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# Deconstructing Secondary Stress

**Abstract:** Inspired by the Accent-First Theory (van der Hulst 1996, 2009, 2010, 2012), this chapter proposes a novel view on the organization of word-level prosody. I argue that the word-level prosodic system is not *bipartite*: primary accent vs. rhythm, but *tripartite*: primary accent vs. secondary accent vs. rhythm. Secondary accent is defined as abstract marking for inherent prominence phonetically realized as non-primary stress. Rhythm is defined as automatic alternation of strong and weak syllables. I show that secondary accent and rhythm regularly exhibitnon-trivial discrepancies in their phonological behavior and propose that these discrepancies stem from two different sets of parameters governing the two properties.

**Keywords:** Secondary accent, secondary stress, rhythm, prosody, accent, stress, prosodic typology

## 1 Introduction

Traditionally, in the study of word-level prominence, a broad distinction is made between primary stress/accent and non-primary stress (or rhythm).[1] In this paper, I propose that the notion of *rhythm* and the notion of *secondary accent* ought to be treated separately. It will be shown that a large number of genetically unrelated languages provide evidence for treating *rhythm* and *secondary accent* as distinct prosodic phenomena. I will show that the notion of *rhythm* as commonly used in the prosodic literature, in fact, is used to analyze two different prosodic properties which regularly exhibit non-trivial discrepancies in their phonologi-

**1** I adopt the view of *accent* and *stress* proposed in van der Hulst (1996, 2012, 2014a, 2014b and other works). In this view, the term *accent* is used to mean an abstract property of a unit, a mark which does not provide any information about the phonetic cues, while *stress* (or 'stress-accent') is used to mean the phonetic manifestation of accent (see also Hyman (2006, 2009) for a discussion of the two terms). *Accent* is thus viewed as *underlying stress*.

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cal and morpho-phonological behavior. The theory proposed here explains these discrepancies and predicts that they would occur regularly, which accords with the empirical facts.

I propose to reserve the term *rhythm* for secondary prominence which is (i) automatic, (ii) iterative, and (iii) is governed by a specific set of parameters discussed below (6). *Secondary accent*, on the other hand, by the definition proposed in this paper (4), is not dependent on iterative application of the rhythmic pattern, and as such, its assignment is governed by other, non-rhythmic, parameters (4). It will be evident that secondary accent assignment in fact parallels primary accent assignment, and I will argue that this parallelism is not accidental but is due to the identical set of parameters governing the two.

## 1.1 Separation of Primary Stress and Rhythm

The key proposal of this paper is based on the formal theory of word accent/stress that separates the representation of primary accent and the representation of rhythmically strong syllables (also known as rhythmic beats), detailed in van der Hulst (1996, 1997 2009, 2010, 2012). Primary accent in the Separation Theory is calculated first and independently of the rhythmic structure, while rhythm is assigned at a later derivational stage and may have some reference to the already assigned accent. The Separation Theory is in opposition to the assumptions of standard Metrical Phonology (Liberman and Prince 1977; Hayes 1995; Halle and Vergnaud 1987; Idsardi 1992), which treats primary stress and rhythm as derived by a single computation whereby primary stress is 'promoted' from one of the rhythmic beats. Below, I mostly focus on summarizing the motivations for separating primary stress and rhythm leaving aside the issue of the ordering in assignment of accent and rhythm.

Van der Hulst (1996, 2009, 2010, 2012) draws evidence for separating accent and rhythm from systems in which different algorithms govern their assignment. Firstly, as shown in Goedemans and van der Hulst (2013) on the basis of StressTyp (Goedemans and van der Hulst 2009), it is not unusual for primary stress and rhythm to be assigned from the opposite edges of a word. These so-called *polar rhythm* systems (van der Hulst 1984)[2] crucially require contrasting settings of the relevant parameters for the assignment of stress and rhythm (see also Moskal 2012). Secondly, stress and rhythm may differ in the setting of the Extrametrical-

**2** These systems are sometimes referred to as *dual rhythm systems* (Gordon 2002), or *bidirectional rhythm systems* (Kager 2005).

ity parameters. Thus, Goedemans and van der Hulst (2013) mention languages like Khalkha Mongolian, Munsee, and Unami where primary stress assignment is sensitive to right-edge extrametricality while rhythm is not. Thirdly, Goedemans and van der Hulst (2013) show that primary stress and rhythm may differ in the settings of parameters dealing with foot structure: weight-sensitivity, headedness, boundedness, and foot size – binary or ternary (see also McGarrity 2003 for a thorough study of asymmetries in primary stress and rhythm).

Additionally, primary stress and rhythm often display properties suggesting that they are assigned at different stages of prosodic derivation. While it is typical for primary stress to exhibit lexical exceptions and/or sensitivity to morphological classes of words, as well as to morphological structure and stratal differences, such sensitivities are typically not involved in the calculation of rhythm. Rhythm is typically fully automatic, 'post-lexical', and implementational.[3]

Importantly, the Separation Theory thus argues that primary stress is non-metrical, rejecting the major postulates of the Metrical Theory. I adopt the main idea of the Separation Theory, namely that primary accent and rhythm are assigned by different prosodic modules. However, I argue that this separation is not sufficient. Specifically, I propose that the word-level prominence system is not bipartite: primary accent vs. secondary accent, but tripartite: primary accent vs. secondary accent vs. rhythm. I propose that rhythm is post-cyclic and automatic while secondary accent assignment occurs in parallel to primary accent assignment and thus can potentially interact with segmental phonology, morphological structure, and lexical information. Although this approach at first glance may seem less parsimonious, it will be shown that (i) it is in fact formally more economical as it reduces the number of parameters required to account for accentual and rhythmic patterns, and (ii) it provides a better empirical coverage for the prosodic systems with complex interactions between primary and non-primary prominence.

## 1.2 Parametric Approach to Accent and Rhythm

Within the Separation Theory, van der Hulst (1996, 2012, 2014a, 2014b) proposes to account for the variety of accent behaviors on one hand, and for the variety of rhythmic patterns on the other hand with a set of Accent parameters and a set of Rhythm parameters. Let us review these two sets.

**3** Goedemans and van der Hulst (2013) note, however, that 'apparent counterexamples' exist, including languages in which secondary prominence needs to be specified as unpredictable – a note crucial for the theory of separation of secondary stress and rhythm proposed in this paper; see Section 2.3 in this chapter for details on phonologically unpredictable secondary prominence.

Firstly, the source of accent in languages is parametrically determined, and a distinction is made between languages where accent is sensitive to phonological properties of words or syllables and lexical accent languages. Van der Hulst does not provide a formalism to capture this parametric choice, but for the purposes of the current discussion, let us formalize it as in (1) below:

(1) Lexical Accent (Y/N)

Secondly, the mechanism of accent assignment is governed by the Domain parameters and the Accent Placement parameters within the designated domain:

(2) Accent parameters

| | |
|---|---|
| Accent Domain | (Bounded) (R/L) |
| | (Satellite) (R/L) |
| Accent Placement | Weight-to-Accent (Y/N) |
| | (Select) (R/L) |
| | (Default) (R/L) |

The parameters in (2) can be briefly defined as follows. The first parameter – Bounded (R/L) – determines whether stress is assigned within a bounded domain at one of the domain edges, Right or Left. If a language assigns stress in a bounded domain, a primary stress has to surface within the first or the last two or three syllables of the domain (as opposed to being assigned anywhere within a word). The parentheses indicate that this parameter can be active or inactive. In case the Bounded parameter is inactive, the domain of accent assignment is equivalent to the word, producing an unbounded accent system. In case this parameter is active, it determines the edge of the word which coincides with the accent domain. The second domain parameter – Satellite (R/L), if active, produces a trisyllabic domain and determines whether an extra syllable is adjoined to the right or to the left of a disyllabic accent domain in a bounded accent system. The notion of *satellite* in van der Hulst (2012) captures the notion of Extrametricality in the Metrical Theory, which involves an extension of the accentual domain at the word periphery (such a satellite is called *external*), but it also includes a possible extension of the accent domain with an internal syllable. Unlike an extrametrical syllable, a satellite can be accented either regularly or in a limited set of language-specific circumstances (see van der Hulst 2012: 1502–1504 for some examples). Consider, for instance, a schematic representation of the accentual domain in a language where an accent must be assigned within a bounded trisyllabic domain at the right edge of the word in (3). The representation in (3) below

groups the three syllables at the right edge of a word into a constituent where the binary stress domain is within the parentheses and the binary stress domain with the adjunct of an external satellite is in curly brackets; the square bracket represents the word boundary:

(3) Trisyllabic accent domain oriented to the right-edge of the word
BOUNDED(R) SATELLITE(R)
. . . σ {(σ σ)+ σ}]

The Accent Placement parameters govern the particulars of accent assignment. WEIGHT-TO-ACCENT parameter determines the source of accent: if this parameter receives a positive setting, accent placement in the language is weight-sensitive. SELECT (R/L) and DEFAULT (R/L) deal with a competition of more than one accent (SELECT), and with absence of accent (DEFAULT), assigning accent to the leftmost or the rightmost accentable unit in a domain. Bogomolets (2020: 190–218) argued for adding two additional parameters to the list of accent parameters in (2), based on the parametric view of Culminativity and Obligatoriness of accent (Hyman 2006, 2009): thus, CULMINATIVITY (Y/N) and OBLIGATORINESS (Y/N) determine whether words with multiple stresses or no stresses are allowed (see examples in §2–3 and discussion in §4). Different combinations of the settings of the parameters in (1)–(2) create the typological diversity found in primary accent systems. I propose that the same set of parameters is responsible for the diversity of secondary accent systems presented in the following section. More specifically, I propose that the algorithm of primary accent assignment and the algorithm of secondary accent assignment are formally identical, and this is due to them being governed by the same set of parameters. *Secondary accent* is defined as (4) with the full list of accent parameters in (4a):

(4) Secondary accent
Abstract marking for inherent prominence phonetically realized as secondary stress and governed by the set of parameters in (4a).
a. Accent parameters

| | |
|---|---|
| Accent Domain | (BOUNDED) (R/L)<br>(SATELLITE) (R/L) |
| Accent Placement | WEIGHT-TO-ACCENT (Y/N)<br>(SELECT) (R/L)<br>(DEFAULT) (R/L)<br>CULMINATIVITY (Y/N)<br>OBLIGATORINESS (Y/N) |

In the Separation Theory (van der Hulst 1996, 2009, 2010, 2012), a different set of parameters has been proposed to account for the rhythmic patterns since, crucially for the Separation Theory, accent and rhythm are treated as two different kinds of prosodic phenomena. The following parameters governing rhythm have been proposed in van der Hulst's work:

(5) Rhythm parameters (van der Hulst 2014b)
Polar beat (Y/N)
Rhythm (Polar/Echo)
Weight (Y/N)
Lapse (Y/N)
NonFinality (Y/N)

The list of parameters in (5) includes the Polar beat parameter which, if active, assigns a secondary prominence (a 'beat') at the edge of the word opposite to the primary accent. However, note that a remark is made in van der Hulst (2014b) that this 'edge prominence' is independent of rhythm. Languages which exhibit this pattern are discussed in detail in §2.1 of this paper. The Rhythm parameter governs the directionality of rhythm propagation: the 'echo' rhythm is assigned to alternating syllables from primary stress, while the 'polar' rhythm in the terms proposed in van der Hulst (2014b), is assigned to alternating syllables from the 'polar beat'. The Weight parameter determines whether rhythm is weight-sensitive. The Lapse parameter determines whether rhythm is binary or ternary, and the NonFinality parameter decides whether the final syllable is provided with a rhythmic beat or not. Although adopting the main ideas of this approach to rhythm, I will propose that rhythmic patterns cross-linguistically can in fact be accounted for with a subset of the parameters in (5). I define *rhythm* as (6) with the updated list of rhythmic parameters in (6a).

(6) Rhythm
Automatic iterative alternation of strong and weak syllables within a word, governed by the set of parameters in (6a).
a. Rhythm parameters
Rhythm (Polar/Echo)
Lapse (Y/N)
NonFinality (Y/N)

I will thus argue that not only do *rhythm* and *primary* accent require separate algorithms in their assignment (as is argued in the Separation Theory), but that

*secondary* accent and rhythm require separate algorithms in their assignment as well. Crucially, it will be shown that secondary accent assignment does not require any parameters that are not already required for primary accent assignment, while the rhythm patterns can be accounted for with just three parameters in (6a).

### 1.3 Outline of the Paper

The remainder of this paper is organized as follows. Section **2** presents a typology of secondary accent systems. In Section **3,** I show that some languages present evidence for all three prosodic properties, and all the logical combinations of rhythm and secondary accent are attested. Importantly, rhythm and secondary accent in languages which have both exhibit discrepancies which are unaccounted for if both rhythm and secondary accent are assigned by a single algorithm. Finally, conclusions and a brief discussion of the implications of the proposed theory are provided in Section **4.**

## 2 Secondary Accent Typology

In this section, I present empirical evidence for and the theoretical implementation of further deconstruction of the notion of word-level prominence. The empirical evidence for the proposed theory centers around two general observations. Firstly, secondary accent assignment parallels the assignment mechanisms common in primary accent assignment and does not parallel the mechanisms common in the assignment of rhythm. Secondly, some languages present evidence for all three prosodic properties.

I begin with evidence for the first point: secondary accent behaves as *accent* proper and is assigned cross-linguistically in the same way as primary accent. The following three strategies of primary accent assignment are common across languages (see Bogomolets and van der Hulst (forthcoming) for an overview). Firstly, primary accent can be *fixed,* i.e. primary accent always falls on the same syllable. The most common patterns cross-linguistically involve fixed primary stress on one of two edge-most syllables at either of the word edges. Examples of such systems are multiple and include, for instance, such languages as Amur Nivkh (initial, Mattissen 2003, forthcoming), Dakota (peninitial, Shaw 1985), Apurinã (penultimate, Facundes 2000), Trumai (final, Guirardello 1999). In §2.1, I propose that in parallel to *fixed* primary accent, *fixed* secondary accent is regularly found cross-linguistically. Secondly, primary accent assignment may depend on the

sensitivity to phonological prominence of some syllables in a wordform. Such prominence most often is conditioned by phonological weight distinctions. Vast descriptive and theoretical literature is available on the role of syllable weight in primary accent assignment; however, the role of syllable weight in secondary accent assignment has received far less attention and has been a subject of controversy even for the best-studied systems like English (see for example Pater 2000 and references therein). In §2.2, I review evidence for the weight sensitivity in secondary accent assignment. Finally, I will consider accent conditioned by underlying phonologically unpredictable prominence of some syllables, i.e. *lexical* accent. Contrary to the predictions of some theories of accent (e.g. de Lacy 2019), and to descriptive claims (e.g. Goedemans and van der Hulst 2014), I will argue that secondary accent, in parallel to primary accent, can in fact be *lexical*. I provide examples of lexical secondary accent in §2.3.

## 2.1 Fixed Secondary Accent

The first type of secondary accent is predictably located in a fixed position within a word. *Fixed* secondary accent, in parallel to *fixed* primary accent, may be located at the edge of a domain (e.g. at one of the edges of a morphological word or another morphological domain). These patterns can be accounted for by the active status of the Bounded (L/R) parameter for secondary accent assignment and the negative setting of the Weight-to-Accent parameter. An active status of the Satellite (L/R) parameter produces a trisyllabic bounded domain for secondary accent assignment, while its inactive status produces a disyllabic domain. The appropriate setting of the Default (L/R) parameter determines the accent placement within the bounded edge-oriented domain. Finally, fixed accent is normally culminative and obligatory, which is expressed through the positive settings of the Culminativity and Obligatoriness parameters:

(7) Parameters governing fixed accent placement

| | |
|---|---|
| Accent Domain | Bounded (L/R) |
| | (Satellite) (L/R) |
| Accent Placement | Weight-to-Accent (N) |
| | Default (L/R) |
| | Culminativity (Y) |
| | Obligatoriness (Y) |

Below I provide examples of three systems with fixed secondary accent: Passamaquoddy (Algonquian; initial secondary accent), Border Lakes Ojibwe (Algon-

quian; final secondary accent), and Tahltan (Athabaskan; penultimate secondary accent). Let us first consider the general pattern observed in Passamaquoddy, where primary accent falls on the penultimate syllable, and secondary accent falls on the initial syllable:

(8)

| a. | b. | c. |
|---|---|---|
| ˌle.ˈwes.to | ˌwi.ke.ˈwes.to | ˌseh.ta.ye.ˈwes.to |
| l-ewesto | wik-ewesto | sehtay-ewesto |
| thus-speak | like-speak | backwards-speak |
| 'He speaks.' | 'He likes to talk.' | 'He speaks while walking backwards.' |

(adapted from Hagstrom 1995: ex. 5)[4]

Examples in (8) show the regular assignment of *fixed* primary accent and *fixed* secondary accent in Passamaquoddy. An identical pattern has been reported in van der Hulst (2012) for Maithili, Biangai, and South Conchucos Quechua. The following parameter settings account for the placement of fixed primary accent (9a) and fixed secondary accent (9b) in Passamaquoddy:

(9) Passamaquoddy accent placement parameters

a. Primary accent parameters

| | |
|---|---|
| Accent Domain | Bounded (R) |
| | (Satellite) |
| Accent Placement | Default (L) |
| | Culminativity (Y) |
| | Obligatoriness (Y) |

b. Secondary accent parameters

| | |
|---|---|
| Accent Domain | Bounded (L) |
| | (Satellite) |
| Accent Placement | Default (L) |
| | Culminativity (Y) |
| | Obligatoriness (Y) |

The result of the settings of the accent parameters in (9) is schematically illustrated in (10):

**4** Note that in addition to *fixed* secondary accent and primary accent, Passamaquoddy also has rhythm. I do not mark rhythm in these examples for clarity of exposition, but see §3.1 below where this pattern is discussed.

(10) Passamaquoddy accent placement

| a. Primary accent | | b. Secondary accent | |
|---|---|---|---|
| x | Default (L) | x | Default (L) |
| . . .σ σ (σ σ)] | Bounded (R) | [(σ σ) σ σ. . . | Bounded (L) |

As evident from the settings of the Bounded (L/R) parameter in (9) and from the implementation in (10), Passamaquoddy shows a common type of *fixed* secondary accent which has previously been termed *polar* (van der Hulst 2014b).[5] The *polar accent* term refers to its characteristic positioning at the edge opposite to the edge of the word where the primary accent is found in the language. This is, however, not the only possible pattern of fixed secondary accent placement.

Fixed *non-polar* secondary accent is found in several dialects of another Algonquian language, Ojibwe. Both, accounts of the so-called syncopating dialects of Odawa and Eastern Ojibwe (Hayes 1995: 216–218; Kaye 1973; Newell 2008; Piggott 1980, 1983) and the so-called non-syncopating dialects, for example, Border Lakes Ojibwe (Swierzbin 2003) describe a stress pattern where, in addition to primary stress, at least in some parts of the lexicon, secondary stress is obligatory on the last syllable of the word. This obligatory word-final secondary prominence is most accurately analyzed as *fixed* secondary accent. Consider data from Border Lakes Ojibwe where one of the regular stress patterns is the following: primary accent assignment is sensitive to syllable weight and is assigned to the rightmost non-final heavy syllable in a word, and secondary accent is required on the final syllable of a word (Swierzbin 2003).[6] Thus, in the examples in (11), the initial syllable receives primary stress because it is the only, and thus the rightmost, heavy (CVV) while secondary stress falls on the final syllable:

(11) a. ˈaːnd͡ʒɪgoˌzɪ ‘S/he is moving to a new place.’
b. ˈʃaːboniˌgʌn ‘needle’ (Swierzbin 2003: 357)

In the examples in (11), primary stress is word-initial while secondary stress is word-final, which creates a seemingly ‘polar’ pattern (minimally different from the Passamaquoddy pattern (10)). However, primary stress can be located at the

**5** Van der Hulst (2012) provides multiple examples of such systems.

**6** As reported in detail in Swierzbin (2003), this is not the only stress pattern observed in the language as stress assignment appears to also be sensitive to lexical marking of some suffixes as well as to word-internal prosodic domains. I refer the reader to Swierzbin (2003) for a detailed description and a possible analysis.

same edge as the word-final secondary stress, since primary stress is not *fixed* in the language, but is assigned to the rightmost heavy syllable in a word. Thus, consider the example in (12), where weight-sensitive primary stress and word-final secondary stress are located at the same edge of the word:

(12) a:nd͡ʒɪˈna:goˌzɪ 'S/he looks different'[7] (Swierzbin 2003: 358)

Thus, while primary accent in the language is unbounded and weight-sensitive, secondary accent is fixed and weight-insensitive. This pattern is accounted for by the following parameter settings:

(13) Border Lakes Ojibwe accent placement parameters

a. Primary accent parameters

| | |
|---|---|
| Accent Domain | (Bounded) |
| | (Satellite) |
| Accent Placement | Weight-to-Accent (Y) |
| | Select (R) |
| | Culminativity (Y) |
| | Obligatoriness (Y) |

b. Secondary accent parameters

| | |
|---|---|
| Accent Domain | Bounded (R) |
| | (Satellite) |
| Accent Placement | Weight-to-Accent (N) |
| | Default (R) |
| | Culminativity (Y) |
| | Obligatoriness (Y) |

The Satellite parameter is not active in Ojibwe, and by (13b), a secondary accent in Ojibwe is assigned within a disyllabic domain at the right edge of a word. Within that disyllabic domain, accent is assigned to the rightmost syllable, which results in a fixed final secondary accent in the language. Consider the schematic representation of these patterns in (14); in (14a), the bold-facing represents heavy syllables:

**7** This form in the source also includes a rhythmic beat on the initial syllable, omitted here for clarity of exposition.

(14) Border Lakes Ojibwe accent placement

a. Primary accent

| | |
|---|---|
| x | Select (R) |
| x x | Weight-to-Accent (Y) |
| [**σ** σ **σ** σ σ σ] | |

b. Secondary accent

| | |
|---|---|
| x | Default (R) |
| . . .σ σ (σ σ)] | Bounded (R)[8] |

Additional evidence for the claim that *fixed* secondary accent is not required to only occur at the edge of the word opposite to the primary stress (as previously proposed for the notion of *polar accent*) can be found. We also find *fixed* secondary accent in languages which do not associate primary accent with a particular distance from the word edges. Consider, for instance, the pattern found in the Athabaskan language Tahltan. In the majority of cases, primary accent in this language is assigned to the initial syllable of the root, but a secondary accent is required in the prefixal domain. Secondary accent is penultimate in the prefixal domain, but is also obligatory even if the root is only prefixed with a single monosyllabic prefix, in which case a clash between the primary and the secondary accent occurs (Bob and Alderete 2005). The clashing secondary and primary stress pattern is exemplified in (15a–c) and the secondary stress assigned to the penultimate syllable in the prefixal domain is exemplified in (15d–f); the root morpheme in all examples is bold-faced:

(15) Tahltan primary and secondary stress

| | | | |
|---|---|---|---|
| a. | ˌme-ˈ**laʔ** | ‘his/her hand’ | |
| b. | ˌkaː-ˈ**tsʼet** | ‘I scratched it out.’ | |
| c. | ˌʔes-ˈ**θone** | ‘my star’ | |
| d. | ˌmeʔe-ˈ**kʼahe** | ‘his/her fat’ | |
| e. | ʔuˌdeθiː-ˈ**dlet** | ‘We (dual) melted it.’ | |
| f. | ʔeˌdʒi-da-ˈ**daɬ** | ‘S/he is going hunting.’ | (Bob and Alderete 2005: 374) |

**8** I thank an anonymous reviewer who has brought to my attention that an even “cleaner” example of both fixed primary and fixed secondary accent aligned to the same edge can be found in Plains Cree. In this Central Algonquian language, primary stress in the default case falls on the antepenultimate syllable, and secondary stress is assigned to the final syllable (as reported in Wolfart 1996). In addition to the fixed right-edge-aligned primary and secondary stress, Plains Cree also has a fully automatic rhythmic pattern propagating from the primary stress leftward. See Section 3.1.1 for a discussion of systems which have all three phenomena – primary stress, secondary stress, and rhythm.

In (15), the root receives primary stress while the prefixal domain receives secondary stress. Both primary accent and, crucially, secondary accent in Tahltan can be analyzed as *fixed* within the relevant domains – the root domain in the case of the primary accent, and the prefixal domain in the case of secondary accent.

A number of typologically and theoretically important generalizations have been made in this section. Firstly, primary and secondary accent can be governed by conflicting settings of the same accent parameters. Secondly, this section has presented a number of accent systems where non-primary prominence is most accurately analyzed as *fixed secondary accent*. Finally, in contrast to the previously held assumption that *fixed* secondary accent can only ever be present in the form of the *polar accent,* I have demonstrated that the position of fixed secondary accent in a language can be calculated without a reference to the position of primary accent, which results in non-polar patterns. I therefore propose to treat *polar accent* as just one kind of *fixed* secondary accent.

## 2.2 Weight-Sensitive Secondary Stress

The second type of secondary accent, which also finds a parallel in primary accent assignment, is *weight-sensitive* secondary accent. Let us consider some examples.

The Australian language Waalubal has been reported to have a fixed primary accent and a weight-sensitive secondary accent (Crowley 1978; Hammond 1986). Primary accent is invariably assigned to the initial syllable in Waalubal, while secondary accent is assigned to all heavy syllables. Syllables with branching nuclei are treated as heavy by the accent assigning algorithm while all other syllable structures are treated as light; consider the data in (16) below:

| | | | | |
|---|---|---|---|---|
| (16) | a. | ˈbandaŋ | ‘other’ | |
| | b. | ˈŋaˌma:lu | ‘tree goanna.ERG’ | |
| | c. | ˈwurguˌlu:m | ‘magpie’ | |
| | d. | ˈbaɲɖaniˌbe: | ‘only covered’ | (Hagberg 2006: 108) |

What we observe in Waalubal, thus, is an asymmetry between the primary accent and the secondary accent, where only the latter is weight-sensitive. This crucially results in a clearly non-rhythmic secondary prominence pattern: for instance, in (16b) the two accents create a clash, and in (16d) we observe a lapse. The Waalubal accent patterns are formally accounted for with the parameter settings in (17):

(17) Waalubal accent placement parameters

a. Primary accent parameters.

| | |
|---|---|
| Accent Domain | Bounded (L) |
| | (Satellite) |
| Accent Placement | Weight-to-Accent (N) |
| | Default (L) |
| | Culminativity (Y) |
| | Obligatoriness (Y) |

b. Secondary accent parameters

| | |
|---|---|
| Accent Domain | (Bounded) |
| | (Satellite) |
| Accent Placement | Weight-to-Accent (Y) |
| | Culminativity (N) |
| | Obligatoriness (N) |

Consider the schematic representation of (17) in (18) below; the bold-facing in (18b) represents heavy syllables:

(18) Waalubal accent placement

a. Primary accent

| | |
|---|---|
| x | Default (L) |
| [(σ σ) σ σ. . . | Bounded (L) |

b. Secondary accent

| | | |
|---|---|---|
| x | x | Weight-to-Accent (Y) |
| [σ **σ** σ σ σ **σ**] | | |

While Waalubal and a number of other languages show an asymmetrical pattern where only secondary accent is weight-sensitive, other languages have been shown to have both primary and secondary accent assignment conditioned by syllable weight.[9] One such pattern is found in the East Mongolian languages Khalkha and Buriat: primary stress falls on the last syllable if it is the only heavy in the word, otherwise on the rightmost nonfinal heavy, otherwise on the initial syllable. Secondary stress falls on all heavy syllables, including the final syllable (Walker 1995). Syllables with branching nuclei are heavy for the purposes of both primary and secondary stress assignment; syllables with non-branching nuclei including closed syllables are treated as light. Consider the examples from Buriat in (19):

**9** McGarrity (2003: 16) lists the following languages showing the same asymmetry as Waalubal: Finnish, Koya, Cahuilla, Apalai, Cambodian, Cayapa, Estonian, Irish Gaelic, Gidabal, Tubatulabal, Western Shoshoni, Margany/Gunya, Alabama, Veps, Votic.

(19) a. ˈbo:ˌso: 'bet, wager'  b. ˌxy:xenˈge:ˌre: 'by one's own girl'  c. ˌbu:zaˌnu:ˈdi:je 'steamed dumplings.ACC' (Walker 1995: 88)

As can be observed in (19), secondary accents in Buriat are assigned to all heavy syllables. Interestingly, clashes between primary accent and secondary accent are allowed, and secondary accent assignment does not obey the same constraints as primary accent in this language, which is evident from the fact that final primary accent is dispreferred while secondary accent can fall on the final syllable (I refer the reader to Walker (1995, 1997) for a detailed analysis of these patterns within the OT framework).

## 2.3 Phonologically Unpredictable Secondary Stress

Finally, the third type of secondary accent, in parallel with primary accent, is phonologically unpredictable, or *lexical*. In this section, I adopt a broad definition of *lexical accent* as accent whose position cannot be predicted form phonological properties of the word (e.g. closeness to word edges or number of syllables) or of the syllables (i.e. syllable weight) and thus has to be underlyingly marked in the lexicon (for a general discussion of lexical accent see van der Hulst 1999, 2010; for competing analyses of lexical accent systems see Alderete 1999, 2001; Bogomolets 2020; Revithiadou 1999). The source of accent in languages which exhibit this pattern is thus specified as in (20):

(20) Lexical Accent (Y)

Nez Perce (Crook 1999), a Sahaptian language, shows a (cyclic) lexical secondary accent pattern. In Nez Perce, multiple morphemes in a morphologically complex word can be underlyingly marked for accent. In such cases, one of the underlying accents receives primary stress (see Bogomolets 2020: 113–133 for a detailed analysis). It is shown in Crook (1999: 383–387) that the remaining underlying accents, however, do not get deleted, but receive secondary stress. Consider the following form of the verb '*weeyik* 'to cross'. In (21), the underlyingly accented root is combined with an underlyingly accented prefix '*nees-* marking a plural object, and an underlyingly accented directional suffix -'*uu*. The first line in the example presents the surface form, and the second line presents the underlying form:

(21) hi-ˌnes-ˌweyiˈk-uu-se
hii-ˈnees-ˈweeyik-ˈuu-see
3-PL.OBJ-cross-toward-INC
'He is crossing toward them.' (adapted from Crook 1999: 480)[10]

In (21), we observe that the root, one of the prefixes, and the suffix realize their underlying accents as stress. The primary stress is on the suffix, and the root and the prefix carry phonologically unpredictable, i.e. *lexical* (*cyclic*) secondary stress.

Phonologically unpredictable secondary accent of similar nature is also attested in the Austronesian language Chamorro. In morphologically simple words in Chamorro, primary accent is obligatorily assigned in the trisyllabic window at the right edge of a word, and penultimate syllable is the default position. In morphologically complex words, primary accent is assigned cyclically: primary accent is assigned to an underlyingly accented affix in the outermost derivational layer (Chung 1983). Accents assigned at all cycles are retained as secondary.[11]

Fijian is an example of non-cyclic lexical secondary accent, which is evident in loanword phonology. Fijian stress has received much attention in the formal literature (see, for example, Hayes 1995: 142; Kenstowicz 2007) with most of the data coming from a series of papers by Schütz (1978, 1983, 1999). Primary stress in the language is weight-sensitive in the bounded disyllabic domain at the right

**10** In Nez Perce, in addition to lexical secondary stress, there is also regular rhythm. In these examples, I omit the marking of rhythm which is not assigned lexically for clarity of exposition. Refer to Crook (1999: 352–382) for a detailed description and a possible analysis.

**11** Secondary stress resulting from the retained accents of simpler morphological forms in Nez Perce and Chamorro are in some way reminiscent of the well-known examples of phonologically unpredictable secondary accent in English, which has received a considerable amount of attention in the formal literature (Chomsky and Halle 1968; Halle and Kenstowicz 1991; Pater 2000). The classic example of such stress is in words like *ˌconˌdenˈsation* where the secondary stress on the second syllable conflicts with the tendency for a syllable immediately preceding the syllable with primary stress to be stressless and reduced. This phonologically unexpected secondary stress is usually assumed to be retained from the morphologically simpler form, i.e. to be *cyclic – conˈdense*. However, Halle and Kenstowicz (1991: 460) showed that English has a parallel secondary stress pattern where secondary accent has to be lexically specified and not result from primary stress at the earlier cycle in words like *ˌchimˌpanˈzee*, *ˌinˌcarˈnation*, *ˌosˌtenˈtation*. Based on these examples, Halle and Kenstowicz (1991) proposed to treat all *condensation*-type words as having a lexically conditioned weight-to-stress rule. In the terms adopted here, all phonologically unpredictable accent is *lexical*, thus secondary accent in forms like *ˌconˌdenˈsation* would be treated as cyclic lexical accent (see Pater 2000 and references therein for various analyses of this pattern).

edge of the word where it is assigned to the final syllable if it is heavy (CVV) and otherwise to the penultimate syllable. The secondary accent pattern relevant for the current discussion is found in loanwords from English (refer to Kenstowicz (2007) for a detailed analysis within the OT framework). Fijian is an open syllable language, which results in pervasive vowel epenthesis to repair consonant clusters found in the source forms. It is particularly interesting that Fijian preserves the main stress of the English source as secondary stress, consider examples in (22) below from Kenstowicz (2007: 319):

(22) Lexical secondary accent in Fijian

| | English | Fijian |
|---|---|---|
| a. | ˈcolony | ˌkoːˈloni |
| b. | ˈcabin | ˌkeːˈbini |
| c. | ˈestimate | ˌesitiˈmeti |
| d. | ˈtelegraph | ˌtalekaˈravu |
| e. | ˈtelevision | ˌtaleviˈsoni |

Note that primary stress in all the forms in (22) is predictable from the general primary accent assignment pattern. Secondary stress in loanwords must, however, be underlyingly marked. Thus, as with the accent systems exemplified in the previous sections, primary and secondary accent assignment in languages with phonologically unpredictable secondary accent may be governed by conflicting settings of the relevant parameters.

## 2.4 Summary

In this section, I presented a typology of secondary accent systems. On one hand, we find that secondary accent and primary accent within a single language are often governed by conflicting parameter settings – an observation which was first made in van der Hulst's work and which influenced the creation of the Separation Theory. On the other hand, we find striking parallels between primary accent assignment and secondary accent assignment in that they are overall governed by the same set of parameters, resulting in the same overall types of primary and secondary accent (i.e. fixed accent, weight-sensitive accent, and phonologically unpredictable accent). This is not expected to occur under the predictions of the Separation Theory.

# 3 Combination of Secondary Accent and Rhythm

The model of word-level prominence proposed in this paper predicts that some languages should distinguish between all three of the proposed types of prominence: primary accent, secondary accent, and rhythm. Notably, this prediction is unique to the theory of prominence proposed here: neither the Separation Theory, nor the standard Metrical Theory distinguish between more than two levels of word-level prominence. In this section, I show that this prediction is borne out: some languages present independent evidence for each prosodic property. Thus, we find languages with only primary accent and rhythm, languages with primary accent and secondary accent but no rhythm, and languages with primary accent, secondary accent, and rhythm.

In the previous section, I argued that secondary accent patterns in all cases can be accounted for with the set of parameters which accounts for primary accent placement cross-linguistically, i.e. only the parameters, which have been independently shown to play a role in primary accent assignment, are needed to account for secondary accent patterns. In this section, I review the parameters proposed for rhythm in van der Hulst (2012, 2014b) and I argue that a smaller set of parameters than previously proposed is sufficient to account for rhythm. Recall that the following parameters governing rhythm were proposed in van der Hulst (2014b):

(23) Rhythm parameters in van der Hulst (2014b)
   a. Polar beat (Y/N)
   b. Rhythm (Polar/Echo)
   c. Weight (Y/N)
   d. Lapse (Y/N)
   e. NonFinality (Y/N)

Notably, parameters (a) and (c) in (23) determine the assignment of prominence which does not create a rhythmic pattern. Under the account proposed for secondary accent in this paper, the 'polar beat' is analyzed as a type of fixed secondary accent. The role of syllable weight in non-primary prominence in the current approach is also restricted to accent proper. Specifically, I argued that weight-sensitivity is a property of accent stemming from the Weight-to-Accent parameter. I thus propose that only three out of five parameters in (23) are needed to account for rhythm (24):[12]

**12** It is possible that one more parameter might be relevant for rhythm assignment – Direction (of propagation) with possible settings being 'leftward' or 'rightward'. Positing this parameter

(24) Rhythm parameters: revised
  a. Rhythm (Polar/Echo)
  b. Lapse (Y/N)
  c. NonFinality (Y/N)

By (24), three properties are definitional of a rhythm system: a specified anchor (primary or secondary accent), the size of a rhythmic unit – binary or ternary, and whether the final syllable in a domain is visible to the rhythm-assigning mechanism. The remaining part of this section presents evidence for the sufficiency of the parameters in (24) and for separating rhythm from secondary accent.

## 3.1 Languages with Secondary Accent and Rhythm

Let us first consider languages which show evidence for all three prosodic properties. Crucially, it will be shown that in all cases, parameters governing the assignment of secondary accent versus rhythm are different, which is predicted to be the case under the theory proposed in this paper, but is unaccounted for otherwise. Below, I review examples of languages where secondary accent must be assigned independently of rhythm in systems with a fixed secondary accent (§3.1.1) and in systems with phonologically unpredictable secondary accent (§3.1.2).[13]

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would be warranted if rhythm systems may differ in the direction of rhythmic alternation, regardless of the rhythm anchor. Thus, if indeed such parametric variation exists, we should find 'echo' systems differing solely in the direction of rhythmic beats assignment. Consider (i) vs. (ii) below; the syllable carrying primary accent is represented with a bold-faced capital sigma, syllables in rhythmically strong positions are underlined:

(i) Binary 'Echo' rhythm L-R
σ σ σ σ **Σ** σ σ σ σ

(ii) Binary 'Echo' rhythm R-L
σ σ σ σ **Σ** σ σ σ σ

I am not aware of such pairs of languages, and it is possible that rhythmification is always automatic and exhaustive, in which case specifying the anchor (i.e. primary accent or secondary accent) is sufficient.

**13** Languages with weight-sensitive secondary accent and an independent regular rhythmic pattern are attested as well, but are not discussed here for the reasons of space. One such example comes from the Muskogean language Chickasaw, where primary accent is weight-sensitive and is assigned to the rightmost heavy syllable within the word, secondary accent is weight-sensitive and is assigned to all heavy syllables, and a regular iambic rhythm is assigned left-to-right (Munro and Ulrich 1984; Munro and Willmond 1994; Gordon 2004).

### 3.1.1 Fixed Secondary Accent and Rhythm

Let us consider first languages which in the previous section have been shown to have a *fixed* secondary accent. Recall from §2.1, in Passamaquoddy, fixed primary accent is assigned on the penultimate syllable, and fixed secondary accent falls on the initial syllable, a pattern accounted for by the parameter settings in (9). In addition, a regular rhythm falls on alternate syllables from the primary accent right-to-left (*echo* rhythm in the terminology of van der Hulst 2012, 2014b). Consider the forms in (25); both rhythm and secondary accent are marked in the examples with the IPA diacritic <ˌ>, but rhythmically prominent syllables are additionally underlined for clarity of exposition:

(25) a. ˌteh.ˌsah.kwa.ˌpa.sol.ˈti.ne
'Let's walk around on top.'

b. ˌwi.ˌcoh.ke.ˈke.mo
'He helps out.'

c. ˌwi.coh.ˌke.ta.ˈha.mal
'He thinks of helping the other.' (LeSourd 1988: 140–143)

Note in (25), the mechanism of secondary accent assignment and that of rhythm assignment may result in a clash (25a). The following parametric settings derive the rhythmic pattern observed in Passamaquoddy:

(26) Passamaquoddy rhythm parameters
Rhythm (Echo)
Lapse (N)
NonFinality (N)

The settings of the rhythm parameters in (26) and the accent parameters in (9) capture the account proposed in this paper for secondary accent as separate from rhythm in application to the prosodic system of Passamaquoddy.

Given the rhythm parameters in (24) and the independent status of secondary accent, we expect that we should find languages with the reverse-Passamaquoddy pattern, i.e. a pattern where rhythm would be anchored to the fixed secondary accent position (and not primary accent) and would thus result in a lapse at the primary accent edge of the word (if clashes with primary accent are disallowed) or in a clash with the primary accent (if clashes with primary accent are allowed). This is indeed what we find. The former pattern is found, for instance, in Piro

(Arawakan; Matteson 1965), while the latter pattern is found in South Conchucos Quechua (Quechuan; Hintz 2006).

In South Conchucos, primary accent is assigned to the initial syllable, and a secondary fixed accent is assigned to the penultimate syllable. An alternating rhythm is anchored to the penultimate syllable accent. Consider examples in (27):

(27) a. ˈʃu.maq ‘pretty’
b. ˈi.ma.ˌku.na ‘things’
c. ˈtʃu.pan.ˌki.man.ˌɬa.chi̥ ‘you would likely have just gotten drunk’
d. ˈtu.ˌʃu.ku.ˌna.qą̊ ‘dancers’
e. ˈwa.ˌra:.ka.ˌmun.qa.ˌna.tʃi̥ ‘hopefully it will appear at dawn’

The South Conchucos data exhibit two interesting properties. Firstly, the system allows for clashes of rhythm with the primary accent (27c–d). Secondly, a variation has been reported between the discourse realization of stress and the realization of stress in elicited data (Hintz 2006). In elicited forms, the stress on the penultimate syllable is judged by speakers as the primary stress, whereas in discourse data the stress on the initial syllable is primary and the stress on the penultimate syllable is secondary. Data illustrating stress in South Conchucos Quechua in (27) thus reflects the discourse pronunciation. Notably, no such variation is possible between the primary stress (on either initial or penultimate syllable) and any of the rhythmic beats between the initial and the penultimate syllable, supporting the claim made in this paper, namely that primary accent and secondary accent are prosodic properties of the same type while rhythm is a prosodic property of a formally different nature.[14]

### 3.1.2 Lexical Secondary Accent and Rhythm

Evidence for the separate systems of secondary accent and rhythm can also be found in languages where secondary accent is phonologically unpredictable,

**14** Goedemans and van der Hulst (2013) also note that fixed secondary accent (of the ‘polar beat’ type) can get reanalyzed as primary accent diachronically, for example, leading a system with penultimate accent to become a system with initial accent or vice versa. They list as examples of such possible historical reanalysis the aboriginal languages of Australia (see Goedemans 2010) and the Slavic languages (with penultimate accent in Polish and initial accent in Czech; see Dogil 1999). Perhaps, another example can be added to this list, namely the change from penultimate accent reconstructed for Proto-Algonquian (Goddard 2016) to second-syllable accent in Blackfoot (Plains Algonquian; Van Der Mark 2003; Weber 2016). Importantly for the proposal put forward in this paper, such reanalysis seems more plausible if it involves a ‘swap’ between two instances of *accent* rather than between a *rhythmic* beat and a primary accent.

i.e. *lexical*. Rhythm in these languages, however, just as in languages like Passamaquoddy, Piro or South Conchucos is fully predictable, regular, and automatic. The case in point here comes from Chamorro. Recall from §2.3, all lexical accents in morphologically complex words with multiple underlying accents are retained as stresses in Chamorro: one of them is realized as primary stress, and all the others are realized as secondary stresses. Secondary stress in Chamorro results from phonologically unpredictable cyclic lexical accents. However, in addition, Chamorro also has a regular rhythm assigned to alternating syllables right-to-left from the primary stress. In contrast to the secondary accent assignment, morphological complexity is not a pre-requisite for rhythm to occur (28a–b), although it may also appear in morphologically complex forms (28c–d) and (28e–f). Consider examples in (28) below; rhythmically prominent syllables are underlined:

(28) a. ˌat.may.ˈgo.su
'vegetable'

b. ˌki.ma.ˈson
'to burn'

c. ba.ˈpot
ship
'ship'

d. ˌba.pot.-ˈni.ha
ship-3PL
'their ship'

e. ka.ˈdu.ku
crazy
'crazy'

f. ˌman.-ka.ˈdu.ku
PL-crazy
'crazy (pl.)'

(adapted from Chung 1983: 43)

In (28a–b), primary stress is assigned to the penultimate syllable, and a rhythmic beat is predictably found on the initial syllable. In (28c), primary stress is assigned to the penultimate syllable of the simplex form. In (28d), when the root is suffixed with the 3Pl possessive agreement marker, primary stress predictably falls on the penultimate syllable of the newly formed word. Note that in this case, the primary stress of the 'ship' form (28c) is not preserved as a secondary stress due to Chamorro not allowing for a syllable preceding a syllable with primary stress to bear stress (the so-called *Destressing Rule*, Chung 1983: 42). However, we observe that a rhythmic beat surfaces in (28d) on the initial syllable. The same is observed in (28e–f). The rhythmic pattern in Chamorro can be accounted for with the following settings of the rhythm parameters:[15]

**15** I should note that no examples are available in the sources where both secondary accent and rhythm would be observable in the same form. However, it is possible for both to be

(29) Chamorro rhythm parameters
RHYTHM (ECHO)
LAPSE (N)
NONFINALITY (N)

Secondary accent and rhythm in Chamorro not only are assigned by different parameters (secondary accent being phonologically unpredictable and rhythm being fully automatic), their interaction with morpho-phonology differs. This is to be expected under the theory proposed here since rhythm is post-cyclic while secondary accent assignment occurs in parallel to primary accent assignment and thus can potentially interact with segmental phonology and with lexical information. The difference in morpho-phonological interactions between rhythm and secondary accent in Chamorro is evident in the processes of Umlaut and Gemination (Chung 1983; Kaplan 2008). Both only are triggered by secondary accent and cannot be triggered by rhythm, firstly supporting the idea that secondary accent and rhythm are different properties; secondly, supporting the idea that secondary accent is *accent*, i.e. is a property of the same class as primary accent, which in this language also triggers umlaut and gemination.

## 3.2 Languages with Secondary Accent and No Rhythm

In the previous section, I demonstrated that some languages present evidence for having both secondary accent and a rhythmic structure. In this section, I turn to languages which have secondary accent, but lack rhythm. One such example comes from an Austronesian language Sibutu Sama (Elenbaas and Kager 1999; Gordon 2002). This language has a fixed primary accent on the penultimate syllable and a fixed secondary accent on the initial syllable.[16] Consider examples in (30) below, note that clashes between primary and secondary stresses are disallowed in Sibutu Sama, thus only penultimate primary stress surfaces in (30a):

(30) a. bisˈsala ‘talk’
b. ˌbissaˈlahan ‘persuading’
c. ˌbissalaˈhanna ‘he is persuading’
d. ˌbissalahanˈkami ‘we are persuading’ (Gordon 2002: 505)

present within one word if the word is long enough and is morphologically complex (Sandra Chung, p.c.).

**16** Kager (1997) provides a discussion and an analysis of prefixed words in the language, which do not necessarily exhibit the same stress pattern.

Sibutu Sama thus presents a clear example of a language where primary stress assignment and secondary stress assignment are governed by different settings of the same accent parameters (to produce the penultimate and the initial fixed stress respectively). Crucially, there is no evidence of rhythm, as is clear from lapses in (30c–d) above.

Weight-sensitive secondary accent but no evidence of a regular rhythmic alternation is found in Waalubal (Pama-Nyungan; Hagberg 2006: 108) and in Khalka and Buriat (East Mongolian; Walker 1995) discussed in §2.2.

## 3.3 Languages with Rhythm and No Secondary Accent

Finally, let us briefly consider examples of languages with a clear rhythmic structure, but no secondary accent. Languages which have rhythm but no secondary accent have in fact been the center of attention for most of metrical stress typology (see, for instance, Hayes 1995; Goedemans and van der Hulst 2013; Gordon, forthcoming; Rice 2010), and for that reason I only provide one illustrative example here.

Apurinã (Arawak; Facundes 2000) has a fixed primary accent and a regular binary rhythm echoing the primary accent. In Apurinã, primary stress is fixed on the penultimate syllable, and rhythm is assigned to alternating syllables right-to-left from the penult; consider examples in (31):

(31) a. ta.ˈka ‘to put/plant’
b. niɨ.ˈta.ka ‘I put/plant.’
c. ˌniɨ.ta.ˈka.rɨ ‘I put/planted it.’
d. niɨ.ˌta.ka.ˈrɨ.ko ‘I will put/plant it.’
e. ˌniɨ.ta.ˌka.pe.ˈrɨ.ko ‘I will have put/planted it.’
f. niɨ.ˌta.ka.ˌpe.ka.ˈrɨ.ko ‘I will put/plant it.’ (Facundes 2000: 103)

The Apurinã prominence patterns are straightforwardly accounted for with the following parameter settings:

(32) Apurinã accent parameters

| | |
|---|---|
| Accent Domain | Bounded (R) |
| | (Satellite) |
| Accent Placement | Default (L) |
| | Culminativity (Y) |
| | Obligatoriness (Y) |

(33) Apurinã rhythm parameters
RHYTHM (ECHO)
LAPSE (N)
NONFINALITY (N)

Importantly for the discussion in this paper, languages like Apurinã show no evidence of secondary accent in addition to primary stress (which is *fixed* in the language) and rhythm (which is regularly echoing the primary stress).

# 4 Discussion

In this paper, building on the insights of the Separation Theory (van der Hulst 1996, 2009, 2010, 2012, 2014a, 2014b), I have argued that not only do rhythm and *primary accent* require separate algorithms in their assignment, but that *secondary accent* and rhythm require separate algorithms in their assignment as well. I have presented empirical data in favor of treating primary accent and secondary accent as prosodic phenomena of the same type. Specifically, I have argued that primary and secondary accent are formally united by virtue of being dependent on the same set of parameters. Rhythm, on the other hand, is treated as a formally different prosodic property.

Since the approach put forward in this paper formally unites primary accent and secondary accent as belonging to the same type of word-level prominence, while rhythm is regarded as belonging to a different type, some of the issues which were unresolved in the Separation Theory of van der Hulst receive an explanation. For instance, it is unexplained in the Separation Theory why some properties may be shared between primary accent and secondary prominence since the two types of prominence are regarded as unrelated phenomena. Under the account proposed here, it is predicted that primary accent would be sharing some properties with secondary accent. Thus, for instance, cases mentioned in Goedemans and van der Hulst (2014) like English swapping of primary and secondary stresses in *ábsolùte*/ *àbsolútely* is problematic for the Separation Theory, but not for the theory proposed here (recall also similar examples from South Conchucos discussed in §3.1.1 and examples of similar diachronic patterns from footnote 17).

Relatedly, in van der Hulst (2009, 2012, 2014a, 2014b), it is argued that the 'irregularity' observed in prosody cross-linguistically is to be attributed to the accentual module which belongs to the 'lexical phonology'. Van der Hulst also proposed that the rhythmic module is 'post-grammatical', fully regular, and automatic. I propose that both primary and secondary accent are assigned at a point of

the prosodic derivation when morpho-lexical and morpho-phonological material is accessible. This is generally assumed to be true of primary accent assignment in order to ensure that primary accent can be (i) sensitive to segmental phonology, (ii) sensitive to morpho-lexical information, and (iii) can drive phonological (segmental) processes. I have proposed that secondary accent, being formally *accent*, is assigned in parallel to primary accent. This predicts that secondary accent might exhibit morpho-lexical and morpho-phonological interactions comparable to primary accent because it is assigned in the same way as primary accent. Rhythm, on the other hand, following the Separation Theory, is fully automatic and is assigned at a later point in the prosodic derivation when it cannot drive segmental processes and is insensitive to morpho-lexical information. As shown in this paper, this prediction is borne out. The Chamorro case discussed in §3.1.2 can be taken as an illustration.

As has been shown throughout this paper, primary and secondary accent systems cross-linguistically vary within the limits defined by the set of accent parameters (4). It has also been observed above that some of the parameters active for the primary accent assignment might not be active for the secondary accent assignment. This is most easily observed in the Culminativity and Obligatoriness parameters. In evaluating this issue, it is useful to address the functional role of stress and the place of Culminativity and Obligatoriness in performing that role. The "prototypical" one-per-domain stress is traditionally seen as assisting in demarcation of the relevant domain. Demarcation as the main function of stress can be considered responsible for the near-universal status of culminativity and obligatoriness of primary stress. Importantly, however, in primary stress assignment, the demarcative function of stress can compete with the demand that primary stress be assigned to prominent syllables. Such prominence can result from syllable weight, sonority considerations, or underlying (*lexical*) marking for accent. Thus, for instance, in a weight-sensitive primary accent system, in a word with multiple heavy syllables, the demarcative function of stress ensured by the positive settings of the Culminativity and Obligatoriness parameters, demands that only one of the heavy syllables receive primary stress. The demand that inherently prominent syllables must be realized with stress is thus subordinate to the requirements of Culminativity and Obligatoriness.[17] The demarcating function of secondary stress, however, appears to be 'losing' to the demand of associating a prominent syllable with stress at least in some cases. For example, this is the case in languages with weight-sensitive secondary accent discussed

**17** This can be straightforwardly expressed with a ranking of groups of constraints in Optimality Theory models, see McGarrity (2003).

above – Waalubal and the East Mongolian languages, where SELECT crucially does not apply resulting in multiple secondary stresses within a word if multiple heavy syllables are present. The subordinate status of the demarcative function of secondary stress in such systems is also supported by the inactive status of DEFAULT: indeed, if no heavy syllables are present within a word, secondary stress simply does not get assigned – a pattern virtually unattested in primary accent systems. However, we do find languages where secondary accent is culminative and obligatory within some domain. This, for instance, was shown to be the case in Tahltan (cf. §2.1) where a single obligatory secondary stress is assigned in the relevant domain. The conclusion that can be drawn then is that CULMINATIVITY and OBLIGATORINESS are (nearly) universally active in primary accent assignment, while they can be inactive for secondary accent assignment purposes.[18] Crucially, the proposal put forward in this paper predicts that we should not find any systems where secondary accent assignment would require any additional parameters (i.e. parameters which are not already required for primary accent assignment cross-linguistically), and this prediction is borne out

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**18** An anonymous reviewer has pointed out another potential gap between the attested combinatorial possibilities for primary and secondary accent parameters – namely, there appears to be an asymmetry in the availability of the positive setting of the SATELLITE parameter. Indeed, although typologically rare, a primary accent bounded within a trisyllabic domain at either edge of a word is attested. Trisyllabic stress windows for secondary accent appear to be virtually non-existent (see, however, Karvonen (2005) for a possible case of antepenultimate secondary accent in Finnish). The question of whether such gaps are accidental or meaningful is left for future research (but refer to McGarrity (2003) for a relevant account of asymmetries between primary and secondary accent).

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