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Teaching suprasegmentals like the stars

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Thanks to the dedication of a small number of teacher-researchers (Gilbert, this issue), the importance of including suprasegmentals in pronunciation teaching is now widely accepted. However, the question of exactly how to go about teaching suprasegmentals—especially how to make sure that what students learn in class transfers to their everyday speech—is less well agreed. It seems clear it requires knowledge of phonetics and phonology, but exactly which aspects of these highly theoretical topics are most relevant to teaching, and how can they best be applied in practice?

A shift in perspective

As one of relatively few researchers to have moved from theoretical phonetics and phonology to their practical application in English language teaching (a road more often travelled in the opposite direction), I would like to offer some thoughts on this question. In my view, what is most needed is not detailed knowledge about phonetics and phonology (though that is valuable), but clarity about the relationship between phonetics and phonology.

Suprasegmentals, the rhythm and melody of speech, are often taught by analogy with poetry. This article proposes a different analogy: teaching second language pronunciation is like helping someone to see new constellations in the night sky, and suprasegmentals are the overall shapes of the constellations, as opposed to the individual stars that make them up.

Projections of the mind

Constellations, such as the southern cross, the big dipper, or the signs of the zodiac, are imaginary lines connecting groups of stars. Of course, there are no lines in the sky itself. The stars are real, but the lines connecting them, and the shapes they create, are projections of our minds.

It is the same with speech. Roughly speaking, phonology is like the study of constellations, while phonetics is the study of the stars. Unfortunately, while anyone can grasp the difference between stars and constellations, the equivalent distinction between phonetics and phonology is more difficult to understand.

Even for those who have studied a good deal of phonetics and phonology, it can be hard to recognise fully that words and phonemes, real as they may seem, are projections of our minds onto a continuous stream of sound, much as constellations are projections onto a continuous array of stars.

Before exploring this idea, and its implications, it is useful to think a little about what is involved in teaching someone to see a new constellation in the night sky. Consider a constellation likely to be new to most readers, the ‘emu in the sky’. This picture (freely available in Wikipedia) shows the emu superimposed on a partial map of the stars.

Teaching constellations

While readers may recognise this image if they see it again, it is unlikely to help even those in the southern hemisphere find the emu itself in the night sky.

To teach a constellation, then, it is not enough just to teach its shape. What the learner needs to learn is how to find the shape in the continuous array of other stars.

Teaching this requires several steps. First, the learner’s attention must be directed to the relevant part of the sky. Next, several landmarks, clearly identifiable by both teacher and learner, must be established. These could be, depending on various factors, other constellations, prominent astronomical bodies, or something in the context, such as a branch or cloud. Finding appropriate landmarks can take considerable negotiation, till both parties are confident they are referring to the same things.

With the landmarks established, the teacher can use them as reference points to describe the shape of the constellation in language appropriate to the learner. Again, ongoing dialogue is needed to avoid miscommunication.

Of course, next time the learner goes out, the stars are liable to be in different alignment, and the landmarks may have changed. It will likely take several lessons, perhaps

with aids, such as maps of the stars with constellations drawn onto them, for the learner to gain confidence in picking out the new constellation. But eventually it will 'leap out' under any conditions, and the learner will wonder how they could ever have missed it.

Teaching pronunciation requires a very similar process. However, there are several complications which make it far more difficult than teaching constellations.

Constellations without the stars

One complication is that in the process of learning to speak their first language, people acquire a kind of 'L1 prejudice' that makes it hard to hear the actual sound of speech. It is as if each person saw the constellations of their own culture so clearly, they barely noticed any other stars. Rather than acknowledging constellations to be projections of their minds, they would feel their own constellations were obvious features of the night sky, and find it hard to imagine there could be any others.

Consider the effect on the constellation-teaching process above if people could see only the constellations they know, and not the stars.

But it gets worse. In many situations, pronunciation is taught through the target language. In terms of the analogy, this means not just constellations but landmarks are discussed in a language in which learners have limited proficiency. So teaching suprasegmentals is like teaching new constellations to someone who has a limited view of the stars, and speaks a foreign language.

Clearly this would be very difficult under any circumstances. But what if teachers themselves remained in their L1 prejudice, unaware they had a limited view of the stars? Recognising that learners find the new constellations hard to see, but having a poor understanding of the reason, they might offer very simple descriptions of the constellations, draw pictures of them, and provide practical exercises in distinguishing one from another. Such teachers would be disappointed and puzzled when learners, having done quite well on the exercises, still found it hard to locate the actual constellations in the real sky.

This may recall a concern expressed by many teachers: students often have trouble transferring the pronunciation they learn in class to life outside. One factor may be that some popular teaching methods do the equivalent of teaching from pictures of constellations, giving insufficient practice in how to actually recognise the constellations in the real sky outside.

The problem is, the L1 prejudice makes methods that would seem absurd if used to teach constellations, appear perfectly sensible when applied to pronunciation teaching. And a further complication compounds the problem.

Poetry and constellations

The second complication can be illustrated by considering the common practice of teaching suprasegmentals through poetry. In terms of the analogy, poetry is like an image of the sky with particular constellations highlighted or embellished to make their shapes stand out clearly.

Such a map would be a useful teaching aid for many kinds of lessons, but it would not really help learners who did not already know a constellation pick it out among the stars. To see this, consider the image above: highlighting the emu outline in a bright colour, and adding detail to clarify its emu shape, would not help a novice locate the real emu in the sky. In fact, it could hinder them, by making the image less like what they actually see in the sky.

It is the same with poetry. The rhythm of poetry is certainly simpler and more obvious than that of real speech. This can make it seem like an aid for those who have trouble with the more complex rhythm of real speech. But there is a flaw in this reasoning.

The rhythm of poetry is simpler because it is more abstract. Learning abstractions, generally, is hard. So though the rhythm of poetry itself is simple, creating the rhythm is hard. After all, many people who can speak perfectly well have limited ability to create or even recite poetry.

Highlighting constellations helps someone trying to memorise them, or draw them, not someone trying to recognise them in the first place. Similarly, in the first language, learning nursery rhymes and limericks is more important for learning to write than to speak (Gillon 2007).

However, just as first language acquisition creates an L1 prejudice that makes constellations seem more real than the stars, so literacy acquisition creates a 'strange inversion' whereby the simple rhythm of poetry seems like a stepping stone to the complexity of real speech.

This is not to say poetry should not be used in second language teaching. It does suggest that using it effectively

requires a good understanding of the true relationship between poetry and real speech.

Poetry and real speech

It is clear the rhythm of everyday spontaneous speech is more complex than that of poetry. What is often not fully appreciated is just how much more complex it is.

One way to gain a small impression is with a digital jukebox (iTunes or Windows Media Player) with a visualiser (an image that pulses to the rhythm of music). Playing music with a strong beat shows a clear, pulsing effect that can be followed even with the sound muted. Playing natural speech through such a visualiser makes a poor show.

With the audio on, it may appear to have a faint but regular beat, but it is generally impossible to follow the beat in the visuals after the sound is muted. This is because, without the 'aural filter' of the L1 prejudice that makes us think the rhythm is regular, the visuals show the rhythm of speech as it really is—not at all like poetry. Even to call it 'stress timed' or 'syllable timed' is at best a simplification (Cauldwell 2002). Similar differences between how we think about speech and what it is really like pervade all levels of analysis—speech is always far more complex than it seems (Ladefoged 2005).

This is not to say real speech has no rhythm, or there are not significant differences in the rhythm of different languages. But describing its rhythm accurately is difficult even for highly trained phoneticians, and there is rarely a single 'right answer'. Many learned journals are filled with debates about the best way to analyse the rhythm even of the simpler forms of real speech, such as prepared monologue, let alone spontaneous conversation (Clark et al 2007).

Fortunately, it is generally not necessary for teachers to come to grips with this literature—and if they do, it will not necessarily help them teach suprasegmentals well. One reason is that the rhythm of speech is an epiphenomenon.

Rhythm as epiphenomenon

When speaking normally, people are not primarily concerned to produce rhythm, complex, simple, or otherwise. Their concern is to convey meaning, which they plan in chunks, generally not much larger than a sentence or two (Wells 2006).

In putting together these chunks, they do create sequences of stressed and unstressed syllables, and it is true that if we step back and reflect on the sound of speech, as opposed to listening to its meaning, the stresses and other features meld together to give a sense of a regular rhythm. But as just discussed, it is not really much like the rhythm of poetry. Importantly, it's not just that people don't talk in poetry—we actually can't talk in poetry. This is because in speaking, the focus is not on rhythm but on meaning. Making poetry requires reflection on rhythm as an epiphenomenon.

An epiphenomenon is a high-level pattern that emerges as an unintended (though interesting) consequence of intentional acts at a lower level. Another example is the pattern of traffic that emerges from many individual people driving to and from work. Understanding such patterns is useful for many purposes, such as planning new roads and services, but describing them is of little use in helping a driver find her way to work.

The point is, teaching suprasegmentals is not primarily about imparting a body of knowledge. It is about helping learners develop a skill. For that, detailed knowledge of the technicalities of phonetics and phonology is neither necessary nor sufficient, any more than is expertise in astronomy for teaching constellations.

In both cases, what is essential is clear recognition of the stars as distinct from constellations. In teaching constellations, this is so obvious as to be a truism. Unfortunately, the same is not true in the case of speech.

Phonetics vs phonology

It is commonly believed the role of phonetics is to provide accurate technical descriptions of the phonological units of language, for example, to describe the combination of loudness, pitch and duration that creates the percept of stress.

Such descriptions are valuable for many purposes, and are certainly an important part of phonetics. However, this view of phonetics is limited in ways that can hinder pronunciation teaching.

First, it encourages a focus on the physical differences in the sound of different languages, such as differences in the way stress is realised. Of course such physical differences exist, and are certainly relevant to language teaching. But too much focus on them ignores a far more important source of problems for learners—the psychological differences that focus people so much on

the constellations they happen to know, they fail to see the vast array of other stars. To appreciate this, consider that learners are rarely able to reproduce the exact sound of the L2 (its stars). Even when it is modeled for them to imitate directly, they tend to project upon it the phonological patterns of their L1 (their constellations).

Second, it encourages a focus on describing, rather than identifying, speech patterns. Phonetic descriptions, no matter how accurate, do not actually enable identification of phonological units. This point can be made clearer via the analogy. To say the Southern Cross has the shape of a cross is accurate, but there are thousands of 'crosses' potentially to be seen among the stars. No amount of additional description of that specific cross can identify it.

The point is the very same stars can be seen in different ways. The only real way to help someone identify a constellation is to look at the stars together, establish landmarks, reference points and shared vocabulary, and use these to show the constellation as you see it.

It is the same with speech: any one stretch of speech is open to numerous phonological interpretations (Fraser 2003). The problem is the similarity is obscured by the L1 prejudice and the strange inversion—which remove the one thing most valuable in the teaching process, awareness of the stars, and of the very different ways they can be grouped into constellations by people from other cultures. 'Homophonic translations' like *un petit d'un petit* (*Humpty Dumpty* to English ears) are intended as humour but have a great deal to teach about speech perception.

The best way to help pronunciation teachers is to help them build this awareness. This does not require detailed knowledge of the technicalities of phonetics and phonology—but that does not mean it is easy. It certainly cannot be gained just by reading an article like this. Close consideration of carefully constructed demonstrations and experiences is needed to disrupt everyday assumptions and encourage distrust in all that seems 'obvious'.

Teaching like the stars

So what practical recommendations can the constellation analogy suggest? First, it is important to be clear that the purpose of the analogy is not to promote new techniques, guaranteed to be successful. It aims to offer a framework within which to understand what makes teaching practices successful or unsuccessful in different contexts, enabling teachers to capiltalise on the successful, and respond constructively to the less successful.

The analogy does, however, offer some guidance on pronunciation teaching. Perhaps its most important implication is the need to engage in ongoing dialogue about pronunciation with learners, in metalanguage adapted to their linguistic, educational and cultural backgrounds. Thus it is not only the content of speaking skills classes that needs to vary depending on whether the learners are European literature students or Vietnamese accountants. The landmarks, and the metalanguage in which they are described, must also be appropriate.

Achieving this requires constant monitoring to be sure material studied in class transfers to spontaneous speech. When it does not, it is likely there has been a breakdown in metalinguistic communication.

This can be checked quite simply by recording a short sample of a learner's speech, juxtaposing it with a sample of the teacher saying the same thing, and asking learners to pick out the salient differences. If they can do this, it suggests they have understood the class work, but need more practice to reinforce what they have learned.

If they cannot, it is necessary to engage in dialogue with them. The aim is not to correct errors, or provide right answers, but to listen to them talk about the differences they do notice. Doing this can create many surprises, as learners' answers are often very different from teachers' expectations. Using their answers as the basis of a dialogue to establish shared reference points and metalanguage can get the lesson back on track.

It can initially be frustrating when, after several lessons, learners are still unable to notice 'obvious' features such as extra syllables or mis-placed stresses (for example). However, it can be very illuminating to hear what they do notice—just as hearing someone speak of the constellations they see can give new insight into the stars.

The emu in the sky

The potential for breakdown in communication about pronunciation between learners and teachers is enormous. A small indication of the kinds of issues that arise can be given by considering the experience of learning to recognise the emu in the sky.

The emu can be easily described as having its head in the Southern Cross and its body across Scorpio. However, even for someone who knows both these constellations, this description is not like to enable recognition. One problem is the emu is not a 'constellation' in the normal sense. Its shape traverses half the sky, defined not by

stars, but by dark regions among the stars. Even under optimal conditions, seeing it requires a significant shift in figure-ground perspective, difficult to achieve unaided.

Teaching pronunciation is like pointing out the emu to someone who does not know Scorpio, is so focused on the stars in the Cross they barely see other stars, let alone dark spaces among them—and is too shy to mention they are not sure what an emu is.

Unfortunately, it is often made even more difficult by the fact teachers themselves have limited ability to see the stars, and limited understanding of the reason learners find it so difficult to see the constellations that seem so obvious to the teacher. Such teachers often feel that what they most need is more knowledge about the emu to pass on to students. But ultimately no amount of information about the emu is as useful as overcoming the L1 prejudice and the strange inversion, and gaining insight into the nature of the task facing learners.

Theory vs practice

Before concluding, it might be interesting to consider why the distinction between phonetics and phonology, so useful in pronunciation teaching, is not more widely understood. One reason is that for the past half century, research has been dominated by Chomskyan theories, which see language learning as a computational process. Such theories certainly offer explanations for why learners make the errors they do. Unfortunately, however, these explanations, even if valid, do not transfer readily to practical teaching recommendations. First, the processes they postulate are inaccessible to conscious intervention. Second, the theories are highly complicated. Unfortunately, in simplifying them for teacher education, the aspects most crucial to teaching are often omitted.

The problem is that just rejecting Chomskyan theory is not enough. It is necessary to understand the reasons for its limitations, or risk repeating them (Fraser, in press). With such understanding, however, there is scope to create a practical theory of pronunciation, to help teachers understand the true relationship between phonetics and phonology, engage students' conscious learning processes through effective metalinguistic communication, and contribute useful observation of what does and doesn't work in class to development of the theory.

Conclusion

Teaching pronunciation is far more complex than teaching constellations, in many ways besides those suggested in this article. For one thing, unlike constellations, which remain in place for the short term, speech evaporates the moment it is created, adding to the difficulty of dialogue. For another, with speech, it is necessary not just to observe constellations, but to produce a stream of 'stars' onto which listeners can project appropriate constellations, a process that takes a great deal of skill and practice.

Despite these and other limitations, the constellation analogy is useful in conceptualising the nature of the task in a way that engages teachers' often substantial skills of intercultural communication, and allows them to make good decisions about when and how to use poetry, visual aids, or guidance on articulation, and many other issues.

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Since 1999 her research has focused increasingly on human (as opposed to computer) applications, especially language and literacy education, and she has worked extensively with both learners and teachers of second language pronunciation.

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