Phonetics with Listening Practice (British)

Course Notes Winter 2019/2020

online:

http://www.spence.saar.de/courses/phoneticswithlistening

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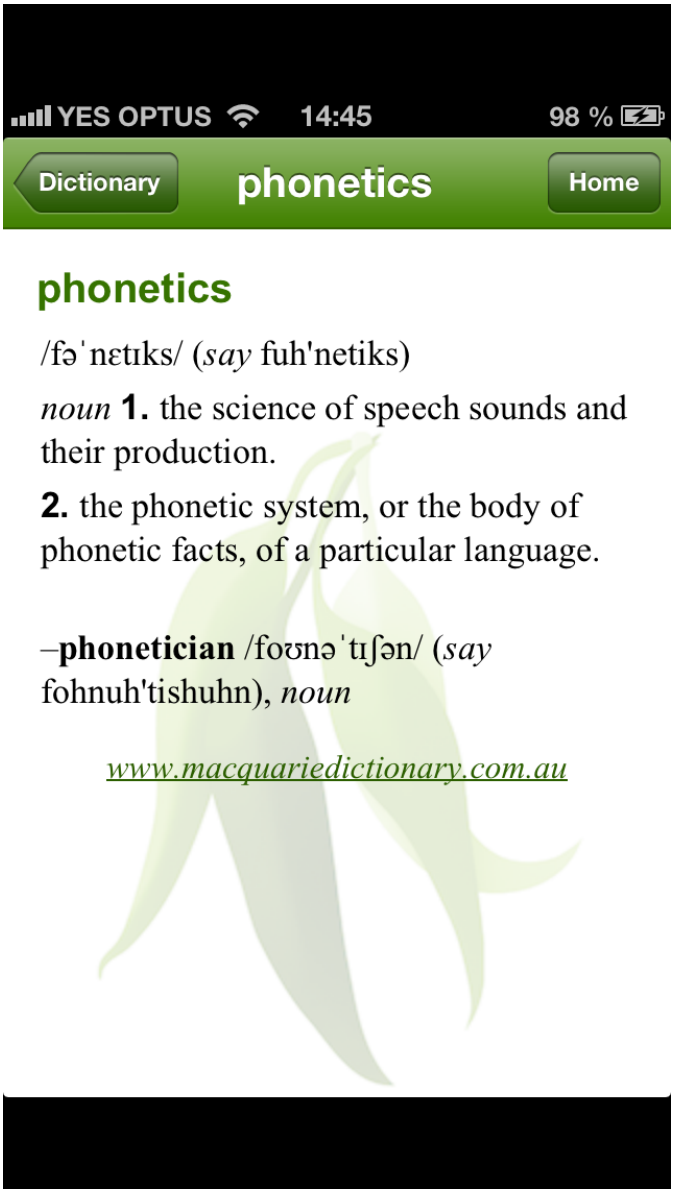
Language: the noises we make with our faces in order to live. (J.R. Firth)



0 Basic Organization

0.1 General information

0.1.1 Overall goal

This course provides an overview of English phonetics, with special emphasis on pronunciation problems that students of English are likely to face if their native language is German. The course is based on the dual fictitious premises that:

- course participants are being trained as undercover agents for the German secret service;
- they will be deployed in espionage work in whatever is left of the United Kingdom after Brexit, where they will be required to pass themselves off as native speakers of Southern British English.

Additionally, reference will be made to some of the main differences between Southern British English and General American English, on the one hand, and between Southern British English and Broad Australian English on the other.

0.1.2 Who this course is for

The course is intended primarily for students whose English courses are provided by *FR Anglistik, Amerikanistik und Anglophone Kulturen*. Other students are welcome to attend the course provided they have a reasonably sound knowledge of English.

The main language of instruction is English, but sometimes German will be used, depending on the nature of the particular problem under discussion.

The course devotes special attention to the things that can go wrong when it is the sound system of German that is interfering with the sound system of English, but we will also look at some of the things that can go wrong when the source of the interference is the sound system of another language (typically a Romance one).

0.1.3 How the course works

The course runs for one 15-week semester (*1 x 2 SWS = 2 SWS*) and meets either Mondays from 16:15 to 17:45 or Wednesdays from 16:15 to 17:45. *Please be punctual!* After each class (15 x 2 hours) there is a certain amount of homework, consisting of exercises (including listening exercises) designed to review what has just been learnt and prepare the ground for what is to come. The total extent of the course is 30 (15 x 2) contact hours, plus an additional 30 hours (15 x 2) devoted to homework, making a total of 60 hours for 2 credit points. (Erasmus students: see below.)

0.1.4 Communication

All students taking the course should make sure that their correct email address is on the course mailing list. When sending an email to the course leader, please make sure that the piece of text

[phonetics-monday]

or

[phonetics-wednesday]

(including the square brackets!) is included in the subject line. (This will happen automagically if you are reading any email I have already sent you concerning this course and you simply hit the "Reply" button.)

0.1.5 Successful participation

Students are expected to attend regularly. ***If you are unable to attend one of the lessons, it is vital that you contact me beforehand to let me know. Missing more than two lessons altogether would seriously compromise your chances of successfully completing the course.***

At the end of the semester, typically in the last two weeks of lectures, there is an oral test which covers the whole of that semester's work.

Students who fail the test at the first attempt have the chance to re-sit it (typically during the semester break or at the very beginning of the next semester's lecture period).

ERASMUS students taking the course can obtain a graded certificate (*benoteter Teilnahmeschein*) by attending regularly and passing the oral test, or an ungraded certificate (*unbenoteter Teilnahmeschein*) on the basis of regular attendance without sitting the test. ERASMUS students who need 3 credit points can make arrangements with the course leader to do extra work to earn the extra point.

Some of the course materials are included in the document you are reading right now; certain additional materials will be distributed in the lessons; and other materials can be accessed by following the links on the course website.

0.2 Provisional timetable

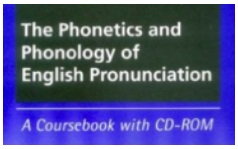
Week	*Date*	*Unit*	*Description*
01	14.x / 16.x	00	Basic organization; initial survey; resources for doing phonetics
02	21.x / 23.x	01	Theoretical introduction (1): the place of phonetics in a functional theory of language
03	28.x / 30.x	02	Theoretical introduction (2): phonetics, phonology, and writing
04	4.xi / 6.xi	03	Consonants (1): approaching consonants via articulatory phonetics and phonology
05	11.xi / 13.xi	04	Vowels (1): approaching vowels via articulatory and acoustic phonetics
06	18.xi / 20.xi	05	Vowels (2): the English vowel system contrasted with German
07	25.xi / 27.xi	06	Consonants (2): the English consonant system contrasted with German
08	02.xii / 04.xii	07	Syllables & Rhythm (1): linking, stress, weak forms
09	09.xii / 11.xii	08	Syllables & Rhythm (2): assimilation & elision; morphophonology
10	16.xii / 18.xii	–	Extra Practice
11	06.i / 08.i	09	Intonation (1): tonality and tonicity
12	13.i / 15.i	10	Intonation (2): the primary tones of English and their meaning
13	20.i / 22.i	11	Intonation (3): the secondary tones of English and their meaning
14	27.i / 29.i	–	Final Test
15	03.ii / 05.ii	–	Final Test

0.3 Resources for learning and doing phonetics

There are a number of resources that will make it easier and more fun for you to learn and do phonetics. The most important of them are listed below:

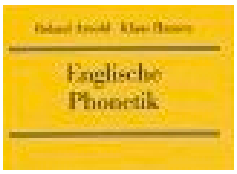
0.3.1 Books on English Phonetics / Phonology

Eckert and Barry: The Phonetics and Phonology of English Pronunciation. Trier: WVT, 2005



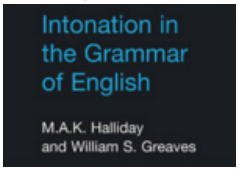
This book is written in the Anglo-Saxon "voyage of discovery" style. It has some annoying inconsistencies (in the use of the symbol [r] for example), but is very worth reading.

Arnold und Hansen: Englische Phonetik. Langenscheidt, 1998



This book is written in formal German academic style. It was originally published in the former GDR (DDR). Most of it is very good, except for the section of intonation.

Halliday and Greaves: Intonation in the Grammar of English. London: Equinox, 2008



The theory of English intonation put forward in this book is the basis for the last three lectures of the course.

0.3.2 Dictionaries that indicate the standard pronunciation of words

These days, most students use online dictionaries, or dictionary apps, to obtain information about how particular English words are pronounced. In this regard, there is a problem.

The most respected dictionaries for British English have long been the massive Oxford English Dictionary and its shorter sister, the Concise Oxford Dictionary. For many decades, these dictionaries—which are intended mainly for native speakers—used their own way of showing how words were pronounced (employing diacritic marks like dots and lines in addition to the normal orthography, and respelling some words or parts of words wherever necessary: **annī'hĭlāt|e -nīĭ-**). During the same period, other dictionaries gradually reached agreement on a standard way of using IPA symbols (/əˈnaɪəleɪt/; see below) to represent English pronunciation. When the Concise Oxford Dictionary decided to use

these symbols for the first time, five changes were made to the standard system—for reasons that are not easy to understand (/əˈnʌɪɪlɛɪt/).

The result is:

- If you are using an Oxford dictionary to check the pronunciation of an English word, make sure it is an Oxford **learner's** dictionary – not the "Concise Oxford Dictionary"!
- BAD: Concise Oxford Dictionary:
  `http://www.oxforddictionaries.com`
- **GOOD: Oxford Advanced Learner's Dictionary:**
  `http://www.oxfordlearnersdictionaries.com`
  (don't forget the "s"!)
- On a Mac, the Concise Oxford Dictionary is integrated with the operating system. DO NOT TRUST IT!!
- Beware these...!

WRONG!	(words like:)	RIGHT!
ɛ	BET	e
a	BAT	æ
əː	NURSE	ɜː
ɛː	SQUARE	eə
ʌɪ	PRICE	aɪ

To find out more about the background to this problem, see:
https://www.phon.ucl.ac.uk/home/wells/ipa-english-uni.htm

0.3.3 Online resources

There are a number of resources freely available on the Internet that are immediately relevant to this course:

Wikipedia:
`http://de.wikipedia.org/wiki/Internationales_Phonetisches_Alphabet`

or in English:
`http://en.wikipedia.org/wiki/International_Phonetic_Alphabet`

In general, you should be careful about using Wikipedia, especially where 'controversial' topics are concerned. Although many topics in the linguistic sciences are indeed controversial, phonetics is probably one of the least so. You can therefore 'trust' Wikipedia, as far as phonetics is concerned. But remember that Wikipedia is written by volunteers, and is constantly being edited; the volunteers are not necessarily experts, and the process of editing often produces awkward and illogical paragraphs.

It is never a bad idea to consult 'original' sources, such as the website of the International Phonetic Association:
http://www.internationalphoneticassociation.org

Right from the beginning of the course, you should start trying to become familiar with the IPA symbols. Here you can find a chart of IPA symbols used for English:
http://simple.wikipedia.org/wiki/IPA_chart_for_English

You should also try to learn as many other IPA symbols as you think you will need (for describing the pronunciation of English in more detail, or for describing the pronunciation of different dialects of English, or for describing other languages). For the full chart of all IPA symbols, see the IPA website or the main Wikipedia article. The full IPA chart can also be found on page 41, the second page of Chapter 2 below.

0.3.4 Fonts

You are encouraged to write out the IPA symbols to practise them; but please note that this means *printing* them, not writing them *cursively in your normal handwriting*. You will need to be able to read IPA transcriptions in order to pass the examination at the end of the course, but the questions will be multiple choice, and you will not have to write the IPA symbols.

You are also urged to practise using IPA symbols with a word processor. In order to do this properly, you need to check the fonts installed on your computer to make sure that you have at least one Unicode font with a broad coverage of symbols. Typically, you will find that you have something like Lucida Grande, or Arial MS Unicode already pre-installed. You may also wish to download and try out other fonts, as well.

In order to find out which of the fonts on your system actually contain the IPA symbols, check your computer's character viewer; scroll down till you come to about Unicode code-point 2500 (in hexadecimal notation) and then examine carefully the symbols that follow.

Figure 1 shows the Unicode "IPA Extensions" block in the character viewer of a MacBook Pro running Mountain Lion, and Figure 2 shows the steps that were necessary to "customize" the character viewer so that it would display more than just arrows and smileys ;-)

The following fonts are free, and are worth having:

Charis SIL:
http://software.sil.org/charis/

Doulos SIL:
http://software.sil.org/doulos/

Gentium Plus:
http://software.sil.org/gentium/

The Brill:
http://www.brill.com/about/brill-fonts

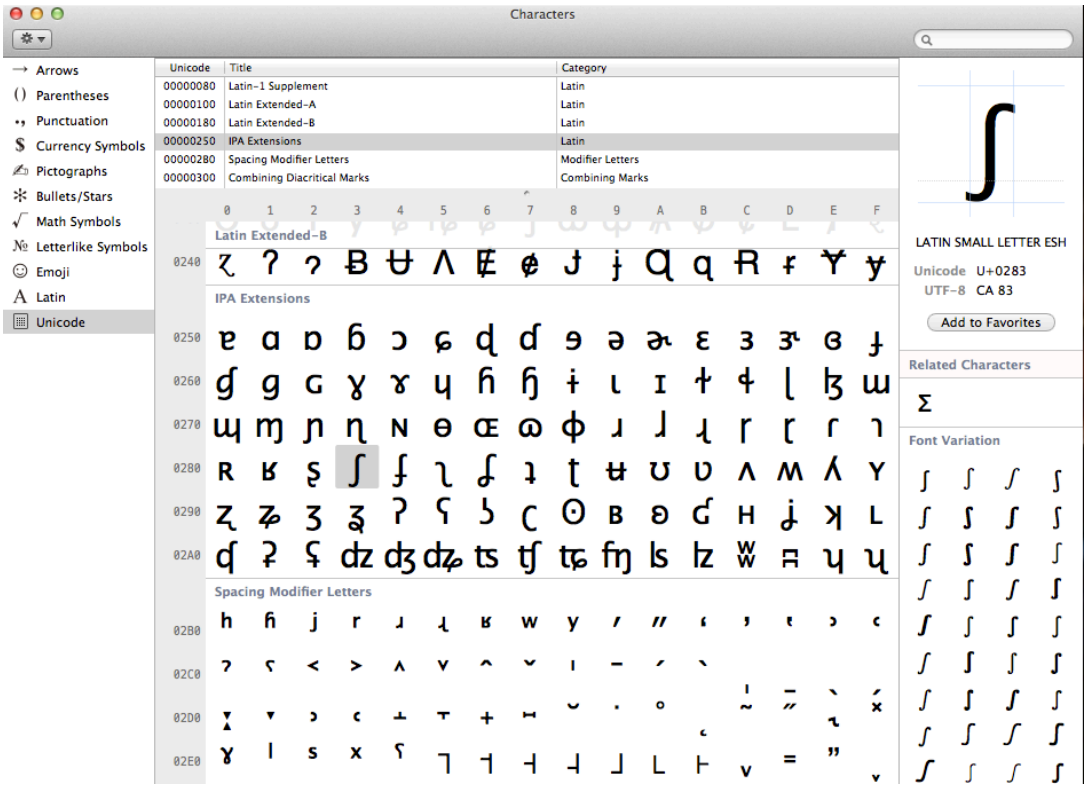


Figure 1: Character Viewer under Mac OS X 10.8.2, showing the IPA Extensions block

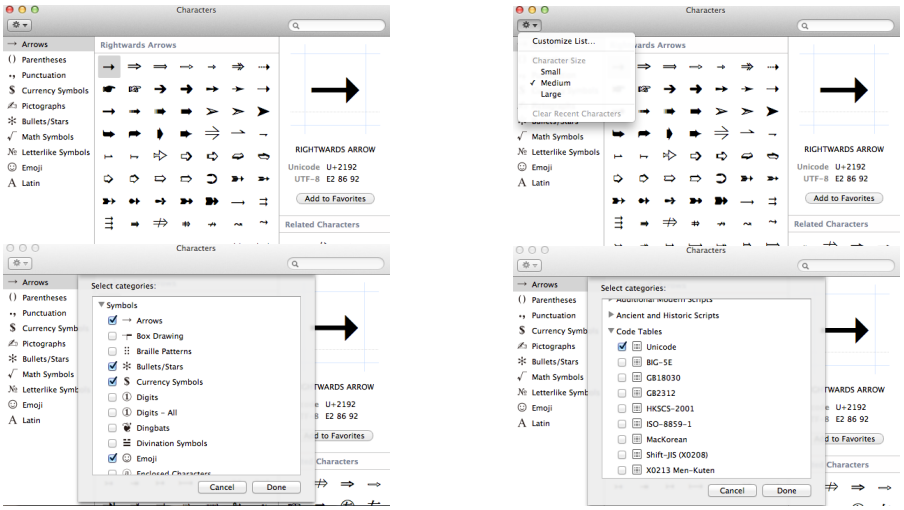


Figure 2: Customizing the Character Viewer under Mac OS X 10.8.2 to enable the display of IPA symbols by their Unicode block

Below we examine the IPA coverage of a variety of different fonts to see what results are possible when typesetting with XƎTEX / XƎBTEX on a Mac running Yosemite. You may be able to get better results depending on your typesetting / desktop publishing / word-processing system and your operating system.

XƎTEX is a free typesetting system; more information about it can be found here:
http://www.tug.org/xetexshowcase/xetex-wuhan.pdf

The aim in comparing different fonts was to determine the quality of the results achievable in for the following kinds of transcriptions: graphemic, phonemic, broad phonetic, and narrow phonetic (including diacritics, the undertie symbol to indicate linking (absence of a break), and the (old-fashioned) lower ligature tie to indicate a diphthong). The best results overall appear to be achievable by using the Charis SIL font, which has been specifically designed with a view to combining diacritics, or with Doulos SIL or Gentium Plus.

Charis SIL (with STIXGeneral for the graphemic boundary symbols ⟨ ⟩)
⟨Arthur⟩ ⟨and⟩ ⟨Jane⟩ ⟨left⟩ ⟨for⟩ ⟨Italy⟩ ⟨this⟩ ⟨morning⟩ (graphemic)
/ˈɑːθ.ə(r)/ /ænd/ /dʒeɪm/ /left/ /fɔː(r)/ /ˈɪt.əl.iː/ /ðɪs/ /ˈmɔːn.ɪŋ/ (phonemic)
[ˈɑːθəɹ ənd ˈdʒeɪm ˈleft fəɹ ˈɪtəli ðɪs ˈmɔːnɪŋ] (broad phonetic)
[ˈa̪ːθəɹ‿n̩ˈd͡ʒe̯ɪmˈlɛf̬ˑəˈɹ‿ɪtəlĭðĭsˈmɔ̪ːnɪŋ] (narrow phonetic) ⟵ perfect result

Doulos SIL (with STIXGeneral for the graphemic boundary symbols ⟨ ⟩)
⟨Arthur⟩ ⟨and⟩ ⟨Jane⟩ ⟨left⟩ ⟨for⟩ ⟨Italy⟩ ⟨this⟩ ⟨morning⟩ (graphemic)
/ˈɑːθ.ə(r)/ /ænd/ /dʒeɪm/ /left/ /fɔː(r)/ /ˈɪt.əl.iː/ /ðɪs/ /ˈmɔːn.ɪŋ/ (phonemic)
[ˈɑːθəɹ ənd ˈdʒeɪm ˈleft fəɹ ˈɪtəli ðɪs ˈmɔːnɪŋ] (broad phonetic)
[ˈa̪ːθəɹ‿n̩ˈd͡ʒe̯ɪmˈlɛf̬ˑəˈɹ‿ɪtəlĭðĭsˈmɔ̪ːnɪŋ] (narrow phonetic) ⟵ perfect result

Gentium Plus
⟨Arthur⟩ ⟨and⟩ ⟨Jane⟩ ⟨left⟩ ⟨for⟩ ⟨Italy⟩ ⟨this⟩ ⟨morning⟩ (graphemic)
/ˈɑːθ.ə(r)/ /ænd/ /dʒeɪm/ /left/ /fɔː(r)/ /ˈɪt.əl.iː/ /ðɪs/ /ˈmɔːn.ɪŋ/ (phonemic)
[ˈɑːθəɹ ənd ˈdʒeɪm ˈleft fəɹ ˈɪtəli ðɪs ˈmɔːnɪŋ] (broad phonetic)
[ˈa̪ːθəɹ‿n̩ˈd͡ʒe̯ɪmˈlɛf̬ˑəˈɹ‿ɪtəlĭðĭsˈmɔ̪ːnɪŋ] (narrow phonetic) ⟵ perfect result

Lucida Grande (with STIXGeneral for the graphemic boundary symbols ⟨ ⟩)
⟨Arthur⟩ ⟨and⟩ ⟨Jane⟩ ⟨left⟩ ⟨for⟩ ⟨Italy⟩ ⟨this⟩ ⟨morning⟩ (graphemic)
/ˈɑːθ.ə(r)/ /ænd/ /dʒeɪm/ /left/ /fɔː(r)/ /ˈɪt.əl.iː/ /ðɪs/ /ˈmɔːn.ɪŋ/ (phonemic)
['ɑːθəɹ ənd 'dʒeɪn 'left fəɹ 'ɪtəli ðɪs 'mɔːnɪŋ] (broad phonetic)
['a̪ːθəɹ‿n̩'dʒ□ □ □ ɪn'lɛf̬ˑə'ɹ‿ɪtəlĭðĭs'mɔ̪ːnɪŋ] (narrow phonetic) ⟵ ligature tie fails

Arial Unicode MS
⟨Arthur⟩ ⟨and⟩ ⟨Jane⟩ ⟨left⟩ ⟨for⟩ ⟨Italy⟩ ⟨this⟩ ⟨morning⟩ (graphemic)
/ˈɑːθ.ə(r)/ /ænd/ /dʒeɪm/ /left/ /fɔː(r)/ /ˈɪt.əl.iː/ /ðɪs/ /ˈmɔːn.ɪŋ/ (phonemic)
['ɑːθəɹ ənd 'dʒeɪn 'left fəɹ 'ɪtəli ðɪs 'mɔːnɪŋ] (broad phonetic)
['a̪ːθəɹ‿n̩'dʒe̯□ɪn'lɛf̬ˑə'ɹ‿ɪtəlĭðĭs'mɔ̪ːnɪŋ] (narrow phonetic) ⟵ ligature tie fails

STIXGeneral
⟨Arthur⟩ ⟨and⟩ ⟨Jane⟩ ⟨left⟩ ⟨for⟩ ⟨Italy⟩ ⟨this⟩ ⟨morning⟩ (graphemic)
/ˈɑːθ.ə(r)/ /ænd/ /dʒeɪm/ /left/ /fɔː(r)/ /ˈɪt.əl.iː/ /ðɪs/ /ˈmɔːn.ɪŋ/ (phonemic)
[ˈɑːθəɹ ənd ˈdʒeɪn ˈleft fəɹ ˈɪtəli ðɪs ˈmɔːnɪŋ] (broad phonetic)
[ˈa̪ːθəɹ n̩ˈd͡ʒe̯ɪnˈlɛf̬ˑəˈɹ ɪtəlĭðĭsˈmɔ̪ːnɪŋ] (narrow phonetic) ⟵ undertie fails, diacritics badly aligned

CMU Serif
⟨Arthur⟩ ⟨and⟩ ⟨Jane⟩ ⟨left⟩ ⟨for⟩ ⟨Italy⟩ ⟨this⟩ ⟨morning⟩ (graphemic)
/ˈɑːθ.ə(r)/ /ænd/ /dʒeɪn/ /left/ /fɔː(r)/ /ˈɪt.əl.iː/ /ðɪs/ /ˈmɔːn.ɪŋ/ (phonemic)
[ˈɑːθəɹ ənd ˈdʒeɪn ˈleɪ̞f̬ə ˈɪtəli ðɪs ˈmɔːnɪŋ] (broad phonetic)
[ˈɑ̪ːθəɹ̩ n̩ˈdʒe̞ɪ̯nˈle̞f̬ˑəˈɹ̩ɪtəlĭðĭsˈmɔ̪ːnɪŋ] (narrow phonetic) ⟵ ligature tie fails

Junicode
⟨Arthur⟩ ⟨and⟩ ⟨Jane⟩ ⟨left⟩ ⟨for⟩ ⟨Italy⟩ ⟨this⟩ ⟨morning⟩ (graphemic)
/ˈɑːθ.ə(r)/ /ænd/ /dʒeɪn/ /left/ /fɔː(r)/ /ˈɪt.əl.iː/ /ðɪs/ /ˈmɔːn.ɪŋ/ (phonemic)
[ˈɑːθəɹ ənd ˈdʒeɪn ˈleɪ̞f̬ə ˈɪtəli ðɪs ˈmɔːnɪŋ] (broad phonetic)
[ˈɑ̪ːθəɹ̩ n̩ˈdʒe̞ɪ̯nˈle̞f̬ˑəˈɹ̩ɪtəlĭðĭsˈmɔ̪ːnɪŋ] (narrow phonetic) ⟵ unacceptable

Linux Libertine
⟨Arthur⟩ ⟨and⟩ ⟨Jane⟩ ⟨left⟩ ⟨for⟩ ⟨Italy⟩ ⟨this⟩ ⟨morning⟩ (graphemic)
/ˈɑːθ.ə(r)/ /ænd/ /dʒeɪn/ /left/ /fɔː(r)/ /ˈɪt.əl.iː/ /ðɪs/ /ˈmɔːn.ɪŋ/ (phonemic)
[ˈɑːθəɹ ənd ˈdʒeɪn ˈleɪ̞f̬ə ˈɪtəli ðɪs ˈmɔːnɪŋ] (broad phonetic)
[ˈɑ̪ːθəɹ̩ n̩ˈdʒe̞ɪ̯nˈle̞f̬ˑəˈɹ̩ɪtəli̯ðɪ̯sˈmɔ̪ːnɪŋ] (narrow phonetic) ⟵ unacceptable

You may be able to get better results than these, depending on your word processing system. Most modern fonts are "smart fonts", which have hidden features that allow you to access additional shapes of each character: see the difference between the Greek letter β and the IPA phonetic symbol β. In order to get the second shape, with the serif at the bottom, which is the correct shape for the IPA phonetic symbol β), I had to access 'Stylistic Set 20' in the font; otherwise it would have been a normal Greek letter β. To do this, using XƎLaTeX, I had to type `{\fontspec[Script=Latin,StylisticSet=20]{Brill}{β}}`, but you may be able to access these alternative shapes more comfortably via a menu in a WYSIWIG ("what you see is what you get") word-processing program or desktop publishing program.

0.3.5 Copy-and-paste

The simplest way to work with phonetic symbols is to copy-and-paste them. Here you can find everything you need:

- `http://www.ipa.webstuff.org/` [NB: you need to select e.g. "Vowels" first...

  See Figure 3 (left half). ... then click on the "COPY AND PASTE VERSION" link]

- `https://r12a.github.io/pickers/ipa/`

  See Figure 3 (right half).

  Beware! The naming conventions used for vowels on the second website are outdated; please do *not* refer to "high" and "low" vowels if you mean 'close' and 'open' vowels!

- `http://westonruter.github.io/ipa-chart/keyboard/` This is an alternative character picker to the one above; it has better terminology, but may need frequent refreshing in your browser window.

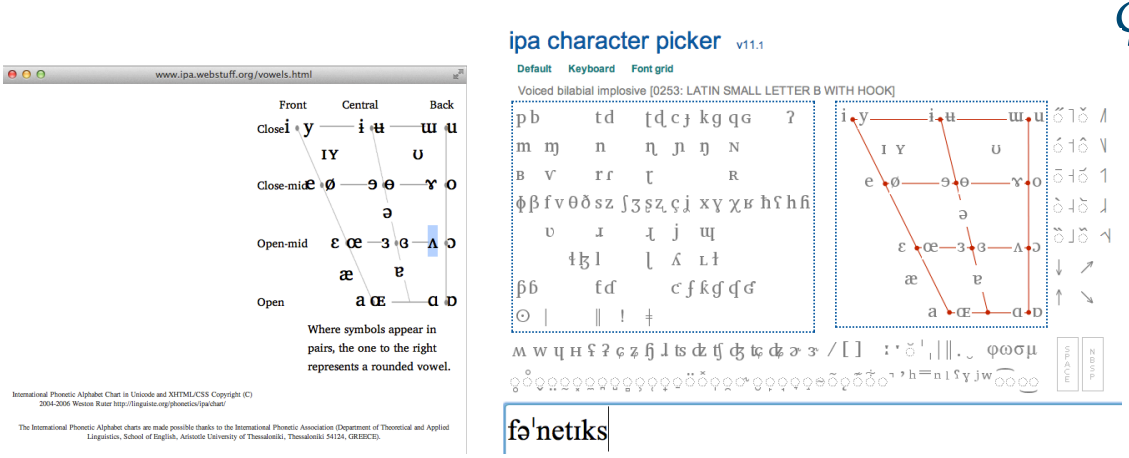


Figure 3: Two copy-and-paste solutions for IPA characters;
Images: (left) webstuff.org ; (right) Richard Ishida

Note: A copy-and-paste solution will save you having to type the symbols using your own keyboard; but you will still need at least one font on your system that has all the phonetic symbols.

0.3.6 Keyboard layouts

It is worth installing an IPA keyboard layout (see Figure 4). This will enable you to enter a large number of phonetic symbols directly from your keyboard — for example, in order to get ŋ you type SHIFT- N, and so on.

- `http://scripts.sil.org/UniIPAKeyboard`

Figure 4: The IPA keyboard layout from SIL

SIL International is a “faith-based” organization that provides free software for purposes related to literacy in the third world. “SIL” originally stood for “Summer Institute of Linguistics”, an organization whose founder, Kenneth L. Pike, played a major role in increasing our understanding of language and translation.

0.3.7 Software worth having

If you are interested in having your very own phonetics lab to play with, the free software PRAAT is the current standard:

- `http://www.fon.hum.uva.nl/praat/`

Praat can do virtually everything, but it takes time to become familiar with its many functions.

There is another piece of phonetics software which you probably already have, without realizing it:

- http://audacity.sourceforge.net

Figure 5: (left) Praat: doing phonetics by computer (right) Audacity: a free, easy-to-use and multilingual audio editor and recorder
Images: (left) Paul Boersma, David Weenink ; (right) https://www.audacityteam.org/copyright/

Audacity enables you to view, for example, a spectrogram of a piece of speech. This will be useful when we are looking at acoustic phonetics later on.

0.3.8 Mobile apps

It is also worth mentioning two apps that run on an iPhone or Android device. Both of them were programmed by a Computer Science graduate of our university.

- FrequenSee – Spectrum Analyzer (free)
  https://play.google.com/store/apps/details?id=com.DanielBach.FrequenSee&hl=de

This app analyzes the frequency of sound in real time, allowing you to immediately see, for example, what the acoustic difference is between an [s] and an [f], or an [i] and an [a] and an [u].

- live BPM – Beat Detector (relatively inexpensive)
  https://play.google.com/store/apps/details?id=com.DanielBach.liveBPM

This app detects the rhythmic "beat" of someone's drumming (or their speaking), and might be useful when we come to the unit dealing with Rhythm.

Figure 6: (left) FrequenSee — Spectrum Analyzer ; (right) liveBPM — Beat Detector (Images: Daniel Bach)

Then there is the “killer app”, which unfortunately is presently only available for iPhone/iPad:

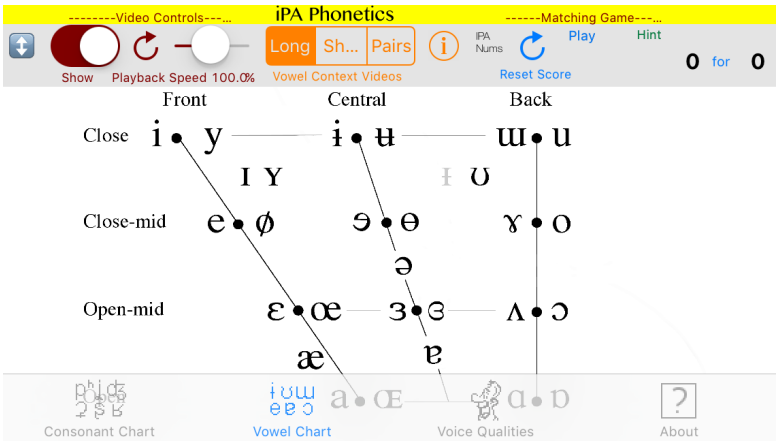


Figure 7: The killer app (1) (Image: UVic)

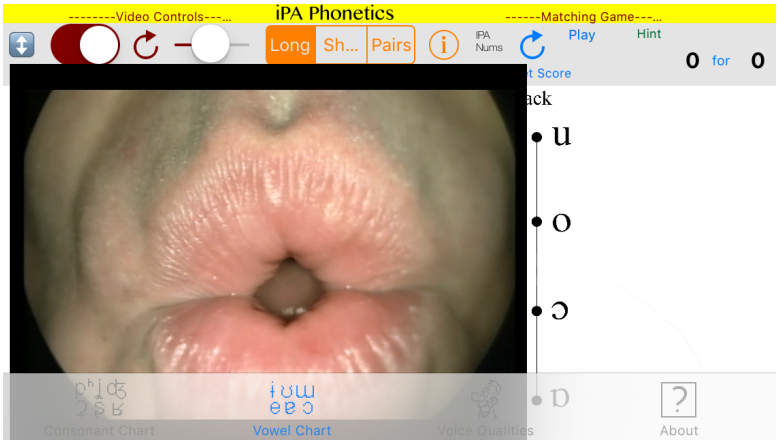


Figure 8: The killer app (2) (Image: UVic)

- Click on the IPA symbol, hear the sound:
  `http://www.uvic.ca/humanities/linguistics/resources/software/ipaphonetics/index.php`

0.4 Principles

Some general principles to remember when studying the phonetics and phonology of English:

1. Imagine you are training to be a spy, and are going to be working in England. A German accent would give you away!

2. Start with the entire body in its biological and social environment. Sleep in an English-style bed, eat an English-style breakfast, surround yourself with everything English; stand the way English people do, walk the way they do, hold your mouth the way they do. Then the sounds will come naturally.

3. Free up your sound-making. Stop being an adult with desires and purposes and intentions. Just be a child and play. Do not let your phonetics be constrained by anything related to language (such as German sound patterns, or German sentence patterns, or German ways of organizing ideas, or ...)

4. Find someone to imitate. It should be someone quintessentially English. Abandon your own desires and purposes and intentions and just imitate the other person.

0.5 A note on how to use these course notes

The course notes for each unit of the Phonetics course typically consist of the following parts:

0. An attempt at a one-page executive **summary** of the unit in graphic form.

1. A set of **workpoints**—a list of contrastive examples designed to lead in to the unit by casting light upon a particular 'region' of the phonetics and phonology of English and highlighting some of the differences between English and German.

2. A checklist of **learning goals** for the unit.

3. An **outline** of the relevant portion of the phonetics of English.

4. A discussion of the **problems** that each region of English phonetics may pose for German-speaking learners.

5. A list of **references** which can be consulted for further information.

6. A **worksheet** containing exercises for guided practice.

At the very beginning of the course, we look not at the sounds and sound system of English but at the theoretical framework of Systemic Functional Linguistics, which is the guiding theory behind the course as a whole.

After each class, students should complete the corresponding worksheet; before the next class, they should study the next set of contrastive examples.

The test at the end of the course will be based on the weekly worksheets.

1 Theoretical introduction (1): the place of phonetics in a functional theory of language

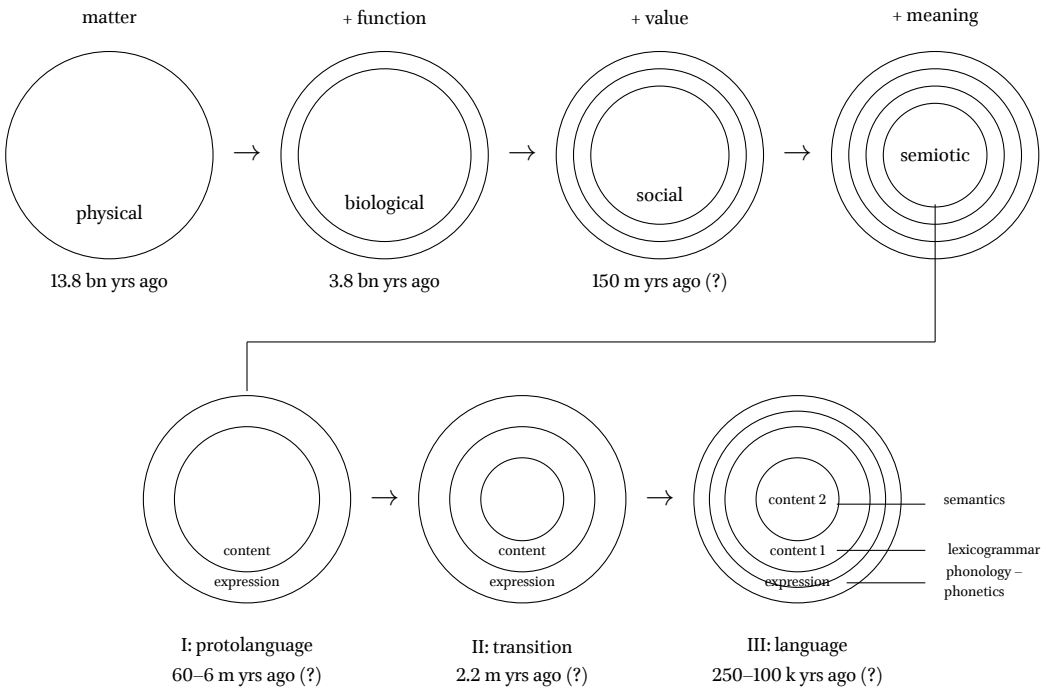


Figure 9: From matter to meaning (after C. M. I. M. Matthiessen)

1.1 Workpoints

In the distant future I see open fields for far more important researches. Psychology will be based on a new foundation, that of the necessary acquirement of each mental power and capacity by gradation. Light will be thrown on the origin of man and his history.

[Charles Darwin,
On the Origin of Species by Means of Natural Selection.
London: John Murray, 1859,
page 488.]

La Société n'admet aucune communication concernant, soit l'origine du langage, soit la création d'une langue universelle.

[Article 2 des
Statuts de la Société de Linguistique de Paris,
approuvés par décision ministérielle
du 8 mars 1866]

Every text — that is, everything that is said or written — unfolds in some context of use; furthermore, it is the uses of language, that, over tens of thousands of generations, have shaped the system. Language has evolved to satisfy human needs; and the way it is organized is functional with respect to these needs — it is not arbitrary.

[M.A.K. Halliday,
An Introduction to Functional Grammar.
London: Edward Arnold, 1985,
page xiii]

1.2 Learning goals

In this unit, you will learn:

1. about the place of language in the evolutionary order of nature
2. about the concept of a SIGN (including a WORD), and the concept of a SIGN SYSTEM (including a LANGUAGE)
3. about the difference between bistratal (two-level) and tristratal (three-level) sign systems
4. about the basic dimensions of the SYSTEMIC FUNCTIONAL theory of language
5. about the place of phonetics in (theories of) language

1.3 Evolution, language, and phonetics

1.3.1 From matter to meaning: the place of language in the evolutionary order of nature

Evolution serves no higher purpose; it therefore has no goal, no plan, no predetermined direction. Higher-level entities, if they come about at all, are contingent, not necessary. In order to 'situate' such higher-level entities within the evolutionary order of nature, it is necessary to develop a feeling for the immensity of the time-scales involved.

At the beginning of the universe, about 13.72 billion years ago, matter, energy, space, and time arise. Matter exists only in the form of the three simplest elements (hydrogen, helium and lithium). All other elements are the result of atomic fusion occurring in large, unstable stars shortly before they explode. After many billions of years and under specific chemical conditions, some molecules become self-replicating. This—which we call life—sets off a chain of events that produces even greater degrees of complexity.

Once there is life, it becomes possible to ask, "what is the function of X?"—where X could be something like photosynthesis, or lungs, or a brain.

Some living organisms live in societies, and once there is society, it becomes possible to ask, "what is the value of Y?"—where Y could be anything useful or, in a further step, anything exchangeable for something else.

It is the notion of 'exchange value' that eventually leads to the notion of 'meaning', where one thing (such as a sequence of sounds) 'stands for' something else (such as an 'idea'). It is now possible to ask 'what is the meaning of Z?'—where Z is, for instance, a sequence of sounds.

Once this SEMIOTIC order has been added to the material, biological, and social orders, a further development can take place: language can develop from the simpler form it has in other animals and in human children between about the ages of 7 months and 18 months, and begin to take on the unique form that it has in human adults.

We make the assumption that the ontogenetic development of language in children can tell us something about the phylogenetic development of language that took place as our species evolved.

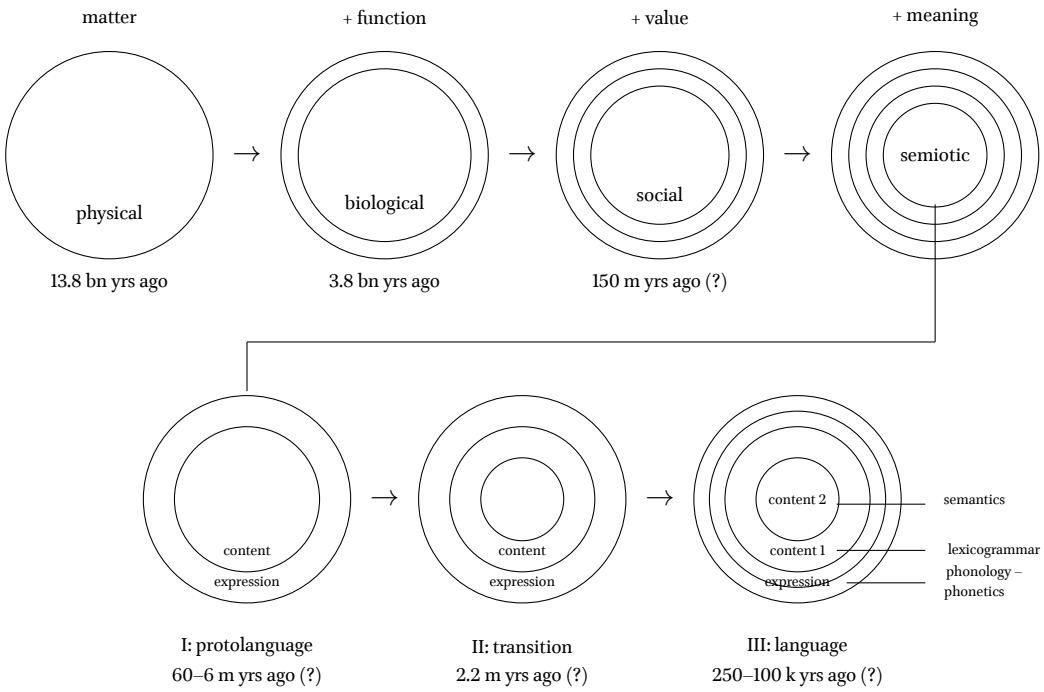


Figure 10: From matter to meaning (after C. M. I. M. Matthiessen)

matter + **life** → *function*

life + **society** → *value* *Gebrauchswert* ↓ *Tauschwert*

society + **language** → *meaning*

[before there is grammar:]

sounds 'standing for' **meanings** → *words*

[once there is grammar:]

sounds 'stand for' **words** ...

... and **words in structures** 'stand for' **meanings**

thus, adult human language has three *'levels'* or *'strata'*:

meanings

... stood for by **wordings**

... stood for by **sound(ing)s**

For more information, consult the works by Arnaud Delsemme, Gerald Edelman, and Terrence Deacon that are cited in the bibliography.

1.3.2 Signs and semiotic systems

The modern science of language—linguistics—begins with the work of Ferdinand de Saussure. Saussure developed the notion that a language is a 'system of signs' (or 'semiotic system'). Each sign is, for Saussure, a relationship—or 'function', in the mathematical sense—between two things: (a mental representation of) a 'signifier' and (a mental representation of) a 'signified'. In the case of natural human language, the signifier would be (a mental representation of) a piece of sound, and the signified would be (a mental representation of) a piece of meaning—a concept.

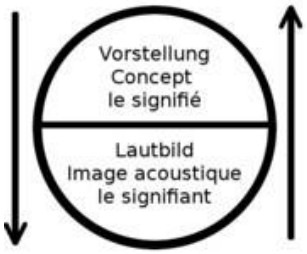


Figure 11: The sign function (Saussure)

You are encouraged to read Saussure, and to keep in mind that his book *Cours de linguistique générale*—the one that founded modern linguistics—was actually put together (after Saussure's untimely death) by two of his students from their lecture notes.

One of the most important points that Saussure makes (or that Saussure's students remembered him as having made) is that in the absence of language both thought and sound would be indefinite and indistinct. It is only by being used to help us distinguish between different ideas, that sounds come to be 'different' and 'distinct' from one another. And conversely, it is only through being stood for by different constellations of sound that different ideas stay 'different' from each other.

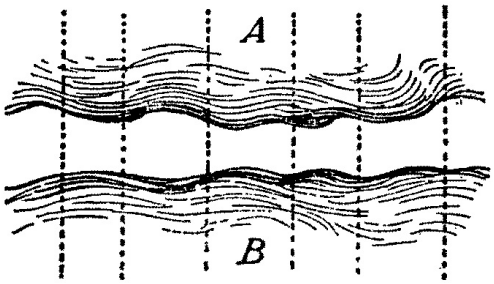
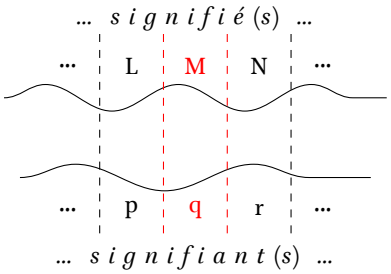


Figure 12: Without language, thought and sound are indefinite and indistinct

It is worth dwelling on this point, because it is so important. The concepts Saussure uses are *l'arbitraire du signe* ('the arbitrariness of the sign'), *valeur* ('value'), and *une forme, non une substance* ('a form, not a substance').

- language (... L/p, M/q, N/r, ...) is a form, not a substance



  - that q stands for M is ARBITRARY
  - M is only defined by its VALUE relative to { ... L ... N ...}
  - q is only defined by its VALUE relative to { ... p ... r ... }

- society (a speech community) is necessary to define these SYSTEMS of values

Figure 13: *L'arbitraire du signe* & *valeur*

The relevant passage from Saussure's *Cours de linguistique générale* (1916; 1996:157) reads as follows:

> La langue est encore comparable à une feuille de papier : la pensée est le recto et le son le verso ; on ne peut découper le recto sans découper en même temps le verso ; de même dans la langue, on ne saurait isoler ni le son de la pensée, ni la pensée du son ; on n'y arriverait que par une abstraction dont le résultat serait de faire de la psychologie pure ou de la phonologie pure.
>
> La linguistique travaille donc sur le terrain limitrophe où les éléments des deux ordres se combinent ; *cette combinaison produit une forme, non une substance*.
>
> Ces vues font mieux comprendre ce qui a été dit (..) de l'arbitraire du signe. Non seulement les deux domaines reliés par le fait linguistique sont confus et amorphes, mais le choix qui appelle telle tranche acoustique pour telle idée est parfaitement arbitraire. Si ce n'était pas le cas, la notion de valeur perdrait quelque chose de son caractère, puisqu'elle contiendrait un élément imposé du dehors. Mais en fait les valeurs restent entièrement relatives, et voilà pourquoi le lien de l'idée et du son est radicalement arbitraire.
>
> À son tour, l'arbitraire du signe nous fait mieux comprendre pourquoi le fait social peut seul créer un système linguistique. La collectivité est nécessaire pour établir des valeurs dont l'unique raison d'être est dans l'usage et le consentement général ; l'individu à lui seul est incapable d'en fixer aucune.
>
> En outre l'idée de valeur, ainsi déterminée, nous montre que c'est une grande illusion de considérer un terme simplement comme l'union d'un certain son avec un certain concept. Le définir ainsi, ce serait l'isoler du système dont il fait partie ; ce serait croire qu'on peut commencer par les termes et construire le système en en faisant la somme, alors qu'au contraire c'est du tout solidaire qu'il faut partir pour obtenir par analyse les éléments qu'il renferme.

Imagine you encounter a group of extraterrestrials for whom martial arts are of such great significance that they have eight different words for different types and degrees of what in German would be called

simply *kämpfen*. From the perspective of this culture, there would be a clear difference between concept 'M' and other concepts in the series { ... J ... K ... L ... M ... N ... O ... P ... }; from the point of view of German, all these concepts would merge into each other, because it would be possible to speak normal German without ever thinking about the distinctions involved.

Similarly, if the extraterrestrials had a word /qʰɑx/ (spelled ⟨[illegible]⟩, normally transliterated as ⟨qaH⟩), meaning 'Sir!', which sounded to our ears more or less identical to the word /qʰɑɣ/ (spelled ⟨[illegible]⟩, normally transliterated as ⟨qagh⟩), meaning 'worms', they would be surprised that we were so insensitive to the difference between the voiceless sound /x/ and the voiced sound /ɣ/, given that the distinction was so important if you wanted to be understood properly!

Figure 14: An extraterrestrial who habitually distinguishes between eight different kinds of fighting and between the two sounds /x/ and /ɣ/; he does this because of the way his language is. You should address him as /qʰɑx/ and, if he does you the honour of offering you a dish of live, writhing /qʰɑɣ/, you should eat it. (Image: Viacom.)

Each sign can only be defined by its place in the *system* of signs:

Figure 15: Language is a system of signs. (Image: Saussure 1916 / Wikipedia.)

When Charles Darwin put forward the theory of evolution by means of natural selection, in his 1859 book *On the Origin of Species*, he intimated that future generations would develop radically new ways of studying human nature and its origins. For our purposes, the aspect of human nature that matters most is the human ability to use language, and the most important question to ask is thus, "How does human language differ from animal language, and how did this difference arise?" It is perhaps worth pointing out that not long after *On the Origin of Species*—in 1866, to be precise—the prestigious Linguistic Society of Paris banned scientific papers that speculated about the origin of language, and this ban was in place for well over a century.

The origin of human language is currently considered to be one of the most difficult intellectual problems that modern science is confronted by, and we have so far made very little progress toward solving it. But one thing seems clear: the human capacity for using signs (such as vocal sounds to stand for human experience) must have co-evolved with the human brain itself, each conditioning the other.

In the process, our species somehow made a transition from a two-level (or 'bistratal') sign system, such as the sign systems used by other animals, to a three-level (or 'tristratal') one, which is uniquely human.

From a bistratal to a tristratal semiotic system I know of no better summary of the evolutionary development mentioned above than that presented by the late John Maynard Smith, in a lecture held at the Royal Institution in London in 1995 entitled "The Origin of Life".

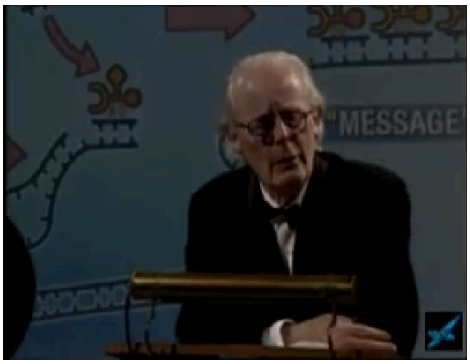


Figure 16: John Maynard Smith ← click for link to video extract

The full video on the origin of life is available in six parts here: https://www.youtube.com/watch?v=viP5kBMtZ18
https://www.youtube.com/watch?v=EzP3m_XlwV8
https://www.youtube.com/watch?v=fRzRbohQ5Zs
https://www.youtube.com/watch?v=Il-yoFGogyA
https://www.youtube.com/watch?v=dmrje1cd90o
https://www.youtube.com/watch?v=tzGDio2ARPw

The entire lecture lasts one hour. I heartily recommend it.

1.3.3 Dimensions in the Systemic Functional theory of language

The theory of language adopted in this course is **Systemic Functional Linguistics (SFL)**, as developed by M.A.K. Halliday together with his students and colleagues. The theory provides a number of dimensions for describing language, the most important of which are described here:

1. **Manifestation** (how language appears ['manifests itself'] in the world)
2. **Stratification** (levels of 'something standing for something else')
3. **Metafunction** (different 'functional components' of meaning, determining different kinds of structures)
4. **Instantiation** (of the broader potential by the actual instance)
5. **Rank** (bigger units made up of smaller ones)
6. **Axis** ('choice' [choosing between elements] vs. 'chain' [chaining elements together])
7. **Delicacy** ('broad' [schematic] vs. 'narrow' [detailed] descriptions)

A few brief remarks on each are in order:

1. Manifestation Although language itself is an abstract system of relationships betweeen relationships, it still has to interface with the real world.

Three possible manifestations of language At the point where language interfaces with physical reality, there are three possible ways in which it can 'manifest itself':

- **sound** (pronunciation) ... from the very beginning
- **writing** (orthography) ... since about 3000 B.C.
- **"signing"** (*Gebärdensprache*) ... for the hearing-impaired

2. Stratification In the course of its evolution, language acquires one more internal 'level' or STRATUM. Furthermore, it comes to be more richly contextualized by 'higher-level' semiotic systems that constrain (and thus enable) its functioning. At the lowest level, there is the biological reality of 'monkeys in shoes' (to borrow Tim Minchin's description of our species) making noises with their faces. At the highest level, there is the social reality of these collectivized hominids living their lives together. In between these levels, there is the semiotic reality of things (such as values) being stood-for by other things (such as vowels).

Higher strata constraining lower strata It is best to start at the bottom and move upwards, looking at how each additional stratum constrains the ones below it. [Note: I have treated the phenomenon of ('restricted' vs. 'elaborated') 'Code' as a separate stratum; this is a simplification of the truth.] It must not be forgotten that Ideology is historically conditioned. What was thinkable and doable for an Australopithecine three million years ago is quite different from what is thinkable and doable for one of its descendants today.

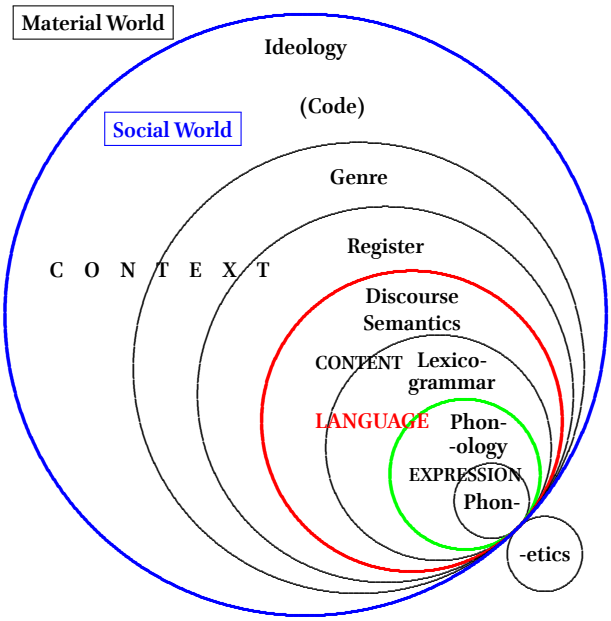
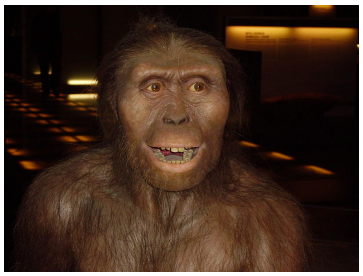


Figure 17: Higher strata constraining lower ones

- *"Language: the noises we make with our faces in order to live"*
- (Reality: Bipedal apes living)
- **Ideology** (what is thinkable? what is doable?)
- **Code** (who's an insider? e.g. two insiders: *„Unn?"* — *„Jo."*)
- **Genre** (what kind of text for what social purpose?)
- **Register** (what's going on? who's taking part? what role is language playing?)
- **Semantics** (what do the words and structures mean... in context?)
- **Lexicogrammar** (what do the words and sentences mean... regardless of context?)
- **Phonology** (are those the kinds of sound patterns you find in English words and sentences?)
- **Phonetics [social/linguistic]** (are those the kinds of sounds you'd hear in English?)
- **Phonetics [physical/biological]** (are those human sounds?)
- (Reality: Bipedal apes making noises with their faces)



Source: Wikipedia / Licence: CC by SA 2.0

Figure 18: Ideology is historically conditioned

It's 3.2 million years ago.
You're an *Australopithecus afarensis*.
What is thinkable?
What is doable?

3. Metafunction Another name for the rather technical-sounding term 'metafunction' is simply 'functional component of language'. Systemic Functional Linguistics makes the explicit claim that the internal arrangement of language (as functional components) reflects the external functions that language is expected to serve in social life. These are, to quote M.A.K. Halliday:

> ... the fundamental components of **meaning** in language are functional components. All languages are organized around two main kinds of meaning, the 'ideational' or reflective, and the 'interpersonal' or active. These components, called 'metafunctions' in the terminology of the present theory, are the manifestations in the linguistic system of the two very general purposes which underlie all uses of language: (i) to understand the environment (ideational), and (ii) to act on the others in it (interpersonal). Combined with these is a third metafunctional component, the 'textual', which breathes relevance into the other two. (Halliday 1985, xiii)

Functional components of language and the type of structure associated with each Each of the functional components of language generates structures of a different type. This allows the structures to be mapped onto each other and combined in more interesting ways.

Function of language		Examples	Structural type
ideational	logical	—Chris said ... that Jane thought ... that Tom had claimed ... that Peter likes Mozart	linear ("string"-like)
	experiential	—the dinosaurs died —an asteroid killed the dinosaurs —Peter likes Mozart —Sally's the cleverest girl in the class	nuclear ("particle"-like)
interpersonal		—he likes Mozart —he's, like, sooo totally into Mozart —I suspect he's possibly rather fond of Mozart, wouldn't you say?	prosodic ("field"-like)
textual		—an asteroid killed the dinosaurs —they were killed by an asteroid —they were killed by one —it was an asteroid that killed them	culminative ("wave"-like)

Table 1: Functional components of language and associated types of structure (1)

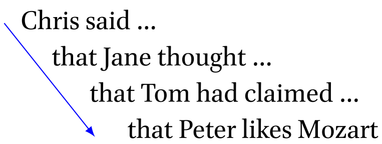
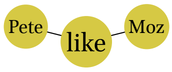
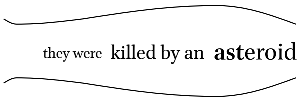
Function of language		Examples	Structural type
⟶ (natural logic) reflecting upon the world (experience) ⟶	modification, quotes/reports, subordination, coordination, apposition, ...		linear (“string”-like)
	processes, participants, circumstances ...		nuclear (“particle”-like)
acting upon the world by interacting with the other people in it: mood, modality, negation, attitude, ...		? suspect...possibly...rather...wouldn’t ?	prosodic (“field”-like)
creating relevance: theme–rheme structure, information structure, ...			culminative (“wave”-like)

Table 2: Functional components of language and associated types of structure (2)

Functions of language associated with changes in pitch (dt.: Tonhöhe) These examples are taken from the phonological stratum, the level at which the sound patterns of a language are described:

in English: **intonation** (more details on this toward the end of the course)

Metafunction	involved?	what work is being done?
logical	yes	e.g. logic of ways of joining clauses together; scope of negation
experiential	no	
interpersonal	yes	e.g. expressing what you feel and want
textual	yes	e.g. indicating what is 'given' and what is 'new'?

Table 3: Chief functions of INTONATION (tonality, tonicity, tone) in English

in Chinese: **lexical tone**

Metafunction	involved?	what work is being done?
experiential	yes	e.g. distinguishing between different concepts: 媽 mā 'Mutter' 蔴 má 'Hanf' 馬 mǎ 'Pferd' 罵 mà 'fluchen'

Table 4: Chief function of tone in Chinese

4. Instantiation This is a concept which is easily misunderstood—hence a deliberately simple analogy is employed here:

The potential and the actual The term 'actual' here means 'real' (dt. 'tatsächlich'), rather than 'current' (dt. 'aktuell').

- Today's weather is an instance of the climate.
- The current text is an instance of the English language.
- The climate is the potential for weather.
- The English language is the potential for English text(s).

climate		weather
POTENTIAL	———————	ACTUAL
language		text

- There are intermediate degrees between the potential and the actual (e.g. a 'register' of a language, or a 'class' of texts).

5. Rank The concept of 'rank' is all about one kind of structure, namely the kind that is easiest to recognize:

Rank: bigger units made up of smaller ones ... exemplified by the structure of English.

The rank scale in grammar:

clause	an asteroid killed the dinosaurs						
group	an asteroid		killed		the dinosaurs		
word	an	asteroid	killed		the	dinosaurs	
morpheme	an	asteroid	kill	ed	the	dinosaur	s

Figure 19: Ranks of grammatical units in English

There is a rank scale in phonology, too:

tone group	. ən **æs** tə rɔɪd **kɪld** ðə **daɪ** nə sɔːz								
foot	. ən	**æs** tə rɔɪd			**kɪld** ðə		**daɪ** nə sɔːz		
syllable	ən	æs	tə	rɔɪd	kɪld	ðə	daɪ	nə	sɔːz
phoneme	ə n	æ s	t ə	r ɔɪ d	k ɪ l d	ð ə	d aɪ	n ə	s ɔː z

Figure 20: Ranks of phonological units in English

A structure is a configuration of functional roles This definition should be learnt by heart and repeated at last twenty times daily: *A structure is a configuration of functional roles.*

syllable ⟶	sɔːz		
roles ⟶	Initial	Nucleus	Final
	↓	↓	↓
phoneme ⟶	s	ɔː	z

or:

syllable ⟶	sɔːz		
roles ⟶	Onset	Rhyme	
		Nucleus	Coda
	↓	↓	↓
phoneme ⟶	s	ɔː	z

Figure 21: Syllable structure in English: two possible analyses

6. Axis The basic concept involved here was introduced by Saussure. Eckert and Barry (2005) provide a good discussion of the two axes in Section III.4. of their book (pp. 30 ff.); they refer to the axes as the 'paradigmatic field' and the 'syntagmatic field'.

Axis: choice (paradigmatic) vs. chain (syntagmatic) The paradigmatic axis is shown vertically, the syntagmatic horizontally:

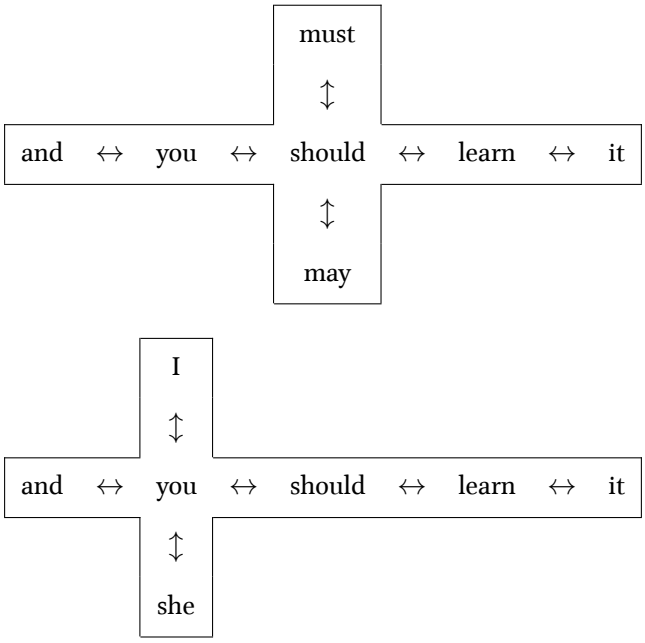


Figure 22: Paradigmatic and syntagmatic axes exemplified via lexicogrammar

There is choice and chain in phonology, too Just as a word can enter into paradigmatic and syntagmatic relations at the lexico-grammatical stratum, a phoneme (*Sprachlaut*) can enter into paradigmatic and syntagmatic relations at the phonological stratum:

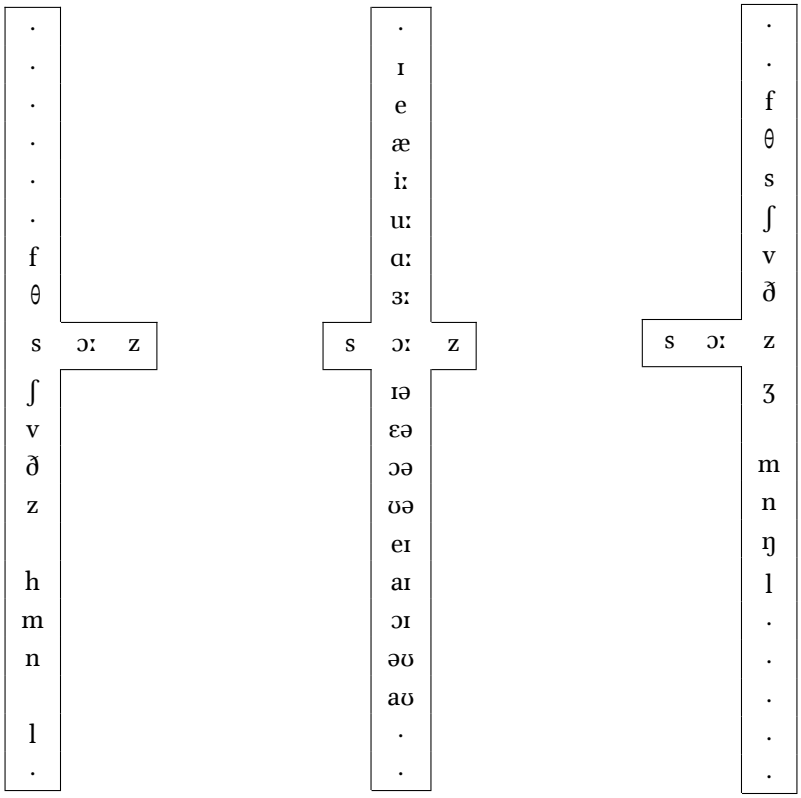


Figure 23: Paradigmatic and syntagmatic axes exemplified via phonology

Syllables that are possible in English include: /sɔːz ʃɔːz lɔːz fɔːθ fɔːs fɔːm fɔːn fɔːl/; it is impossible for a syllable to end with /h/, or begin with /ŋ/ or (probably:) /ʒ/. A list of all possible ways a syllable can begin and end in English is given in a later part of the notes.

7. Delicacy This concept requires some getting used to, but never forget: Delicacy is your friend. You can choose to have as much delicacy as you need, depending on your purposes.

Delicacy: 'broad' vs. 'narrow' transcriptions Below we give some examples:

A 'broad' (less delicate) transcription, making only the minimum necessary number of distinctions:

[ɹed]

A 'narrow' (more delicate) transcription, making as many distinctions as possible:

[ɹ̠ʷe̞d̚]

There is no need to be frightened by narrow transcriptions! Just work through them systematically.

1.3.4 Three kinds of phonetics

Phonetics, as an academic discipline, is concerned with three separate aspects of physical reality: the production, transmission, and reception of the sounds of language:

Articulatory, acoustic and auditory phonetics These can be exemplified using a famous diagram by Saussure:

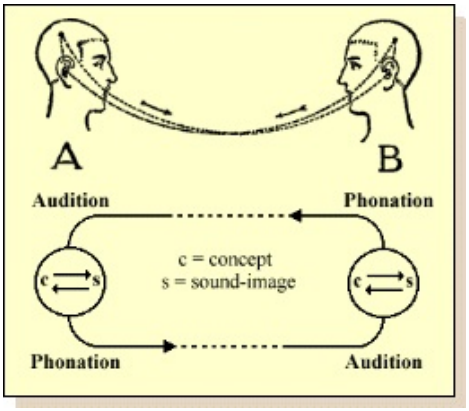


Figure 24: Producing, transmitting, and receiving signs

In this course we will not deal explicitly with auditory phonetics.

1.3.5 Phonetics vs. phonology

This is a topic which it's worth spending some time on right at the beginning, and revisiting at regular intervals.

Why do we need phonology? (1) Phonology is the study of the sound patterns of a language. How can you tell that this is French just by listening to it?

Un petit d'un petit /
S'étonne aux Halles /
Un petit d'un petit /
À degrés te fallent /
Indolent qui ne sort cesse /
Indolent qui ne se mène /
Qu'importe un petit d'un petit /
Tout gai de Reguennes?

from the mediaeval manuscript "Mots d'heures: gousses, rames".

Why do we need phonology? (2) Now compare this strangely similar English poem. How can you tell it is English, just by listening to it? (What about the rhythm?)

Humpty Dumpty /
sat on a wall /
Humpty Dumpty /
had a great fall /
And all the King's horses /
and all the King's men /
Couldn't put Humpty Dumpty /
together again.

source: the traditional collection "Mother Goose Rhymes"

Why do we need phonetics? There are at least two reasons:

1) Spelling is not a good guide to pronunciation:

I take it you already know /
Of tough and bough and cough and dough? /
Others may stumble but not you /
On hiccough, thorough, laugh and through.

2) What do British and Americans think of when they hear a German accent? (Why do they continue to make Nazi jokes, nearly 70 years after the defeat of Nazi Germany? Might it have something to do with the 'meaning' of German-style phonetics? 'Aggressive!', 'Rude!', etc.)

1.4 Possible sources of difficulty

One major source of difficulty is learning to separate the SYNCHRONIC from the DIACHRONIC persective on language. We need to be able to view a particular language, in its current state, as a more-or-less self-contained system; but on the other hand, there are things that can best be understood if we begin by looking at their historical development, rather than the function they have today.

Another source of difficulty is learning to work with several different developmental time-scales all at once: the PHYLOGENETIC (the way language evolves as a collective phenomenon over thousands and millions and years); the ONTOGENETIC (the way language develops in one particular biological individual throughout his-or-her lifespan); and finally the LOGOGENETIC (the way language changes slightly in the course of being used to produce or consume a single text). It is important to view these different time-scales as simply points on a continuum. It is the ways language is used (in the logogenetic perspective) that ultimately determine the way it evolves (phylogenetically).

Two disciplines are concerned with the sounds of language: LINGUISTICS and PHONETICS. Each has its own traditional way of doing things.

Subject concerned	Phonetics	Linguistics			
Level (general):	SUBSTANCE (phonic or graphic)	relation of form and substance	FORM	CONTEXT (relation of form and situation)	situation (non-linguistic phenomena)
Level (specific):	PHONETICS (sounds)	PHONOLOGY (sound system)	GRAMMAR & LEXIS (vocabulary)	SEMANTICS	
	SCRIPT	'GRAPHOLOGY' (writing system)			

Table 5: Levels (strata) of language, based on Halliday, McIntosh and Strevens (1964: 18) as presented by Matthiessen (2007), slightly modified

There are two traditions within linguistics: the ETHNOGRAPHIC-RHETORICAL and the PHILOSOPHICAL-LOGICAL. The second is the one that is currently dominant; the first is the one that informs this course. Whereas the philosophical-logical tradition stresses the universality of language and its role in enabling (or constraining) human thought, the ethnographic-rhetorical perspective celebrates the diversity of language(s) and the role(s) played by language in the economic and social life of a community. The two traditions use slightly differing terminology.

1.5 Further reading

If you want to explore some of these ideas further, I recommend the reading material that accompanies my course *Expanding your English vocabulary skills* in winter semester. You can obtain a hardcopy of the reading material by sending me an email, or asking me immediately after the end of one of the *Phonetics with Listening Practice* classes.

1.6 Worksheet

As homework for next week, read the following poem and make sure you know how to pronounce all the words that occur in it. If necessary, look them up in a good dictionary. (But beware the Concise Oxford Dictionary, and any standard 'native speaker' dictionary published in North America, such as Merriam Webster! Not that these are not good dictionaries! It's just that they use some 'non-standard' ways of representing English pronunciation!)

> I take it you already know
> Of tough and bough and cough and dough?
> Others may stumble but not you,
> On hiccough, thorough, lough and through.
>
> Well done! And now you wish, perhaps,
> To learn of less familiar traps?
> Beware of heard, a dreadful word
> That looks like beard but sounds like bird,
>
> And dead—it's said like bed, not bead—
> For goodness' sake, don't call it deed!
> Watch out for meat and great and threat
> (They rhyme with suite and straight and debt).
>
> A moth is not a moth in mother,
> Nor both in bother, broth in brother,
> And here is not a match for there,
> Nor dear and fear for bear and pear,
>
> And then there's dose and rose and lose–
> Just look them up–and loose and choose,
> And cork and work and card and ward,
> And font and front and word and sword,
>
> And do and go and thwart and cart—
> Come, come, I've hardly made a start!
> A dreadful language? Man alive!
> I'd mastered it when I was five!

(Source: `http://tinyurl.com/6y2zgw7` (modified))

Note that there are many slightly different versions of this poem in circulation.

2 Theoretical introduction (2): phonetics, phonology, and writing

IPA symbols needed for writing English phonemes

Consonants:

p			t				k	
b			d				g	
					tʃ			
					dʒ			
	f	θ		s		ʃ		h
	v	ð		z		ʒ		
m			n				ŋ	
			l			r		
w							j	

pit			to				cod	
bit			do				god	
					chin			
					gin			
	fin	thin		sin		shin		hit
	van	the		zoo		vision		
man			not				sing	
			lay			ray		
wet							yet	

Vowels:

	ə	

the		

ɪ		ʊ
e		
æ	ʌ	ɒ

rick		rook
reck		
rack	ruck	rock

iː		uː
	ɜː	ɔː
		ɑː

meet		moot
	pert	port
		part

eɪ		ɔɪ
aɪ		

mate		boil
mite		

	əʊ	
aʊ		

	note	
now		

ɪə		ʊə
eə		

mere		gourd
mare		

eɪə		ɔɪə
aɪə		

player		employer
tire		

	əʊə	
aʊə		

	lower	
tower		

THE INTERNATIONAL PHONETIC ALPHABET (revised to 2015)

CONSONANTS (PULMONIC)

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b			t d		ʈ ɖ	c ɟ	k ɡ	q ɢ		ʔ
Nasal	m	ɱ		n		ɳ	ɲ	ŋ	ɴ		
Trill	ʙ			r					ʀ		
Tap or Flap		ⱱ		ɾ		ɽ					
Fricative	ɸ β	f v	θ ð	s z	ʃ ʒ	ʂ ʐ	ç ʝ	x ɣ	χ ʁ	ħ ʕ	h ɦ
Lateral fricative				ɬ ɮ							
Approximant		ʋ		ɹ		ɻ	j	ɰ			
Lateral approximant				l		ɭ	ʎ	ʟ			

Symbols to the right in a cell are voiced, to the left are voiceless. Shaded areas denote articulations judged impossible.

CONSONANTS (NON-PULMONIC)

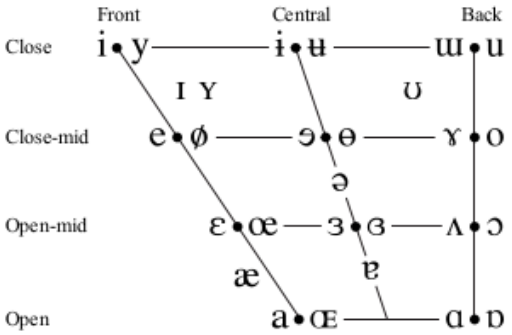
Clicks	Voiced implosives	Ejectives
ʘ Bilabial	ɓ Bilabial	ʼ Examples:
ǀ Dental	ɗ Dental/alveolar	pʼ Bilabial
ǃ (Post)alveolar	ʄ Palatal	tʼ Dental/alveolar
ǂ Palatoalveolar	ɠ Velar	kʼ Velar
ǁ Alveolar lateral	ʛ Uvular	sʼ Alveolar fricative

OTHER SYMBOLS

- ʍ Voiceless labial-velar fricative
- w Voiced labial-velar approximant
- ɥ Voiced labial-palatal approximant
- ʜ Voiceless epiglottal fricative
- ʢ Voiced epiglottal fricative
- ʡ Epiglottal plosive
- ɕ ʑ Alveolo-palatal fricatives
- ɺ Voiced alveolar lateral flap
- ɧ Simultaneous ʃ and x

Affricates and double articulations can be represented by two symbols joined by a tie bar if necessary. t͡s k͡p

VOWELS



Where symbols appear in pairs, the one to the right represents a rounded vowel.

SUPRASEGMENTALS

- ˈ Primary stress ˌfoʊnəˈtɪʃən
- ˌ Secondary stress
- ː Long eː
- ˑ Half-long eˑ
- ˘ Extra-short ĕ
- ǀ Minor (foot) group
- ‖ Major (intonation) group
- . Syllable break ɹi.ækt
- ‿ Linking (absence of a break)

TONES AND WORD ACCENTS

LEVEL		CONTOUR	
ȅ or ˥	Extra high	ě or ˩˥	Rising
é ˦	High	ê ˥˩	Falling
ē ˧	Mid	ĕ ˦˥	High rising
è ˨	Low	ȅ ˩˨	Low rising
ȅ ˩	Extra low	ê ˥˩˥	Rising-falling
↓	Downstep	↗	Global rise
↑	Upstep	↘	Global fall

DIACRITICS

Some diacritics may be placed above a symbol with a descender, e.g. ŋ̊

̥	Voiceless	n̥ d̥	̤	Breathy voiced	b̤ a̤	̪	Dental	t̪ d̪
̬	Voiced	s̬ t̬	̰	Creaky voiced	b̰ a̰	̺	Apical	t̺ d̺
ʰ	Aspirated	tʰ dʰ	̼	Linguolabial	t̼ d̼	̻	Laminal	t̻ d̻
̹	More rounded	ɔ̹	ʷ	Labialized	tʷ dʷ	̃	Nasalized	ẽ
̜	Less rounded	ɔ̜	ʲ	Palatalized	tʲ dʲ	ⁿ	Nasal release	dⁿ
̟	Advanced	u̟	ˠ	Velarized	tˠ dˠ	ˡ	Lateral release	dˡ
̠	Retracted	e̠	ˤ	Pharyngealized	tˤ dˤ	̚	No audible release	d̚
̈	Centralized	ë	̴	Velarized or pharyngealized	ɫ			
̽	Mid-centralized	e̽	̝	Raised	e̝	(ɹ̝ = voiced alveolar fricative)		
̩	Syllabic	n̩	̞	Lowered	e̞	(β̞ = voiced bilabial approximant)		
̯	Non-syllabic	e̯	̘	Advanced Tongue Root	e̘			
˞	Rhoticity	ə˞ a˞	̙	Retracted Tongue Root	e̙			

Typefaces: Doulos SIL (metatext); Doulos SIL, IPA Kiel, IPA LS Uni (symbols)

2.1 Workpoints

"The English writing system

There is a tendency for mixed languages to get mixed scripts. Japanese is one example; English is another.

Like Japanese, English has been through a great deal of outside influence. After the English overran Britain, their language was strongly influenced by the native Celtic languages—hardly at all in vocabulary, but quite considerably in some aspects of its grammar. Next it was successively invaded by Norwegian, Danish, and Norman French; then in the Renaissance, it took over massive doses of Latin and Greek, not only lexical roots but also large numbers of affixes and the morphological processes that went with them.

Like every other European language, English inherited an alphabetic writing system; and after a few letters had been added (Latin had a very simple phonological system, so its alphabet is rather impoverished from the point of view of most other languages), it was excellently suited to the writing of Old English (Anglo-Saxon). The Norman French scribes destroyed some of its good qualities, by refusing to write the symbols they did not recognise; but what really perturbed it were two phenomena that took place in the language itself. One was the great internal upheaval that took place in Middle English (1100–1500), when the language changed extremely quickly and a dialectally mixed standard variety evolved; the other was the inflow of Graeco-Romance elements from 1450 onwards, already referred to above.

The effect on the writing system was likewise twofold. Just when the spelling was becoming standardised, it had suddenly grown rather archaic; the language had changed, and the spelling continued to reflect its earlier phonological patterns. Secondly, the Latin and Greek borrowings brought with them new phonological patterns from outside that had somehow to be reconciled with the native ones—while at the same time the Latin (and Latinized Greek) spelling was retained largely unaltered. There were thus two partially distinct phonological systems, compatible but not homogenised, each represented by different spelling conventions neither of which was particularly appropriate.

The French, who had similar problems, tackled them by setting up an Academy, which would legislate about the language and its orthography; the result was a writing system that is consistent but massively archaic. The English, equally characteristically, let things take their course, and ended up with a writing system that looks incredibly muddled, but in which the superficial messiness hides a rather effective compromise between the old and the new, the native and the foreign. It is far from perfect; but it has many virtues—not the least of which is that it is quietly neutral among all the various native and non-native forms of English that are now spoken around the world."

Source: M. A. K. Halliday, *Spoken and written language.* Deakin University, Victoria: Deakin University Press, 1985, pp 26–27.

2.2 Learning goals

In this unit, you will learn:

1. about the historical development of writing systems
2. about the unconscious, collective insights into the structure of language that informed this development
3. about the initial historical need for an applied linguistics, including studies of spelling and pronunciation
4. about the purposes and limitations of using the International Phonetic Alphabet
5. about the difference between phonetics and phonology
6. about the differences between consonant sounds and vowel sounds

2.3 Writing and sound

2.3.1 The nature of writing

After it had already existed for tens of thousands of generations in its spoken manifestation, language acquired an additional, written manifestation a few thousand years after the neolithic revolution. The invention of writing was made necessary by. and went hand in hand with, the development of class society and the State. The main initial purpose of writing appears to have been public administration, including taxation of wealth.

Writing initially involved taking another semiotic system—a pictorial one—and reinterpreting it in such a way that, instead of drawing stylized symbols for things (as when a child draws a house as a square, with a triangle on top for the roof, and a rectangle for the door, and a square next to the door for the window), people now interpreted those symbols as standing for **the words that stood for** the things.

Once this principle was established, it became possible to take advantage of the fact that words get pronounced, and their pronunciation typically consists of a sequence of one or more syllables, each of which in turn consists of a sequence of one or more mutually distinguishable sounds. So if I needed a symbol that meant 'king', I could simply draw a picture of a king, or of the crown that identified him as a king. But if the *word* for 'king' in my language was pronounced, say, **melek**, then I could write one or more symbols that indicated the pronunciation of the word in some way. I could break the word down into two syllables, or five sounds, or—depending on what kind of language it was—I could even simply indicate the three consonant sounds **m**, **l**, and **k**, and leave out the vowels, on the grounds that the consonants were sufficient to identify which word was intended (as is the case in Semitic languages, such as Phoenician, and Hebrew, and Arabic). A good way of representing these three consonant sounds would be to draw stylized pictures of (the meaning of each of) the words **mayim** 'water', **lamed** 'goad' (dt. 'Treibstock') and **kaph** 'hand'.

It is often said that a language gets the writing system it deserves; thus, Chinese has a writing system in which the symbols—the 'characters'—stand for words (more exactly: for morphemes, which are the smallest elements that have both a meaning and a pronunciation, and are the component parts of words). In Chinese these elements are also 'monosyllabic', i.e. their pronunciation is always precisely one syllable long. And since Chinese syllables cannot be easily analyzed into smaller units of sound, such as phonemes, the Chinese writing system never developed in the direction of an alphabet (in which there would ideally be one symbol for every distinct sound).

But even in languages with an alphabetic writing system, the things that are being written are still words. There may be no spaces between the words (for instance, the earliest Greek manuscripts that have come down to us do not indicate the word boundaries in any way); but the purpose of alphabetic writing is nevertheless to write words.

A few centuries after the invention of writing, civilizations in India, China, and Europe began to pursue systematic studies of language. It seems that the motivation for doing so was provided by language variation and language change. Where a language had changed over time, it became necessary to preserve the knowledge of certain highly-valued texts—such as the poems of Homer in Ancient Greece. Language variation, too, posed the problem that not all varieties were held to be of equal value; people who had learnt, say, Latin as a second language when they became citizens of the Roman Empire, might desire to improve their spoken or written Latin in order to further their professional career.

Finally, in nineteenth century Europe, at about the same time as compulsory public education was introduced in the advanced capitalist countries, phoneticians made a serious attempt to establish an internationally valid way of transcribing the sounds of speech. This is what is today known as the "IPA", the International Phonetic Alphabet of the International Phonetic Association (see page 33). Once again, the motivations were related to language teaching—teaching people a second or foreign language, or trying to make speakers of a non-standard regional or social dialect more proficient in the 'high-status' form of the language (such as Hochdeutsch, or Oxford English, or whatever the standard was).

Now, you can perhaps imagine how intense the discussions must have been between German, French, and English phoneticians about which sound the letter **j** should stand for in an official, international, scientific way of transcribing sounds. German phoneticians wanted it to represent the same sound as in German *ja*, French phoneticians naturally felt it should stand for the sound it had in the French first person singular personal pronoun *je*, and English phoneticians would have preferred to have it stand for the sound it had in the English word *jelly*.

2.3.2 Why do we need phonetic transcription?

As you certainly noticed when you were doing the homework in preparation for this week's class, English spelling is often a very unreliable guide to English pronunciation. This poses a serious problem whenever it is necessary to discuss English pronunciation systematically.

> I take it you already know
> Of tough and bough and cough and dough?
> Others may stumble but not you
> On hiccough, thorough, lough, and through.

From the "spelling poem" (Eckert and Barry p. 253; but note that Eckert and Barry have taken "laugh" instead of "lough").

If we transcribed the problematic words using the IPA, we would have the following 're-spellings', which would turn out to be an unambiguous guide to the pronunciation:

Normal orthography	IPA transcription British	American
tough	tʌf	təf
bough	baʊ	baʊ
cough	kɒf	kɑf
dough	dəʊ	doʊ
hiccough	ˈhɪkʌp	ˈhɪkəp
thorough	ˈθʌrə	ˈθəroʊ
lough	lɒx	lɑx
laugh	lɑːf	læf
through	θruː	θruː

Table 6: The IPA used to re-spell words whose traditional spelling is problematic

The pronunciations given in Table 6 are based on 'Southern British English' (the normal speech of educated people from the southern part of England) and 'General American' (the normal speech of educated people from the American Midwest). The symbol used for the "r" sound here is simply: r. In a more careful transcription it would be ɹ (but this would raise an issue in the case of the word "through" that will be discussed later). A "lough" is a lake; this is the Anglo-Irish spelling of the word, the Scottish spelling is "loch". The sound at the end of the word is the same as the sound at the end of the German word "Loch", meaning a hole.

Further problems would become apparent if, instead of just showing the pronunciation of a few words in isolation, we tried to transcribe the whole poem as it would typically be read... or as it was actually read, by a particular person, on a particular occasion.

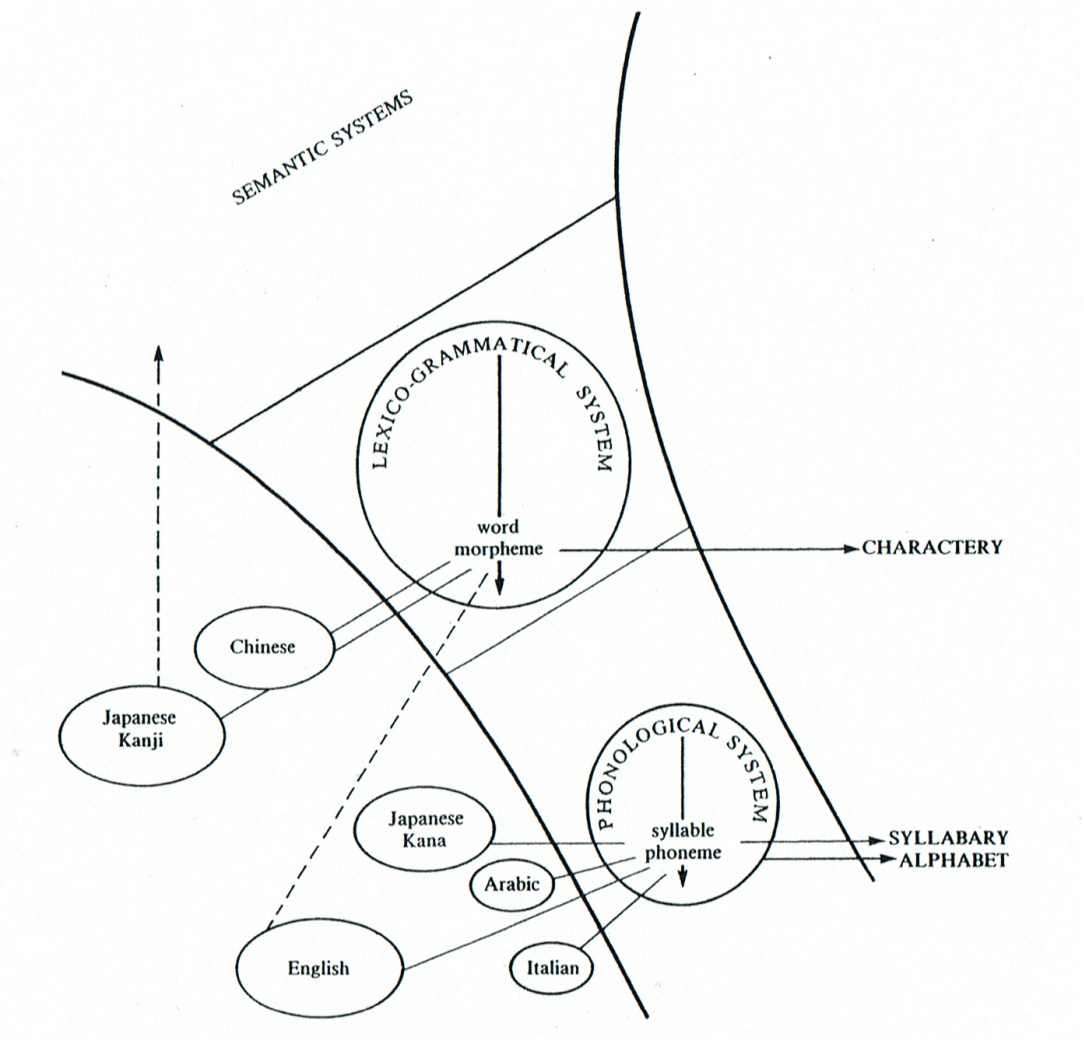


Figure 25: How writing systems represent language
Source: M.A.K. Halliday:
Spoken and written language.
Deakin University Press,
1985: 43

2.3.3 Hearing *what's* said vs. listening to *how* it's said

- Normally, we listen to someone to hear what he/she is saying.
- What did the person say? Click here to hear [klɪk hɪə tə hɪə]
  - "Ich bin in den Laden reingegangen..."?
  - "Bin in den Laden reingegangen..."?
  - "Bin in'n Laden reingegangen..."?
  - "Bin in'n Lad'n reingegang'ng..."?
- Orthography is not very good at capturing the details of the pronunciation:
  - [bɪn ɪn̩ ˈlaːdn̩ ˈʁaɪŋgəˈgan̩]
- But how much detail should we try to capture in our transcription of the sound?

When sound-based writing was invented the first time round, it was intuitively clear to the users of this new 'manifestation' of language that only those features of the sound should be written down that made a difference to the meaning. Whenever sound-based writing is *re*-invented, in the form of phonetic transcription for the purpose of studying language scientifically, the issue of 'what to write down' arises again. But in the context of studying language, rather than simply using language, there is the possibility that one might want to transcribe every fine detail of a particular utterance by a particular person at a particular time and place under particular conditions, rather than simply transcribing those aspects of the sound that 'make a difference'. Phoneticians are often inconsistent on this point. For example, they have a maddening tendency to want to include word breaks in their transcriptions of actual utterances, as if they were simply 're-inventing alphabetic writing':

⟨Ich bin in den Laden reingegangen.⟩ — standard orthography

/ʔɪç bɪn ʔɪn deːn ˈlaːdən ˈʁaɪŋgəˌganən/ — a phonemic transcription

[bɪn ɪn ̩ ˈlaːdn̩ ˈʁaɪŋgəˈgan̩] — a phonetic transcription with word breaks

[ˈbɪnɪn̩ˈlaːdn̩ˈʁaɪŋgəˈgan̩] — a phonetic transcription without word breaks

It could be argued that leaving out the word breaks makes the transcription of an utterance much harder to read. But if the intention was really to show the sound, rather than the meaning, then it might be better to indicate the breaks between syllables, as here:

[ˈbɪn.ɪn.n̩.ˈlaː.dn̩.ˈʁaɪŋ.gə.ˈgan̩] — a phonetic transcription with syllable breaks

But what exactly is the difference between a phonetic and a phonemic transcription?

2.3.4 Phonetic vs. phonological (e.g. phonemic) transcription

Recall that there are different LEVELS (a.k.a. STRATA) in language, as well as different MANIFESTATIONS (e.g. written and spoken).

TIN STEP LETDOWN		lexicogrammatical
⟨t⟩	/ t /	{graph | phon}emic
ᴛ ɨ ʈ	[tʰ] [t] [t̚]	{graph | phon}etic
photons	sound waves	physical reality

Figure 26: -emic vs -etic representations. Note the conventions: ⟨t⟩ / t / [t]

In the English language, at the lexicogrammatical stratum (vocabulary and grammar), we can identify the three words shown in Figure 26: TIN, STEP, and LETDOWN.

Each of these words is 'realized as' (or 'stood for by') a sequence of graphemes (letters) and a sequence of phonemes (speech sounds). Phonemes are *phonological* units, i.e. they are part of the sound *system* (in German you could call phonemes 'Sprachlaute'). But phonemes in turn are realized as 'phones' ('Sprechlaute'), i.e. the actual sounds used in speaking. These sounds are realized as (or 'carried by') sound waves.

Similarly, graphemes are part of the writing system; they are the abstract, 'ideal' letters that underlie the actual concrete shapes that people write or printers print, and these shapes are carried by (or 'realized as') photons, particles/waves of light.

2.3.5 Consonants and vowels: phonetics and phonology

- Phonetically: vowels involve merely a "shaping" of the airflow from the lungs
- Phonetically: consonants involve more of a restriction or obstruction of the airflow
- Phonologically: a vowel typically functions as the Nucleus of a syllable
- Phonologically: a consonant typically functions as the Onset (Initial) or Coda (Final) element in the structure of a syllable
- And don't confuse vowel/consonant "letters" (⟨ ⟩) with vowel/consonant "sounds" (/ / and [ ]); the above is about "sounds".

2.3.6 Phonetics vs. phonology: different strata

Confronting phonetics with phonology

- Page 33 of the course notes: official full IPA chart
- Page 32 of the course notes: list of English phonemes
- What differences do you notice between the two pages?

-etic vs. -emic: a difference of perspective

- An -etic description is made from the perpective of an "outsider":
- — "what gestures / shapes / sounds can I in fact observe?"
- An -emic description is made from the perspective of an "insider"
- — which *differences* between gestures / shapes / sounds are likely to **stand for a difference in MEANING** within one particular language?

2.4 Possible sources of difficulty

The main difficulty will be to learn to 'shift perspective' when dealing with sound:

- Two sounds may sound (to your ears) so similar that you assume they are just two different variants of the *same* sound (i.e. you hear two PHONES and assume they are two ALLOPHONES of the same PHONEME)—because that's the way things are in your native language
- Two phones may sound (to your ears) so different that you assume they could not possibly be two allophones of the same phoneme—because you haven't yet learnt to function within the sound system of the language you're learning.

2.5 Further reading

There are some good examples to help you learn the difference between phonetic and phonemic analyses of sound in Eckert and Barry (2005), chapter III, pages 9 to 35.

2.6 Worksheet

Learn the names of the parts of the vocal tract, and the adjectives associated with them. (You can find the information you need at: http://en.wikipedia.org/wiki/File:Places_of_articulation.svg.) Make sure that you can identify each of the numbered locations on the diagram below:

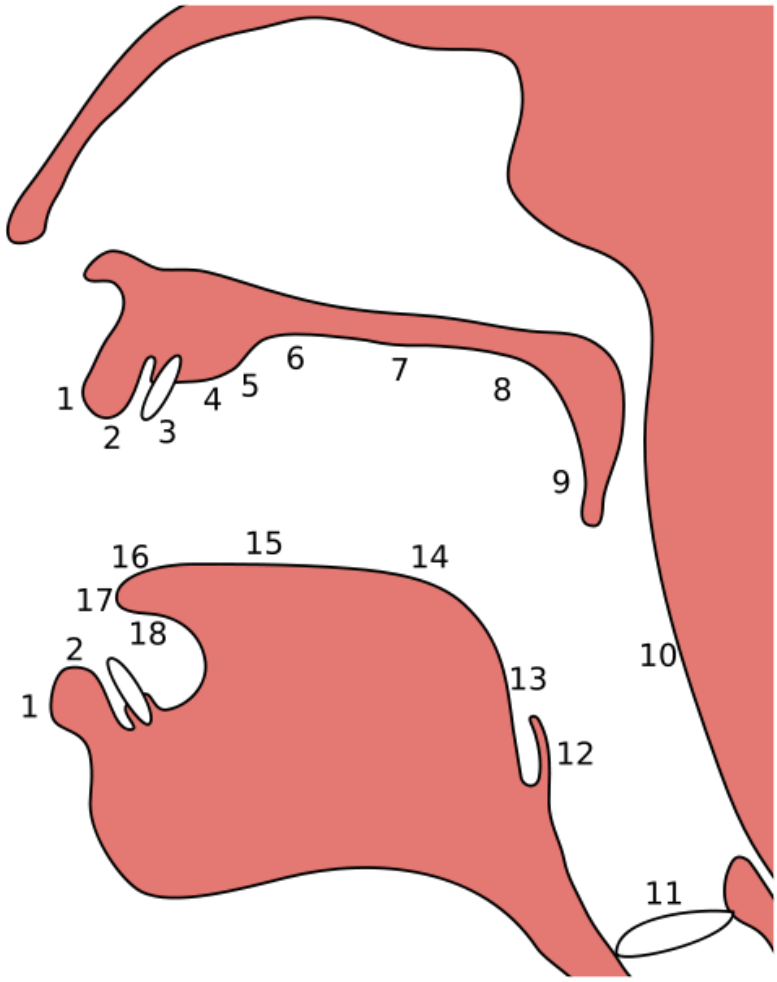


Figure 27: Places of articulation. Image: Wikipedia, based on Minifie et al. (1973) and Catford (1977)