Prosodic systems: Austronesia

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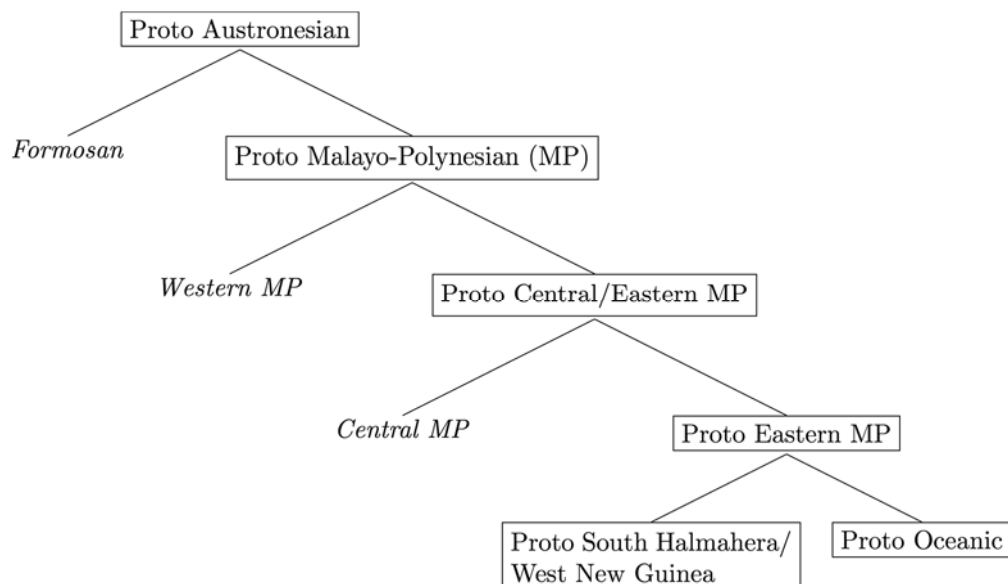Daniel Kaufman (Queens College, CUNY & ELA)

30.1 Introduction

Figure 1. The Austronesian family tree (Blust 1999, Ross 2008)

Austronesian languages cover a vast area, reaching from Madagascar in the west to Hawai'i and Easter Island in the east. With close to 1300 languages, over 550 of which belong to the large Oceanic subgroup spanning the Pacific Ocean, they constitute one of the largest well-established phylogenetic units of languages. While a few Austronesian languages, in particular Malay in its many varieties and the major Philippine languages, have been documented for some centuries, most of them remain underdocumented and understudied. The major monographic reference work on Austronesian languages is Blust (2013). Adelaar & Himmelmann (2005) and Lynch, Crowley & Ross (2005) provide language sketches as well as typological and historical overviews for the non-Oceanic and Oceanic Austronesian languages, respectively.

Major nodes in the phylogenetic structure of the Austronesian family are shown in Figure 1 (see Blust 2013: chapter 10 for a summary). Following Ross (2008), the italicized groupings in Figure 1 are not valid phylogenetic subgroups, but rather collections of subgroups whose relations have not yet been fully worked out. The groupings in boxes, on the other hand, are thought to represent single proto-languages and have been partially reconstructed using the comparative method. Most of languages mentioned in the chapter belong to the Western Malayo-Polynesian linkage, which includes all the languages of the Philippines and, with a few exceptions, Indonesia. When dealing with languages from other branches, this is explicity noted.

The prosody of none of the Austronesian languages has been studied to a degree that comes close to that of the well-studied European languages. There are a few specialist prosodic studies, but there is no comprehensive description of a prosodic system that covers how word-based prominence interacts with higher level prominence. Sections on prosody in descriptive

grammars, if they mention the topic at all, usually do not go beyond the statement of a default stress pattern (without providing evidence for a stress analysis) and the odd remark on intonation patterns, referring to pitch trajectories rather than attempting to identify phonologically relevant tonal targets.

This chapter is exclusively concerned with the two major word-based prosodies, lexical tone and lexical stress, and with phrase-based intonation, ignoring other word-related suprasegmental phenomena such as Sundanese nasal spreading, made famous by Robins (1957) and repeatedly taken up in the phonological literature (cf. Blust 2013: 238-241). Stress and tone have their own sections in Blust (2013), which, however, does not deal with intonation.

30.2 Lexical tone

Most Austronesian languages do not use tone to distinguish lexical items. Distinctive lexical tone patterns have only been reported for a few geographically widely separated language groups, for which see Edmondson & Gregerson (1993), Remijsen (2001), Brunelle (2005), Blust (2013: 657-659). This section provides some general observations and briefly reports on the cross-linguistically very unusual tone systems in West New Guinea languages. See also chapter 24 for the Chamic subgroup of Western Malayo-Polynesian and chapter 29 for languages in New Guinea.

In most instances, distinctive lexical tone in Austronesian languages is transparently due to contact influences, which provides important evidence for transferred tonogenesis. Tonal distinctions usually are restricted, either phonotactically (e.g. contrast only on final syllable) or with regard to permissible tone patterns per word (e.g. words bear either high or low tone). Contact-induced tonogenesis often involves a shift from disyllabic words characteristic of the family to monosyllables as the most common word type. Edmondson & Gregersen (1993) contain specialist chapters for a number of the better studied Austronesian tone languages.

The little that is known about the West New Guinea languages, mostly spoken on the islands along the Bird's Head and Cenderawasih Bay in eastern Indonesia, points to a bewildering variety of word-prosodic systems. These languages are part of the extended contact zone between Austronesian and Papuan languages along the island of New Guinea.

Monosyllabic words have a six-way tone contrast in Magey Matbat according to Remijsen (2007). From the few examples he gives, it appears that at least one syllable in polysyllabic words is toneless, but the position of tone-bearing syllables is not predictable. This contrasts with Moor, which is analysed by Kamholz (2014:101–106) as having four tonal patterns, largely confined to the final two syllables. More importantly, and rather unusually for a tone language, 'tones are realized only on phrase-final words' (Kamholz 2014:102). Kamholz (2014:116 passim) also briefly mentions Yerisiam and Yaur as languages with a complex word tone system plus contrastive vowel length.

A particularly complex – and cross-linguistically unusual – word-prosodic system is found in Ma'ya. Remijsen (2001, 2002) makes a convincing case for an analysis in terms of both lexical stress and lexical tone. There are three tonal contrasts which are confined to the final syllable. In addition, lexical bases differ in whether they are stressed on the penultimate or ultimate syllable. That is, there are minimal pairs which differ only with regard to tone, e.g. sa^{12} 'to sweep' vs. sa^3 'to climb' vs. toneless sa 'one' (Remijsen 2002:596). And there are

minimal pairs differing only in stress, e.g. *'mana³* 'light (of weight)' vs. *ma'na³* 'grease' (Remijsen 2002:600). Importantly, Remijsen (2002:602–610) provides detailed acoustic evidence for the proposed stress difference, which includes not only duration measures, but also differences in vowel quality and spectral balance.

30.3 Lexical stress

Many Austronesian languages are described as having primary stress on the penultimate syllable, more rarely on the ultima. Outside the Philippine languages, discussed below, stress is rarely claimed to be contrastive, and if it is, the contrast usually applies only to a small subset of lexical items which are said to have final stress (e.g. Toba Batak, cf. van der Tuuk 1971). Structural correlates of stress, like differing phoneme inventories for stressed and unstressed syllables, are relatively rare. Examples include a stress dependent *ə/o* alternation in Begak (Goudswaard 2005), a stress dependent umlaut process in Chamorro, which has figured in several theoretical studies beginning with Chung (1983), and pre-stress vowel reduction in the Atayalic languages (Li 1981), among others. A number of Austronesian languages with an iambic stress pattern are reported for western Indonesia. Some of these are clearly the result of contact with mainland Southeast Asian languages, as is the case with Acehnese (Durie 1985), Chamic (Thurgood 1999) and Moken (Larish 1999, Pittayaporn 2005). Other iambic languages in Borneo (e.g. Merap, Segai-Modang group, Bidayuh) are also likely due to areal effects, although evidence for direct contact with non-Austronesians is unclear. In some of these languages, the iambic pattern has led to vowel breaking in the final syllable and vowel weakening in the initial syllable, as described by Smith (2017).

Stress is often described impressionistically on the basis of words heard in isolation, without properly distinguishing word-based and phrase-based prominence (a general problem for the study of word stress, cf. Hyman 2014, Roettger & Gordon 2017). Work going beyond auditory impressions discusses stress solely in terms of pitch, duration and overall intensity. Notable exceptions include Remijsen (2002) and Maskikit-Essed & Gussenhoven (2016) who also examine spectral balance. Furthermore, Rehg (1993) claims that the major pitch excursions occurring on the penultimate syllable do not necessarily correlate with stress in Micronesian languages.

Claims regarding stress which are primarily based on (impressionistic) evidence from pitch are difficult to evaluate without a more comprehensive account of the intonational system, which is usually missing. In line with widespread assumptions of current prosodic theory, in particular the autosegmental-metrical analysis of intonation (Ladd 2008, Gussenhoven 2004), the present discussion is based on the assumption that the analysis of pitch trajectories does not necessarily presuppose the existence of metrically strong anchoring points (i.e. lexically stressed syllables). Rather, intonational targets may also be linked to the boundaries of prosodic phrases. Consequently, many claims about stress in Austronesian languages found in the literature need further investigation, which may lead to the conclusion that a putative stress phenomenon allows for a more insightful analysis in other terms. An instructive example in this regard is the so-called *definitive accent* in Tongan. Here, definiteness was claimed to be marked by shifting stress from the penult to the ultima, but it has now convincingly been argued that the relevant contrast is essentially one of vowel length (which is phonemic in Tongan) and involves an enclitic vowel (cf. Anderson & Otsuka 2006).

The bulk of the specialist work on stress relates to Standard Indonesian, the variety of Malay serving as the national language of Indonesia. As many other varieties of Malay, Indonesian has widely been claimed to have penultimate (primary) stress, unless the penultimate syllable contains a schwa, stress then shifting to the ultima (see Halim 1981, chapter 2 for a summary of the early literature). Beginning with Odé (1994), however, a group of Leiden phoneticians have questioned this view in acoustic and perceptual investigations of presumed stress phenomena in Indonesia (cf. also Zubkova 1966). Van Heuven & van Zanten (2007) contains a detailed report on this work, which also extends to three other Malayic varieties (Betawi; cf. also van Heuven et al. 2008), Manado and Kutai Malay) as well as to Toba Batak. The main findings are as follows (see also Zuraidah et al. 2008 on Malaysian Standard Malay and Maskikit-Essed & Gussenhoven 2016 on Ambon Malay):

- strong L1 effects exist for the production and perception of potentially stress-related parameters in Indonesian, with L1 Javanese speakers having the least clear evidence for stress.
- speakers of Manado Malay and L1 Toba Batak speakers of Indonesian are more consistent in rendering a fixed (typically penultimate) syllable within words more prominent.
- perceptually, speakers rate examples where one of the final three syllables is made acoustically prominent by manipulating pitch, duration or overall intensity as roughly equivalent. Using a different methodology, Riesberg et al. (2018) find that speakers of Papuan Malay are unable to agree on which syllables are prominent in short excerpts of spontaneous narrative Papuan Malay speech.
- prominence distinctions among words appear to lack a communicative function in Indonesian. Thus, in gating experiments Indonesian speakers were unable to make use of prominence differences in the initial syllables. They were also unable to understand contrastive stress on the subword level (as in English, "cof[FER] not cof[FIN]") as shown by their inability to judge the pragmatic appropriateness of examples involving such contrasts (van Heuven & Faust 2009).

Much of this work argues that what has been analyzed as word stress in Indonesian has no functional relevance for native speakers and that Indonesian and other varieties of Malay have no word-based prominence, a conclusion that, however, still needs further scrutiny before it can be considered to be firmly established.

Inasmuch as the evidence for stress in other Austronesian languages is similar to that invoked for Indonesian, this kind of argument may apply more widely. This is, in fact, hypothesized in Goedemans & van Zanten (2014) who propose a set of diagnostics for suspicious stress claims, noting that these apply to a broad range of Austronesian languages. For example, some of the variation noted in older descriptions of Indonesian stress have also described for dialects of Paiwan, a Formosan language of Taiwan, by Chen (2009a,b). Chen observes that the southern dialect has invariable stress on the penultimate syllable, but that the Piuma dialect shifts it to the ultima when the nucleus of the penultimate syllable is schwa. But as in the case of Indonesian, studies of stress and prosodic prominence in Formosan languages (e.g. Chiang & Chiang 2005 for Saisiyat) generally do not take phrasal phonology into account, and the same questions thus remain open.

Philippine languages present different problems for stress typology, since the vast majority of these languages have a phonemic distinction in prosodic prominence on the root level. Zorc (1978) is an early attempt to understand the phenomenon in a historical perspective and Zorc (1993) provides an overview. In Tagalog, the best studied language of the Philippines, this prominence has alternatively been analyzed as due to underlying stress or to vowel length. Official Tagalog orthographic conventions for indicating stress imply that final stress is word-based: <gandá> 'beauty' and that penultimate stress is unmarked <ulo> 'head'. Both implications are probably wrong. First, what has been analyzed as word-final stress is most likely a right-aligned edge tone, as further illustrated in section 4. Second, it has been noted that roots with apparent 'final stress' in Tagalog are significantly more common that those with 'penultimate stress' (Blust 2013:179), and thus that penultimate stress or prominence should be considered the marked case. The situation becomes clearer when we examine words in non-final positions, as shown in the examples below, where all syllables would be typically pronounced with even duration, overall intensity and pitch except the final one (the stress mark here simply indicates some form of perceived prominence).

(1)   Tagalog

    a. [taˈŋa]   b. [aŋ ta~taŋa niˈla]

                          DET PL~stupid 3p.GEN

      'stupid'   'How stupid they are!'

Unlike final prominence, penultimate prominence in the Tagalog word does *not* disappear in non-final contexts such as the above. It does however shift with suffixation. For instance, [ˈba:sag] 'break' becomes [baˈsa:gin] 'break (patient voice)' with the -in suffix. Again, unlike final prominence, penultimate prominence does not shift when the word is followed by clitics or other lexical material, e.g. [baˈsa:gin mo] 'you break it!'. This, prima facie, looks like a proper stress system. Treating Philippine prosodic systems like Tagalog as inherently stress-based, however, leads to a paradox in which heavy syllables seem to repel stress. While roots with an open penult allow for penultimate (trochaic) or final (iambic) prominence, no possibility exists for a trochaic pattern when the penultimate syllable is closed.

(2)   Tagalog syllable structure and putatively word-level prominence patterns

    open penult   ˈCV.CV(C)   CV.ˈCV(C)
    closed penult   *ˈ**CVC**.CV(C)   CVC.ˈCV(C)

This, in conjunction with the divergent behavior of penultimate and final prominence, strongly suggests that length is the underlying category of interest (following Schachter & Otanes 1972:15-18, Wolff et al. 1991:12, Zorc 1993, but contra Bloomfield 1917:141f; French 1988:63f). The penultimate syllable of native roots can bear a long vowel, as in /ba:sag/ 'break' or not, as in /taŋa/ 'stupid'. Apparent final stress is thus postlexical, occurring only when the word occurs in phrase-final position. Penultimate prominence reflects a lexically specified long vowel. Long vowels can only occur in open syllables, a common state of affairs, so the paradox of heavy syllables repelling stress is illusory. Long vowels cannot occur in final syllables, but this is also not unusual, as final lengthening effects tend to neutralize length distinctions in final positions (Barnes 2006:151). What is unusual about Philippine prosodic systems like Tagalog is that they instantiate 'length shift', a phenomenon

far more familiar from stress. This can be explained as a structure preservation effect in light of the fact that long vowels never appear in (native) roots earlier than the penultimate syllable. Length shift thus preserves this generalization over suffixed words.

Iterative stress (typically, with trochaic feet) has been posited for a number of Austronesian languages as well.[1] It is worth noting that, with only very few exceptions (e.g. French 1988, which does not contain phonetic evidence), iterative stress has only been demonstrated for Western Malayo-Polynesian languages lacking phonemic prominence distinctions on the word level. The Sama languages of the southern Philippines have no length distinction on the penultimate syllable and are perhaps the best candidates for possessing iterative (right-aligned trochaic) stress (see Allison 1979 for Sibutu, Walton 1979 for Pangutaran, Brainard and Behrens 2002 for Yakan). A similar iterative footing is reported for Oceanic languages and tentatively reconstructed for Proto-Oceanic by Ross (1988:18). The main areas of investigation within right-aligned trochaic systems have been the integration of suffixes and clitics, the treatment of the left edge of the prosodic word (for instance, whether or not it contains an initial dactyl) and the often irregular behaviour of vowel hiatus. Zuraw et al. (2014) exemplifies this line of inquiry for Samoan, while Buckley (1998) examines related issues in the much discussed stress pattern of Manam (Lichtenberk 1983, Chaski 1985).

30.4. Intonation

Stoel (2005, 2006) has proposed analyses of the intonation of Manado Malay and Banyumas Javanese, the essential features of which have also been found for Malaysian Malay (Zuraidah et al. 2008), Waima'a (Himmelmann 2010, 2018), and Ambon Malay (Maskikit-Essed & Gussenhoven 2016). See also Halim (1981) for a description of Indonesian in a pre-autosegmental framework. There is still no well-established standard analysis for intonation in Austronesian languages and much of what is reported here is still tentative. In fact, for most branches too little is known about intonation to provide a basis for even the most basic observations (for the Oceanic branch see, for example, Rehg 1993, Jepson 2013, Clemens 2014, and Calhoun 2015; for Formosan languages, there are Chiang et al. 2006, Karlson and Holmer 2011 and a number of Taiwanese MA theses).

Despite the great diversity of Austronesian languages and the scarcity of detailed analyses, several generalization may still apply widely. We have not encountered any languages with post-focus compression, although this may not be surprising given the large number of languages for which it is thought to be absent (Xu et al. 2012). Relatedly, it appears impossible for most Austronesian languages to express narrow focus on a sub-constituent of a clause or noun phrase with intonation alone. Narrow focus is achieved through syntactic or morphological means, potentially in conjunction with a particular intonational pattern, but the role of intonation in focus marking is clearly more circumspect when compared to a language like English (Kaufman 2005).

In many languages, the tones aligned with the edges of phrases and utterances are the only tonal targets that surface with any consistency. As is cross-linguistically common, we find an

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[1] Such a pattern was also posited by Cohn (1989 *et seq*) for non-Javanese Indonesian. It is likely that the divergence between these analyses and the more recent stressless analyses discussed above are partly due to differences in substrate between the varieties under examination (e.g. Batak vs. Javanese) and partly due to differences in methodology (stress perception tests vs. impressionistic evaluaton of words in isolation).

association between H-L% and declarative statements contrasting with a L-H% combination for polar interrogatives. This can be seen in the Waima'a and Totoli examples below in (3) and (4).[2]

(3)   Waima'a (elicited)

    ne   de   kara   haru   lumu
    3s   NEG   like   shirt   green
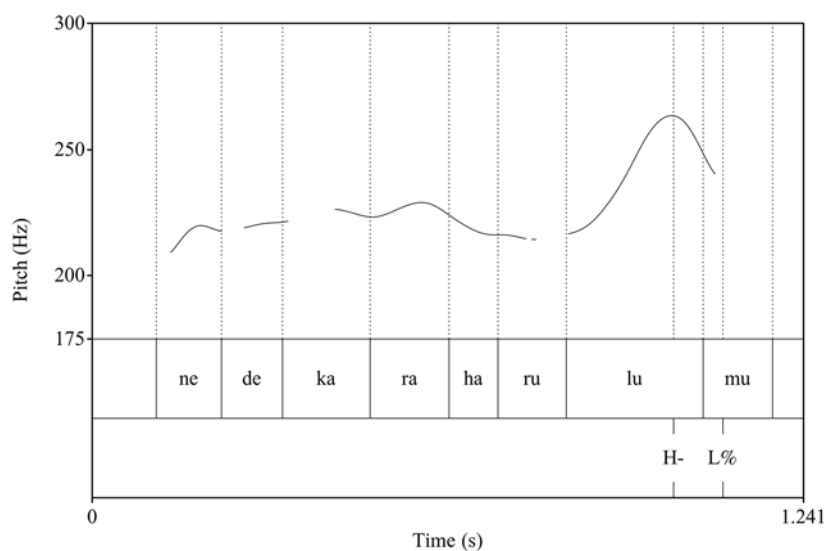   'S/he doesn't like the green shirt.'

Figure 1: f0 for example (3)

(4)   Totoli (elicited)

    isei   nangaanko   saginna
    who   AV.RLS:eat:AND   banana:3s.POSS
    'Who ate his/her banana?'

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[2] Throughout this section we will refer to the combination of the two tonal targets as edge tones, the final pitch excursion as a boundary tone (T%) and the target preceding the latter as "prefinal target" (T-). We will return to issues in the analysis of this prefinal target below.

Figure 2: F0 and pitch accents for example (4)
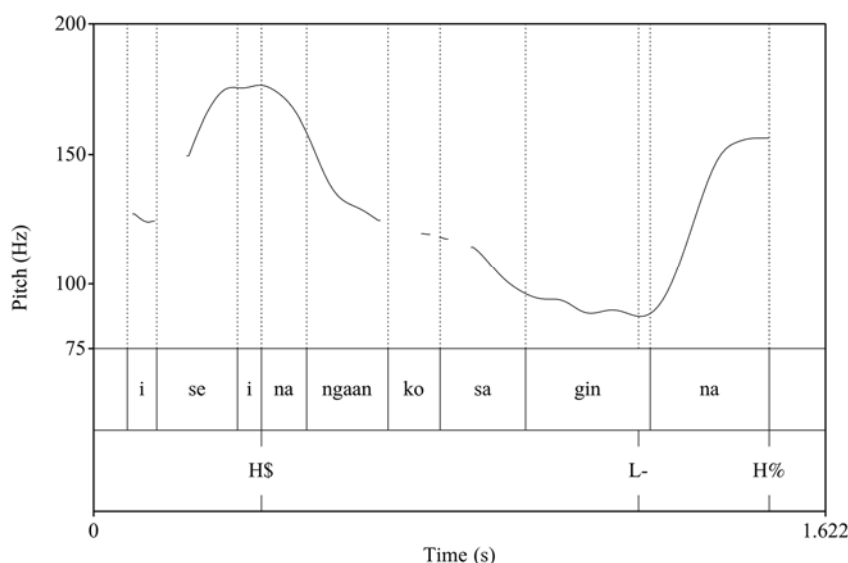
In addition to the bitonal target at the right edge, IPs are often (but not necessarily, cf. example (3)), divided into smaller Phonological Phrases (PhP) which usually end on a high target, represented by H$ in Figure 2. Note that all tonal annotations in this section only pertain to targets that are clearly recognizable in the f0 extraction. Sub-IP phrasing is too little understood to allow for speculations as to whether IPs are exhaustively divided into PhPs (with deletion of the PhP-final boundary tone). Where they exist, PhPs are of variable size, but are often larger than a single phonological word and may span complete (subordinate) clauses. Himmelmann (2018) provides more details for Waima'a and Totoli.

The cues for prosodic phrasing are generally intonational in Austronesian languages and can be subtle. Downstep of H tones associated with PhP has been observed in all the languages discussed here, with exceptions for IP-final excursions, which can be considerably higher (arguably due to H%). Higher-level durational effects remain largely unexplored, although it is a potentially rich area for uncovering the mapping of syntactic structure to PhPs. Richards (2010: 165-182), for example, explores the structure of higher prosody in Tagalog with a view towards syntactic analysis and suggests an algorithm for locating edge tones at the left edges of PhP. Hsieh (2016) examines Tagalog verb durations in two conditions and shows evidence for closer prosodic integration of transitive subjects with preceding verbs when compared with objects.

However, not all cues for phrasing are prosodic. In Rotuman and many of the languages of the Timor area, VC-metathesis appears to be rooted in phonological phrasing. In Amarasi, a language of West Timor, as described by Edwards (2016:3), metathesis occurs in several phrase medial contexts but not across a subject and the predicate, as seen in **Error! Reference source not found.**. Edwards (2016, chapter 2) provides an exhaustive review of the literature on prosodic metathesis in Austronesian and an in-depth analysis of Amarasi.

(5)   Amarasi
        (i)   fa**ut** koʔu   (ii)   fatu   koʔu

stone big   stone   big
 '(a) big stone'   'Stones are big.

There are also segmental effects in Philippine languages that depend on prosodic phrasing. In Tagalog, for instance, we find glottal stop deletion, final vowel lowering, and intervocalic tapping (/d/→[ɾ]), all of which appear to be diagnostic of prosodic boundaries apart from being subject to speech rate effects.

Recall from section 3 that the major evidence for stress in most Austronesian languages are pitch trajectories observed on words spoken in isolation, i.e. as short IPs, which may in fact either show IP-final edge tones or the effect of lexical stress. While it is widely acknowledged that in the national standard varieties Indonesian and Malaysian Malay, IP edge tones are not systematically associated with either of the two unit-final syllables, this appears to be more systematic in many other varieties, including Toba Batak, Waima'a, as well as eastern varieties of Malay (Manado, Papuan). Here, the prefinal target appears to be regularly associated with the penultimate syllable and the final boundary tone with the final syllable, giving rise to the widely made claim of regular penultimate stress. If this association of edge tones were exceptionless, it would not warrant an analysis in terms of lexical stress, because the pitch trajectory can be fully described with reference to the IP boundary (a rise starting at the beginning of the penultimate syllable, the peak reached at the boundary to the final syllable, etc.). Such an analysis is supported for languages like Papuan Malay, where penultimate intonational prominence disappears in phrase-medial position, as seen in (6).

(6)   Papuan Malay (elicited)
    a)   baju   b)   baju   mera
         shirt   shirt   red

       Figure 3: F0 and edge tones for ex. (6)
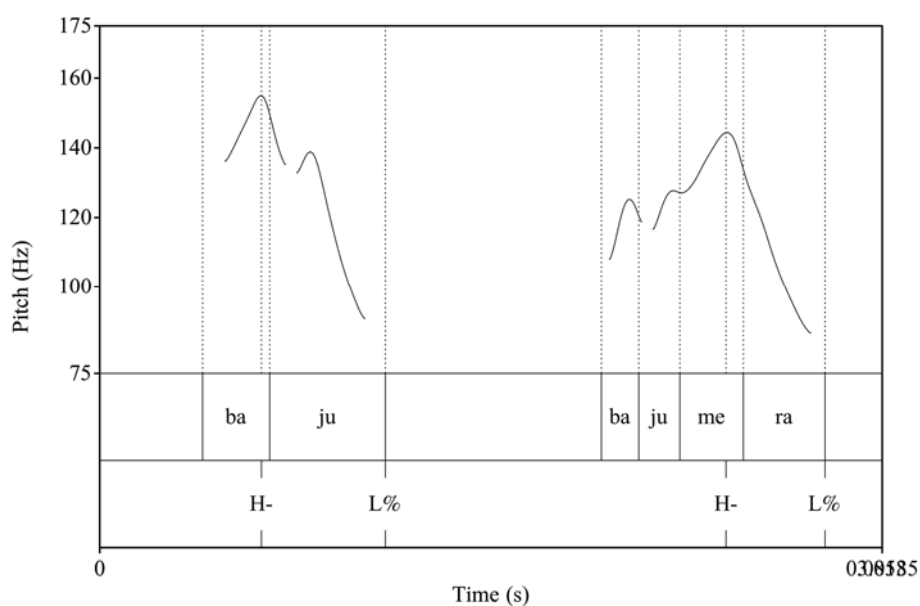
Many languages with a prominent penultimate syllable in the IP have been claimed to possess a small group of words which in IP-final position trigger prominence on their final syllable. Such a state of affairs suggests a stress difference, as proposed by Stoel (2005) for Manado Malay, for instance. However, Maskikit-Essed & Gussenhoven's (2016) careful investigation of Ambon Malay, for which essentially the same claims as for Manado Malay have been made (cf. van Minde 1997), shows that the f0 peak of the pre-final rise does not clearly align with either the final or the prefinal syllable. Instead, the best predictor for its placement is the duration of the IP-final rhyme, syllable or word. They therefore propose an analysis of the IP-final edge tone combination as 'floating boundary tones' (HL%). Obviously, further investigations are needed to determine whether such an analysis can also be supported for other instances of a presumed stress difference based on what is heard as a difference in alignment of the IP-final edge tone combination.

Other languages, however, clearly do associate IP-final edge tones with specific syllables. Thus, in Tagalog, they are regularly associated with the final syllable, unless the penultimate syllable contains a long vowel. In the latter case, the prefinal target is typically reached on the long vowel. Central Philippine languages vary as to whether closed penultimate syllables attract prosodic prominence. In Cebuano, for example, a closed penult coincides with prosodic prominence, as in /tanʔaw/ [ˈtanʔaw] 'look' (Wolff 1972:x) (cf. the Tagalog example in (1)). An underlying form such as /basbas/ thus appears to have final prominence in Tagalog [basˈbas] but penultimate prominence in Cebuano [ˈbasbas] (cf. Zorc 1993:19, Shyrock 1993). In yet other Philippine languages, such as Itawis and Pangasinan, IP-final edge tone association is apparently not predictable even in words with a closed penult (Blust 2013:177).

30.5 Prosodic integration of function words

Among languages displaying word-level prominence, there are two strategies for handling clitics and function words. In Philippine languages, second-position clitics are distinct from lexical roots in not satisfying (disyllabic or bimoraic) minimality constraints (Billings & Kaufman 2004, Kaufman 2010). In most of these languages, the last syllable of the clitic, not that of the lexical host to its left, will attract the IP-final edge tone combination, as shown in (7), where it occurs on the final clitic *ba*. No prominence at all is accorded to the final syllable of the verb *binili* in (7), which has an H tone characteristic of many types of Tagalog utterances, on its first syllable.

(7)   Tagalog (elicited)
        b<in>ili=mo=ba?
        <PRF.PV>buy=2s.GEN=QM
        'Did you buy (it)?'

Figure 4: F0 and edge tones for example (7)
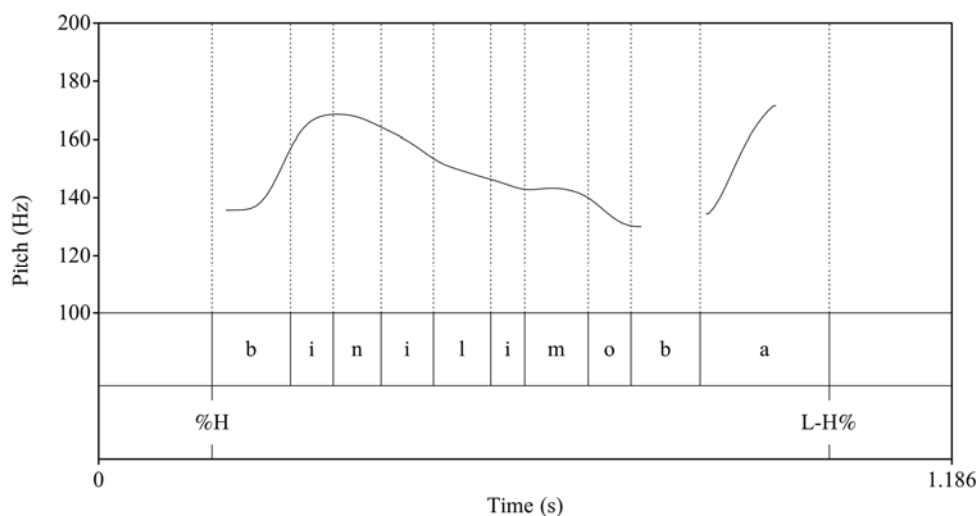
The initial H typically docks to the first word of the IP but not necessarily to its first syllable, as seen in **Error! Reference source not found.**, where it is aligned with the final syllable of the proclitic *maŋa*. The initial and final pitch targets in this typical Tagalog pattern fully ignore the lexical/functional and the prosodic word/clitic distinction. In terms of duration, note that only syllables with lexically specified vowel length and length derived through compensatory lengthening after ʔ-deletion emerge as long. No word-based durational effects are present outside of vowel length in **Error! Reference source not found.**, an elicited example.

(8) maŋa = baːtaʔ = ŋaʔ = pala = sila
      PL   child   EMPH MIRA 3p.NOM
      [maŋa baːtaː ŋaː pala sila]
       'They are really children!'

Figure 5: f0 and edge tones for example **Error! Reference source not found.**
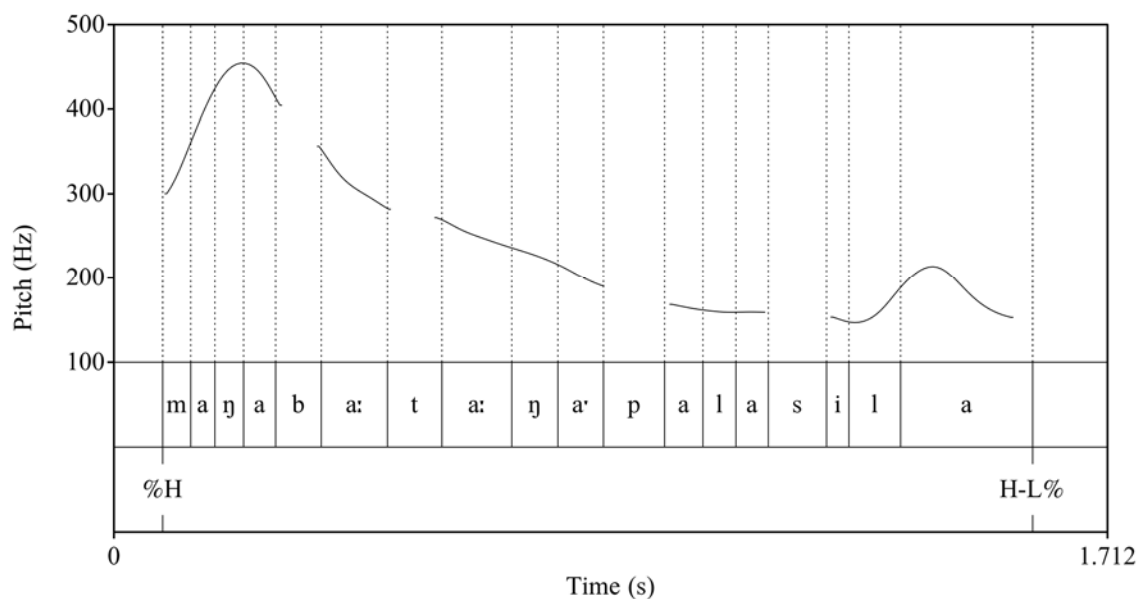

In the Pamona-Kaili and South Sulawesi languages of Sulawesi, on the other hand, function words are treated distinctly from lexical words, where only the latter project pitch accents. For Uma, a Pamona-Kaili language, word-based prominence is aligned with the penultimate syllable of a window that includes the lexical word itself and a small number of adverbial clitics such as *mpu'u* 'really' and *oa'* 'anyway' (Martens 1988). A large number of other types of clitics, including those with pronominal, aspectual and adverbial functions (cf. example (9)), are excluded from this window. Martens' (1988) observations are of interest, because they concern prominence in what is generally a non-final element in the Uma clause, the verb. A similar pattern can be found in the closely related Kulawi language (Adriani and Esser 1939:9), where prominence is associated with the penultimate syllable of the word including suffixes, but excluding pronominal and adverbial clitics.[3] Enclitics do not attract prominence even when they are disyllabic, as in *hóu=kami* house=1p.ex.GEN 'our house'. Unlike the Philippine languages discussed above, Kulawi and Uma appear to make a clear distinction between lexical and functional words, with pitch targets anchoring only to lexical words. Note how the pitch targets in (9) are anchored to the penultimate syllable of the lexical word excluding the genitive clitics. Similarly, in (10) the function word *padena* 'then' and the pronominal clitic are not associated with pitch excursions.

(9)   Kulawi (from a spoken narrative)
       nam-peˈgika   ˈdike=na   no-pa-ˈdapa   hiˈnoko=ra
       RLS.TR-wait   dog=3s.GEN   RLS.INTR-CAU-hunt prey=3p.GEN
       '... his dog was waiting while he was hunting their prey.'

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[3] Similar patterns are found in South Sulawesi languages, such as Bugis (Sirk 1996) and Makassarese (Jukes 2006).
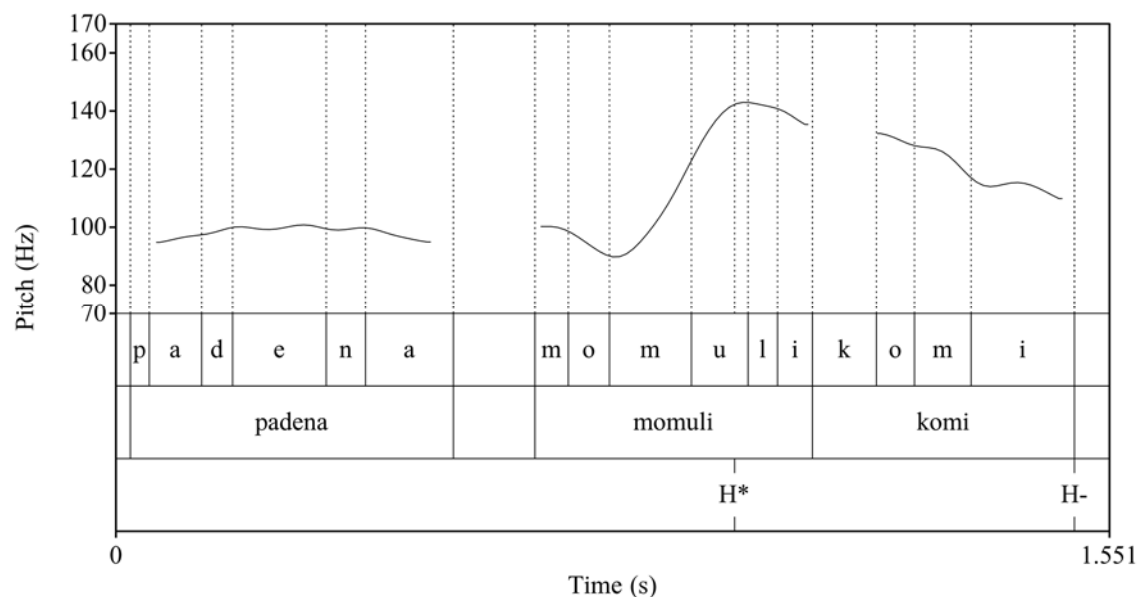
Figure 6: F0 and tonal targets for example (9)
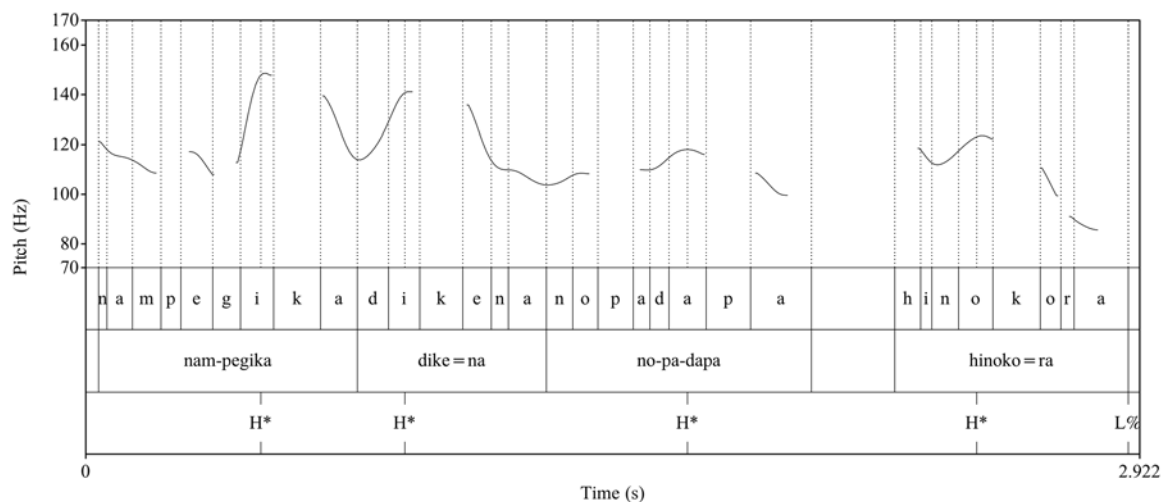
(10) Kulawi (from a spoken narrative)

   padena   mo-ˈmuli=komi
   then   IRR.AV-create=2p.NOM
   'you (go) create'

Figure 7: F0 and tonal targets for example (10)

The prosodic framework in this chapter is not sufficient to capture all the relevant intonational contrasts. Thus, in Manado Malay and the Javanese Palace language (see chapters in van Heuven & van Zanten 2007) questions may involve a (more or less) continuous rise across most of an IP, usually after a minor initial drop. Furthermore, echo questions may have specific features such as a higher pitch level than the preceding statement. In fact, there appear to be various ways to expand the IP at the right edge, after the IP-marking edge tone combination. Stoel (2005), for example, reports the option for Manado Malay to add a single further phrase after the IP-edge tones which tends to be flat and involves a highly compressed pitch range. There are also various options for what may be termed intonational clitics, often

determiners or conjunctions, which may occur after the IP-marking edge tone combination. This is similar to the compression found on post-posed reporting clauses and vocatives in English (e.g. 'Don't do it!' *she said*.)

30.5 Conclusion

Until very recently, Austronesian languages have contributed little to our understanding of prosodic typology. We are now in a position to enumerate several unusual features of these languages which require special attention from theoretical, typological and experimental approaches. First of all, the possibility that many languages of Indonesia lack word-based prominence must be taken seriously and examined with a more diverse range of tools. Corpus investigations, which are necessary to reveal the predictive power of production and perception studies cited earlier, are lacking. The theoretical implications of 'stresslessness' have also gone unexplored. Does 'stresslessness' simply indicate that intonational and durational prominence are anchored to higher levels within an otherwise normal hierarchical prosodic structure or does it imply a restructuring or even a lack of structure on the level of the prosodic word? To answer this, evidence for prosodic structure must be culled from segmental alternations, phonotactic generalizations, morphophonological processes, acquisition and elsewhere. Only then will we be able to say whether a lack of word-based prominence is diagnostic of more profound structural differences. Philippine languages, on the other hand, present us with the problem of mobile (and morphologically conditioned) vowel length, its relation to syllable type and the anchoring of pitch movements, areas which show interesting cross-linguistic variation within the group. Making progress here will require abandoning (at least temporarily) the composite notion of 'word stress'. For each language under investigation, the determinants of segment and syllable duration, pitch movements, overall intensity, as well as other possible measures like spectral tilt, must be treated as *a priori* independent dimensions with special attention to keeping word-level, phrase-level and utterance-level effects distinct. It may emerge that Austronesian languages indeed provide broad support for the 'no stress type'. On the other hand, we cannot yet rule out that a careful reassessment of prosodic organization in some of the apparent stressless languages could yield subtle word-based prominence patterns that are occluded by higher level prosodic phenomena.

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