The sound of language:

The two primary fields of linguistics concerned with speech sounds – those sounds that are used by humans to communicate – are phonetics and phonology. Both areas are mutually dependent. Phonetics describes the concrete, physical dimension of sounds, such as whether they are *voiced* or *voiceless* and their *place and manner of articulation*. The aspect of sound production is particularly what *articulatory phonetics* is concerned with, while *acoustic* and *auditory phonetics* deal with the characteristics of sound waves and how they are perceived by the human ear.

While phonetics deals with the form of sounds (how they are produced, heard and how they can be described), phonology is concerned with the function of sounds, that is, with their meaning in a given language. By systematically studying phonological differences between languages, it is for example possible to predict what sounds the learner of a second language will have difficulties with or why certain languages are judged as more difficult to learn in terms of pronunciation than others.

Phones

The basic unit of phonetics is called a phone, which is basically any human speech sound. Remember, phonetics is only concerned with "sounds as such", so any sound that comes out of a person's mouth can be called a phone. In contrast to this, the basic unit in phonology is the phoneme, which is any sound in a language that differentiates meaning. In linguistic contexts, phones are often expressed by placing brackets around a transcription (e.g. [dæns] for American *dance*).

Phonemes

The relationship of sound and meaning can be explained by looking into whether a difference in sound structure causes a shift in meaning or not. Try this by saying the following words out loud:

look – book – cook – took

You will notice right away that their sound patterns are similar except for the initial sound (*l, b, c, t*). The fact that replacing one sound with another (for example, *l* with *b*) yields a different meaningful word in English demonstrates that the speech sounds *l* and *b* are phonemes in the English language. Linguists normally write phonemes with slashes around the transcriptions,

e.g. /l/ and /b/. An case like *look – book* that demonstrates that /l/ and /b/ are phonemes is called a minimal pair.

Now compare this with another example:

tea – he

At first this might be confusing. While the spelling of *look, book* etc happens to be similar, except at the beginning of the word where the distinct phoneme occurs, the spelling of *tea* and *he* is not similar. But they still form a minimal pair for the phonemes /t/ and /h/, because the rest of the sound pattern is identical.

The key here is to recognize that we are dealing with sounds, not spelling. Two sounds may be distinct phonemes while being represented by the same letters, or be completely identical in terms of sound structure but look different in writing.

Examples:

see – sea

Identical sound, different spelling – not a minimal pair, because we're looking at a difference that exists only in writing.

th<u>e</u> – m<u>e</u>

The final sound looks similar in writing, but is there is an obvious sound difference between short and long *e*. However, these two words are not suitable candidates for a minimal pair test, as the rest of the sound pattern is not identical.

Allophones

What, then, about sounds which are different but do not differentiate meaning? Take this example:

<u>l</u>ip – pi<u>ll</u>

While the difference is slight, you might notice that /l/ does not sound exactly the same in *lip* and *pill* (try to keep track of where you place the tip of your tongue). Such a difference depends on many factors – in this case whether the sound is at the beginning or end of the word. Other examples for such factors include dialectal differences (think about how British vs.

American speakers say *dance* or *France*) and there is even a certain degree of difference among individuals. The decisive contrast between this and the examples above is that such variants don't differentiate meaning. The *l*s in *lip* and *pill* are both allophones of the phoneme /l/.

What is it good for?

Why is it important whether we are dealing with allophones of the same phoneme or with entirely different phonemes? Have a look at this table describing the phoneme inventory of Standard Mandarin, the official language of China. One difference that you are likely to notice is that Standard Mandarin lacks the voiced bilabial, alveolar and velar plosives /b/, /d/ and /g/. However, it has aspirated (ger. *behaucht*) versions of these consonants, which are distinct phonemes: p^h, t^h, k^h. In other words, a difference that does not distinguish meaning in English (aspiration) is a salient difference in Mandarin Chinese, while another one (voicing of plosives) distinguishes meaning in English but not in Chinese.

Side by side

The following table gives an summarizing overview of the differences between phonetics and phonology.

phonetics	phonology
sounds as such	sounds as parts of a sound system
language use (*parole*)	language system (*langue*)
language-independent	language-dependent
substance	function
concrete	abstract
phone [ ]	phoneme / /

The human vocal tract

What is for linguistic purposes identified as the vocal tract fills several functions, among them breathing and ingesting food. The production of speech sounds is essentially realized by directing the flow of air through the articulatory system in specific ways – for example by letting air escape gradually in a sort of hiss, by letting air pressure build and then suddenly releasing it, by letting the vocal cords vibrate etc.

Describing speech sounds

Speech sounds are usually described via their articulatory qualities, i.e. their

- **place of articulation (*where* in the vocal tract they are generated)**
- **manner of articulation (*how* they are generated)**

and whether they are

- **voiced or voiceless (whether they make the vocal cords vibrate or not)**

Vowels vs. consonants

One basic phonetic differentiation that can be made when classifying speech sounds is that they fall into two relatively distinct categories:

- **vowels, which are produced by letting air flow through the articulatory system without any constraints and**

- **consonants, which feature some sort of obstruction of the air flow in the vocal tract**

Vowels are generally voiced, while English consonants can be either voiced or voiceless.

Place of articulation

The following list describes the main places of articulation for English consonants. Note that the use of certain places and manners of articulation is common in some languages but not in others. For example, Arabic has two pharyngeal consonants that English lacks (/ħ/ and /ʕ/). An example that you are familiar with are the *Umlaut* vowels that occur in German but not in English and the dental fricative (the "th") that is common in English but not in German.

Lips

A sound that is produced by pressing the lips together is called bilabial.
Sounds: /p/, /b/, /m/ (and, to some extent, the labial-velar approximant /w/)

A sound that involves using the lips and teeth together is described as labio-dental.
Sounds: /f/, /v/

Teeth

A sound that is created by placing the tip of the tongue behind the upper teeth is dental.
Sounds: /θ/, /ð/

Alveolar ridge

A sound that is produced by tapping the tongue against the area a bit behind the teeth (called the alveolar ridge) is referred to as alveolar.
Sounds: /t/, /d/, /n/, /s/, /z/, /ɹ/, /l/

Alveolar ridge and hard palate

A sound that originates between the alveolar ridge and the hard palate is called palato-alveolar or post-alveolar.
Sounds: /ʃ/, /ʒ/, /tʃ/, /dʒ/

Hard palate

A sound that comes from the middle section of the roof of the mouth (the hard palate) is called palatal.
Sound: /j/

Soft palate (velum)

A sound the is produced in the upper back area of the mouth (the soft palate or velum) is described as velar.
Sounds: /k/, /g/, /ŋ/

Throat

A sound that originates in the throat (or, more specifically, the glottis) is referred to as glottal.
Sound: /h/

Manner of articulation

The term *manner of articulation* is generally used to explain *how* a sound is produced. Place, manner and voicing are usually named together, allowing us to describe */z/* as a *voiced alveolar fricative*.

Plosives

These sounds (also referred to as *stops*) occur when there is an initial blockage of both the oral and nasal cavities of the vocal tract (and therefore no air flow), which is then suddenly released.
Sounds: /p/, /b/, /t/, /d/, /k/, /g/

Nasals

When articulating a nasal the air flow completely bypasses the oral cavity, instead flowing through the nose. The precise position of the tongue during articulation determines the resulting sound.
Sounds: /m/, /n/

Fricatives

Fricatives are produced by forcing air through a narrow channel made by placing two articulatory organs closely together (for example, upper lip and lower teeth in /f/).
<u>Sounds:</u> /f/, /v/, /θ/, /ð/, /s/, /z/, /ʃ/, /ʒ/, /h/

Africatives

Africatives combine plosive with fricative qualities, first blocking the air stream and then *slowly* releasing it (in contrast to normal plosives, which release pressure *suddenly*).
<u>Sounds:</u> /tʃ/, /dʒ/

Approximants

The articulation of these speech sounds involves only very slight obstruction of the air flow, which is why some approximants are considered to be relatively close to vowels (so-called *half-vowels*). The exact realization of the approximant /r/ (as either /ɹ/ or /ɻ/) is one of the characteristic differences between British and American English dialects*.
<u>Sounds:</u> /l/ (lateral-alveolar approximant), /j/ (palatal approximant), /w/ (labial-velar approximant), /ɹ/ (lateral approximant in British RP), /ɻ/ (retroflex approximant in American English)

*** Note that there is really no single *British* or *American English* in the precise linguistic sense. *British* could theoretically include Scots (which is widely regarded as a seperate language), Received Pronunciation and Cockney, while *American* would geographically conflate Canadian English with Southern US-American and countless other regional and social varieties. Always keep in mind that tags like *British English* and *American English* are idealized blanket labels which are generally not specific enough for linguistic purposes.**