# 7

# Word Prominence and Areal Linguistics

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## 7.1 Introduction

The goal of this chapter is to present an overview of the consequences of language contact, with the understanding that linguistic areas arise through contact (Hickey 2010), focusing on word prominence (i.e. stress and pitch-accent). Section 7.2 deals with preliminary issues which are relevant to the study of contact-induced change. In Section 7.3 we briefly present some cases of convergence involving changes in word prominence attributable to contact. Section 7.4 makes the point that language contact often leads to hybrid systems. Realizing that language contact can lead to both convergence (linguistic areas) and divergence, Section 7.5 focuses on divergence of an ancestral system, partly due to language contact, into a variety of closely related systems, taking Basque as a case study. Given the rather limited availability of systematic studies of contact-induced change in word prominence, in Sections 7.6 and 7.7 we present two detailed original case studies. Section 7.6 deals with the languages of North America where, drawing on Rice (2010, 2014), but based on a larger sample of languages, various instances of language contact are studied, focusing on areal distributions that cut across language families. Section 7.7, drawing on Goedemans (2010a), offers a case study concerning the aboriginal languages of Australia, in which we find variation between initial stress and penultimate stress in a geographically concise contact area. Section 7.8 presents some conclusions and directions for further research.

## 7.2 Preliminaries

### 7.2.1 What is a Linguistic Area?

The definition of 'linguistic area' as the domain of study of 'areal linguistics' has been the subject of much debate. We accept the conclusion of

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Campbell (2006) that the notion 'linguistic area' refers to the epiphenomenal result of an accumulation of linguistic changes that are due to *language contact*. Convergence of properties in 'a couple of' languages that are 'not too closely related' points the linguist in the direction of suspecting the influence of language contact and thus offers an opportunity to study the manner in which languages acquire properties *laterally*, or due to external factors, as opposed to *vertically*, or due to inheritance, as expressed in the family tree model.[1]

### 7.2.2 Word Prominence

The phrase 'word prominence' covers a wide variety of properties that can vary independently. A number of terms are used in the literature, including (word) prominence, (word) accent, tone, stress and pitch-accent.

(1) Dimensions of word prominence (see van der Hulst 1999b, 2012, 2014b)
   a. Presence/absence of word accent (or word stress[2])
   b. Location of accent (word edge, weight sensitivity, boundedness)
   c. Phonetic correlates of accent (e.g. enhanced duration, amplitude, pitch; taken separately or together often referred to as 'stress' or, if pitch is prevalent, as 'pitch-accent')
   d. Phonotactic correlates of accent (e.g. richer vowel contrast, more complex syllable structure, tonal contrast exclusively or richer on the accented syllable)
   e. Presence/absence of word rhythm
   f. Type of rhythm (edge prominence, direction, weight sensitivity)

Given this 'deconstruction' of word prominence, it is clear that changes in this aspect of language, whether attributed to internal or external causes, can be of many different kinds. Limiting our attention to effects of language contact, we expect languages to potentially influence each other in many different ways, even with reference to such a 'limited' aspect as word prominence.

Word prominence is an especially worthwhile area to study, as it has often been noted in the literature that it 'proves particularly vulnerable to systemic reshaping within language contact' (Salmons 1992: 7). Similarly, Matras (2009: 231) remarks that, within phonology, 'prosody seems to be

[1] Vertical and lateral effects are not mutually exclusive. An internally driven change might be enhanced by contact with a language that has already implemented this change or is more advanced in implementing it.

[2] Many linguists use the terms 'accent' and 'stress' interchangeably. We here follow a tradition that regards 'accent' as the abstract lexical mark and 'stress' as a particular bundle of phonetic properties (e.g. duration, amplitude, fundamental frequency) that realize accent. This gives a stress-accent language. If accent is realized mainly in terms of F0, we speak of a pitch-accent language. Languages that have fully predictable occurrences of prominence peaks can be said to have 'stress' that does not realize a lexical accent mark, although we believe that such cases are rare and, if seemingly occurring, 'stress' in those cases may be due to 'edge prominence' and phrasal rhythm.

more prone to cross-linguistic replication in contact situations than segmental phonology, with stress figuring in-between the two.'[3]

### 7.2.3 The Distribution of Stress/Accent Systems in the Languages of the World

Various examples of linguistic areas that display convergence of word prominence have been mentioned in the literature (e.g. Hayes 1995; Jakobson 1971; Salmons 1992).

(2) Areas of convergence
   a. The area around the Baltic with languages from different families having initial stress (Dogil 1999a)
   b. Afroasiatic languages like Hausa (and other Chadic languages) which got tone from neighbouring Niger-Kordofanian languages (Ruhlen 1975: 62)
   c. Areas in Southeast Asia sharing tonal properties (Benedict 1948)
   d. Occurrence of iambic word rhythm in North American languages (Hayes 1995)

Since Salmons' study, which focuses on (2a), more typological surveys of word prominence systems have become available. One such source is StressTyp2, a database that contains information on stress systems of over 700 languages.[4] For reference to general characteristics regarding the distribution of word prominence see Goedemans and van der Hulst (2005a, 2005b, 2005c, 2005d) and Goedemans (2010b), which are based on a subset of the current StressTyp dataset. Comparing these distributions with the geographical spread of language families, two types of findings can be reported. On the one hand, word prominence properties often do cut across language families that are spoken in contiguous areas (possible evidence of convergence), while on the other hand, we also see several examples of rich diversity within language families (evidence of divergence). In particular, van der Hulst and Goedemans identify a number of general areal tendencies (corroborated by the studies in van der Hulst, Goedemans and van Zanten 2010) in the distribution of prominence.

(3) Areas of convergence
   a. European systems that are not sensitive to weight tend to have initial stress (see van der Hulst 2010)
   b. Austronesian systems tend to have penultimate stress (see Section 7.7 and Goedemans 2010b)

[3] 'Word prominence' can be subsumed under the more general phrase 'word prosody' which covers all phonetic and phonological properties that are dependent on the 'word domain' such as lenition and fortition processes that mark word edges, and vowel harmony.

[4] See Goedemans and van der Hulst (2009); URL of StressTyp2: http://st2.ullet.net.

c. Arabic dialects are generally sensitive to weight (see Hayes 1995; van der Hulst and Hellmuth 2010)
d. South American languages are generally insensitive to weight, with stress near the right edge of the word (see Wetzels and Meira 2010)
e. Australian languages generally have initial stress (except in the north) and are not weight-sensitive (see Section 7.7 and Goedemans 2010b)

Section 7.7 offers an in-depth discussion of Australian patterns. For additional information we also refer to van der Hulst, Goedemans and van Zanten (2010), which contains extensive chapters of word prominence patterns in all continents of the world, with occasional explicit references to areal characteristics.

### 7.2.4 Loan Phonology

Before turning to linguistic areas in particular, it is worthwhile mentioning some aspects of loan phonology (Kang 2010, 2011; Uffmann 2015), as the incidental patterns that we find in borrowing form a foundation for looking at more extensive patterning that might arise through contact and the formation of what we call linguistic areas. When words are borrowed, the pattern of the source language may be respected (preservative borrowing) or not (neglectful borrowing). We identify a number of possible scenarios that have been reported in the relevant literature (Broselow 2009; Davis, Tsujimura and Tu 2012; Kang 2010, 2011; Kubozono 2006) in (4).[5]

(4) Borrowing scenarios
A. Preservative borrowing
a. Pattern of source language fits the pattern of recipient language: words are adopted with no change
b. Pattern of source language differs from pattern of recipient language: foreign words are admitted into recipient language as exceptional pattern
B. Neglectful borrowing:
a. Pattern of source language and recipient language differs: the recipient system is imposed on borrowings from source language[6]
b. Creation of a default pattern specific to loans

The list in (5) presents illustrative examples that we collected from the literature (in particular Davis, Tsujimura and Tu 2012; Kang 2010, 2011),

[5] In this discussion we ignore the important distinction between contact among adults and among child language learners.

[6] Sometimes foreign words may be clipped so that their stress pattern will fit the receiving language.

identifying the specific realization of word prominence (involving tone, pitch-accent and stress-accent) in both the source and the recipient language.[7]

(5) Borrowing word prosody
- A. Source (tone) / Recipient (tone)
  Preservation of tone in tone language: Hausa > Gwari
  Neglect of tone in tone language: Mandarin > Lhasa Tibetan
- B. Source (tone) / Recipient (pitch-accent)
  Preservation of tone in pitch-accent language: Mandarin > Yanbian Korean
  Neglect of tone in pitch-accent language: Chinese > Japanese
- C. Source (tone) / Recipient (stress)
  Preservation of tone in stress language: not attested
  Neglect of tone in stress language: Chinese > English
- D. Source (pitch-accent) / Recipient (tone)
  Preservation of pitch-accent in tone language: not attested
  Neglect of pitch-accent in tone language: Japanese > Thai
- E. Source (pitch-accent) / Recipient (pitch-accent)
  Preservation of pitch-accent in pitch-accent language: not attested
  Neglect of pitch-accent in pitch-accent language: Japanese > Korean
- F. Source (pitch-accent) / Recipient (stress)
  Preservation of pitch-accent in stress language: not attested
  Neglect of pitch-accent in stress language: Japanese > English
- G. Source (stress) / Recipient (tone)
  Preservation of stress in tone language: English > Cantonese
  Neglect of stress in tone language: French/English > Vietnamese
- H. Source (stress) / Recipient (pitch-accent)
  Preservation of stress in pitch-accent language: not attested
  Neglect of stress in pitch-accent language: French/English > Japanese
- I. Source (stress) / Recipient (stress)
  Preservation of stress in stress language: very common
  Neglect of stress in stress language: default stress English > Finnish

Where a property is said to be preserved from one prosodic type into another type, this implies that the location of a property is preserved but not necessarily its phonetic cues. Thus, if stress is preserved in a tone system, the stress cue is reinterpreted as a tone and vice versa. The summary in (5) is, we believe, useful in providing clear illustrations of

[7] Here we mention the examples found in these sources, without taking issue with specific cases.

the consequences of borrowing, which, then, might also be expected to show up in linguistic areas.[8]

### 7.2.5 A Theory of Word Prominence Change

In this section we briefly survey some of the kinds of changes that have been identified in word prominence, whether attributable to vertical or lateral factors. As pointed out in Section 7.2.2, the holistic notion 'word prominence' comprises numerous smaller properties which, independently, can be subject to change; we will consider some of these here.

Taking 'primary accent/stress' and rhythm to be the main components of many prominence systems, we first mention factors that give rise to the notion of primary accent/stress. It has been suggested (see for example Hyman 1977 and Gordon 2014) that word accent/stress may result as the reanalysis of intonational peaks as properties of word edges. Penultimate accent systems are common in languages of the world (Goedemans and van der Hulst 2005a). Hyman (1977) suggests that the preponderance of this accent location may be due to the occurrence of an intonation pitch-accent H+L on the right edge of the rightmost word in an intonational phrase. To avoid tonal crowding on the final syllable, the HL melody would spread out over the final two syllables, giving the penultimate syllable the appearance of prominence due to bearing the H-tone. This then may lead to interpretation of this syllable as being accented at the word level. Gordon (2014) pays special attention to the development of word prominence from phrasal intonation and suggests that, even synchronically, some cases of alleged word accent may be more properly analysed in terms of intonational structure.[9]

Another source for the emergence of an accentual system is tone (see Ratliff 2015 about tonal change in general). Salmons (1992) in particular discusses the change from tonal to accentual systems, resulting from the fact that the distribution of specifically high tones may develop constraints (up to the maximal occurrence of one H tone per word) which, then, trigger a reinterpretation of tone and pitch-accent and eventually stress-accent.

Once accent is present, changes in the factors that determine accent location may be related to, or caused by, changes in another component of the phonology or the grammar at large. In classical Latin, accent

[8] In addition to loan phonology, another area of research that is relevant to the study of language contact is second language phonology. There is a considerable literature on how speakers perceive and produce word prominence patterns of languages that they are learning: see, for instance, Altmann (2006), Altmann and Kabak (2011), Kijak (2009), Peperkamp and Dupoux (2002), and for the relation between second language acquisition and phonological change, Eckman and Iverson (2015). The three areas of loan phonology, second language phonology and language contact share a number of interesting common results, but space limitations prevent us from discussing these here.

[9] While the languages discussed above involve reanalysis where the changes appear to arise internal to the system, reanalysis may also be triggered from outside the system. Reanalysis may also lie behind the change from Germanic initial accent to right-edge accent, due to the presence of Latin loans (Lahiri, Riad and Jacobs 1999).

placement was sensitive to vowel length (among other factors). Contrastive vowel length was lost in Romance languages such as Italian and Spanish, but vowels that were long kept the accent. Accent placement thus became partially lexicalized, with specification of these unpredictable accents in the lexicon (see Roca 1999).

Another important factor that can change the determination of accent location is emergence of syllable weight, when intrinsic properties of syllables (in particular syllable rhymes) phonologize by becoming determinants in stress location. Penultimate heavy syllables (containing a long vowel or coda consonant) can influence the relocation of final accent (which is already somewhat disfavoured) to penultimate accent.

Another kind of accentual change involves an edge switch for accent, as can be seen by reference to two Slavic languages, Polish and Czech. Polish has penultimate accent, while Czech has initial accent. Many languages with penultimate accent have an initial edge prominence ('secondary stress') on the first syllable, which in specific contexts might be the locus of an intonational pitch-accent (see van der Hulst 2014b). This may motivate the learner to regard the initial rather than the penultimate syllable as accented. Such a change can then be said to be caused by the intonational system.

Regarding rhythm, we suggest that this aspect of word prominence may arise as the result of grammaticalizing low-level phonetic properties. For instance, a language can acquire 'notable' rhythm when low-level rhythm (which we take to be a universal property of all languages) is exaggerated and causes allophonic changes in phonemes. It is even possible for rhythm to fully lexicalize (and lose some of its 'natural' phonetic properties) becoming 'abstract', still guiding for example allomorphic choice and phonotactic asymmetries, while the language has meanwhile been subjected to a new kind of rhythm. Such mismatches, which reflect a form of hybridity and which underscore the need for a 'deconstructed' analysis (see Section 7.4), are discussed in Gordon (2014, 2016).

Changes in rhythm type may arise due to the influence of the same intrinsic properties of syllables that can affect the location or primary accent/stress.

Given the deconstruction of word prominence into several factors (see 1), a few other patterns of change would have to be considered in a fuller account.[10] Many of these changes can be seen as motivated by grammar-internal factors or in terms of acquisition strategies. This leaves a small remnant for changes that could be said to rely crucially on language contact, but, of course, even internally motivated changes

[10] Another area of change concerns the distinction between bounded and unbounded systems, which we omit here for reasons of space.

can be triggered or enhanced by external influences due to languages in which such factors play a role. Illustrating the potentially complex interaction of internal and external factors, Salmons (1992) offers extensive discussion of specific patterns of change that involve the transition from tonal systems to pitch-accent systems to stress systems, which he sees as potentially resulting from internal factors and reanalysis, although language contact may contribute to such internally motivated changes. Moravcsik (1978) also remarks that changes in word prominence, whether potentially internally driven or not, are often probably due to language contact, precisely, as we have already mentioned, because they are the first to be affected by such contact.

## 7.3 Convergence

Salmons (1992) focuses on language contact in early northern Europe, especially between Germanic and Celtic, but including Italic, Finnish, Saami and other Finno-Ugric languages which together, he argues, form an areal fixed initial stress group. He pays particular attention to the joint Germanic–Celtic shift to initial accent (shared with Italic). It has been debated whether this shift is attributable to language contact with an unknown substrate language in northern Europe or to Finno-Ugric. Salmons opts for the latter.[11]

Salmons' conclusion that the presence of initial stress in this area is due to language contact receives support, he argues, when one considers the distribution of stress patterns in the languages of the world. Based on Ruhlen (1975, 1977), Salmons finds that initial accent is absent in 16 of Ruhlen's 28 genetic groupings (including Austroasiatic, Nilo-Saharan, Sino-Tibetan and Palaeosiberian). In many other families the average number of languages with initial stress is under 7 per cent. The bulk of initial stress systems come from Australian (Section 7.7) and Uralic (with 16 out of 23 languages listed in Ruhlen having initial stress). Interestingly, the six Indo-European languages in his survey (Latvian, Czech, Irish,[12] Swedish, Danish, Dutch) all belong to the linguistic area that forms the subject of Salmons' survey. Final stress also has a biased genetic distribution, with '63.9 per cent' of the languages with this stress system coming from three families (Penutian, Altaic, Indo-European) based on Ruhlen's counts. The Indo-European languages in this group are French, Armenian and Iranian languages, and the latter form part of a linguistic area with Altaic languages. Penultimate stress appears to have a much more equal

[11] For reviews of Salmons' book see Peter (1994), Greiner (1994) and Lehiste (1994).

[12] Only Northern and Western Irish have initial stress. Southern Irish has a complicated system determined by vowel length and syllable weight which attracts stress to non-initial syllables. This may have been due to contact with Anglo-Norman after the late twelfth century or to internal tensions due to the rise of long vowels in non-initial syllables in Middle Irish (or due to a combination of both). See Hickey (1997, 2014).

distribution in language families (which correlates with its preponderance as a fixed accent type: Goedemans and van der Hulst 2005a; Hyman 1977).

Results such as these show that accentual types can run in families (as might be expected). This makes resemblances *across* families more likely to be the result of language contact than of independent development toward certain common types. Thus, the widespread occurrence of initial stress in the northern European initial stress area proposed by Salmons is therefore plausibly the result of language contact.[13]

Salmons includes a survey of examples of accentual change due to language contact; to these we add further examples in the list below.[14] We suspect that a broader survey of the literature might reveal many more of these examples.

(6) Examples of contact-induced changes in word prominence
   a. Scandinavian tonal systems lost in the dialects spoken in Finland, a non-tonal language (Haugen 1970)
   b. Within Bantu, languages range from fully tonal to restricted tone or pitch-accent systems, to stress systems (as in Swahili) (Salmons 1992)
   c. Loss of tone in African pidgins (Fanagalo, Town-Bemba, pidgin Hausa) (Heine 1973)
   d. Presence of fixed stress in African pidgins (Kituba) (Heine 1973)
   e. Loss of tone in some Caribbean pidgins and creoles (Alleyne 1980)[15]
   f. Loss of tone in Danish in contact with Low German (Gårding 1977)
   g. Loss of tone in Swedish spoken in the United States (Ureland 1971)
   h. Russian dialects bordering on Karelian-Olonec-Vepsian speaking areas show a tendency toward initial stress (Veenker 1967)
   i. Hungarian may have influenced the emergence of initial accent in Czech and Slovak (Thomason and Kaufman 1988; Veenker 1967)
   j. Boanon, a Mongolian language, acquiring tone under the influence of Linxia, a Chinese language (Li 1986)
   k. Transfer of a stress system in Iroquoian languages Cayuga to Onondaga and Seneca (Michelson 1988)
   l. Influence of penultimate stress in a dialect of French spoken in Brittany as a possible influence on penultimate stress in Breton (Sommerfelt 1962)
   m. Final stress in Turkic languages, Armenian, Iranian languages (Hyman 1977)

[13] Peters (1994), in his review of Salmons (1992), criticized Salmons' use of percentages to make this point.

[14] We thank Sally Thomason for bringing some of these examples to our attention. See Thomason and Kaufman (1988) for other examples.

[15] Island Caribbean. Sranan and Saramaccan in Surinam are exceptions.

n. English influence on Stoney Dakota (Siouan) in having right-edge stress patterns similar to English in addition to the expected second-syllable Dakota stress pattern (Shaw 1985)
o. Germanic initial primary accent added accent determined from the right edge, as in Romance with French loanwords (van der Hulst, Hendriks and van de Weijer 1999)
p. Cree-Montagnais-Naskapi (Algonquian) final stress attributed to French (Mackenzie 1980)
q. Shift in Hungarian dialects near the former Yugoslavia border from initial stress to fixed penultimate stress (Thomason 2001: 143) (note that Serbo-Croatian varieties generally have free stress, but in this dialect there is also fixed penultimate stress)
r. Latvian complex accent system replaced by first-syllable stress under influence of Livonian (Finnic) (Thomason 2001)

Clearly, a list like this does not allow for any general conclusions or hypotheses. What is missing in most cases are detailed analyses of the circumstances and mechanisms involved. Thus, while there is no shortage of reported cases of accentual change due to language contact, there is a clear need for more detailed studies of specific cases and we will offer two such studies in Sections 7.6 and 7.7.

## 7.4 Hybridity

Although, as argued in Section 7.2.5, in general it is difficult to determine whether change in a word accent system is motivated by contact or not, we take hybridity to be an indication of contact-induced change. By hybridity we mean that a system clearly incorporates aspects of systems that are, under usual assumptions, compatible with one another (i.e. can be shown to follow from a single uniform analysis). Languages can be hybrid in their prominence system in many ways; several of these types of hybridity will be illustrated in our case studies in Sections 7.6 and 7.7.

(7) Types of hybridity
A. Competing patterns
a. Due to loans, a regular pattern may have a limited number of exceptions
b. Exceptions may increase in number and, if originating from a single language, form a second pattern, that may be restricted to an independently identifiable lexical stratum
c. The new (default) pattern may start being applied to non-loans, but not all
d. The change may lead to variability

B. Deviant patterns
   a. Due to contact, a pattern may change one of its parameters, leading to a theoretically possible yet more marked pattern
   b. Due to contact, words of different lengths may have different patterns
C. Incomplete patterns
   a. Due to contact with other patterns, a pattern may display incompleteness in that certain parameters are not set, e.g. absence of primary stress

An example of a stratal effect (7Ab) is found in European languages belonging to the Germanic group which, as a whole, have Romance-influenced right-edge stress, while also maintaining traits of the Germanic initial stress. The Romance influence on Germanic languages (partly via English) has given rise to a 'pan-European right-edge stress pattern, from which only Icelandic has escaped' (van der Hulst, Hendriks and van de Weijer 1999; Lahiri 2015).

While hybridity can be a sign of language contact, we must realize that hybridity can also result from the synchronic presence of different stages of historical developments. As mentioned in Section 7.2.5, when a language changes its rhythmic bias, a synchronic accent of certain phonological regularities may require the postulation of the older pattern at a deeper level of analysis, while the new pattern is accounted for at a later stratum (see Gordon 2014). In a general sense, hybridity results from the presence of two (or more) systems, whether originating from different stages of a single language or from different languages that are in contact.[16]

## 7.5 Divergence: The Case of Basque

In Section 7.2.1 we noted that contact-induced change can result in cases in which a set of closely related languages displays a wide variety of word prominence systems, although it is likely that such fragmentation can also result without much external influence. There are several cases with a sometimes strikingly rich proliferation of word prominence types within one language family.

(8) Examples of divergence
   a. Basque dialects (see below)
   b. Bantu dialects/languages (Carter 1973; Clements and Goldsmith 1984; Goldsmith 1988; Hyman 1989; Odden 1988; Salmons 1992: 46 ff.)
   c. Japanese dialects (Haraguchi 1979; Uwano 1999, 2012)

[16] Dresher and Lahiri (1991) speak of metrical incoherence to characterize such cases.

d. Arabic dialects (Hayes 1995; van der Hulst and Hellmuth 2010)
e. Scandinavian dialects (Bye 2004; Gårding 1977; Riad 1998)

Modern-day Slavic languages exhibit quite a bit of diversity (see Dogil 1999b; Salmons 1992: 49). To this, we add the languages spoken in Mesoamerica, which show a rich variety of tonal accentual systems, although in these cases several language families have been claimed to be involved (see van der Hulst, Rice and Wetzels 2010). Several more examples of divergence can be found in van der Hulst, Goedemans and van Zanten (2010), which offers an overview of the distribution of word prominence systems in all language families of the world.

In all these cases, a group of languages belonging to a single (macro-) family display an enormous amount of diversity, while preserving certain common properties. We suggest that it would be very interesting to look into the internal and external causes that result in the divergence processes that lead to such diversity. As an example of such an approach we discuss the case of Basque.

Hualde (1999) presents an overview of the different contemporary accentual systems found in Basque dialects.[17] The Basque dialects present a great diversity of word-prosodic systems, especially when one takes into account the size of the area in which Basque is spoken (only about 135 × 35 km.). This area shows many patterns of convergence and divergence: see Hualde (2007). The Basque word-prosodic systems range from lexical pitch-accent and stress-accent systems in the Western dialects to weight-insensitive accent on the second syllable in some Central Basque dialects and weight-insensitive accent on the penultimate syllable in, for instance, the High Navarrese variety of Baztan. Thus, there is not only a distinction between pitch-accent and stress-accent systems and between weight-sensitive and weight-insensitive systems, but also, within the weight-insensitive accent systems, accent can be assigned from either the right or the left edge.[18] Hualde distinguishes the following main accentual types.

(9) Basque word prominence systems
a. the *Western* type, which is a lexical system with unaccented and accented stems and affixes, and prominence in accented words realized as pitch drop or stress, depending on region (types: Markina, Gernika-Getxo, Antzuola)
b. the *Central* type, in which accent is assigned from the left word edge
c. the *Hondarribia/Old Labourdian* type, in which accent seems to be assigned from the right word edge, with variety between dialects

[17] We thank José Hualde for additional information and helpful comments on this section of our chapter.

[18] The scope and nature of this enormous variety in such a small territory is reminiscent of the situation in the Caucasus (see Kodzasov 1999).

d. the *Souletin* type (with unmarked final and marked penultimate stress) as a special type
e. the *Western Navarrese* type represented by Goizueta, with both lexical stress *and* lexical pitch-accent

In this subsection we focus on some changes that have occurred in Western varieties of Basque which Hualde (2003) attributes to contact with Spanish. This case reveals a number of subtle and perhaps unexpected responses to confrontation with a prominence system that is different from the influenced dialects.

As a point of departure, Hualde takes the Western Basque dialects (spoken in the provinces of Bizkaia and Gipuzkoa and neighbouring areas), and, in particular, the Northern or Coastal Bizkaian pitch-accent type. A hypothesis for how the Western Navarrese (Goizueta) type may be historically related to Northern Bizkaian is developed in Hualde (2012). Western Basque is a system with accented and unaccented morphemes, the majority being unaccented. A pitch pattern is associated with phrases. In particular, Hualde proposes initial %LH and final H*L accentual patterns, the former distributed over two syllables and the latter on the final syllable. A phrase final unaccented word in the Gernika-Getxo type receives a *derived accent* on the final syllable (the Markina type has a penultimate default; see (14). In (10) and (11) we illustrate the Gernika-Getxo type:

(10) %L H- H*L
| | | /
[la gu nen] [a ma ri] 'to the friend-SING's mother'

(11) %L H*L H*L
| |/ | /
[la gú nen] [a ma ri] 'to the friend-PLURs' mother'

The plural has a morphologically determined accent, in particular the plural suffix is pre-accenting; see Hualde (1999) for paradigms showing this. On the surface, all lexical accents are on a non-final syllable because the accented suffixes are actually pre-accenting. For lexical roots there are some tendencies for their location depending on the local dialect. For instance in three-syllable accented roots, the accent is generally on the first syllable in some dialects (e.g. *bélarri* 'ear', *tómate* 'tomato', *pátata* 'potato'), but on the second in other towns (*belárri, tomáte, patáta*). We refer to Hualde (2012) for details.

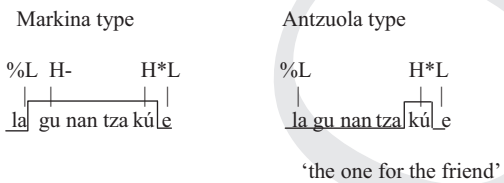
Hualde (2003) shows how this Western type has developed into different kinds of systems under the possible influence of Spanish. All Western Basque speakers are Basque/Spanish bilinguals.

The Western pattern has given rise to two responses, shown in (12) and (13).

(12) Reanalysis
Response A. In Bilbao Basque (as well as in varieties of the Central type) the initial LH in (11) has been reanalysed as the phonetic realization of a pitch-accent on the second syllable, attributed to the fact that in Spanish a comparable pitch rise is an important cue to its stress-accent.

(13) Pitch rise ⇨ accent
Response B. In the Antzuola dialect, the initial H is suppressed, and there is a high pitch-accent on the penultimate syllable followed by a low on the final syllable.

(14) Accent ⇨ pitch rise



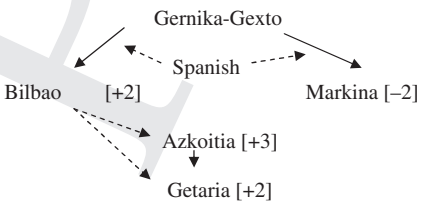

This change makes the Antzuola type sound much more like Spanish.

All responses reflect an influence of the Spanish stress cue, a rise to high pitch on the stress-accented syllable. In response A it is the initial rise that is identified with the accent (because rises identify accent location in Spanish), whereas in response B the accent location is identified with a rise (again because rises identify accent location in Spanish). Hualde suggests that the change in the Antzuola system with penultimate accent led to changes in Azkoitia and other cases, giving rise to third syllable stress-accent [+3] (with non-finality, i.e. avoidance of final accent), a reinterpretation that can easily result from the ambiguity that is caused by words of up to four syllables where a penultimate location could be reinterpreted as a third syllable location. The difference would only be clear in words with five syllables or more.

For younger speakers in Getaria the [+3] system is changing to [+2]. The change from [–2] to [+3] and the change from [+3] to [+2] could be influenced by the existence of [+2] dialects (see above).

Summarizing (broken lines indicate influence, solid lines indicate change):[19]

(15)




[19] '+2' means second syllable accent, etc. '–2' means penultimate accent.

This case study shows how language contact, including contact between dialects, can lead to surprising consequences. In particular, Spanish contact triggered changes that in one case (response A) caused an analysis of a non-accentual pitch rise as accentual and in another case (response B) a change in the pitch realization of the accent (and the entire word contour). Both responses are based on identification of accents with pitch rises.[20]

## 7.6 North American Linguistic Areas: Evidence for Convergence?

Several linguistic areas have been identified in North America, but accent has not been considered as a factor that defines these areas. In this section we first present three case studies of accent patterns in areas that are argued to be linguistic areas, asking what these areas reveal about contact-induced change. We then look more broadly at the continent as a whole, asking whether there is support for the observation that North America might be a linguistic area in terms of accent patterns.

### 7.6.1 Three Areas of Convergence

In this section we offer a study of three linguistic areas of California for which evidence of convergence has been given (see discussions in Campbell 1997 and Mithun 1999; see Haynie 2012 for the most recent discussion of two of these areas). The grounds for speaking of convergence for these linguistic areas are quite different. In two cases there is evidence for the borrowing of words, while in the third there is no such evidence, and the linguistic factors that define this third area are quite different. We will ask what these areas tell us about word prominence and areal phenomena more broadly rather than about contact-induced change specifically.

It is important to keep in mind that we do not have detailed descriptions of accentual systems for many of the languages addressed in this section. We can, generally, refer to the placement of 'primary stress', but often not to 'secondary stress'. Also, there is no detailed discussion of the realization of accent available for many of the languages. As Golla (2011: 209) points out, 'Accentual uses of pitch and tonal phenomena occur widely in the languages of the northern part of the California region, but in most instances the documentation is poor.'

#### 7.6.1.1 Clear Lake Linguistic Area (California)

One well-defined linguistic area in California is Clear Lake, located approximately 100 miles north of San Francisco. This area includes the

[20] See Hualde (2000) and Hualde et al. (2002) for additional details.

following languages (the language family is given in parentheses): Lake Miwok (Utian), Patwin (Wintuan), Eastern Pomo (Pomoan), Southeastern Pomo (Pomoan) and Wappo (isolate, or Yukian, see Campbell 1997: 132, Golla 2011: 192–193, Mithun 1999: 554 for discussions and different perspectives). This list of languages is taken from Campbell (1997: 336); Mithun (1999: 317) includes examples from a second Wintuan language, Nomlaki.

Campbell and Mithun identify a number of phonological characteristics shared by languages of the Clear Lake area. Their particular focus is on how Lake Miwok, part of the Clear Lake area, differs from genealogically related languages. For instance, Lake Miwok, like its neighbours, has contrasting phonation types in stops and affricates, while other Miwok languages do not. Lake Miwok and some of the other languages in the area have a voiceless lateral and a lateral affricate; other Miwok languages do not; Lake Miwok and other Clear Lake languages all have five short and five long vowels, while other Miwok languages have six short and six long vowels. The source of innovation in Lake Miwok, discussed by Callaghan (1964), is borrowing: Lake Miwok borrowed words from Hill Patwin and from Southeastern Pomo, with the sounds not found in other Miwok languages introduced through those borrowings. Campbell (1997: 129) notes that Lake Miwok is geographically isolated from the other Miwok languages, and speakers had frequent contact with speakers of Eastern Pomo, Southeastern Pomo, Foothills Patwin, and Wappo, as reflected in loanwords. Golla (2011: 107) reports on the relationship between Patwin and Southeastern Pomo, noting that Patwin influence was strong in the Southeastern Pomo area, with Patwin-Pomo bilingualism common.

We now examine word accent in this area, asking if it too shows areal characteristics. In order to discuss word accent in most of these languages, it is necessary to say something about morphology, so information about this is included in the discussion below.

Word stress in Wappo appears on the first syllable of the stem. The language has some prefixes as well as derivational and aspectual suffixes.

We have not found sources that discuss stress in the Wintuan language Patwin. In Wintu (Pitkin 1984), stress is described as falling on one of the first two syllables of the stem – the first heavy syllable, with the first syllable if neither is heavy. Golla (2011: 146) notes that both Wintu and Patwin have prefixes indicating location and direction; both languages also have suffixes.

The position of word accent in the Pomoan languages is addressed in Moshinsky (1974). Moshinsky (1974: 56) proposes that stress was predictable in Proto-Pomoan, falling on the first stem vowel. The stem was frequently preceded by a monosyllabic prefix, so stress was often on the second syllable. Languages in the family developed in different ways.

In Eastern, Central and Northern Pomo, this pattern was usually maintained, with stress generally on the second syllable, although there is not always clear evidence for a synchronic morphological analysis. McLendon (1975: 12) notes that in Eastern Pomo, stress falls on the root, with second syllable stress being the predominant pattern. Northeastern Pomo often moved stress on to a previously unstressed syllable.

Kashaya, another Pomoan language, has a complex system. Basically, primary stress can appear on one of the first three syllables of the word. Buckley (2013) treats the language as quantity-sensitive and iambic, with the first syllable invisible for purposes of stress. Moshinsky (1974) notes that Southern Pomo has the most aberrant stress pattern, with stress on the penultimate syllable of a phrase; see Walker (2013), who also finds penultimate stress on words and phrases and secondary stress on the first syllable. Southeastern Pomo is regarded by Moshinky as having regular stress (1974: 57), with word stress generally on the first syllable of nouns, verbs and adjectives. While Moshinsky notes that there are a few exceptions where it does not fall on the first vowel (it is on the second vowel if there is a directional prefix or if the first vowel is a part of reduplication), Buckley (2013) argues that primary stress falls on the first syllable, while directional prefixes and the first vowel of the stem may have secondary stress.

While the Pomoan languages in question differ in detail, there is in general morphological sensitivity, with stress attracted to the root in most of the languages. The position of primary stress is determined from the left edge, and is near the left edge of the word in languages of this family. Even in Northern Pomo, there is secondary stress on the first syllable.

The Miwok languages are largely suffixing, with pronominal prefixes that fall outside the domain of stress. Word accent appears on one of the first two syllables of the root, being attracted to heavy syllables, with heaviness defined slightly differently depending on the language. Lake Miwok has word stress on the first or second syllable of the root; prefixes do not take stress (Callaghan 1964). In particular, primary stress falls on the second root syllable if it is heavy, and otherwise on the first syllable.

The languages of the Clear Lake area (Lake Miwok, Patwin, Eastern Pomo, Southeastern Pomo, Wappo) share several characteristics with respect to accent. Most noticeable is that primary stress occurs near the left edge of either the word or the root/stem. Given that these languages are largely suffixing (as are Miwok, Wintuan and Pomoan languages that are not in the area), stress is quite likely to fall on one of the first two syllables. In general, all the languages under consideration have the root as the domain of stress (Southeastern Pomo is the exception). Some of the languages show quantity sensitivity (Lake Miwok, other Miwok, Kashaya), and some do not (Eastern Pomo, Southeastern Pomo, Wappo).

The left-edge orientation of primary stress is clearly a characteristic that defines this linguistic area, and thus can be considered an areal phenomenon. Whether this is a result of contact is not certain, since the major languages that border the Clear Lake area are genealogically related to languages of the area and generally share the same orientation of stress. It is possible that the languages of the area retained similar accent patterns because they form an area. Kashaya, geographically the most remote member, has the most divergent pattern in the Pomoan family, although it maintains much of the basic pattern of the related languages with the position of accent determined from the left edge. The homogeneity that is found in word accent could result from convergence, or from inheritance, with the areal effects inhibiting change.

#### 7.6.1.2 Northwestern California

Another part of California that has been identified as a linguistic area is Northwestern California. Haynie (2012), based on Conathan (2004) and others, notes good evidence for areal feature spread in Northern California, and particularly in the Northwestern California area.

The Northwestern California area differs from the Clear Lake area in several ways. While in the Clear Lake area, there is evidence for lexical borrowing between languages, this is not so in the Northwestern California area. Conathan (2004) argues that the Northwestern California area is characterized by functional convergence, but not by actual borrowing or calquing.

Conathan defines the Northwestern California area as consisting of the following languages: Tolowa (Athabaskan), Hupa (Athabaskan), Karuk (isolate), Chimariko (isolate), Yurok (Algic) and Wiyot (Algic). Karuk and Chimariko are sometimes grouped together in the Hokan stock. Conathan notes that the language group is somewhat controversial, and that she could have included Shasta (Hokan) and Wintu (Wintuan) as well.

Haynie (2012) examines several phonological and morphological characteristics that are claimed to mark an even broader area, Northern California, based on a spatial autocorrelation technique that examines features likely to have diffused geographically rather than genealogically or by chance, to determine whether feature diffusion is a likely scenario in this area (Haynie 2012: 88). Haynie concludes that the Northwestern California area, discussed in this section, and the Clear Lake area, discussed in Section 7.6.1.1, show evidence for feature diffusion, while Northern California as a whole is 'more like a collection of smaller diffusion zones' (Haynie 2012: 89).

The phonological characteristics of Northwestern California that Haynie discusses are summarized below, with some additional characteristics discussed in Jany (2009). Several of the languages have plain, ejective and aspirated stops (Tolowa, Hupa, Chimariko); Yurok has

plain and ejective stops; Wiyot has plain and aspirated stops; Karuk has plain stops. Hupa and Chimariko have a back velar; the others do not. Tolowa and Wiyot have a lateral fricative; Yurok has both a plain and ejective lateral fricative; Hupa has a lateral fricative and ejective affricate; Karuk and Yurok have neither. Hupa has a velar nasal; none of the other languages do. Tolowa, Hupa, Yurok and Wiyot have labialized consonants, while the other languages do not (Jany 2009); Tolowa has retroflex consonants while the others do not (Jany 2009). The languages also differ in their vowel inventories (ranging from three to six vowels; some have length contrasts, some have nasalized vowels). There are clearly considerable phonological differences between the languages in this group, as Conathan (2004) and Haynie (2012) conclude.

Turning to word accent, there are also differences between the languages. In terms of domain, Tolowa, Karuk, Yurok and probably Wiyot take the word as the domain, Hupa has the word as the domain of accent with the morpheme also playing a role, while Chimariko takes the root as the domain of accent. Wiyot determines the location of accent from the left edge, as does Hupa as recorded by Sapir; later Hupa has accent on the first long vowel and on the root if there is no prefix long vowel (see Gordon and Luna 2004 on Hupa). Karuk is similar, with accent on the first long vowel, with default to the last vowel. In Chimariko, accent is generally on the penultimate syllable of the root. The various languages are quantity-sensitive. In terms of morphology, Yurok and Wiyot are largely suffixing, with some prefixes; the others are largely prefixing; Karuk has both prefixes and suffixes.

Languages in this group may have lexical accent (Tolowa), or the position of accent may be predictable. Accent may take the word or the root as its domain and it might respond to weight (Yurok, Shasta). It may appear near the left edge (Hupa, Wiyot, Karuk), but stress can also be near the end of the word (Hupa default in the later recordings; Karuk default).

Jany (2009: 32) comments extensively on similarities in stress systems in these and a few other languages:

> Stress systems are often described in detail in the grammars consulted. However, the phonetic correlates of stress are not always mentioned. In general, stress patterns show many similarities in Northern California. Immediate neighbours of Chimariko, Hupa, Shasta, and Wintu, all show weight-sensitive stress systems. While their weight hierarchies are slightly different, all have CVV as their heaviest syllable. Root stress, as well as penultimate stress and leftward attraction of stress, are also very common in the area. Shasta, for example, has penultimate stress, but moves the stress in longer sequences to the first preceding heavy syllable. Acoustic correlates of stress include pitch and intensity for Hupa. For Shasta, a high–low pitch tonal accent has been described. Hence the acoustic correlate of stress in Chimariko, which is pitch, is also attested in other languages of the area. Given that stress is easily

> transferred through language contact, it is likely that the languages in Northern California have shifted their stress patterns as a result of multilingualism in the area. For Chimariko it can be speculated that vowel length on stressed syllables was developing as a contact phenomenon given the weight-sensitive stress systems of neighbouring languages with CVV as the heaviest syllable type.

Conathan (2004) takes a different perspective in her discussion of the area. She notes that this is an area of intense cultural interaction, but with little lexical borrowing. She says specifically that 'Local convergence of phonological features is conspicuous in its absence' (2004: 167). Conathan remarks that the three languages Karuk, Hupa and Yurok, all genealogically distinct, are the 'core' members of this area, and their inventories are quite different; she attributes this to lack of lexical borrowing between these languages (Conathan 2004: 169). Golla (2011) remarks that, given the close social and ceremonial ties, intergroup marriage and a moderate degree of multilingualism, 'it is surprising how few of the distinctive phonological, lexical, or grammatical features of Hupa-Chilula can be attributed to direct Yurok influence', further noting that lexical borrowings are almost non-existent. What Conathan finds most noteworthy about the Northwestern California linguistic area is the existence of grammatical borrowing without lexical borrowing. Thus, she finds evidence of contact effects in certain components of the grammar – tense and aspect marking, classifier systems, second person prominence in argument marking, loan translations, word order – but she does not find loanwords and phonological convergence. Mithun (2010) too notes a number of structural parallels in languages of this area (and in North America more broadly).

Conathan (2004: 175–179) identifies a variety of reasons for why there might be an absence of lexical borrowing, including the absence of a dominant language in terms of population size, the overall rarity of bilingualism, an overall egalitarian society with multidirectional bilingualism combined with the absence of language shift or a lingua franca, and efforts to avoid mixing languages. With respect to multilingualism, she points out that it arose largely from interlingual marriages.

These languages, unlike those of the Clear Lake area, do not show many similarities in their word accent systems. Perhaps the commonalities that Jany (2009) identifies – weight sensitivity, realization as pitch – are the phonological parallels to the kinds of contact effects that Conathan identifies in the Northwestern Californian languages. Within the phonological domain, a study of intonational patterns would be worthwhile, as this might be an area where convergence would be more likely. Matras (2009: 231–233) specifically notes the susceptibility of prosody, referring largely to word-level prosody, to shift under contact conditions. He suggests that prosody is peripheral in conveying meaning, being prototypically a form of expression of emotive modes, and thus operating at the

level of the speech act rather than the word level. He further notes that 'This allows speakers to mentally disconnect prosody more easily from the matter or shape of words', making it prone to change.

While the Clear Lake area likely involves both areal and genetic changes, this is less clear in the Northwestern California area, where even between genetically related languages there are several differences, there is no clear evidence of areal convergence, and absence of clear genetic relationships between other languages makes it difficult to ascertain if there are divergences.

#### 7.6.1.3 Yuman-Takic

Hinton (1991) presents a detailed study of a group of languages in southern California, making the case that Yuman languages and a class of Uto-Aztecan languages known as Cupan formed a linguistic area at some point. Hinton argues that Yuman languages had a major influence on the Cupan language group (1991: 148), with the Cupan languages (Luiseño, Cupeño, Cahuilla) evolving to resemble the Yuman languages phonologically under the influence of a Yuman substratum that was replaced by the Cupan languages. Hinton shows that there are several characteristics that are shared by Yuman and Cupan languages, but are not reconstructed for Proto-Uto-Aztecan and are generally not present in the neighbouring Esselen, Chumashan and Salinan languages. The traits that Hinton examines are segmental, with a focus on unusual segments that are reconstructed for Proto-Yuman but not for Proto-Uto-Aztecan, and are found in Cupan languages but not in other Uto-Aztecan languages of the area. These include a kw/qw distinction, phonemic in Proto-Yuman and in Luiseño and allophonic in Cahuilla and Cupeño. Other characteristics found in Proto-Yuman, not in Proto-Uto-Aztecan, and in Cupan languages but not in other nearby Uto-Aztecan languages, include a distinction between s and retroflex s (also in a nearby Uto-Aztecan language, Serrano), xw, ñ (not in Luiseño), ly (not in Luiseño), r/l. Hinton further notes that Cahuilla and Cupeño share a small vowel inventory with Proto-Yuman (three vowels with allophonic variation), while Proto-Uto-Aztecan and most Uto-Aztecan have a larger vowel inventory (five vowels).

What about word accent? Yuman languages have accent near the right edge of the word. There is variation across Uto-Aztecan in terms of stress placement, but Cahuilla, Cupeño and Luiseño, while they differ in their patterns, all have primary stress near the left edge of the word. Of the other Takic languages, a larger group in which the Cupan languages fall, Tübatulabal has no main stress, with the placement of stress determined from the right edge of the word, and Chemehuevi has stress on the second syllable. We have not found information on Serrano and Gabrielino, two other Takic languages. While there are clearly segmental influences of Yuman languages on the Cupan languages, as detailed by Hinton (1991), it does not appear that the accent system was subject to contact effects in

terms of merging. Thus, this area suggests that, while stress is viewed as subject to borrowing (see Matras 2009), borrowing of segmental features may occur without borrowing of the stress system.

#### 7.6.1.4 Summary: Linguistic Areas of California

We have surveyed three areas of California that have been identified as linguistic areas. The three different areas investigated lead us to different conclusions. In one, Clear Lake, word accent is a factor that contributes to the linguistic area, although its origin (genealogy, contact, both) is not clear. In another, Northwestern California, accent resembles segmental properties in not showing obvious areal effects. In a third case, Yuman-Takic, several segmental features suggest an area, but accent does not appear to be involved in defining this area.

### 7.6.2 A Survey of Accent Patterns in North America

Hayes (1995) remarks on the distribution of iambicity in North America, noting that iambic patterns are more common in North America than elsewhere in the world. Mithun (2010) looks at a number of parallels in morphosyntactic patterns across North America, arguing that 'The Americas provide rich examples of language contact' in terms of structural parallelisms 'even in the absence of borrowed words and morphemes' (Mithun 2010: 691). In this section we examine some of the similarities in accent patterns in languages of North America in order to study whether there are any broad generalizations that might be drawn.

First we report on findings related to a study of word prominence systems in languages around the world, drawing on Goedemans' (2010b) study of cross-linguistic patterns of stress, which are based on the StressTyp database.

We begin with fixed versus variable (weight-sensitive) stress. Due to limitations of space, we do not provide details, but simply summarize findings.

Based on language family (a total of 40 families; within a family, languages may fall into both categories), 24 families have languages that are quantity-insensitive (fixed stress), and 26 of the families have languages that are quantity-sensitive (variable) with respect to primary stress. Goedemans (2010b: 651) reports that in the StressTyp survey, 278 languages (55.5 per cent) showed fixed, or quantity-insensitive, stress, while 222, or 44.5 per cent, have variable, or quantity-sensitive, stress. The difference between the numbers of North American families showing fixed and variable stress is probably not significant (recall that the count is based on families, not on languages).

The specific location of primary stress in quantity-sensitive languages is also of interest. In the 222 quantity-sensitive languages examined by

Goedemans, primary stress is located on one of the leftmost two syllables in around 15 per cent and on one of the rightmost two syllables in around 30 per cent of the languages (2010b: 655); the next most common pattern is stress located on any syllable (unbounded), followed by stress on the right edge, but not restricted to the rightmost two syllables (~13 per cent) and then by stress location being unpredictable (e.g., lexical, irregular, no primary stress). This suggests that the most common pattern is for variable stress to be determined from the right (around 43 per cent of the languages in the survey).

The numbers for North America are by family unless there are differences between languages within the family, in which case the family is counted in both categories left and right. Languages that are considered to be count systems within StressTyp – foot assignment starts at one edge, but primary stress occurs on the other edge – are considered in terms of the position of primary stress, not in terms of the edge from which it is determined. Given this, 11 of the families in North America have languages with primary stress near the left edge, while six have it near the right edge. Since we are not counting individual languages, but rather patterns within a language family, it is not clear whether the numbers are comparable with those in Goedemans (2010b). If they are, languages of North America exhibit a different bias in terms of the placement of primary stress than Goedemans found, with a preference for left-edge primary stress in North America but right edge generally.

We next consider the edge at which primary accent occurs in the quantity-insensitive languages, conflating word edge and root/stem edge. In the sample, 12 families have languages with stress on the final or penultimate syllable, while 11 have left-edge oriented primary stress. For quantity-insensitive languages, Goedemans (2010b) includes information about whether stress is initial, second syllable, antepenultimate, penultimate or final. In the StressTyp survey, at the left edge, stress is more likely to fall on the first syllable – around 32 per cent of the languages – than on the second syllable – around 4 per cent of the languages, while at the right edge, stress is more likely to fall on the penultimate syllable (around 37 per cent of the languages) than the final syllable (around 17 per cent). In the North American survey, there are slightly more families with languages that mark stress at the end of the word, although the sample size is quite small and the difference is very small and most likely not significant.

Compared then with the StressTyp survey, North America shows some differences. Approximately equal numbers of families have languages with quantity-insensitive and quantity-sensitive stress systems, while the StressTyp survey finds more quantity-insensitive languages. Furthermore, there appears to be a preference for accent falling near the left edge in quantity-sensitive North America, but near the right edge generally. Finally, in quantity-insensitive languages, somewhat more languages

show final stress, in keeping with patterns noted in StressTyp. Based on this evidence, it appears that North America as a whole shows some distinct patterns when compared with other languages in StressTyp; more careful study with counts based on similar criteria would clearly be worthwhile to determine whether accent patterns indeed define North America as a linguistic area.

## 7.7 Australia (the Arnhem Land Clash)

A particularly striking example of an areal phenomenon related to stress (reported in Goedemans 2010a) can be found in Arnhem Land and neighbouring areas in the Northern Territory of Australia.[21] In this section, the case will be presented anew, drawing from additional examples found in continued research on the stress systems of languages in the area.

Australia is divided into two linguistic areas. Across most of the continent, languages from only one family are spoken. We refer to these as the Pama-Nyungan languages, a term coined by Ken Hale (see Dixon 1980) from the word for 'man' in the languages spoken in the northeast and southwest of Australia. Opposed to this continent-wide unity we find an area in the northern parts of the Northern Territory and Western Australia in which linguistic diversity is abundant. Languages from no fewer than 15 different families, the so-called non-Pama-Nyungan languages, are spoken there.[22] Moreover, a few isolated 'pockets' of the Pama-Nyungan group can be found there as well.

### 7.7.1 Two Different Patterns: Initial and Penultimate Stress

When we look at the stress systems of the languages in these two areas, we observe a striking difference. The dominant stress pattern for Australian Aboriginal languages is one of the most common patterns we find in the languages of the world (see Goedemans 2010b). Although minor variations and exceptions exist, almost all Pama-Nyungan languages place primary stress on the first syllable and secondary stress on all odd syllables to the right of that primary stress (Initial stress: shorthand 'I'). The pattern is illustrated in (16) with some examples from Djambarrpuyngu, a language spoken on Elcho Island off the northeast coast of the Northern Territory (Wilkinson 1991).

(16) Djambarrpuyngu

| | |
|---|---|
| *ˈputuru* | 'ear' |
| *ˈŋurruˌpandala* | 'bush apple' |
| *ˈlithanˌmaraˌnhamirr* | 'dry CAUS+FOURTH+PROP' |

[21] Although not geographically correct, we will refer to this area as Arnhem Land for the sake of convenience.

[22] *Ethnologue*, 17th edition, Lewis et al. (2013).

This language does not place a secondary stress on the final syllable, producing a final lapse in words with an odd number of syllables. In a common variant on the pattern exemplified in (16) a secondary stress is placed on the final syllable of words with an odd number of syllables. Maranunggu (Daly River, Tryon 1970) stresses the final syllable of *lángkaratetì* 'prawn', while in Djambarrpuyngu it remains unstressed in *púthuru*.

Among the non-Pama-Nyungan languages, however, many languages place the primary stress on the penultimate syllable, while secondary stresses appear on even syllables before the penult (penultimate stress: shorthand 'P'). The examples in (17) from Limilngan, another Arnhem Land language (Harvey 2001), illustrate the pattern.

(17) Limilngan

| | |
|---|---|
| *uˈwagi* | 'fire' |
| *ˌlatdinˈyayan* | 'crocodile' |
| *ˌuruˌgalitjˈbagi* | 'bandicoot' |

The cases that are most interesting to us appear in the border areas between groups of languages with penultimate stress and those featuring initial stress. It is quite clear that in the hotbed of diffusional activity that Arnhem Land is (Heath 1978, Dixon 1980), languages influence each other on many linguistic fronts, and stress is no exception. We observe a host of patterns that seem to have features of both the patterns in (16) and (17), but which are in fact different from both. We will call these systems 'hybrids' and we will show below that these hybrids do not randomly select features from contact stress patterns. Rather, there is a distinct order to their behaviour which allows us to draw a continuum between the patterns in (16) and (17) with discrete steps, all but one of which can be filled with an example language from the Arnhem Land area. Moreover, we will show why these hybrids are of considerable theoretical importance. To understand this fully, we must first briefly explain the basics of the theory that students of stress use in their field.

### 7.7.2 Deriving the Patterns

To represent the Djambarrpuyngu pattern in (16) we adopt the so-called metrical approach (Hayes 1995; Liberman and Prince 1977), in which patterns like those in (16) and (17) can be derived in two steps. First, syllables are grouped into binary feet (from right to left or from left to right). These feet can be left strong (trochaic) or right strong (iambic). In words that contain an odd number of syllables the left-over syllable at the end of the parse can be left unparsed or form a monosyllabic foot. After footing, a second step (called the End Rule) promotes the leftmost or rightmost strong syllable to the status of primary word stress. Given these parameters, the patterns illustrated in (16) and (17) can be

analysed as shown in (18). For Djambarrpuyngu we assign trochees from left to right and apply the End Rule left. A final left-over syllable remains unparsed.

(18) Djambarrpuyngu

a. * b. *

(* .) (* .) (* .) (* .) (* .)

ˈlithanˌmaraˌnhamirr ˈŋurruˌpaɳɖala

Maranunggu is identical, except for the fact that a left-over syllable will be parsed as a monosyllabic foot. In Limilngan we assign trochees from right to left and apply the End Rule right. In this case, an initial left-over syllable cannot be parsed as a monosyllabic foot because this would create a stress clash, which is universally disallowed (see van der Hulst 2014c). In (19) we summarize the three analyses.

(19)

| Parameters | Djambarrpuyngu | Maranunggu | Limilngan |
|---|---|---|---|
| Footing (LR/RL) | LR | LR | RL |
| Foot type (trochee/iamb) | trochee | trochee | trochee |
| Monosyllabic foot (yes/no) | no | yes | (no) |
| End rule (L/R) | L | L | R |

Let us now turn to the hybrid systems. Looking at these parameters, we could envisage a continuum between true I (initial) languages like Djambarrpuyngu and true P (penultimate) languages like Limilngan. A small change (as a result of diffusional pressure) in parameter settings with respect to the values that deliver true right-edge or true left-edge patterns in (19) will alter the stress system of the language in question, moving it towards the other end of the continuum, slightly changing the orientation of stress to one of the word edges. The striking observation with respect to the Arnhem Land contact area is that we find example languages for the full range of possible changes in parameter settings. Before we present those languages, we must address one more theoretical problem which we encounter when we consider a language like Nakara (Eather 1990). This language only deviates from Djambarrpuyngu in that it assigns secondary stress from right to left instead of left to right. The primary stress remains firmly on the first syllable, as shown in (20).

(20) Nakara

ˈdiɟːaɽaˌbaga ‘he emerges’

We observe that, although the step that Nakara takes towards the right edge of the continuum is a minor one, we run into a theoretical problem. The Nakara pattern is not a logical option, given the set of parameters available to us. In a standard metrical system, we should assign feet starting at either the right or the left edge and then promote one of the feet to primary stress. Nakara seems to indicate that the choice of edge for primary stress and the starting edge of footing for secondary stresses must

be stated separately. Cases like Nakara, as well as many other considerations, have prompted van der Hulst (1996) to deviate from standard metrical theory, as explained above, by separating the algorithms for the assignment of primary and secondary stress. Contrary to standard metrical practice, he claims that primary stress is assigned first, after which secondary stress is assigned using its own set of rules (see Goedemans and van der Hulst 2014 for supporting arguments for this position). In quantity-insensitive languages[23] primary and secondary stress may be assigned along the following lines.[24]

(21) *Parameters for primary stress*: Create a bisyllabic domain (|. . .|)
Edge (L/R)
Type (trochee/iamb)
*Parameters for secondary stress:* ((. . .))
Footing (LR/RL)
Foot type (trochee/iamb)
Assign more than one foot (iterative: yes/no)
Monosyllabic foot (yes/no)

There is no need for an End Rule in this approach because as a matter of principle the strong syllable in the primary stress domain is the primary stress. Application of these principles to (20) leads to the representation in (22).

(22) | * .| (* .)
*ˈdɪɟːaɾaˌbaga*

Adopting this alternative model, Table 7.1 presents the Arnhem Land hybrid stress languages in a logical step-by-step 'tour' of parametrical changes from Djambarrpuyngu-type languages to Limilngan-type languages (each parameter represented in bold indicates the crucial change with respect to the languages above it; iterative foot assignment is indicated by an asterisk * after the direction setting, and we leave out the settings for monosyllabic feet since they are not relevant to the discussion).[25]

We can see that the large variety[26] of intermediate stress systems on our continuum can be straightforwardly analysed once we adopt the

[23] These are languages not using the internal make-up of syllables in the stress assignment rules.

[24] These distinctions refer to the parameters we use in the StressTyp database to describe the stress patterns of the world's languages. We ignore some parameters that we do not need in this section.

[25] Languages in an area that is as diffusionally active as this one will have scores of exceptions to regular patterns. Large subsets of exceptions might be seen as 'a first step' towards the other end of the continuum. There are example languages in this respect, but for reasons of space, we will not discuss them here. See Section 7.7.3, however, for a discussion of exceptions as a sign of instability.

[26] Note that one logical variety is missing in the scheme. There are R and L mirror images for most patterns, but not for Ngankikurrungkurr. This conspicuous absence is theoretically relevant and we will come back to it in Section 7.7.5.

Table 7.1 *Arnhem Land hybrid stress languages*

| Main \| Secondary | Description, language and example |
|---|---|
| L/tr \| LR*/tr | Primary stress on the first syllable, secondary on alternates after it.<br>**Dyambarrpuyngu** ˈlithanˌmaraˌnhamirr |
| L/tr \| **RL***/tr | Primary stress on the first, but secondary on the penult and alternates before it.<br>**Nakara** ˈdiŋːaɽaˌbaga |
| L/tr \| **RL**/tr | Primary stress on the first, but only one secondary stress at the right edge.<br>**Waanyi** (Osbourne 1966) ˈwabinbaraˌulu 'for turtles' |
| L/**Ø**[27] \| RL*/tr | Secondary stress on the penult and alternates before it. Primary stress on the first or second, depending on which is stressed based on the RL rhythm.<br>**Ngankikurrungkurr** (Hoddinott and Kofod 1988)<br>ˈweriˌfepi 'cave' aˈnimpirrˌmire 'firefly' |
| **none** \| **LR***/tr | Secondary stress on the first and alternates after it. No primary stress.<br>**Rembarrnga** (McKay 1975) ˌkamuˌnuŋku 'white ochre' |
| **LR/tr** \| RL*/tr | Secondary stress on the penult and alternates before it *and* one secondary stress on the first (for which we use the primary stress domain).<br>**Anindilyakwa** (Leeding 1989) ˌningkwirriˌpwikwiˌrriwa 'you three' |
| **RL/tr** \| **LR***/tr | Secondary stress on the first and alternates after it *and* one secondary stress on the penult.<br>**Yanyuwa** (Kirton 1977) ˌmařuwaˌřala 'cousin' |
| **none** \| **RL***/tr | Secondary stress on the penult and alternates before it. No primary stress.<br>**Wardaman** (Merlan 1994) jaˌwarrga 'liver' |
| **R**/tr \| **LR**/tr | Primary stress on the penult and only one secondary stress on the first.<br>**Umbugarla** (Davies 1989) no example available |
| R/tr \| **LR***/tr | Primary stress on the penult, secondary stress on the first and alternates after it.<br>**Nunggubuyu** (Hore 1981) ˌrawuˌrrumuguˈrrumu plant species |
| R/tr \| **RL***/tr | Primary stress on the penult, secondary stress on alternates before it.<br>**Limilngan** ˌuruˌgalitjˈbagi 'bandicoot' |

theoretical separation of primary and secondary stress. Without it, the analyses for all these hybrid patterns form a much greater challenge. It would seem, then, that Arnhem Land is a show case for the validity of this separation.

[27] The unspecified main stress domain allows main stress to end up on the first or second syllable, whichever one is made 'strong' by iterative secondary stress assignment from right to left (see Goedemans, van der Hulst and Visch 1996 for a discussion of this unusual type of stress system called a count system; see also note 26 and the discussion in Section 7.6.2). In our view, count systems are hybrids situated well towards the centre of the left-to-right spectrum. One could say that languages like Ngankikurrungkurr are still within the left half, since the primary stress domain is located there, but they obviously occupy a niche one step further to the right than, for example, Waanyi, in that they have got rid of the fixed initial primary stress. Interestingly, Ngan'gityemerri (Reid 1990), a dialect of Ngankikurrungkurr, is of the Djambarrpuyngu type, placing primary stress on initial syllables, while alternates thereafter carry secondary stress. However, that language also shows distinct signs of right-edge diffusional pressure, since in many five-syllable words secondary stress occurs on the penult or final instead of the third syllable.

### 7.7.3 Exceptions and Other Signs of Instability

The first possibility that comes to mind when we think of languages that adopt specific features from neighbouring languages involves plain exceptions due to the borrowing of words with preservation of their original stress pattern. When that effect becomes so large that significant parts of the lexicon exhibit the alternative pattern (or a common variant of it) we should include that pattern in the stress description of the language as belonging to a set of 'regular' exceptions. In our view, abundance of exceptions in many languages in the area may point to high diffusional activity. We have seen in Section 7.7.2 that there is an abundance of hybrid stress types in Arnhem Land that form intermediate stages between true I and true P languages. Add to that the fact that most of the languages we looked at have scores of exceptions, and we have all the ingredients for a boiling cauldron of metrical activity. This might mean that some (or all) of the hybrid patterns we have encountered are unstable; they are transitional, and 'on the move' along the suggested continuum, and are therefore more weakly anchored in the phonology of the language than the patterns of languages with more common single-edge fixed-stress locations. Such systems might be more susceptible to outside influence in the form of (a) relatively swift changes in the rules, (b) harbouring a wealth of exceptions, (c) variability of stressing within single words, and (d) maybe even some unexplained metrical effects. Such instability has indeed been reported for Arnhem Land languages, and we review some cases below.

Many of the penultimate stress languages have scores of initial stress exceptions. Two cases in point are Ngalakan and Mangarayi (Merlan 1983, 1989). Some examples are presented in (23).

(23)

| Ngalakan | | Mangarayi | |
|---|---|---|---|
| *ˈdakbaˌrara* | 'green tree frog' | *ˈwuruˌmumu* | 'hornet' |
| *ˌmiliˈbalkiñ* | 'salt water' | *ˌwarinˈjalan* | *'Exocarpos latifolius'* |

Merlan notes that these languages even show exceptions that go beyond penultimate or initial stress. Antepenultimate stress is not at all hard to find. It is clear that the stress patterns of these two languages are anything but stable.

In another type of hybrid, stressing in longer words may be relatively uniform, while three-syllable words, often quite susceptible to variation, show alternation between the initial and the penultimate pattern. The pattern is exemplified in (24) by Alawa (Sharpe 1972), spoken in the southern end of the region, to the west of Yanyuwa. In Maung, a language from the north coast (Capell and Hinch 1970) however, a radically different solution is chosen. Three-syllable words in this language reportedly have primary stress on the initial *and* the penultimate syllable.

(24)

| Alawa | | Maung | |
|---|---|---|---|
| *aˈlawal* | 'properly' | *ˈbaˈladji* | 'bag' |
| *ˈpařakal* | 'spear' | *ˈmaˈmiŋa* | 'clam shell' |

The Maung examples exhibit what we called 'unexplained metrical effects' above. Whereas languages without primary stress, only employing several equal secondary stresses, occur frequently, languages with 'more than one primary stress' would appear to be impossible from a theoretical point of view. We do not attempt to solve that issue here. Whatever is going on in Maung three-syllable words, it is clearly not common, and in our view it is a sure sign of the instability of its hybrid stress pattern.

Another sign of the instability of hybrids we mentioned above is that, in some languages, changes in the stress pattern could occur relatively swiftly. Such changes are perhaps difficult to capture in grammatical descriptions, which may not be based on contact with the speakers that is long enough to reveal metrical transitions. Yet, we might have cases in Ngalkbun (Capell 1962; Sandefur and Jenhan 1977) and Ndjébanna (McKay 1975, 2000), two languages spoken on the northeastern fringe of the penultimate area, near the border with the predominantly left-oriented Yolngu languages. Capell classifies Ngalkbun as a typical initial stress language that has the same pattern as Djambarrpuyngu. However, 15 years later, Sandefur and Jenhan wrote that the pattern in words longer than three syllables is to stress the penult and alternates before it. Three-syllable words also stress the penult, and place a secondary stress on the initial syllable that remains 'stranded' in bisyllabic parsing. Some examples from Sandefur and Jenhan are presented in (25).

(25) Ngalkbun

| | | |
|---|---|---|
| a. | *ˌwulkunˈtjanŋan* | 'my younger sister' |
| b. | *ˌŋaʔyenjyenjtjuˈŋiyan* | 'I will talk' |
| c. | *naˈkomtutj* ~ *ˈnakomtutj* | 'little boy' |

Example (25a) shows the pattern claimed by Sandefur and Jenhan to apply to most Ngalkbun words. Example (25b), however, reveals the Umbugarla pattern, with only one secondary stress located on the left-hand side. Example (25c) shows that Ngalkbun is also an example of the last sign of instability we mentioned above: variation of stressing *within* the word. The language as described by Sandefur and Jenhan unmistakably shows signs of affinity with the edge Capell designated as the location for primary stress. Even though we might suspect that one of the descriptions is just wrong, all the signs point to a much more enticing possibility: the sources have captured Ngalkbun at two different stages in its transition from a left-oriented to a right-oriented stress system. Similarly, in a few scant remarks about stress in Ndjébanna, McKay (1975) sketches a left-oriented system, while in a much later source (McKay 2000) a right-oriented pattern seems to dominate the scene.

With this discussion on exceptions and their signal function for instability we conclude the overview of Arnhem Land stress types. We have seen what all these hybrid patterns tell us theoretically.

They strongly support van der Hulst's claim that the algorithms for the assignment of primary and secondary stress must be separated. What we have not yet seen is how these languages are located with respect to each other. In Section 7.7.4 we will check whether the hybrid patterns have something to tell us when we look at their geographical locations.

### 7.7.4 Geographical Distribution

To create an easily understood map, we have taken the geographical language data for Google Earth that were created in the AUTOTYP project (www.autotyp.uzh.ch/). We have excluded all the languages for which we had no stress data, and divided the others into three categories, as shown in (26).

(26) i. Predominantly initial stress (Djambarrpuyngu type, white dots)
ii. Predominantly penultimate stress (Limilngan type, black dots)
iii. Hybrids (grey dots)

In categories i and ii, we have incorporated languages that are of the prototypical type but which do have exceptions. Even though we introduced these as having taken the first step towards the other edge, and therefore hybridity, we felt it would be more revealing to include only the languages for which hybridity is more prominently present in category iii. The cleaned-up AUTOTYP map is shown in Map 7.1.

What strikes us immediately is that the black dots split the area down the middle. A pocket of white initial stress languages is isolated in the northeast, while some other white dots are located in the west. In the southeast, not visible on the map, some Pama-Nyungan initial stress languages are the closest neighbours of Yanyuwa, Garawa and Waanyi. Most hybrids are located in the border areas, where the initial and penultimate stress systems collide. We already noted in the introduction to Section 7.7 that this contact area is where almost all hybrids appear, but their exact locations with respect to I, P and the other hybrids only now becomes clear. Perhaps most noteworthy in this respect is the fact that we do not see any hybrids in the south. We do not know the reason for this. There are Pama-Nyungan languages there, but diffusional forces between these and Djingulu and Gudanji, if any, have not (yet) resulted in any overtly hybrid stress patterns.

### 7.7.5 Going Left or Going Right? Innovation or Remnant?

In this case study, we have discussed a journey along a continuum from initial (I) to penultimate (P) stress, as if that were the direction in which the languages in the Arnhem Land area are evolving. But we have in fact thus far made no claim regarding the issue of the direction of diffusion. This is, however, a most intriguing question, and we endeavour to answer it in this section.


**Map 7.1** Arnhem Land area with P, I and hybrids

What is really happening in Arnhem Land? Has the P stress innovation invaded the area, forcing back the native I pattern to the northeast and the west? Or was the P pattern once used across the board in all non-Pama-Nyungan languages and is it now being slowly mopped up by the Pama-Nyungan I forces? Or is our impression of a 'journey' that languages can make to either end of our spectrum a false one? Maybe the intermediate hybrid 'states' that we have found above are in fact stable stress patterns and no evolution of stress patterns to more left- or right-oriented versions has taken place at all. Even though it is difficult to be certain, given the highly volatile nature of most of the data we have found, we do believe that we can answer these questions.[28] It is our firm belief that the metrical scene in the Arnhem Land area is in turmoil. Almost all the data we have found in grammars point to systems that are changing. A myriad of exceptions to patterns and rules reflects a situation of great instability. Also on theoretical grounds, as we noted in Section 7.4, we could assume that hybrids will not always remain hybrids, but are on the move towards more common stress patterns. Therefore, firstly, we propose here that these languages *are* changing as the result of diffusional pressure, and secondly, that they are going rightward to become more and more P-like. For the second claim, we have not yet given the arguments. We now review what evidence is available.

Our first piece of evidence concerns the northeast of Arnhem Land, the isolated 'white pocket' in Map 7.1. The suggestion that this group of Pama-Nyungan languages is slowly giving in to pressure of the P languages to the west turns out to be correct in the light of claims made by Dixon (1980). Dixon shows that the Yolngu tribes speaking the languages in the area moved there only recently, and notes that after the migration, considerable diffusional pressure towards the Yolngu languages (I languages) originated from the P languages to the west. It is therefore most likely that the stress patterns of languages like Nakara developed from true I patterns through influence of P languages, and not the other way around.

Evidence for the same direction of diffusion can be found in Yanyuwa (Kirton 1977). In long polymorphemic words, a tendency is developing to replace the stress on the initial syllable of a word-internal morpheme by a stress on the pre-antepenultimate syllable. Compare the alternatives in (27).

(27) Yanyuwa

| | |
|---|---|
| *ˌgumbaˌramandaˌninjdja* | 'he was hitting himself' |
| *ˌgumbaraˌmandaˌninjdja* | |

[28] Note that we can do nothing but make claims about *tendencies* here. In an area as diffusionally active as this one, pressure may well work both ways, and some stress systems might evolve leftward, while others go to the right, and some may even go back and forth between directions before they make their final choice. The case made here will simply concern the direction in which the languages are generally going.

The top pattern is the traditional one, the bottom word represents the tendency. Clearly, this tendency reflects a movement to a more rigid right-to-left way of assigning secondary stresses. This is the only language-internal evidence available in favour of movement towards penultimate stress.

A theoretical argument for the movement towards penultimate rather than initial stress can be found when we consider the absence of left-to-right count systems[29] in the diffusional melting pot of Arnhem Land that we noted in Section 7.7.2. In this chapter we cannot delve into the full arguments,[30] so we must summarize. To derive a right-to-left count system from a basic non-count pattern we can walk two very different paths: (1) we could start out with a basic initial stress pattern and switch the starting edge of footing from the left to the right side *while leaving the primary stress domain where it is*, or (2) starting with the domain at the right edge in a penultimate stress system, we could derive the desired count system if we *flipped the domain* to the left while leaving the starting edge of footing at the right. However, in our view such a movement of the domain is far too drastic to constitute the first reaction of a language to diffusional pressure, and once other, less drastic, evolutionary steps have been taken, the right-to-left count system can no longer be derived. Therefore, we submit that I-systems are the point of departure for Arnhem Land hybrids. For left-to-right count systems, the argument would be the inverse of the above, with P-systems forming a point of departure. We propose, therefore, that the absence of such left-to-right count systems in the area can be interpreted as evidence for the claim that, in principle, Arnhem Land languages do not move from P to I-systems.

Two scenarios for the development of diffusional pressure in Arnhem Land were sketched above. P-systems could be relatively new on the scene, expanding their influence on the much older I-systems. Alternatively, P-systems could be remnants of a much older pattern that is on the retreat under the pressure of the I-systems. There is no doubt that P-systems are indeed an innovation with respect to Proto-Australian, which had simple initial stress across the board (Dixon 1980). But that may still mean that P-systems could have arisen long ago and are now slowly fading away. To choose between the two scenarios, we need to look for a trigger, a relatively recent development that could have caused the genesis of P-systems or be the agent of their demise. It so happens that the former is easy to find. Both Heath (1978) and Dixon (1980) report prefixing as a rather new phenomenon among the non-Pama-Nyungan languages. It is quite likely that the penultimate stress pattern arose as the result of the

[29] In a count system the starting edge for footing is opposite to the edge selected by the End Rule; see van der Hulst (2014c).

[30] The interested reader is referred to Goedemans (2010a).

addition of prefixes to stress initial stems, many of which will have been bisyllabic. A penultimate, or at least a more right-oriented, primary stress, perhaps already with some secondary stresses on the chain of prefixes, might have been the result.[31] This pattern may have spread rapidly among the non-Pama-Nyungan languages, in the wake of the prefixing innovation. In this scenario, penultimate stress has become more regular over time and is now exerting its influence over non-prefixing neighbouring languages. The fact that a trigger for P-innovation can be found so easily adds to the evidence for the claim that hybrids become more P-like through pressure from the penultimate stress systems.

The evidence presented above does not make a rock-solid case for the claim that diffusion indeed pushes back the I-languages in Arnhem Land. It does, however, provide some fairly firm ground to walk on when we take new steps towards understanding the metrical upheaval that these languages are subject to. Much more scrutiny of linguistic data is needed before we can say anything more definitive. We hope that such data will become readily available in the near future.

## 7.8 Conclusions

While this chapter has referenced different approaches and studies concerning contact-induced change, linguistic areas and word-prosodic systems, our main conclusion is that the study of these topics is largely an under-investigated area. There are challenges in identifying whether similarity of stress systems in an area is due to independent factors or is contact-induced. We definitely see areal effects and many very likely cases have long been identified. In this chapter we have provided information and references concerning the typological distribution of word prominence systems in selected languages and language families of the world in the hope that proper considerations of these will lead to the identification of additional linguistic areas. However, we believe that the study of contact-induced change in word prominence systems is still largely dominated by anecdotal reports, and much is uncertain about the precise mechanisms that are at play. (A notable exception is the detailed study of Salmons 1992.) This, in part, is caused by a typical holistic approach to stress/accent that does not take into account that these notions more often than not cover a package of properties at both the phonological and the phonetic levels (see Section 7.2.2). We have also suggested that when moving toward an understanding of the mechanisms of contact-induced changes much can be learned from descriptive and experimental work on loan phonology and second language phonology (see Section 7.2.4).

[31] See Goedemans (2010a) for a more in-depth discussion.

By looking at three cases in more detail, we have tried to move beyond anecdotal reports. In Section 7.5 we discussed the case of Basque dialects, based on the work of José Hualde. This shows how a prominence system can respond to language contact in various different ways. It would clearly be desirable to have more studies of this kind within the context of specific modular theories of word prominence systems which also take into account the interplay between word prominence and intonation (Gordon 2014). Section 7.6 discussed in detail the word prominence evidence for considering certain previously identified language clusters in North America as linguistic areas, showing that prominence is an areal indicator in some areas but not in others. Finally, Section 7.7 offered a detailed case study of the consequences of language contact in northern Australia, clearly showing that a modular, parametric analysis of word prominence systems provides insights into the myriad of attested systems. Overall, we have argued that contact situations can create hybrid systems which provide clear descriptive and theoretical challenges for areal linguistics.

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