

8

Accents and how to get rid of them (or not)

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8.1 Introduction

In this chapter, I will discuss the notion of ‘accent’ as it has been used in the analysis of both stress systems and tone systems, although I will mostly focus on the use of accents in certain types of tone systems that have been called ‘restrictive’ tone systems.¹ That both stress and tone can involve the specification of accents is inherent in the widely used terms ‘stress accent’ and ‘pitch accent’. Whereas the use of accents in stress systems is, I believe, uncontroversial in order to deal with ‘free stress’ (referring to cases in which stress locations are not predictable on phonological grounds) as well as ‘exceptional stress’ (in languages that have some type of phonologically predictable stress, but with idiosyncratic exceptions), accentual analyses of restricted tone systems have been disputed on the argument that instead of using accents, one could just as well use lexically specified H tones.² An important question is of

¹ Tonal languages can be ranked on a scale of *tonal density* (Gussenhoven 2004), which indicates how many word positions allow a tonal contrast. In a sense, such a scale indicates the relative functional load of tone properties. Stretching Gussenhoven’s notion, one could say that relative density arises not only in the syntagmatic dimension (depending on how many syllables cannot have a context-free tonal specification), but also in the paradigmatic dimension (depending on the number of contrastive options, including level and contour tones):

Tonal density matrix						
T1	+	+	+	+	+	+
T2	+	+	+	+	+	+
T3	+	+	+	+	+	+
...						
	x	x	x	x	x	x

(tone bearing-units)

Any ‘minus’ would indicate a restriction of some kind.

² Interestingly, the lexical specification of H tones has been questioned when used in certain European ‘tonal’ languages’ and here the proposal has been to replace these H tones by lexically specified foot structure. See footnote 33.

course what we mean by ‘accent’, i.e. what the formal representation of accent is. This question will take centre stage in this chapter. I will argue that we must make an explicit *and* formal distinction between moraic accents and syllabic accents, both of which are *diacritic features* at different levels of the phonotactic structure of words. I will critically discuss proposals that aim to replace accent by tonal specifications of some kind, maintaining instead that accents are primitives in their own right. Following van der Hulst (2011), I adopt the position that neither obligatoriness nor culminativity are necessary properties of accents. I develop this position here and in doing so, in section 8.2.2, I will make a distinction between *syllabic accents* and *moraic accents*, which was not made explicitly in van der Hulst (2011), although it has a respectable precedent in Trubetzkoy (1939 [1960]). While the focus of this chapter is on the accentual analysis of restricted tone systems, some background is required with respect to the role of accents in ‘stress’ systems, which I provide in section 8.2.1.

In section 8.3, I discuss the theoretical choice between specifying a lexical tone or specifying an accent (often symbolized by an asterisk or ‘grid mark’). Section 8.4 discusses the potential co-occurrence of both types of accents within a single language, which will be embedded in a somewhat broader discussion of word prosodic systems that combine stress and tone—not only privative (accentual) tone, but also contrastive tone. Section 8.5 is devoted to the question of whether the notion of accent, which is essentially a diacritic mark, can be reduced to a segmental internal ‘phonological’ specification. I will critically discuss two proposals that seek to reduce diacritic accents to a segmental specification. Spahr (2016) has proposed that a diacritic accent specification is in fact an ‘unspecified tonal node’, which can be interpreted as stress in some languages and as pitch in others. Dubina (2012) proposes to replace accents by a tonal H specification (similar to Pulleyblank’s, Poser’s, and Hyman’s position) but also extending the use of H to ‘free stress systems’. The apparent elegance of these approaches is that we can get rid of accents by reducing them to an independently motivated phonological property, namely a tonal class node. I will argue that these proposals resort to debatable formal representations and make empirical predictions that are not borne out.

8.2 Phonologically driven word accent

8.2.1 The ‘primary accent first’ model

In van der Hulst (1999, 2012, 2022), I developed a theory of ‘word accentuation’ for bounded and unbounded *stress accent* systems. This theory is based on the idea that word accent and rhythm form different modules of the phonology, rather than being conflated in one formalism as in Metrical Phonology (Lieberman and Prince 1977). Many arguments for the separation of accent and rhythm, as well as precedents of this view, are given in van der Hulst (1984, 1996, 1997, 2009, 2010a, b, 2012, in prep) and in Goedemans and van der Hulst (2014). A core feature of the model is that primary accent is assigned first and that rhythm is dependent on the accent location, a relation which is the opposite of how Metrical Phonology was designed because in that model, foot formation (which accounts for rhythm) feeds the formation of a word metrical structure which identifies the *word head*, which we can equate to what I call the word accent. In this chapter, I do not discuss the assignment of rhythm (but see van der Hulst 2014c for a detailed proposal), which I locate in the implementation module of the grammar.³

Taking an unbounded, weight-sensitive, Left/Right system as an example, my way of determining the *word* (or rather *domain*) *accent* involves three steps.⁴ Firstly, heavy syllables (given in bold) project what I call a *variable syllabic accent* (notated as ‘(x)’)⁵. Secondly, there is a rule (called *Resolution*) to license one of these variable accents as the domain accent which only allows for two options (left/right).⁶ The other, non-licensed variable accents become ‘invisible’, and can therefore not have any phonetic cues.⁷ A third step

³ In van der Hulst (2022: §7.1.5), I suggest that implementation can apply to phonological ‘phases’, where phases are understood as roughly equivalent to levels, such as level I and level II in level-ordered theories (following Siegel 1974).

⁴ I prefer the label *domain accent* because the domain can be smaller than the entire grammatical word as it is in English where ‘word accent’ is established at ‘level I’ before the addition of so-called level-II affixes. See Siegel (1974), who formalized the English word stress rules as a rule that applies at level I, which is as in Chomsky and Halle (1968) where this rule is blocked by the # boundary that ~~such~~ level II affixes introduce. Somewhat paradoxically, Borowsky (1993), in spirit following Chomsky and Halle’s terminology, calls the level I domain the ‘word domain’.

⁵ There is a formal analogy here with my work on vowel harmony, where I use the notion of variable specification for harmonic elements and licensing to account for whether or not a variable element is phonetically realized; see van der Hulst (2018).

⁶ This linear rule is comparable to the End Rule proposed in Prince (1983).

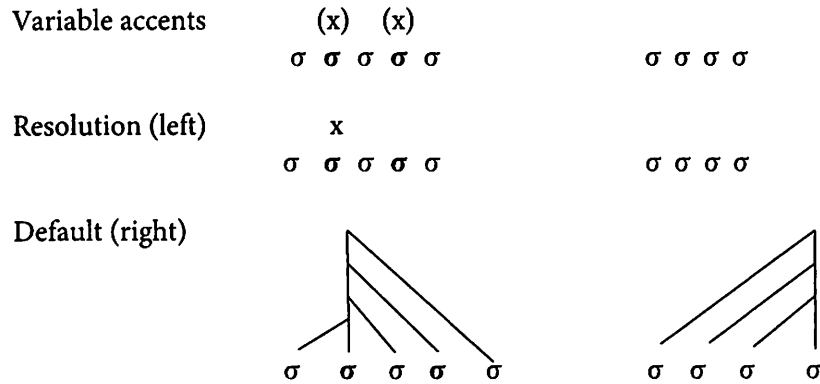
⁷ This is not always true. In Arapaho, ‘losers’ show up with phonetic exponents; see Bogomolets (2020).

→ 3

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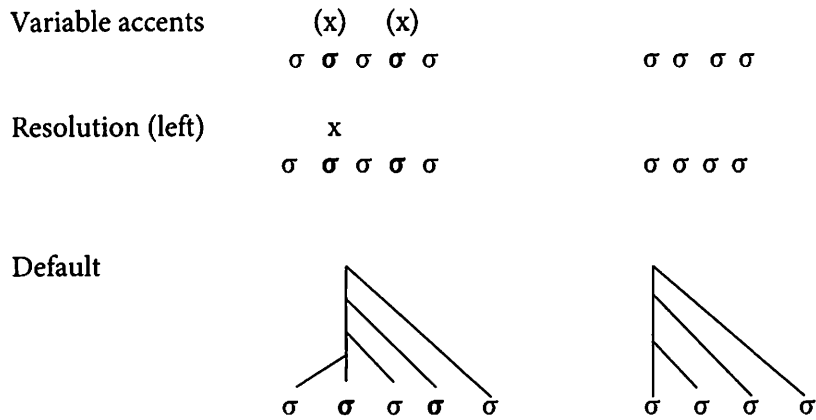
(called *Default*) is necessary for when the domain does not contain a heavy syllable. This step is conceived as involving the formation of a dependency structure whose head is either on the left or on the right.⁸ In (1), I illustrate the three steps:

(1) Opposite-to-Default: Left/Right



An unbounded Left/Left system differs from a Left/Right system in the value for Default:

(2) Opposite-to-Same: Left/Left



⁸ The effect of a linear resolution rule could also be achieved in terms of a 'metrical' algorithm which identifies leftmost or rightmost heavy syllable as a maximally binary foot head (which is reminiscent of a proposal for unbounded systems in Prince 1985), but as argued in van der Hulst (in prep.), there is no empirical or conceptual gain in adopting such a proposal. On the assumption that all syllables will be parsed into a dependency ('metrical structure'), Default will take care of that.

L the
L1 resolution

As shown in Halle and Vergnaud (1987) and Hayes (1995), four unbounded patterns are attested in the languages of the world (see Hayes 1995; van der Hulst 1999), those in (1) and (2) and their mirror images:

(3) Four types of weight-sensitive unbounded systems⁹

- a. L/R: Stress the leftmost (first) heavy, or else the rightmost (last) light syllable, e.g. Tahitian
- b. L/L: Stress the leftmost (first) heavy, or else the leftmost (first) light syllable, e.g. Amele
- c. R/L: Stress the rightmost (last) heavy, or else the leftmost (first) light syllable, e.g. Sikaritai
- d. R/R: Stress the rightmost (last) heavy, or else the rightmost (last) light syllable, e.g. Puluwatese

As shown in van der Hulst (1999, 2012, 2022), these four types also occur as bounded systems, both on the left and right side of the word, here illustrated with right side examples:

(4) Right-edge weight-sensitive systems¹⁰

- a. L/R: stress the leftmost heavy syllable, otherwise the rightmost syllable; or, in the usual description: stress the penultimate syllable if heavy, otherwise the last syllable, e.g. Aklan.
- b. L/L: stress the leftmost heavy syllable, otherwise the leftmost syllable; or stress the penultimate syllable if heavy, otherwise the final heavy, otherwise the penultimate syllable, e.g. Sunda.
- c. R/L: stress the rightmost heavy syllable, otherwise the leftmost syllable; or stress the final syllable if heavy, otherwise the penultimate syllable, e.g. Epena Pedee.
- d. R/R: stress the rightmost heavy syllable, otherwise the rightmost syllable; or stress the final syllable if heavy, otherwise the penultimate heavy syllable, otherwise the last syllable, e.g. Yapese.

The choice between bounded and unbounded systems necessitates a domain parameter, modulo 'extrametricality', which pushes the window one syl-

⁹ From a functional point of view, unbounded systems are curious because the location of accents provides no information about word edges, thus lacking a demarcative function. It must be concluded that in systems of this sort, the 'greed' of heavy syllables in catching the word accent has overtaken the edge-based preference of bounded systems. In essence, demarcation is due to the accentual window being bounded. This kind of conflict is expressed in terms of the ranking of constraints in Optimality Theory (Prince and Smolensky 1993 [2004]). The present chapter follows a parametric approach to language variation. My reasons for not adopting OT have been provided elsewhere (van der Hulst 2011).

¹⁰ References for the languages cited are given in van der Hulst (1999).

L 4x
Capital S

L MS

lable in; in van der Hulst (2012, 2022), this parameter is called Satellite because, as in unbounded systems, in bounded systems, the ‘extra syllable’ can occur on either side of the domain, creating the effect of ‘internal’ satellite syllables. For details I refer to van der Hulst (2012, in prep.).¹¹

The bisyllabic window that is required for bounded systems is not to be equated to the metrical notion of *foot*. There is, in fact, no foot typology that would cover the four options in (4) or their mirror image in cases on the left side of the word. I refer to van der Hulst (1999, 2012, in prep) for further motivation of this point. In line with the separation of word accent and rhythm, the Default dependency structure does not account for rhythmic patterns. As mentioned, rhythm is assigned ‘later’ and as analysed in van der Hulst (2014c) does not in fact not require foot structure (being more in line with Prince’s 1983 grid-only approach).¹²

In summary, the system for accent location has five parameters:¹³

(5) Parameters for phonologically driven accentuation

- a. Bounded (left/right)
- b. Satellite (left/right)
- c. Project weight (yes/no)¹⁴
- d. Resolution (left/right)
- e. D-formation (left/right)

As discussed, to accommodate the distinction between so-called bounded and unbounded accent systems, we need a window parameter, which is parameter (5a). The accentual window can be either ‘bounded’ (a bisyllabic window on the left or right side of the ~~phonotactic~~ domain) or unbounded (the whole ~~phonotactic~~ domain), both subject to the option of an extra syllable *on either side* of the accentual domain, which are called satellites.¹⁵ The first two parameters are ‘optional’. If no value is set for parameter (5a), the system is unbounded,

H1 2x
accentual

¹¹ Extrametricality can also apply at the level of syllable structure when a final consonant is not syllabified, which turns a potentially heavy syllable into a light one. This kind of extrametricality can also be external or internal; see van der Hulst and Rosenthal (1999), van der Hulst (2011, in prep.).

¹² As mentioned above, whenever it appears that ‘foot’ structure has to be present lexically or ‘early’ in the phonology, I regard this structure as a recursive extension of syllable structure. See van der Hulst (2010a, in prep.).

¹³ In van der Hulst (2014c) I propose a set of rhythm parameters which will not be reviewed in this chapter.

¹⁴ Weight projection determines whether or not syllables with specific phonological properties (which make them intrinsically ‘heavy’) enter into the computation of the word accent location. Diacritic weight is ‘automatically’ projected because it is specified as a diacritic property of syllables.

¹⁵ I construe extrametricality in terms of a Satellite parameter which can add an extra syllable to the left or right of the accentual window. This allows extrametrical syllables that are not word-peripheral, but I will not here motivate why we need this. Basically, a word-internal extrametrical syllable can be accented, while a peripheral extrametrical syllable (which reflects extrametricality in the traditional sense) cannot. I do not here discuss the motivation and properties of internal satellites in any detail; see van der Hulst (2012, in prep.).

in which case there is no further left/right choice to be made. Likewise, parameter (5b) also does not have to be set because systems do not have to use it. The other three parameters are not optional and thus always active. The weight projection parameter is self-evident; the *yes* option makes heavy syllables available as variable accents for the computation of accent, but some syllables may have a variable accent and behave as heavy due to diacritic marking.¹⁶ The ~~directional~~ parameter locates the winning accent in the accentual window. Finally, the Default parameter accounts for the default accent location if there is no accent due to phonological or diacritic weight, first within the accent window and then within the whole accentual domain.¹⁷

The procedure just outlined also applies to cases in which ‘stress’ is *not* weight-sensitive (whether bounded or unbounded, with or without a positive setting for Satellite), essentially only requiring Default. However, in such systems, syllables can be marked as exceptions, which in my model, means that they have a *diacritic variable syllabic* accent.¹⁸ In such a system, if bounded, it is unlikely that the accent window will contain more than one diacritic accent, but that situation might arise when the window comprises a stem-final syllable and a suffix syllable, both with a diacritic accent, in which case, resolution is required through licensing of one of the variable accents. A case in point is Greek, as analysed in Revithiadou (1999), where the word accent occurs within a right-edge three-syllabic accentual window, its location being dependent on lexical accents. We must also take into consideration the fact that syllabic accents can be rule-governed when specific morphological categories

¹⁶ Perhaps we also have to consider the possibility that a heavy syllable behaves as light? I am not aware of real cases that require such an exception for medial syllables, although, in general, *final* mora or consonant extrametricality can make a final heavy syllable behave as light and still be visible; see Rosenthal and van der Hulst (1999) for discussion of cases in which heavy syllables count as light, but only in word-final position. Another issue is that sometimes syllables need to be marked as ‘unaccentable’ or ‘stress-repelling’, which goes further than being marked as light. Giving a role to S/W labelling in addition to diacritic accents, a possible approach is to mark such syllables with a diacritic label ‘W’, which prevents them from ending up in a strong metrical position. A detailed account of these special cases can be found in van der Hulst (to appear). Thirdly, some phonologists make a distinction between strong and weak accents (see for example Kiparsky 2021), which could mean that diacritic accents can involve degrees, just as has been claimed for phonological weight in languages such as Pirahã (Everett 1988) and Nanti (Crowhurst and Michael 1995).

¹⁷ Given that syllabic accents *are* properties of syllables, there is no necessary requirement in any language that each word has at least one accent, nor that each word has at most one accent. Syllabic accents are in this respect comparable to phonologically heavy syllables and how these function in a weight-sensitive stress accent system. In the latter case, I am not aware of cases in which there is a requirement that each word must have a heavy syllable, nor cases in which a word can have at most one heavy syllable, although I will not exclude the possibility that language-specific constraints might enforce such situations.

¹⁸ Arguably, languages that are completely predictable, showing no evidence for exception, do need any use of the notion accent. The word prominence patterns can, in that case, be entirely attributed to the implementation module.

H
resolution

ns
L not

are always accented, or when a complex word contain pre- or post-accenting affixes. This is clearly demonstrated in Roca's (1999) analysis of stress in Spanish. In this language, stress occurs within a three-syllable window on the right side of the word. In underived words, the location of stress is largely unpredictable, but in inflectional paradigms, certain morphological categories predictably occur with an accent.

There are, however, also languages in which diacritic accents take centre stage within an unbounded domain. In this type of language, morphemes are either diacritically accented or unaccented. In the former case, one syllable within an accented morpheme bears a syllabic accent. A case in point is the stress system of Russian (see Revithiadou 1999):

(6) Russian

Stress the rightmost diacritic accent or else the leftmost (first) syllable

Languages of this kind are often said to have a 'lexical accent system', or have 'free accent' (although these labels should also be used for bounded systems that involve diacritic accents). Being 'free' does not mean that there is no need for a procedure to decide which lexical syllabic accent will emerge with the word domain accent. When more than one morpheme bears a lexical accent, only one of them can be the word domain accent due to the Resolution rule.¹⁹ Also, if no morpheme in a word is accented, there must be a Default procedure to locate the syllable that will have the word domain accent. As it turns out, these procedures for a language like Russian are not different from the procedures that we have discussed in this section for languages that were said to have unbounded, weight-sensitive domain accents. If the lexical accents in Russian are represented as variable (i.e. as potential domain accents), we can use the Resolution (set to left) to select the winning accent. And if there is no accent, a left-headed Dependency structure will designate the first syllable as the default domain head. What this means is that the Russian system is just like the unbounded weight-sensitive systems in (17c), the only difference being that licensing selects from diacritically heavy syllables instead of phonologically heavy ones; for additional discussion see Bogomolets and van der Hulst (2022).²⁰

3 (3c)

¹⁹ In unbounded systems the accentual domain always seems to be the whole word domain. If empirically true, this requires an explanation. See the concluding paragraphs of section 8.6 for an attempt.

²⁰ Diacritic syllabic accents can also *co-occur* with syllabic accents that are due to phonological weight (as is the case in English 'stress' which refers to syllable weight as well as diacritic accents). I am assuming that both types of accent are treated alike by the accentual algorithm. This predicts that

Paradoxically perhaps, as was noted in Bogomolets (2020: 11–14, Ch2), we can conclude that in lexical accent systems, whether bounded or unbounded, the location of word accent (due to Resolution) is phonologically driven while at the same time the syllabic accents that feed into the accent algorithm are ‘lexical and morphological’ in nature. From this perspective, it is *not* paradoxical to find lexical accent systems in which resolution is morphologically driven. I propose, in van der Hulst (2022), that such lexical accent systems can determine the domain head with reference to a morphologically driven hierarchical phonotactic structure in which nodes are labelled as heads of dependents, in effect a dependency structure that is derived from the morphological structure. Bogomolets (2020) proposes and convincingly argues that both resolution types are the only two strategies that lexical accent uses to designate one of the syllabic accents as the domain accent.²¹

Finally, it must be kept in mind that the computation of word accent is dependent on two notions of ‘domain’. When words are morphologically structured, accent computation can take place with reference to domains that are smaller than the whole word. Rather than referring to such domains as ‘morphological’, I have called them phonological in van der Hulst (2022), specifically *phonotactic*, to distinguish them from prosodic domains that arise at a later level of the derivation when rhythmic organization has been imposed. The second notion of domain was called the *accentual window*, which can comprise the entire phonotactic domain, in which case we say that accent placement is unbounded, or a bisyllabic subdomain (possible, extended with a satellite syllable), in which accent placement is bounded. In both cases, accent location can be weight-sensitive or weight-insensitive (weight being either phonological or diacritic).

~~In a right-edge bounded weight-sensitive system,~~ a diacritic accent to the left of a final heavy syllable could not ‘overrule’ the latter, which means that the exceptional pattern of penultimate ‘stress’ when the word ends in a heavy syllable is impossible. This empirical prediction could turn out to face counterexamples, which, then, would imply that diacritic weight can outrank phonological weight, either universally or in specific systems. The potential need for ‘weight scales’ that mix both types of weight are motivated in Vaxman (2016, 2019). Independent need for weight scales could also come from languages which have a greater than binary distinction in phonological weight; this has been analysed with a ‘weight scale’ (e.g. Pirahã: Everett 1988; Nanti: Crowhurst and Michaels 1995). When weight scales are relevant, I will assume that resolution is fed by a subroutine that creates a syllable weight tier with only the heaviest syllables. I refer to Vaxman (2016, 2019) for analyses of such cases adopting this approach.

²¹ Bogomolets (2020) does not conceive of non-morphological systems as using metrical structure formation; ~~instead she employs a notion of linear licensing as does van der Hulst (2012, 2022).~~ The formalization of the role of morphological structure in morphological systems is different from what I propose in van der Hulst (2022).

L (i.e. linear and hierarchical)

↳ r (or)

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H in English

H Red
Also her

Here
and

8.2.2 Syllabic and moraic accents

I attribute the apparent *obligatoriness* and *culminativity* of ‘stress’ in so-called *stress accent* systems to the fact that syllabic accents trigger the formation of a Dependency structure which designates a unique domain *head* (the so-called designated terminal element, DTE, in metrical theory). I have referred to the designated head of a dependency structure as a ‘*word (or domain) accent*’, but this notion then needs to be sharply distinguished from the notion syllabic accent. The syllable that carries the ‘word/domain accent’ does not have to be marked with a syllabic (phonological or diacritic) accent if its location is due to the Default D-structure rule.²² Given that the word head may thus be syllabically accented or not, phonetic exponents of accented and non-accented word heads potentially differ; see van der Hulst (in prep.) for relevant cases. Obligatoriness and culminativity are, of course, classical properties of metrical structures which are, after all, dependency structures of sorts.

However, neither *obligatoriness* nor *culminativity* are necessary properties of all accent systems. To see this, we need to turn to accents as properties of morae, i.e. *moraic accents*. There is no necessary requirement that each word has at least one accented mora, although perhaps such a requirement could be imposed, which would then be comparable to a requirement in a syllabic system that there is at least one syllabic accent in the word that is due to phonological weight, given that having a moraic accent can be thought of as a form of phonological weight (see footnote 27). Nor is there a necessary requirement that words have at most one syllable that has a moraic accent, although, once more, such a requirement could perhaps be imposed on a language-specific basis.

Moraic accents, being specifications of segments within the syllable rhyme, do *not* trigger the formation of D-structure.²³ Unlike syllabic accents, which typically compete for word prominence, triggering the formation of D-structure, moraic accents do not trigger D-structure. Moraic accents are not ‘visible’ at the syllabic level and, on the assumption that metrical structure organized syllables and not morae, moraic accents cannot impact D-structure

²² It is actually advisable to avoid the term ‘word accent’, convenient and familiar as it may be.

²³ However, it is possible that having a moraic accent causes a syllable to behave as if heavy and, as such, causes it to have stress. This is the ~~case~~ in Lithuanian as analysed in Halle and Vergnaud (1987) and Blevins (1993) ~~in which~~ the leftmost syllable with a moraic accent ~~because~~ the head of the (inbounded) accentual domain.

L S

L t s

H
given
thatH case
H is

formation.²⁴ This means that in a moraic accent system, there is not necessarily a word head that comes to be associated with high pitch, allowing for words that lack a moraic accent to lack a ‘tonal’ specification.²⁵ In other words, moraic accent systems do not necessarily display obligatoriness. Nor is culminativity a necessary property because more than one syllable can be marked with a moraic accent, which does not trigger resolution ~~that~~ only applies when syllabic accents are at play. However, moraic accents can indirectly influence D-formation in syllables that contain a moraic accent which counts as heavy with respect to D-formation.

In moraic systems, monomoraic syllables can have a moraic accent. In case of bimoraic syllables, the first or second mora can have an accent, although, in some moraic systems, accent location is restricted to the head mora. Resolution at the moraic level could play a role if there is ~~an~~ empirical need for bimoraic syllables having two moraic accents, a situation that is unlikely to ever occur or be needed.

Following an early suggestion in Trubetzkoy (1939 [1960]), I will assume that moraic accents are typically correlated with a (high) pitch cue and not with stress cues, whereas syllabic accents correlate with stress exponents. I propose that domain accents, being designated elements of a D-structure, ‘naturally’ trigger phonetic, stress-like exponents (duration, intensity, pitch, etc.) although, perhaps in some cases, the major cue may be only one of these.

If the only cue is pitch, this leads to the term *pitch accent language*, but if the primary or only cue is, for example, duration, we could also refer to this as a *duration accent language*. As I argue in this chapter, we must distinguish between syllabic pitch accent systems that are dependency-based (‘metrical’), with the head syllable being the locus of pitch, and ‘non-metrical’ pitch accent systems, in which accents are *moraic* (in the next section, I will ~~also refer to~~ such pitch accent systems as *privative tone systems*).

The Trubetzkoyan correlation between syllabic accent and stress on the one hand and moraic accent and high pitch on the other, seemingly contradicts the idea that accents and phonetic cues are distinct and should be kept apart. As

²⁴ Here I depart from Halle and Vergnaud (1987) who assume that the units that are organized in metrical structure can be syllables or morae.

²⁵ This situation could characterize the pitch accent system of Tokyo Japanese. That unaccented words appear to have an H tone has been analysed in Pierrehumbert and Beckman (1988) and Gussenhoven (2004) as the result of a boundary H tone. I refer to van der Hulst (2011, in prep.) for an alternative account in which D-structure, and thus word headhood, does play a role. Tokyo Japanese is, in a sense, a hybrid system that McCawley (1968) captures by the term syllabic moraic system, due to the fact that only head morae can be accented, which means that within bimoraic syllables, only the first mora can be accented.

W when

add;
do not
hyphenate

§ H

H which

H §

L §

put in 25
here

H an

H
consider
in analysis
of

Abercrombie (1976 [1991]: 82–83) puts it (when discussing the notion ‘accent’ in the context of ‘stress’ systems):²⁶

When I say that such-and-such syllable of a word has an (or the) accent, or is accented (other syllables therefore being unaccented), I am not saying anything about the phonetic characteristics of that syllable. All that is being said is that in certain conditions (which must be specified) in utterances, an accented syllable will show certain characteristics which can be predicted. The various possible realisations of accent may have nothing phonetic in common. An accented syllable *may* be realised as stress, with various features of pitch, of syllable length and segment length, of loudness, and of articulatory characteristics in various combinations. But none of these are included in the definition of accent. In other words, accent is ineffable. It plays no part in the phonological analysis of utterances; its place is in the lexicon. Accent, in fact, is what is indicated by the ‘stress marks’ in the English Pronouncing Dictionary.

However, distinguishing between accent and phonetic correlates does not preclude that, for whatever reason, certain strong tendencies are prevalent in the languages of the world; see Dogil and Williams (1999) and Gordon and Roetler (2017). Preferably attested correlations can be explained with reference to the nature of the phonetic correlates and the nature of the phonological positions that bear the accent; however, I will not try to provide such an explanation in this chapter.²⁷

8.3 Star Wars: The H tone strikes back

The question as to whether accents are required has arisen in the analysis of certain types of tone languages, often from the Bantu language family. Such languages have an apparent contrast between the presence of H vs. its absence on one or more syllables, which can be regarded as the privative use of H tone.²⁸ Accentual analyses have been especially supported when there is an additional constraint that the distribution of the H tone is

²⁶ In ~~the course of~~ this chapter, I ~~will~~ distinguish Abercrombie’s notion of accent (which I take to be *word accents*) from both *syllabic accents* and *moraic accents*.

²⁷ We must also reckon with exceptions to the correction that Trubetzkoy noted. Nubi (Gussenhoven 2006) is an unusual, syllable-based ‘pitch accent’ language, with H instead of stress as the realization of word heads.

²⁸ We can speak of privative H tone when the tonal patterns of words do not require specification of an L tone, but merely require presence or absence of H tone on individual syllables or morae.

H ↗
A ↗

L ↗

'restricted', sometimes to *at most* one syllable per word (being culminative) and sometimes to occurring *at least* once (being obligatory), or even both. The autosegmental approach to such systems, proposed in Goldsmith (1976), Clements and Goldsmith (1984), and Hyman (1978) uses the so-called 'asterisk' or 'star'-notation for accents that come to be associated with a privative H tone.²⁹ This approach has a longer tradition in especially African linguistics (see Meeussen 1970; Schadeberg 1973; Voorhoeve 1973). Accentual analyses also have a long history in the analysis of varieties of Japanese; see Haraguchi (1979) for historical references and his own autosegmental interpretation of these. McCawley (1968, 1978) proposed that Tokyo Japanese dialect (TJ) underlyingly is an accentual language which nearer to the surface becomes a tonal language after tonal elements are inserted with reference to the (winning) accent. Analyses along these lines have been developed for 'tonal' Scandinavian languages (see Riad 1998c), Slavic languages (see Ivić 1958; Browne and McCawley 1965), and Limburgian dialects (see Hermans 2012).³⁰

The use of accents was motivated by Goldsmith not only because a specific position (with a stress-like distribution) often seemed to play an obvious role in tonal association, but also because certain stress-like rules seemed to apply, notably deletion of asterisks under 'clash'. A further motivation came from the analogy between intonation and tone. Following Liberman (1975), intonation was understood as a specification of a melody consisting of a linear sequence of tones or tone clusters such as H, L, or HL, which would be associated with specific syllables in the sentence, notably stressed syllables of words in focused phrases. It seemed natural to view the tonal structure of words in a similar way, in particular, when the word melody was limited and seemingly associated to syllables that could be viewed as having an accent at the word level.³¹

In response to these accentual approaches, it has been proposed that accents that correlate with a H tone, whether lexically specified or assigned by a rule (possibly referring to morphosyntactic features), are not needed at all and can 'simply' be replaced by H tones that are either lexically specified or assigned by a rule. Pulleyblank (1986) launched a direct war on stars, which he called

²⁹ Instead of inserting an H tone, one might also propose that the asterisk is phonetically implemented as high pitch, without the intervention of a phonological unit H. In this chapter, I will not differentiate between these two possibilities and simply refer to an H tone, leaving undecided whether this is a phonological entity or a phonetic exponent; see van der Hulst (2011) for discussion of this issue.

³⁰ We must note, however, that Hermans ultimately attributes the difference between the two types of 'accents' in Limburgian dialects to two types of feet.

³¹ By referring to English 'as a tonal language' Goldsmith (1981) turned this analogy around. Interestingly, the extension of the 'tonal' analysis of phrasal units to tonal patterns of words has a parallel in the extension of the analysis of lines of verse to rhythmic patterns of words in metrical phonology.

‘accentual diacritics’. It should be pointed out that Pulleyblank was not arguing against cases in which tones can be associated to a tone-bearer that could be located in terms of a metrical algorithm as the ‘head of the word’. Metrical structure can be sensitive to diacritic syllabic accents and such diacritic accents that trigger ‘stress’ (via metrical structure) were not under attack in Pulleyblank’s work, although they are in the theory proposed in Dubina (2012), which I discuss in section 8.5.³² Pulleyblank presents several arguments against diacritic stars for tonal systems (cf. Blevins 1993: 238 for a summary of these arguments). Most importantly, he pointed out that diacritic accents do not at all function like syllables that are diacritically marked in stress systems, on the argument that they do not function as the anchor for metrical feet; rather, they function to locate the presence of tones. He also argued that using both stars and tones makes the phonological machinery overly rich in that we now predict rules referring to stars, to tones, and to both at the same time. A potential argument in favour of stars as an obligatory property of words is also not convincing since obligatoriness is not always attested, given that there are alleged pitch accent languages, such as, for example, Tokyo Japanese, that have unaccented words (cf. Poser 1984). Even if accents are culminative, this does still not necessarily support an accentual analysis. Hyman (2006, 2009) makes this argument by showing that languages may have properties other than tone which display a once-per-word character, implying that we do not want to analyse all of these as accentual.³³

A comprehensive defence of the tone-only approach with many case studies from a variety of languages of different language families is offered in Hyman (2006, 2009). The issue that Hyman specifically raises is whether there is a place in *the typology of word prosodic systems* for the type ‘pitch accent system’, i.e. systems which are accentual, with accent being realized as H tone, or some other tonal ‘melody’. Hyman argues that pitch accent systems are not a ‘word prosodic type’ because such languages are simply tonal.³⁴ He only acknowledges ‘tone systems’ and ‘stress systems’. In my previous work

³² The distinction between ‘metrical’ and ‘non-metrical’ pitch accent systems can also be found in Clark (1988). In section 8.3, I will propose a ‘nuanced’ interpretation of privative tone systems and ultimately reserve the moraic accent analysis for only those in which the occurrence of the H tone is not both obligatory and culminative, assuming that ~~such~~ systems in which H tones have these properties most likely requires a syllabic accent analysis. A case in point is Nubi (Gussenhoven 2006).

³³ Pulleyblank also mentions a formal argument that rules that insert complex melodies like LHL violate a constraint on insertion that was originally proposed in Chomsky and Halle (1968), namely that insertion rules should insert single units.

³⁴ What complicates matters is that the label ‘pitch accent language/systems’ has been widely used for cases in which ‘tone’ and ‘stress’ or ‘accent’ both seem to play a role, but there are significant differences within this group. See van der Hulst and Smith (1988a, b) and Hyman and Wilson (1991). Some of those differences will be made explicit in this chapter.

M 3

(e.g. van der Hulst 2011), I have pushed back against Hyman's binary typology, although I understand the simplicity of the idea that all languages that use pitch at the word level, no matter how limited, are analysed as 'tonal languages'.³⁵ Focusing on so-called *restricted tone* languages which use privative H tone with various restrictions on the distribution of H, I argue, in van der Hulst (2011), that it is not only possible but also insightful to analyse all of these cases as accentual. It is perhaps true that one can never exclude a strictly tonal analysis with certainty, but it then must be admitted that the restricted distribution of the H tones is, 'accidental', especially where it resembles in one way or another the distribution of accents in stress accent languages. In hindsight, this argument only holds force for privative H languages that can be analysed with syllabic accents (such as the case of Nubi, analysed in Gussenhoven 2006), because those that I will analyse with moraic accents are not expected to have stress-like distribution of accents, as I will explain below.

The arguments against the tone-only approach that I find more compelling is that, arguably, the use of privative H tones violates *the principle of contrastivity*, which requires that all predictable information is removed from phonological representations, at least at the 'underlying level'. If the only tonal specification is H, contrastivity is violated because it is predictable that every tone is an H tone.³⁶ If, in response, the tone is specified as an 'underspecified tone' (or an 'empty tonal root node'), the question arises whether that notion is theoretically defensible, given the expressive power of unspecified class nodes; I will discuss such proposals in section 8.5. To clarify my own position, which, like Hyman's, also supports a binary opposition, I oppose (true) tone systems to accent systems, with the latter subdividing into different subtypes depending on the phonological or phonetic correlates of accent. True tone languages are those that use different, *contrastive tone specifications*. In stress accent languages, accents are correlated with a set of phonetic properties that we call 'stress' (typically mainly duration, but often accompanied by some degree of intensity and pitch, and 'segmental' symptoms—hyper-articulation effects—that affect the segments that make up a stressed syllable).³⁷ In pitch accent languages, the only correlate is (claimed to be) pitch. This basic

³⁵ This view echoes the definition of tone language by Welmers (1959: 2): 'A tone language is a language in which both pitch phonemes and segmental phonemes enter into the composition of at least some morphemes'. Strictly speaking, this excludes cases in which a language has tonal affixes without having affixes or other morphemes that combine tone and segmental properties. Perhaps such a language is unlikely to exist, but if it does, I think Welmers would also call it a tone language.

³⁶ We must note that Clements (2003) does not take contrastivity to be a necessary condition for the use of phonological specifications. For him, it is sufficient that a phonological specification plays some kind of role in the phonology of a language.

³⁷ Fully automatic weight-insensitive stress can be analysed without the use of accents. Those systems would fully rely on the construction of a default dependency/metrical structure. ~~If weight plays a role in such systems, only accents projected from weight would be required.~~

or stress can be implementational.
even

dichotomy between stress accent and pitch accent languages was adopted in Hyman (1977), being similar to the traditional distinction between dynamic and musical accent. I have suggested that other subtypes of the accent group could be distinguished if accent correlates with some other salient phonetic or phonological property. In van der Hulst (2011, 2012), I point out that if, in some languages, the primary or only cue of accent is duration, we might speak of a duration accent language; or if the correlate is not merely pitch, but a *contrastive* tone specification, we speak of a tone accent (or tonal accent) system; this case shows that contrastive tone and accent are not incompatible, as I will further discuss in section 8.4. Manifestations of accent can thus be manifold and also include non-phonetic, phonotactic properties as in a tonal accent language in which only accented syllables allow a certain ~~phonemic~~ contrast that is neutralized in non-accented syllables. But contrastive options can also regard other properties than tone, such as the number of (qualitative and quantitative) contrastive vowel distinctions which can be greater in accented syllables than in non-accented syllables. The various correlates of accent are not mutually exclusive; more than one cue can apply in a given language. Beckman (1986) refers to accent languages in which the phonetic cue is not 'stress' (a collection of phonetic cues) as 'non-stress accent languages'. It is here important to emphasize that the notion 'accent' does not have any inherent phonetic or phonological properties once we acknowledge that we must make a distinction between the location of prominence (as marked by an accent, which is an abstract property) and its phonetic manifestation, as clearly formulated in Abercrombie's quote at the end of section 8.2.

Hyman's idea that 'stress' and 'tone' are the only prosodic types, suffers, in my view, from comparing apples and oranges, since 'stress' is a phonetic exponent and tone is a phonological entity, given that we distinguish between the notion tone, which implies contrastive pitch choices, and pitch as a predictable phonetic correlate of accent; pitch, of course, is also the typical exponent of tone. I would thus rather say that there are *accent systems* and *tone systems*, each of which come in different varieties. As already mentioned, these systems are not incompatible and can thus corroborate in a single language (as in tonal accent languages). In section 8.4, I will discuss various other potential interactions. We can say that a language is a *tone language* if its word prosodic system only uses a tone system, just like English which does not use contrastive tones, is ~~an~~ [^] accent language, only using an accent system.

I now return to the argument for accentual analyses of restricted tone languages that H in restricted tone systems can only be accentual if its occurrence is both culminative and obligatory, properties that are characteristic, if not

tonemic

H
a pure

^ pure

definitional, of a stress accent system, which, as proposed in section 8.2, is subject to a D-structure. If, then, we call the often-discussed case of Tokyo Japanese a pitch accent language, it is potentially problematic that Japanese words can be ‘unaccented’.³⁸

However, this argument loses force when we make a distinction between moraic accents and syllabic accents. As Hyman (2006, 2009) points out, whereas ‘stress’ seems to be a property of syllables, alleged pitch accent languages often seem to involve tones with a moraic distribution; although not always as demonstrated by the abovementioned Nubi case. This means that the comparison between privative tone (which is typically moraic) and stress cues (which correlate with syllabic accent) eliminates the expectation that privative tone and stress function the same and it thus undercuts the argument against an accentual analysis of privative tone.

To clarify the notion of moraic accent, let us consider some cases. As we will see, moraic accents, like cases of morphologically conditioned syllabic accents, do not always have to be specified lexically. There can be an obligatory occurrence of moraic accent in some morphosyntactic category, but in such cases the location of the moraic accent may still be phonologically conditioned. An example is Somali in which a certain class of words, all nouns, can have a moraic accent on the final or penultimate mora (Banti 1988; Hyman 1981). Examples are given in (7):³⁹

(7) Somali

root	masculine		feminine	
a. /inan/	ínan	‘boy’	inán	‘girl’
/naʃas/	náʃas	‘stupid man’	naʃás	‘stupid woman’
/goray/	góray	‘male ostrich’	goráy	‘female ostrich’
b. /darmaan/	darmáan	‘colt’	darmaán	‘filly’
/ʃeesaan/	ʃeesáan	‘young he-goat’	ʃeesaán	‘young she-goat’
/dameer/	daméer	‘he-donkey’	dameér	‘she-donkey’
c. /doofaar/	doofáar	‘pig’	doofaár	‘pigs’
/kalax/	kálax	‘lady’	kaláx	‘ladies’

As shown in (7), in nouns there is a ‘tonal’ contrast that is used to express gender and plurality. The accent mark here stands for high tone, which can be

³⁸ There is a rich literature about the pitch accent system of Tokyo Japanese. See Pierrehumbert and Beckman (1988), Gussenhoven (2004), and van der Hulst (2011) for references.

³⁹ See Kaldhol and Johnson, this volume for a critical examination of tone in Somali that questions the ‘one High per word rule’. Hyman (2006) has identified other languages that submit to this rule. Potential candidates are Safwa and Kinga, which Voorhoeve (1973) and Schadeberg (1973) have identified as ‘restricted tone languages’, the restriction being that only one high pitch occurs per word.

represented formally as a diacritic moraic accent. We should note that Somali can have unaccented words:

(8) Unaccented verbs

aragtay 'she-saw'
yahah 'is'

For Somali there is positive evidence for a moraic analysis. The moraic accent is predicted to occur on the final or penultimate mora. Assuming that accent is moraic, metrical structure is not necessarily triggered and obligatoriness is thus not expected. However, since the accent is predictable on morphological grounds, there is no reason to expect more than one accent, which then accounts for the apparent culminativity, and which thus does not require a specific constraint or licensing in this case.

As was already mentioned, moraic accents *can* only trigger metrical structure if moraic accents function to make a syllable heavy. A bounded instance of stress being dependent on moraic accent is reported in Bennett and Henderson (2013), who describe word prominence in Uspanteko, a Mayan language spoken in the western highlands of Guatemala. Uspanteko has both 'stress' and 'tone'. 'Stress' is predictable and confined to one of the last two syllables. If a word is tonal, H occurs on the penultimate mora.⁴⁰ The location of moraic accent is thus completely phonologically predictable. Given that long vowels can only occur in the final syllable, high pitch occurs 'on the first mora' of such final long vowels.⁴¹ In the absence of a long vowel, the penultimate syllable (always short) has the moraic accent. Strictly speaking, even though accent is realized as high pitch on the penultimate mora, this does not necessarily imply that the accent is moraic. Note that there is no contrast between accent being on the first or second mora of a long vowel. However, since the realization is pitch, rather than stress, a moraic accent is expected, especially since, irrespective of high pitch, the language also has stress. Interestingly, stress in Uspanteko is sensitive to the presence of the moraic accent. We know this because in non-'tonal' words, stress is always final, irrespective of whether the final vowel is long or short. In 'tonal' words, stress accent is attracted to the syllable with the 'tone', which can be the penultimate syllable. This means that the moraic accent projects syllable weight.⁴² Stress is assigned within a bisyllabic window on the right edge. The default for stress is set to

⁴⁰ I refer to Köhnlein and Zhu, this volume for a different analysis of this system which reckons with the fact that words with moraic glottal stops never have tone.

⁴¹ This is thus a case of a specific form of syllable weight having a once-per-word distribution.

⁴² 'Tone'-sensitive stress has been proposed for other cases as well, see section 8.4.

such cases in their survey of Papuan languages: Kaure, Sikaritai, Obokuitai, Golin, Fore, Move, and Usarufa. In Fore, the first syllable with a high tone is 'stressed', and in words without high tones the first syllable is 'stressed'; 'stress' here meaning that these syllables are prominence peaks. Both Golin and Obokuitai have the opposite pattern: stress falls on the last high tone, or on the last syllable if there are no high tones. These are 'typical' weight-sensitive unbounded systems which can be analysed as having heavy syllables due to their moraic accent/H:

L " / "

(10) a. Golin (L/L)

Accent falls on the rightmost high tone syllable,
else on the rightmost syllable if H tones are absent.

b. Fore (F/F)

Accent falls on the leftmost high tone syllable,
else on the leftmost syllable if H tones are absent.

Languages that have also been analysed as a first/first unbounded moraic/H dependent stress systems are Lithuanian (Halle and Vergnaud 1987; Blevins 1993) and Serbo-Croatian (Inkelas and Zec 1988).⁴⁴

Cases as in (10) could be called pitch accent systems (if the H tone is privative), with stress being dependent on syllable weight that is due to moraic accents. Dependency of stress on tone can also occur in languages that have contrastive tone, either in all or some syllables, sometimes with maximal complexity found in the 'stressed' syllable. Clear examples are given in Suárez (1983), as well as in Yip (2002) in their surveys of Meso or Middle American languages. Suárez mentions Northern 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 of the 'stem' in both cases). This can be compared to Huautla Mazatec where every syllable can have contrastive tone with stress also being stem-final. In between, we find cases where the contrast on certain unstressed syllables is limited. In Palantla Chinantec, for example, there is no tonal contrast on post-stress syllables. Isthmus Zapotec (Mock 1988) has two contrastive tones which associate to the stressed syllable and from there spread rightward, with pre-stress syllables being low-toned. ^{various} These cases fall under (9b).

contrasted with opposed to

L(i.e. 9c)

Languages that restrict the presence of a privative (non-contrastive) tone to the stressed syllable, without making it mandatory in that position, also occur. If, in such cases, the occurrence of stress is only partially predictable, syllabic accents would be required, which suggests that the tones must be analysed as

These also belong to type (9b).

⁴⁴ See de Lacy (2002) for additional cases and discussion.

‘right’ (based on cases where there is no moraic accent), meaning that the rightmost syllable in the window is the head of a metrical structure that is constructed within this window. This leads to final stress if there is no tone. Presumably, if, in the absence of a moraic accent, Uspanteko always has final stress (i.e. without exceptions), the language does not require diacritic syllabic accents. However, if words exist that have penultimate stress without there being a moraic accent in that syllable, both types of accents would have to co-occur.⁴³

It would appear that both Trubetzkoy (1939 [1960]) and Halle and Vergnaud (1987) take syllabic and moraic accents to be mutually exclusive, implying that a language has either one or the other. In this view, the choice of the accent-bearing unit is an independent parameter of the accentual system. That would certainly have been a possibility. However, in our discussion of Uspanteko we have just seen that a language that has moraic accents can also have syllabic accent if required to represent exceptional stress locations. In the next section, I will briefly consider other systems that appear to have both tone and ‘stress’. In considering such cases, we will have to keep in mind two distinctions, namely that between privative H systems (which I analyse in terms of moraic accent) and contrastive tone systems, and between stress systems which allow lexical exceptions (which requires diacritic syllabic accents) and systems in which stress is completely predictable. For both cases the location of stress can be weight-sensitive or not.

8.4 Dependencies between stress and tone

While tone and stress (despite being apples and oranges) are different kinds of word prosodic phenomena, and languages are typically classified as having one or the other, it has long been noted that there is no inherent incompatibility between the two, although the moraic–syllabic accent distinction is not always taken into consideration. Three logical possibilities obtain (see also de Lacy 2002):

- (9) a. Stress is dependent on tone
- b. Tone is dependent on stress
- c. Stress and tone are independent

119 Option (9a) occurs when a language is ‘tonal’, with stress being located at the first or last tonal specification. Van Zanten and Dol (2010) recognize several

⁴³ In this chapter, I do not provide an explanation of how heads are located within the accentual window. See van der Hulst (2012, in prep.).

moraic accents (or H tones), whether or not there is a contrast in having the moraic accent on the first or second mora in a bimoraic syllable. Analyses along these lines have been developed for ‘tonal’ Scandinavian (see Riad 1998c), Slavic languages (see Browne and McCawley 1965), and Limburgian dialects (see Hermans 2012).

Case (9c) occurs when a language has both tone and stress, neither being dependent on the other. If the tonal aspect is a privative H tone, moraic accents conceivably co-occur with syllabic accents, unless stress is fully predicable. The language Arapaho (analysed in Bogomolets 2020, to appear) has privative H tones (with unpredictable location) and stress that is sensitive to syllabic (diacritic) accents.

The situation is more complicated if we are dealing with contrastive tone and stress that is not fully predictable. The Caribbean language Papiamentu is analysed in Remijsen (2001) and Remijsen and van Heuven (2005) as an example of a language with both contrastive tone and contrastive (i.e. not fully predictable) stress, while Remijsen (2001) discusses the Austronesian languages Ma’ya as another case. Hualde, Lujanbio, and Torreira (2008) report contrastive stress and contrastive tone for two dialects of Basque; also see Hualde and Icardo Isaka, this volume. As I will suggest in section 8.5, in these languages, tone may be consistently privative.

8.5 Reducing accents to segmental content

8.5.1 Dubina (2012) and Spahr (2016)

In this section, I start by discussing two proposals to reduce accents to tonal specifications of a certain kind. I will discuss these proposals first, point out some problems and then offer another proposal that reduces accents to laryngeal specifications, while maintaining a distinction between moraic and syllabic systems, using the framework of Radical CV Phonology (van der Hulst 2020).

Dubina (2012) develops ‘a Tonal Analysis of Free Stress’. This account does not directly address the reduction of accent to tone that was discussed in section 8.3, but it can be seen as an extension of expanding the use of tone beyond the alleged pitch accent systems that Hyman and others took to be tonal rather than accentual. Dubina’s focus is on stress accent systems, and in particular unbounded, lexical stress accent systems, i.e. systems with lexically specified accents in a subset of the morphemes:

p. xii: ‘In this thesis, we argue that a strictly tonal, non-accentual analysis is applicable to a wider range of suprasegmental phenomena than usually

assumed. The bulk of the work is dedicated to East Slavic stress. [...] The tonal model can successfully handle the same scope of data as the competing accounts, which are based on accentual representations. The significance of this result for the typology of word prominence lies in the demonstration that, contrary to Hyman's (2006) assertion, languages like Russian do lend themselves to an analysis in purely tonal terms, if one accepts, as van der Hulst (1999) does, that the phonetic exponents of phonological tone may be other than pitch (cf. Lockwood (1983)).'

p. 14: 'While we do not discuss the status of tone in phonology at any length, it is clear that our analysis involves the assumption that tone is a more abstract feature than usually believed and does not have a unique phonetic correspondent. In this respect, our analysis follows Lockwood's (1983) insight on the non-unique nature of the phonetic interpretation of phonological tone. The important difference is that Lockwood explicitly requires phonological tone not to be culminative, whereas our analyses of Belarusian and Indo-European operate with culminative tone.'

While I do mention Lockwood's proposal in van der Hulst (1999), implicitly considering perhaps that his notion of tone could replace the notion accent, I actually do not think, at least not now, that we must go as far as Lockwood suggested, allowing *any* phonetic realization of the category tone that behaves suprasegmentally. Nor would I want to allow that a phonological feature has no phonetic correlate at all.⁴⁵ In Dubina's approach, the postulated tonal element H correlates with overt stress-like phonetic properties (above and beyond pitch), although this only applies to those tonal specifications that are selected for primary stress. The other tonal specifications have no phonetic correlates and are thus abstract: they merely function as 'placeholders' which get phonetic content if selected for 'primary stress'.⁴⁶ Dubina thus proposes H as the representation of *accents* (I assume *syllabic* or *moraic*) for 'free stress', which suggests that we would still need diacritic accent for exceptions in predictable (bounded) stress. However, one might argue that Dubina's idea could be extended to *all* cases where diacritic accents have been used. But whether or not the use of H is meant to replace *all* uses of diacritic accents, there is the obvious suspicion that in his theory, diacritic (content-free) accents have

⁴⁵ As I argue in van der Hulst (2018), allowing this opens the door to the kind of abstractness that Kiparsky (1968) warned phonologists to avoid. While structural aspects of phonological representations might have no phonetic correlates, I assume that segmental specifications, which are 'substantive', must have phonetic correlates.

⁴⁶ We must reckon with the possibility that in specific cases where accents have been postulated, there are, in fact, phonetic properties in all cases. In analysing the stress accent systems of Russian, Kodzasov (1999: 853) claims that 'the "lexical marks are really intrinsic phonological properties of morphemes". I am doubtful that the inherent properties that Kodzasov hears, are really there, other than as exponents of the winning accent (and thus of stress), since no other sources mention them.

been substituted by a *diacritic use of tones*. Moreover, while the elegance of Dubina's proposal is clear, in that he extends the idea to replace accents by an H tone to systems with 'free stress', a specific argument remains against the tonal analysis, which involves the notion of contrastivity. Arguably, specifying lexical Hs amounts to violating contrastivity, if we assume that the only lexical specification that is active in these ~~four~~ systems is H. To capture the perceived redundancy, a case could be made for postulating an unspecified tonal node which can be predictably provided with H.

H S

A proposal of precisely this kind is found in Spahr (2016), who replaces 'accents' with a tonal node (which he symbolizes as ' π ') which can remain unspecified for a specific feature.

p. ii. Features on π -nodes are used in tone languages with more than one tonal autosegment, but in privative tone languages, the π -node itself reflects the phonetic realization of the marked member of the tone opposition. The same featureless π -node is used as an autosegmental marker of accented positions in lexical stress systems, where its language-specific phonetic realization is that of stress: some combination of increased pitch, duration, and intensity.

p. 78: The phonetic realization of the π -node is determined language-specifically, and it need not be given a substantive name like 'tone' or 'stress'.

Spahr's proposal, like Dubina's, puts forward a unified, formal account of all former accents. The unspecified tonal node replaces the accent not only in Hyman's tonal systems, but also in stress accent systems, just like Dubina's H tone can be interpreted as either 'stress' or 'tone'. But Spahr's theory meets the objection made to Dubina's theory in that it does not violate the contrastivity requirement.

As already mentioned previously, for proposals of this kind, the co-occurrence of contrastive tone and contrastive stress is problematic because if the tonal node is used 'for accent' it cannot at the same time be used for contrastive tones. Both Dubina (p. 265ff.) and Spahr (p. 130ff.) address the issues that are raised by languages that appear to be 'accentual' and also have *contrastive* tone.⁴⁷ The languages of type (2a) are not problematic if stress is fully predictable based on tonal specification, given that full predictability does not require diacritic accents (of course, if the relevant

Lg

⁴⁷ Bogomolets (2020) has independently proposed that word prosodic systems that have both will show differences between the two that are related to their relative 'salience'; I refer to this thesis for elaboration of this idea.

(g c)

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languages had exceptional stress in some words, it would be a problem). For type (1b) languages, the prediction is that the location of the stressed syllables that display tonal contrast is likewise fully predictable so that once more no need exists for diacritic accents. When stress and tone are independent, the prediction is once more that stress cannot be contrastive (i.e. is fully predictable), assuming that contrastivity would require diacritic accents.

To account for systems that actually have both contrastive tone and contrastive stress, there is an alternative, independent way to represent stress in Spahr's theory:

p. ii: In certain systems, surface stress may be represented covertly as length on the X-tier with tone represented on the π -tier [...].

p. 78: Because it is possible for a surface stress contrast to be derived from covert quantity ('honorary weight'), stress can be represented on the X-tier instead of with π -nodes. This means that it is possible for a language to simultaneously show a tone contrast and a stress contrast, but in doing so must sacrifice the ability to have a separate quantity contrast. Thus, the proposed model predicts that no more than two independent prosodic contrasts may coexist in a single system.

I will not address here the prediction that a language with contrastive stress and a tonal contrast cannot have a distinctive length contrast, although I mention that Arapaho offers a counterexample (see Bogomolets 2020). Barring providing such a counterexample,⁴⁸ I find the use of 'covert length' in order to be able to represent contrastive stress somewhat ad hoc, because there is no independent motivation that I can see for specifying unpredictable stress locations differently in languages with or without tonal contrast.

Ignoring the problem of how to represent both contrastive tone and contrastive stress for the moment, Spahr's proposal to unify the representation of accent is attractive. However, his idea cannot be implemented in the specific theory of segmental structure presented in van der Hulst (2020), which does not allow for unspecified nodes, a measure taken to prevent the expressive power that such an option necessarily entails. Additionally, empty 'class nodes' do not have a theoretical existence in the model. I cannot remedy this by specifying the laryngeal node with a specified H tone, while, like Dubina,

⁴⁸ Potentially, Uspanteko might be a case in point; it has contrastive stress in disyllabic words with light syllables of equal sonority as well as distinctive length in final (stressed) syllables.

saying that the unit H can be interpreted in terms of pitch or stress, because this brings us back to the violation of contrastivity. There is, in fact, an additional problem for both proposals. As mentioned with reference to Arapaho, there are languages in which unpredictable occurrences of privative H co-occur with unpredictable syllabic accents, which means that one cannot use the same formal representation for both. We can solve this problem by acknowledging a distinction between syllabic accents (for stress) and moraic accents (for H tone), but that distinction is not made in either proposal. In the next section, I will suggest that there is perhaps a way to address this problem when we represent syllabic and moraic accents as alternative choices in the laryngeal node.

Comparing the two proposals, one might argue that Spahr's usage of an unspecified node has an advantage over Dubina's use of H. Admitting that Dubina takes his H to be phonetically broad, it would seem that using an unspecified node has direct advantage of allowing the 'accent' to be manifested with low rather than with high pitch. Additionally, it seems more compatible with the finding that the phonetic realization of accents can be dependent on intonational tones. I refer to Zec and Zsiga, this volume, where interactions of lexical tone and intonation in Serbian are analysed.

8.5.2 Why we need accents

In my own model of segmental structure, developed in great detail in (van der Hulst 2020), accents cannot be represented by an unspecified laryngeal node (Spahr), because class nodes are not primitive entities. Nor can I use an |H| specification (Dubina) because this violates non-contrastivity. This means that I am committed to treating accents as formal primitives that are privative features of either syllable nodes or mora nodes.

Apart from this consideration, I wonder how laryngeal specification that represent accent function in the computation of 'stress'. In any model that operates with a grid-based representation of 'stress' (with or without bracketing), grid marks are postulated such that one of the grid marks is selected, e.g.:

$$(11) \quad \begin{array}{ccc} x & x & \Rightarrow (x \begin{array}{c} x \\ x \end{array}) \\ \sigma_h & \sigma_h & \sigma_h \sigma_h \end{array}$$

X
X (must be above each other)

Here the subscript 'h' indicates the laryngeal specification of accent. What are grid marks? In my approach, such marks *are* the accents which can replace

the 'diacritic' specification of the laryngeal specification, rather than being projected from such specifications.

Arguably, we need grid mark accents anyway when syllables behave as heavy with respect to the computation of 'stress', based on their intrinsic properties (such as complexity of the rhyme or the sonority of segments within the rhyme). In that case, a grid mark is projected based on phonological weight, whereas, when accents are diacritic, they are specified lexically as properties of syllables (or of morae, given that a distinction between syllabic and moraic accents is made, as is done here).

I now (re)turn to the problem that both Spahr and Dubina face, which is that the use of a laryngeal specification to represent (diacritic) accent prevents that a language that has diacritic accents from also having contrastive tone. Given that the cooccurrence of accent and contrastive tone is empirically attested, Spahr solved this problem by, in that case, representing accents in term of covert length ('honorary weight'), which entails the prediction that such a language cannot have an overt length contrast, which, apart from potentially being empirically problematic, strikes me as a rather ad hoc solution.

Dubina also considers whether his tonal analysis of 'free stress' predicts that no language can have contrastive stress and contrastive tone (p. 266), but he maintains that no language has or can have *free* (i.e. unpredictable) stress *and* contrastive tone.

A relevant case in point is provided in Remijsen (2001), see Table 8.1

Table 8.1 Minimal set examples of tone and stress contrast in disyllabic words in Papiamentu, after Remijsen (2001)

Stress and Melody	'High-Low	'Low-High	Low-'High
	'múla	'mulá	mu'lá
Gloss	'mule'	'grind' (infinitive)	'grind' (participle)
	'ligá	li'gá	li'gá
Gloss	'bond, union'	'bind' (infinitive)	'bind' (participle)
	'debé	'debé	de'bé
Gloss	'debt'	'owe' (infinitive)	'owe' (participle)

Dubina does consider this language a convincing example of contrastive stress and contrastive tone, due to the fact that ~~stress~~ in these cases can, in his view, stress be predicted if morphological or phonological factors are considered. Another solution would be to invoke *lexically specified foot structure* to represent contrastive stress; this approach could also have been taken by

Hand

^ ^s
H §

Spahr as an alternative to his covert length approach. However, the idea to specify foot structure lexically, and indeed to specify different foot types to capture contrastive stress location, strikes me as equally ad hoc as Spahr's use of covert length. In view of this scepticism, I would not be inclined to adopt the use of contrastive foot structure to account for the distinction in some Scandinavian languages and Limburgian dialects to account for the presence or absence of H tones that can co-occur with stress; see Morén-Duolljá (2013), Köhnlein (2016), and Hermans (2012), as well as Fournier and Gussenhoven, this volume and Bye, this volume. In these cases too, I would use 'moraic accents' (which then co-occur with syllabic accents to mark exceptional stress locations). Interestingly, at an abstract level, there are similarities between the controversy about using (moraic) accents or lexical tone in restricted tone systems and the controversy about using lexical prosodic structure or lexical tones in the 'European' systems. In both cases, lexical H competes with structural alternatives. In my approach the structural alternative is an accent, potentially to be reduced to a segmental-internal 'laryngeal' property. That said, the question of whether or not some kind of foot structure may need to be segmentally specified to account for other properties than 'stress' cannot be answered here. I suggest that what is sometimes called lexical foot structure may be recursive syllable structure (see van der Hulst 2010).

↳ (see below)

If accents are primitives, there is no conflict between having both contrastive tone and contrastive accent. That said, in the case at hand, one could argue that Papiamentu has privative H tone which means that it could be represented in term of moraic accent, while 'stress' would appeal to syllabic accents. We need this option anyway for a language like Arapaho (Bogomolets 2020) which has both diacritic weight for 'stress' and unpredictable Hs. The models of Dubina and Spahr do not distinguish between privative and contrastive tone. The co-occurrence of any kind of tone together with accents would require covert length (in Spahr's model) or would be predicted to not occur. For Dubina this makes Arapaho (like potentially cases such as Mayan) problematic.

In my approach, languages that have diacritic accent and either privative or contrastive tone are permitted.⁴⁹ A clear case in which diacritic (i.e. unpredictable, thus contrastive) accent co-occurs with contrastive tone (rather than privative) has not been provided here, but I suspect that such cases will be (and

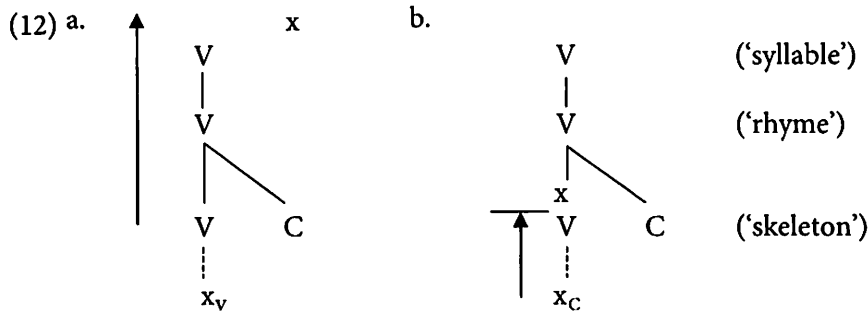
⁴⁹ We do not expect a language to have contrastive tone and privative tone, which arguably does not need a formal explanation; this would imply involving different specifications of the tonal node.

perhaps have been) found, for example, in the Mesoamerican tonal languages that have contrastive tone and 'stress', which may not, in all cases, be entirely phonologically predictable.

In an effort to come as close as possible to the ideas of Dubina and Spahr, let us consider whether the privative accent feature can somehow be represented at the segmental level, albeit not as a laryngeal specification. Suppose we say that accents as segmental features can be of two types, in the spirit of my RcvP model formally represented as $|x_V|$ and $|x_C|$. The privative accentual elements could be properties of the segmental nodes. When projected upward to the syllabic or moraic position, they would be the grid marks that enter into the metrical computation. When such computation is based on phonological weight, an $|x_V|$ element would be predictably assigned to the syllable node, based on whatever property can contribute to phonological weight (typically branchingness of the rhyme, possibly combined with the sonority of the second rhyme segment, or the sonority level of the vowel). Such predictable assignment could not involve $|x_C|$ because of ~~said~~ incompatibility between the C-nature of the accentual specification and the V-nature of the syllable node.

the

This difference between the $|x_V|$ and $|x_C|$ elements would account for the distinction between syllabic and moraic accent, as follows:



Given the logic of RcvP, it is expected that the accentual V element is visible at the nuclear/syllabic node of the syllable (because this node is also encoded as V), which then effectively captures the notion of syllabic accent, as shown in (12a) below. In (12b), however, the prominence element $|x_C|$ cannot project up to the nuclear or syllable level, being effectively stuck at the level of the mora, i.e. the terminal position of the rhyme unit, encoded as V.

odd hypothesis

(2x) 1 2

Les

To make this account complete, we need to consider two other possible structures:

of a segmental specification in the root node). We need them anyway for the computation of metrical structure and reducing them to laryngeal/tonal specification requires models with significant expressive power (involving empty nodes, covert length, and H specifications that have no limit on possible phonetic correlates). Additionally, such proposals make empirical predictions that are at the very least debatable. I have thus proposed that accents are primitive elements of the theory which occur on syllables or on morae where they are directly available for 'metrical' computations.

I have tried to maintain the spirit of their proposals in the context of the RcvP model, making the tentative suggestion that accents could be encoded as C or V elements, but in that proposal too, the laryngeal or tonal section of segmental structure is not recruited.

Nevertheless,

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