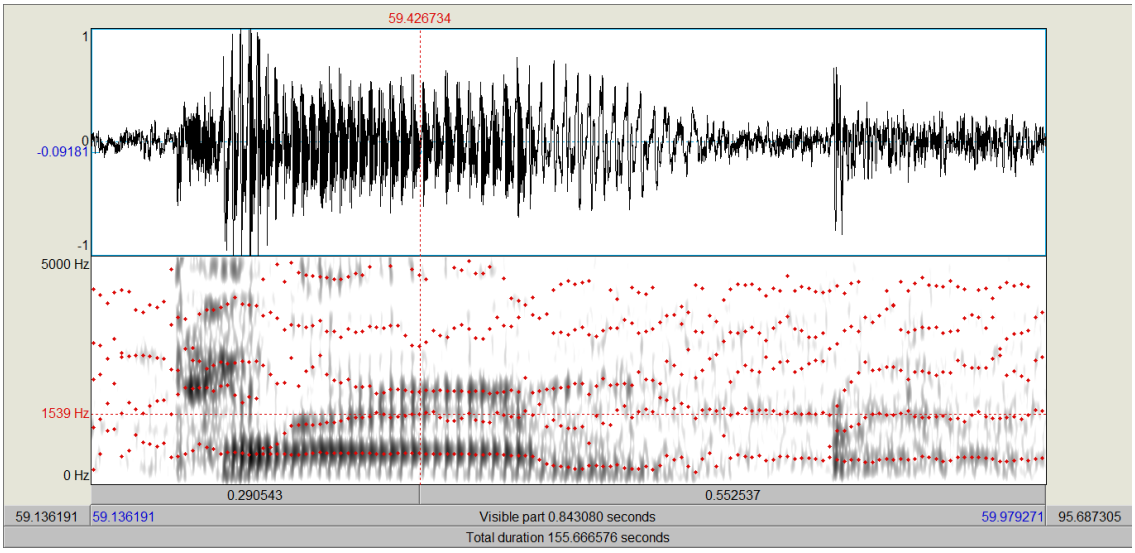


Figure A.23.6 Plan [æ]

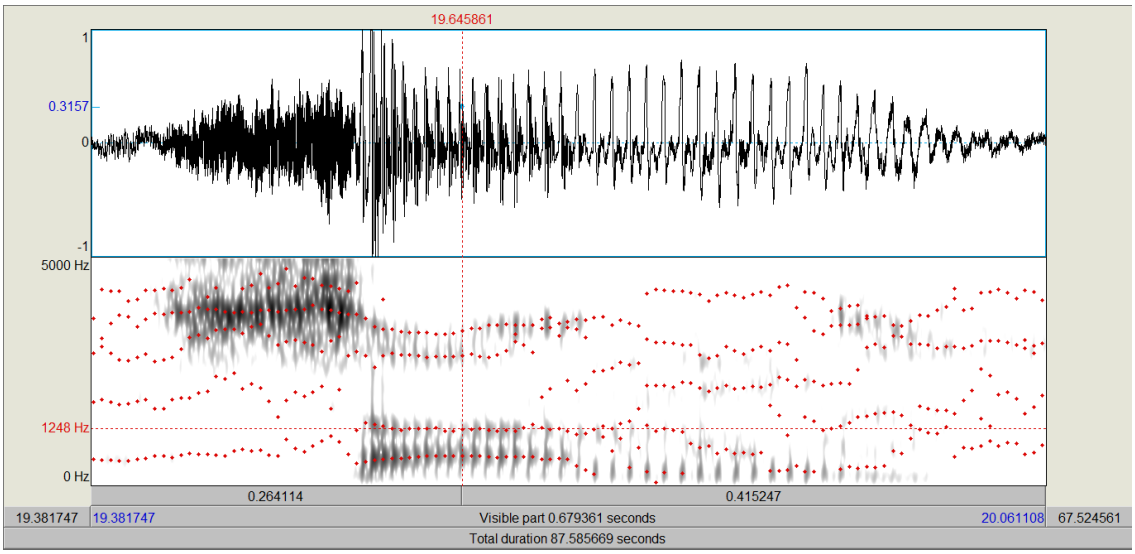


Figure A.23.7 Sun [ʌ]

A.24 Steve [Yorkshire, England]

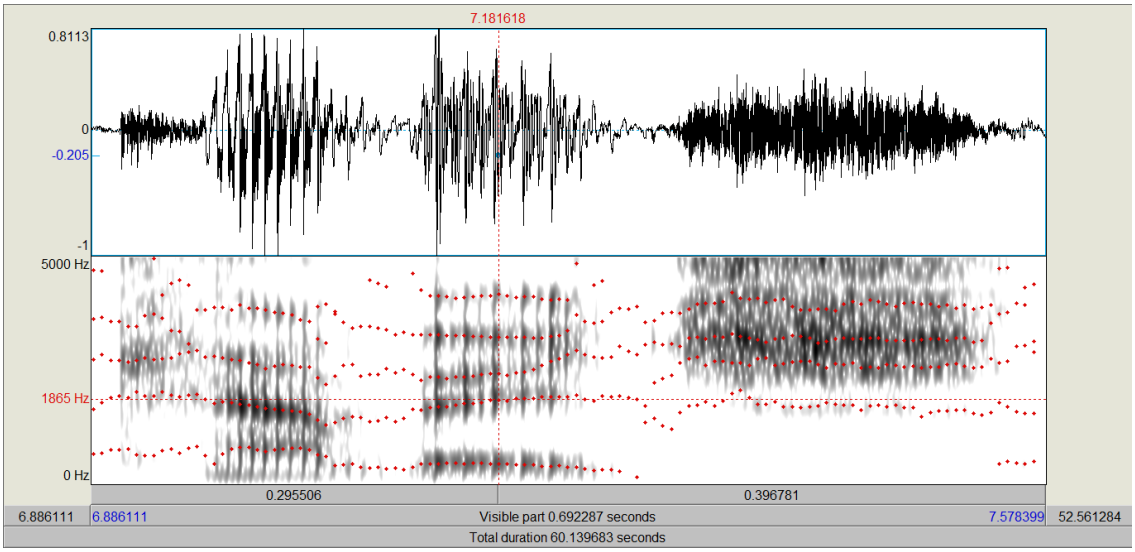


Figure A.24.1 Cabbage [ɪ]

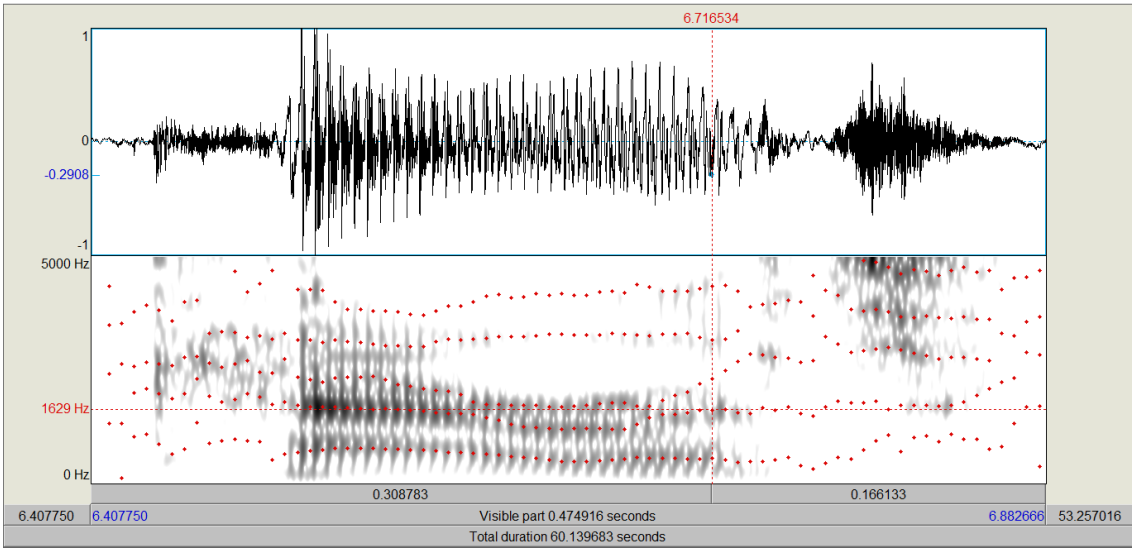


Figure A.24.2 Carrot [ə]

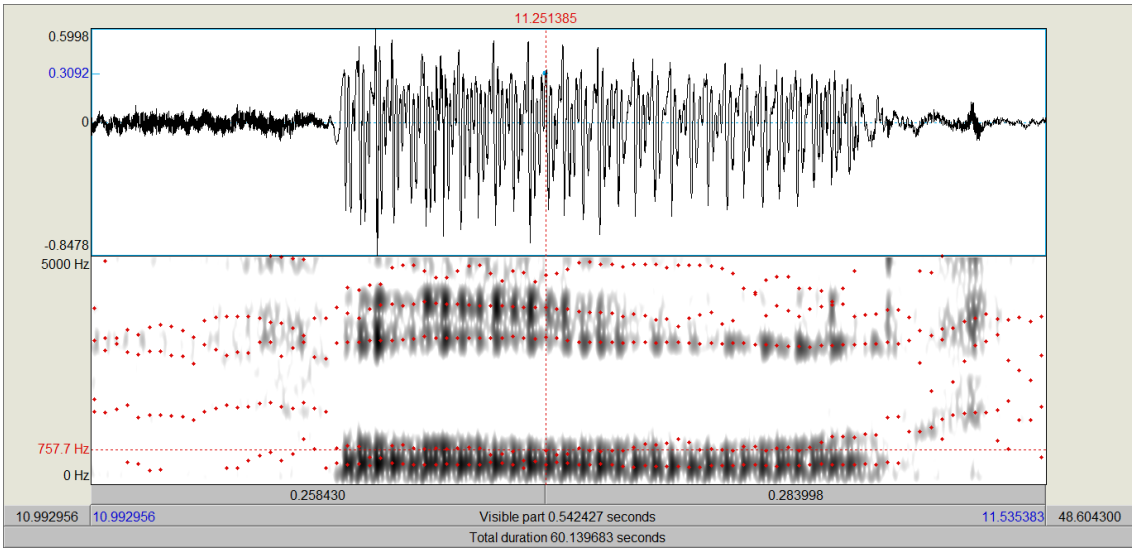


Figure A.24.3 Full [ʊ]

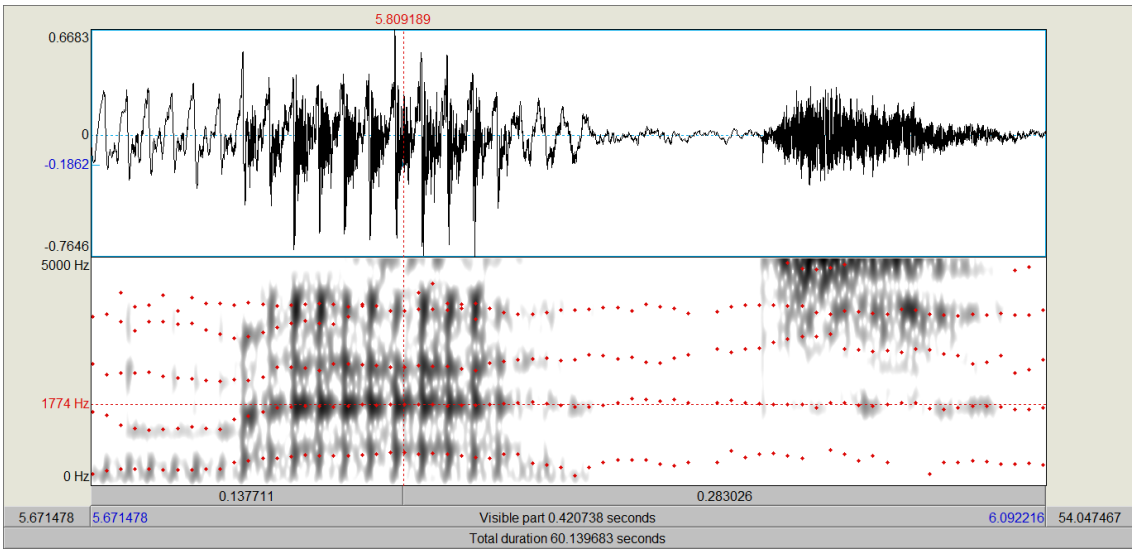


Figure A.24.4 Met [e]

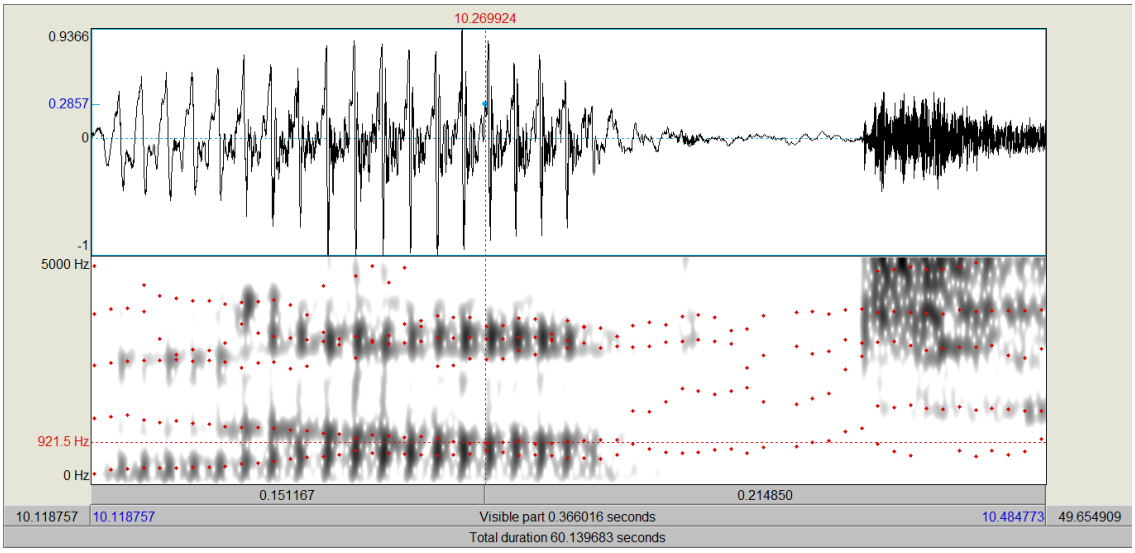


Figure A.24.5 Not [ɒ]

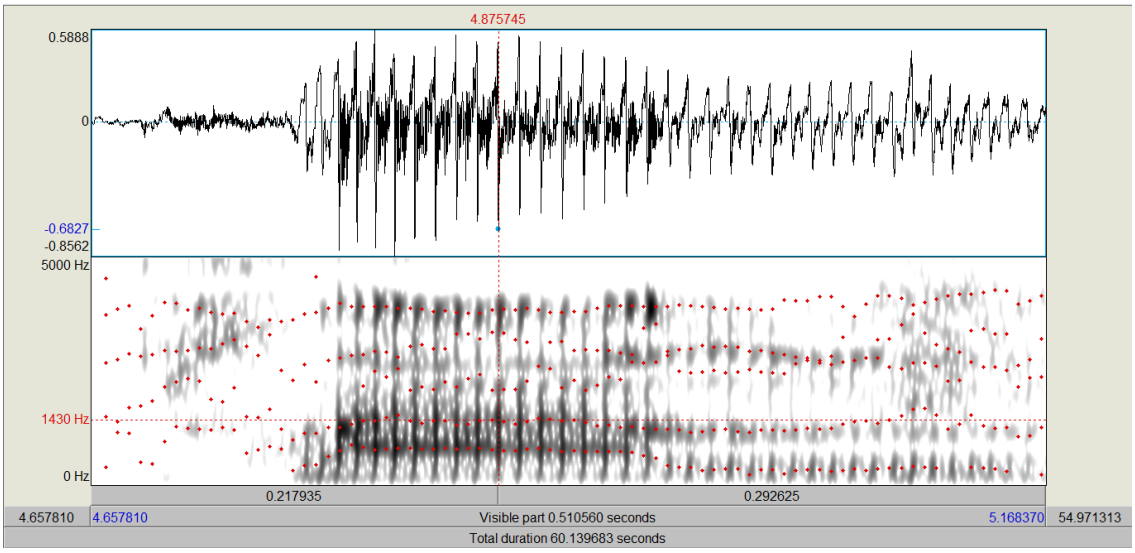


Figure A.24.6 Plan [æ]

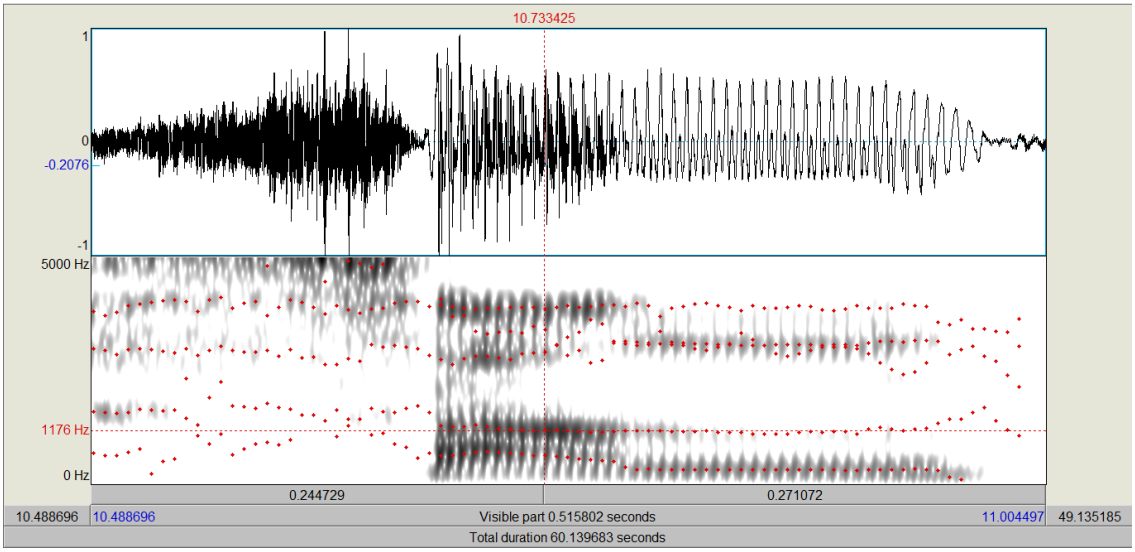


Figure A.24.7 Sun [ʌ]

A.25 Simon [Somerset, England]

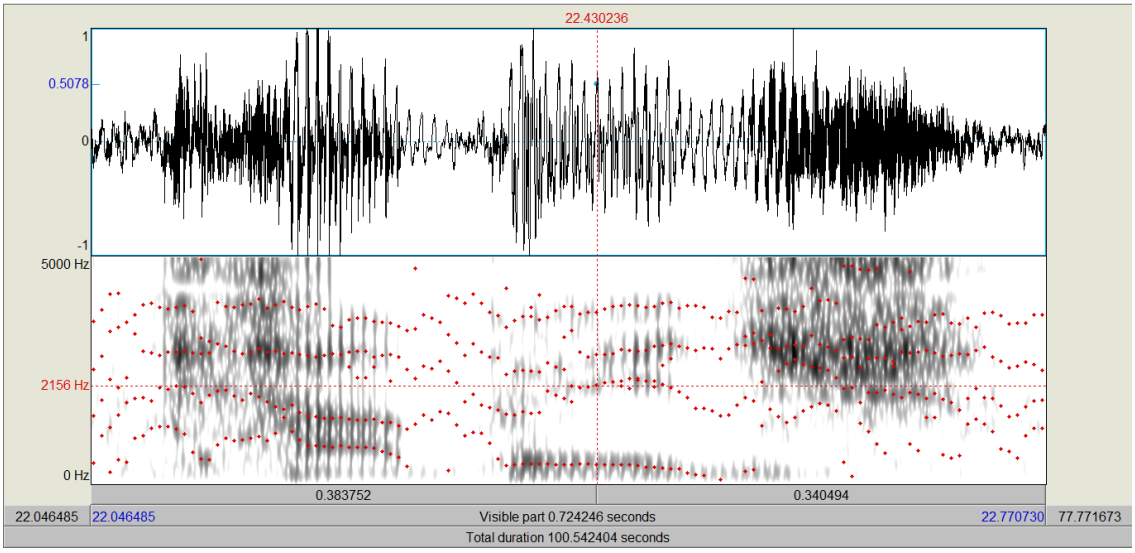


Figure A.25.1 Cabbage [ɪ]

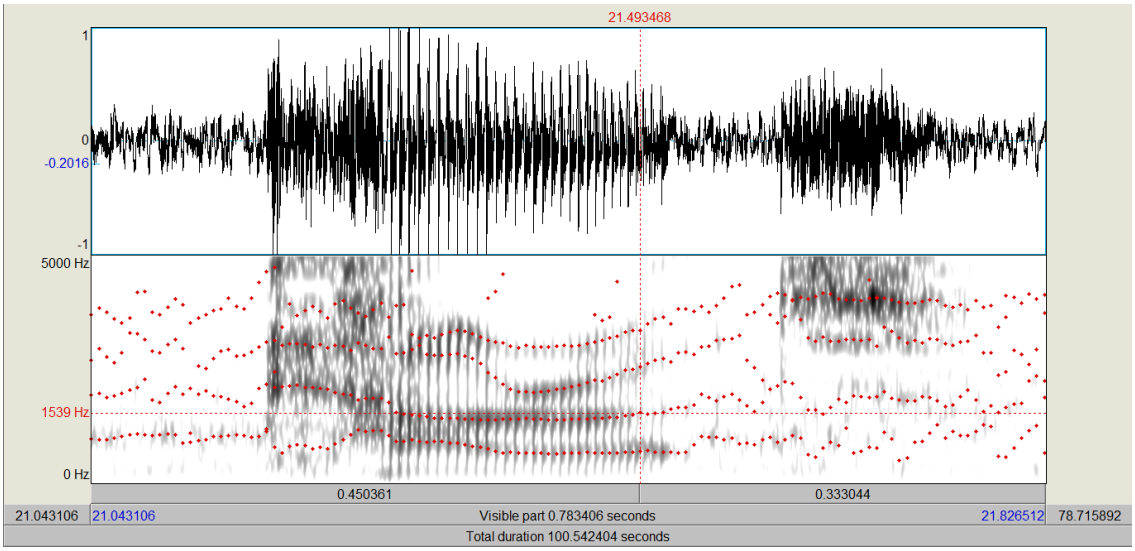


Figure A.25.2 Carrot [ə]

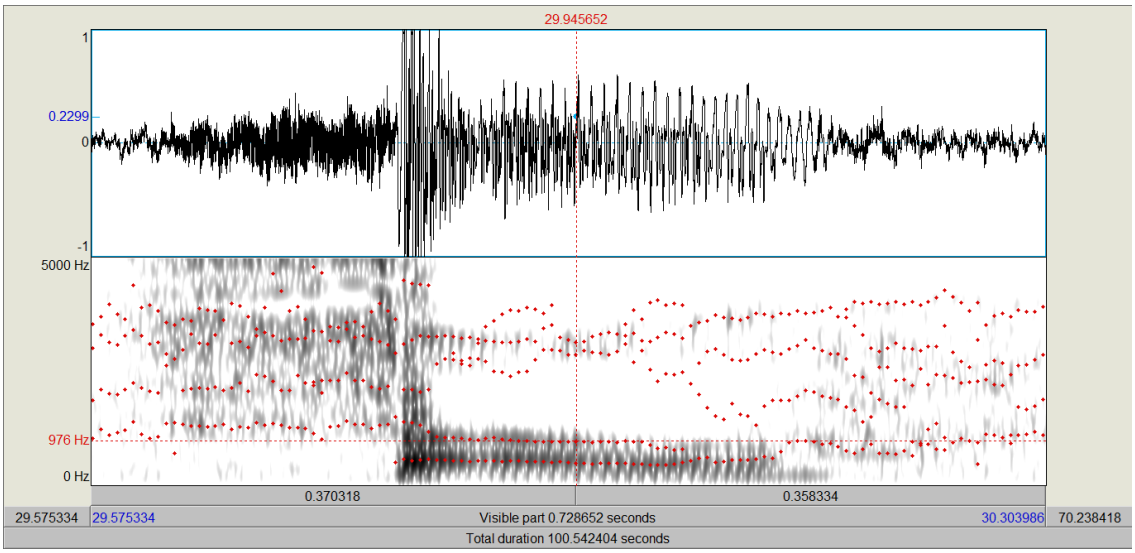


Figure A.25.3 Full [ʊ]

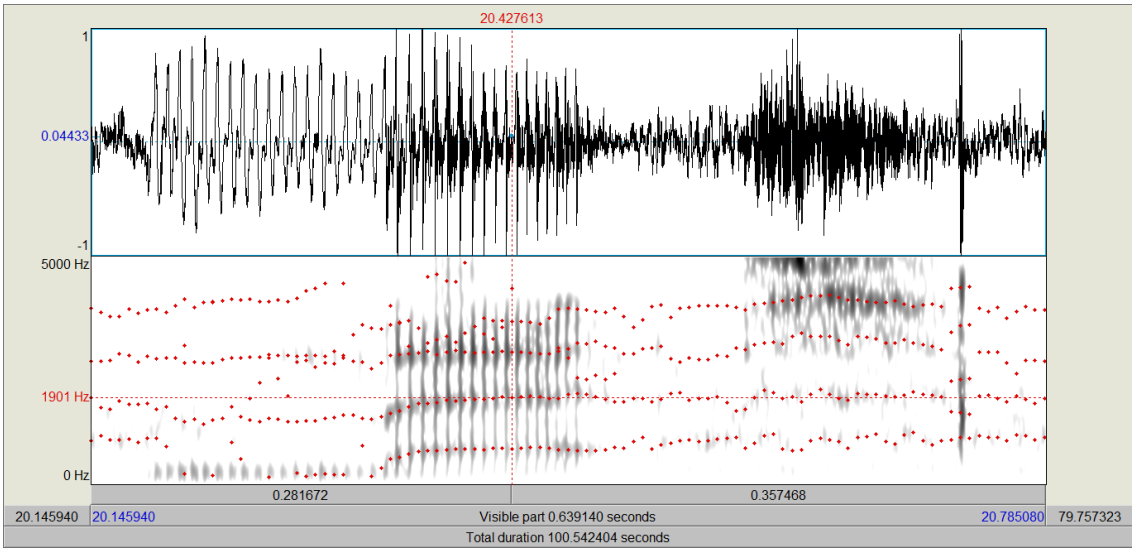


Figure A.25.4 Met [e]

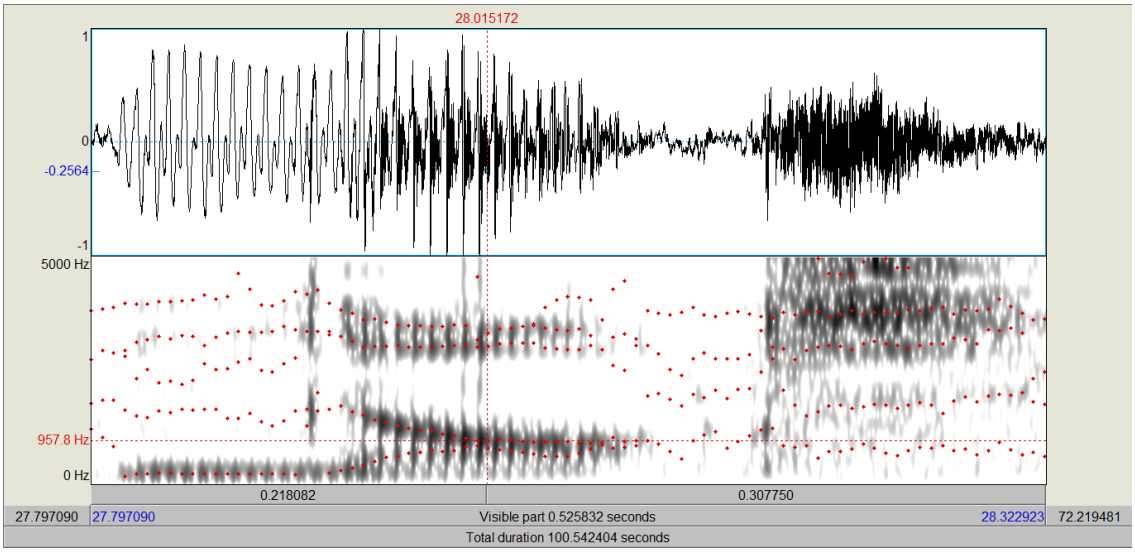


Figure A.25.5 Not [ɒ]

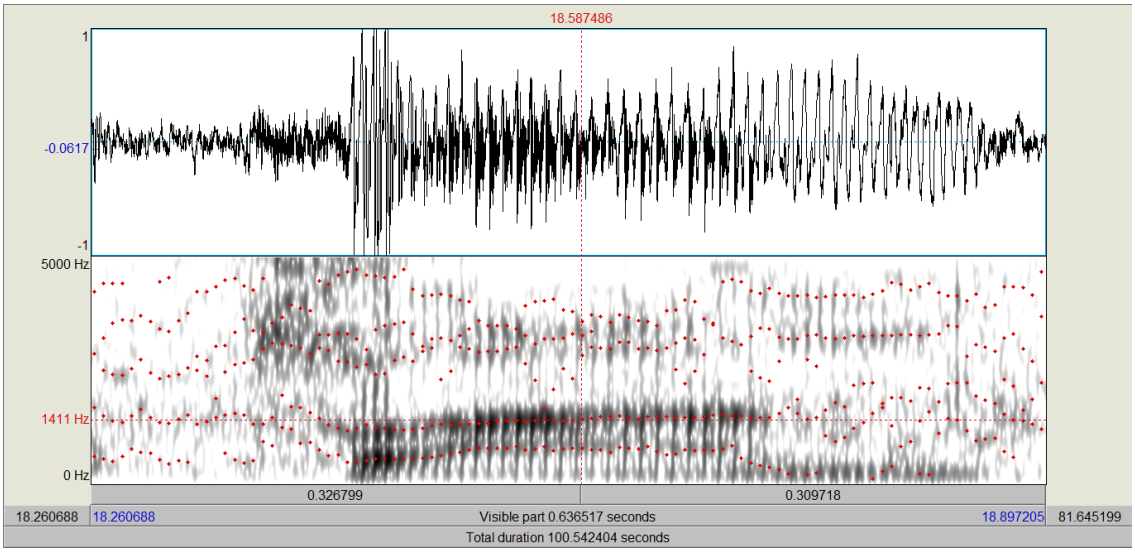


Figure A.25.6 Plan [æ]

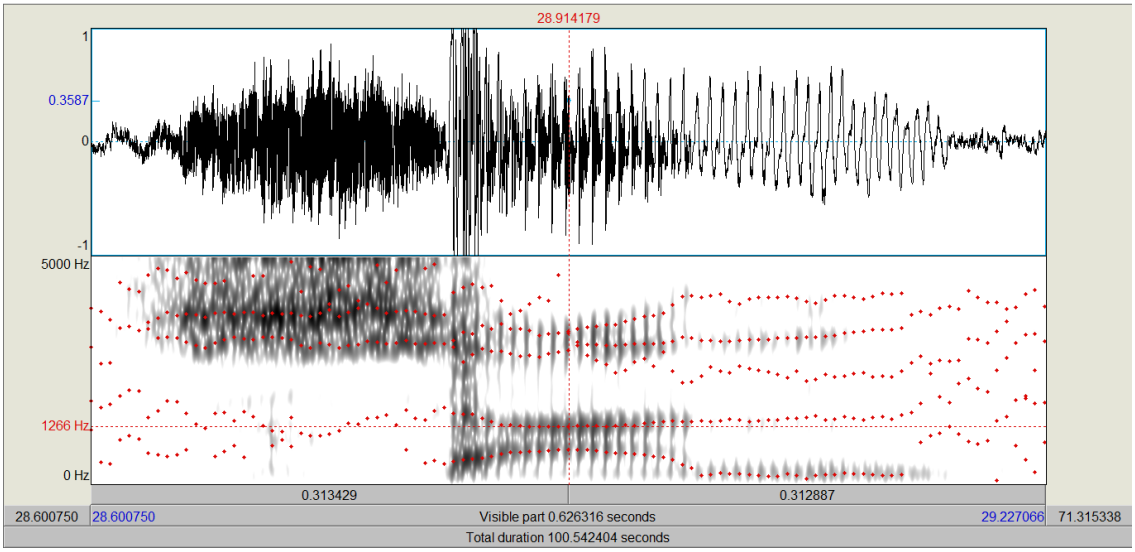


Figure A.25.7 Sun [ʌ]

A.26 Ursula Juta, BBC [South Africa]

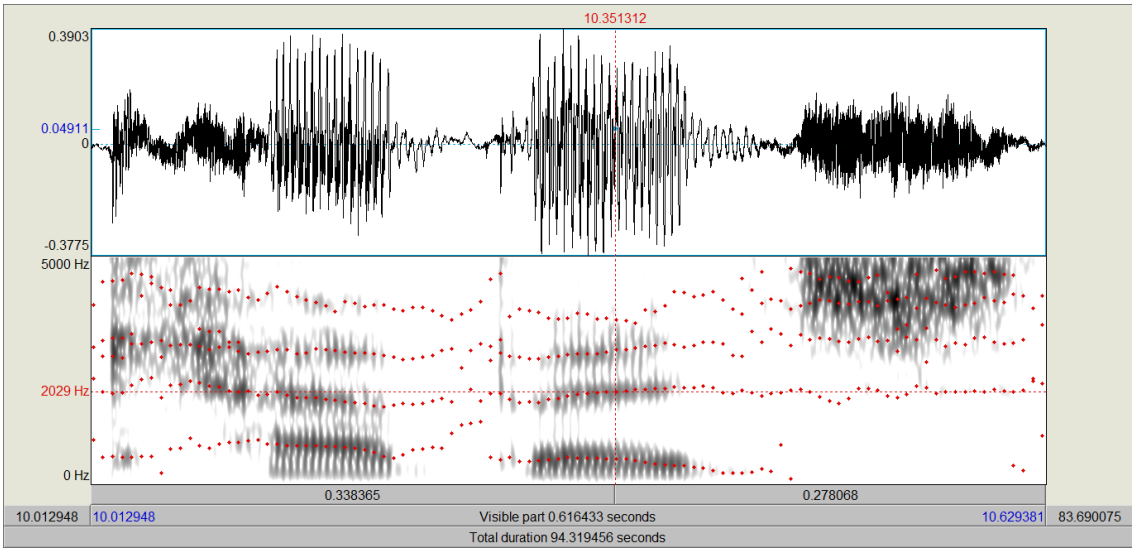


Figure A.26.1 Cabbage [ɪ]

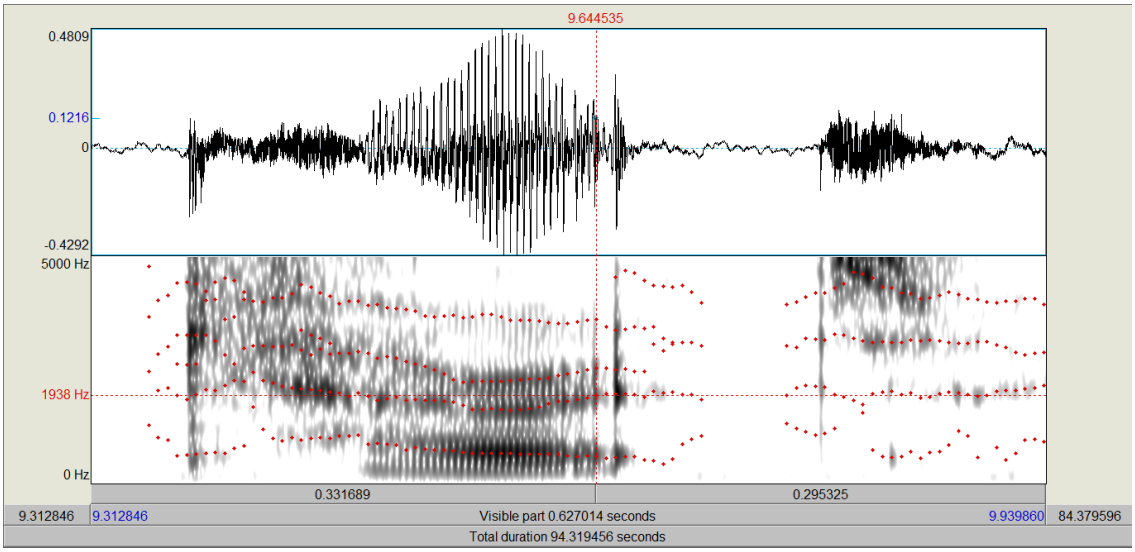


Figure A.26.2 Carrot [ə]

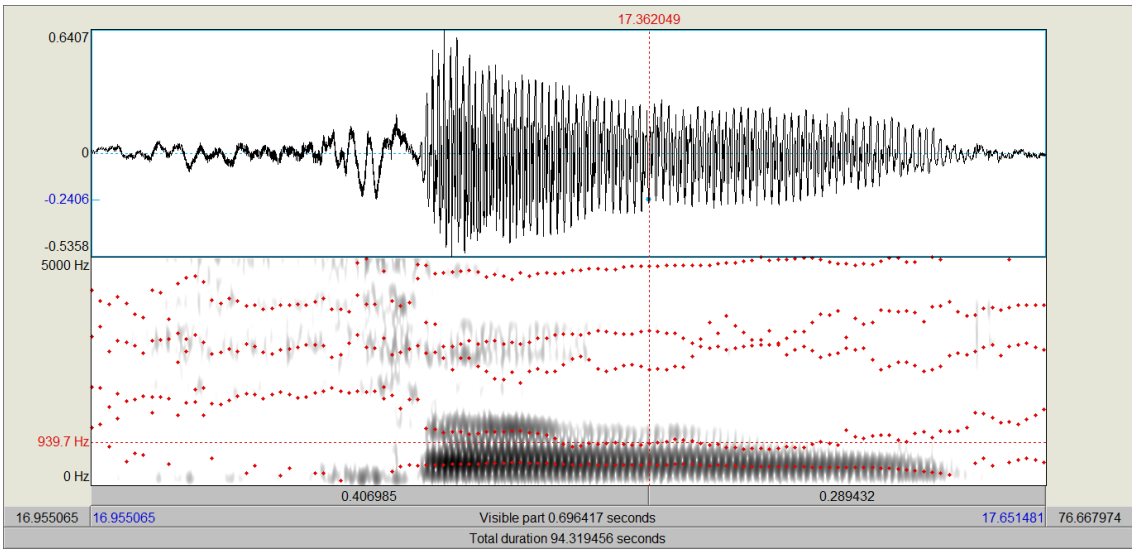


Figure A.26.3 Full [ʊ]

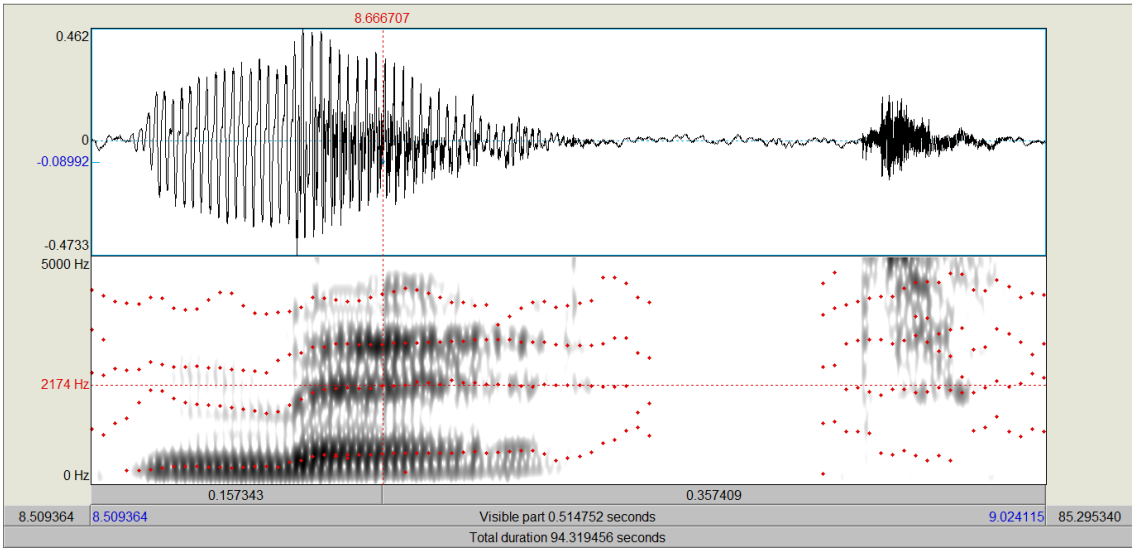


Figure A.26.4 Met [e]

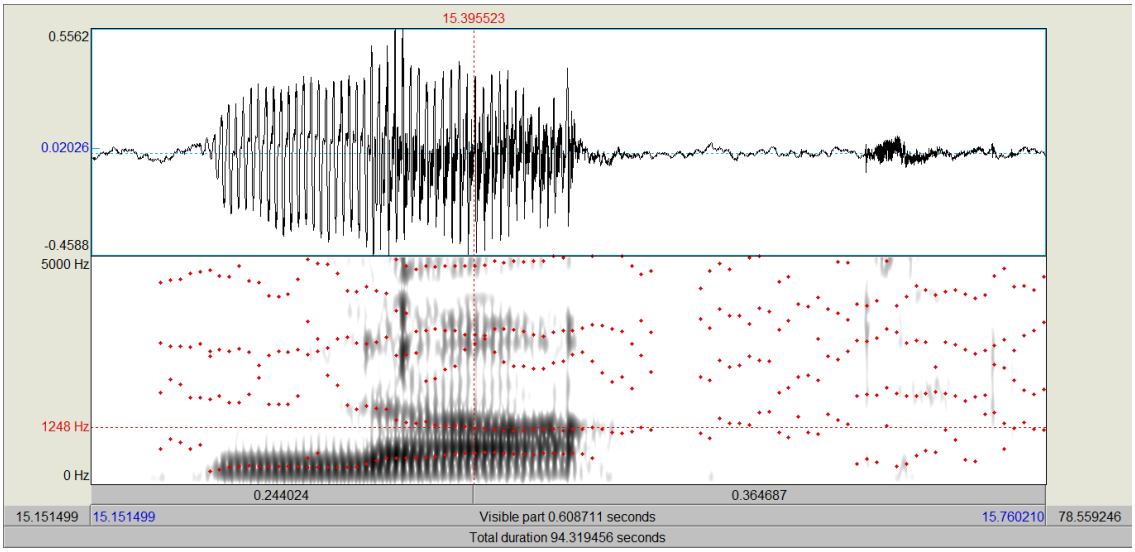


Figure A.26.5 Not [ɒ]

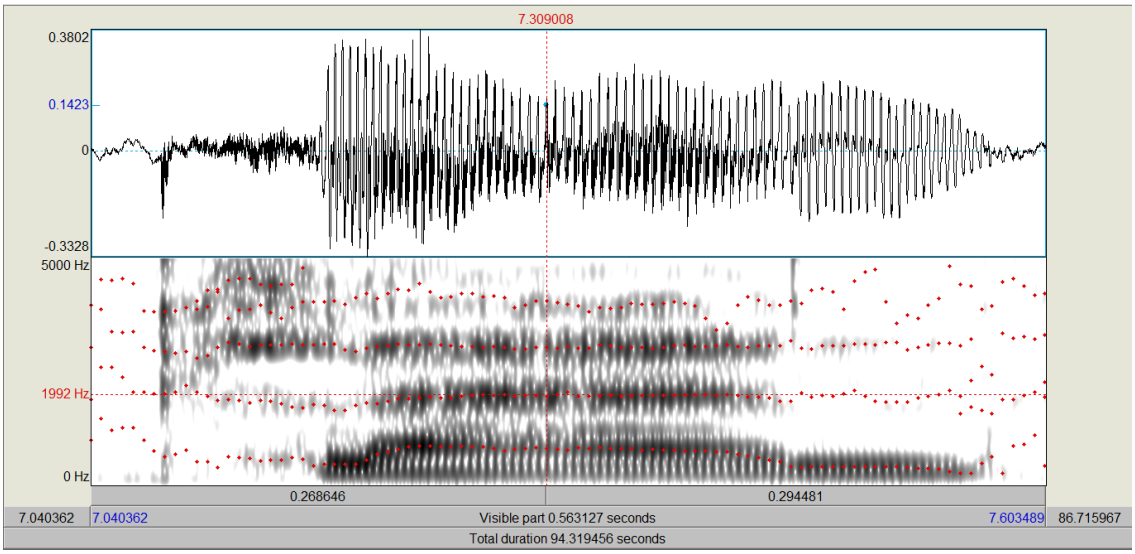


Figure A.26.6 Plan [æ]

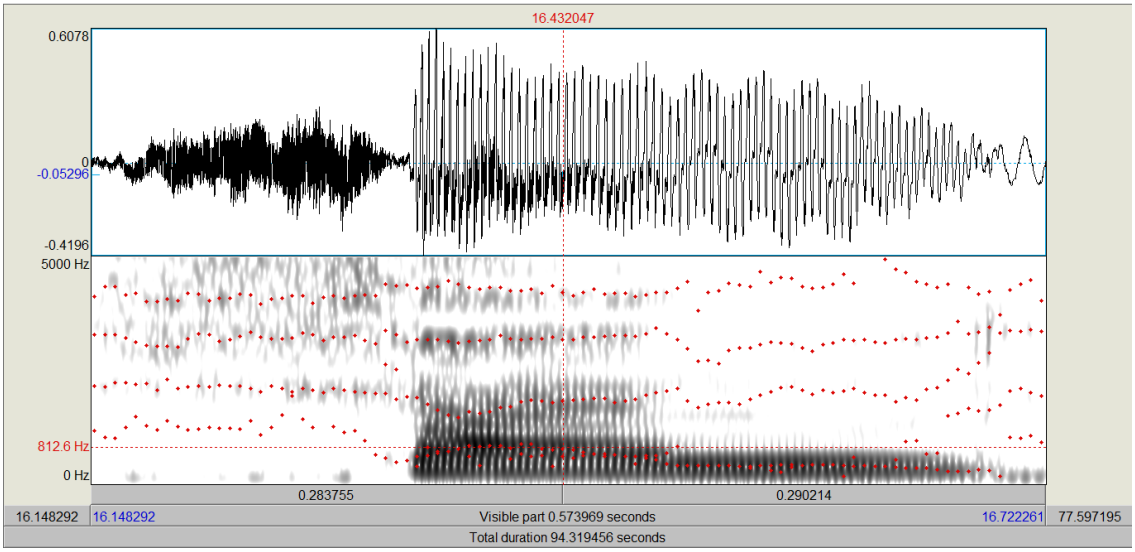


Figure A.26.7 Sun [ʌ]

A.27 Vincent Brown [Norfolk, England]

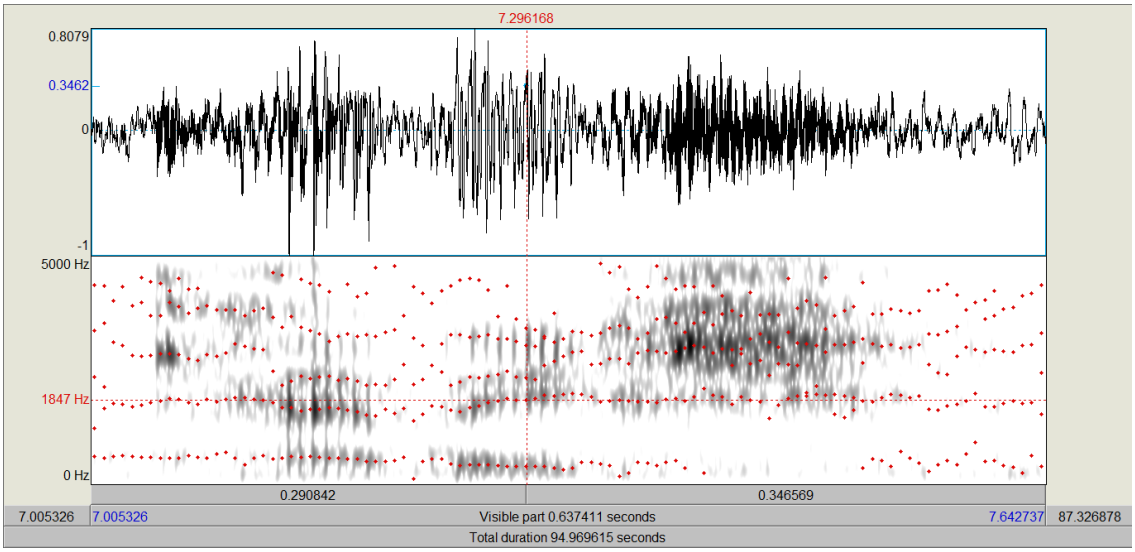


Figure A.27.1 Cabbage [ɪ]

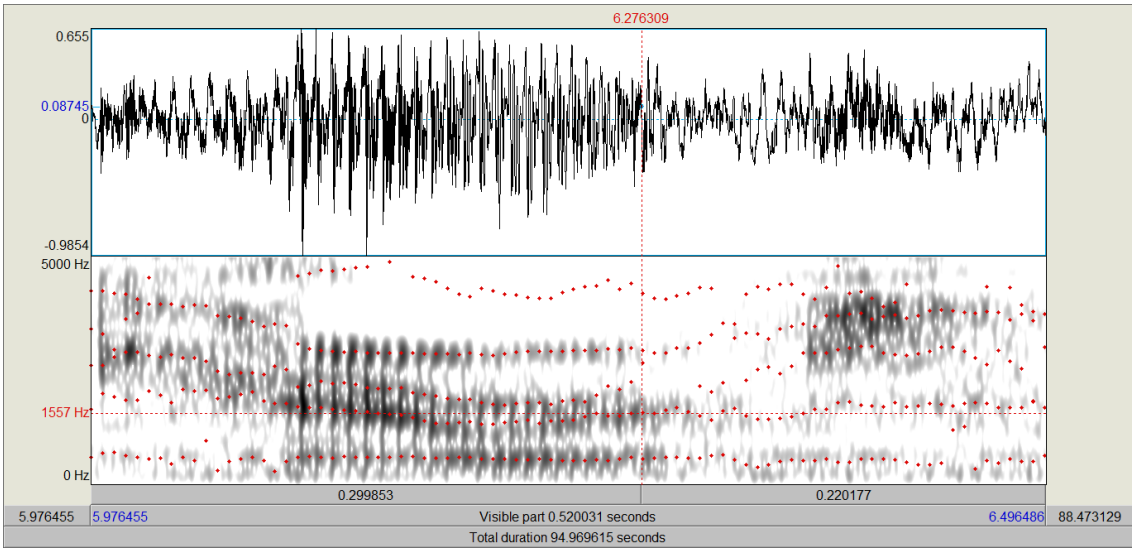


Figure A.27.2 Carrot [ə]

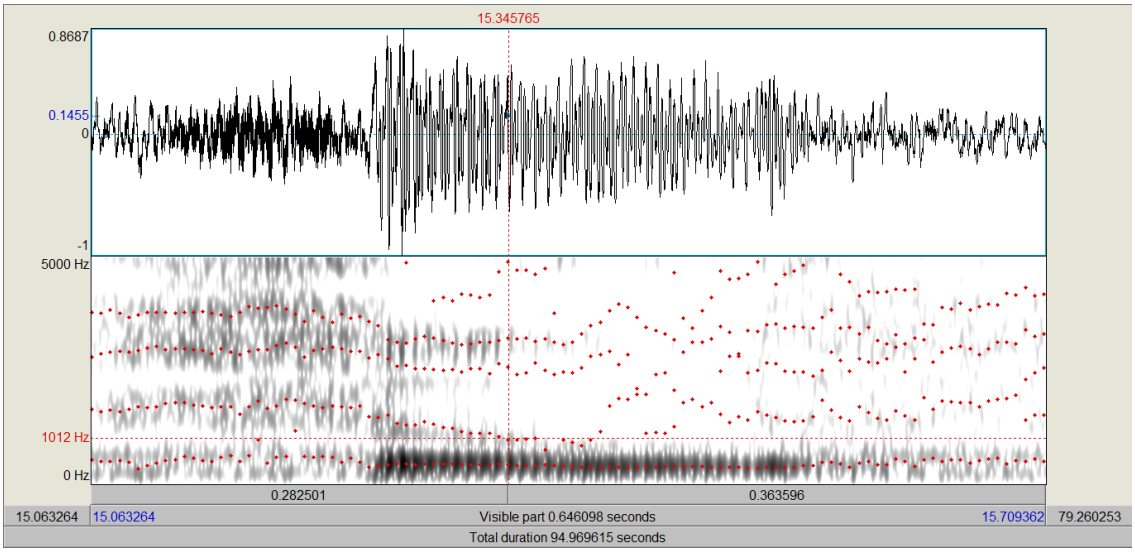


Figure A.27.3 Full [ʊ]

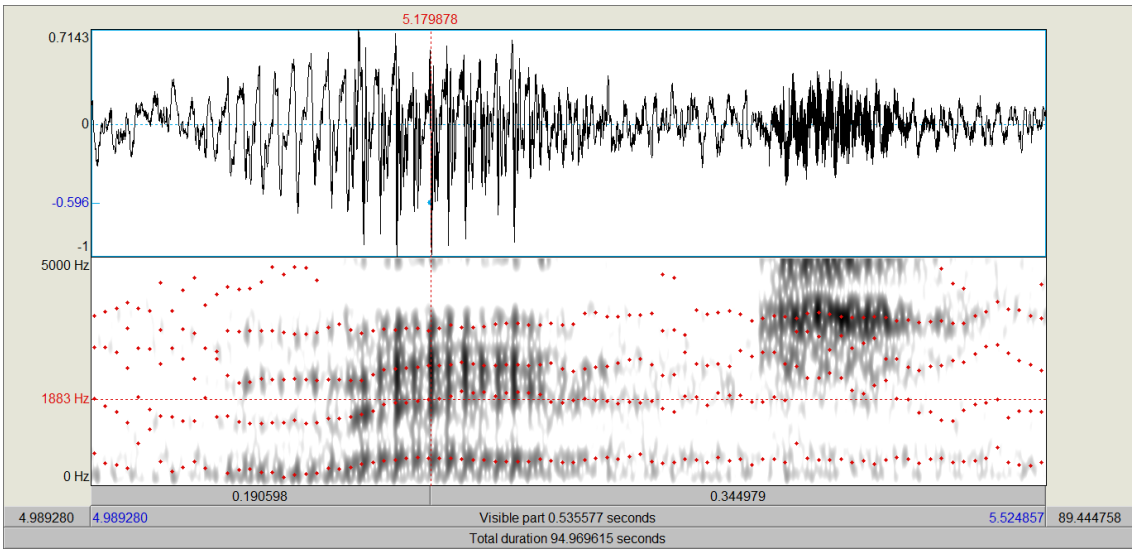


Figure A.27.4 Met [e]

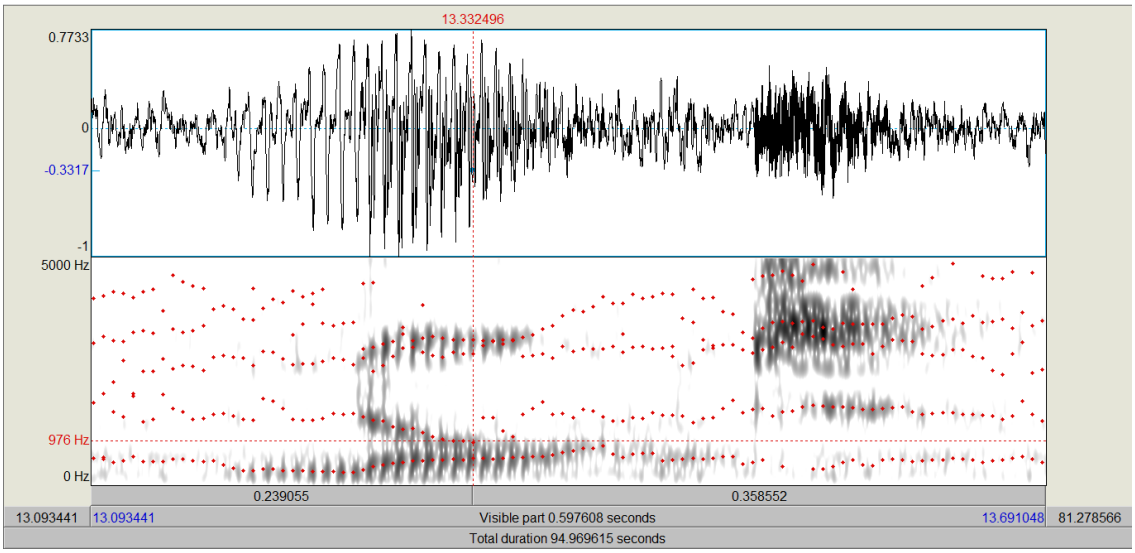


Figure A.27.5 Not [ɒ]

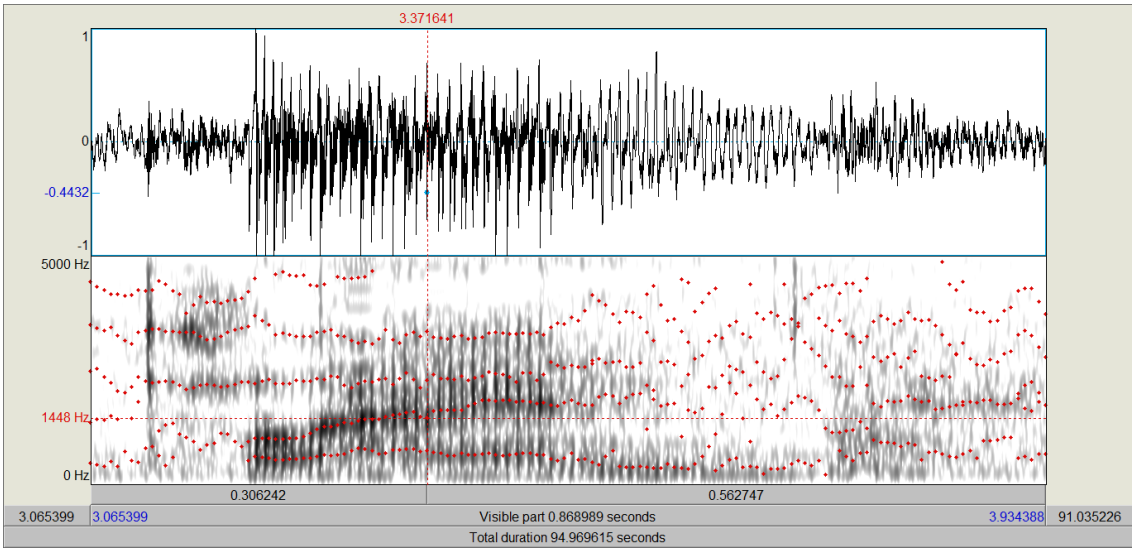


Figure A.27.6 Plan [æ]

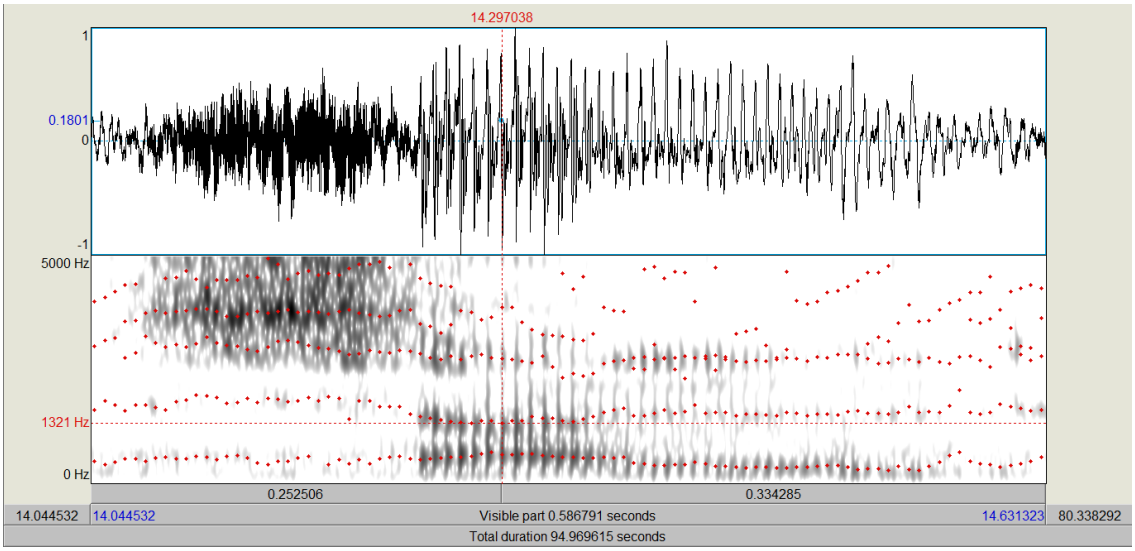


Figure A.27.7 Sun [ʌ]

A.28 William Beasley [Leicestershire, England]

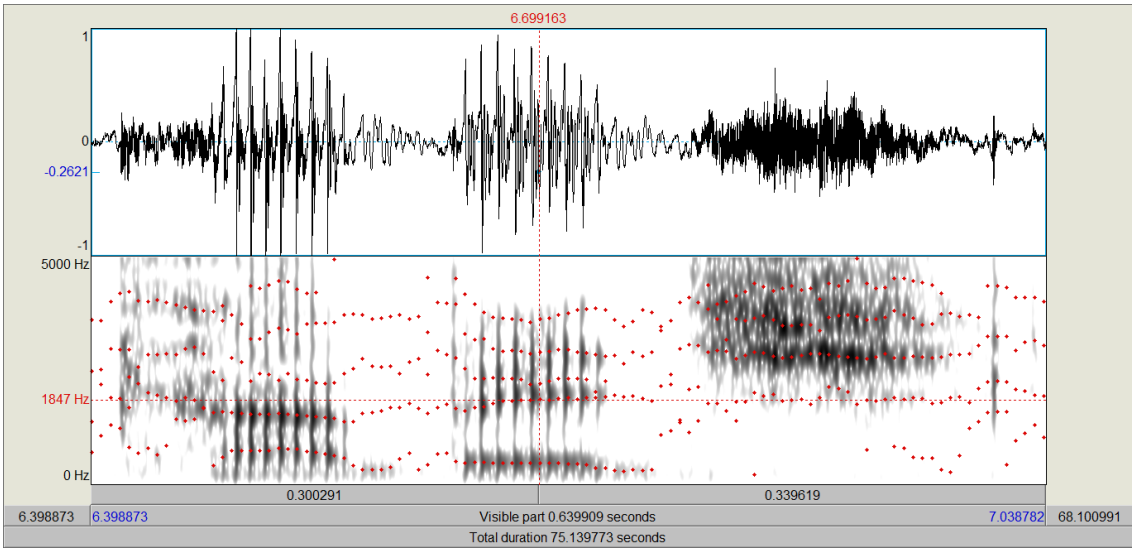


Figure A.28.1 Cabbage [ɪ]

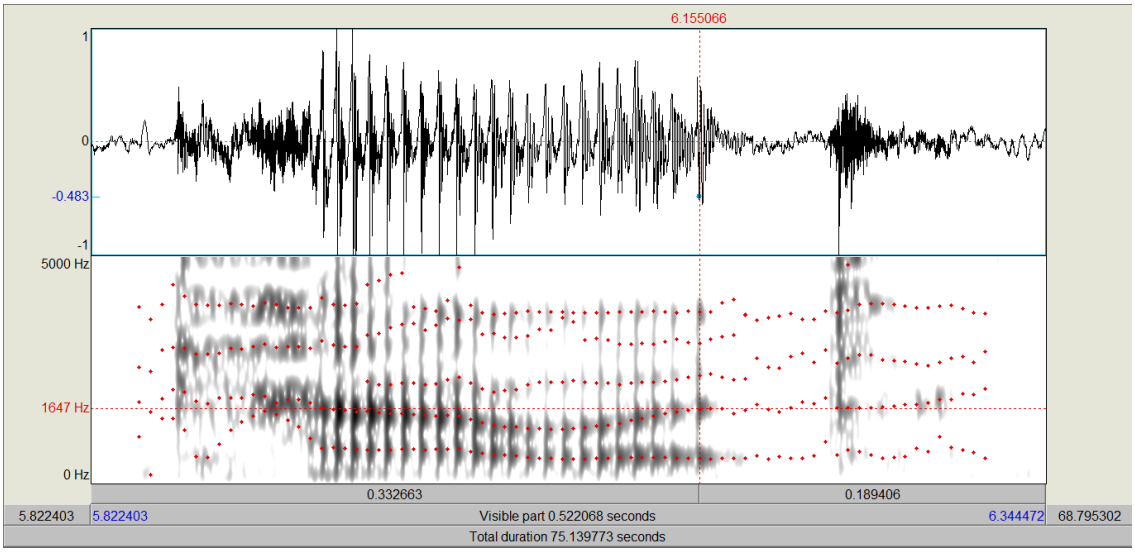


Figure A.28.2 Carrot [ə]

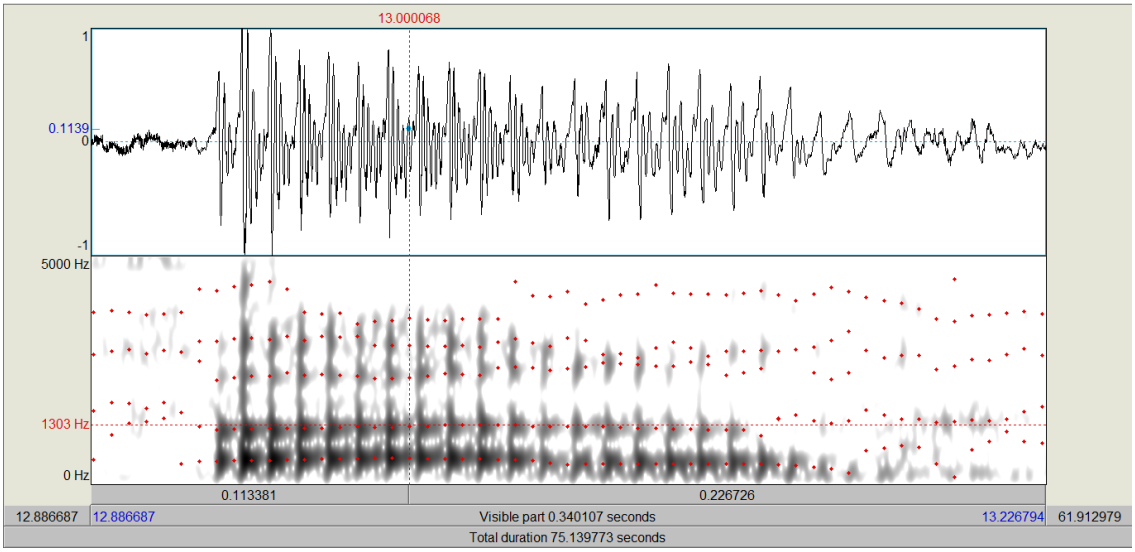


Figure A.28.3 Full [ʊ]

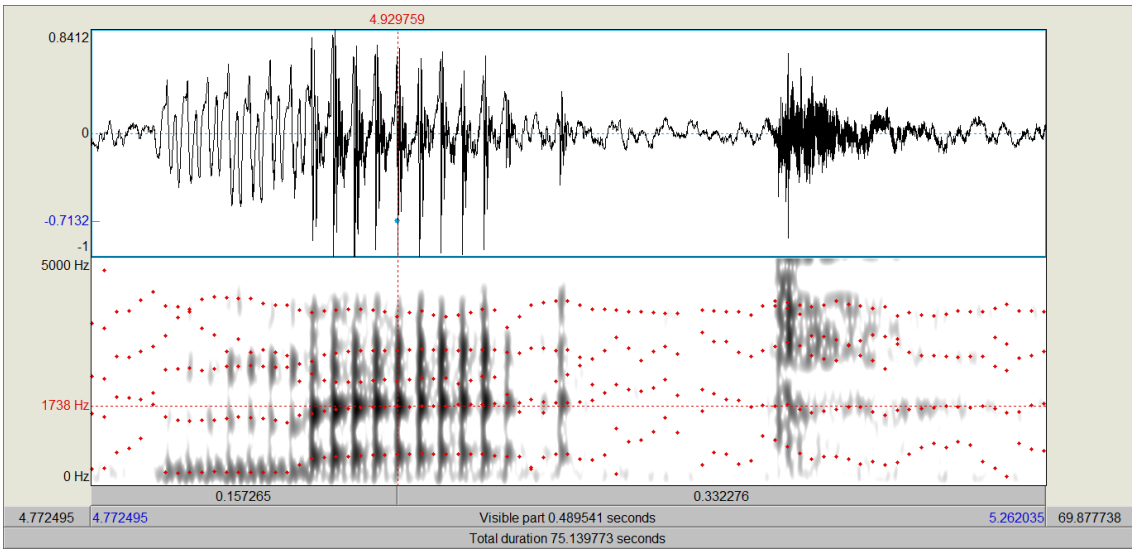


Figure A.28.4 Met [e]

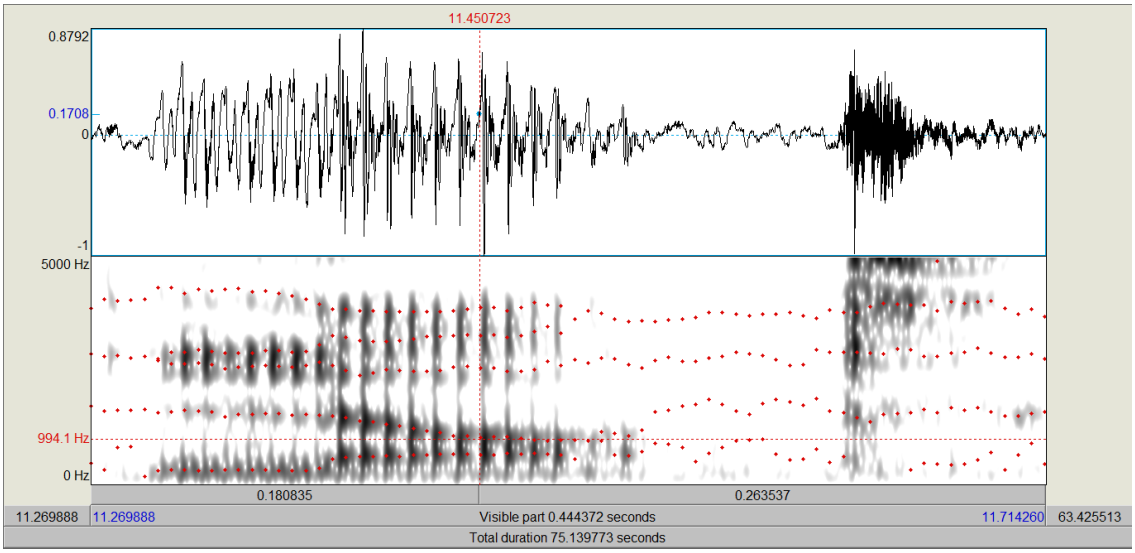


Figure A.28.5 Not [ɒ]

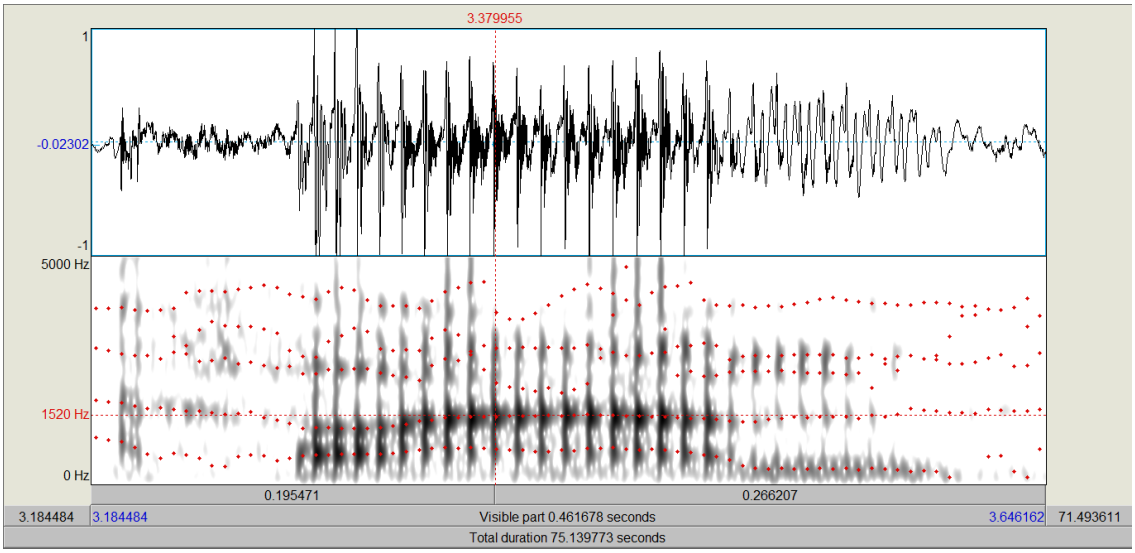


Figure A.28.6 Plan [æ]

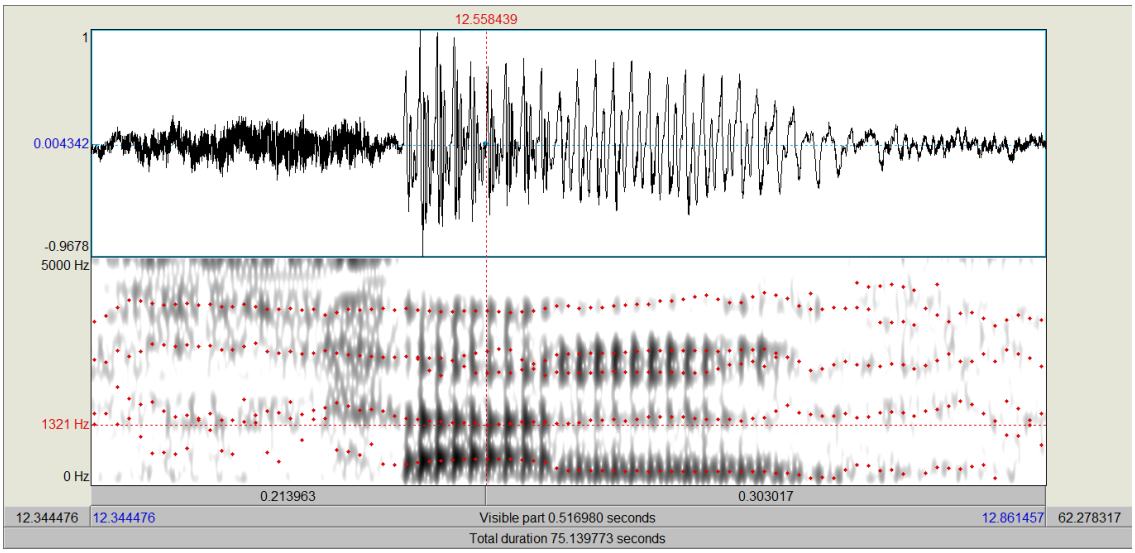


Figure A.28.7 Sun [ʌ]

A.29 William [Buckinghamshire, England]

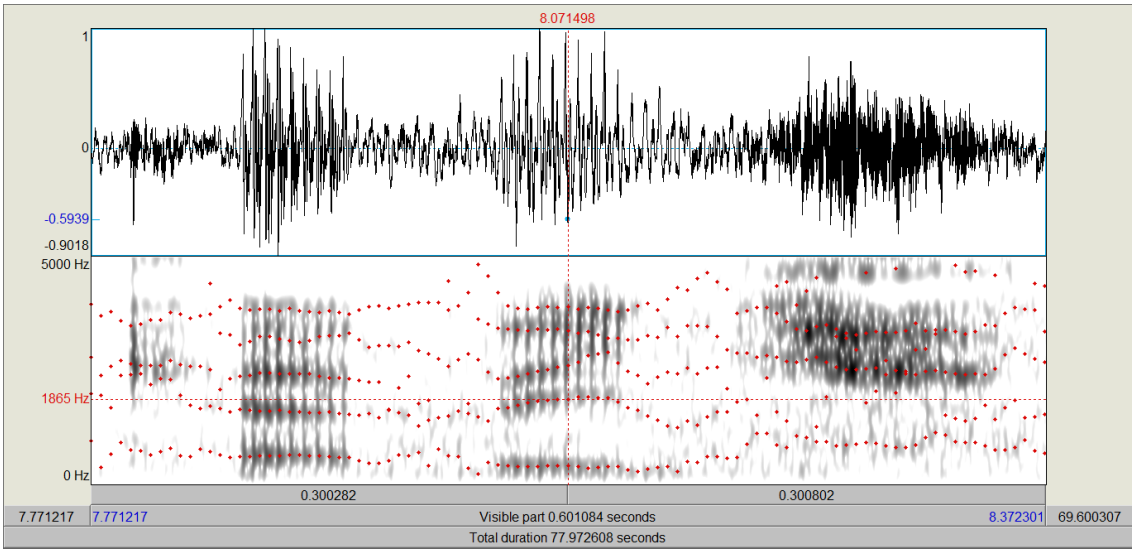


Figure A.29.1 Cabbage [ɪ]

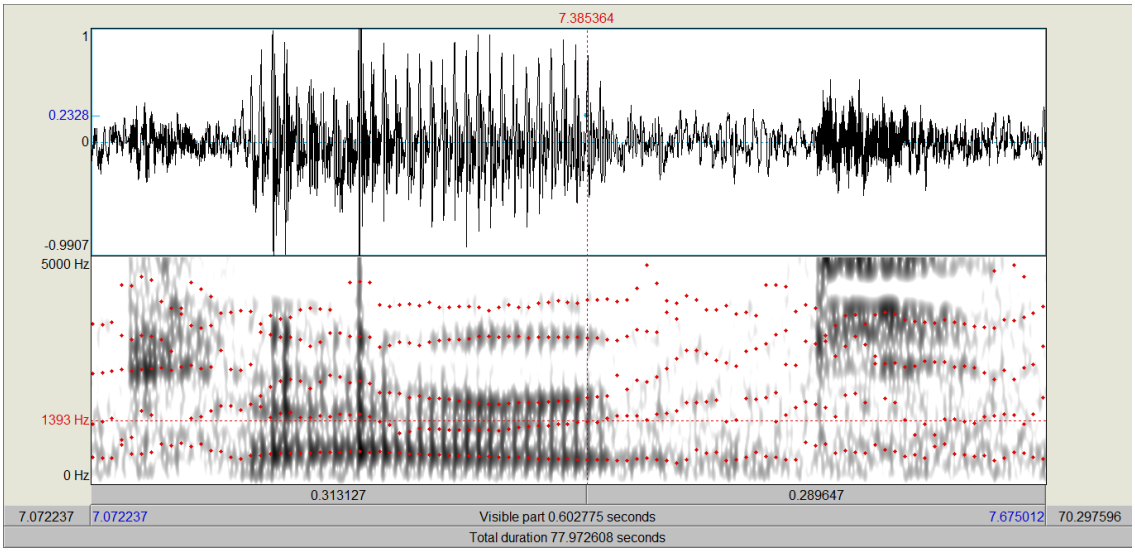


Figure A.29.2 Carrot [ə]

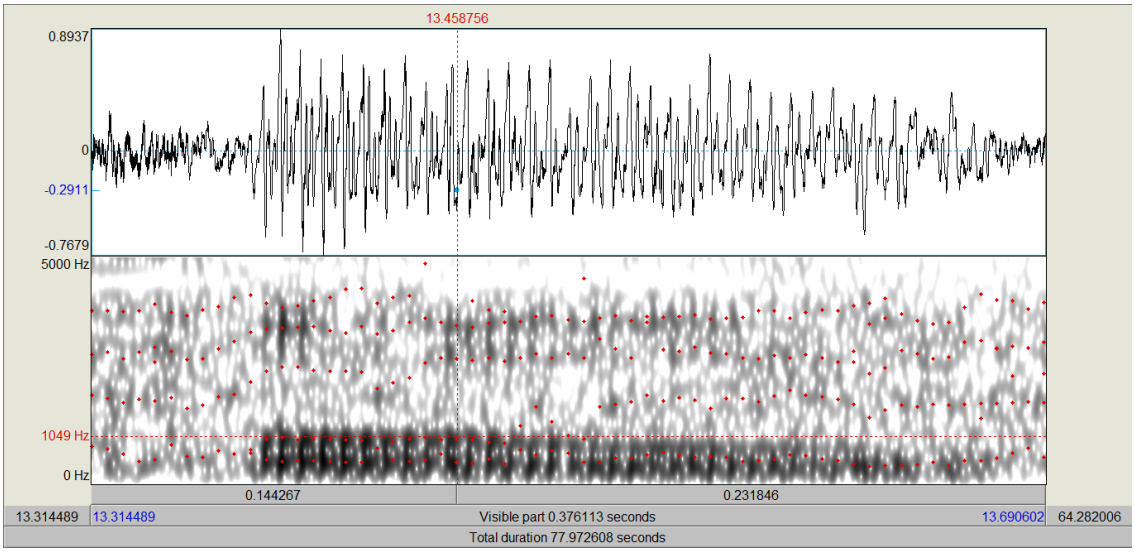


Figure A.29.3 Full [ʊ]

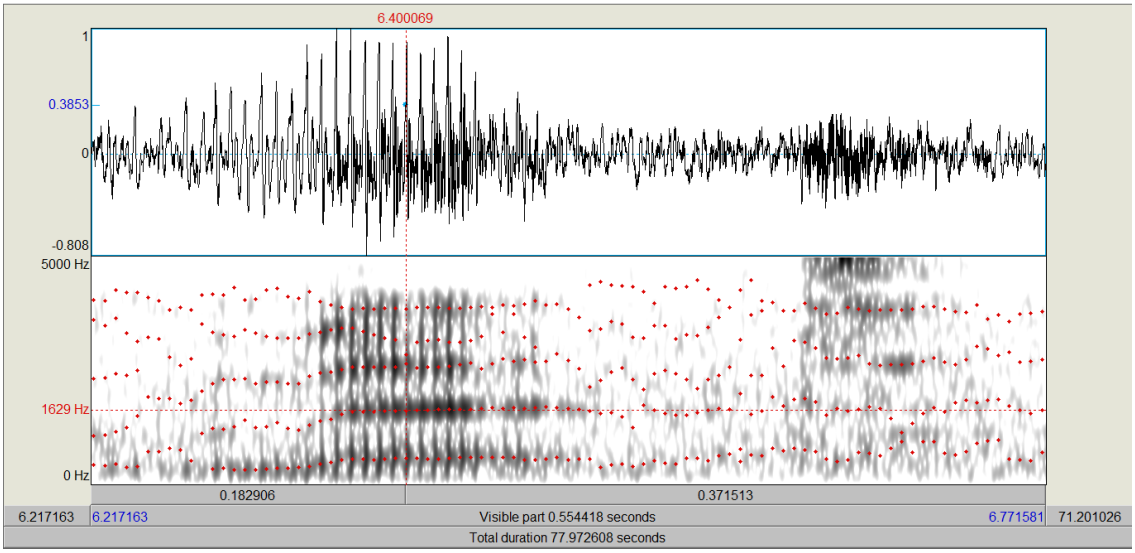


Figure A.29.4 Met [e]

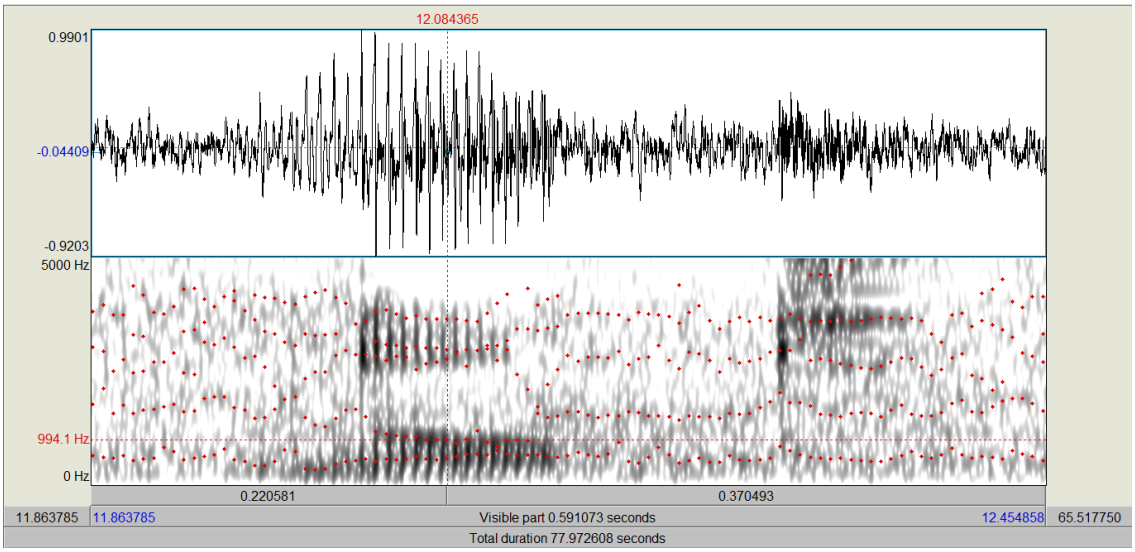


Figure A.29.5 Not [ɒ]

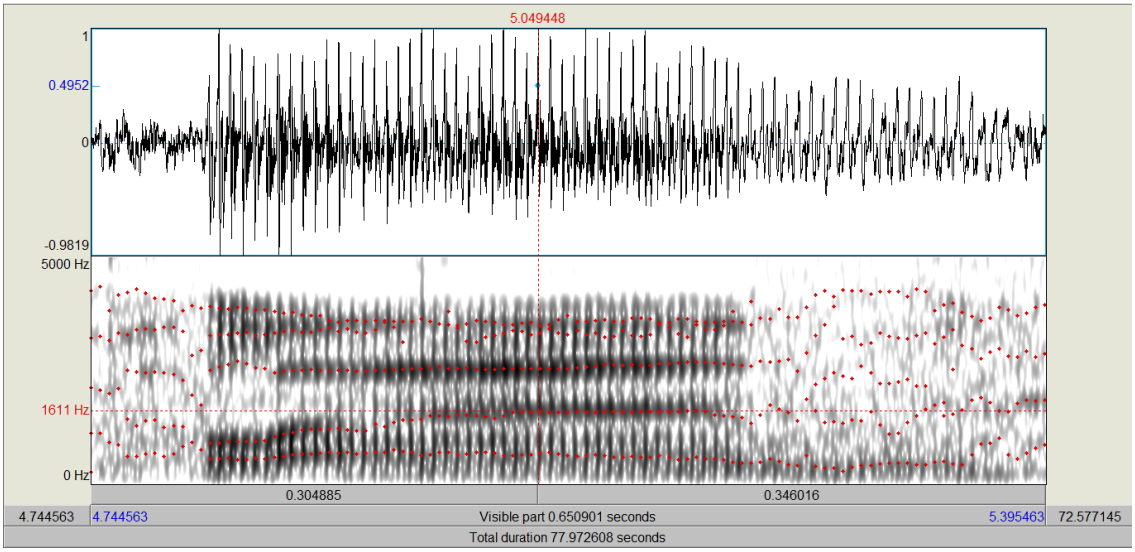


Figure A.29.6 Plan [æ]

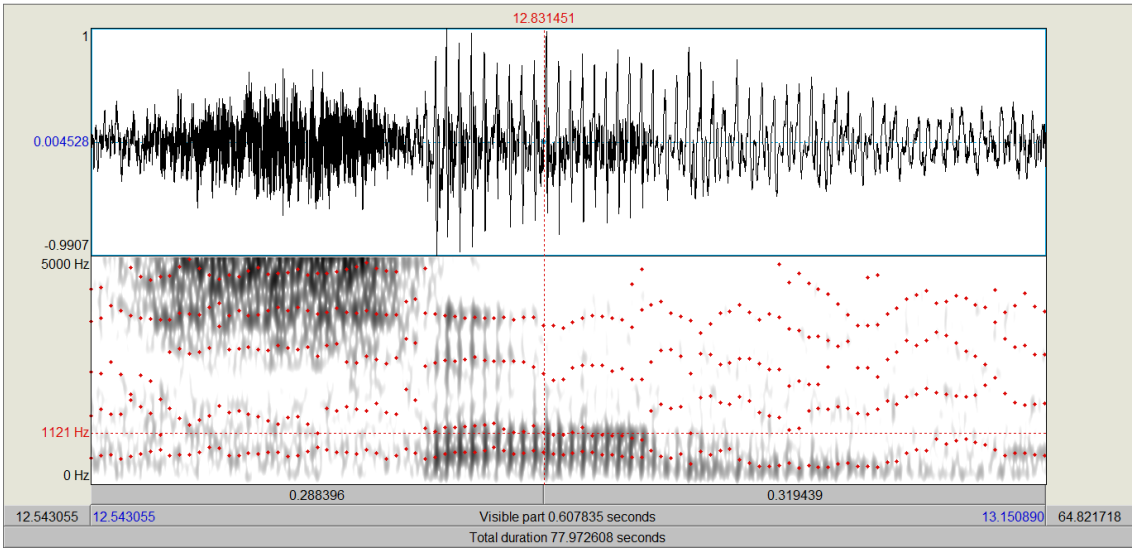


Figure A.29.7 Sun [ʌ]

A.30 William T. Drakeford [South Carolina, USA]

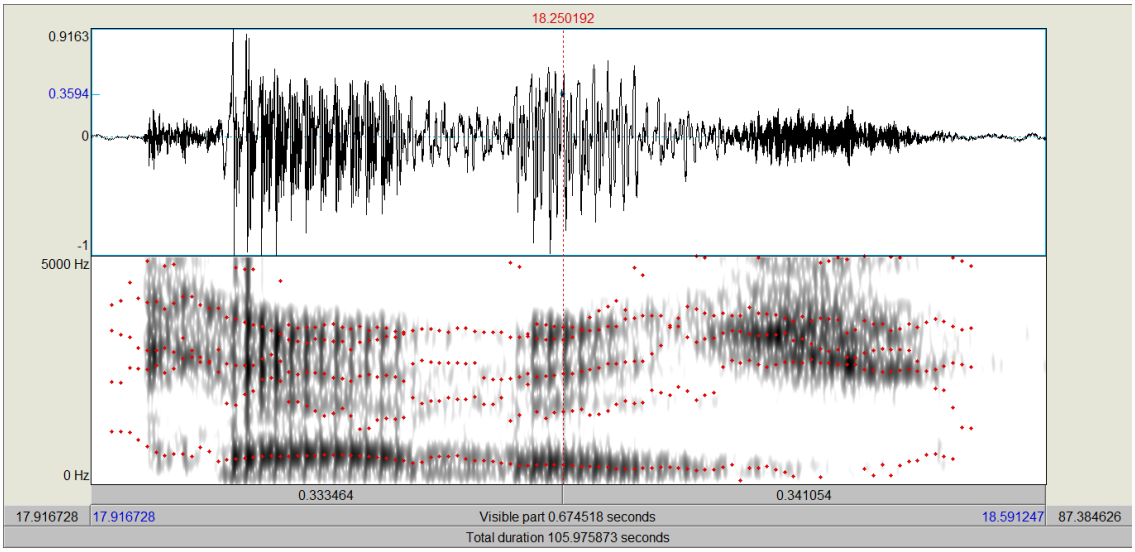


Figure A.30.1 Cabbage [ɪ]

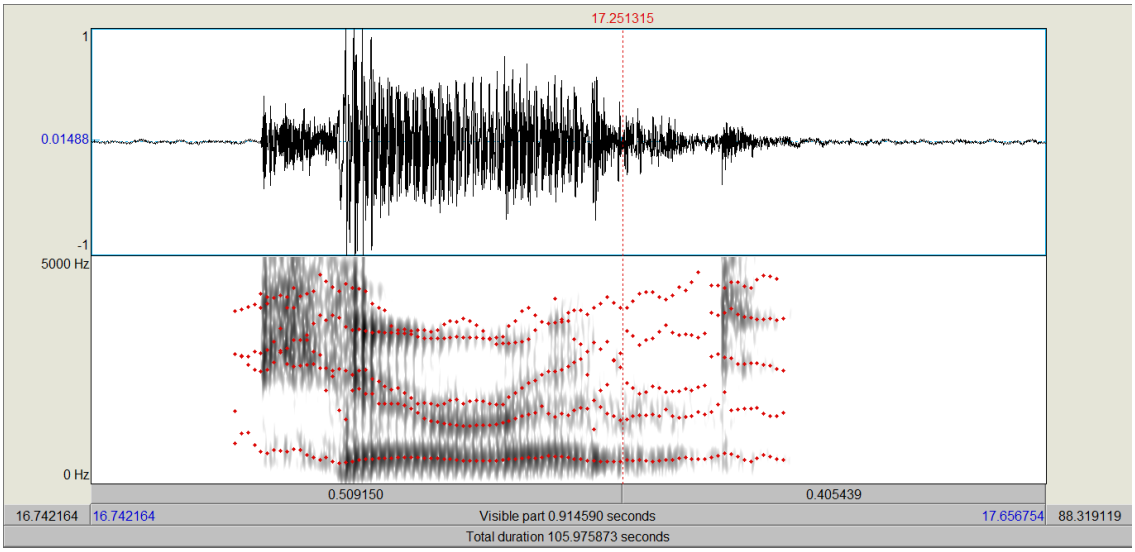


Figure A.30.2 Carrot [ə]

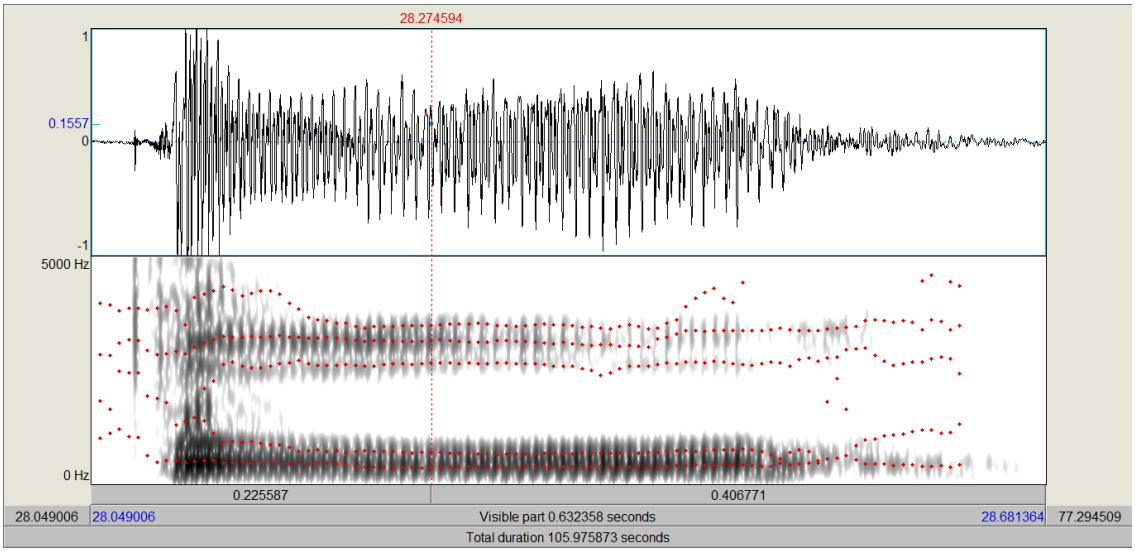


Figure A.30.3 Full [ʊ]

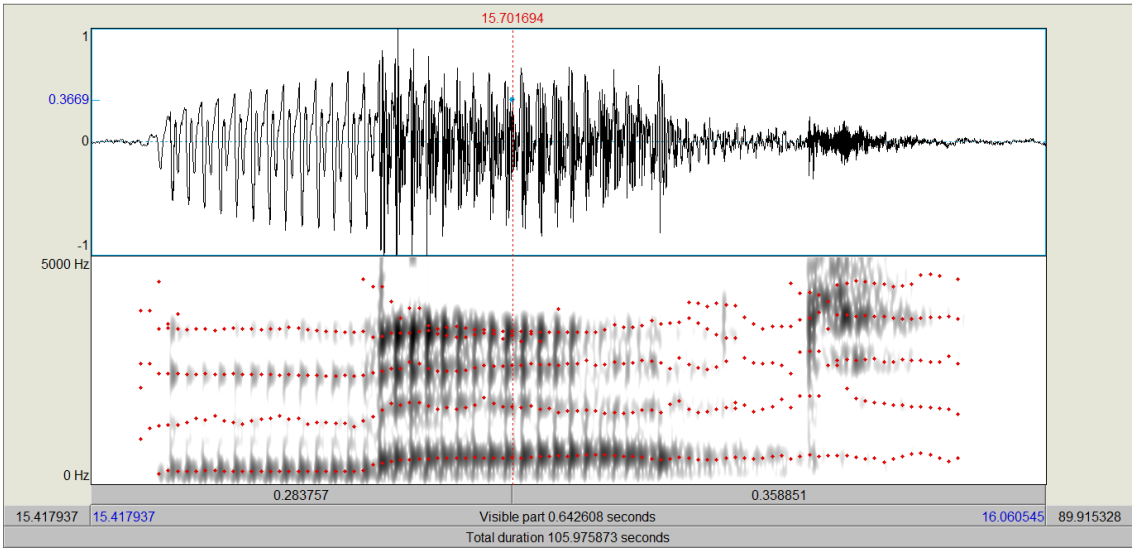


Figure A.30.4 Met [e]

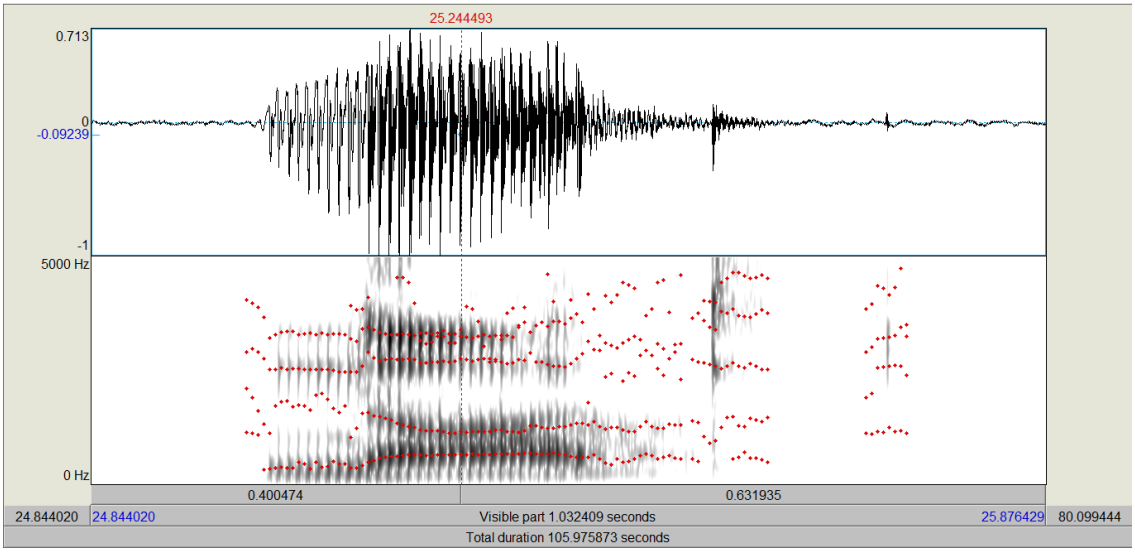


Figure A.30.5 Not [ɒ]

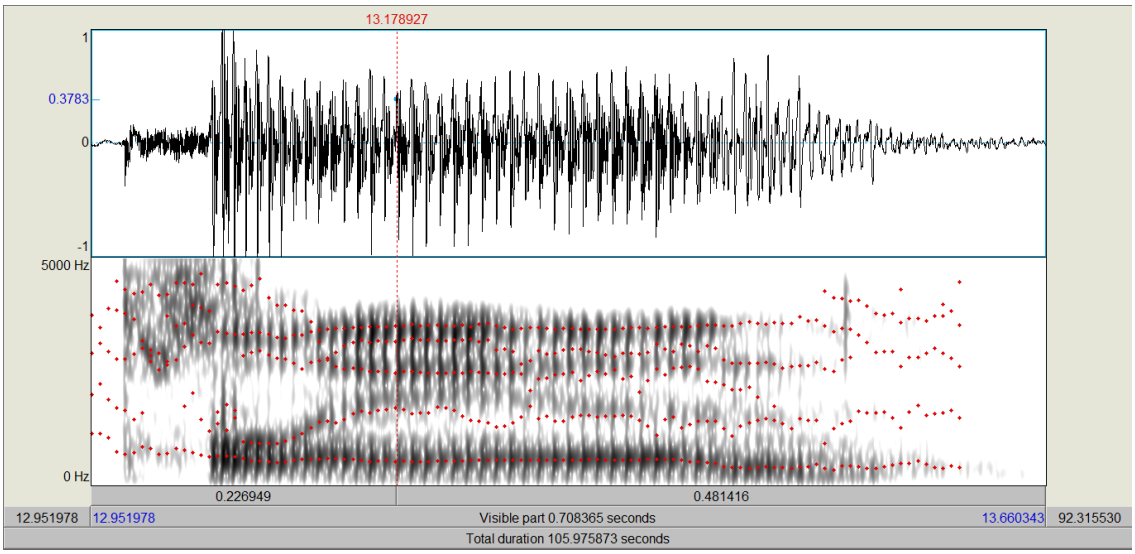


Figure A.30.6 Plan [æ]

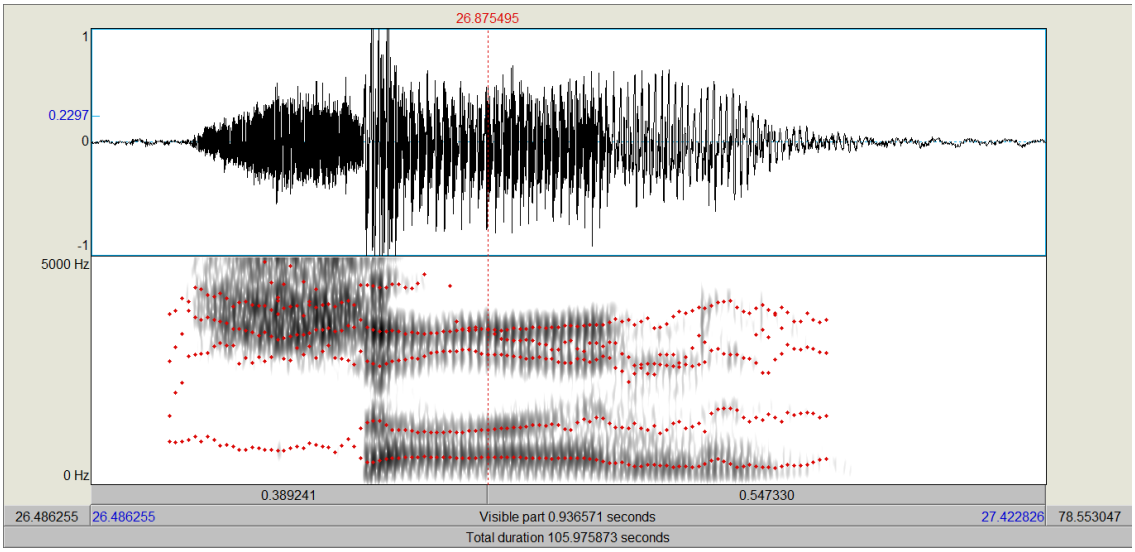


Figure A.30.7 Sun [ʌ]

A.31 Yan [Glasgow, Scotland]

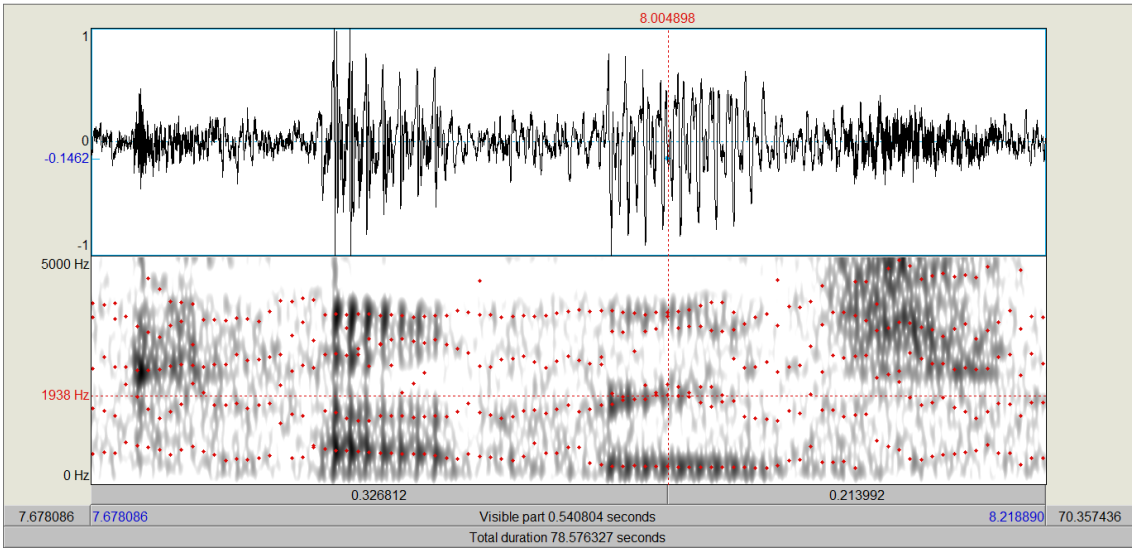


Figure A.31.1 Cabbage [ɪ]

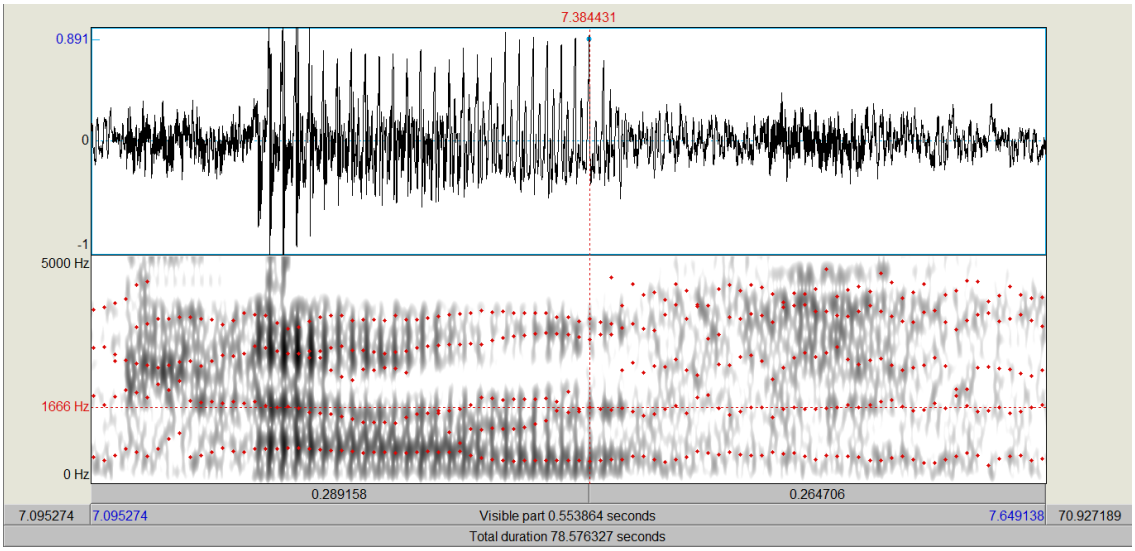


Figure A.31.2 Carrot [ə]

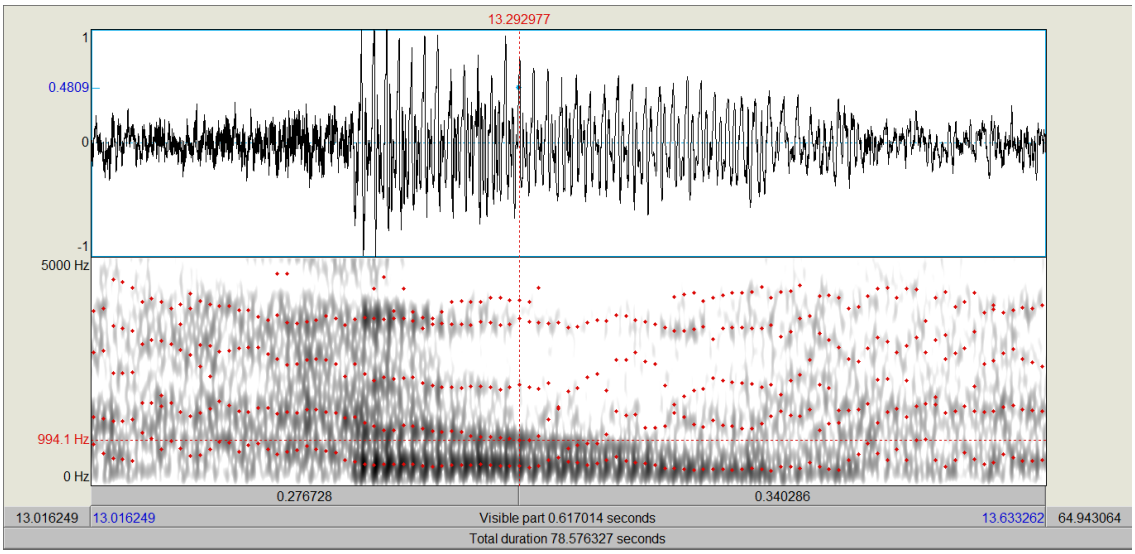


Figure A.31.3 Full [ʊ]

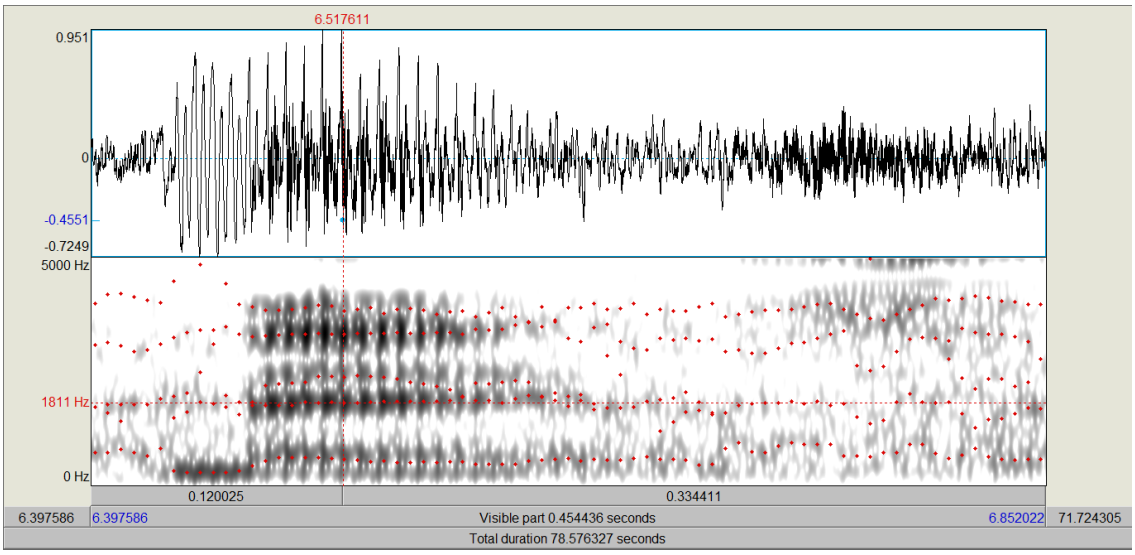


Figure A.31.4 Met [e]

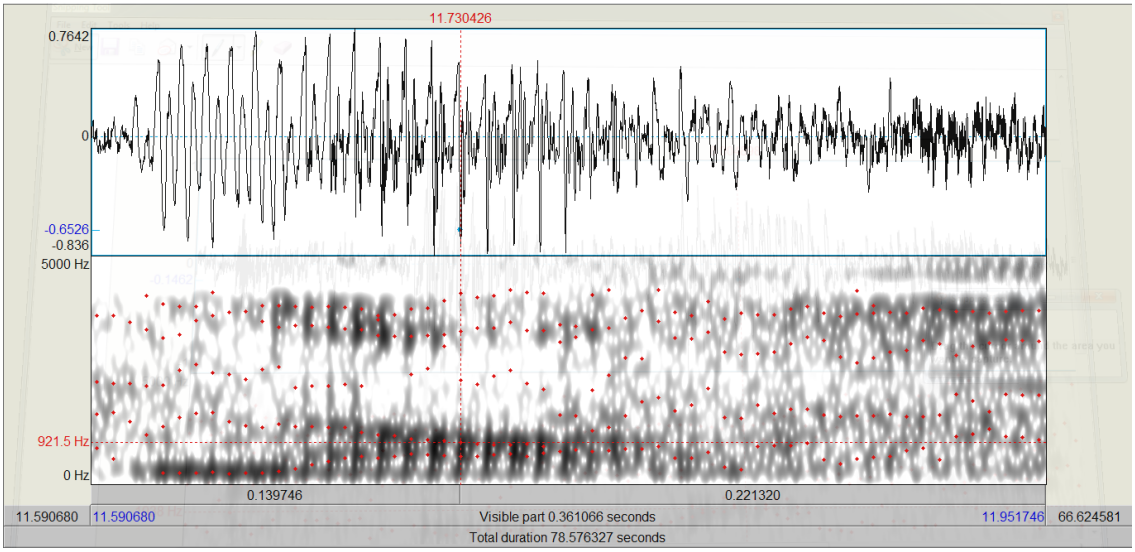


Figure A.31.5 Not [ɒ]

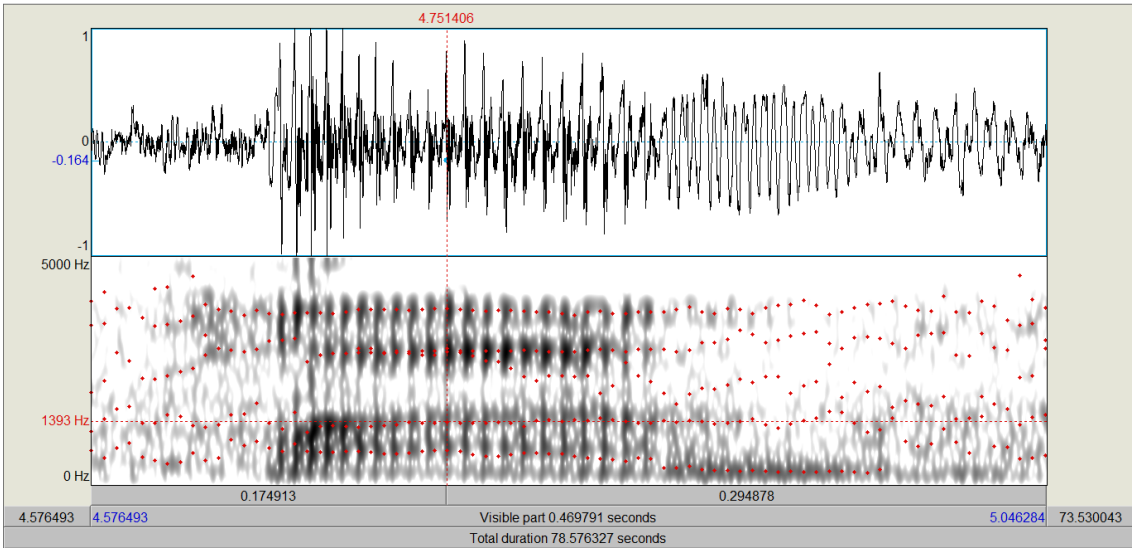


Figure A.31.6 Plan [æ]

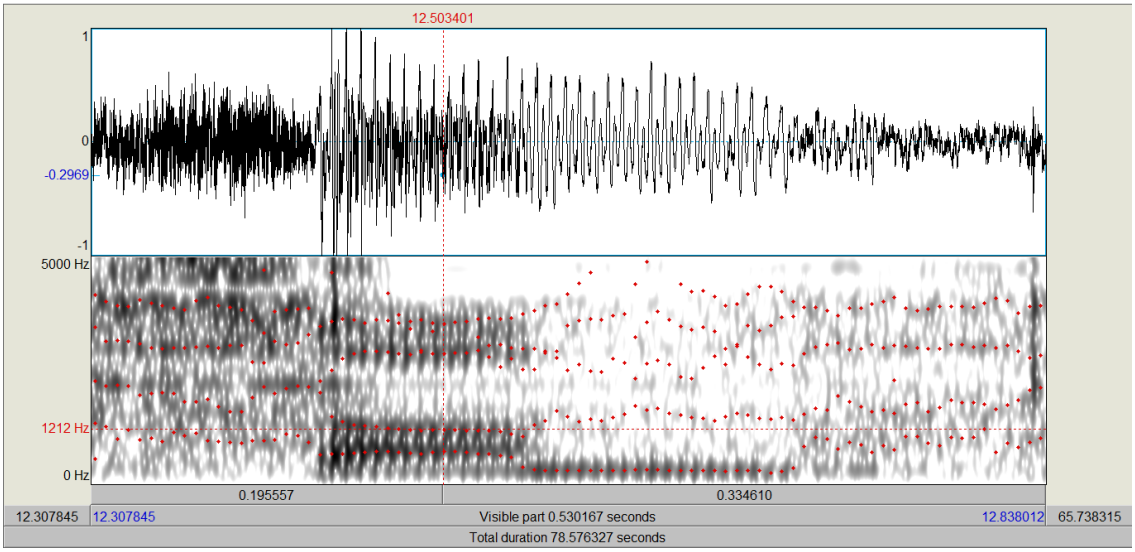


Figure A.31.7 Sun [ʌ]

B Formant tables and diagrams

B.1 Annette [New Zealand]	T1	T2	F1	F2
ʌ	15.2002	15.2002	792	1230
æ	5.1952	5.1952	842	1907
e	7.9358	7.9358	529	2119
ɪ	9.6338	9.6338	501	1887
ɒ	14.4532	14.4532	810	1169
ʊ	16.0008	16.0008	489	1792
ə	8.8878	8.8878	617	1857

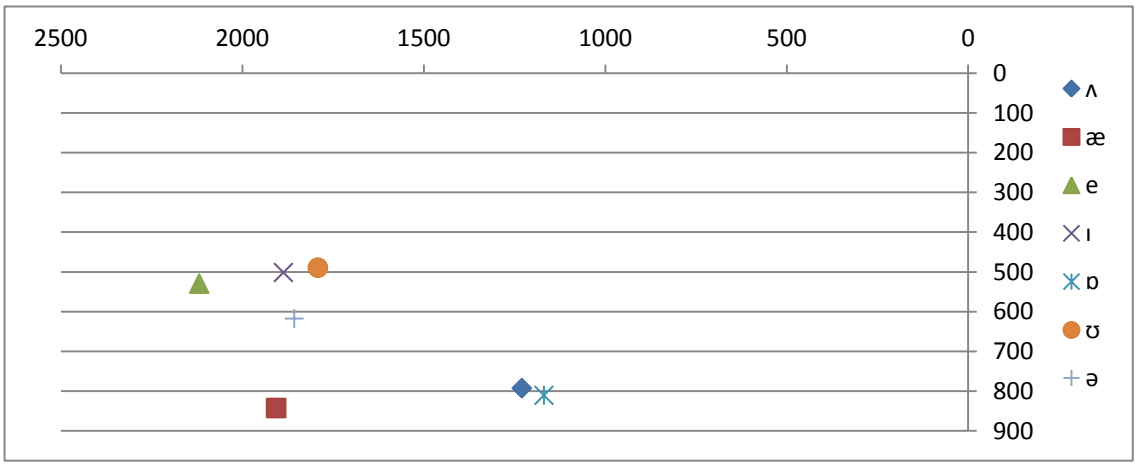


Table B.1 Formant and diagram table – Annette [New Zealand]

B.2 Benjamin Jordan [USA]	T1	T2	F1	F2
ʌ	13.4432	13.4432	603	1339
æ	3.5086	3.5086	574	1663
e	5.4541	5.4541	634	1746
ɪ	7.3658	7.3658	447	1621
ɒ	12.4763	12.4763	686	1294
ʊ	14.4916	14.4916	527	885
ə	6.5018	6.5018	553	1625

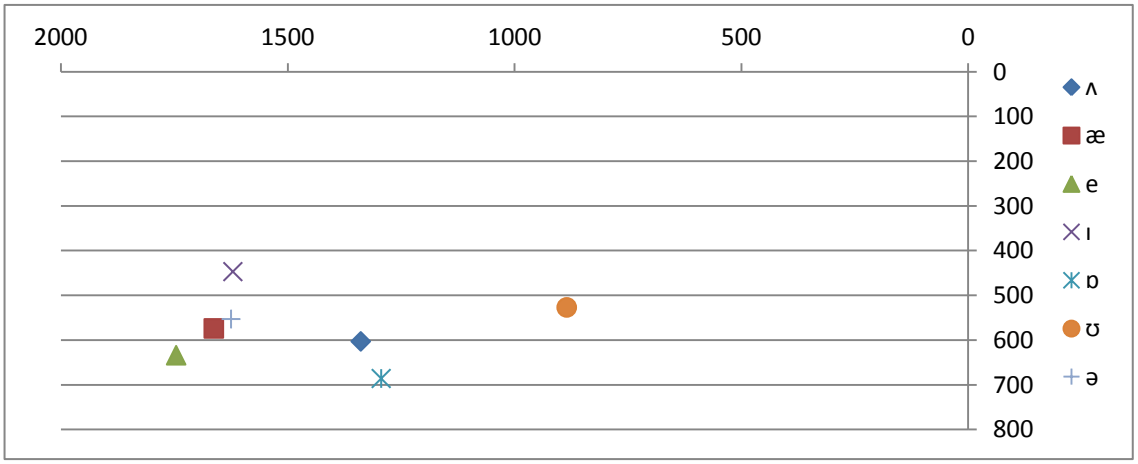


Table B.2 Formant and diagram table – Benjamin Jordan [USA]

B.3 Brian [Dorset, England]	T1	T2	F1	F2
ʌ	11.358	11.358	633	1258
æ	4.0652	4.0652	757	1305
e	5.3286	5.3286	660	1760
ɪ	6.6839	6.6839	399	1844
ɒ	10.6049	10.6049	634	889
ʊ	12.0919	12.0919	457	761
ə	5.9563	5.9563	482	1478

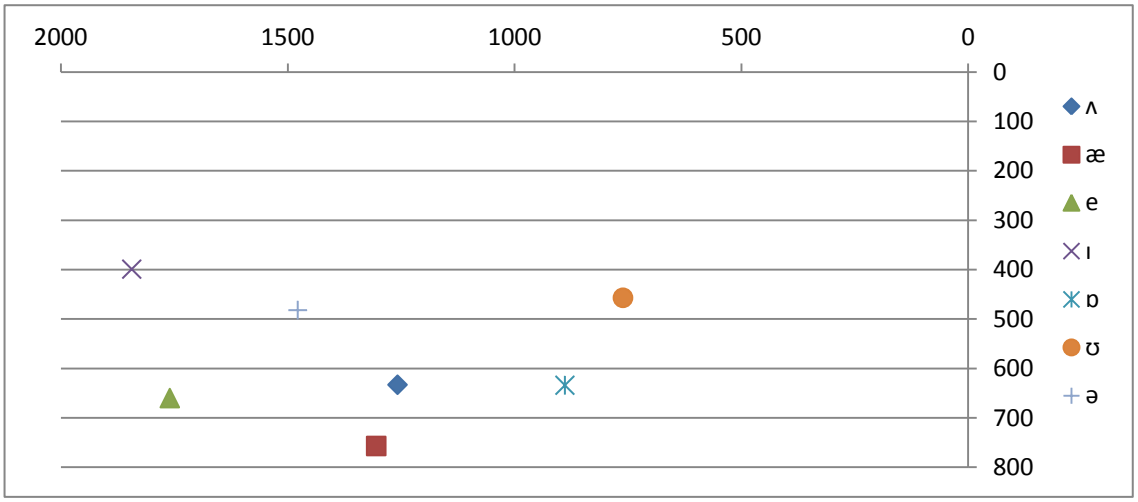


Table B.3 Formant and diagram table – Brian [Dorset, England]

B.4 Carrie Lesley [Hertfordshire,ENG]	T1	T2	F1	F2
ʌ	19.0947	19.0947	693	1396
æ	11.3004	11.3004	803	1504
e	12.6344	12.6344	732	1960
ɪ	14.1459	14.1459	419	2173
ɒ	18.2844	18.2844	762	1777
ʊ	19.8235	19.8235	670	1884
ə	13.45	13.45	589	1771

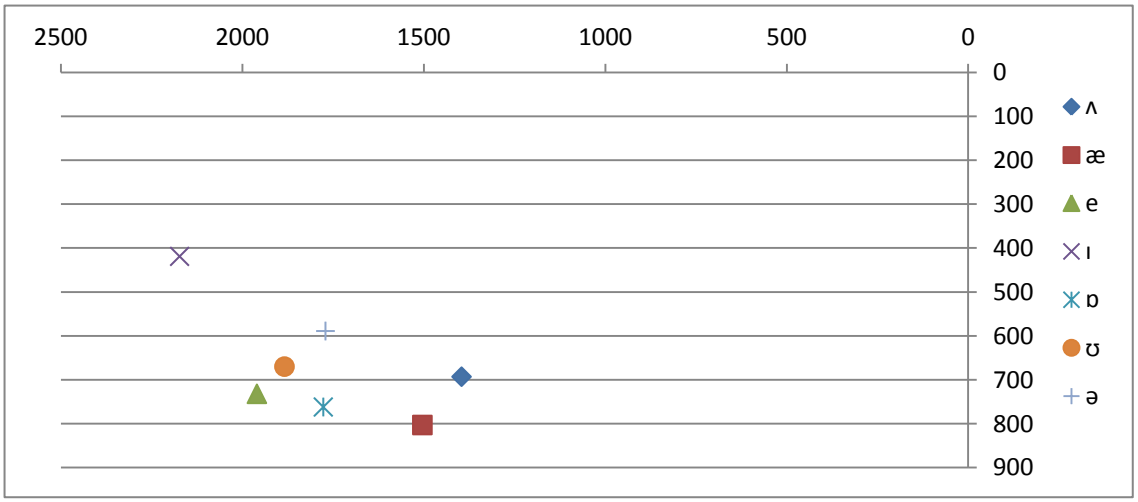


Table B.4 Formant and diagram table – Carrie Lesley [Hertfordshire, England]

B.5 Catharine Starling [Norfolk, ENG]	T1	T2	F1	F2
ʌ	13.7155	13.7155	850	1572
æ	8.166	8.166	893	1831
e	9.0038	9.0038	765	2011
ɪ	10.0262	10.0262	529	2132
ɒ	13.1354	13.1354	783	1246
ʊ	14.6416	14.6416	511	1332
ə	9.5707	9.5707	761	1772

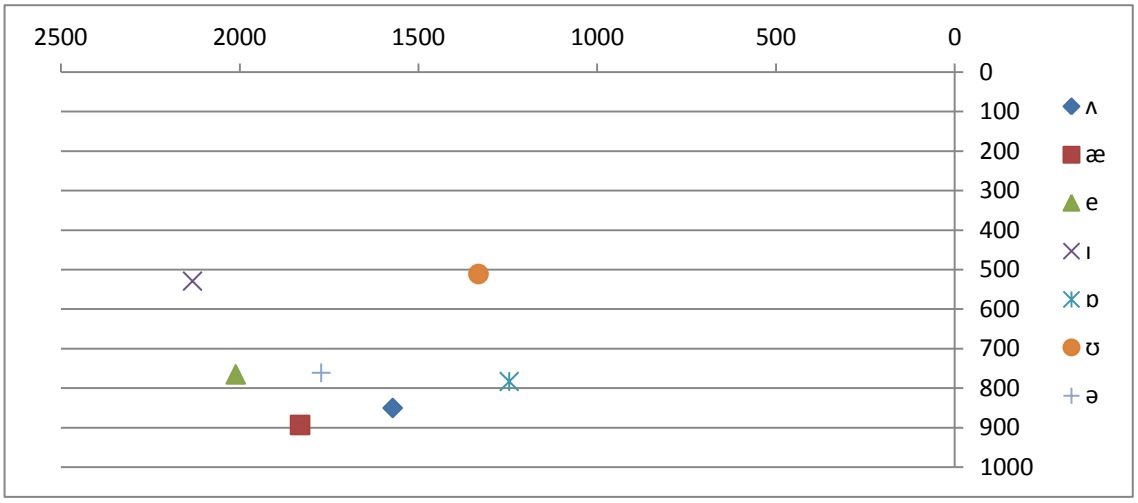


Table B.5 Formant and diagram table – Catharine Starling [Norfolk, England]

B.6 Claudia [London, England]	T1	T2	F1	F2
ʌ	9.9	9.9	936	1537
æ	2.2416	2.2416	1136	1561
e	3.4918	3.4918	851	1847
ɪ	5.3207	5.3207	629	2215
ɒ	9.1935	9.1935	696	1270
ʊ	10.5779	10.5779	761	1405
ə	4.2531	4.2531	660	2026

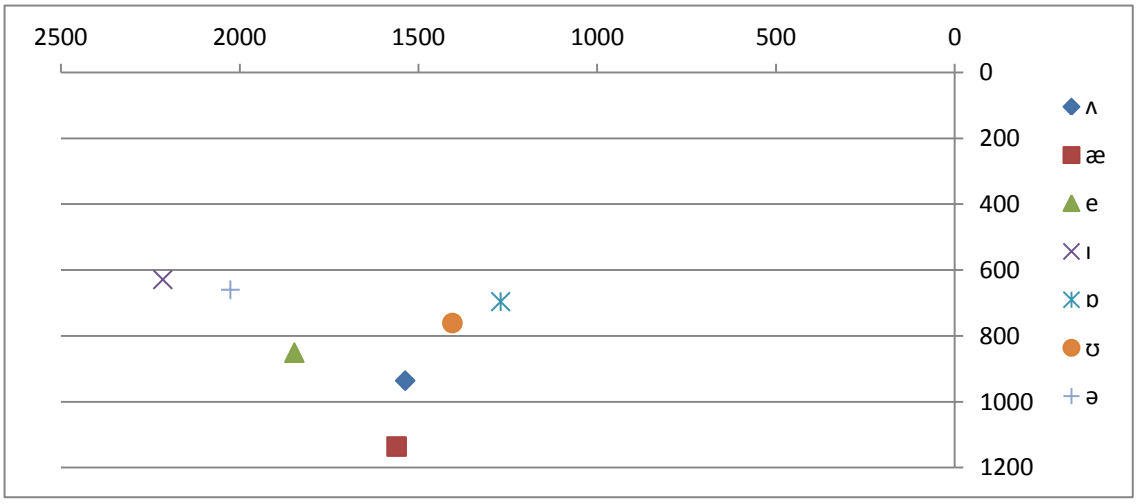


Table B.6 Formant and diagram table – Claudia [London, England]

B.7 Ellie [Kent, England]	T1	T2	F1	F2
ʌ	14.4809	14.4809	737	1325
æ	4.2832	4.2832	812	1668
e	5.9784	5.9784	790	1942
ɪ	7.8634	7.8634	639	2179
ɒ	13.4391	13.4391	678	1123
ʊ	15.4284	15.4284	606	1132
ə	7.015	7.015	677	1869

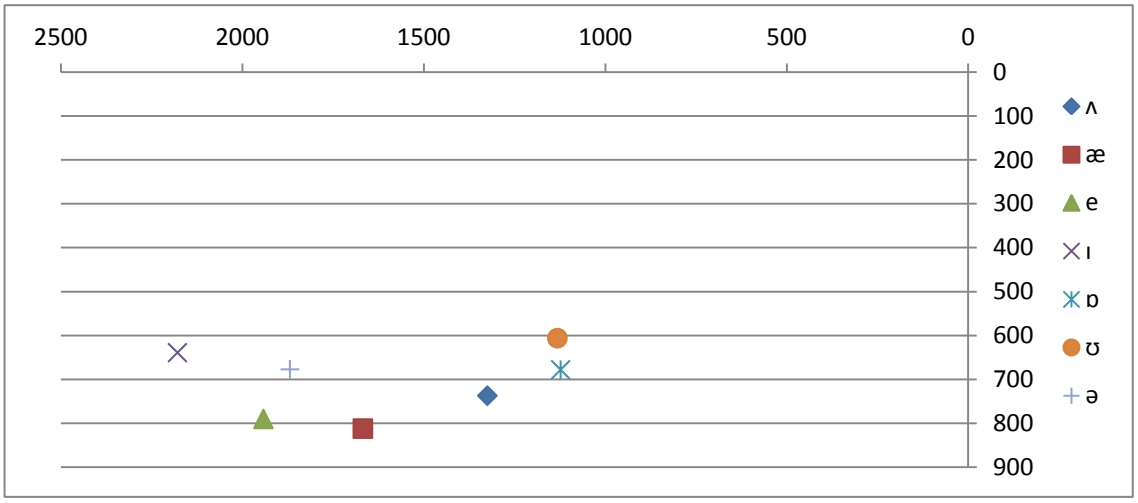


Table B.7 Formant and diagram table – Ellie [Kent, England]

B.8 Florence [Derbyshire, England]	T1	T2	F1	F2
ʌ	12.5416	12.5416	560	1582
æ	5.5342	5.5342	983	1634
e	6.67	6.67	815	2122
ɪ	8.1809	8.1809	486	2430
ɒ	11.7105	11.7105	768	1405
ʊ	13.0234	13.0234	644	1323
ə	7.5912	7.5912	649	2104

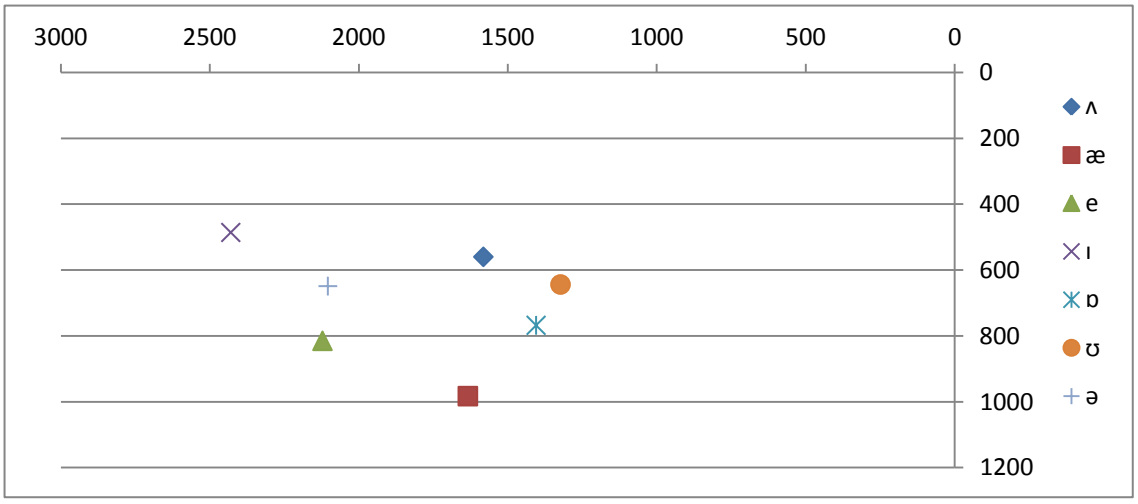


Table B.8 Formant and diagram table – Florence [Derbyshire, England]

B.9 Frank Bryant [Cornwall, England]	T1	T2	F1	F2
ʌ	30.0493	30.0493	636	1138
æ	23.5552	23.5552	716	1358
e	24.9243	24.9243	687	1600
ɪ	26.0325	26.0325	430	1835
ɒ	29.3985	29.3985	650	1180
ʊ	30.6055	30.6055	511	992
ə	25.5751	25.5751	620	1590

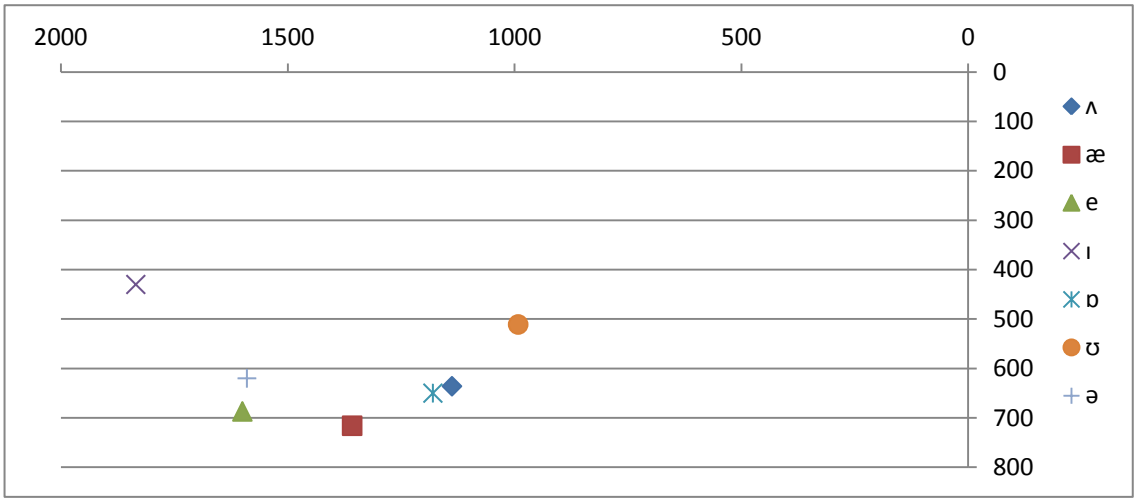


Table B.9 Formant and diagram table – Frank Bryant [Cornwall, England]

B.10 Jade [Nottinghamshire,England]	T1	T2	F1	F2
ʌ	16.8866	16.8866	546	1459
æ	8.05	8.05	853	1803
e	9.5728	9.5728	873	1820
ɪ	11.3918	11.3918	539	1999
ɒ	15.7351	15.7351	678	1242
ʊ	17.5477	17.5477	570	1216
ə	10.4794	10.4794	605	1813

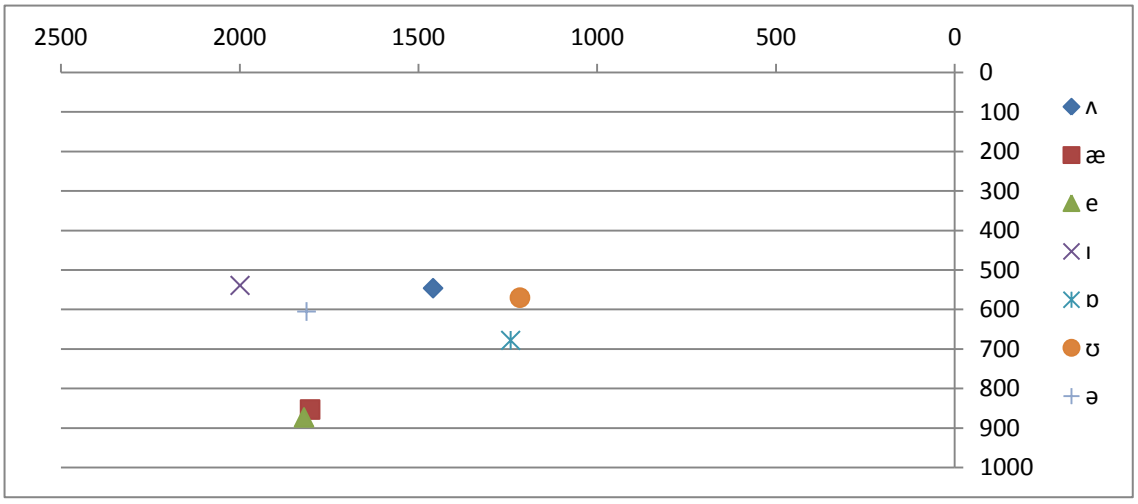


Table B.10 Formant and diagram table – Jade [Nottinghamshire, England]

B.11 J. Gardener [Leicestershire,ENG]	T1	T2	F1	F2
ʌ	13.3678	13.3678	559	1175
æ	4.5073	4.5073	801	1561
e	6.0581	6.0581	652	1664
ɪ	7.7229	7.7229	351	1652
ɒ	12.4342	12.4342	767	775
ʊ	14.0822	14.0822	439	862
ə	6.9754	6.9754	529	1496

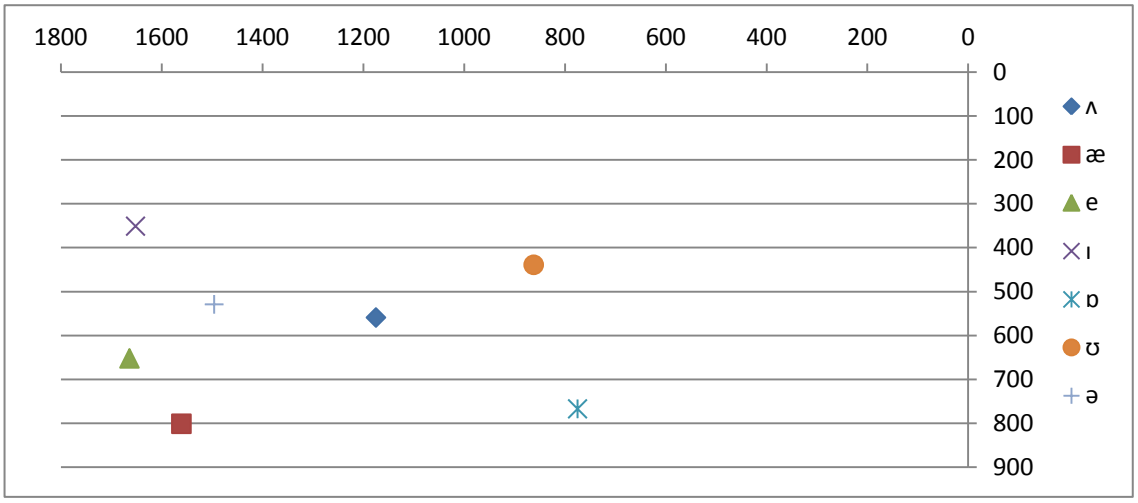


Table B.11 Formant and diagram table – Joshua Gardener [Leicestershire, England]

B.12 Krupa Patel [London, England]	T1	T2	F1	F2
ʌ	10.3791	10.3791	764	1303
æ	2.4453	2.4453	795	1822
e	3.8015	3.8015	777	1918
ɪ	5.346	5.346	539	1948
ɒ	9.67	9.67	793	1239
ʊ	11.1687	11.1687	511	1148
ə	4.6956	4.6956	689	1851

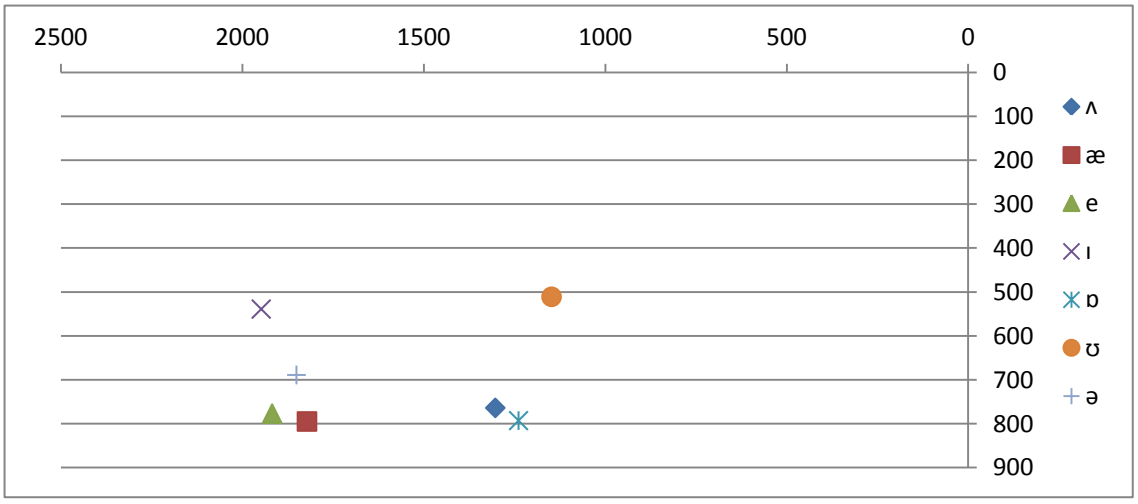


Table B.12 Formant and diagram table – Krupa Patel [London, England]

B.13 Lauren [Norfolk, England]	T1	T2	F1	F2
ʌ	25.5251	25.5251	750	1239
æ	15.2816	15.2816	798	1725
e	17.0703	17.0703	708	1922
ɪ	19.4692	19.4692	518	2182
ɒ	24.5158	24.5158	680	1031
ʊ	26.2365	26.2365	541	1008
ə	18.3835	18.3835	674	1746

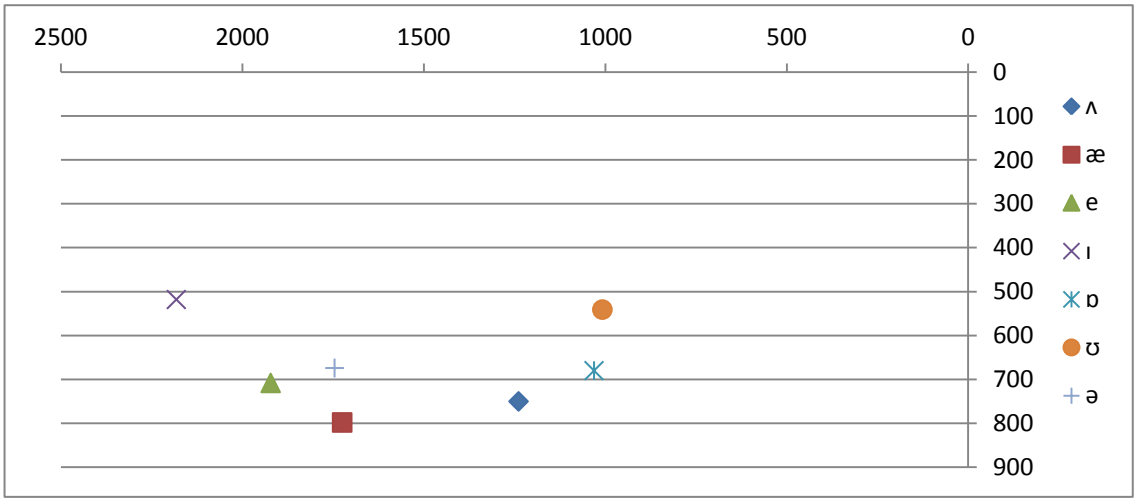


Table B.13 Formant and diagram table – Lauren [Norfolk, England]

B.14 Luke, BBC [England]	T1	T2	F1	F2
ʌ	46.8667	46.8667	643	1199
æ	35.7036	35.7036	693	1433
e	37.634	37.634	612	1928
ɪ	39.7645	39.7645	393	1924
ɒ	45.7841	45.7841	581	1029
ʊ	48.0723	48.0723	390	891
ə	38.7915	38.7915	548	1458

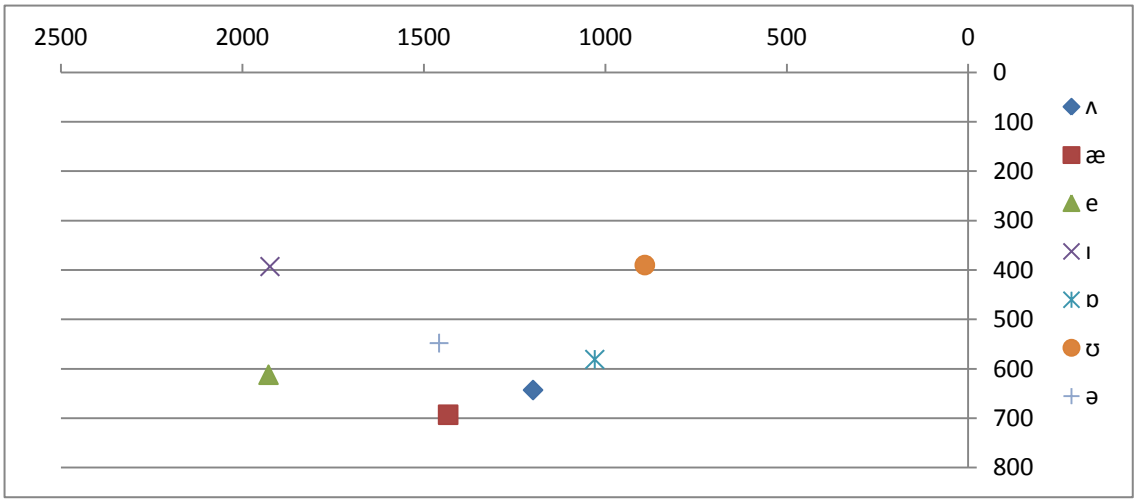


Table B.14 Formant and diagram table – Luke BBC [England]

B.15 Maddie [London, England]	T1	T2	F1	F2
ʌ	12.154	12.154	860	1475
æ	6.77	6.77	856	1606
e	7.6111	7.6111	826	1881
ɪ	8.6086	8.6086	615	2151
ɒ	11.5955	11.5955	592	1277
ʊ	12.5703	12.5703	544	1214
ə	8.1747	8.1747	629	1765

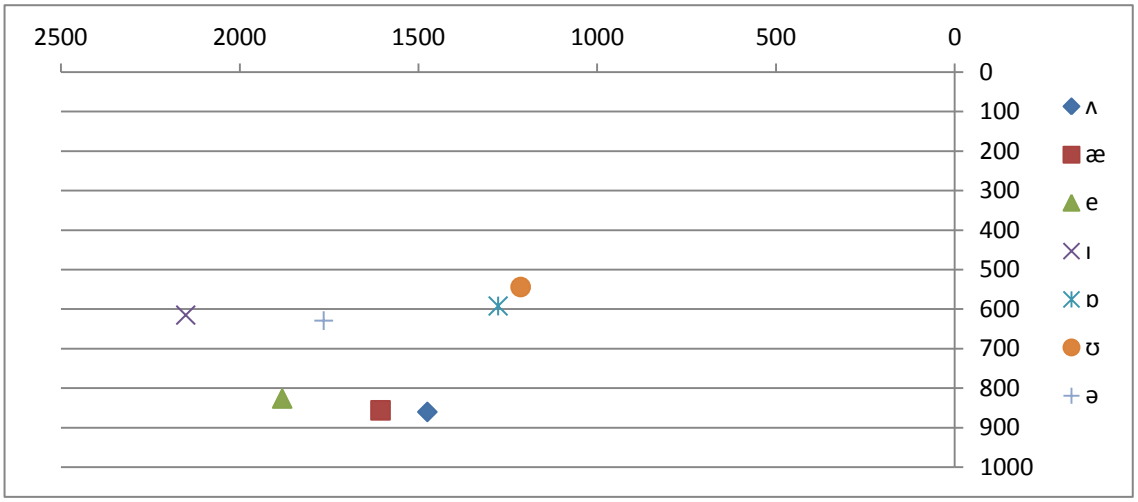


Table B.15 Formant and diagram table – Maddie [London, England]

B.16 Maya [Devon, England]	T1	T2	F1	F2
ʌ	11.5077	11.5077	934	1666
æ	4.489	4.489	874	1784
e	5.6017	5.6017	870	1883
ɪ	7.0111	7.0111	570	2053
ɒ	10.7678	10.7678	735	1217
ʊ	12.1779	12.1779	613	1296
ə	6.4108	6.4108	654	2004

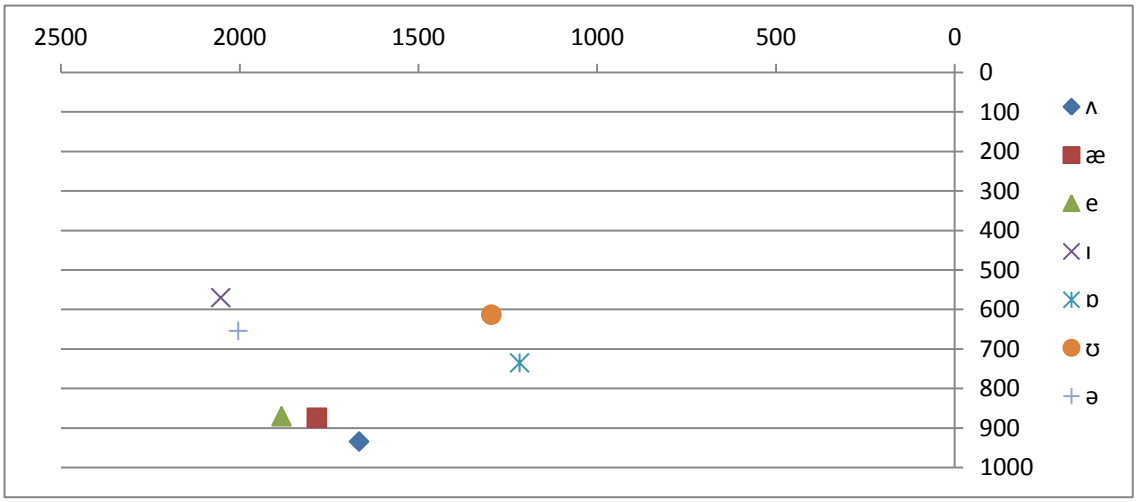


Table B.16 Formant and diagram table – Maya [Devon, England]

B.17 Michael [London, England]	T1	T2	F1	F2
ʌ	14.2655	14.2655	605	1047
æ	4.9193	4.9193	789	1645
e	6.5473	6.5473	678	1867
ɪ	8.1255	8.1255	490	1814
ɒ	13.1522	13.1522	596	856
ʊ	15.1026	15.1026	433	789
ə	7.3883	7.3883	571	1538

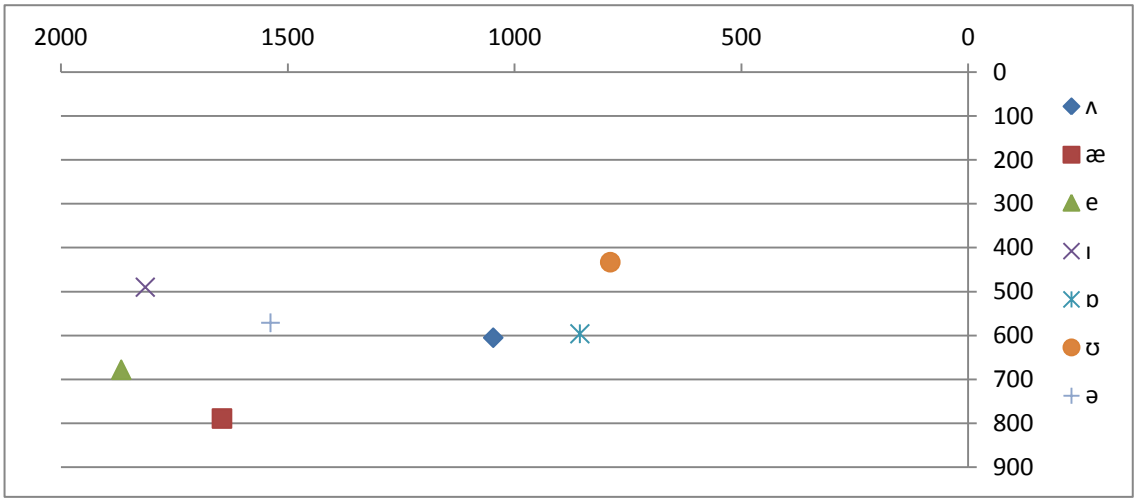


Table B.17 Formant and diagram table – Michael [London, England]

B.18 Neil [Norfolk, England]	T1	T2	F1	F2
ʌ	15.1848	15.1848	721	1314
æ	6.062	6.062	812	1511
e	7.77	7.77	688	1788
ɪ	9.5591	9.5591	508	1933
ɒ	14.3096	14.3096	660	1016
ʊ	16.0786	16.0786	510	896
ə	8.736	8.736	568	1651

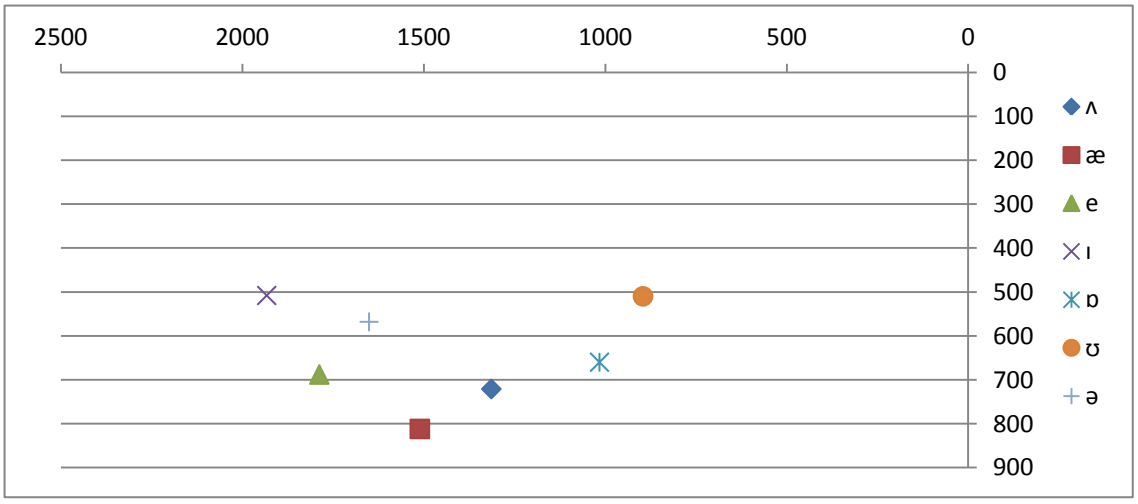


Table B.18 Formant and diagram table – Neil [Norfolk, England]

B.19 Nicole [Norfolk, England]	T1	T2	F1	F2
ʌ	15.2065	15.2065	645	1516
æ	7.6635	7.6635	884	1782
e	8.8741	8.8741	669	2101
ɪ	10.3301	10.3301	477	2315
ɒ	14.4379	14.4379	677	1155
ʊ	16.0347	16.0347	479	1161
ə	9.6812	9.6812	589	1962

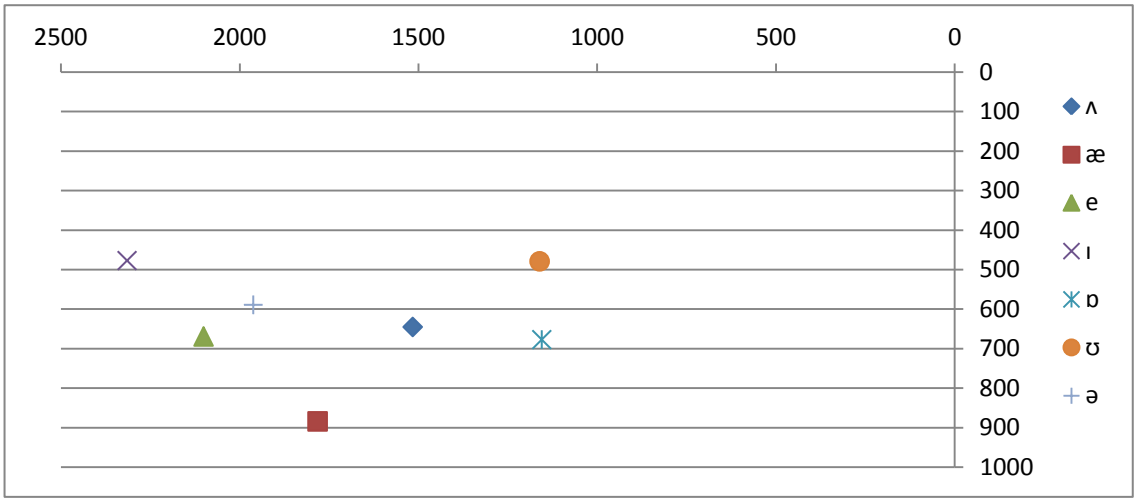


Table B.19 Formant and diagram table – Nicole [Norfolk, England]

B.20 Ollie [Hertfordshire, England]	T1	T2	F1	F2
ʌ	19.4285	19.4285	647	1182
æ	10.1757	10.1757	692	1403
e	12.1769	12.1769	634	1652
ɪ	13.8005	13.8005	422	1667
ɒ	18.398	18.398	616	1098
ʊ	20.1358	20.1358	467	837
ə	13.1063	13.1063	529	1426

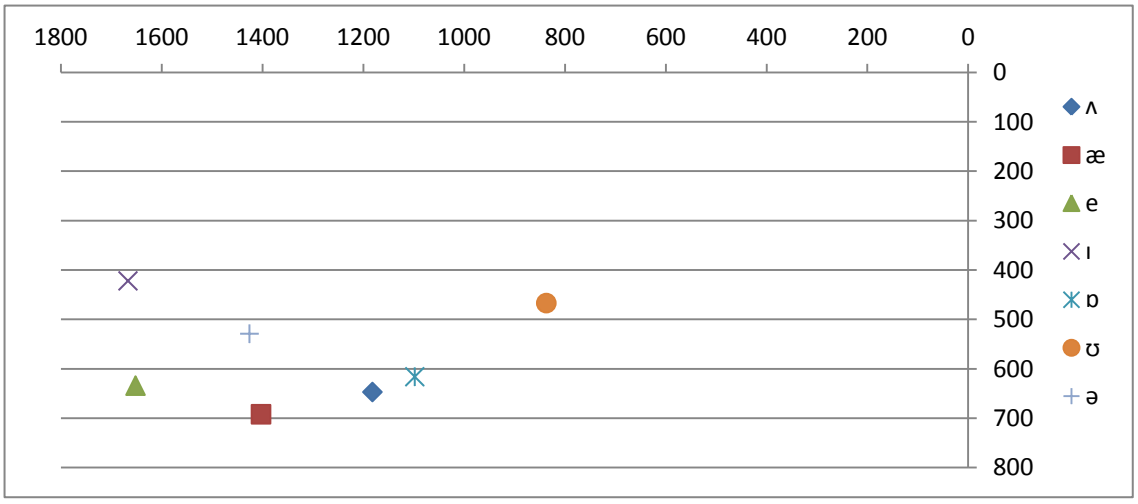


Table B.20 Formant and diagram table – Ollie [Hertfordshire, England]

B.21 Robert [Norfolk, England]	T1	T2	F1	F2
ʌ	19.6459	19.6459	635	1204
æ	7.9575	7.9575	773	1641
e	9.9749	9.9749	602	1792
ɪ	12.1863	12.1863	440	1887
ɒ	18.4094	18.4094	583	996
ʊ	20.4313	20.4313	456	1012
ə	11.2394	11.2394	560	1687

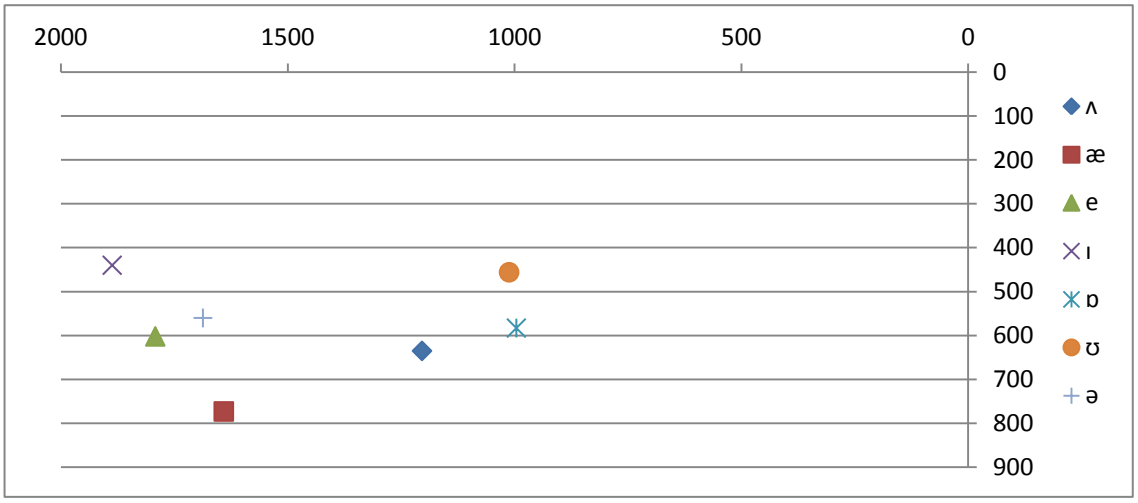


Table B.21 Formant and diagram table – Robert [Norfolk, England]

B.22 Robin [Dortford, England]	T1	T2	F1	F2
ʌ	13.4656	13.4656	719	1198
æ	6.7229	6.7229	735	1448
e	7.761	7.761	643	1717
ɪ	9.1002	9.1002	436	1768
ɒ	12.5783	12.5783	678	1010
ʊ	13.9775	13.9775	494	725
ə	8.5689	8.5689	570	1480

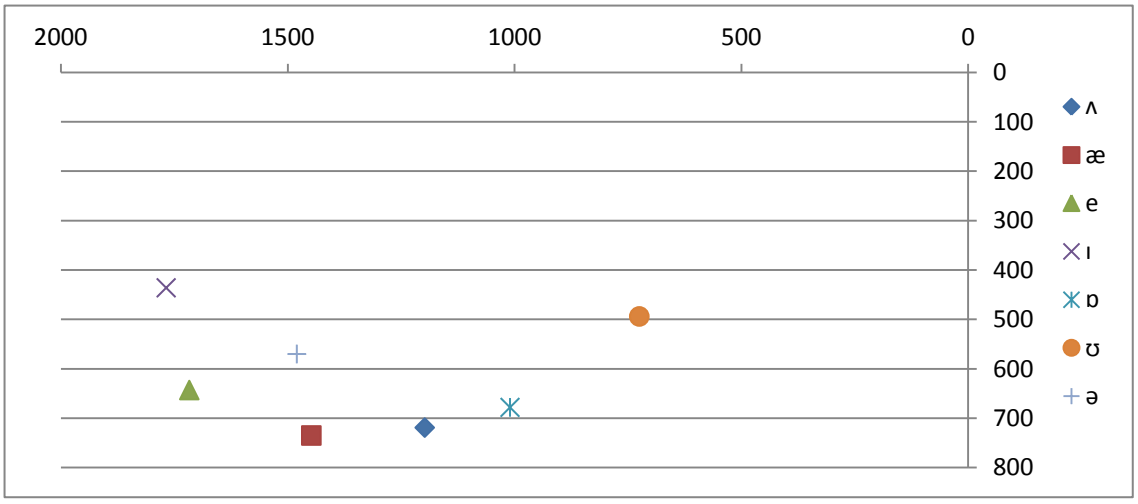


Table B.22 Formant and diagram table – Robin [Hertfordshire, England]

B.23 Steve Ferry [Norfolk, England]	T1	T2	F1	F2
ʌ	72.1086	72.1086	547	1216
æ	59.4267	59.4267	663	1524
e	61.5629	61.5629	564	1846
ɪ	63.9549	63.9549	388	2059
ɒ	71.0195	71.0195	616	958
ʊ	73.3173	73.3173	437	964
ə	62.8401	62.8401	540	1623

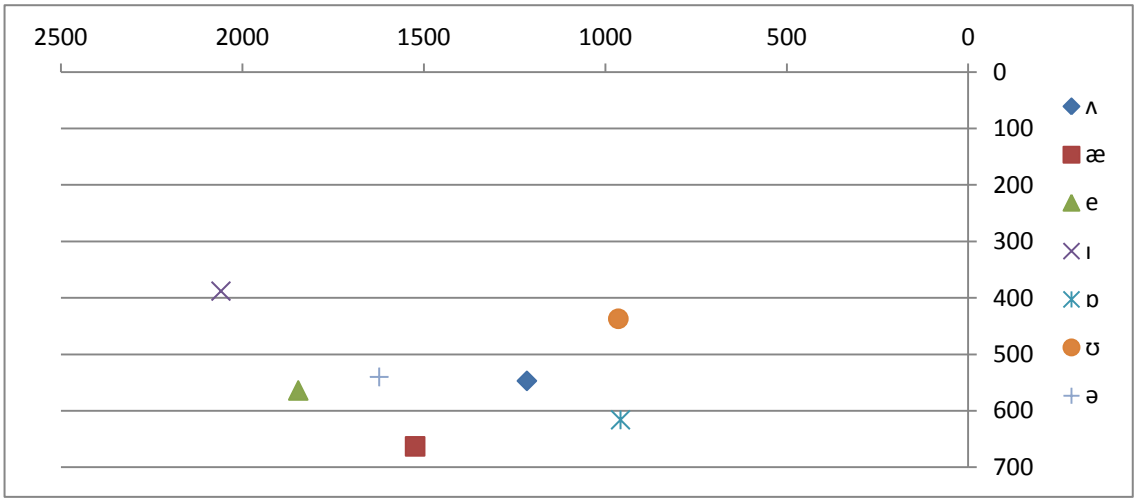


Table B.23 Formant and diagram table – Steve Ferry [Norfolk, England]

B.24 Steve [Yorkshire, England]	T1	T2	F1	F2
ʌ	10.7334	10.7334	606	1168
æ	4.8757	4.8757	749	1389
e	0.8092	5.8092	700	1756
ɪ	7.1816	7.1816	427	1837
ɒ	10.2699	10.2699	714	883
ʊ	11.2667	11.2667	410	765
ə	6.7165	6.7165	539	1596

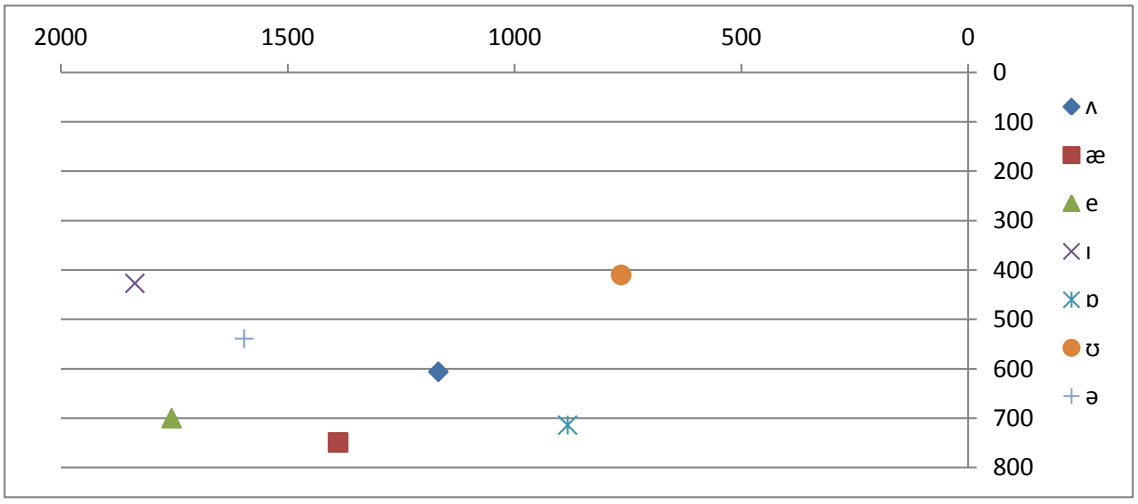


Table B.24 Formant and diagram table – Steve [Yorkshire]

B.25 Simon [Somerset, England]	T1	T2	F1	F2
ʌ	28.9142	28.9142	737	1251
æ	18.5875	18.5875	777	1401
e	20.4276	20.4276	765	1892
ɪ	22.4302	22.4302	422	2157
ɒ	28.0152	28.0152	790	939
ʊ	29.9457	29.9457	473	933
ə	21.4935	21.4935	686	1526

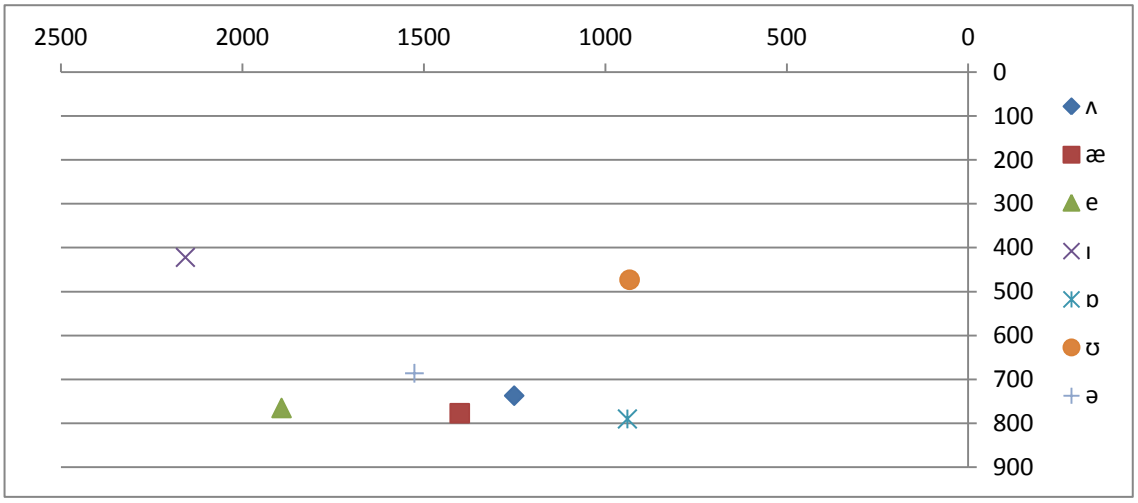


Table B.25 Formant and diagram table – Simon [Somerset, England]

B.26 Ursula Juta, BBC [South Africa]	T1	T2	F1	F2
ʌ	16.432	16.432	585	750
æ	7.309	7.309	797	1938
e	8.6667	8.6667	644	2136
ɪ	10.3513	10.3513	548	2011
ɒ	15.4172	15.4172	699	1190
ʊ	17.3057	17.3057	445	847
ə	9.6445	9.6445	587	1907

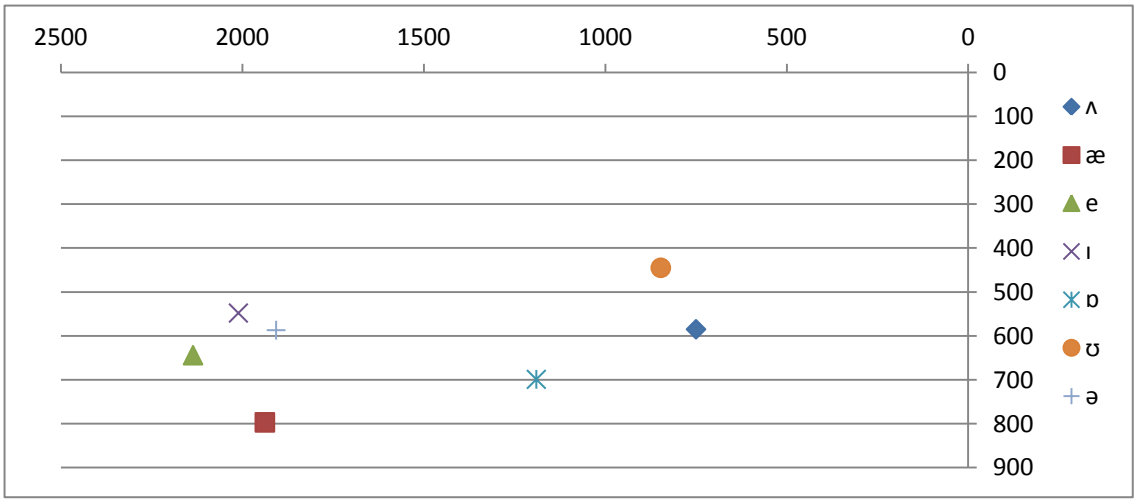


Table B.26 Formant and diagram table – Ursula Juta, BBC [South Africa]

B.27 Vincent Brown [Norfolk, ENG]	T1	T2	F1	F2
ʌ	14.297	14.297	622	1311
æ	3.3716	3.3716	722	1453
e	5.1799	5.1799	582	1870
ɪ	7.2962	7.2962	376	1828
ɒ	13.3325	13.3325	578	931
ʊ	15.3458	15.3458	413	957
ə	6.2763	6.2763	548	1561

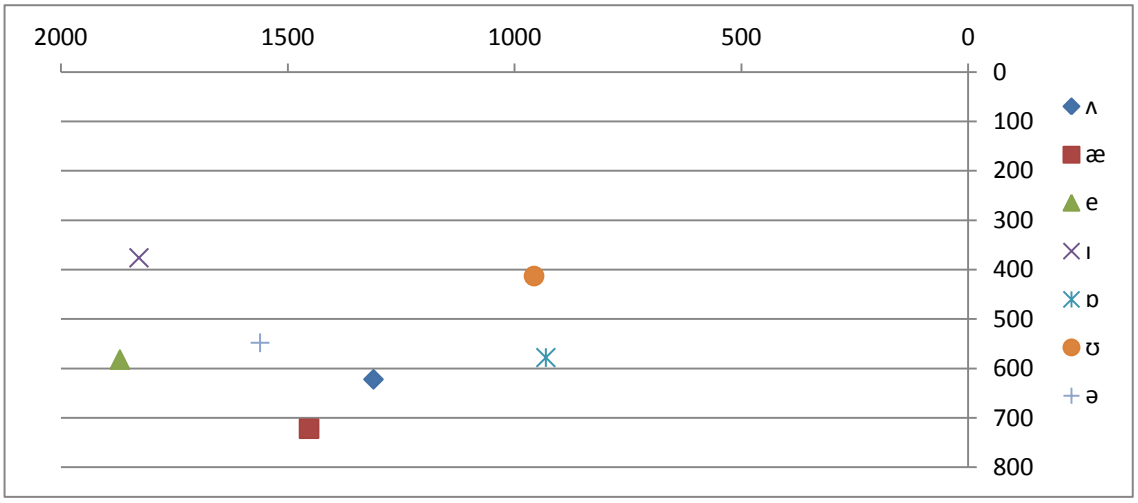


Table B.27 Formant and diagram table – Vincent Brown [Norfolk, England]

B.28 W. Beasley [Leicestershire,ENG]	T1	T2	F1	F2
ʌ	12.5584	12.5584	564	1317
æ	3.38	3.38	768	1472
e	4.9298	4.9298	664	1711
ɪ	6.6992	6.6992	449	1837
ɒ	11.4507	11.4507	639	1018
ʊ	13.0001	13.0001	552	1250
ə	6.1551	6.1551	544	1617

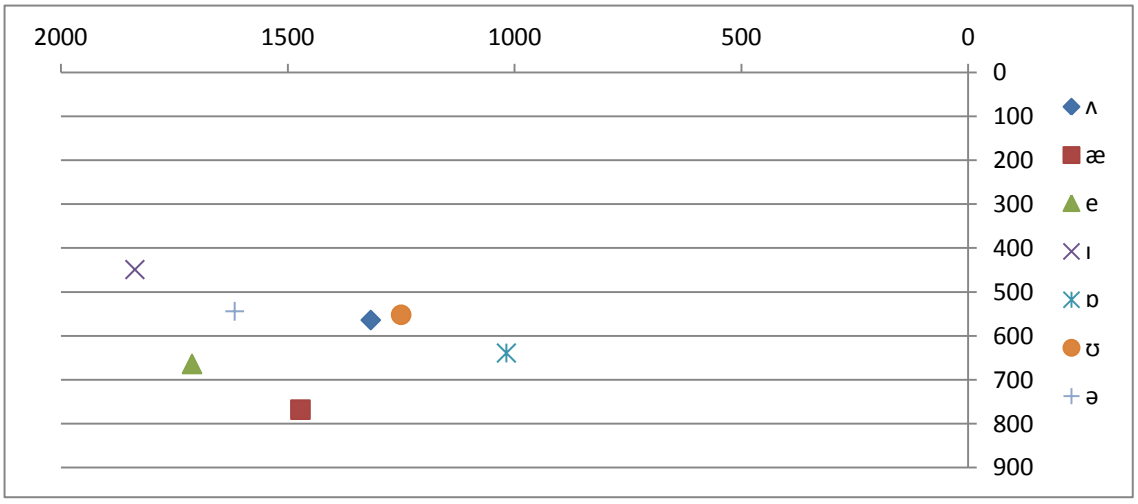


Table B.28 Formant and diagram table – William Beasley [Leicestershire, England]

B.29 William [Buckinghamshire,ENG]	T1	T2	F1	F2
ʌ	12.8315	12.8315	680	1126
æ	5.0494	5.0494	658	1571
e	6.4001	6.4001	562	1601
ɪ	8.0715	8.0715	402	1839
ɒ	12.0844	12.0844	572	974
ʊ	13.4588	13.4588	460	983
ə	7.3854	7.3854	527	1351

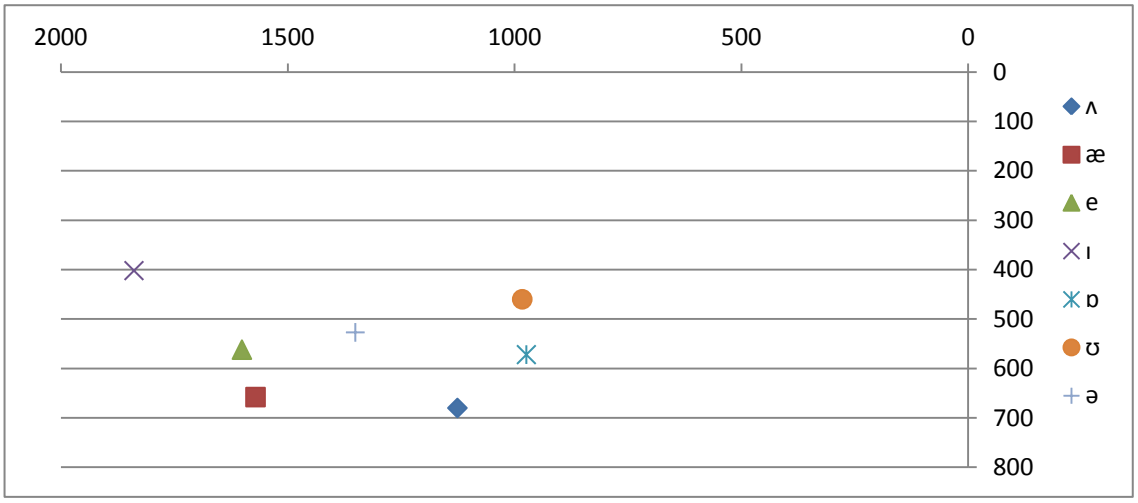


Table B.29 Formant and diagram table – William [Buckinghamshire, England]

B.30 W. Drakeford [S. Carolina, USA]	T1	T2	F1	F2
ʌ	26.8755	26.8755	573	1178
æ	13.1789	13.1789	511	1674
e	15.7017	15.7017	570	1675
ɪ	18.2502	18.2502	407	1577
ɒ	25.2445	25.2445	640	1131
ʊ	28.2746	28.2746	353	690
ə	17.2513	17.2513	476	1384

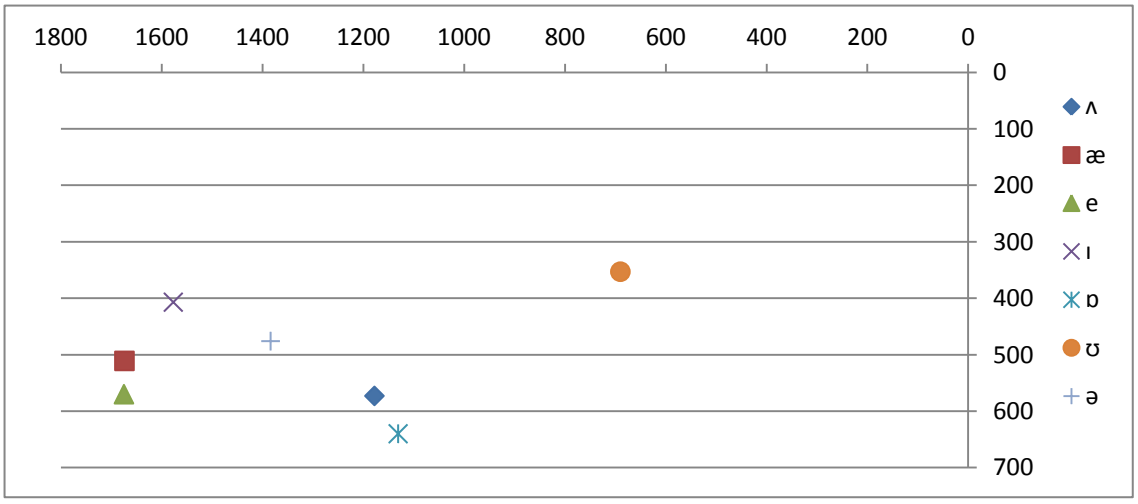


Table B.30 Formant and diagram table – William Drakeford [South Carolina, USA]

B.31 Yan [Glasgow, Scotland]	T1	T2	F1	F2
ʌ	12.5034	12.5034	708	1182
æ	4.7514	4.7514	746	1359
e	6.5176	6.5176	566	1793
ɪ	8.0049	8.0049	369	1931
ɒ	11.7304	11.7304	591	906
ʊ	13.293	13.293	406	977
ə	7.3844	7.3844	470	1641

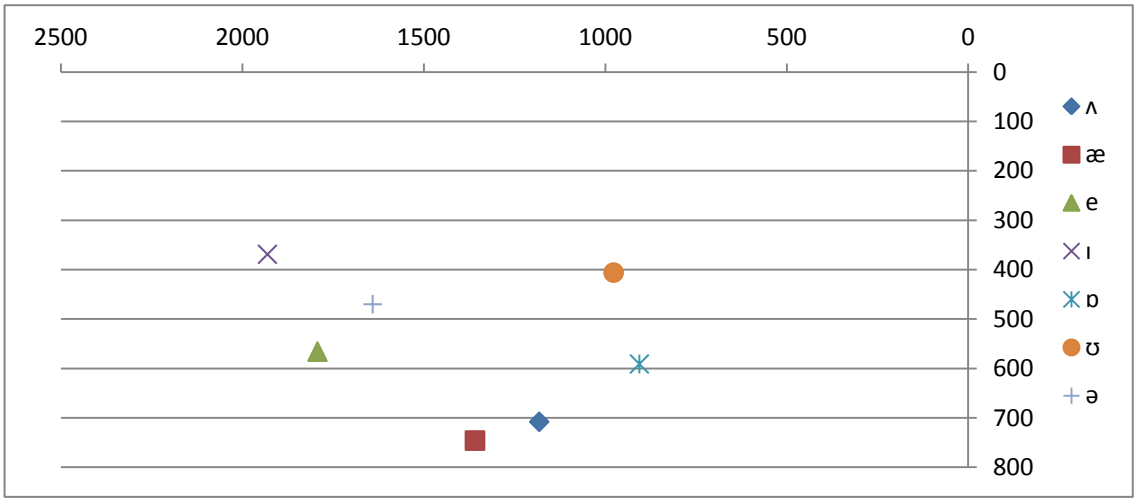


Table B.31 Formant and diagram table – Yan [Glasgow, Scotland]

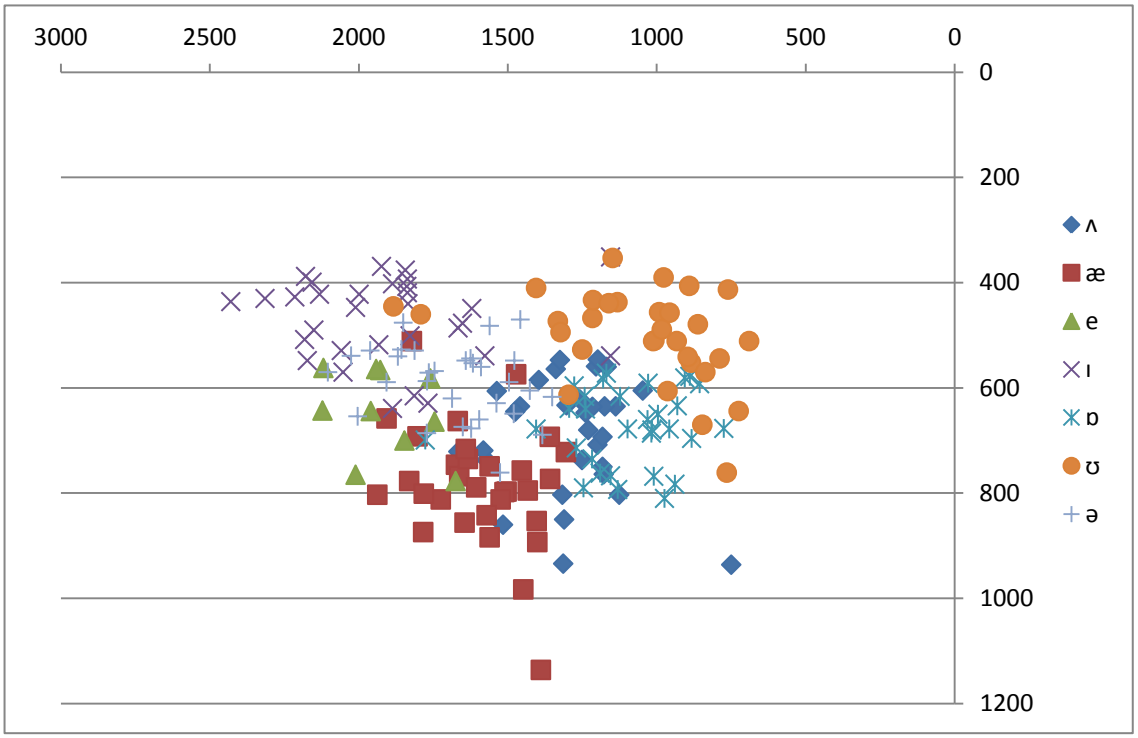


Table B.32 Diagram – Formant cluster

C Enclosed CD

- **A digital version of the bachelor thesis in format** .pdf
- **A file containing a complete list of the tested voice recordings**

Playlist

- **A document in Microsoft Excel**

Vowel_charts.xls

- **A file containing used software free to download**

Audacity.exe

Praat.exe

RStudio.exe