Phrase Tones in Samoan: form and function puzzles

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In this paper, we present both novel and previously published data related to the type and distribution of phrase tones in Samoan, an understudied Austronesian language [1]. We identify four phrase tones in Samoan: L-, H-, L+H- and H+L-, in all cases aligned with the right-edges of phonological phrases. While some aspects of the form and function of these phrase tones fit comfortably with well-established patterns in the AM framework for other languages, other aspects are more puzzling. We discuss our analysis in relation to challenges in extending the AM framework to understudied languages: in particular, the tension between phonetic or form-related and phonological or functional motivations for an analysis (cf. [2]).

The data presented come from sets of recordings of native Samoan speakers living in New Zealand, primarily read sentences, recorded over a number of years. Some of these are new analyses of data we have reported previously [3-6]. We also present novel data, recorded at the same time as that reported in [4], of sentences involving *so'o* 'any' and nominalisations (cf. [1, 7]). In addition, we draw on ongoing work by Kristine Yu and colleagues, who were the first to publish analysis of Samoan intonation in the AM framework (e.g. [8,9]).
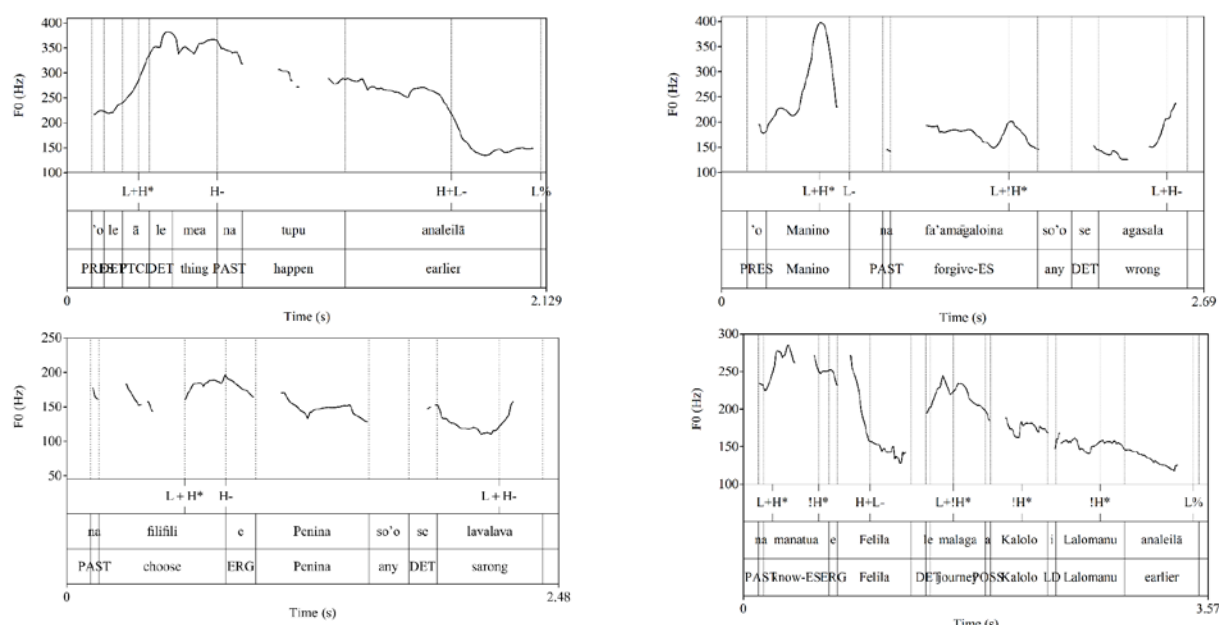

Figure 1: Examples of typical intonational realisations of, from top left to bottom right, (a) a question, (b) a sentence with 'o-fronting and so'o *('any'), (c) a canonical sentence with* so'o, *and (d) a sentence with nominalisation.*

Fig. 1 illustrates the four phrase tones H-, L-, L+H- and H+L-, in four different sentence types from our data. We discuss each in turn below. In form, H- phrase tones are as expected within an AM analysis: a rise in pitch at the right-edge of a phonological phrase, that continues right up to the word edge, e.g. on *mea* in Fig. 1a and *filifili* in Fig. 1c. There is not usually a pause, though there is a weak sense of juncture. Functionally, H- tones occur in a number of place where phonological phrase boundaries would be expected: at the end of the cleft-like fronted phrases marked with the particle *'o* (see Fig. 1a and [3-5, 8, 9]), and between coordinated phrases and in lists [8-9]. However, at the edges of other syntactic phrases, H- tones occur very consistently before the absolutive argument, but only sporadically before ergative or oblique arguments [3, 4, 8, 9]. This pattern led Yu to claim that in the latter case they are not phrase tones but tonal markers of absolutive case [9]. In our work, however, we have identified a number of cases where the H- tones do not usually appear before the absolutive: before post-verbal absolutives marked with *na'o* 'only' and in equatives [4], and before absolutives marked with contrastive emphasis [5]. Here we present two more such cases: before absolutives marked with *so'o* 'any' (see Figs. 1b&c) and before absolutive nominalized verbs (see *le malaga* in Fig. 1d). These cases do not seem to be

consistent with the claim the tones are absolute case markers, but are more consistent with Calhoun's alternative claim in [4] these mark incomplete information units. In terms of form, there are no consistent differences between the general H- and the 'absolute' H- tone, so phonetically there seems to be one category here. The question therefore is the extent to which different functions of these tones, and differing claims about whether and how these are linked, should affect analysis of their phonological status.

Similarly, L- phrase tones show a pitch fall at the phrase boundary, e.g. on *Manino* in Fig. 1b. They are usually followed by a pause (see Fig. 1b and [4, 5, 9]), which would seem more consistent with a stronger break, i.e. break index 4. However, functionally, L- tones frequently occur in our data mid-sentence, in similar positions to H- tone, e.g. following fronted *'o*-phrases (see Fig. 1b), in coordinated phrases in equatives, and after a contrastively prominent word [4,5]. Based on this functional equivalence, Calhoun argues in [4] these are phrase tones, which mark a complete information unit. Mid-sentence they are used to break up a complex sentence into multiple information units.

L+H- and H+L- tones are rather different, as in form, they resemble pitch accents. The L+H- tones involve a pitch rise on the stressed mora (e.g. on /sa/ in *agasala* in Fig. 1b and the second /la/ in *lavalava* in Fig. 1c), while H+L- tones involve a dramatic pitch fall on the stressed mora (e.g. on /laː/ in *analeilā* in Fig. 1a and /li/ in *Felila* in Fig. 1d). Aspects of the form support the phrase tone analysis: they always occur right before a phrase break, usually marked with a pause; for H+L-, where there are no preceding intonational events in the phrase, the tone is preceded by a high pitch plateau (see Fig. 1a and [6]). However, in [3], Calhoun argues for the L+H- analysis primarily on functional grounds: these tones usually appear on the final word in declarative sentences even when that word is given, and despite the focus position being initial, i.e. they do not appear to be prominence-lending. Here, we extend this claim to H+L- tones through functional parallelism. H+L- tones consistently appear on the final word in questions, regardless of focus within the question [6], e.g. Fig 1a, which shows the question "What happened earlier?". In both cases the tone is boundary-marking, not prominence-lending, and marks the mood of the utterance. H+L- tones are also found sentence medially on our data, usually followed by a pause: e.g. on *Felila* in Fig. 1d, which is the ergative subject of the sentence "Felila knows about Kalolo's journey to Lalomanu", involving a nominalized complement; preceding a contrastively prominent word [5]; and on the theme in equatives [4]. Analysis of the functional link between these is still ongoing, however, we believe, like H-, H+L- marks an incomplete information unit, in this case specifically an open focus to be resolved (cf. [7]).

As can be seen from the discussion above, considerations of form and function are intertwined when developing an intonational analysis. The phrase tones we have identified: H-, L-, L+H- and H+L- are each consistent categories in terms of their form. However, the decision to categorise them as phrase tones drew heavily on functional considerations. This is particularly challenging when working on understudied languages, as it is not usual to have a native speaker analyst, and judgments from consultants are especially hard to elicit regarding the kinds of pragmatic and discourse functions at issue. A further challenge is dealing with variation between and within speakers in production tasks. However, we believe it is vital to take functional considerations into account when building an intonational analysis for a language. Further, we submit that a useful starting assumption in any analysis is that intonational categories identified by similarity in form should also be able to be linked by function.

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