Pitch Accent Systems

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1.   Introduction[1]

This chapter deals with the typology of *word prosodic systems* and, specifically, discusses the notion 'pitch-accent (language)', asking whether there is such a class of languages as distinct from the notions 'stress (language)' and 'tone (language)'. Several issues will turn out to be crucial. Firstly, there is the issue of recognizing (or not) a notion of *accent* which could be said to underlie both pitch-accent and 'stress' (or indeed stress-accent), and perhaps even other phenomena which are often not even referred to as accentual (such as phonotactic asymmetries). Secondly, there is the question as to whether we wish to distinguish between pitch as a *non-distinctive* and thus perhaps strictly phonetic property (arising in *phonetic implementation*) and pitch as the exponent of a phonological category (namely *tone*). Thirdly, there is the possibility of having tone, stress and accent (in various combinations) 'side by side' within the same language which raises the question how these notions interact in any given language.

The structure of this chapter is as follows: In section 2 I will introduce the basic notions and definitions. Section 3 will briefly mention examples of languages that have been referred to as pitch accent languages, where accent is apparently realized in terms of *non-distinctive* pitch. In section 4, we then examine cases in which tone realization or tone distribution has been said to depend on accent (or stress), a class of languages that is also often included in the pitch-accent type. Section 5 and 6 focus on the different ways in which alleged pitch accent languages have been analyzed, with or without using the notion 'accent'. In section 7, I define the notions accent and stress as distinct phonological entities and suggest that stress languages may or may not be accentual. In section 8 I offer some conclusions.

2.   Accent, tone and stress: definitions and usage

2.1.   Accent and stress

For many languages, researchers have reported word-level 'prominence', associated with a specific syllable in the word, which is called 'stress' (an English term) or 'accent' (the term, ignoring spelling differences, used in, for example, French or German) (see also Chapter 43: Representations of Word Stress). In English literature on the subject both terms ('stress' and 'accent') have been used for word-level prominence which has lead to a good deal of confusion, in particular because there are writers who use both terms for

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different things. Cutler (1984), for example, regards 'stress' as a property of words and 'accent' as a property of sentences. There is thus a need for being clear on how these two terms are used.

2.2. Accent and its cues

On closer scrutiny the informal notion of 'prominence' *can* be dissected into two distinct phenomena. On the one hand, we have the *location* of the prominent syllable (penultimate; ultimate if the final syllable has a long vowel, otherwise penultimate etc.) and, on the other hand, there are the phonetic (and phonotactic) *cues* that signal the location of the prominent syllable (Chapter 40: Stress: Phonotactic and Phonetic Evidence). In one (fairly old) terminological tradition, the locational aspect of prominence is called *accent*. The characterization of the accent (location) is essentially sequential (or *syntagmatic*) and is such that only one syllable in the relevant domain can have this property. This is what Martinet (1960) and Garde (1968) refer to as 'accent' being *contrastive* or *culminative*, a term mainly used in Trubetzkoy (1939). The realizational aspect of prominence is, in a sense *paradigmatic* (cf. van Coetsem 1996): there are various (not necessarily incompatible) phonetic and phonotactic means for cueing the accent. Some languages may favor one specific cue (for example, *pitch* or, *duration*), but it is not excluded that several cues conspire to manifest the accent. This dissecting of 'prominence' correlates with traditional terminological systems such as *musical accent* versus *dynamic accent* or (with much the same meaning) *pitch-accent* (systems) versus *stress-accent* (systems) (cf. Fox 2000: chapter 3 for an excellent general review of the notion *accent*; also see van Coetsem 1996 and van der Hulst 1999, 2010b). In each case, the modifier of the head noun ('accent') says something about the way in which the accent is 'manifested' or 'realized'. In this chapter I will focus on relationships that involve accent and pitch, whether used distinctively (in terms of contrastive tones) or non-distinctively. However, I will also have to consider the relationship between accent and stress.

2.3.   Word prosodic types

While in some languages pitch is a property of words, all languages use pitch features within an *intonational system*, a system that aligns 'sentences' with a melody that can be defined in terms of pitch events that mark boundaries of (syntactic or prosodic) units as well as the informational packaging of the utterance with reference to the notion 'focus' (Bolinger 1982, Gussenhoven 2004b; Chapter 89: Levels *vs*. Configurations and the Representation of Intonation). At the same time there are languages that use pitch as a property of 'words'. Within this group of languages we commonly find the 'labels' in (1b) and (1c). The label 'stress' in (1a) is then reserved for languages that need no specification of pitch at the word level, although like all other languages, they will be using pitch for intonation purposes.

(1)   a.   Stress (or stress-accent)

b.   Pitch accent
c.   Tone

There is, however, a great deal of controversy concerning the use of the terms 'tone' and 'pitch-accent', and, for that matter, the term 'stress'. [2]

In Hyman (2001, 2006, 2007a) a case is made for attributing systems that we label 'stress'[3] and 'tone' the status of 'prototypes', meaning that languages that belong to one or the other (or both) type(s) display one or more specific *defining* properties. 'Pitch-accent', according to Hyman, is not a prototype, but rather a 'label' for a large class of hybrid systems that mix 'tone' and 'stress' properties in various ways, or systems that are plainly tonal, although displaying various restrictions on the distribution of tones. In effect, Hyman regards the notion 'accent' as being unnecessary, whether as a formal mechanism in analysis or as a prosodic type. Other researchers (such as Gussenhoven, e.g. 2004) who also reject the idea of 'pitch accent languages', nonetheless recognize the notion of accent as an 'analytic device'. In this chapter these views will be discussed and compared to views that attribute a fundamental role to the notion *accent*.

2.4.   Definitions and use of tone

A traditional way of defining the notion 'tone' is in terms of '*distinctive* use of pitch'. Thus, if a language uses pitch to distinguish different otherwise identical morphemes, pitch has a phonological or contrastive (distinctive) status. The following often quoted definition captures what is perhaps the maximal use of distinctive pitch:

> "A tone language may be defined as a language having lexically significant, contrastive, but relative pitch on each syllable" (Pike 1948: 3)

If tones are distinctive on all syllables (like possibly other properties such as frontness, height or roundness) we can say that the distribution of tones is *unrestricted*. Most researchers, however, agree that there is no reason to limit the term "tonal language" to cases in which the distribution of tones is *entirely* unrestricted (see Chapter 10: The Representation of Tone). Presumably, all tonal systems show restrictions resulting from tonal spreading or assimilation (Schuh 1977, Hyman 2007b), from using a limited set of tonal melodies which are properties of morphemes rather than of syllables (Leben 1971; Goldsmith 1976; Halle and Vergnaud 1982), from the avoidance of sequences of identical tones (dissimilatory or 'OCP' effects) or indeed from relations between tone distribution and accent (or 'stress') (see section 4.1.). Also, it is not uncommon to find

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[2] Typological studies of word prosodic systems are numerous: Trubetzkoy (1939), Hockett (1955), Greenberg & Kashube (1976), Garde (1968), Meeussen (1972), Goldsmith (1976, 1988), Hyman (1977, 1978a, 1981, 2006, 2007a), Lockwood (1982), Clark (1987, 1988), Haraguchi (1988), Hayes (1995), Hollenbach (1988), Mock (1988), Odden (1982, 1983), Clements & Goldsmith (1984), Beckman (1986), van der Hulst & Smith (1988), Wright (1988), van der Hulst (1999, 2010), De Lacy (2002), and Duanmu (2004).

[3] Here Hyman avoids the term 'stress-*accent*', presumably because he no longer (compared to Hyman 1977) recognized the label 'pitch-accent' as a useful one and thus essentially wants to eliminate the notion accent altogether.

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that the full range of contrasts is not found in affixes (as opposed to roots or stems) (Chapter 112: Root-Affix Asymmetries). Finally, initial or final syllables may refuse to bear tonal contrast (sometimes to leave room for intonational tones or for other perhaps 'perceptual' reasons; Chapter 104: Perceptual Effects).[4] Since it would be unwise to maintain the strictness of Pike's definition (according to which perhaps not a single language is tonal), van der Hulst and Smith (1988) quote a much more liberal definition that is provided by Welmers (1973:2):

> "A tone language is a language in which both pitch phonemes and segmental phonemes enter into the composition of at least some morphemes"[5]

Note the use of the term 'pitch *phoneme*' (Chapter 4: Phonemes) which suggests that Welmers requires that pitch is used contrastively, a rather crucial point to which I will return below. This definition includes languages in which there are tonal contrasts in certain, or even in only one position in some morphemes.

With this broader definition, tonal languages can be ranked on a scale of *tonal density* (Gussenhoven 2004), which indicates how many word positions have how much tonal contrast. In a sense such a scale indicates the relative *functional load* of tone properties. Stretching Gussenhoven's notion, we could say that relative density arises not only in the syntagmatic dimension (depending on how many positions display tonal restrictions), but also in the paradigmatic dimensions (depending on the number of contrastive options per position):

(2)   Tonal density matrix

        T1   + + + + + +
        T2   + + + + + +
        T3   + + + + + +
             x x x x x x   (tone bearing-units)

However, no matter how dramatic the restrictions, as long as there is tonal *contrast* (i.e. distinctive use of pitch), phonological tones *must* be specified in the lexical entries. The smallest tonal system would have two tones, H and L. More extensive systems would add an M tone and possible two different M tones (high mid and low mid). In addition, systems can have contour tones (rise, fall, etc.) (Chapter 10: The Representation of Tone).

2.4.   Culminativity and obligatoriness

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[4] Suárez (1983: 52): In Huichol and Mazahua there is no tone contrast on the last two syllables or the last syllable, respectively. In these languages, inherent lexical tones are removed to free up space for intonational tones.

[5] Strictly speaking this excludes a case in which a language has tonal affixes without having affixes or other morphemes that combine tone and segmental properties.

Another frequently cited term in this context is 'restricted tone language' introduced in Voorhoeve (1973) and Schadeberg (1973). This term too would seem to indicate a scale of restrictiveness, although Voorhoeve introduced it in the context of Bantu languages whose tonal system is *so* severely restricted (up to one H per word in a H/L system) that he started wondering whether an accentual analysis should be considered (Chapter 124: Bantu Tone). Indeed, adding syntagmatic and paradigmatic restrictions on the distribution of tone together, one could see that a language, despite having a H/L contrast, while allowing at most one H tone per word could easily lead to an accentual analysis in which the H 'tone' is regarded as the predictable pitch *cue* of an accent, even in the case in which there is no indication of any additional, independent cues for this accent.

But what is 'accent', precisely, and how is it formally represented? Hyman (2007a) formulates two necessary properties of what he call stress and here I will taken these two as a point of departure for establishing what might be seen as characteristics of accent, if these notions are going to be distinguished. One 'property' is such that each 'word' can have 'it' *at most once* (only one syllable can be stressed or accented) and, additionally, each word must have it *at least once*. These two properties, following Hyman (2006, 2007a) can be referred to as:

(3)   a.   Culminativity (at most one)
             b.   Obligatoriness (at least one)

Let us now ask whether the two properties in (3) *must* be regarded as necessary properties of accent. An issue that goes to the heart of what is often seen as problematic for the notion 'pitch-accent' is that languages which allegedly have a pitch-accent system, and thus accent, sometimes have (lexical) words that appear to be *unaccented* (see the discussions of Tokyo Japanese in section 6). This, however, is only problematic if obligatoriness is stipulated to be a *necessary* property of accent. We could investigate a more liberal understanding of accent and say that in an accentual language, unaccented words are simply permitted. This, of course, has important consequences because it opens the door to using the presence versus absence of accent as a contrastive option and thus to analyzing alleged tonal language that have a H – L contrast as fully accentual languages, seeing H as the exponent of accent and L as the lack of accent.

We may then also question whether culminativity is a necessary requirement for speaking of accent. If culminativity is not required, even 'H-L' languages that allow multiple H 'tones' *could* analyzed as fully accentual. Allowing words to have multiple accents separates the notions stress and accent even more dramatically than just giving up obligatoriness for accent. Still, if accent is not the same thing as stress, there is no a priori reason for believing that any properties of the latter need to be true of the former. I return to these issues in section 5.3.

2.5. Representational issues

Answers to the question as to whether or not the properties in (3) are definitional of accent, have repercussions for, or are implicit in, the manner in which accents are formally represented. In one type of approach the relevant syllables are marked with an

'accent mark', as is common in dictionaries, and in the autosegmental approach (i.e. the 'star' in Goldsmith 1975) or in terms of a segmental feature as in the phonological theory of Chomsky and Halle (1968). In this, what I will call, "lexicographic approach" there is no commitment to culminativity or obligatoriness.

A different formal approach is to provide the string of syllables with a headed tree structure as has been proposed in various versions of Metrical Theory (Liberman and Prince 1977) and Dependency Phonology (Anderson and Ewen 1987) (see also Chapter 42: The Foot). Metrical structures have one designated terminal unit, the head of the word, which counts as the (primary) 'stress'. This notation (assuming that all syllables must be grouped in one structure) implies culminativity, but not necessarily obligatoriness because it doesn't follow from the notation that each word must be provided with a metrical tree.

However, rather than seeing 'asterisks' and trees as competing mechanisms, we should entertain the idea that they are complementary in that the former represent accents, while the latter represent stress. This point is understood in Anderson and Ewen (1987) who, in addition to headed tree structures also use asterisks to indicate, what we might call *potential heads*.[6] I will return to this point in section 7.

2.6.   Problems with the notion 'pitch accent'

So far we have been considering a use of the term accent as an abstract mark of a position that can be cued by various phonetic properties, 'stress' being one of them. Beckmann (1986) refers to languages that are *not* stress-accent languages, as 'non-stress-accent' languages (thus avoiding the term 'pitch-accent language'). This, of course, is compatible with the idea that in many non-stress languages pitch is the most salient property of accent. Van der Hulst (1999, 2010b) points out that, if we maintain the term 'pitch-accent language', we might then also expect to find languages that can be labeled as 'duration-accent' languages (if duration is the only cue). Under this view, pitch-accent languages are languages in which accent is (mainly) cued by phonetic pitch.

There are, in fact, various factors that make the use of this term problematic. One factor is, obviously, that people may simply define the term differently. For example, as we will learn in section 4.1., tonal contrast is often limited to specific syllables in the word and cases of this sort have been analyzed by identifying a notion 'accent' and, subsequently, the notion that association of tones is guided by, or dependent on this accent. While, in this case, the *presence* of tone can be said to function as a cue of accent, the cue is not phonetic but rather a phonological fact (namely the phonotactic distribution of tones). The fact that the possibility of tonal contrast may signal the accent location is part of a much more general pattern, found in many languages, where accented syllables display contrastive or structural options that are exclusive to the a particular syllable (see van der Hulst 2010b, Downing 2010).[7] Pursuing the terminological path that we entered above, we might refer to such cases in which tonal contrast is limited to the accented syllable as *tone-accent* (or tonal accent) languages, rather than pitch-accent languages. It

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[6] Another formal notation (also proposed in Liberman and Prince 1977) is the metrical grid which does not even imply culminativity. See Chapter 43: Representations of Word Stress for extensive discussion.
[7] This relates to the notion of positional faithfulness; cf. Beckmann (1998).

is apparently the case that accented syllables can be referred to by the phonology as well as by the phonetic implementation system. In fact, accents can be referred to by other grammatical modules as well, such as for example the intonation system. Does that mean that we can refer to English as an 'intonation-accent' language? Languages cannot be put in a single box when it comes to the question which cues they have for accent.

Tonal accent systems, then, differ from pitch-accent systems if we agree that in the latter pitch is not used distinctively. However, some writers (e.g. Downing 2010) use the term 'pitch-accent' for *any* system in which pitch properties (whether distinctive or not) enter into a relationship with accent or stress. This would include not only what is called here a 'pitch-accent' or a 'tone-accent' language, but also another class of languages that have both tone and accent in which accent (or 'stress') is assigned with reference to tone. Downing's use of the term 'pitch-accent' is thus much broader than the one I suggested thus far.

Finally, we return to Hyman's (2006, 2007a) use of the relevant terminology. It would seem that he agrees that systems do exist in which pitch could be analyzed as a predictable phonetic cue of a notion accent[8], but he argues that systems of that sort *can* always be analyzed as tonal. He refers to Gussenhoven (2006) who analyzes Nubi, a language in which each word has precisely one syllable with high pitch. Gussenhoven argues that Nubi presents a case that *can* be analyzed as a pitch-accent or even as a 'stress language', but adds that it is also possible to propose a tonal analysis. If a tonal analysis is chosen, it follows that the fact that the high pitch in Nubi is culminative and obligatory is considered 'an accident'. It would be said that Nubi is simply on the far end of a continuum of tonal languages in which the distribution of tones is restricted in various ways.

We must realize that Hyman (2006, 2007a, this volume) as well as Gussenhoven (2004, 2006) (in line with the approach initiated in Pulleyblank 1986; cf. section 4.4.) adopts a definition of tone that is even more liberal than that of Welmers (see Hyman 2001 for first introduction of this definition):

> "A language with tone is one in which an indication of pitch enters into the lexical realization of at least some morphemes"

For these authors, then, the notion tone clearly no longer entails 'tonal contrast' (i.e. distinctivity). For this reason, they maintain that a language like Nubi, although it could be analyzed as a pitch-accent system, can also be tonal.

2.7. Intonational pitch accents

Before we examine some cases of (alleged) pitch accent systems, let us consider one other use of the term 'pitch-accent'. The term is also used in the intonation literature where, following Bolinger (1982), intonational events that associate to *phrasal* accents (usually called phrasal 'stresses') are called *pitch-accents*. In the autosegmental-metrical tradition of Goldsmith (1981), Liberman (1975), Bruce (1977) and Pierrehumbert (1980), Gussenhoven (2004), Ladd (2009), Chapter 89: Levels *vs*. Configurations and the Representation of Intonation intonational pitch-accents are *phonological* tones (H, L or

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[8] This is, in fact, how he uses the term in Hyman (1977).

some combination) and the reason for that is that in many intonational systems that have been studied within this model, there are tonal *contrasts* at the intonational level because different tones or tone combinations have different meanings. However, if in some language each phrasal accent would associate with the same pitch event, it would be perfectly possible to analyze that pitch events as a direct phonetic interpretation of the phrasal accent without postulating an intervening phonological tone.[9]

2.8. The issue of distinctivity

Approaches in the autosegmental-metrical tradition are not, however, so much concerned with distinctivity (and indeed with a distinction between 'phonological' and 'phonetic' phenomena) and all phrase level pitch phenomena are usually analyzed in terms of 'tones' (which mirrors Hyman's general use of tones at the word level, which also ignores distinctivity).

It could be argued that definitional decisions are, paradoxically, not the crucial issue. Does it really matter whether we 'call' Nubi a tone language or a pitch-accent language or even a stress language? What *is* of importance is how specific systems are analyzed and which theoretical tools are used. This being said, we must also be aware of the bigger issue regarding how we see 'phonology' as distinct from and interacting with 'phonetic interpretation or implementation'. A traditional stance would be to maintain that using a formal object 'H' in the phonology entails that this unit has a contrastive function within the linguistic system (Chapter 6: Contrast). If pitch is distinctive we deal with *phonological* entities such as /H/ and /L/, etc. If one sets up the system of phonetic implementation by translating a non-tonal property X (e.g., accent) into a phonetic property 'H' which gets implemented in terms of relative F0, we seem to be dealing with [H] (rather than with /H/).[10]

Against this background this chapter will examine some specific cases.

3. Some (alleged) pitch accent systems

In this section I simply provide some references to languages that have been analyzed as pitch accent systems or that have played an important role in the proper treatment of systems that have pitch or tonal cues correlating with accent.

3.1. A tour around the world

Van der Hulst, Goedemans and van Zanten (2010) offers a survey of word accentual systems in the world's languages. I refer here specifically to the chapters on languages in

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[9] It may in fact be the case that languages that have been described or listed as word level pitch-accent systems may be phrasal pitch accent systems. Since the patterns listed for words are often based on elicitation of citation forms we cannot be sure that the observed word prosodic properties are word-level or phrase level. See van Zanten, Stoel and Remijsen (2010) and Gordon (to appear).
[10] Here I refer to Clements (2001, 2009) who defends a broader justification for recognizing phonological features than only distinctivity. If a phonetic property is in some sense 'salient' this would, in his view, justify postulating a phonological feature.

the Americas (Rice 2010, Wetzels and Meira 2010, van der Hulst, Rice and Wetzels 2010) for many examples of languages that have been described as realizing accent exclusively or mainly in terms of pitch. Several additional examples can be found in the chapter on Papuan languages (Dol and van Zanten 2010) and Asian languages (Schiering and van der Hulst 2010) and European languages (van der Hulst 2010a), specifically Caucasian languages (Kodzasov 1999). Even though these surveys do not *prove* that the category of pitch-accent languages is a genuine prosodic type, it cannot be without some significance that *so* many systems have been identified with obligatory and culminative (and non-distinctive) high pitch.

3.2. Basque and Japanese[11]

The following two cases differ from the previous cases in making explicit reference to unaccented words, i.e. lack of obligatoriness. Yet in both cases it would seem that the alleged accents have distributional properties that are very similar to those of stress(-accent), which support the pitch-accent type of analysis.

3.2.1. Basque

The Basque dialects present a great diversity of word-prosodic systems (see Hualde 1999). Gussenhoven (2004: chapter 9) presents an analysis of Norther Bizkaian Basque with reference to the Gernika and Lekeito dialects. Both have accented and unaccented roots, the former being in the minority. There are inflectional and derivational suffixes that are accented or pre-accenting. In Lekeito, if a word has an accent, this accent always ends up on the penultimate syllable. In Gernika, which is more common in Basque dialects, the leftmost (non-final) accent prevails. In Lekeito unaccented words are grouped with an accented word to their left or right, whereas sequences of unaccented words form a single domain together. Each such domain either has an accent (if it contains an accented word) or is unaccented. Unaccented domains receive a default final accent in certain syntactic positions, namely at the end of the sentence or before the finite verb. Each accent, whether lexical or default, is associated with a HL pitch accent. The left edge of the accentual domain is marked by a LH boundary sequence and between the boundary H and the H of the pitch accent, we get a high plateau. Systems of this sort seem obvious candidates for accentual analyses which, of course begs the question, whether they *must* be analyzed accentually. One argument that could be made for an accentual approach is that in the various dialects we note a variety of accent locations (ranging from lexical to rule-governed) which is very reminiscent of the distribution of 'stress' in 'stress-accent languages'. The second argument again involves the fact that pitch is non-distinctive in Basque dialects. Note that in Basque, unaccented words are provided with default accent, at least in some cases.

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[11] Another case that is similar to these two language is Korean which, in its many dialects, displays a rich variety that is reminiscent of, especially, the Japanese situation; see Fukui (2003) and for a summary Schiering and van de Hulst (2010).

3.2.2. Japanese

Among Japanese dialects we also find a broad array of word prosodic systems (cf. Haraguchi 1979). An overarching property of all systems is the relevance of pitch at the level of the 'word', or, as some researchers prefer to put it, the 'accentual domain'. An interesting overview in the context of autosegmental theory of dialectal differences is offered by Haraguchi (1979, 1988), who divides Japanese dialects into two broad categories: pitch-accent systems and unaccented systems. Cross-classifying with this dichotomy, he suggests a 'universal' inventory of melodies (H, L, HL, LH and LHL) from which a system may pick one or two at most. In addition to the choice of one or more melodies, the differences among dialects depend on:

(4)   a.   The location of accent/H: fixed or free[12]
              b.   The spreading of H: no spreading/rightward/leftward

Thus in Tokyo Japanese, the H tone spreads leftward (leaving an initial mora low, possibly due to a boundary L tone that comes with the left. We will focus on the pitch aspect of Tokyo Japanese, in section 6.2. The system of Tokyo Japanese is such that the constituents of words (stems, affixes) can be accented or unaccented (or, in the case of affixes, pre-accented). When more than one accent is present in the accentual domain (which can be larger than the word and therefore needs a careful definition; Gussenhoven (2004) calls it the α-domain), the first (or leftmost accent) predominates, i.e. will attract the high pitch/tone. If no accent is present, the high pitch occurs on the last (rightmost) syllable (and spreads from there). This FIRST/LAST pattern constitutes a system that is reminiscent of so-called *unbounded stress systems* (Hayes 1995). In fact, Haraguchi (1988) notes that three of the possible unbounded patterns occur in Japanese dialects (see also Chapter 129: Japanese Pitch Accent).

(5)   a. Systems with unaccented words   b. Systems without unaccented words
        First/First[13] Kumi   First Fukuoka
        First/Last   Tokyo, Osaka
        Last/First   -   Last   -
        Last/Last   Hirosaki

Note that systems without unaccented words have no default clause.
        Haraguchi (1979, 1988) also recognizes *unaccented systems*, i.e. systems in which no word is accented. He mentions Sendai, Miyakonojo and Kagoshima. In such systems the tonal melody is associated either from left-to-right or from right-to-left in his analysis:

(6)   Systems with only unaccented words

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[12] In section 6.2. we will discuss the way accents are distributed in Tokyo Japanese, which is partly lexical and partly rule-based.

[13] This reads as: "Associate a tone with the first accented syllable, or, if no accent is present, with the first syllable."

      First
      Last

For these systems, tones are associated to words in terms of association conventions that make no reference to accents, but rather the word edges. These same conventions are invoked for unaccented words in accentual languages (as in 5a) which implies that in such systems tones are associated partly to accents and partly in a *direct* fashion (i.e. without 'intervening' accents).

In all dialects that use just one melody, the question can again be raised whether this 'melody' is a *phonological* entity or entirely due to phonetic interpretation. Haraguchi (1999, 1988) does not raise this issue, but it could be argued, as before, that only dialects that have more than one word melody are truly tonal.

3.3. Bantu languages

Many Bantu languages are commonly described as having both tone and accentual properties, while a few (such as Swahili) have lost tone to retain only 'stress' (Chapter 124: Bantu Tone). Bantu word-prosodic systems have always been of special interest to the debate regarding the appropriate analysis for languages that have both significant word-level pitch movement and indications that accents plays a role as well; see Voorhoeve (1973), Schadeberg (1973), Goldsmith (1975, 1988), Odden (1988), Hyman (1978a, 1981, 1982, 1989), Clements and Goldsmith (1984) and especially Downing (2010). The accentual analysis of Bantu languages was strongly promoted by Goldsmith (1976, 1984, 1991), although this approach has a longer history (see the introduction in Clements and Goldsmith 1984 for a historical perspective).

4. Systems with accent and tone

Although the focus of this chapter is on pitch correlates of accent, we must be aware of the fact that in systems that display both *tone* and accent several relations between these two phenomena are possible (Hyman 1977, van der Hulst and Smith 1988, Fox 2000, De Lacy 2002, Meira and Wetzels 2010 among others):

(7)   a. Accent and tone are independent
             b. Accent is dependent on tone
             c. Tone is dependent on accent

De Lacy (2002) proposes a system of constraints and account for the different relations in terms of different rankings. In this section I will focus on the systems in which tone is dependent on accent; for a discussion of the other two cases, see van der Hulst, in prep. In section 2.6., I have used the term *tonal accent systems* for system in which the distribution of tone is determined by accent, but we need to be more precise on exactly that kind of relationships may exist.

The distribution of distinctive tones can be restricted for a variety of reasons (see section 2). While the factors that lead to restrictions in a specific system may be unrelated to the notion 'accent' (which may or may not be independently present in the language in question), there comes a point where the tonal system is *so* restricted that an analysis is possible in which a specific syllable can be identified that can be called 'accented' and, as such, function as the domain for the association of the tonal distinctions. If a notion of accent was already present on independent grounds, the common tendency of reduction of tonal contrast in unaccented syllables may have been a factor in the emergence of a restricted tonal system, in addition to other factors that may have played a role. However, the processes that lead to restrictions may also 'accidentally' give rise to an accentual interpretation. Since languages in which accent and tone interact are sometimes included in the class of pitch-accent languages, these cases merit our attention in this chapter,

The effect of accent on tonal contrast can be twofold. It may lead to reduction and eventually neutralization of underlying contrast (Chapter 84: Mergers and Neutralization). This is what is called *accent-driven reduction*. It is commonly claimed that the elimination of tones in certain positions in Mandarin Chinese (Chapter 117: Chinese Tone Sandhi) is caused by the fact that tonal contrast can only be maintained in words with accent; see Yip (1980, 2002), Duanmu (2000) and Wright (1983) for analyses and references. A similar case can be found in the Ijô languages (Williamson 1988), where only the first word in a 'tone group' retains its underlying tones. In both cases, unaccented words loose their lexical tones (which nonetheless show up if the words are in an accented position). In these two examples we deal with accent at the compound or phrasal level and thus with neutralization of all tones belonging to words that are not in an accented position.

Reduction of tonal contrast *within* polysyllabic morphemes may lead to a restructuring such that tones formerly associated to unaccented syllables now either have disappeared for ever or are attracted to one particular syllable, the accented syllable. In either case, the end result is that tonal contrast only occurs on the accented syllable. When a restricted tone system is analyzed with reference to a notion of accent, we have accent-driven tonal distribution and the system can be called a *tonal accent* system. A question that arises in these cases is whether the accented syllable is cued merely by its attraction of tonal contrast, or, additionally, by other 'stress-like' cues. I will turn to this issue in section 5. I here mention some examples from Suárez (1983), as well as from Yip (2002) in their surveys of Meso or Middle American languages. Isthmus Zapotec has two tones which associate to the accented syllable and from there spread rightward. 'Pre-stress' syllables are low-toned. Suárez also mentions Nothern Pame and Yaitepec Chatino, as languages that have a tonal contrast only in the syllable that is said to be 'stressed' (which is the last syllable in both cases, presumably of the stem). This can be compared to Huautla Mazatec where every syllable can have contrastive tone. In between, we find cases where the contrast on certain non-accented syllables is limited. In Palantla Chinantec, for example, there is no tonal contrast on post-stress syllable.

Van der Hulst and Smith (1988) cite the case of San Juan Copola Trique that illustrates how restricted tonal distribution can arise historically (cf. Yip 2002, and Hollenbach 1988). In the Otomanguean family at large, we find a continuum of reduction of tonal contrast and, interestingly, an *increase* of tonal contrasts on the accented syllable. A case where accent has only mildly influenced tonal contrast is found in Cajonos

Zapotec (Nelis & Hollenbach 1980). Of the four underlying tones H, L, HL and M, only M is disallowed in unaccented syllables. In this case, then, we do not have a tone-accent system, but simply a tone *and* accent system with accent-driven reduction.

Among the languages in which the distribution of tone is dependent on accent, there is a subclass of special cases in which tonal contrast is limited to, or near accented syllables, not because in other positions tones have been neutralized, but simply because a tonal contrast historically developed in this position only. In these cases, the accented syllable, in addition to being an attractor for tonal association, has clear stress-like cues. Hence languages of this kind are, at the same time, stress-accent languages and tonal-accent languages with the proviso that the tone does not always associate directly to the accent syllable but sometimes near it (although this also depends on the details of the analysis). Two well-known cases of this sort are the Scandinavian languages and Serbo-Croatian. For discussions of the Scandinavian type I refer to Bruce (1999) and Gussenhoven (2004) (see also Chapter 102: Tonogenesis). For Serbo-Croatian see among others Inkelas and Zec (1998).[14]

We must note that the co-occurrence of stress-accent and a lexical pitch contrast enforces a tonal analysis of the latter. If the accent was not manifested in any other way than forming an anchor for lexical pitch, it could be argued that the opposition is one between accented words and unaccented words.

5. The accent debate

5.1. Accents or no accents

We have so far discussed two possible interactions between accent and pitch or tone:

(8) a. Accent $\Rightarrow$ pitch (pitch-accent systems; section 3)

  b. Accent $\Rightarrow$ tone (accent-dependent reduction and distribution; section 4)

The dividing line between the two types is distinctivity. If pitch is non-distinctive, if there is no tonal contrast, the system uses pitch to cue accent. But if there is tonal contrast, tones are at play.

The Bantu systems mentioned in the preceding section have been analyzed with accent and tone. However, the question of whether the occurrence of tone contrast on one specific syllable requires a notion of accent cannot be taken for granted, even when tonal association seems to be limited to an 'accent-like' position. Let us take the case in which the alleged accented syllable has no independent property apart from being the locus of tonal contrast. One could then say that there really is no accent at all and instead assume that the tones, being specified as a property of morphemes, associate to their specific

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[14] In his chapter on central Franconian tones, Gussenhoven (2004, chapter 12) discusses the emergence and representation of a tonal distinction that is very similar to the Scandinavian distinction; also see Gussenhoven and Bruce (1999) and Hermans (1994). We also find a similar contrast (due again to different historical factors in Scottish Gaelic; see MacAulay (1992: 234-236)

locus *directly* without first assigning an accent that attracts the tones. In this case we would accept that accent rules and tone association rules fall under the umbrella of a general theory of *positional identification* and that the principles for positional identification are similar, if not the same, for both accent placement and tone association.

(9) a. Indirect (accentual) approach
        Step One: Accent goes to position X
        Step Two: Tones go to accent

    b. Direct approach
        Step One: Tones go to position X

If the direct approach is taken, the category of tonal *accent* systems reduces to tonal systems which are then further differentiated in terms of different principles of association (LR, RL, positional). Below we will see that the direct tonal approach can also be applied in systems that have unpredictable (i.e. lexically specified) loci for accents.

The question is to what degree tone placement and accent placement should be allowed to overlap. If, for example, a tonal contrast occurs on the final syllable if closed and otherwise on the penultimate syllable, do we say that there is a quantity-sensitive accent rule and that tones are attracted to the accent, or do we make the tonal association rules quantity-sensitive? The earlier literature on systems in which tone contrast is limited to specific syllables reflects the view to *not* duplicate the theory of accent placement in a theory of tone placement, so that in these cases accent is usually seen as placing a role in tonal association.

On the other hand, Haraguchi (1979, 1988, 1991), as we have seen in section 3.3., makes a sharp distinction between tones that associate to accents and tones that associate directly to tone-bearing units at edge. In the latter case he only sees strict directional association (from right to left, or from left to right). But, if, for example, one would add the option of making peripheral tone-bearing units 'extratonal', we extend the set of cases in which tonal association can be direct. However, we do not expect direct tonal association to be dependent on syllable weight distinctions. Hence if tones are attracted to positions that reflect weight criteria one would be inclined to associate tones to accent which are assigned in a weight-sensitive fashion.

Given the inevitable overlap between accent placement and direct tonal association, Pulleyblank (1986) launched an attack on the use of accents and suggested replacing accents by tones. This approach, discussed in the next section, became the prevailing trend since then.

5.2.   Giving up accents

The direct tone approach was promoted by Pulleyblank (1986) mainly for various African tonal systems and by Poser (1984) for Tokyo Japanese in particular. Of Pulleyblank's arguments against stars I here mention the two more important ones (cf. Blevins 1993: 238). Firstly, using stars and tone makes the system overly rich in that we now predict rules referring to stars, to tones and to both at the same time. Secondly, the inherent

culminative nature of stars can also be found in systems that are arguably tonal and non-accentual, i.e. the asymmetry between accent and non-accent find a counterpart in systems in which H tone contrasts with 'zero' (ending up as default L). Another argument that could be mentioned is that accent (if equated with 'stress') is a property of syllable, whereas 'stars' sometimes need to be assigned to moras. Finally, as we have already mentioned, the fact of unaccented words, or indeed words with multiple accents that all surface, in accentual systems can be regarded as problematic.

Pulleyblank applied the direct tone approach to a variety of cases, not only cases in which the position of the tone is predictable, but also in those where the former accent location is lexically specified, and it was subsequently adopted in much other work (Hyman 1989, Clark 1988). We note, once more, that this move entailed the use of phonological features in for non-distinctive, i.e. predictable properties. Even though the location of the alleged tone could be a lexical, unpredictable property, the phonetic nature of the entity (high pitch) would nonetheless be predictable.[15]

The abandonment of stars implies, firstly, that the systems discussed in section 4.3, where H tone is restricted (perhaps up to the point of being culminative), but not obligatory, are now analyzed as tonal. However, a further-reaching conclusion is that 'straight-forward' pitch-accent systems (discussed in section 3) where high pitch is both obligatory and culminative are also analyzed as tonal, despite the fact that pitch is not distinctive. This may or may not be considered a (conceptual) problem (cf. Clements 2001, 2009). Another issue is of course that we now necessarily end up having rules for tonal association which duplicate the theory of accent as it is needed for non-tonal accent systems.

The dismissal of accent, cannot make the Scandinavian (and Serbo-Croatian) case purely tonal, since, as mentioned, in these cases we need, the notion of stress(-accent), independent from the tonal specifications.

5.3.   In defense of accents

If accents are rejected for pitch-accent and restricted tone languages, the term 'accent' can be either abandoned in favor of the term 'stress' (for stress-accent languages. Hyman (2007) adopts this position and reduced the typology of word prosodic systems to tone languages and stress languages. In this section I will focus on the use of accents in 'tonal' systems and suggest an opposite route to that of Hyman's, one which maximizes the use of accents to the expense of not just non-contrastive 'tones', but even to the expense of (allegedly) contrastive tones.

The issue here does not revolve around languages that have obligatory and culminative high pitch such as Nubi (Gussenhoven 2006). Here the case for accent could be considered uncontroversial *if* one would argue that culminativity and obligatoriness are required to speak of accent (which essentially means that one takes accent and stress to be the same thing). Rather, let us focus on languages in which H tones violate one of these two constraints, or both. My point will be that languages of that sort can also be

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[15] This might suggest a 'compromise' position in which 'accents' are regarded as unspecified tonal 'root nodes'. In an approach that adopts a wider use of accents as possible ingredients of stress-accent systems, this idea could not be maintained.

analyzed as accentual (and thus non-tonal) if we realize that obligatoriness and culminativity, while perhaps being typical or even necessary for stress, are not required for accent. These points were anticipated in section 2.4.

Let us first consider the type of case in which one syllable per word is either H or L, meaning that H is culminative but *not* obligatory. In an accent-cum-tone analysis we would postulate an accent and from there we have several options, depending on how we characterize the tonal contrast (H/L, H/zero, zero/L). But there is also another option. We can also analyze the contrast as: accent *vs.* no accent (with accent giving rise to phonetic high pitch and low pitch as a default). What this means is that we can analyze these alleged H/L systems as pitch accent systems as long as we 'allow' that accentual languages have a class of unaccented words.

Secondly, even when a 'H/L' system allows multiple (non-adjacent) 'H tones', this does not necessarily enforce a tonal analysis. If both criteria that Hyman (2007) proposed for stress, do not apply to accent, there is no reason why a word could not have more than one accent.

Concluding, if we push the use of accents to its limits (to the expense of using tones), this implies allowing unaccented words (violating obligatoriness) and allowing multiple accents (violating culminativity). With this liberal view on accent, only languages that have a more than binary pitch contrast are *necessarily* tonal, or, indeed languages in which culminativity and obligatoriness of accent is independently required (as in the case discussed in section 4.1.).

One could say that 'H/L' systems of are the real pivotal cases, where we, as linguists (or as language learners) have a choice between an accentual or tonal analysis. There could be certain diagnostics that may tip the balance to either an accentual or a tonal analysis and we need to make explicit what these diagnostics might be. Here, I admit, more work needs to be done.

An accentual approach is favored when the distribution of accent squarely falls within the theory of accent placement that is independently needed for stress-accent and other types of accentual languages. This, perhaps, makes *those* languages suspect in which accents need to be assigned to moras (cf. the case of Somali; Hyman 1981, Biber 1981, Banti 1988). Another tonal diagnostic is the need to refer to floating tones, assuming that the notion 'floating accent' is suspect. Thirdly, it could be argued that tonal *spreading* processes might suggest tone, but implementational mechanisms can also be held responsible for pitch extending over several syllables. A fourth potential way to discriminate between accent and /H/ tone would be to look at the details of phonetic implementation. One could conceivably argue that the phonetic pitch target of phonological categories like /H/ is more specifically defined than the pitch target of accents. Fifthly, an accentual analysis could be said to account for cases in which we need rule that delete apparent accents in clash, or other rules that refer to accents, irrespective of their pitch or 'tonal' correlates.

McCawley (1978) suggested that in some cases one might want to say that a system is accentual first and then becomes tonal in the course of the derivation. The question is, however, whether the tonal end of the derivation is still part of the phonology or part of the phonetic implementation.

In this section I have suggested that accentual systems should be 'allowed' to have unaccented words or multiple accented words, or even both. This seems to imply

that obligatoriness and culminativity are not necessary properties of accent and that the case in which accents are both obligatory and culminative is just one of four possibilities; see section 7.

6.   The case of Tokyo Japanese

A language that is often mentioned as a prime example of a pitch accent systems is, in fact, different from both Nubi and Somali, apparently sharing properties with either one. Each words is said to have high pitch, but, at the same time, some words are said to be accented while others are non-accented. Let us first consider the basic facts (cf. Chapter 129: Japanese Pitch Accent for an extensive treatment).

In Tokyo Japanese, nouns have a specific pitch contour which in some but not all cases involves a LHL contour. In those words that have the full LHL pattern, the L occurs on the initial mora. This mora is followed by a high plateau, which may drop to low at some point. After the drop, remaining syllables are low. In some words the initial L, and in other words the final L is missing. Thus, we find the following patterns, taking trisyllabic nouns to illustrate the possibilities:

(10)   a. HLL   b.   LHL   c.   LHH L
             σσσ   σσσ   σσσ(-σ)
             inoti   kokoro   atama
             'life'   'heart'   'head'

         d. LHH H
             σσσ(-σ)
             sakana
             'fish'

This system can and has been analyzed in many different ways and here we will specifically focus on accounting for the difference between (10c) and (10d). For (10a-c) we have three options and depending on which one is chosen various approaches can be suggested for class (10d):

(11)   (10a-c)   (10d)

                                       i   ii   iii
a.   Accent => /H/ => [H]   default accent   /H/ to last syllable Impl.
b.   /H/   /H/ to last syllable Impl.
c.   Accent => [H]   Impl.

In (11a), the accent-cum-tone analysis, the (10d) case would be lexically *un*accented. Since such words surface with an apparent H tone throughout (except for the initial mora), one could consider assigning a default final accent (case i in 11), which then triggers an H tone. This analysis encounters a problem, however. Words that have no lexical accent must be identifiable as such in the phonetic interpretation because there is a

phonetic difference between (10c) and (10d). Roughly (10c) is LHH and (10d) is LHM, with the stem-final "H" in the latter not quite as high as the other Hs in both examples. The two types of words also have different effects on following words (or 'accentual phrases') inside the Intermediate Phrase: (10c) causes downstep, (10d) does not; cf. Haraguchi (1988); Beckman & Pierrehumbert (1988); Gussenhoven (2004). Alternative (ii), which would use the H tone assignment rule in (12), resolves this issue because it could be argued that a H tone on an accented syllable and a H tone on an unaccented syllable are interpreted differently (cf. 5a):

(12)   Assign /H/ to the first[16] accent or, if there is no accent, to the final syllable

The difference between (10c) and (10d) could also be made if the pitch properties of the latter class are entirely accounted for in terms of phonetic implementation (case iii in 11) since this system could respond to the presence versus absence of an accent.

In the second (tone-only) approach, (10d) should be accounted for by method (iii), since method (ii), available in principle, would wrongly conflate (10c) and (10d) since there now is no accent to differentiate between them. Finally, the third method 11c (accent only), both classes *must* be differentiated in the phonetic implementation: accent is interpreted as high pitch, while lack of accent is interpreted differently, although also in terms of elevated pitch.

I have now briefly discussed three different approaches to a system such as that of Tokyo Japanese nouns, namely those mentioned in (11). All three approaches have been defended in the literature in one form or another. The tone-accent approach (although often *called* 'pitch-accent approach'), (11a), comes closest to the analysis offered in McCawley (1968). Lexically, the language is accentual, but in the course of the derivation (presumably at the word level) tone is added and from that point on the language is tonal. This approach was adopted as part of the autosegmental analysis of languages like Japanese and other monomelodic systems (cf. Goldsmith 1976, Haraguchi 1979, 1988). The tone-only approach, (11b), has been advocated by Meeussen (1972), Pulleyblank (1986) and Clark (1987), Poser (1984) and Pierrehumbert and Beckman (1988). Lockwood (1983) is a clear representative of (11c), the pitch-accent analysis.

To what extent do these linguists recognize the possibilities in (11), other than the one that they propose for Japanese, as valid for other languages? Clark (1988) rejects (11a) as a theoretical option, but claims that (11c) represents an independent possibility, next to (11b). She makes a distinction between restricted tonal systems, i.e. (11b) and metrical pitch-accent systems, i.e. (11c). The difference between the two types is claimed to be that only metrical pitch-accent systems have the characteristics that we also find in non-tonal accent languages with respect to accent locations (e.g. influence of syllable weight) and other phonetic cues that occur as the manifestation of accent. In her restricted tonal languages the alleged accent is simply a tone at every level of representation (Clark 1988:52). An argument to analyze Tokyo Japanese as tonal would be the fact that we have words as in (10d), as distinct from (10c). In a tonal analysis this difference is expected, since words do not have to have a tone. But in an accentual analysis, a class of unaccented languages has been seen as unexpected (see also Duanmu 2004). I have

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[16] Here I added 'first' to the rule because if a word ends up having more than one accent, it is always the leftmost accent that attracts the H tone.

shown, however, that accentless words are not an embarrassment if we realize that accents need not be obligatory.

Let us now ask how the high pitch profile in class (10d) could be analyzed as *not* resulting from a /H/ tone (supplied by default, i.e. option (11ii)), but rather as emerging in the phonetic implementation (i.e. option 11iii). In the approach of Beckmann and Pierrehumbert (1988) and Gussenhoven (2004) it is assumed that there are morphemes with lexical accents as well as morphemes that lack accents. Lexical accents are then associated with an H*L 'pitch accent'. So far this is essentially following the accent-cum-tone approach (i.e. 11a). The high pitch pattern of unaccented words (e.g. 10d) is due to an H 'boundary tone'. The claim is that the left edge of 'words' is predictably provided with a LH boundary sequence. The L part of this boundary sequence is responsible for the low initial mora of words that do not have initial accent and the H part is responsible for the high pattern of unaccented words. This H tone associates to the second mora and from their high pitch decreases toward the end of the word. Thus it is explained that a word with a final accent and an unaccented word have a different high profile. In *accented* words the final syllable is realized in terms of a high target for its H*L pitch accent, while an unaccented word's final syllable does not have a H target at all, but merely reflects the interpolation of the H boundary tone (which is on the left) toward the end of the word (where, in fact, we find the boundary L of the next word, or, if the word is utterance final, a utterance L boundary tone):

(13)   a.   x
                        { (ta ta ta ta)   }
                              | | |
                              L H - - H L   L

              b.
                        { (ta ta ta ta)   }
                              | | -
                              L H -   L

Clearly, this analysis does not require a default accent rule for unaccented words (11i), nor does it appeal to a default pitch accent (11ii).

Before we close this section, let us ask whether this analysis must be regarded as an accent-cum-tone or can also be interpreted as an accent-only approach. We see symbols like 'H' and 'L' in this approach, but that does not mean that these entities are 'lexical' in any sense. I submit that the pitch accents can be seen as phonetic entities, hence [HL] rather than /HL/. The tonal entities are part of the vocabulary of the implementation system. These entities mix in with the other tonal entities that are introduced at the post-lexical level, belonging to the intonational system. Intonational entities themselves may or may not be phonological. Boundary tones that predictably associate with certain types of boundaries without expressing any specific semantics, are, likewise, phonetic entities, e.g. [L] or [H]. Phonetic implementation operates on the representations that the grammar supplies. When it comes to the specification of pitch, minimally, the following entities are relevant: tones (lexical or intonational), 'accents' and prosodic boundaries. We can, if accents get high pitch, first assign [H] to accent and

then do the actual implementation. The same applies to boundaries; we can assign a [H] to the left boundary of a certain type of prosodic phrase. Strictly speaking, we only do this in order to make the implementation rules refer to only one type of entity (namely tonal entities, whether phonetic or phonological) instead of to three different types of entities (tones, accents and boundaries). It would seem, in any event, that the pitch profiles of Tokyo Japanese words do not require reference to word-level tones.

7.   Accent and stress

A discussion of pitch accent systems forms part of the broader discussion of word prosodic systems. However, having made reference in the preceding sections to a view that recognizes both accent and stress as independent notions, this section will briefly discuss their properties and interaction.

We might entertain the idea that the alleged accent in Tokyo Japanese are simply 'marks' which are to be compared to syllable weight. If this comparison holds we might refer to the accents as 'diacritic weight marks' and in that case there is no reason for every word to have one such mark, just like languages that have a contrast between CV (light) and CVX (heavy) syllables typically do not necessarily demand that each words has a 'heavy syllable'. Nor, for that matter, do we expect words to have only one 'accent', since words also can have more than one heavy syllable. This interpretation of 'accents' explains the occurrence of unaccented words and multiple accented words in specific systems.

A problem with this approach is that weight-diacritics have characteristics that are more reminiscent of 'stress' than of heavy syllable, notably predictability. This can be illustrated by taking a closer look at the accentual system of Tokyo Japanese. I refer to Chapter 129: Japanese Pitch Accent, where it is shown that the Tokyo Japanese accent rule is very similar to the Latin-style English accent rule.

We now have a new problem. If the Tokyo Japanese accents are like weight why is their distribution (a) predictable by rule and (b) why is the rule so similar to the typical 'stress' placement rules? And why are there accentual systems in which accent is culminative and/or obligatory? To resolve these issues, van der Hulst (2009, in prep.) proposes to account for accent and 'rhythm', which traditional metrical theories conflate in one representation, in two different modules. The accentual module accounts for the location of the so-called primary accent or primary 'stress' in systems where this location shows influence of lexical factors (exceptions, morphological classes, etc.), while the rhythmic module associates words with *metrical structures*. This separation of tasks allows a simpler version of the metrical system which, as van der Hulst shows, cannot handle all varieties of primary accent locations in bounded systems and is simply not designed to deal with accent locations in unbounded systems.

The theory of accent that has been suggested is admittedly 'liberal' in that accent is neither required to be culminative not obligatory. While this allows four different kinds of pitch accentual systems, it might be argued that we now also predict four kinds of any sort of accent system, whatever the cues for accent are. Focusing on the specific case of stress-accent languages, Hyman (2007a) argues that in such systems 'stress' is always culminative and obligatory.

We can explain the culminativity and obligatoriness of stress by developing a proper understanding of what is meant by 'stress'. Instead of saying that the metrical module account for the rhythmic structure of words, we could simply say that it accounts for stress, thus taking the term 'stress' to stand for the overall metrical structure of words. In this view, we place metrical structure on the same level as pitch, i.e. as a word-level property that is assigned to words with reference to accents (if present), which *in this capacity* are, as previously stated, pre-specified metrical heads. The difference is that while pitch is literally an *exponent* of accent (and thus absence if there is no accent), metrical structure is a parametric choice that is made for the language as a whole. If a word has an accent, this accent determines the manner in which this metrical structure is associated to the word. If there is no accent, the metrical structure resorts to a default mode of association. This means that languages can have stress without accent (when stress is fully automatic, and, indeed, often variable[17]), and they can have accent without stress (in which case accents has cues such as pitch).

8.   Conclusions

In this chapter we have considered the phenomenon of pitch accent which necessarily entailed a detailed discussion of the notion 'accent'. I have tried to focus on analytical issues, i.e. on how definitions of basic notions such a tone, accent and stress allow or disallow certain types of analysis. Next to the idea that lexical relevance or salience of pitch is a sufficient condition for tone, we have considered a more conservative view which insists on distinctivity. Whereas the former view essentially can do away with pitch accent as a prosodic type, the latter view is compelled to this notion in cases where pitch is not distinctive. I then showed that even systems in which pitch appears to function distinctively can be analyzed in terms accents if accents are neither required to be obligatory nor culminative. There is thus a class of systems that is ambiguous between a tonal and an accentual analysis.

In summary, the two opposing views in this debate are those that maximize the use of tone (giving up distinctivity as a necessary criterion) and those that maximize the use of accents (which are neither necessarily obligatory not culminative).

By developing a specific notion of accent, we then considered the relationship between accent and non-pitch properties covered by the umbrella term 'stress', making the perhaps obvious connection between stress and rhythmic or metrical structure. This view is further developed in van der Hulst (in prep.).

Let us finally realize that the status of word-level pitch properties is not entirely unique. All distinctions that we can establish for relationships between accent and pitch can also be established for accent and properties such as duration and vowel quality. Note that in these domains, we do not encounter the claim that any word level relevance of duration or vowel quality automatically entails the phonological categories 'length' and 'tense'. This, then, presents an asymmetry in assessment of what is considered to be phonological: why speak of tone (instead of accent) if pitch is not used distinctively (and thus is a predictable cue of accent) if, at the same time, cases in which accent is cued by

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[17] A case in point would be Indonesian stress; cf. Odé and van Heuven (2004).

non-distinctive duration or vowel quality are *not* analyzed as involving lexical specification of length or of non-distinctive vowel features?

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