The art of the chart

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Most teachers of English will have come across a sound chart at some point, but few realise how arbitrary they are. I do not mean 'arbitrary' in the negative sense of 'with no good reason', but rather in the sense that there are choices that the designer has had to make. At every stage in the creation of a chart, the author will have made decisions which could equally well have been otherwise. Phonetic facts interplay with pedagogic priorities and graphic limitations, and these forces do not always pull in the same direction, so that compromises are required. Chart design is as much an art as a science. A chart is not objective reality, but one person's model of reality. In this article, I will present a sound chart of my own creation and explain the rationale for the decisions I made when designing it.

Background

I designed this chart while teaching pronunciation classes at a language school in the North West of England. My students are from many different language backgrounds. Their level tends to be around B1 or B2 and their interest in pronunciation is for general language competence – not part of an academic linguistics course, for example. None of them has yet expressed to me a desire to acquire a specifically British accent, and they seem perfectly at home with the idea of international intelligibility as an objective. I myself have a GB (General British) accent, with some Northern regional features, eroded after 30 years abroad. No doubt all these aspects of my context have influenced the design of the chart.

My objective was twofold:

1. To create a poster for reference in passing during any given lesson. Over time, as students become accustomed to it, such a poster also serves as a mnemonic, jogging students' memory of pronunciation features previously studied.

2. To create a visual which could be used in intensively in lessons exploring the sound system, or parts of it. Such a model would help students see the whole system at a glance, and patterning among the various sounds within it.

At the school where I work, many classrooms have a print of Arian Underhill's (2005) phonemic chart on the wall. While this chart serves the above two objectives very effectively, I found certain features frustrating. For example, Underhill's chart has diphthongs in a separate block from other vowel sounds, creating a huge distance between /eə/ and /e/, for instance – sounds which for me are very closely related as a long-short pair. Another feature which I felt often led to problems in class was the placement of schwa as a sound on a par with the rest, whereas to me it is distinctive in kind. For these and other reasons, I decided to try out a different design.

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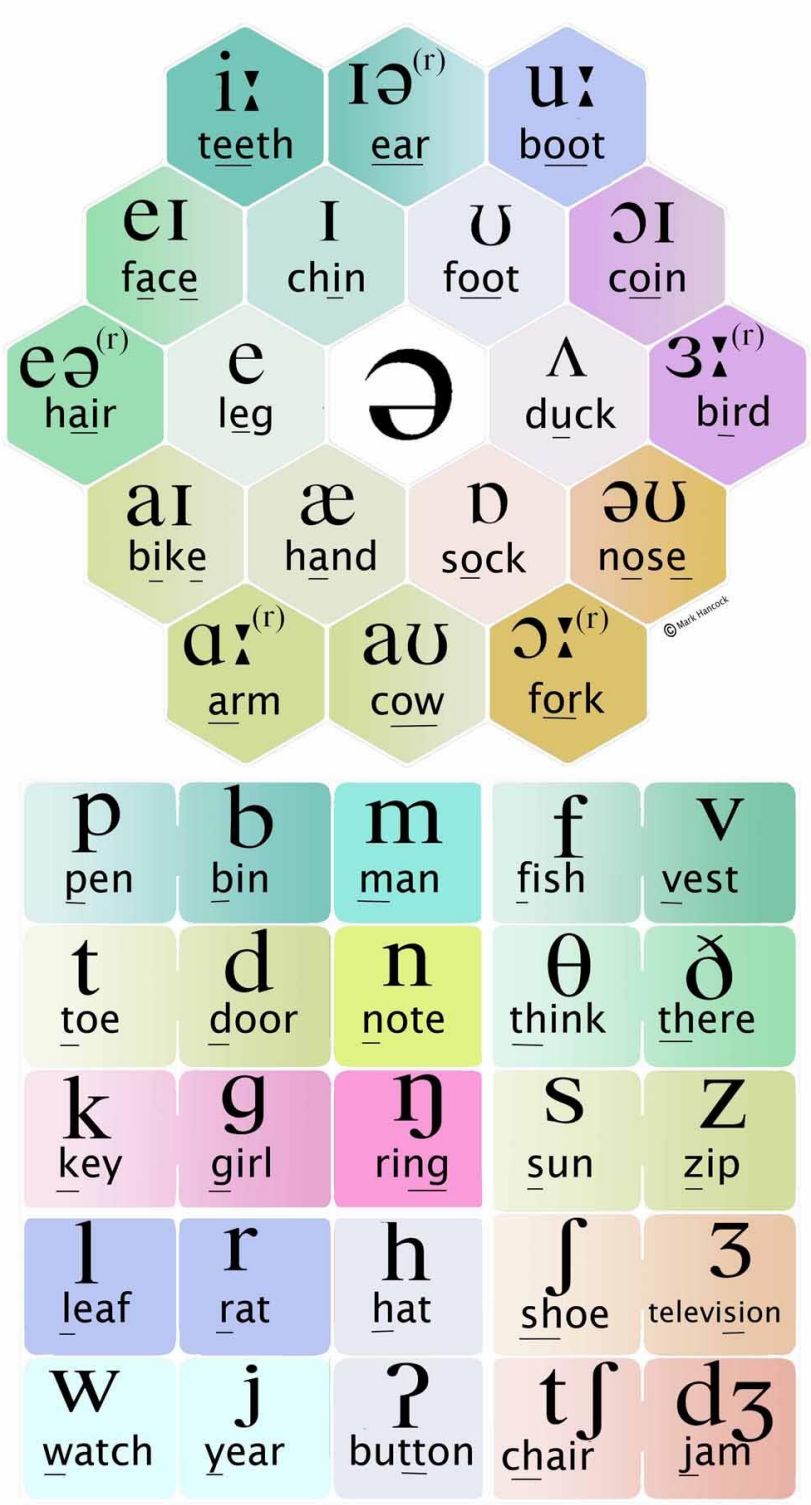

Figure 1. The sound chart

Early Decisions

Shall I use IPA symbols?

I decided to use IPA symbols in my first version of the chart. In order to make the chart usable alongside (UK) published ELT material and dictionaries, I used the symbols most commonly found in these, even though some of them are not ideal. For instance, I used the symbol /eə/ for the vowel sound in *hair*, despite Cruttenden's (2014) recommended alternative of /ɛ:/. This would have served me better, as I wish to portray this sound as a long vowel rather than a diphthong in my model, as I will explain below. I also used the symbol /æ/ for the vowel sound in *hand*, despite Cruttenden's (ibid) suggestion of the less clunky /a/. I should add, however, that Cruttenden's reasoning for this recommendation was more to do with contemporary phonetic accuracy than elegance of the symbol.

How many sounds shall I include?

Teachers often suppose there are a specific number of sounds in English, but, at least from the teaching perspective, there are decisions to be made here too. Among the consonants, I might have left out /ŋ/, /tʃ/ and /dʒ/ for example. Pedagogically speaking, they might have been treated as the sum of the two elements that are present or implicit in the symbol: /n/ and /g/ for /ŋ/, /t/ and /ʃ/ for /ʧ/, and /d/ and /ʒ/ for /ʤ/, I kept them in largely to remain in keeping with the traditional set. I also added the glottal stop /ʔ, despite the fact that it is not a phoneme of English. I have often found it useful in class in explaining the quality of the /t/ in phrases like *not now*, for example – particularly for receptive awareness. My chart contains a total of 25 consonant symbols.

Among the vowels, I left out the /ʊə/, as in *poor*, for example. So many speakers merge this sound with /ɔ:/, so that *poor* and *pour* become homophones (see for example Cruttenden 2014 p156), that I felt it was not worth bringing to the learners' attention. I could have reduced the vowel inventory further. Jenner (1997), for instance, has suggested that the /ə/ element in the centring diphthongs /eə/, /ɪə/ and /ʊə/, could be better viewed as 'a realization variant, in some circumstances, of an underlying phonological /r/' (p. 11). In which case, a symbol like /eə/ could be dispensed with in favour of a combination of /e/ and /r/. I didn't go down this route. My chart contains a total of 19 vowel symbols.

Shall I tailor the chart closely to a particular accent?

I did not wish my chart to be prescriptive of a given model accent. This is one possible peril of using the IPA symbols, since these serve as phonetic symbols as well as phonemic ones, and this can lead to an unhelpful focus on phonetic detail. A phonetic symbol such as [e] refers to a very specific sound. A phonemic symbol like /e/ on the other hand refers to any of the range of sounds that different competent speakers of English would use in a word like *leg*. I would not wish the

symbols in my chart to be interpreted as the former. In practice, this means reminding my students that their version of a given sound does not have to be identical to mine – they have a certain latitude to pronounce it in their own way. The important thing is that it should be consistently distinguished from the neighbouring sounds in the system.

With a view to accent ambivalence, I used the superscript (ʳ) alongside the symbols for vowel sounds which are heavily influenced by a subsequent <r>. This is used in some dictionaries to indicate that the <r> is pronounced only before a following vowel. In my chart, I intend it to mean that the student may chose to pronounce the <r> which is usually to be found after these particular vowel sounds or not, whichever suits them best or comes most naturally. Jenkins (2000) has suggested that in terms of international intelligibility, students are probably better off pronouncing it. Most of my students prefer to anyway, despite the fact that my school is in a non-rhotic environment.

Shall I include example guide words containing the sounds?

I decided to include example guide words in the chart below each symbol. I chose words with typical spellings for that sound, with the relevant letters underlined. Brown (2014) has useful frequency lists for the different spellings of sounds, which I consulted. I chose monosyllabic words which could be easily visualized – partly for the mnemonic value, and partly with a view to making an illustrated version of the chart (which I have done). I didn't include a guide word for the schwa because this can't be properly illustrated in a monosyllabic word out of context. I also wanted to make it visually apparent that this sound should not be considered as just one other among the set, equivalent to the rest.

The shape of the chart

I decided to present the set of vowels as six long-short pairs. The importance of 6 led to the hexagonal shape of the vowel chart. It is organized as follows:

The outer circle of the hexagon contains the long vowels, both the relatively pure ones and the diphthongs. The relatively pure long vowels are situated at the corners. The inner circle of the hexagon contains the short vowels. These are placed next to a long equivalent sound. The equivalence is only approximate – for example, the sound /iː/ in the top left corner is not simply a longer version of the neighbouring short sound /ɪ/. There is a qualitative difference too for most speakers. The pairing is therefore a pedagogic simplification. The centre of the hexagon is occupied by the unstressed sound /ə/. This completes the pattern of longer on the outside growing shorter towards the centre. This patterning is reinforced by the colouring, with the hexagons becoming paler towards the centre.

The vowels are positioned in the chart very roughly in accordance with the traditional vowel quadrant – the further down the chart you go, the more the jaw drops, and the further left in the chart, the further forward in the mouth the vowel is produced. The pair of sounds at 3 o'clock in the

system, /ʌ/ and /ɜ:/, buck this pattern and are more central. This was due to graphic constraints - ideally, these sounds should have been above the centre in a 3-dimensional chart.

The design of the consonant chart is rectangular rather than hexagonal – I could find no inherent six-point patterning as in the vowel system. It is divided into three blocks, with the stops and related nasals in the top left, the fricatives and affricates down the left hand two columns, In both of these blocks, place of articulation goes further back in the vocal tract as you go down the chart, and for the stops, fricatives and affricates, the unvoiced consonant is on the left and its voiced counterpart on the right, The remaining sounds are in the bottom left corner.

Flexibility

The chart is intended to be a flexible model of the sound system. For this reason, there was enough looseness in the structure of the vowel chart to move away from the traditional vowel quadrant. In the latter, vowels are located very precisely relating to their place of production in the mouth space. The sound /ʌ/, for instance, for RP would typically be located near the bottom of the chart, in the middle. Further north in the UK, this phoneme may move up through the central space occupied by shwa symbol and eventually merge into the sound /ʊ/. Hence, for some speakers in Manchester, luck and look are homophones. This degree of variation is not untypical among the vowel sounds, and the chart does not preclude it. If there is any problem, it comes when two sounds merge entirely into one. For example, for many Scottish speakers, /ʊ/ merges with /u:/ so that full and fool are homophones. Students in Scotland, or with a Scottish teacher, might wonder why there are two symbols but only one sound. This would oblige the teacher to explain that for many speakers there is a difference.

An American version

As an exercise in testing the flexibility of the chart, I tried making an American version – see figure 2. This is a black and white version – there is also a colour version. For this, I kept the hexagon structure of the vowel chart but used the system of symbols presented in Celce-Murcia, Brinton and Goodwin (1996). Maintaining the same chart shape facilitates a direct comparison with the GB vowel system model. We can see that the vowel sounds with an optional (r) element in the GB model have a full /r/ element in the American version. For Celce-Murcia et.al, these would be combinations of two sounds, not a single composite symbol. However, it may be valid to give them special treatment in recognition of the way in which the /r/ 'colours' the preceding vowel, giving it a distinctive nature. This special treatment of these vowels makes the chart something of a hybrid vowel system model, easily adaptable between a rhotic and non-rhotic variety.

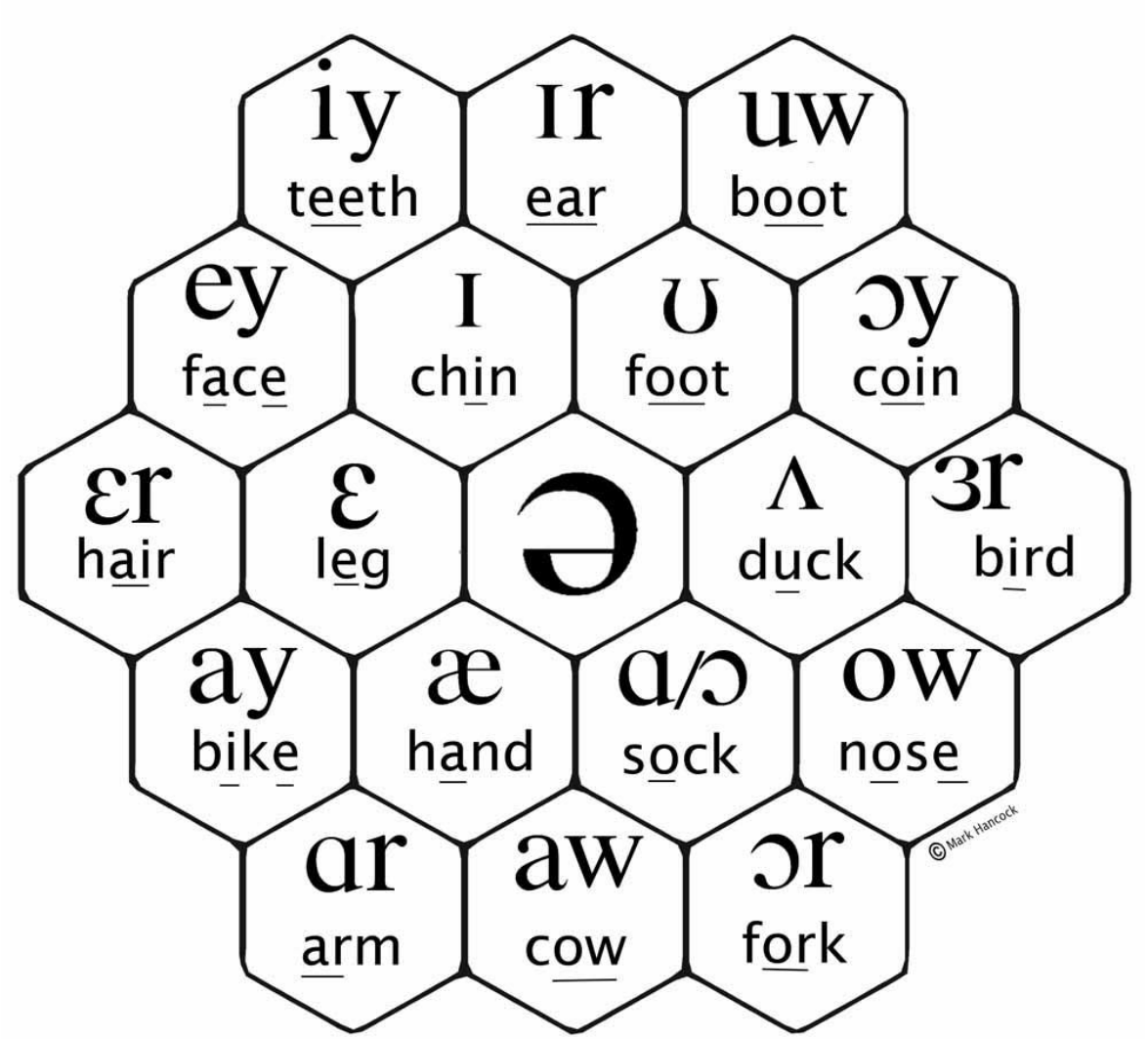

Figure 2. The American vowel chart

The other important difference from the GB model was the *sock* vowel, with two symbols sharing the same space - /ɑ/ and /ɔ/. This could be justified by the fact that many American speakers merge these two sounds so that *cot* and *caught* are homophones. In fact, the /ɔ/ symbol could perhaps be deleted altogether.

In the resulting chart, the same patterning of 'long' on the outside and 'short' doesn't work, as *long* and *short* are not as pedagogically helpful adjectives for GA vowels as they are for GB vowels. Instead, a patterning of 'complex' in the outer circle and 'simple' on the inner circle can be seen. This is evident in the symbols. The sounds in the outer circle all have a diphthongal glide or r-colouring while those in the inner circle are simple single symbols.

Conclusion

In this article, I have attempted to reconstruct and explain the design decisions behind a pedagogical sound chart for teaching English. It is a chart which I have been using in my own teaching context for over a year, and I have found that students seem to take to it quite easily. This chart and various other versions of it may be freely downloaded from hancockmcdonald.com/materials. Prior to designing this chart, I have often used Underhill's (2005) well-known and widely used phonemic chart mentioned earlier. The similarities and differences between that chart and my own reflect the fact that there are many ways to represent phonetic facts for pedagogic purposes. And that is the art of the chart.

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Mark Hancock started teaching English in 1984. He's worked in Sudan, Turkey, Brazil and Spain. He has a degree in Teaching English from Aston University. He has published many pronunciation books, including *Pronunciation Games* (CUP 1995), *English Pronunciation in Use Intermediate* (CUP 2012) and with Annie McDonald, *Authentic Listening Pack* (Delta 2015). He co-hosts the ELT resources website hancockmcdonald.com.

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