



Phonological Concepts and Concept Formation: Metatheory, Theory and Application¹

HELEN FRASER
*University of New England**

ABSTRACT

This paper presents an overview of Phenomenological Phonology (PP), including its metatheory, theory and application, for comparison with Cognitive Phonology (CP). While PP and CP are in close agreement at the theory level, there are some significant differences at the level of metatheory. PP considers phonological terms (such as *phoneme* and *word*) to be words like any others, and gives detailed consideration to the concepts behind such terms. It also considers pronunciation to be a form of behaviour, driven by concepts created through general concept-formation processes. This has important consequences for practical application in the areas of pronunciation and literacy teaching.

KEYWORDS: phenomenology, phonology, pronunciation, concepts, concept formation, abstractness, applied cognitive phonology.

* *Address for correspondence:* Helen Fraser. School of Languages, Cultures and Linguistics. University of New England, Armidale, New South Wales, Australia. Tel: 61 2 6773 3318; e-mail: hfraser@une.edu.au; web: <http://www-personal.une.edu.au/~hfraser/>

I. INTRODUCTION

This paper offers an overview of Phenomenological Phonology, with the aim of inviting comparison with Cognitive Phonology (Langacker, 1987; Taylor, 2002). Phenomenological Phonology (PP) is similar in many ways to Cognitive Phonology (CP), but there are also a number of differences. Should PP be thought of as the same as CP, a branch of CP, or something different altogether? And does anything much hinge on the answer?

Since an important feature of PP is its explicit linking of metatheory, theory and practice, this paper, despite space limitations, covers key aspects of all three. The first part gives an overview of the metatheoretical framework (for more detailed background see Fraser, 1992, in press). The second part briefly presents some implications of the framework for phonological theory (see also Fraser, 1997, 2004b). Finally, some examples are given of the effect of following these implications on the practical task of pronunciation teaching (Fraser, 2001, 2004a, 2006).

II. THE PHENOMENOLOGICAL FRAMEWORK

II.1. Overview

Phenomenology is a complex set of philosophical ideas (Spiegelberg, 1982). This paper focuses on just one general aspect, its recognition of three distinct levels of analysis: the level of words, the level of reality and, mediating between the two, the level of concepts.

These three levels of analysis are very familiar to Cognitive Linguistics, partly because of the influence of phenomenology, through structuralism and post structuralism, on contemporary scholarship in general, and partly because linguistics itself, through the work of key figures such as Saussure, Whorf and their successors, has played an important role in developing a detailed understanding of the three levels and their relationships (Carroll, 1956; de Saussure, 1986). However, phenomenology pursues implications of the three levels of analysis that are not so familiar.

The most important of these implications follows from recognition that words and concepts do not emerge from nothing, but are created and used by a person. Recognition of the levels therefore requires recognition of a Subject. The Subject is a generalised and theorised version of the person who creates and uses words and concepts, as opposed to a subject (lower case 's'), which is a specific person. There is thus an important distinction between the terms *Subjective*, meaning 'requiring theoretical acknowledgement of a

‘someone’ who creates concepts and words’, and *subjective*, meaning ‘restricted to the viewpoint of a specific person’.

The Subject is acknowledged by a range of theories, but Phenomenology is distinctive in putting the Subject in central position, starting any analysis with explicit consideration of the Subject who creates the words and concepts used in the analysis. This can be especially useful when, as in the scientific study of language and cognition, there are two Subjects: one, the scientist, making a theoretical analysis of the other, an element in the scientist’s theory.

A less well known but very significant contribution of Phenomenology, stemming directly from its focus on the role of the Subject in creating words and concepts, is observation of the ease with which the three levels of analysis (word, concept and reality) can become confused, and the undesirable effects on theory that can follow. More than simply observing this, Phenomenology has developed a method for avoiding this confusion.

The following sections provide more detail about each of the three levels of analysis, the role of the Subject, and the method for minimising confusion among the levels. Some of the ideas will be familiar to readers with a background in Cognitive Linguistics. However the use made of the ideas in PP is, as will be seen, somewhat different.

II.2. Reality

The level of reality is covered by a range of technical terms in Phenomenology (e.g. *World*, *Life World*), each with important distinctions in meaning, but the everyday word *reality* serves well for the present discussion. Reality is the world as it is, as opposed to how people think it is or would like it to be, or how it might potentially or ideally be. People and their artefacts are part of reality and can influence reality, but reality exists independently of any individual. Phenomenology is therefore not a form of idealism (the assertion that reality exists only in people’s minds).

Reality is richly structured and highly complex, with a nature, or way of being, of its own. Through embodied experience, people can develop an unspoken or tacit understanding of reality. This understanding can be considered accurate, or realistic, to the extent that it allows people to survive and prosper as individuals and as a species. It is, however, inevitably partial, both in the sense of being limited, and in the sense of being subjective, constrained by the sensory systems and interpretive biases of the experiencer.

It is also possible to describe reality with words or other symbols and representations. This is useful in communicating with others about reality but, since descriptions rest

ultimately on experience, they too are inevitably partial, again in both senses of the word. Reality is open to many alternative descriptions. Through the use of special methods and equipment, scientists can create descriptions of greater and greater detail and accuracy. However, reality is inexhaustible by any, or all, descriptions. There is always some 'surplus' beyond the description, and any one description inevitably obscures some aspects of reality, even as it may be revealing others.

These points can be summed up by saying that reality in itself is 'raw'. It has a nature of its own, but no self-existing description of its own. Ultimately, even the most detailed and accurate descriptions of reality rest on a tacit appeal to shared experience.

II.3. Concepts

The level of concepts is also given various technical terms in Phenomenology, as well as in other theories. Perhaps the best known term is *mental representation*. However, this term has a good deal of theoretical baggage (Shanon, 1993). Though the word *concept* was disallowed in technical discussion for some time due to the unobservability of concepts, it has now made a welcome return, partly thanks to Cognitive Linguistics (Taylor, 2002).

Concepts are the Subject's interpretation of, or way of thinking about, reality. Everyday reasoning about people's thinking and behaviour involves constant reference to concepts in understanding why people do what they do, and predicting what they might be likely to do next via an informal 'theory of mind' (Premack & Woodruff, 1978).

One of the most important things about concepts is that it is concepts of reality, not reality itself, that drive a person's behaviour. People sometimes find this difficult to accept, preferring to explain behaviour, especially their own, with reference to reality ('I ran away because of the tiger') rather than with reference to their concepts ('I ran away because of my concept of the tiger'). It is not too difficult to demonstrate, however, that it is not the tiger as such which causes the running, but a concept of the tiger (the tiger would not cause that behaviour in someone who did not know it was there, or did not know it was dangerous).

Though concepts have an immense effect on reasoning and behaviour, concepts themselves are not directly observable. Indeed there is a sense in which they are necessarily invisible. Concepts are like a lens, or a pair of glasses, through which a person views the world. They greatly affect the person's view of reality, but when people use concepts, they look through them rather than at them, and are generally unaware of them. When glasses are not in use, they can be taken off and looked at. Unfortunately concepts cannot be directly

observed in this way. They can be studied through consideration of their effect. However, as with glasses, it is difficult to study concepts while actually using them.

Given their central importance to all aspects of life, concepts as such have been given surprisingly little direct study in the mainstream sciences of cognition, which has followed an analogy between human cognition and computer processing, and sought to avoid reference to concepts in favour of mental representations, which are, even if only principle, more tangible. Cognitive Linguistics is exceptional in taking conceptual structure as a central theme in theory development, and has contributed to a body of scientific knowledge about concepts, which includes the following general points (Murphy, 2002).

Concepts are abstract with respect to reality. This is because they are formed through processes of abstraction from reality. Abstraction is a 'drawing out' (the etymological meaning of *abstract*) of those aspects of reality that are salient to a particular person at a particular time in a particular context. Abstraction requires a sense of contrast, or difference. It is common to say that a concept groups together aspects of reality that are similar. It is equally true, however, that concepts group together aspects of reality that are different from some other known aspect of reality. For example, developing the concept BROWN involves understanding what is 'not-brown' (Wittgenstein, 1958/1974). Cognitive Linguistics, following the work of Eleanor Rosch (e.g. Rosch, 1973), defines concepts in terms of categories, with 'prototypical' members at the centre of the category and more 'peripheral' members around an often 'fuzzy' boundary.

The fact that the creation of concepts involves processes of abstraction means, importantly, that concepts are not simply a 'mapping' of physical characteristics of reality onto another level. Concepts are strongly influenced by context, culture and point of view - as well as by reality itself. The latter is important to emphasise because Phenomenology has often been wrongly thought of as focusing on subjective (note the small *s*) interpretation to the exclusion of reality ('if I think it is art, it is art'). The phenomenological understanding of the relationship between concepts and reality can be seen via analogy with the potter and the clay. Reality is the clay, and the concept is the pot. The potter can shape the clay in many ways, but the nature of the pot is constrained by the nature of the clay. Similarly, reality can be conceptualised in many ways, but the nature of the resulting concepts is constrained (barring pathology) by the nature of reality.

The fact that concepts do not simply map aspects of reality means that, while it can be useful to work with formal definitions of concepts for certain purposes, no concept can be fully defined with reference only to the physical or formal properties of the reality behind it

(Wittgenstein, 1958/1974). Rather, a concept embraces a collection of aspects of reality that seem 'the same' to a particular subject in a particular context, despite having often enormous physical differences. As is well known in Cognitive Linguistics, it is quite possible to have a category in which there is no single physical feature common to all members.

II.4. Words

The level of words is one with which everyone is familiar from everyday life. When people use words, they feel that they are referring directly to reality. However, this is an illusion, sometimes known as *naive realism*. Words refer not to reality but to concepts of reality.

Words, like pictures, diagrams and other representations, are symbols not of reality but of concepts. The ability to use such symbols is an important part of what makes us human (Noble & Davidson, 1996). Words have the important function of allowing humans to reflect upon concepts, and think about the things they conceptualise even when they are not there. With the aid of symbols, people can compare and contrast concepts, consider similarities and differences among them, and draw out, or abstract, those features that are salient at the time and in the context. This gives the powerful ability to iteratively create new concepts at higher levels of abstraction. For example, having words for concepts of things that happen to be red and blue allows comparison of the things and abstraction of new, more abstract, concepts of RED and BLUE. By further comparing and contrasting, yet more abstract concepts such as COLOUR, or SCARLET, CRIMSON, AQUA, and ROYAL BLUE, can be created.

By considering the processes of abstraction involved in the formation of concepts behind words, a hierarchy of abstractness can be defined. This hierarchy is similar to but somewhat different from the schema-instance hierarchy used in Cognitive Linguistics (Taylor, 2002: Chapter 7). Basic concepts are similar to the basic concepts of Cognitive Linguistics, but concepts of both lower order and higher order terms in a taxonomy are considered in PP to be more abstract than basic level concepts, because they require more levels of abstraction by the Subject. Thus for example, both TOOL and CHAINSAW would be considered more abstract in PP than SAW.

Applying a word to a concept, like creating a concept in the first place, is a process that requires tacit background understanding (Polanyi, 1966). Because of this, just as concepts are not a direct mapping of reality, so words are not a direct mapping of concepts. One concept can be symbolised by several words (synonymy), or one word can symbolise several concepts

(homonymy). It is possible to have a concept without having a word for it. Some concepts require not a word, but a whole sentence, for their expression.

This is the reason behind the observation, very well known to Cognitive Linguistics, that determining the concept behind a word (its meaning) is not simply a matter of reading off a formal definition, but requires analysis of its use in a range of contexts.

II.5. The Subject

From what has been said so far, it is clear that the existence of concepts and words presupposes some processing of reality, in much the same way as the existence of a pot presupposes some processing of clay. The Subject is the doer of the processes of conceptualisation, abstraction, categorisation, and so on, conceived as a generalised theoretical being, rather than a specific person. It is important to clarify this definition. It is very far from implying that subjects (people) have only general or group characteristics, and not individual, personal characteristics. It was the major contribution of Heidegger to Phenomenology, in opposition to Husserl, to point out that personal, social and embodied characteristics were essential to people's interaction with reality, and their ability to form concepts and use language. The general characteristics of the Subject therefore include provision for highly specific characteristics of each subject, based on its own embodied, social and subjective experience.

Without the Subject, clearly, there could be no concepts or words. Interestingly, however, just as concepts are necessarily invisible as they are being used, so the Subject is invisible to itself while engaged in its projects. It takes an act of reflection for a Subject to become aware of its own characteristics, and the contribution of its own point of view to its concepts of reality. Even then, such awareness is necessarily partial.

One of the Phenomenologists' major contributions is their acknowledgement of and focus on the role of the Subject in creating words and concepts. This is not to say that the role of the Subject is denied in other philosophies. However, in other philosophies, the Subject, even if acknowledged in principle, tends to be regretted and avoided. A great deal of effort goes into defining the Subject so as to minimise any difference between the Subject and the material world (Stillings *et al.*, 1987). Mainstream cognitive theory, for example, has achieved this avoidance of dualism via analogy between the human mind and a computer.

Phenomenology, in strong contrast with mainstream theory, does not seek to avoid the Subject, but embraces the Subject, acknowledging the fundamental difference between the

Subject and other aspects of reality, and analysing with care the characteristics of the Subject that allow it to achieve processes such as conceptualisation, abstraction or categorisation. One important finding is that, since the processes involved in formation and use of concepts and words require a tacit background understanding not just of the concept itself but of the context in which it emerges (Polanyi, 1966), the Subject who creates words and concepts cannot be a computational device (Dreyfus, 1979).

Through its recognition of the Subject, and analysis of the relationship between reality, concept and Subject, Phenomenology is able to transcend the traditional philosophical opposition between idealism and realism, while still avoiding dualism. It does this by distinguishing between *existence* and *existence-as*: an aspect of reality can *exist* in a 'raw' or undescribed state independently of any observer or Subject, but for it to *exist-as* (some description) - that is, to have a word attached to it - requires action, in particular the action of concept-formation, by a Subject.

Most importantly of all, phenomenologists see themselves, in their role as philosophers, as Subjects in exactly the same sense as the Subject they postulate in their philosophy, and the terms of their theories as words in exactly the same sense as words of everyday language.

II.6. The natural attitude

One of Phenomenology's most useful contributions, though one that has influenced other disciplines relatively little, is their concept of the Natural Attitude (Husserl, 1960). The Natural Attitude is the tendency to behave in everyday life as if words refer not to concepts but to reality.

The Natural Attitude is somewhat like naive realism. However, it is not a theoretical 'ism' but an informal attitude. As its name suggests, it is entirely natural, an inevitable consequence of the invisibility of concepts and the tendency of the Subject to focus outwards from itself when engaged in projects. People actually need the Natural Attitude when getting on with their lives and engaging in projects. There are many times, for example, when it is much better to accept the convenient fiction that the word *dog* refers to an actual dog than to waste time on reminders that it really refers to someone's concept of a dog.

On the other hand, it is possible to choose a different attitude at times. In the Attitude of Reflection, the fictions of the Natural Attitude can be put aside, in an attempt to see the effect of one's concepts on one's view of the world, in much the same way as one can consider the effect of one's glasses on one's visual perception.

In everyday life, people move without concern between the Natural Attitude and an attitude of reflection. For example, the everyday terms *sunrise* and *sunset*, with their Natural Attitude view of the sun revolving round the earth, continue to be used even though scientific discourse requires acceptance of the reflective attitude view that it is the earth that revolves around the sun.

However, though in fairly neutral contexts like this, the move between Natural and reflective attitudes is easy, there can sometimes be resistance to the reflective attitude view. For example, it is one thing to accept the general principle that behaviour is driven by concepts, not reality, or to say it of someone else's behaviour. It is another to admit that one's own behaviour is driven by concepts, not reality. There is a sense in which people cling to, or get stuck in, the Natural Attitude.

Unfortunately scientists and philosophers are far from immune from getting stuck in this way. They can recognise the general principle that words relate to concepts not reality, and yet have a wish to behave as if their own scientific words relate directly to reality, justifying the use of these words by reference to their accurate portrayal of reality. This can cause particular irony when scientists or philosophers studying words and concepts use words and concepts in a way that conflicts with their own findings about words and concepts - which is why the Phenomenologists take such care to recognise that they themselves, as theorists, are Subjects just like the Subjects they study.

II.7. Theorising words and concepts

Everyday reasoning, as we have seen, involves an understanding of words and concepts that is very similar to the one just outlined, and makes frequent reference to the role of words and concepts in reasoning and behaviour. It is common knowledge that different people can have different concepts of the same 'raw reality', depending on their culture, point of view and context. If someone says 'It's a great movie', we do not accept that as an objective statement of fact, but interpret it in light of who has said it, and in what context, and come to our own judgment about the likely quality of the movie. In contemporary debate about important social or political issues, the role of language and context in shaping opinion is extremely well understood - perhaps at least partly through the influence of linguistics (Elgin, 1999).

Theories of language and cognition seek more scientific understanding of the role of words and concepts. Mainstream theories have a rather specific understanding of what it means to be scientific, based on the practices of the natural sciences. The natural sciences,

recognising that words and concepts intervene between reality and people's understanding of it, have traditionally sought to bypass words and concepts in attaining an understanding of reality itself. This is achieved through ensuring that all statements are based on verifiable observations. Of course it is recognised that the ability to achieve complete objectivity is limited (Feynman, 1986). However the ongoing attempt is seen as the path to scientific understanding of the natural world.

Applying this criterion to the scientific study of language and cognition however creates some problems. It is of course possible and necessary to treat language and cognition in a scientific manner, but in doing so it is not possible to bypass words and concepts, since they are key elements of the subject matter being studied, as well as the vehicle via which they can be studied. Traditionally rigour in theories of language and cognition has come from explicit definition of terms, and justification of the definition by appeal to the relationship between the terms and the reality they refer to.

The problem is, of course, that according to these theorists' own understanding of language and cognition, there is no direct relationship between reality and words. The relationship must always be mediated through concepts - which must always belong to an embodied Subject in a personal and social context. The natural sciences can get away (up to a point) with ignoring this uncomfortable fact, by behaving as if all scientific concepts belong to some generalised 'scientific Subject' with a particular point of view that all scientists are willing to subscribe to. In the sciences of language and cognition, however, there are unavoidably two Subjects to consider, the one being studied and the one doing the studying. Terms within the theory need to be defined from the point of view of one or the other, and the issue cannot be fudged for long without theoretical confusion arising.

For this reason, the phenomenological approach to rigour is different. Where the traditional approach is an attempt to escape from the Natural Attitude by denying it, according to Phenomenology, the only hope of avoiding the bad effects of the Natural Attitude on theory is to acknowledge it. Rigour in Phenomenology, then, comes from careful analysis of the words and concepts used in theories, not to eliminate their Subjectivity but to understand their presuppositions and ensure that these are commensurate with the context in which they are being used.

The phenomenological method therefore involves not defining the terms used in theories once and for all, but asking Framework Questions of each term in the context that it is used. Framework Questions are questions like the following:

- what concept lies behind this term?
- what ‘bit of reality’ lies behind this concept?
- what kind of person can have this concept?
- what prior concepts does that person need to have?
- in what context does that ‘bit of reality’ have to occur to be conceptualised in this way?

Through asking questions like this, a better understanding can be gained of the relative abstractness and other characteristics of the concepts behind the words used in theories.

III. PHENOMENOLOGICAL PHONOLOGY

III.1. Overview

Phonology is the study of the sounds of speech, and how they function to help us convey meaning in language. It has been barely touched as a topic of study in Phenomenology (Ihde, 1976; Merleau-Ponty, 1962), perhaps because most of the interesting questions of phonology arise from technical discoveries (Perkell & Klatt, 1986) that have impinged little on the more philosophical work of the Phenomenologists.

Mainstream phonology, on the other hand, has had almost no exposure, even indirectly, to Phenomenology. Even those aspects of phenomenological thinking that are well known in other branches of linguistics (e.g. the idea that words relate to concepts not to reality, and that concepts cannot be defined simply by listing physical features of the reality they relate to) are rarely the focus of attention in phonology. Thus it is absolutely standard in mainstream phonology to define phonemes as a set (whether a list or a ‘geometry’) of physical features, and to understand phonetic features as being ‘closer to reality’ than phonological features. Cognitive Phonology, again, is exceptional in the degree to which it has questioned these mainstream ideas, with several scholars looking at the implications of treating phonemes not as sets of features but as categories of sounds (Nathan, 1986, 1996; Taylor, 2003).

This section summarises very briefly an investigation of how phonology might be treated from a phenomenological perspective.

III.2. Phonological terms

The first step in developing phonology from a phenomenological perspective is to acknowledge that the terms used in a theory of phonology (terms such as *word*, *syllable*, *phoneme*, *feature*, *alveolar*, and so on) are words like any other words, subject to all the principles discussed above. They refer to concepts of reality, not to reality itself, and people who use them are prone to get caught up in the Natural Attitude. It is essential therefore to ask the Framework Questions about the terms used in phonological theories.

The reality behind any phonological terms is what might be called ‘raw speech’ -- the rich, complex, highly structured, quasi-continuous sound produced by the vocal tract when someone talks. Of course, to give a description of any kind to raw speech requires first conceptualising it, thus rendering it no longer ‘raw’, and limiting it to only one of its possible descriptions rather than any of the many others. One way to refer to raw speech without limiting it in this way, is to ‘point’ to the shared experience of hearing speech without understanding the words, for example when listening to someone speak an unknown language. The aim of the exercise of course is not describe the raw speech neutrally (which is impossible), but rather to demonstrate the degree to which everyday descriptions of speech in terms of words are abstract, or ‘processed’, with respect to the raw reality - in the senses developed above.

An analogy with the crow of the rooster is sometimes helpful in elaborating the distinction between raw speech and words. The rooster can be described as saying ‘cockadoodle-doo’ (or its equivalent in another language). It can also be experienced as uttering a ‘raw crow’ - a very different sound from the English word ‘cockadoodle-doo’. Similarly, a person can be described as saying ‘Could you pass the salt please?’ In this case it is more difficult to discern a difference between the words and the reality, but it is possible to think of the ‘raw speech’ behind the words by imagining how the sentence might seem to someone who does not know English, or to an animal which does not understand language, or to a machine set up to record the speech.

Between raw speech and the phonological terms used to describe it are, of course, concepts - as is the case for any words. There are many different ways of conceptualising raw speech. There is nothing inherently right or wrong about any of these concepts, but each has presuppositions that need to be taken into account when using them in theories.

Before raw speech can be understood as meaningful language, it must first be conceptualised as a string of words. It is interesting that in everyday life, people rarely

actually describe speech as a sequence of words. Conceptualising speech as a sequence of words has become so obvious to them, through learning a native language, they no longer notice they do it, and have few metalinguistic terms to describe the sounds of words, as opposed to their meanings.

One common way for phonologists to conceptualise speech is as a string of phonemes. Asking the framework questions shows that in order to have a concept of phoneme, it is necessary to know a large number of words, and to be able to compare and contrast the sounds of those words in a very particular manner (Byrne, 1998), which may only become possible through learning alphabetic literacy (Coulmas, 1989; Linell, 1988; Olson, 1996). The concept of phoneme thus presupposes a Subject that knows the language, is literate in an alphabetic writing system, and, arguably, has undergone some basic training in linguistics (Scarborough *et al.*, 1998).

Another common way for phonologists to conceptualise speech is as a sequence of allophones. Pursuing the framework questions reveals that the concept of allophone presupposes a concept of phoneme. Raw speech, as discussed earlier, is continuous, and continuously variable. It is not possible to segment it into allophones without having some prior understanding of its phonemic segmentation (Laver, 1994).

Although these and other conceptualisations of speech seem very obvious to phonologists, it is not difficult to demonstrate that the most basic way for someone who knows the language to conceptualise speech is as neither phonemes nor allophones, but as a sequence of meaningful words. This is shown by the fact that it is almost impossible to listen to a language you know without hearing it as words. Though these word-concepts are not noticed, as discussed above, recognition of them underpins all other concepts of the sound of speech, which are more abstract.

III.3. Abstractness of phonological terms

Using answers to the Framework Questions along the lines just indicated, it is possible to set up a hierarchy of abstractness of phonological terms, based on understanding of the processes of abstraction required to create the concepts the terms refer to.

From all that has been said so far (and see also more detail in the references given in the Introduction) it is clear that the metalinguistic concept behind the term *word* is abstract with respect to raw speech. Terms for parts of words, such as *phoneme* or *syllable*, refer to

considerably more abstract concepts, and terms for phonetic concepts such as *allophone* or *pitch trace*, are more abstract still.

Compelling as this view is when argued from the principles outlined above, however, it is highly unorthodox in relation to mainstream phonological theory. Mainstream theory would certainly agree that words are abstract with respect to raw speech. However it would see phonetic representations as less rather than more abstract than words, closer to the reality of actual pronunciation. Phonemic representation is universally agreed, among mainstream theories, to be more abstract than phonetic, and words more abstract again, because of their even less direct mapping onto raw speech.

How are these two strongly opposed views to be reconciled? It is natural to think that one must be right and the other wrong. However this may not be the most helpful approach. Rather than seeking universal accuracy or objectivity, it is possible to recognise that there are various ways of conceptualising abstractness, each with a range of presuppositions.

In many contexts the traditional hierarchy is perfectly appropriate. For example, if linguists are theorising language for descriptive or typological purposes, intending to communicate findings primarily with other phonologists who have a common goal of predicting and accounting for characteristics of the sound systems of language, it is very useful to be able to refer to rules that change one sound into another, or constraints that restrict the appearance of certain sound combinations -- without worrying whether sounds really change into other sounds, or whether it is people who change the way they speak, or become aware of different relationships among sounds (Ohala, 1990).

In other contexts, rather than acting merely as Subjects theorising language, linguists act as Subjects theorising other Subjects' use of language. Sometimes this is done in a context, such as in developing phonological theory for speech technology, which makes an analogy between the Subject and a computational device. In this case as well the traditional hierarchy is appropriate to the extent it is useful in achieving the goal.

A crucial change of context comes, however, when linguists aim to theorise a living human being seeking to accomplish some phonological task, such as acquiring literacy or learning pronunciation. To model such a Subject as a computational device is to distort its nature. To maintain the mainstream hierarchy of abstractness is to ascribe concepts to Subjects at stages of development, or stages of mental processing at which it is impossible that such a concept could exist.

The important thing is to choose a hierarchy of abstractness, and other theoretical commitments, whose presuppositions are commensurate with the context in which it is to be used. Asking the Framework Questions can help with this.

IV. APPLYING PHENOMENOLOGICAL PHONOLOGY TO PRONUNCIATION TEACHING

It is well known that people learning a second language in adulthood often have particular difficulty mastering its pronunciation. It is often taken for granted that this difficulty stems from the physical difficulty of producing the sounds of the new language. On this view, teaching pronunciation involves showing students ‘the sounds you are actually making’, via acoustic or articulatory representations. This, unfortunately is often far less successful than is hoped. From the PP point of view, that is hardly surprising. Although in phonology articulatory and acoustic descriptions of speech are seen as being ‘close to reality’, according to the PP hierarchy, as discussed earlier, these are highly abstract representations, and a great deal of prior knowledge is required in order to interpret them, and to associate them with particular ways of speaking. Learners of second language pronunciation typically do not have that prior knowledge, and find it very difficult to relate the visual representations to their own pronunciation behaviour.

PP takes a different view of how to teach pronunciation. Pronunciation is a form of behaviour. As such, it is driven by concepts. On this view, difficulties with pronunciation are primarily conceptual difficulties. This is supported by the observation that, though of course some pronunciation problems are caused by physical difficulty in producing particular sounds, in many cases, the speaker has no difficulty producing an acceptable version of the needed sounds. A classic case is the speaker who calls two girls *Arison* and *Blonwyn*. This person can clearly say both [r] and [l]. The problem is not in pronouncing the sounds, but in keeping them mentally distinct, as appropriate for the new language.

If pronunciation is driven by concepts, the key to changing pronunciation is changing the concepts that drive it. This will not instantly solve all pronunciation difficulties. Pronunciation is a skill, and requires practice. However, without attention to the conceptual level, practice alone is frequently ineffective, and therefore discouraging. If the conceptual issues are addressed first, practice can be rewarding, and improvement follows far more quickly (Couper, 2006).

Principles for helping students form or modify concepts are well known to education (Lefrancois, 1994), and especially to communicative language teaching (McKay, 2002). They include principles such as ensuring that materials are meaningful, contextualised and culturally appropriate, that students are actively involved in learning rather than passively receiving information, that learning follows a series of incremental steps building new concepts from existing concepts, that students take responsibility for their own learning through self-reflection and other meta-cognitive skills. Such principles fit extremely well with PP and can be easily adapted to pronunciation teaching, by someone who understands principles of PP. Unfortunately however the major shift to communicative language teaching that took place in the 1970s and 1980s did not give detailed consideration to pronunciation (Celce-Murcia *et al.*, 1996). This may have been because at that time there was a gulf between theoretical phonology, which was strongly influenced by the computational analogy, and language teaching, which required a more humanistic perspective. The result is that, while many teachers successfully use methods of teaching pronunciation that conform to a greater or lesser degree to PP principles (Fraser, 2000), many do not consider themselves successful pronunciation teachers, and many do not teach pronunciation at all (Macdonald, 2002).

Even when concept formation practices are used successfully, however, they are generally not understood explicitly as concept formation practices. This is because, when second language pronunciation teaching is theorised, it is still generally from the perspective of mainstream phonological theory. Applying mainstream computational theory in the classroom emphasises the need to teach phonological rules. Teaching such rules has its place, and can be successful if used sensitively. However it is all too easy for students to focus on learning the rules as abstract facts, rather than learning pronunciation. The result can often be that students can recite rules of pronunciation in pronunciation that itself violates the rules.

PP allows theorists to start with observation of what works best in the classroom, and create explanations which in turn allow the successful practice to be explored and extended in useful ways. The remainder of this section looks very briefly at just two principles of PP that can be used effectively in pronunciation teaching.

The first has to do with metalinguistic communication -- the communication that takes place between teacher and students about pronunciation. It is an obvious principle of concept formation that students should be able to understand what their teacher tells them about the concepts they are learning. It can be surprising to find, then, just how frequently students' and teachers' descriptions of pronunciation pass each other by completely, and how challenging it can be to remedy this and ensure successful metalinguistic communication.

Thus to tell a student that they have put the stress on the wrong syllable may seem to be a clear statement of fact. However people from different language and education backgrounds may have a very different concept of what phonetic characteristics constitute stress, or no concept of stress at all. Unless the teacher has taken care to build up the concepts that the student needs to share, it can prove to be very difficult for the student to understand and act on the teacher's advice.

People from different language and literacy backgrounds have very different phonological concepts (Strange, 1995). Communicating about pronunciation is therefore fraught with many opportunities for misunderstanding. It can be useful to think of metalinguistic communication as a form of intercultural communication. Metalinguistic communication is even more challenging than general intercultural communication, however. People tend to be aware of the possibility of different cultural concepts behind words like 'polite', or 'respect', but descriptions of sounds are thought to be objective, and misunderstanding is not expected.

A second useful principle brought into focus by attention to principles of concept formation is the use of contrast. As discussed above, contrast is essential for concept formation - but what sort of contrast is most effective for learners? Minimal pairs have been used in pronunciation teaching for many years (Baker, 1981), and can certainly be useful if incorporated into meaningful contexts. However minimal pairs are a very specific and rather abstract form of contrast. Another way to exploit the principle of contrast in pronunciation teaching is to focus on the contrast between what the learner thinks they said and what a native speaker would think they had said (Cartwright & Fraser, forthcoming).

V. CONCLUSION

Having started with a question as to the relationship between Cognitive Phonology and Phenomenological Phonology, it may be appropriate to finish with a suggestion as to how the question might be answered.

It seems the two approaches are very similar. CP is more established as a theory, within the broader framework of Cognitive Linguistics. Indeed PP has benefited greatly from the insights of CP, as well as Cognitive Linguistics more generally. PP perhaps has the advantage of its origins as a re-creation from first principles of the fundamentals of phonology in light of insights from both Phenomenological philosophy and pronunciation teaching practice. This has enabled PP to question and in some cases reject assumptions from mainstream phonology

which CP, despite its differences from mainstream theory, still accepts as axiomatic. The relative abstractness of concepts such as WORD, PHONEME and ALLOPHONE is a key example. More detailed discussion of this and other issues, along with suggested implications for applying Cognitive Phonology in the socially relevant domains of pronunciation and literacy teaching practice, are set out in further work by the author (Fraser, submitted).

NOTES

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