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Prosody and meaning: theory and practice

Tim Wharton

Abstract

Prosodic elements such as stress and intonation are generally seen as providing both 'natural' and properly linguistic input to utterance comprehension. They typically create impressions, convey information about emotions or attitudes, or alter the salience of linguistically possible interpretations rather than conveying distinct propositions or concepts in their own right. These aspects of communication present a challenge to pragmatic theory: how should they be described and explained? This chapter examines some of the theoretical questions raised in the study of the pragmatics of prosody. It explores a range of distinctions made in the study of meaning – between natural meaning and non-natural meaning, coding and inference, between linguistic coding and non-linguistic coding – and considers their relation to prosody. Three theoretical questions are asked: How can the different types of prosody be characterised? What is the relationship between prosody and *intentional* communication? What kind of meaning does prosody encode? In the final section of the chapter the discussion is extended to the practical domain. To what extent is the theoretical debate reflected in the teaching of English pronunciation? Can the theory usefully inform the practice?

1. Introduction

A recently published encyclopedia of pragmatics[1] contains over three hundred entries. A myriad of different perspectives are adopted, each clustering around a central notion of pragmatics as the study of 'language in use'. There are 'clinical' and 'computational' perspectives; 'developmental', 'experimental', 'formal', 'intercultural', 'optimality-theoretic' perspectives and many more. As well as this, pragmatics is applied to a range of communicative phenomena: the pragmatics of translation, of word-learning, of writing, of communication aids, even (perhaps surprisingly) of non-human animal communication. This diversity is at least partially reflected in the range of approaches to pragmatics adopted in this volume: pragmatics is clearly many things to many people.

The conception of pragmatics adopted in this chapter owes a great deal to the man who – arguably – the father of modern pragmatics. For Paul Grice the meaning a speaker intended to convey was to be understood in

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[1] Cummings, L. (ed.) (2009) *The Pragmatics Encylopaedia*.

terms of propositional attitude psychology. Ultimately, the meaning of utterances (or sentences, or words) was to be characterised in terms of the beliefs, desires and intentions of the people who utter them. Beliefs, desires and intentions are all psychological/cognitive phenomena, and so this chapter takes a psychological/cognitive[2] view of pragmatics, regarding it as – ultimately at least – a branch of psychology or cognitive science.

No-one denies that the way we say the words we say makes a substantial contribution to our intended meaning. In the most intuitively obvious cases, a particular tone of voice might indicate that we want to dissociate ourselves entirely from the proposition we are expressing: that we *mean* the opposite of what we are saying. So it is also true that the way we say what we say is capable of conferring on those words entirely new layers of meaning. But prosody also works in other, more subtle ways. In English, the way words are grouped together into intonation phrases conveys information about constituency relations and grammatical structure. Within these phrases, differences in the volume, length and pitch of syllables help direct a listener's attention to the most salient points of a message.

However, until relatively recently, most of the investigation into the complex interaction between prosody and speaker meaning has been done not by pragmatists, but by phonologists (Halliday 1963, 1967; O'Connor and Arnold 1973; Brazil 1975; Ladd 1978, 1996; Bolinger 1983*ab*; Ward and Hirschberg 1988; Hirschberg and Ward 1995; Pierrehumbert and Hirschberg 1990; Gussenhoven 1984, 2002, 2006; Chen and Gussenhoven 2003). The various schools and traditions which have emerged have made great progress and we now have formal analyses of prosodic structures and systems in a number of different languages and concrete proposals on how they relate to meaning.

While this body of work often appeals – to take one example – to 'systems of rich interpretive pragmatics' (Ladd 1996, p. 39), very little utilizes a recognised theoretical pragmatic framework, particularly the kind of framework that takes Grice's views on meaning – or indeed a cognitive view of pragmatics – seriously. It is not enough to write – as D. Robert Ladd did in 1996 when attempting to assess the merits of competing accounts of intonational meaning – 'there has been very little real debate on this issue. I think this is primarily because we know too little about pragmatic inference for the debate to be conclusive (Ladd 1996, p. 101). We know much more about pragmatic inference than we did fifteen years ago. Recent work in cognitive sciences on reasoning and rationality (Gigerenzer, Todd et al. 1999, Gigerenzer 2000) has developed work on 'bounded

[2] The small 'c' is important.

rationality' and proposes that evolution has left humans with rules-of-thumb – heuristics – which enable us to use what is, after all, a finite cognitive capacity in the most economical way. Work within cognitively oriented approaches to pragmatics (Blakemore 2002, Carston 2002, Sperber and Wilson 1986/1995) makes concrete proposals about these fast, frugal pragmatic heuristics. As well as this, since the early nineteen-nineties researchers working within pragmatics have been looking at the kind of issues raised by linguists and phonologists during the previous twenty five years and there is now a rich literature that considers prosodic contributions to meaning from a cognitive pragmatics-based perspective rather than a phonological one (Clark 2007; Clark and Lindsey 1990; Escandell-Vidal 1998; Fretheim 2002; House 1990, 2006; Imai 1998; Vandepitte 1989; Wichmann 2002; Wilson and Wharton 2006). Wichmann and Blakemore's 2006 volume is the result of a conference in 2002 which was a bold attempt to bring people from the two disciplines together.

The aims of this chapter are two-fold. Firstly, I intend to give the reader a flavour of some of the various dimensions along which the debates on the relationship between pragmatics (as conceived in this chapter) and prosody take place, as well as suggest ways in which studies in this area might be advanced. In this regard I focus on three theoretical questions (these questions are explored in more detail in Wharton 2009, in press):

(1) How can the different types of prosody be characterised?
(2) What is the relationship between prosody and *intentional* communication?
(3) What kind of meaning does prosody encode (if anything)?

The next section of the chapter is divided into three sub-sections, each of which deal with the questions above (so question (1) is dealt with in section 2.1, question (2) in section 2.2 and question (3) in section 2.3).

Secondly, I would like (as my title suggests) to extend the debate to the practical domain. To what extent is the theoretical debate reflected in the teaching of English pronunciation? Can the theory usefully inform the practice?

2. Theory

2.1 How can the different types of prosody be characterised?

It is clear that the various elements of prosody do not all work in the same way. On the one hand, the lexical distinction in English between the verb and the noun 'export' or between the preposition 'below' and the verb 'billow' are seen as properly linguistic, as are the tonal lexical contrasts in languages such as Burmese and Thai. On the other, affective prosody, say,

sounding surprised or bored, or happy or sad, are natural phenomena (Ladd, 1996; Gussenhoven, 2004) interpreted by non-linguistic systems. Grice himself was sensitive to this distinction:

> We might start by trying to think of stress as a purely natural way of highlighting, or making prominent a particular word: compare putting some object (e.g. a new hat) in an obvious place in a room so that someone coming into the room will notice or pay attention to it. But there are various suggestible ways of doing this with a word: e.g. intoning it, saying it in a squeaky voice. Such methods would not be thought just unusual, but would be frowned upon […] So there is a good case for regarding stress as a conventional device for highlighting.
>
> Grice (1967, Lecture III, pp. 17-18)

Halliday's (1963, 1967) account of prosody was based within a broad tradition which regarded prosody as properly linguistic. He aimed to articulate a theory of grammar that was rich enough to accommodate intonation patterns, and aimed to extend the notion of language to incorporate all prosody: in other words, he was working toward a *semantic*, rather than pragmatic explanation. Other linguistically oriented accounts of prosody can be found in the works of Sag and Liberman (1975) and Gussenhoven (1984).

In direct contrast to these accounts, Bolinger (1983*a*) was famously of the view that we would be better to focus more on the natural, pragmatic side. He focussed on the interaction between intonation and other, parallel natural components of the complex communicative stimulus:

> If intonation is part of a gestural complex whose primitive and still surviving function is—however elaborated and refined—the signalling of emotions and their degrees of intensity, then there should be many obvious ways in which visible and audible gesture are coupled to produce similar and reinforcing effects. This kind of working parallel is easiest to demonstrate with exclamations. An ah! of surprise, with a high fall in pitch, is paralleled by a high fall on the part of the eyebrows … A similar coupling of pitch and head movement can be seen in the normal production of a conciliatory and acquiescent utterance such as "I will" with the accent at the lowest pitch—we call this a bow when it involves the head, but the intonation bows at the same time. (1983a, p. 98)

However, he stressed that behaviours may indeed be 'more' or 'less' natural, implicitly suggesting they exist along some kind of continuum and argued that although we may feel some aspects of intonation to be properly linguistic, there still have their roots in the natural behaviours from which they evolved:

Intonation … assists grammar – in some instances may be indispensable to it – but it is not ultimately grammatical … If here and there it has entered the realm of the arbitrary, it has taken the precaution of blazing a trail back to where it came from (1983, pp. 106-108).

More recently, it has been proposed that the differences between the various aspects of prosody might be captured by suggesting that prosodic effects range along a continuum from 'natural' to language-specific (Gussenhoven 2002, Pell 2002). According to various phonologists, prosody encodes both *linguistic* and *paralinguistic* meaning.

Turning first to the 'natural' end of the natural/language-specific continuum, Chen and Gussenhoven (2003) argue that the interpretation of paralanguage is governed by *biological codes*. An example of one such code is the *effort code*, which links the amount of energy expended in the production of speech to a range of interpretive effects. An increase in effort may, for example, lead to increased articulatory precision, creating an impression of 'helpfulness', or 'obligingness'; or it may result in a wider pitch range, creating an impression of 'forcefulness' or 'certainty' or conveying affective meanings such as 'agitation' or 'surprise'. There are two issues I would like to raise here.

The first of these concerns the notion of *code*. One observation of previous characterisations of the natural aspects of prosody is that all such aspects are analysed as codes. Much work on human communication makes this assumption and adopts a code model of communication, according to which a communicator's thoughts are translated into a signal by the use of a code and translated back from the signal by an audience into the original message. I will argue that biological communicative systems (as distinct from a linguistic prosodic code) do exist, but not quite in the way Gussenhoven envisages: many natural aspects of prosody, however, are not *codes* at all. Marc Hauser (1996) applies a distinction between signs and signals to cases of information transmission among animals. *Signs* carry information by providing evidence for it. *Signals*, on the other hand, are those behaviours that convey information and have been "moulded by natural selection to do so" (Seeley 1989, p. 547). Put differently, the adaptive function of a behaviour is the effect which is historically responsible for the reproduction and propagation of that behaviour within a species (Millikan 1984, Origgi and Sperber 2000, Sperber 2007).

Whilst a sign may happen to carry information for an observer, it would go on being produced whether or not it carried this information. The presence of chimpanzee nests in trees indicates that chimps live in the area. Certain species of prey – such as forest monkeys – might use the presence

of nests to detect whether not its chief predator is nearby (see Hauser 1996, pp. 9-10). The nests, however, cannot be said to have a signalling function.

One way of describing this is to say that natural signs (e.g. the nests) are not *inherently* communicative. They are, in fact, classic cases of natural meaning ($meaning_N$) in the Gricean (1957, 1989) sense – see (4), (5), (6). These can be contrasted with Gricean non-natural meaning ($meaning_{NN}$) – see (7) and (8):

(4) Those black clouds $mean_N$ rain (see Grice 1989, p. 291).
(5) Those chimpanzee nests $mean_N$ chimps live here.
(6) That paw-print $means_N$ a bear has passed.
(7) That remark $means_{NN}$ 'it's going to rain'.
(8) 'Det kommer til å regne' $means_{NN}$ 'it's going to rain'.

By contrast, signals have a communicative function. The function of, say, the honeybee's dance is to inform other honeybees about the location of nectar; the function of the bull-frog's call is to alert female frogs to the fact that he is in the vicinity and looking for a mate. If these behaviours did not carry this information, it would be hard to see why these behaviours survive. Most animal communication seems to be based on signalling systems of this type. Since there is no evidence that either honeybees or frogs are capable of multi-layered intention expression and attribution required for their communicative behaviours to be characterized as cases of $meaning_{NN}$, it is hard to see how a system so complex is governed by anything but an innately determined code.

In Wharton (2003*b*, 2009, in press) I illustrate the distinction between natural signs and signals in the human case by comparing shivering with smiling. Shivering is a natural behaviour whose function is to generate heat by rapid muscle movement. It may provide evidence to an observer that an individual is feeling cold. However, it is not its function to carry this information: it is not a signal but a sign. Smiling, by contrast, appears to have evolved as a signalling activity whose function *is* to convey information to others (van Hooff 1972; Ekman 1989, 1992, 1999; Fridlund 1994). Like the bee dance, the bull-frog calls, the alarm calls of vervet monkeys and a whole range of non-human animal communication systems, they are signals rather than signs.

It is not hard to think of prosodic counterparts to shivering and smiling. A speaker's mental or physical state may affect the prosodic properties of her utterance, enabling a hearer with the appropriate background knowledge or experience to infer whether she is healthy or ill, tired or alert, drunk or sober etc. As with shivering, these prosodic properties carry information about the speaker's mental or physical state, but it is not their

function to do so: they are natural signs, interpreted by inference rather than decoding. On the other hand, affective tones of voice, like affective facial expressions, may well be natural signals, interpreted by innately determined codes.

Honeybees and frogs both lack the ability to infer the intentions of others, but they can still inform each other by means of their dance-based or vocal code. As Grice showed, communication among humans is different. Human linguistic communication exploits the ability to understand the behaviour of others in terms of the intentions behind it – sometimes known as the 'mindreading' ability. A speaker produces linguistically coded evidence of her intention to convey a certain meaning and the hearer must use this as a starting point from which to infer that intention: linguistic communication therefore involves *both* coding *and* inferential intention recognition. And communication among humans not only requires the capacity for inferential intention recognition, but may also be achieved in the absence of any code at all – such as when I nudge my empty glass toward you and you infer that I'd like some more wine.

To return to question (1), I suggest that there are three distinct types of prosodic input: natural signs, which are interpreted purely inferentially; natural signals, which in some cases are interpreted purely by decoding; and *linguistic signals*, which are part of a *linguistic* signalling system, governed by a *linguistic* code with its own special-purpose principles or mechanisms, and interpreted by a combination of decoding and inference. This position is represented in Figure 2.1 (I turn to discussion of the right-most node in Section 3):

Figure 2.1 about here

With the above distinctions in mind, is clear articulation a natural signal interpreted – as Gussenhoven suggests – by an innately determined biological code? I would suggest that it is better analysed as a natural *sign* of the speaker's desire to help the speaker understand, and interpreted via inference and not decoding. A great deal can be communicated by using clear articulation – that you intend to convey helpfulness, or that you are being obliging, or that you want to convey any one of a wide range of other impressions – but nothing is *encoded* by it at all.

The second issue concerns the term *paralanguage*, which – like the term pragmatics – is open to different interpretations (see Wharton 2009, pp.6-8 for further discussion). For some, paralanguage is defined as including only those vocal aspects of language use that are not strictly speaking part of

language. Construed in this way, facial expression, manual and vocal gestures and other kinesic behaviours are *not* part of paralanguage. Yet there are others who take paralinguistic to include most or all of those aspects of linguistic communication that are not part of language *per se*, but are nonetheless somehow involved with the message or meaning a communicator conveys. The second construal comes closer to how I would want to define paralanguage; rising pitch is so often linked with rising eyebrows that it's perhaps not clear why we would want to say that while the former is part of a paralanguage, the latter is not. Recall Bolinger's words:

> A similar coupling of pitch and head movement can be seen in the normal production of a conciliatory and acquiescent utterance such as "I will" with the accent at the lowest pitch—*we call this a bow when it involves the head, but the intonation bows at the same time*. [My emphasis, TW] (1983, p. 98)

But if this is the case, where does language end and paralanguage begin? At the end of a careful attempt to motivate the distinction, Ladd (1996, p. 283) concludes: '… I concede that we must stop short of drawing a clear boundary between language and paralanguage. For now that question remains open.' Ladd's fine-grained autosegmental analyses of intonational phonology shed considerable light on which parts of prosody are universal, and which are language-specific, but if the distinction between language and paralanguage cannot really be sustained, it is hardly a helpful one.

2.2 What is the relationship between prosody and *intentional* communication?

Natural prosodic signals have a communicative function, but neither they (nor, of course, natural signs) are intrinsically linked to *intentional* communication. Nonetheless, the sign-signal distinction must be seen in light of the fact that humans have highly developed metapsychological abilities and natural behaviours can therefore be recruited for use in intentional communication. How this takes place is an under-explored domain in studies on pragmatics and prosody.

Sometimes, it may be clear to the audience that an aspect of prosody is being accidentally revealed rather than intentionally conveyed. The speaker's faltering tone of voice may betray the fact that she is a little anxious, or – depending on the context – even that her frustration is boiling over into anger. In more sophisticated cases, the speaker's tone of voice may be covertly manipulated to suggest to an audience that she is accidentally be-

traying her feelings rather than wanting them to be recognised as part of her meaning in the full Gricean sense. As well as being used *covertly*, a communicator may also *overtly* show her feelings to an audience. She may do this by deliberately producing, and perhaps exaggerating, a natural sign or signal (e.g. a smile or a particular tone of voice); or she may do it by making no attempt to conceal a spontaneously-produced natural sign or signal in circumstances where it is obvious to both communicator and audience that she could have taken steps to conceal them. Grice saw an important difference between this kind of deliberate showing and cases of meaning$_{NN}$ and took pains to distinguish between them. While was prepared to treat the *simulation* of a piece of natural behaviour (a frown) as meaning$_{NN}$ and saw its interpretation as crucially involving a process of inferential intention recognition, he argued that a spontaneous piece of natural behaviour, even if openly *shown* to an audience, did not amount to a case of meaning$_{NN}$ (Grice 1989, p. 219).

Grice's distinction has had important consequences for how linguistics and philosophers have come to conceive the domain of pragmatics. To deny that the open showing of spontaneously-produced natural behaviours is a case of meaning$_{NN}$ has had the effect of excluding it from the domain of pragmatics. This may indeed be one of the reasons why those working within pragmatics have tended to gloss over the prosodic aspects of communication. But there seem to be clear cases where the overt showing of spontaneously produced natural signs and signals makes a difference to the speaker's meaning. Consider the utterance (9), in which – given the expletive – we can assume the speaker was making no attempt to conceal the spontaneous anger in her tone of voice (and facial expression):

(9) **Damn**! They're up to the roof aren't they?
(KCT 190 – British National Corpus)

She would naturally be understood as meaning not only that 'they are up on the roof' but also that she was *angry that they were up on the roof*. Implicatures may depend on this: the degree of anger the speaker overtly shows might warrant the hearer inferring that the speaker is going to take a particular course of action against the people to whom she is referring (give them a slight dressing down or fire them). Consider an utterance of (10), in which a speaker makes no attempt to conceal the emotion in her tone of voice.

(10) I am disappointed!
(J12 3028 British National Corpus)

The natural tone of voice that the speaker shows to the hearer will not only help him establish the implicit content of her utterance, but will also contribute to the proposition he takes her to be expressing. The truth conditions of her utterance of (10) will vary according to the type or degree of 'disappointed' she intends to communicate (it is a degree term), and hence reflects in her natural behaviour.

In Wharton (2009) I present a detailed defence of an approach which argues that the open showing of spontaneously-produced natural signs and signals may be located along a continuum between showing and non-natural meaning. My research has a range of implications for both what we take the domain of pragmatics to be and suggests a range of test cases which might be used to better understand the prosodic difficulties found in, for example, people with autism, who typically exhibit impairments in both production and comprehension (Chevallier, Noveck, Happé and Wilson (in press) is an attempt to explore the extent to which atypical recognition of vocal cues is caused by impaired Theory of Mind).

The first type of test case would consist of natural prosodic *signals* which are *not* overtly shown, and which would not normally be understood as contributing to a communicator's meaning. Examples might be someone trying to conceal their anxiety while speaking, sighing to herself while working alone in her room, or uttering an exclamation of surprise when something falls off a shelf while no-one else is present. Comprehension of these behaviours in people with prosodic impairments might be compared with comprehension of cases where the same natural prosodic signal is overtly shown in addressing someone, and would normally be understood as contributing to the communicator's meaning.

The second type of test case would consist of natural prosodic *signs* which are not overtly shown, and which would not normally be understood as contributing to a communicator's meaning. Examples might be saying "The taxi's arriving" while sounding bored, tired, shaky or ill. Interpretation of these natural prosodic clues might be compared with comprehension of cases where the same natural prosodic sign is overtly shown, and would normally be understood as contributing to the communicator's meaning.

The inspiration for the approach developed above comes from *relevance theory* (Sperber and Wilson 1986/1995; Blakemore 2002; Carston 2002). Relevance theorists have consistently argued that there is a continuum of cases between showing and meaning$_{NN}$, *all of which* may fall within the domain of pragmatics and contribute to a speaker's meaning (Sperber and Wilson, 1986/95). Since aspects of the analysis to follow rely on a little background on relevance theory, a brief exposition is in order.

According to the theory, utterance interpretation is a two-phase process. The linguistically encoded logical form which is the output of the mental grammar is simply a starting point for rich inferential processes guided by the expectation that speakers will conform to certain standards of communication. In (highly) intuitive terms, an audience faced with a piece of overtly communicative behaviour is entitled to assume that the communicator has a good reason for producing this particular stimulus as evidence not only of their intention to communicate, but of *what* they want to communicate. Thus far, there is no divergence from other post-Gricean and neo-Gricean accounts.

But relevance theory takes the psychology seriously, and aims to provide an account of *how* pragmatic inference works. It follows recent work in cognitive science which sees the mind as an 'adaptive toolbox', a set of dedicated cognitive mechanisms which have evolved in small steps towards greater *cognitive efficiency* (Hirschfeld and Gelman 1994; Barkow, Cosmides and Tooby 1995; Sperber 2002):

> Cognitive efficiency involves making the right choices in selecting which available new information to attend to and which available past information to process it with. The right choices in this respect consist in bringing together inputs and memory information, the joint processing of which will provide as much cognitive effect as possible for as little effort as possible. (Sperber 1996, p. 114)

Seen in this way, cognition and communication relies partly on 'fast and frugal heuristics' (Gigerenzer, Todd et al. 1999, Gigerenzer 2000), which make it possible to pick out potentially relevant inputs to cognitive processes (e.g. sights, sounds, utterances, memories, conclusions of inferences) and process them in a way that enhances their relevance. Gigerenzer, Todd et al. could be describing one of the fundamental assumptions of relevance theory when they write (p. 21): 'Cognition is the art of focusing on the relevant and deliberately ignoring the rest.'

Construed in this way, the human cognitive system is geared to look out for relevant information, which will interact with information that is already mentally-represented and bring about positive *cognitive effects* based on a combination of the new and the old information. Relevance itself is a property of inputs to cognitive processes, and is defined in terms of cognitive effects gained and processing effort expended: other things being equal, the more cognitive effects gained, and the less processing effort expended in gaining those effects, the greater the relevance of the input to the individual who processes it.

This disposition to search for relevance is routinely exploited in human communication. Speakers know that listeners will pay attention only to

stimuli that are relevant enough and so – in order to attract and hold an audience's attention – they make their communicative stimuli appear at least relevant enough to be worth processing. More precisely, the *Communicative Principle of Relevance* claims that by overtly displaying an intention to inform – producing an utterance or other ostensive stimulus – a communicator creates a presumption that the stimulus is at least relevant enough to be worth processing, and moreover, the most relevant one compatible with her own abilities and preferences. This Communicative Principle motivates the following relevance-theoretic comprehension procedure—taken from Wilson and Sperber (2002, p. 13):

> Relevance theoretic comprehension procedure: (a) follow a path of least effort in computing cognitive effects; test interpretive hypotheses (disambiguations, reference resolutions, implicatures, etc.) in order of accessibility; (b) stop when your expectations of relevance are satisfied

The comprehension procedure itself can be seen as a 'fast and frugal' heuristic of the kind mentioned above. In this respect, the relevance theoretic approach diverges from more traditional Gricean accounts of comprehension (see Grice 1989, pp. 30-31), which rationally reconstruct the comprehension process in the form of conscious and reflective inferences about the mental states of others.

Consider again (9) and (10). There are many degrees of anger or disappointment that that speaker might have intended to convey, and each of these would be relevant in a different way and yield different implications. Although a neutral tone of voice would cause the hearer least phonological processing effort, it would give him very little guidance on the type of effects he was expected to derive. By contrast, any departure from neutral prosody would increase the hearer's phonological processing effort, but would thereby encourage him to look for extra (or different) effects. Which effects should he derive? According to the comprehension procedure above, he should follow a path of least effort, deriving whatever effects are made most accessible in the circumstances by the type of prosodic input used, and stopping when he has enough effects to justify the extra effort caused by the departure from the 'expected' prosody.

Another idea often found in the literature is that contrastive stress, like pointing, is a natural highlighting device, used to draw attention to a particular constituent in an utterance. The idea is explored from a relevance-theoretic perspective in Sperber and Wilson (1986/95, chapter 4), who build on the quote from Grice on page. It follows from the Communicative Principle of Relevance that if two stress patterns differ in the amounts of processing effort required to interpret them, then the costlier pattern should

be used less often, and only used in order to create extra, or at least different, effects. Thus, compare the effects on reference assignment of the neutral stress pattern in utterance (11) and the costlier contrastive pattern in (12):

(11) Bill insulted Ted and then he *punched* him.
(12) Bill insulted Ted and then *he* punched *him*.

A hearer using the relevance-theoretic comprehension procedure in interpreting the second conjunct in (11) should follow a path of least effort in assigning reference, and interpret *he* as referring to Bill and *him* to Ted. This assignment is made easily accessible by syntactic parallelism, on the one hand, and encyclopaedic knowledge, on the other. Use of the costlier contrastive pattern in (12) should divert the hearer from this otherwise preferred interpretation towards the alternative, less accessible interpretation on which *he* refers to Ted and *him* to Bill. On this account, contrastive stress is a 'natural' highlighting device which achieves its effects via the automatic working of the relevance-theoretic comprehension procedure. It does not *encode* anything. Some elements of prosody, however, *do* and it is to those elements I turn in the next section.

2.3 What does prosody encode?

As I said earlier, it is a tacit assumption in much of the literature on prosody (and, indeed, in the literature on human communication) that prosody conveys the information it does by encoding it. So on the one hand there are three distinct (and probably linguistic) aspects of the prosodic structure of English that contribute to what a speaker means: *tonality* – the chunking of words into groups or phrases; *tonicity* – the location within that phrase of the pitch accent – or *tonic* – a prominent syllable which typically highlights new information; *tone* – the type of melodic contour on that accent.On the other, there are the natural aspects of prosody which encode information that conveys information about emotional states about emotional states and attitudes, or creates impressions. We have seen that much of what is often treated as governed by either a linguistic or biological code might not be coded at all. Nonetheless, natural codes do exist.

Much early work on prosody and meaning – in what might be called the British School – concerned itself with the meanings of English nuclear tones (or *pitch tones* or *melodies*). This is the rising or falling (and rising *and* falling) that occurs on the tonic syllable in an intonation phrase. But assigning meaning to English tones has proved a troublesome business. In general, the more precise one's account, the easier it is to criticise.

O'Connor and Arnold (1973) make highly specific claims about meaning. A low fall, according to them, means that a statement is definite and complete insofar as it is a 'separate item of interest'. In addition it conveys a 'detached, reserved, dispassionate, dull, possibly grim or surly attitude on the part of the speaker'. But so much depends on the words that such accounts are rendered redundant.

(11) I \adore you.

It is now recognised that prosody encodes something much less precise, and perhaps hard to pin down in conceptual terms. So rather than a particular tone encoding a concept such as 'detachedness' or 'reservation', the tone encodes information that indicates how the speaker intends the proposition she is expressing to fit in with what she believes the hearer knows or believes at a particular point in the conversation. As Jill House puts it, prosody functions to:

…guide the listener in how to proceed: how to access the relevant cognitive context within which to interpret the speaker's contribution, how to evaluate that contribution, and how to construct the interaction itself, to enable the communication to take place. (House 2007, p. 369)

House's work (1990, 2006) is crucial to the account developed here. She is someone who has constantly tried to bridge the gap between prosody and pragmatics: a phonetician with a real understanding of pragmatic principles; for her, the role of prosody is – at least partly – to *create* the context.

As communication continues, newly communicated assumptions… or background assumptions which the talk has made accessible, come to the foreground, while others drop into the background. The ever-changing context is thus whatever set of assumptions is active at a given time. Comprehension involves the processing of the new assumptions in the context of the old ones, and in the process the context is updated. (House *ibid.* p. 370)

Hirschberg and Ward (1995, p. 407) propose that the high-rise question contour of English encodes 'that the propositional content of the utterance is to be added to the speaker's and hearer's 'mutual beliefs'… and to question whether the hearer can relate that propositional content to the contents of the hearer's own (unshared) beliefs'. In a recent paper Clark (2007), building on the work of Imai (1998), makes proposals about all the tones

of Southern 'Estuary' English: a rise, for example, encodes information to the effect that 'an explicature[3] of the utterance is entertained as an interpretation of a thought of someone other than the speaker at the time of utterance.' Such proposals are vague enough to be worthy of attention, but note that what prosody encodes is often even vaguer: affective prosody communicates moods and vague impressions.

We are led to two apparently incompatible claims: on the one hand, the claim that prosodic signals are naturally or linguistically coded; on the other, that they typically create a diffuse impression rather than conveying a determinate message. A *code* is standardly seen as a set of rules or principles pairing signals with determinate messages. How is it possible to maintain both that prosodic signals are coded and that what they convey may be no more than a wide array of weak non-propositional effects? The answer, I will suggest, is that we need a new notion of coding. In this section of the chapter, I pursue an idea originally proposed by Diane Blakemore (1987, 2002) and applied to different aspects of prosody by Vandepitte (1989), Clark and Lindsey (1990), House (1990, 2006), Escandell-Vidal (1998, 2002), Imai (1998) and Fretheim (2002). The reason it is hard to pin down what prosody encodes in conceptual terms is that prosody doesn't encode anything conceptual at all.

The idea is this: if linguistic communication typically involves a combination of decoding and inference, then linguistic signals might be expected to encode information of two distinct types. First, there is regular *conceptual* encoding, where a word (e.g. *dog*) encodes a concept (e.g. DOG) which figures as a constituent of the logical form of sentences in which that word occurs. Second, we might expect to find a form of *procedural* encoding, where a word (or other linguistic expression) encodes information specifically geared to guiding the hearer during the inferential phase of comprehension. The function of such 'procedural' expressions would be to facilitate the identification of the speaker's meaning by narrowing the search space for inferential comprehension, increasing the salience of some hypotheses and eliminating others, thus reducing the overall effort required.

Properly linguistic expressions which have been analysed in procedural terms include discourse connectives, mood indicators and discourse particles (cf. Blakemore, 1987, 2002; König, 1991; Wilson and Sperber, 1993; Hall, 2004). So a discourse connective such as *but* encodes a procedure which inhibits a conclusion that might otherwise be drawn; mood indica-

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[3] In relevance theory anything communicated explicitly (as opposed to implicitly – *cf.* Grice's notion of *implicature*) is called an *explicature*.

tors – e.g. imperative morphosyntax – encode procedures which facilitate the retrieval of a range of speech-act or propositional-attitude descriptions associated with imperatives; discourse particles such as *please* encode a procedure which facilitates the retrieval of a range of speech-act or propositional-attitude descriptions associated with requests. Properly linguistic prosodic signals (e.g. lexical stress, lexical tone and fully grammaticalised aspects of prosody – perhaps nuclear tones) might be analysed on similar lines, as facilitating the retrieval of certain types of syntactic, semantic or conceptual representation. Thus, the notion of procedural encoding applies straightforwardly to properly linguistic prosodic elements.

Turning to natural signals, there has been some debate about whether interjections such as *oh, ah* and *wow* are properly linguistic. Wharton 2003*a* surveys the literature and concludes that interjections are best analysed as falling on the natural rather than the properly linguistic side. However, I also argue that interjections are natural signals rather than signs, and that they share with discourse connectives and discourse particles the property of encoding procedural rather than conceptual information. On this approach, the function of an interjection such as *wow* might be to facilitate the retrieval of a range of speech-act or propositional-attitude descriptions associated with expressions of surprise or delight, which might be narrowed in context by information derived from prosody, facial expressions, background assumptions, discourse context, etc., and contribute to the speaker's meaning in the regular way, by falling under the relevance-theoretic comprehension procedure.

The line of argument is taken further in Wharton (2003*b*), which proposes that natural signals such as smiles and other spontaneous facial expressions should also be analysed as encoding procedural rather than conceptual information. The idea can be extended to natural prosody, such as affective tone of voice. On this approach, the function of affective tone of voice – a natural signal – would be to facilitate the retrieval of similar propositional-attitude descriptions to those activated by interjections. This approach makes it possible, on the one hand, to capture the fact that natural signals, interjections and properly linguistic signals such as mood indicators or discourse particles all have a coded element, and on the other, to explain why what they communicate can sometimes be so nebulous, contextually shaded and hard to pin down in conceptual terms.

If, as Bolinger appears to suggest in the quote on page, there is a diachronic dimension to the continuum between display and language, then this continuum may turn out to be a useful tool with which to follow the trail back from arbitrary linguistics expressions to their natural origins: perhaps to prosody too. Chen and Gussenhoven (2003) and Wichmann (2002) suggest that since there is considerable cross-linguistic variation in

the way paralinguistic meanings are realised, to a point where they may become heavily stereotyped or even fully grammaticalised, they might also become part of language proper. In Wharton (2009) I suggest ways in which vocalisation might be ranged along such a diachronic (and synchronic) continuum, from an entirely natural gag reflex in which the glottis simply closes, to the related *ugh* [ux] through interjections such as *yugh* [jux] and *yuk* [jʌk], to linguistically productive expressions such as *yucky*, *yuckier* and *yuckiest* (see Padilla-Cruz 2009*ab* for more discussion of interjections). As I have argued in Wharton (2009), a synchronic version of this continuum is already used in the literature on gesticulation and gesture (McNeill 1992, Kendon 2000).

3. Practice

One point on which almost all theorists agree is that it is inappropriate to confer onto prosody the same kind of meaning we generally confer onto words. So rather than a particular tone encoding a concept such as 'politeness', 'surprise', 'disbelief' or 'enthusiasm', the tone encodes information that indicates how the speaker intends what she is saying to fit in with what she believes the hearer knows or believes at a particular point in the conversation. Working from relevance-theoretic perspective, Jill House puts it like this:

> The role of discourse participants may be summarised as follows: the speaker's task is to present his contribution in a way that optimally directs the hearer to the intended interpretation; the hearer's task is to use a combination of linguistic decoding and inferencing to derive hypotheses about the explicit and implicit content of the utterance, and to find the interpretation which seems to be most relevant for the least amount of processing effort. (House *ibid.* p. 371)

Given the support for this kind of claim, it is surprising that the temptation to make such direct claims on the link between prosodic form and meaning – á la O'Connor and Arnold – is not resisted. But one of the most popular pronunciation coursebooks – Headway Intermediate Pronunciation – makes many such direct links, correlating various intonation patterns with the precise same emotional states listed above. As a former EFL teacher myself I understand perfectly well that sometimes generalisations simply have to be made. But how useful such generalisations are is open to question. Prosody simply *can't* be pinned down in conceptual terms and it is potentially misleading to the student to presume it does. Szczepek Reed (2004, this volume) and Kouper-Kuhlen (in press) uses evidence from research carried out within the framework of interactional linguistics to show

how some of even the most basic claims made in the EFL literature about the correlations between pitch change and questions are simply wrong.[4]

Another point of agreement among the theorists is that prosodic meaning is not all cut from the same cloth: Fig. 1.1 above is an attempt to clarify the position. According to the figure, prosody comes in four main varieties. Natural prosody divides into two classes: signs and signals. Non-natural prosody includes those aspects of prosody that are grammatical (phonemes, lexical stress), and also the non-natural aspects of prosody that are cultural rather than linguistic.

A strong version of the claim that a communicative behaviour is 'natural' would entail that it is also universal. But universals in human behaviour are hard to find. It has been claimed that the eyebrow flash is a candidate for a universal communicative behaviour (Eibl-Eibesfeldt 1972) but Paul Ekman (1989, 1992, 1994, 1999), himself an advocate of the view that there is a whole range of spontaneous facial expressions that have evolved in humans to reflect a signaller's internal state, denies that the eyebrow flash is used in the United States. To what extent can the fact that some aspects of prosody are natural and hence universal (or almost universal) be exploited by teachers and learners? With caution, probably, but I have had some interesting discussion with both on the degree to which such universals exist. When discussing aspects of this chapter with teachers and learners on a Summer I teach regularly[5], it was a source of interest to some when I introduced them to Gussenhoven's (2002) *Frequency Code*. This is essentially:

> …Ohala's extension to human speech of Morton's explanation for the widespread similarities in patterns of avian and mammalian vocalizations in face-to-face competitive encounters. Vocalisations by dominant or aggressive individuals are low-pitched, while those by subordinate or submissive individuals are highpitched.
>
> (2002, p. 48)

Some teachers suggested that this might be why when adults try to signal reassurance to children, a relatively high, sometimes rising pitch is used, or even why high pitches in general are associated with positive attitudes.

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4 Those working within the field of interactional linguistics continue to do impressive and insightful work into the role of prosody in sequence- and turn-management (see references in Szczepek Reed (this volume)).

5 The University College London Summer Course in English Phonetics.

Perhaps an awareness that certain aspects of 'natural' English prosody may be partially (or perhaps wholly) reflected in the natural prosody of the first languages in question might be a strategy worth pursuing.

Turning to the node on the far right of Fig. 2.1, what can it mean to say that a given behaviour is culturally, rather than linguistically encoded? There are a variety of complications, not the least of which is that there is, of course, a *cultural* element to language itself, and the question of what differentiates the cultural from the linguistic is a complex one. But whilst the notion of a cultural, as opposed to linguistic, code may be an unfamiliar one in the analysis of prosody, it is perfectly normal in the study of gesture. Communicators have a whole range of gestures at their disposal, and the prosodic continuum from 'natural' to language-specific (Gussenhoven 2002, Pell 2002) is reflected in a gestural continuum suggested by McNeill. At one extreme, there are the entirely natural, non-linguistic gesticulations that are spontaneously used to accompany speech. At the other, there is sign language proper, which is fully linguistic and non-natural in Grice's sense. Between these two extremes lie a range of gestures which, whilst clearly *non-linguistic*, are equally clearly non-natural in Grice's sense. This is the category of culture-specific 'emblems': the British two-fingered insult is one such example, the multi-cultural raised second finger 'salute' another. There may well be elements of prosody which have previously been analysed as 'language-specific' but which are actually cultural stylisations rather than properly linguistic – one example might be the British 'calling contour' – 'hell-*aw*-oo'. Ladd (1996), Gussenhoven (2002, 2004) and Wichmann (2002) suggest there is a considerable cross-linguistic variation in the way what they call 'universal paralinguistic meanings' are realised, to a point where they may become heavily stereotyped or even fully grammaticalised and part of language proper. Among the aims of this chapter has been to draw attention to two possibilities that have perhaps not been so widely considered in the literature: first, not all prosodic inputs are coded at all; and second, the fact that prosodic patterns and their interpretations become stereotyped or vary from language to language is not conclusive evidence that they are *linguistically* coded.

Whilst it is not entirely clear precisely which aspects of prosody are cultural rather than linguistically coded – and nor is it clear to me how we might find out – it seems clear that there *is* a socio-cultural aspect to prosody. Over the past fifty or sixty years, the experience of the 'language learner' has changed immeasurably. At one time, in both method and objective, learning a language was analogous to learning algebra or logic. The method was grammar-translation, the objective grammatical competence. Communicating with the target language being learned, even *speaking* it, was never a consideration. In the modern EFL classroom, the em-

phasis is very much - to hijack Dell Hymes' (1972) term – about *communicative* rather than just *linguistic* competence.

Some aspects of prosody clearly form part of a sociocultural, rather than the grammatical or structural competence a learner of English is aiming for. Cantarutti (2010) suggests prosody forms part of 'pragmatic and discourse skills, as well as the strategic competence'. It may well be that different aspects of prosody play a role in all the different competences. But if certain aspects of prosody are not even *linguistic*, it could be suggested that the language classroom is not even the place to learn them. Perhaps we should no more be teaching students to mimic some aspects of prosody than we should be teaching them to mimic other dimensions of English culture: clothing, pastimes or food.

The introductory chapter to a recent book by Morón, Padilla-Cruz *et al.* explains how – building on work by Canale and Swain (1980), Canale (1983) and Bachmann (1990) – Celce-Muria *et al.* (1995) suggest a more comprehensive model of communicative competence as applied to the second language classroom. It suggests the aim of the modern language learner is to achieve a *range* of competences, of which grammatical or structural competence is only one. These other competences include *sociocultural competence* – the ability to produce utterances that are appropriate to the sociocultural context in which communication takes place (e.g. social factors such as participants' age, gender and power, and stylistic factors such as politeness conventions and degrees of formality) – and *strategic competence* – the use of fillers, self-initiated repair or self-rephrasing and appeals for help when the learner does not know a word. This latter competence provides students with:

> […] an ever-present, potentially usable inventory of skills that allows a strategically competent speaker to negotiate messages and resolve problems or to compensate for deficiencies in any of the other underlying competencies.
>
> (Celce-Murcia *et al.* 1995, p. 9)

On the summer course I refer to earlier, I carried out an informal survey in order to get a sense of the importance teachers place on such competences. Teachers almost unanimously remarked that grammatical (or structural) competence was the most important to the student. But equal second in the rankings of the various competences was sociocultural competence as defined above. Here is what one teacher had to say:

> I think sociocultural competence cannot be overlooked in language teaching because it leads to appropriate and effective communication. I am a university lecturer in Thailand. My university also offers weekend classes for adult students at

undergraduate and postgraduate levels. Some of my students can speak English quite well but many times I've found that they do not use English appropriately. [6]

A problem, of course, is that whilst English speakers certainly have rules or conventions of appropriacy, many learners of English as a second language may be doing so in order to converse with *other* non-native speakers of English whose rules of appropriacy may differ from the native English speaker's as well as their own. To some extent here we enter the debate articulated in Jenkins (2000) on the degree to which native-like pronunciation is even *desirable* among learners. Jenkins famously suggests that teacher might be better off concentrating on a Core Lingua Franca within which those phonemic distinctions that are unlikely to cause communication problems are abandoned. Whilst the ultimate choice must be left up to the individual student, it seems to me that telling students certain phonetic distinctions are not worth their while attempting is at best unrealistic and at worst patronizing. But in any case, Ostler (2010) suggests that English may be the *last* Lingua Franca in the world and that by 2050 no Lingua Franca will be necessary. ELT learners can breathe a sigh of relief, and ELT schools – whose monopoly may soon be coming to an end – had better start planning ahead.

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[6] This quote included with the kind permission of Ms Rachada Pongprairat, Assistant Professor of English, Thepsatri Rajabhat University, Thailand.

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