



# The interaction of prosody and syntax in Samoan focus marking

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## Abstract

This paper presents the first study of prosodic and syntactic focus marking in Samoan, an Austronesian VSO language. It is shown that while Samoan appears to use syntax to mark focus, focus marking in Samoan actually fits well within the generalisation that focus must be maximally prosodically prominent. Seven native speakers were recorded answering questions about pictures depicting simple events. The questions were designed to elicit agent or object focus, and question-under-discussion (QUD) focus or contrastive focus. Results showed different speakers had different focus-marking strategies. Two consistently used a cleft construction to front the focused constituent. Two speakers fronted focused agents, but not objects. The final three used basic verb-agent-object ordering in all focus conditions. Prosody was analysed within the Autosegmental Metrical framework. The initial phonological phrase was always the most prominent. Therefore, when the focus was fronted, it was maximally prominent, making Samoan a language with prosodically motivated syntactic movement, like Spanish and Hungarian. In the verb-agent-object sentences, the verb and agent were in the initial phrase. Speakers raised the accent on the object in object focus, and lowered it in agent focus; although they did not do this consistently. There was no prosodic marking of focus on the agent. This is interestingly opposite the asymmetry between focus marking on the subject and object in English and Romance languages, with the same prosodic motivation.

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## 1. Introduction

In recent years, as this special issue attests, there has been a rise in interest in the relationship between prosody, syntax and information structure. In particular, while focus marking is evidently a fundamental function of prosodic prominence in languages like English, it is becoming clear that this is true of many languages, provided that prosodic prominence is construed sufficiently broadly (e.g. [Büring, 2009](#)). This paper presents the result of a production experiment, which is the first major study of focus-marking in Samoan. I show that while Samoan at first appears to primarily use syntactic means to mark focus, it actually fits well within the generalisation that focus must be maximally prosodically prominent, adding to our knowledge of how widespread this generalisation is across languages ([Truckenbrodt, 1995](#); [Büring, 2009](#)). The study also shows some interesting interactions between prosody and syntax related to focus, suggesting an intriguing and complex relationship between the three which could be relevant for studies of other languages (cf. [Yu, 2009](#)).

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Samoan is a Polynesian language, part of the Austronesian language family (Mosel and Hovdhaugen, 1992:4). There are around 200,000 speakers in Samoa, and a further 160,000 worldwide (Lewis et al., 2013), including a large population in New Zealand. There has been very little research on either prosody or focus-marking in Polynesian languages, nor indeed on prosody in Austronesian languages more generally. Therefore this is a valuable contribution to our knowledge of this large but under-studied language family.

Below, section 1.1 sets out my definition of focus, and summarises how prosody and syntax can mark focus across languages. Section 1.2 gives relevant background on Samoan, including previous research on prosody and focus marking in Samoan and related languages. Section 2 explains the aims and methodology for the experiment, while sections 3–5 set out the results. Section 3 looks at how the syntactic construction used varied by focus condition. Section 4 analyses the overall prosodic structure of Samoan, and discusses how this relates to focus marking. Section 5 looks at how focus affects prosody in the basic verb-agent-object constructions. Finally, section 6 discusses implications of the findings for the relationship between prosody, syntax and information structure in Samoan.

### 1.1. Focus, prosody and syntax

Focus is a key part of information structure. During a discourse, speakers build a ‘common ground’ of propositions relevant to the context they believe to be established with the other speaker(s) (Stalnaker, 1978; Clark, 1996). To facilitate this, each utterance has an ‘information structure’, i.e. each argument, predicate, etc. is marked as to how it refers back to, alters and/or updates the common ground. There is much varied and often contradictory use of information structure terminology (e.g. see Kruijff-Korbayová and Steedman, 2003). For the purposes of this article, I simply outline the model I am assuming, and define the two types of focus to be investigated here.

Following Rooth (1992), I take focus marking of an element to introduce a presupposition of alternatives to the focus, compatible with the context (or able to be accommodated). For instance in the following English example (focus is marked with the subscript [<sub>F</sub>]):

- (1) Q. What’s your daughter doing at University?  
A. She’s doing [<sub>F</sub>Chemistry].

The focus-marking on *Chemistry* in (1) implies a contrast which is compatible with the context (the question), i.e. it implicitly excludes the other subjects which the daughter could be doing at University. There is disagreement about whether focus-marking always implies alternatives. Some argue, contra Rooth, that the answer to a *wh*-type question can simply be an ‘information’ focus, as opposed to a ‘contrastive’ focus, which involves alternatives (e.g. Rooth, 1992; Steedman, 2000; Krifka, 2008 versus Lambrecht, 1994; Kiss, 1998); for example, if the question were “Isn’t your daughter doing English at University?”, there is a contrast between *English* and *Chemistry*, whereas in the example above this is not necessarily the case. I have argued that there is no categorical distinction between ‘information’ and ‘contrastive’ focus in English, though there may be pragmatic differences (Calhoun, 2009, 2010). In some languages it has been claimed that there are syntactic differences in how these are expressed (e.g. Kiss, 1998; Drubig and Schaffar, 2001; Benincà and Poletto, 2004; Neeleman et al., 2009). In this study, I simply operationalised focus in terms of two question types which are standardly held to invoke focus in the response: ‘QUD (question-under-discussion) focus’, where the focus is the answer to a question explicit or implicit in the preceding discourse (after Roberts, 1998), in this case an immediately preceding *who*- or *what*-type question which does not imply a contrast; and ‘contrastive focus’, i.e. where the answer to the question is the focus, but the question does imply a contrast (such as “Isn’t your daughter...”). It was then a research question whether these were realized differently in Samoan.

Information structure involves an orthogonal dimension, which is sometimes conflated with focus marking. Following Steedman (2000, 2014) and Calhoun (2010), I take information structure to operate in two dimensions; focus-marking operates within a division into theme and rheme (see also Halliday, 1968; Vallduví and Vilkuna, 1998). This can be seen in the following example:

- (2) Q. What are your kids doing at University?  
A. (([Katie<sub>F</sub>]’s doing) ([Chemistry<sub>F</sub>]), ((and [Paul<sub>F</sub>]’s doing) ([Law<sub>F</sub>])).  
                    theme                    rheme                    theme                    rheme

*Katie*, *Chemistry*, *Paul* and *Law* are all foci, in that they contrast with alternatives available in the context. However, they have different functions: *Katie* and *Paul* are thematic foci. The theme, or topic, is “a part of the meaning of an utterance that the speaker claims some participant in the conversation supposes... already is in common ground” (Steedman, 2014:10). In a response to a *wh*-type question, the theme is the part contained in the question, in this case what the kids are doing. *Chemistry* and *Law* are rhematic foci. The rheme, or comment, is “a part of the meaning of an utterance with which the

speaker claims some participant in the conversation updates (or fails to update) common ground” (Steedman, 2014:10). In response to a *wh*-type question, this is the answer; in this case the subjects studied at University. In an example like (1), it is generally agreed the theme in the answer (i.e. “She’s doing”) does not contain a focus; focused themes (or contrastive topics) are optional (cf. Steedman, 2000; Büring, 2003). However, it is debated whether rhemes always contain a focus. This is akin to the disputed distinction between ‘information’ focus, i.e. a rheme without a focus, and ‘contrastive’ focus, i.e. a rheme with a focus. Although the theme/rheme dimension is important, to keep the experiment manageable, the marking of themes in Samoan was not investigated in this study. The term ‘focus’ is used to mean rhematic focus in this paper.

In many languages, including English, the primary means of marking focus is increasing the prosodic prominence of the focused constituent, e.g. with a pitch accent or increased phonetic prominence (e.g. see Ladd, 2008; Calhoun, 2010). For example, in (1) and (2), all of the foci would normally be produced with strong pitch accents. I will call this ‘in situ prosodic marking of focus’. Across languages, an increase in prosodic prominence on a word can be achieved in a variety of ways, including raising the height of an accent peak, increasing pitch excursion, differences in timing of the accent peak, increased duration and/or intensity, and hyperarticulation of prominent vowels/syllables (e.g. Baumann et al., 2007; Kügler, 2008; Manolescu et al., 2009; Vanrell et al., 2013). This is often accompanied by decreasing the prosodic prominence of any non-focal words following the focus. Prominence can also be shown by the choice of pitch accent type, both high and low accents can mark focus. Prosodic prominence can further be marked on the edges rather than the heads of prosodic constituents. The relationship between phrasing and prominence is complex, however, in some cases a prosodic boundary inserted to the left or right of the focus marks it as prominent, particularly if combined with de-phrasing of the post-focal material, increasing the pitch range of the focused phrase, and/or lowering the post-focal pitch range (see further section 6, Büring, 2009, and the discussion in Burdin et al., 2015).

Other languages are said to prefer syntactic means of focus-marking, i.e. to have a syntactic ‘focus position’ in which the focus is normally placed, most commonly either initially or finally, or immediately before or after the verb (e.g. see Rebushi and Tuller, 1999; Drubig and Schaffar, 2001; Zimmermann and Onea, 2011; Genzel et al., 2015). Empirical studies have shown that some of the widely cited ‘syntactic focus’ languages, e.g. Spanish, Italian and Catalan, in fact also regularly employ in situ prosodic focus marking, and that preferences for prosodic or syntactic means are subject to considerable dialectal variation (Face and D’Imperio, 2005; Gabriel, 2010; Muntendam, 2013; Vanrell and Fernández Soriano, 2013). Therefore, syntactic and in situ prosodic focus-marking strategies are probably best seen not as mutually exclusive, but gradient preferences that are subject to discourse and other constraints that are not yet fully understood (cf. Face and D’Imperio, 2005). Focus can also be marked with a special morphological marker on the focus or on the verb (e.g. see Drubig and Schaffar, 2001). Some languages are claimed to use different means to mark ‘information’ and ‘contrastive’ focus. For example in Hungarian, contrastive foci are claimed to be fronted, while information foci can be marked by prominence in situ (Kiss, 1998, but see Szendrői, 2003; Genzel et al., 2015; note that Kiss claims that identificational or exhaustive focus involves movement in Hungarian, this covers a slightly different set of discourse contexts to contrastive focus as defined above).

These means of focus marking can reinforce each other, e.g. fronted constituents are often produced in a separate intonational phrase, therefore they are both syntactically and prosodically marked off from the rest of the sentence. However, a growing number of researchers have hypothesised that the relationship between prosodic and syntactic focus-marking is deeper than this (e.g. Vallduví, 1990; Truckenbrodt, 1995; Vallduví and Engdahl, 1996; Zubizarreta, 1998, 2010; Van Valin, 1999; Ladd, 2008; Szendrői, 2003; Samek-Lodovici, 2005; Büring, 2009; Féry, 2013). That is, there is an over-arching generalisation that the focus needs to be aligned with the position of maximal prosodic prominence in the sentence (Truckenbrodt, 1995; Büring, 2009). Different languages have different constraints on how the prosodic and syntactic structure can be produced to achieve this, resulting in apparent preference for either a prosodic or a syntactic focus-marking strategy; but the prediction is that syntactic focus marking will turn out to be prosodically motivated. It has also been argued that morphological focus markers can help achieve a particular prosodic structure, thereby encompassing morphological focus marking in this generalisation as well (e.g. Büring, 2009; Féry, 2013). For example, in English, word ordering is relatively inflexible, but the prosodic structure can be reasonably freely reorganized to align the maximal prominence with the focus (cf. Calhoun, 2010). However, in Spanish, the prosodic structure is relatively inflexible, so if the focus does not fall in the default (final) position of maximal prominence (or nuclear accent) in the basic word ordering, then the word ordering can be changed, e.g. (CAPS show the nuclear accent, from Büring, 2009:197):

- (3) Q: *Quién compró el periódico ayer?*  
Who bought the newspaper yesterday?
- A: *Ayer compró el periódico JUAN.*  
Yesterday bought the newspaper Juan.

That is, in both cases the word ordering is prosodically motivated. As noted above, it is also possible to use in situ prosodic marking of focus in Spanish. However, in Castilian Spanish at least, this strategy is less common for informational focus marking than the final placement shown in (3) (Face and D'Imperio, 2005, though see Vanrell and Fernández Soriano, 2013). Accounting for this variation is a separable question from the one of whether a given language has a consistent 'most prominent' position within its prosodic structure, and if so, whether focus-related word order variation results in movement of the focus to this position.

To evaluate whether the prediction that syntactic focus-marking strategies are prosodically motivated holds for a given language, it is necessary to have a good understanding of the prosodic structure of that language. For a prosodic unit, e.g. a prosodic word containing a focus, to be maximally prominent, it must be the head of the largest prosodic unit, e.g. an intonation phrase, which contains that unit. As discussed above, prominence can be indicated in a variety of ways. Unfortunately, in many languages in which focus marking has been studied, such information about the prosodic structure is not available. However, for those in which it is, the 'focus is maximally prominent' principle holds for a good range of languages (though see Zerbian, 2007; Downing and Pompino-Marschall, 2013).

## 1.2. Background on Samoan

Like other Polynesian languages, Samoan has relatively simple phonology and phonotactics. There are ten consonant phonemes (/f, ŋ, l, m, n, p, s, t, v, ʔ/) (plus /h, r, k/ in loan words), and five vowel phonemes (/a, e, i, o, u/) (Mosel and Hovdhaugen, 1992:ch. 2).<sup>1</sup> Vowel length is phonemic. Lexical stress falls on the penultimate mora (Zuraw et al., 2008).

Basic word order is Verb-Subject-Object (VSO) (Chung, 1978:14; Hunkin:103), e.g.<sup>2</sup>:

- (4) Na toso e Sione le maea  
 PAST pull ERG Sione DET rope  
 'Sione pulled the rope'

Samoan is morphologically ergative, i.e., in (4) the object, or absolutive, *le maea* is unmarked for case, while the subject, or ergative (the agent), *Sione* is preceded by the particle *e* (Chung, 1978:54–55). Syntactically, the agent sometimes aligns with the subject role (e.g. only ergative NPs and intransitive subjects can be realised as clitic pronouns, Chung, 1978:34–37), while sometimes the object does (e.g. with fronting constructions, see below). As the alignment of the subject role (S) with either the Agent (A) or the Object (O) is not clear (see Dixon, 1994; Mosel and Hovdhaugen, 1992:773), I shall avoid the term 'subject', and only use the terms verb, agent and object (VAO) (following the convention in Dixon, 1994).

There is a long history of research on Samoan syntax and grammar (e.g. Pratt, 1960; Churchward, 1951; Milner, 1966; Pawley, 1966; Chung, 1978; Mosel and Hovdhaugen, 1992; Koopman, 2012), and some on aspects of Samoan phonology (e.g. Conday, 1990; Schütz, 2007; Zuraw et al., 2008) and discourse (e.g. Ochs, 1982; Duranti, 1988; Duranti and Ochs, 1996). However, to my knowledge, there has been no previous research looking directly at the prosodic and syntactic expression of focus in Samoan. There are, however, several relevant sections in the major Samoan grammar (Mosel and Hovdhaugen, 1992). Mosel and Hovdhaugen (1992:448–451) state that the ordering of arguments following the verb is relatively free, and "the argument on which the speaker wants to focus as an essential part of the new formation directly follows the verb" (except for non-clitic pronouns which always follow the verb). From this definition, and the examples given, it is not clear the extent to which their notion of focus overlaps with that used here.

Mosel and Hovdhaugen (1992:40–42) also provide a brief, impressionistic overview of intonation. They state that stressed syllables can be accented: this is shown as a series of rising pitch accents which downstep over the intonation phrase (p. 41, Fig. 2.33). They also say that "the only obligatorily accented phrase is the last one of the sentence...[which] is also characterized by an obligatory tone raising", i.e. it has a higher peak than the preceding accent. An "obligatorily raised" final accent is suggestive of a nuclear accent in the European sense, which normally aligns with focus (e.g. see Ladd, 2008). However, putting these two observations together, it looks like Samoan is an exception to the 'focus is maximally prominent' principle. That is, if there are at least two post-verbal arguments, and the focus is on the first following the verb, then it cannot carry the "raised" accent, which compulsorily falls on the last word. Mosel and Hovdhaugen (1992) do not make this link, but it was certainly worth exploring further. Mosel and Hovdhaugen (1992:42) also give one example of "emphatic stress... used for contrastive purposes", on the verb in a sentence with a fronted noun phrase (see below). This implies that prominence can be raised in situ to mark contrastive focus at least. However, there is no information on how widespread this is.

<sup>1</sup> In this paper I follow Samoan orthography, where <V̄> = /V:/, <'> = /ʔ/ and <g> = /ŋ/.

<sup>2</sup> Abbreviations in the morpheme glosses are (largely following Mosel and Hovdhaugen (1992:xix)): DEM = demonstrative, DET = determiner, ERG = ergative, ES = ergative suffix, PAST = past tense, PRES = presentative.

Finally, Mosel and Hovdhaugen (1992:464–476) discuss the “fronted presentative noun phrase” construction, involving a noun phrase, preceded by the particle 'o, before the verb. I translate this as a cleft in English (see further below). The fronted phrase can be an argument of the verb, or a temporal or locative adverbial, e.g.:

- (5) a. 'O Sione na tosoa le maea  
 PRES Sione PAST pull-ES DET rope  
 'It was Sione who pulled the rope'
- b. 'O le maea na toso e Sione  
 PRES DET rope PAST pull ERG Sione  
 'It was the rope that Sione pulled'

As can be seen, when the agent is fronted, there is a suffix *-a* on the verb, but not when the object is fronted (the suffix also does not appear with fronted intransitive subjects, hence in fronted constructions objects align with the subject role). This suffix takes a number of forms including *-ia*, *-ina* or *-a*; it appears in a range of contexts, and its function is disputed (e.g. see Chung, 1978:81–93; Mosel and Hovdhaugen, 1992:747–763; Cook, 1996; Otsuka, 2011). I follow Mosel and Hovdhaugen (1992) in labelling it an 'ergative suffix'.

The fronting construction is very common. Mosel and Hovdhaugen (1992:474–475) list its pragmatic functions as introducing the topic of discourse, referring to contrasting participants, as a means of emphasis, and to denote where and when a state of affairs takes place. This suggests that fronting can mark focus, particularly contrastive focus, but that is not its only function (and note that these other functions will not be explored in this study). No information is given about the intonation of fronted constructions. Mosel and Hovdhaugen (1992) state that initial arguments marked with 'o are fronted, but do not state explicitly whether this means these are clefts or dislocated arguments of the main clause. However, in related languages Niuean and Tongan, the equivalent phrases (marked with the cognate *ko*) are analysed as clefts (Massam, 2000; Otsuka, 2005). In recent work, Hohaus and Howell (2014) argue that 'o-fronted phrases in Samoan are dislocated arguments, although they acknowledge the evidence is somewhat equivocal (see also Potsdam, 2009). Massam (2000) identifies these initial phrases in Niuean as predicates, i.e. having a verbal function, with the following verbal clause acting as a headless relative clause (a similar analysis has been proposed for equivalent initial phrases in Maori, Bauer, 1991, 1997, and Malagasy, Paul, 2001).

In a recent study, Hohaus and Howell (2014) propose that 'o is a morphological focus marker in Samoan. They claim that fronted phrases with 'o are focused, and cite as supporting evidence that the other functions of the 'o particle in Samoan have also been claimed to be associated with focus in the literature, namely marking the question word in questions (cf. 7), in the particles *na'o* ('only') and *so'o* ('any') and the future tense marker 'o *le 'ā*. Note that adverbials can be fronted without the preceding 'o particle, but arguments cannot, and when it is the adverbial or oblique argument that is fronted, there is an anaphoric pronoun in the lower clause (Mosel and Hovdhaugen, 1992:462–471).

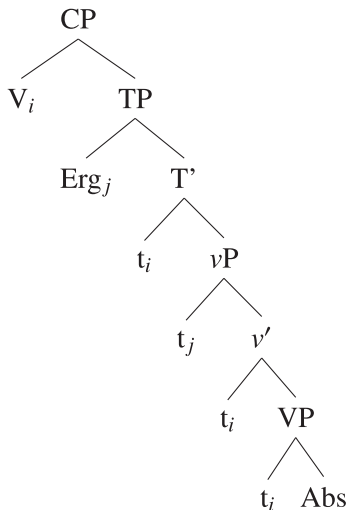
A good description of Samoan intonation has recently been done in the Autosegmental-Metrical framework (Ladd, 2008) by Orfitelli and Yu (2009), based on one 21 year-old male speaker (see also Yu, 2009). Further details of their analysis will be given in section 4, but notably, Orfitelli and Yu uncovered an intonational feature, i.e. a rising phrase tone H-, with a very interesting distribution. That is, Orfitelli and Yu found that for most prosodic words, there was a rising accent whose peak was associated with the stressed mora of the lexical head. However, in some cases, the peak was associated with the end of the prosodic word (see examples in section 4), consistent with the word ending in a H- phrase tone. These tones appeared at the end of fronted phrases, in lists and coordination, and intriguingly, at the end of the word before the absolutive. Yu (2009) analyses this last use of H- as a tonal marker of absolutive case, akin to the ergative lexical case marker *e*. The H- consistently appeared before the absolutive in their data, no matter the order, number and length of the arguments following the verb. It did not appear when the absolutive was fronted, but there are no case markers in fronted phrases, so this is expected. However, as Yu (2009) acknowledges, a tonal case marker would be highly unexpected in a generally non-tonal language family.<sup>3</sup> Below, I will propose that it is more likely these tones mark the edges of phonological phrases. There is a question then of what syntactic constituent they are aligned with. Mosel and Hovdhaugen (1992) are not specific about the internal structure of the verb phrase, and I am not aware of a syntactic analysis of Samoan which would allow us to evaluate this question (though see Koopman, 2012). Therefore, in (6), a proposal within the generative framework by Otsuka (2005) for the syntactic structure of VSO and VOS sentences

<sup>3</sup> Note that the related Polynesian languages Tongan and Pukapukan have the so-called 'definitive accent', which marks an NP as definite. Recent careful phonetic studies have shown that, despite the name, this does not involve pitch features but rather doubling of the final mora in the last word of the noun phrase (Taumoevalau, 2002; Salisbury, 2002; Anderson and Otsuka, 2006; van Ryn, 2013). This is therefore not a tonal morphological feature, but more akin to reduplication. According to Conday (1990), Samoan has a similar feature which is restricted to locative NPs. Conday's study shows the phonetics of the marking seem to also be consistent with doubling of the final mora in the NP.

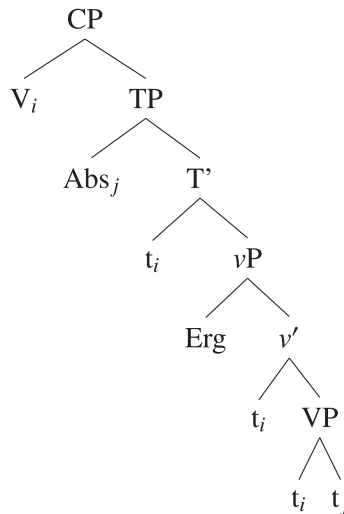
(VAO and VOA in my terms) in Tongan is set out (Erg = ergative, i.e. S/A, Abs = absolute, i.e. O). Samoan and Tongan are closely related and the relevant facts are similar: Tongan also has basic word order VSO and is morphologically ergative, although it has both ergative and absolutive lexical case markers. This is therefore a reasonable proxy.

(6) (Otsuka 2005: Tongan)

a. VSO



b. VOS



As can be seen, there is no consistent syntactic constituent boundary type before the absolutive, but not the ergative, in each structure. (The same holds if the ergative argument were fronted in (6a)). Another possibility could be that the H-tone directly marks focus. In some ergative languages new information is usually introduced in the absolutive case (du Bois, 1987; Dixon, 1994). If this were true in Samoan, it would suggest the 'absolutive' tone marks the beginning of the focus (Yu et al. did not look at focus in their study). This would imply the tone should be suppressed when the absolutive is not the focus. Although this would not seem to fit with Mosel and Hovdhaugen's remarks about focus in Samoan above, it was worth investigating.

To my knowledge, there has also been very little research on the prosodic and syntactic expression of focus in other Polynesian languages. Otsuka (2005) looked at word ordering in relation to focus. In her analysis, VSO (VAO) is used when there is QUD focus on the subject, and VOS (VOA) where there is QUD focus on the object. That is, the QUD focus directly follows the verb. She states that *ko*-clefts ( $\equiv$  'o) are strongly preferred by speakers to express contrastive or corrective focus. This then looks very similar to the picture for Samoan implied in Mosel and Hovdhaugen (1992). Otsuka states that stress cannot be used in situ to mark focus, but does not discuss the prosodic structure of Tongan in general.

Also of relevance is Bauer's (1991) account of a construction in Māori involving fronting the subject (but not other arguments), preceded by *ko* (see also Bauer, 1997; Pearce, 1999). Māori also has basic word order VSO (or VAO), but is not ergative. Bauer states that when the *ko*-fronting construction is used to mark focus, it takes the main stress in the sentence (which would normally fall on the initial verb). She says that otherwise stress cannot be moved between constituents, at least for older speakers. Interestingly, she shows that initial *ko*-phrases can also be used to mark topics (my themes), however, then the main stress does not shift from the verb. (Note that there are other focus-marking constructions in Māori, which all involve fronting the focus, see Bauer, 1997). Given the obvious parallel between these constructions and 'o-fronted phrases in Samoan, it would be interesting to see if there is a similar difference in the prosody depending on whether the phrase is rhematic or thematic (focal or topical).

## 2. Experiment

This study looked at how focus is marked in Samoan. As there has been so little previous research, it was an exploratory study, aimed at providing reasonable coverage of means of focus marking in Samoan, while still being manageable. This study only considers focus marking in transitive sentences where both the agent and the object are expressed. Cross-linguistically, there are often asymmetries in the expression of subject (agent) and object focus (e.g. see Zimmermann, 2011), so it was felt to be important to include both of these. As outlined above, in some languages it

has been claimed that there are distinct markers of QUD and contrastive focus, so both of these types of focus were included to see if this were the case in Samoan. However, any distinction between theme and rheme (or topic and focus) was not explored.

In the experiment, the realisation of broad focus sentences, e.g. sentences where the context did not set up a focus on any particular constituent, were compared with sentences where there was a focus on either the agent or the object. The agent or object focus was either a QUD or contrastive focus. This created a somewhat complex experimental design: it was not possible to fully cross focus argument (broad, agent, object) with focus type (QUD, contrastive), as broad focus cannot be contrastive. Of interest was firstly the syntactic construction used. It was predicted, based on the research reviewed above, that broad focus would be realised using the basic VAO word ordering, while for the agent and object focus sentences, the focused word would either be fronted, or be immediately post-verbal. If there was a difference between QUD and contrastive focus, then following from Otsuka's (2005) results for Tongan, we would expect the focused word to be immediately post-verbal for QUD focus, and fronting to be used for contrastive focus. Secondly, the prosodic realisation of the sentences was analysed. The overall prosodic structure of each sentence type (fronted and VAO/VOA) was examined to see, if there was a syntactic 'focus position' (e.g. the initial position), whether this could be prosodically motivated, e.g. because that position generally has the greatest prominence in the sentence (cf. section 1.1). Since there has been so little research on Samoan prosody, its structure was analysed in some detail to establish this. The prosodic analysis also aimed to show whether emphatic accents could be used to mark focus 'in situ', i.e. where the basic VAO order was used in more than one focus condition (broad, agent, object), as seemed to be suggested was possible in Mosel and Hovdhaugen (1992). Further, the analysis looked at whether there were any prosodic differences between the realisation of QUD and contrastive focus. Existing research on unrelated languages would suggest that if such a difference exists, then contrastive foci would be expected to be realised with greater phonetic prominence than QUD foci (e.g. see Calhoun, 2012). Finally, the analysis looked at the distribution of H- tones, to find out whether these consistently appear before the absolutive argument, as found by Yu (2009), regardless of the focus status of the absolutive; following the discussion above.

The methodology used was a production study involving multiple native speakers describing simple events in pictures to a partner. This methodology is similar to the 'Description of a Single Situation' task in the Questionnaire on Information Structure (Skopeteas et al., 2007). This provides data that is reasonably controlled, but is still produced in a fairly natural setting with clear communicative goals, which is important when exploring discourse features like focus. Participants took part in pairs. One participant, the answerer, was looking at a picture of an event, e.g. a character called Sione pulling a rope (see Fig. 1 and further in section 2.2). The other participant, the questioner, read questions like the following, designed to elicit the type of focus in bold in the response ("Q-Focus" = QUD focus, "C-Focus" = contrastive focus). The first participant answered while looking at a picture of the event. This design allowed participants to choose both the syntactic construction and prosody of their response. The syntax and prosody of the responses were analysed.

- (7) a. 'O le ā le mea na tupu analeilā?  
PRES DET what DET thing PAST happen earlier  
'What happened earlier?' (**Broad Focus**)
- b. 'O ai na tosoa le maea analeilā?  
PRES who PAST pull-ES DET rope earlier  
'Who pulled the rope earlier?' (**Agent Q-Focus**)
- c. 'O le ā le mea na toso e Sione analeilā?  
PRES DET what DET thing PAST pull ERG Sione earlier  
'What did Sione pull earlier?' (**Object Q-Focus**)
- d. Na toso e Felila le maea analeilā?  
PAST pull ERG Felila DET rope earlier  
'Did Felila pull the rope earlier?' (**Agent C-Focus**)
- e. Na toso e Sione le ta'avale analeilā?  
PAST pull ERG Sione DET car earlier  
'Did Sione pull the car earlier?' (**Object C-Focus**)

As can be seen, questions designed to elicit QUD focus are realised with the question word in a fronted phrase, whereas the questions designed to elicit contrastive focus are realised using the basic VAO word order. At the time the experiment was designed, it was my understanding that this was the usual way to ask each of these types of questions. However, further discussion with my Samoan advisors suggests that it is also possible to ask the contrastive focus questions using a fronted phrase. With hindsight, it probably would have been better to hold construction type constant across all questions. The possible relevance of this to the responses given will be discussed in section 3.



Fig. 1. Picture for the event *Na toso e Sione le maea analeilā* “Sione pulled a rope”, as an example of the type of picture the answerer saw in the experiment.

### 2.1. Participants

Ten participants took part in pairs. The speakers were intended to be native speakers of Samoan who grew up in Samoa, but were living in New Zealand, as the experiment was conducted in New Zealand. Three of the speakers turned out to have grown up in New Zealand, so their data was excluded. Table 1 gives information on the remaining seven. There was intended to be an approximate gender balance among the speakers; however, unfortunately, all three of the excluded speakers were male, so only one male speaker was included in the analysis. As can be seen, participants fell into two uneven groups: older (39 years and older) and younger (25 years and younger), and had lived in New Zealand between 1 and 17 years. Most participants arrived in New Zealand in their late teens/early 20s, the earliest was 16 years old. Participants were asked to estimate the time they spent speaking Samoan and English each day. This is reported in Table 1 as the percentage of time they reported speaking Samoan. As can be seen, speakers R and T unfortunately did not answer this question. All speakers reported having learnt English in school from the age of 6. Information on the exact origin of the speakers was collected, but it was not found to have any evident effect on the results. Regional variation in Samoan within Samoa is reported to be very small (Mosel and Hovdhaugen, 1992:8). Participants received supermarket vouchers in recognition of their participation.

### 2.2. Materials and design

Twenty scenes were constructed involving one of six characters doing a simple action, e.g. pulling a rope (as in Fig. 1); see Appendix for a full list. The aim was for there to be sufficient characters for them not to repeat too frequently, but not too many so the participants could memorise their names. To assist with this, the characters were differentiated by age and sex, i.e. a old man and woman, a young man and woman, and a boy and girl. Characters were divided among the scenes

Table 1

Information about speakers in the experiment, including their sex, age, the number of years since they moved to New Zealand, and the percentage of Samoan (as opposed to English) they reported speaking each day.

Speaker	Sex	Age	Years in NZ	Samoan spoken daily
M	F	50	2	90%
K	F	39	17	80%
R	F	25	9	N/A
N	M	25	6	38%
T	F	21	3	N/A
F	F	20	2	67%
E	F	18	1	42%



as evenly as possible. The scenes were designed to involve words with particular phonological properties. The verbs were all two morae long, and the character and object names three morae, to control for word length. For the character and object names, the last two morae (including the stressed mora) contained only sonorant sounds, to facilitate the  $f_0$  (fundamental frequency) analysis.

For each of the twenty scenes, five questions were constructed to elicit each of the five focus conditions: broad focus, agent Q-focus, object Q-focus, agent C-focus and object C-focus (as in (7)). This created 100 question–answer pairs. These were split into five blocks of 20. The order of presentation of the focus conditions followed a Latin Square design. Each scene occurred once in each block, in pseudo-random order, i.e. the same character, verb or object did not appear in two adjacent items (including in the contrastive focus question), to avoid any between-item contrast or givenness effects. There were no fillers.

Two Powerpoint presentations were constructed, one with the questions and the other with the pictures. There was also a familiarisation Powerpoint, to enable the participants to learn the names of the six characters and the intended object names; as well as a practice Powerpoint, containing six scenes not in the main experiment, to familiarise the participants with the experimental procedure.

### 2.3. Procedure

Participants were seated next to each other at computers angled so that they could not see each others' screens. They began with the familiarisation and practice Powerpoint presentations. For the practice and the main experiment, they swapped between the questioner and the answerer role at the end of each block. Each participant then completed two blocks in each role. Therefore, each participant saw each scene in two focus conditions as answerer (and two further as questioner), and they answered eight questions in each focus condition. In total, each participant took part in 80 question–answer pairs as either the questioner or the answerer, after completing the familiarisation and practice slides. There were a total of 280 sentences recorded, i.e. 40 sentences for each of the seven participants (as speaker).

The experimental sessions were conducted almost entirely in Samoan, both in the Powerpoint instructions and in interactions with the research assistant. The participants were asked to imagine that each scene was something that happened recently (e.g. last night). The questioner read each question, as it was printed on the Powerpoint slide (one slide per question). The answerer was asked to give an answer (based on the picture they were looking at) that seemed natural, and was a simple but full response to the question. This was done to avoid either elliptical or overly elaborate responses. Participants were recorded using head-mounted microphones directly to hard-drive at a sampling rate of 44 kHz. The whole session took around 45 min.

### 3. Syntactic marking of focus

To start with, the syntactic construction of the answers was analysed by focus condition. Almost all of the answers were one of the following types (using the paradigm from (7); the labels show the order of constituents, e.g. AVO). Participants often included the time adverbial from the question.

- (8)
- a. *Na toso e Sione le maea (analeilā)*  
PAST pull ERG Sione DET rope (earlier)  
'Sione pulled the rope (earlier)' (**VAO**)
  - b. *Na toso le maea e Sione (analeilā)*  
PAST pull DET rope ERG Sione (earlier)  
'Sione pulled the rope (earlier)' (**VOA**)
  - c. *'O Sione na tosoa le maea (analeilā)*  
PRES Sione PAST pull-ES DET rope (earlier)  
'It was Sione who pulled the rope (earlier)' (**AVO**)
  - d. *'O le maea na toso e Sione (analeilā)*  
PRES DET rope PAST pull ERG Sione (earlier)  
'It was the rope that Sione pulled (earlier)' (**OVA**)

Only six of the 280 answers were not one of these types: three were elliptical (omitting the given argument), and three were different, more elaborate syntactic constructions. As these were so rare, they were omitted from the analysis. 12 further sentences were excluded because the participant mistakenly replied "yes" to one of the contrastive focus questions.

Table 2

Percentage of syntactic constructions of each type used in the answers by focus condition. First the results over all the speakers are shown, then these speakers are divided into sub-groups according to their focus-marking strategy in the lower two sections: 'front focus' or 'front agent focus'.

Focus type	Syntactic construction								Total	
	VAO		VOA		AVO		OVA			
	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>		
Broad focus	94	51	6	3	0	0	0	0	54	
Agent Q-focus	47	25	0	0	53	28	0	0	53	
Agent C-focus	63	32	0	0	37	19	0	0	51	
Object Q-focus	71	40	0	0	0	0	29	16	56	
Object C-focus	73	35	0	0	2	1	25	12	48	
Total	70	183	1	3	18	48	11	28	262	
<i>Front focus speakers (K and F)</i>										
Agent Q-focus		0		0		16		0	16	
Agent C-focus		2		0		14		0	16	
Object Q-focus		1		0		0		15	16	
Object C-focus		1		0		1		12	14	
Total		4		0		31		27	62	
<i>Front agent focus speakers (M and N)</i>										
Agent Q-focus		2		0		12		0	14	
Agent C-focus		7		0		5		0	12	
Object Q-focus		15		0		0		1	16	
Object C-focus		12		0		0		0	12	
Total		36		0		17		1	54	

Table 2 shows the distribution of syntactic constructions by focus condition. As can be seen, participants used the basic VAO order almost all the time for broad focus, as expected. Over both types of agent focus, participants fronted the focus (AVO) approximately half the time, otherwise VAO order was used. For object focus, fronting (OVA) was used about 30% of the time, and VAO order otherwise. For object focus, there was little difference between QUD focus and contrastive focus. For agent focus, it looks as if contrastive focus could be less likely to be fronted than QUD focus. VOA order occurred only three times in the data, all in broad focus and all from the same speaker (speaker M) (contrary Mosel and Hovdhaugen, 1992:448–451, see section 1.2). A generalised logit mixed model was fitted to test the likelihood of an argument being fronted (as opposed to not fronted) using the *lmer* function in the *lme4* package in *R* (Bates and Maechler, 2009; R Core Team, 2013). Focus argument (agent or object) and focus type (QUD or contrastive) were fixed effects, and Item a random effect. Broad focus sentences were excluded from the model as focus type does not vary for broad focus. Speaker could not be included as a random effect because the high level of between speaker variability meant that the model did not converge with this effect included (see below and bottom of Table 2). The model showed that the argument was more likely to be fronted for agent focus ( $\beta = 0.775$ ,  $p = 0.009$ ), but there was no significant effect of focus type on word order ( $p = 0.19$ ) ( $N = 208$ , log likelihood =  $-132.3$ , the intercept, Focus = object, focus type = QUD, was significant,  $\beta = -0.781$ ,  $p = 0.002$ ). The interaction of focus argument and focus type was tested but was not significant. Therefore the apparent difference between QUD and contrastive focus in agent focus is not significant.

However, a clearer picture emerges looking at the data by participant, as there were large differences in how different speakers marked focus (see lower part of Table 2). Three of the participants, R, T and E, always used VAO order, i.e. they did not use syntax to mark focus (the 'no syntactic focus' speakers). Two participants, K and F, fronted the focus almost all the time (the 'front focus' speakers); while two, M and N, fronted focused agents most of the time, but not focused objects (the 'front agent focus' speakers). The latter group showed the dispreference for fronting contrastive agent foci, as opposed to QUD foci. It is possible that for these speakers, this trend was related to the form of the question, i.e. in the QUD focus questions, the question word was fronted, whereas in the contrastive focus questions, basic VAO order was used (see (7)), and this could have primed these speakers to use the same syntactic construction in the response. However, if this were the source of this effect, it is apparently not very strong, as it is confined only to agents, and these two speakers. Overall, it appears the 'front focus' and 'front agent focus' speakers primarily use syntactic means to mark which argument is in focus, whereas the 'no syntactic focus' speakers do not. There is no clear evidence for a distinction between QUD focus and contrastive focus.

Interestingly, all the 'no syntactic focus' speakers were under 25 years old, while the two older speakers (M and K) were in the focus fronting groups (although the younger speakers F and N were also). A plausible explanation for these findings,

then, is that fronting is becoming less common as a focus-marking strategy in Samoan. This could be contact-related language change given the influence of English with its more fixed word order (see further section 5).

#### 4. Prosodic structure in Samoan

The next analysis sought to establish the phonological structure of the different sentence types produced, before looking at focus effects within each type (in section 5). The data was the same as in section 3, except that 22 disfluent sentences were omitted. The analysis was conducted by the author. Orfitelli & Yu's (2009) analysis, in the Autosegmental–Metrical framework (Ladd, 2008), was used as a starting point. Analyses were carried out using Praat (Boersma and Weenink, 2013). The analysis was done perceptually, considering the range of possible phonetic cues to prosodic structure (prominence and phrasing) discussed in section 1.1. As the analysis was done by listening to the speech, along with a transcription and translation, the syntactic structure of each sentence was available while the prosody was being analysed. However, the focus status of each sentence was not available to prevent circularity in the analysis.

Below, the inventory of prosodic types found in these data, and how they were identified, is described. The distribution of these types is then discussed. Finally, the findings of the prosodic analysis are related to focus marking.

##### 4.1. Inventory of prosodic types

The proposed tonal inventory of Samoan, as found in these data, is as follows:

- **Pitch accents:** L+H\*, L+!H\*, H\*, !H\* (associated with the stressed mora in a word)
- **Phrase tones:** H-, !H-, L+H-, L+!H- (associated with the end of a phonological phrase)
- **Boundary tones:** L% (associated with the end of an intonational phrase)

These tonal events will be described and exemplified in the discussion below. This inventory largely agrees with that proposed by Orfitelli and Yu (2009), with some differences in notation and the distribution and use of certain tones that will be discussed below. Orfitelli and Yu (2009) also identify a rising final boundary tone, H%. This was not attested in these data. It was found by Orfitelli and Yu (2009) to be used to express uncertainty and disbelief, and in echo and tag questions; none of these discourse types were found in my data.

Fig. 2 shows the realisation of a typical broad focus VAO sentence (the sound files for all the Samoan examples in this section are included with the supplementary data for this special issue). As Orfitelli and Yu (2009) found, each prosodic

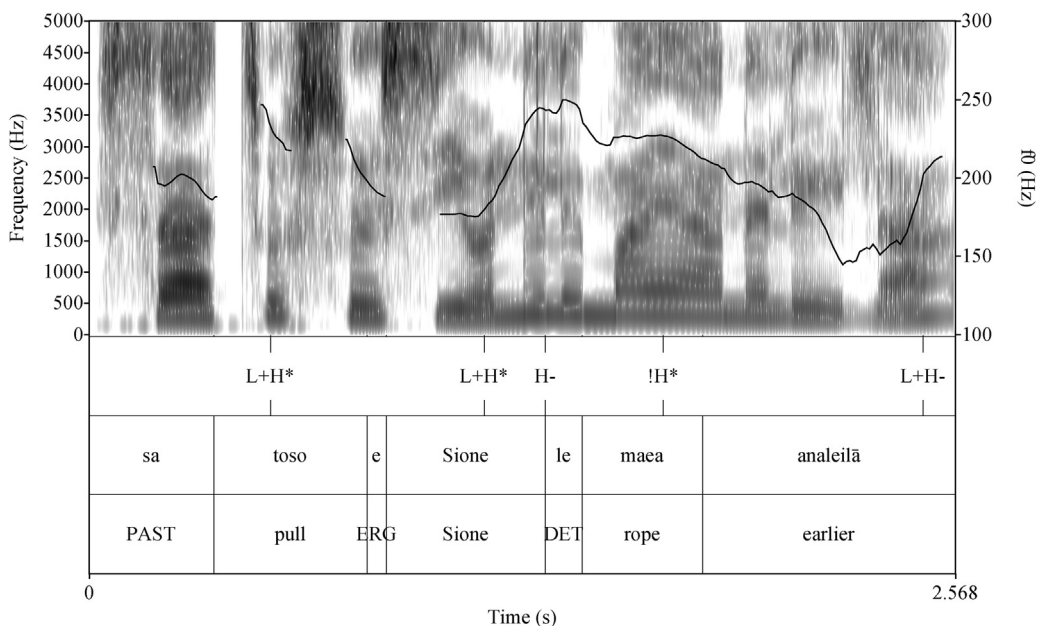


Fig. 2. Prosodic realisation of a typical broad focus VAO sentence in Samoan (speaker K).

word is usually associated with a rising pitch accent, which I label L+H\*, i.e. a low, L, pitch target rising to a peak associated with the stressed mora, H\* (Orfitelli and Yu label these ‘LH’ accents). (As can be seen, the rise on *Sione* in Fig. 2 is later, this is because of the following H- phrase tone, see further below. The phrase accent (–) notation on the final accent will also be explained below). Prosodic words consist of a lexical head, plus any surrounding particles (usually to the left). As Orfitelli and Yu (2009) found, the accent rise was associated with the penultimate mora (cf. Zuraw et al., 2008), i.e. when the final vowel in the word was short, the peak was associated with the penultimate vowel (e.g. with [o] in *toso* in Fig. 2), whereas when the final vowel was long, the peak was associated with that vowel (e.g. with [a:] in *analeilā* in Fig. 2). Accents were sometimes produced without a clear initial L target (e.g. *maea* in Fig. 2); these were labelled H\* (or !H\*). In these cases, more weight was placed on other cues to prominence, such as duration and amplitude, in deciding accent status. For most speakers, (!)H\* accents had a different distribution to the L+(!)H\* accents, and therefore seemed to be a different accent type. (Orfitelli and Yu, 2009 also found H\* accents, but only on mora with secondary lexical stress; in my data, they were also found marking primary lexical stress on some words). Two speakers, N and R, produced (!)H\* accents regularly in all positions. These speakers generally sounded “flatter”, probably reflecting lack of engagement in the task. Accents produced with a perceptibly lower peak than the preceding peak were marked downstepped (!). (Note that although Orfitelli and Yu found downstepping across accents in a phrase, they did not mark this as a separate accent type). As it was not initially clear what the domain of downstep in Samoan is (see further below), downstep was marked at the intonation phrase level. Initially, accents which were perceptibly higher were marked as upstepped, however, these usually seemed to pattern with the non-downstepped accents.

f0 rises could be associated with prosodic constituent boundaries, rather than stressed morae, e.g. in Fig. 2 the f0 track does not peak during the stressed mora [o] in *Sione*, but is rather associated with the end of the prosodic word *e Sione* (the actual peak ‘spills over’ into *le* at the beginning of the following prosodic word in this case). When the lexical head was not final in the prosodic word, the peak was still aligned with the end of the prosodic constituent (e.g. when a demonstrative *lē* or *lea* followed a fronted noun, see Fig. 5). I analyse these as high phrase tones (H-) marking the ends of phonological phrases (cf. Orfitelli and Yu, 2009; Yu, 2009) (see further below). If there were other phonetic cues to a boundary accompanying these tones, such as final lengthening, they were very subtle (as also noted by Yu, 2009). These tones could be downstepped relative to the preceding H-, but not preceding accents in the phrase (however note that downstepping was labelled relative to the preceding tonal event in the intonation phrase, be it pitch accent or phrase tone). As can be seen on *Sione* in Fig. 2, in the cases where a word was marked with a H- phrase tone, it was very difficult to tell if there was also a L+H\* accent on the word. These words are marked as accented, as they did sound prominent; however, it is possible that the final word in each phonological phrase, like *Sione*, could be analysed as having a single intonation event, a rising L+H- phrase accent. I leave this question for future research.

Sentences were usually produced as a single intonational phrase (except when disfluent). As Orfitelli and Yu (2009) and Mosel and Hovdhaugen (1992:40–42) found, these usually ended in a low boundary tone (L%) (see Fig. 5). However, in cases where the final vowel was long, this final fall was not apparent in the pitch trace (although it often sounded as if it was there), as can be seen in Figs. 2–4. My analysis of this is that there is an underlying low boundary tone, L%, in these cases, but it is truncated. That is, the H target of the phrase accent is associated with the end of the stressed mora, e.g. [a:] in *analeilā* in Fig. 2, and there is no following mora on which to realise the fall, leaving an apparent final rise (cf. Ladd, 2008:180–183). There did not seem to be any pragmatic distinction between these apparent final rises, and the sentences ending in a final fall. However, I did not annotate a fall where there was not one in the pitch trace, to keep the transcription as transparent as possible.

#### 4.2. Distribution of prosodic events

The most common intonational pattern for each syntactic type is shown below in (9) (see Figs. 2–5 for examples). Data from speakers N and R is excluded, as they did not distinguish L+(!)H\* and (!)H\* accents consistently like the other speakers. The last argument (agent, A, or object, O) was produced differently depending on whether or not the time adverbial (T) followed, so these are separated (note all the VOA sentences had the time adverbial). For each argument, the most common accent or phrase tone type is given, with the counts of that tone type below. Where the most common tone type did not account for at least 70% of the data, the next most common tone type is shown in a second row below the argument, along with its counts. In all cases, the two most common tone types for a given argument accounted for at least 70% of the data; infrequent tone choices are not shown. The total number of each syntactic type is also given. The phonological ( $\varphi$ ) and intonational phrases ( $\iota$ ) suggested by the phrase and boundary tones are shown. Note that counts are not given for the final L% boundary tone, as this was often not present when the final word ended in a long vowel, however, in these cases it is assumed to be there underlyingly, as discussed above.

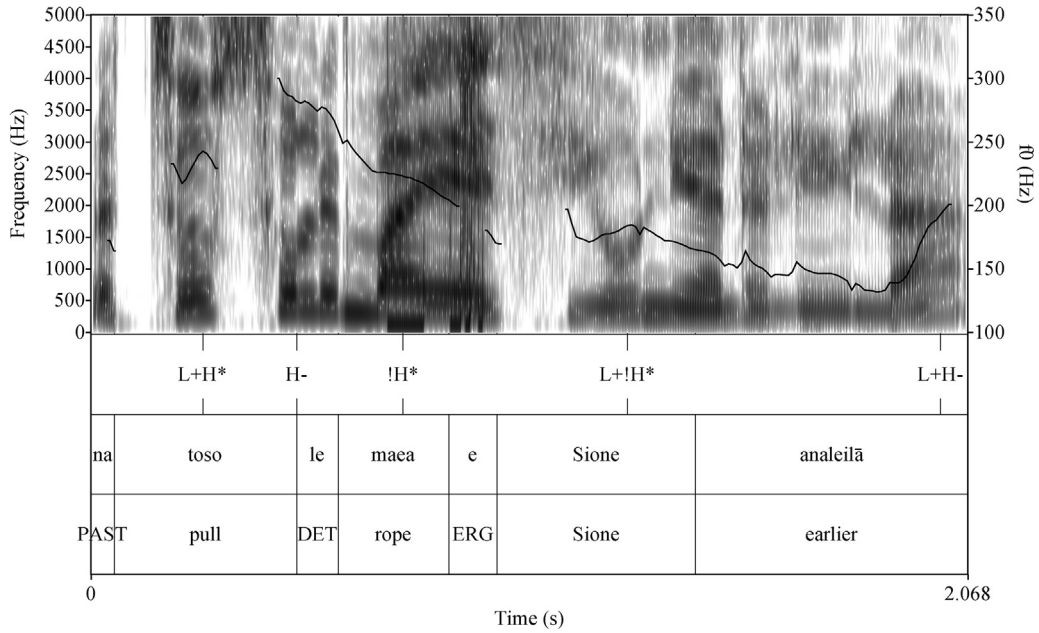


Fig. 3. Prosodic realisation of a typical VOA sentence in Samoan (speaker M).

- (9) a. (( **V** **A** )<sub>φ</sub> ( **O** **T** )<sub>φ</sub> )<sub>i</sub> (cf. Fig. 2)  
 L+H\* L+H\* H- !H\* L+H- L%  
 79% (26) 97% (32) 97% (32) 48% (16) 82% (27)  
 L+!H\*  
 24% (8) N=33
- 
- b. (( **V** **A** )<sub>φ</sub> ( **O** )<sub>φ</sub> )<sub>i</sub>  
 L+H\* L+H\* H- L+!H- L%  
 81% (59) 63% (46) 95% (69) 53% (39)  
 L+!H\* L+H\*  
 23% (17) 29% (21) N=73
- 
- c. (( **V** )<sub>φ</sub> ( **O** **A** **T** )<sub>φ</sub> )<sub>i</sub> (cf. Fig. 3)  
 L+H\* H- !H\* L+!H\* L+H- L%  
 100% (3) 100% (3) 100% (3) 67% (2) 100% (3)  
 !H\*  
 33% (1) N=3
- 
- d. (( **A** )<sub>φ</sub> ( **V** )<sub>φ</sub> ( **O** **T** )<sub>φ</sub> )<sub>i</sub> (cf. Fig. 4)  
 L+H\* H- L+H\* H- L+H- L%  
 100% (26) 100% (26) 50% (13) 50% (13) 58% (15) 58% (15)  
 L+!H\* !H- !H\* L+!H-  
 46% (12) 46% (12) 31% (8) 42% (11) N=26
- 
- e. (( **A** )<sub>φ</sub> ( **V** )<sub>φ</sub> ( **O** )<sub>φ</sub> )<sub>i</sub>  
 L+H\* H- L+!H\* !H- L+H- L%  
 100% (12) 100% (12) 75% (9) 75% (9) 58% (7)  
 L+!H-  
 42% (5) N=12
- 
- f. (( **O** )<sub>φ</sub> ( **V** **A** **T** )<sub>φ</sub> )<sub>i</sub>  
 L+H\* H- !H\* L+H- L%  
 100% (22) 100% (22) 100% (22) 77% (17) 82% (18) N=22

g. (( O )<sub>φ</sub> ( V A )<sub>φ</sub> )<sub>i</sub> (cf. Fig. 5)  
 L+H\* H- L+!H- L%  
 100% (6) 100% (6) 100% (6) 83%(5) N=6

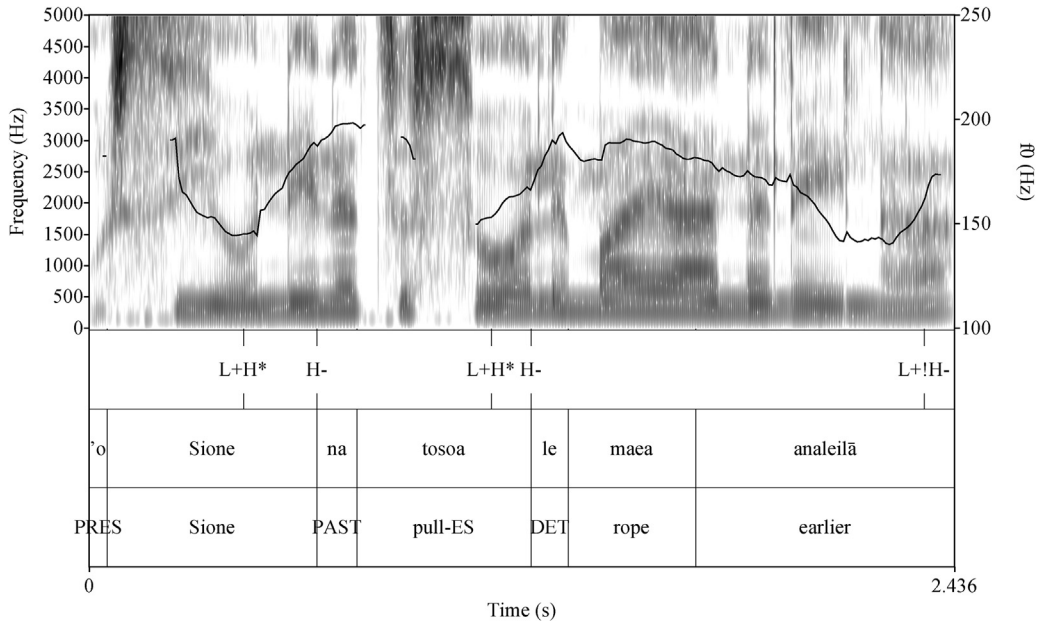


Fig. 4. Prosodic realisation of a typical AVO sentence in Samoan (speaker K).

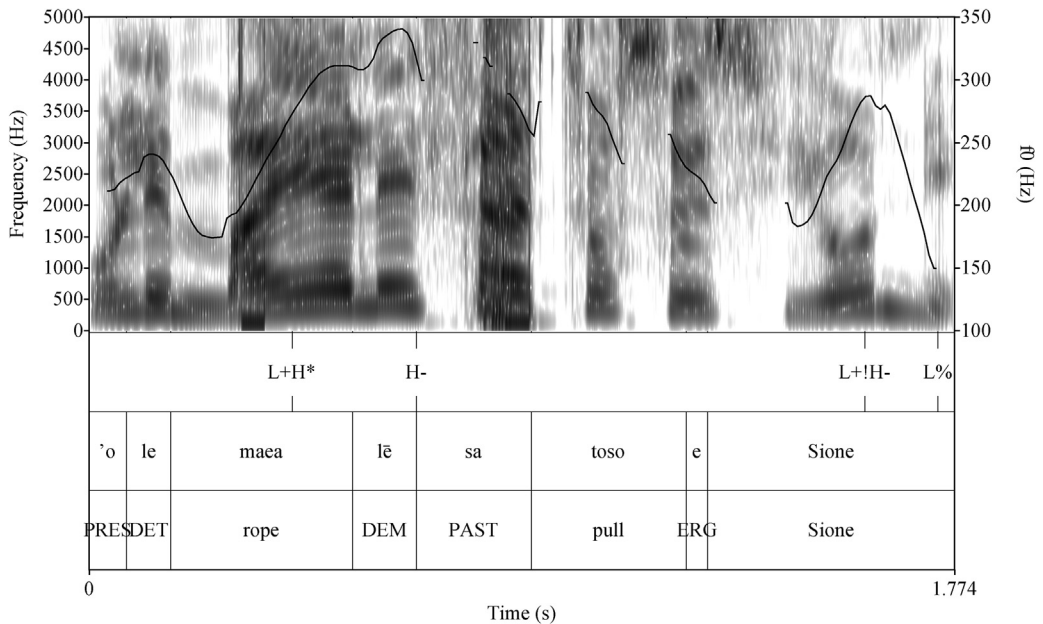


Fig. 5. Prosodic realisation of a typical OVA sentence in Samoan (speaker M).

As can be seen, each prosodic word was marked with a rising pitch accent (L+(!H\*), except following an H- phrase tone, in which case the word was usually either unaccented, or marked with an !H\* accent. The final word always had a rising phrase accent, L+(!H)- (see further below).

Fronted constituents in AVO and OVA sentences always ended in high phrase tones (see Figs. 4 and 5). This was also found by Orfitelli and Yu (2009), and therefore seems to be a general property of fronted phrases, and not directly related to focus (even though in these data the fronted phrase was almost always in focus). As Yu (2009) first observed, these phrase tones were also almost always found on the prosodic word boundary before the object, except where it was fronted, i.e. in VAO, VOA and AVO sentences, but not OVA (see Figs. 2–5). In both cases, I analyse these tones as marking the ends of phonological phrases ( $\varphi$ ), as shown in (9) (contra Yu, 2009, who analyses the pre-object cases as tonal case markers, see further section 6). There were no noticeable phonetic differences between the phrase tones at the end of fronted constituents and before absolutes, and phonologically they seem to pattern exactly the same. For example, accent peaks following an H- were downstepped (except for the verb in AVO sentences, where the verb also carried a H- tone), and this occurred whether the tone followed a fronted constituent or was before the absolute. This is consistent with these being phrase boundaries triggering pitch range lowering in the following phrase (Ladd, 1988; Truckenbrodt, 2002, 2007). Further, in the AVO sentences where two H- tones occurred, speakers usually showed downstep across the two H- tones (but not relative to any accent peaks), again consistent with these being phrase boundaries (Truckenbrodt, 2002, 2007). Yu (2009) and Mosel and Hovdhaugen (1992:40–43) report a trend for accents to downstep over the phrase. Mosel and Hovdhaugen (1992) seem to take the intonational phrase as the domain of downstep. Yu (2009) states that H- tones break  $\bar{F}_0$  downtrend. Her data included sentences of different lengths and different word orderings following the verb. In these data there seemed to be downstep within each phonological phrase, partially reset with each H- tone. Downstep within each phonological phrase was difficult to confirm in these data, as there were few phonological phrases with sufficient accents in them (on words not also marked with the H- tone), though this can be seen in the object-agent sequence in the VOAT sentences (see (9c), Fig. 3).

The final prosodic word always had a rising accent which was not downstepped relative to any preceding accent, though it was usually lower than the preceding H- tone. This is consistent with Mosel and Hovdhaugen's (1992:41) finding that the last prosodic word is "obligatorily raised". Orfitelli and Yu (2009) identify this, without argument, as the nuclear accent. However, in 60% of sentences (144 out of 240 fluent sentences) the final prosodic word was the time expression (e.g. *analeilā* in Figs. 2–4). This is therefore not a typical nuclear accent, which usually marks the focus (cf. Ladd, 2008:ch. 6). The time expression is clearly not focal, always being repeated from the question. My interpretation is that these are actually non-prominence lending phrase accents that associate with stressed morae, in the sense of Grice et al. (2000); hence I have labelled these L+(!H)-, as they seem to be realised in the same way as L+(!H)\* pitch accents, but they are solely edge marking. Grice et al. (2000) show that in questions in some Eastern European languages, e.g. Greek, a phrase accent may be associated with a lexically stressed syllable, if there is sufficient material following the nuclear accent in the phrase. In these languages, the phrase accent is high, and so resembles a regular pitch accent; however, it is not heard as prominent by native speakers of these languages, and does not signal focus (Grice et al., 2000; Arvaniti and Baltazani, 2005; Ladd, 2008).<sup>4</sup> Parallel to this, in AVOT sentences, the object was produced either without an accent, or with an !H\* accent, whereas in AVO sentences, the object always had a rising pitch accent ((9d) and (9e)). This is consistent with the final accent being an obligatory phrase accent, not affected by accentual suppression in fronting structures (see below). A similar pattern was found with the agent in OVAT versus OVA sentences ((9f) and (9g)), and the object in VAOT versus VAO sentences ((9a) and (9b)). The fact that the final accent was not downstepped relative to any preceding accents in the phonological phrase, but was downstepped relative to the preceding phrase tone, is also consistent with it being a phrasal edge marker (cf. Truckenbrodt, 2007).

My phrase accent analysis also fits with the intonation of questions in Samoan. Mosel and Hovdhaugen (1992:42–43) report that the "tone is pretty low on the two to three last syllables" in interrogatives, with the last accent in the phrase being dropped. Orfitelli and Yu (2009) analyse this as in fact being an !H\* accent on the final prosodic word. I have only analysed a small sample of the questions in these data, but this appears to me to be actually a final H+L- phrase accent. Following either my analysis or Orfitelli and Yu's (2009) analysis, this is consistent with intonation phrases in both declaratives and interrogatives ending in compulsory phrase accents, with the accent type (L+H- or !H\*/H+L- respectively) marking the mood of the sentence.

<sup>4</sup> Note that there is a related phenomenon in languages including German and English where a post-nuclear tone can be associated with a stressed syllable marking 'secondary prominence', associated with 'second occurrence focus', on that word, i.e. the phrase accent is prominence-lending, but does not mark nuclear prominence (Grice et al., 2000, 2005; Beaver et al., 2007). This is distinct from the Eastern European case, where the location of the high phrase tone does not change the focus structure of the sentence (Grice et al., 2000; Arvaniti and Baltazani, 2005; Ladd, 2008).

Interestingly, for the older speakers, M and K, the final accent in declaratives was almost always L+H-, and in fact for speaker M this accent was usually upstepped (e.g. in Fig. 3); consistent with the pattern found by Mosel and Hovdhaugen (1992), based on their data from speakers recorded in the 1980s. However, for the remainder of the speakers, all younger, the final accent was more likely to be downstepped. This may therefore be another feature of Samoan that is changing. Below, I proceed on the assumption that final accents are boundary markers, and therefore that the position of maximal prosodic prominence is elsewhere in Samoan (see further section 6).

Once phrase marking effects are accounted for, it emerges that H- tones also suppress at least the first accent in the following phrase. That is, if the word following the H- tone is not itself marked with an H- tone, and is not final, then it is either unaccented or marked with a !H\* (assuming !H\* accents are suppressed L+!H\* accents, which seems plausible as they are perceptually less prominent, cf. Hirschberg, 2007), e.g. the object in VOAT and AVOT sentences ((9c) and (9d)) and the verb in OVA(T) sentences ((9f) and (9g)), although this is less clear for the object in VAOT sentences (9a). It is not clear if this just affects the first word, or all the non-final words in the phrase, e.g. it affects the agent in the OVAT sentences (9f), but not in the VOAT sentences (9c) (though there are only 3 examples of the latter). To my knowledge, this pattern has not been commented on before. Mosel and Hovdhaugen (1992:41) state that accents are not compulsory on prosodic words, but only give one example of an unaccented word, a verb following a fronted absolutive (which fits with the pattern here). Orfitelli and Yu (2009), however, found accents were compulsory on prosodic words for their speaker (see especially their Figures 8a-c). This is puzzling, as this pattern was extremely consistent for the seven speakers recorded here.

#### 4.3. Focus marking and prosodic structure

So how does this prosodic structure relate to focus marking? My interpretation is that the initial phonological phrase in a Samoan sentence is maximally prominent. This is shown by the height of the accents and the phrase tone in that phrase, and the downstepped pitch range and accent suppression in the following phrase(s). In the cases where there were two prosodic words in the initial phrase, i.e. the VAO sentences, both were realised with L+H\* accents; and in the other sentences, where there was one prosodic word in the initial phrase, this was realised with a L+H\* accent. For those speakers who do use syntactic means to mark focus, this prosodic structure dovetails nicely with the main syntactic focus marking strategy, i.e. fronting (see section 3): by putting the focus in initial position, these speakers are making it maximally prominent. That is, Samoan shows prosodically motivated syntactic movement in relation to focus marking. Focus fronting may then directly affect the prosodic realisation, as discussed above, accent suppression following the H- tone was more complete in AVO and OVA sentences, where the initial phrase always contained the focus, than in VAO sentences, which were used to express broad, agent and object focus. These effects are akin to post-focal deaccenting (Ladd, 2008:ch. 6), although phonetically they are quite different. Effects of focus within VAO sentences are explored in the next section. The phonological phrase boundary before the object (absolutive) seems to be immune to focus effects: it was consistently found in VAO and VOA sentences regardless of focus type, as well as in AVO sentences which almost always were agent focus (see further section 6).

### 5. Prosodic effects of focus in situ

In sections 3 and 4, it was shown that speakers who mark constituents as focused by fronting them are effectively using both syntactic and prosodic means to mark focus. However, three of the seven participants used VAO order in all focus conditions, and two for object focus. Therefore, it was investigated whether speakers used prosody to distinguish focus conditions in VAO sentences. The phonological realisation of the other constructions is generally straight-forward: AVO and OVA sentences were almost always agent or object focus respectively. The only exception was one AVO sentence produced in object focus. There were no evident prosodic differences between this sentence and other AVO sentences. There were no phonological effects of QUD versus contrastive focus in the fronted sentences. The VOA sentences were all broad focus, and thus focus effects could not arise.

Table 3 shows the accent type on agents and objects by focus condition in VAO sentences. There were no consistent effect of focus condition on the accent type for the verb and any time adverbial in these sentences (these data are not reported). For the purposes of this analysis, I have called all accents pitch accents (i.e. marked with a \*), as for the younger 'no syntactic focus' speakers at least, it appears the type of final accent may be sensitive to focus status, and therefore may no longer be solely an edge-marking phrase accent. There were very few H\* accents, so these are grouped with L+!H\*. Speaker R's data is again omitted (see section 4.2). Speaker N is included, as he showed focus-related prosodic variation. The objects are separated into final and non-final (i.e. followed by a time adverbial), as in section 4.2 it was found that the final word in a sentence was usually accented.

As can be seen in the top panel of Table 3, most agents were realised with a full L+H\*, and a smaller number with downstepped L+!H\* accents. There do not appear to be any consistent effects of focus argument (agent or object) or



Table 3

Accent type used on agents and objects in VAO sentences by focus condition. Objects are separated into non-final (i.e. following by a time adverbial) and final. The first three blocks show results for all speakers, at the bottom of the table is the data for objects for the subset of speakers N, T and E (see text for more details).

Focus type	L+H*		L+!H*/H*		!H*		None		Total
	%	N	%	N	%	N	%	N	
<i>Agents</i>									
Broad focus	80	28	14	5	0	0	6	2	35
Agent Q-focus	56	9	44	7	0	0	0	0	16
Agent C-focus	71	15	19	4	5	1	5	1	21
Object Q-focus	74	23	23	7	0	0	3	1	31
Object C-focus	80	20	16	4	4	1	0	0	25
Total	74	95	21	27	2	2	3	4	128
<i>Non-final objects</i>									
Broad focus	6	1	38	6	44	7	13	2	16
Agent Q-focus	0	0	67	2	33	1	0	0	3
Agent C-focus	0	0	29	2	57	4	14	1	7
Object Q-focus	33	5	20	3	40	6	7	1	15
Object C-focus	40	4	40	4	20	2	0	0	10
Total	20	10	33	17	39	20	8	4	51
<i>Final objects</i>									
Broad focus	37	7	58	11	5	1	0	0	19
Agent Q-focus	8	1	85	11	8	1	0	0	13
Agent C-focus	14	2	43	6	43	6	0	0	14
Object Q-focus	31	5	50	8	19	3	0	0	16
Object C-focus	47	7	40	6	13	2	0	0	15
Total	29	22	55	42	17	13	0	0	77
<i>Objects: speakers N, T and E</i>									
Broad focus	22	4	67	12	11	2	0	0	18
Agent focus	6	2	63	20	31	10	0	0	32
Object focus	46	19	39	16	15	6	0	0	41
Total	27	25	53	48	20	18	0	0	91

focus type (QUD or contrastive). Ordinal logistic regression mixed models were fitted to test the likelihood of accents of different strengths on agents using the *clmm* function in the *ordinal* package in *R* (Christensen, 2013; R Core Team, 2013). That is, the outcome was an ordered factor with the levels low accent strength (!H\* or no accent), medium accent strength (L+!H\* or H\*) or strong accent (L+H\*), with a higher coefficient in the model indicating the likelihood of greater accent strength. In the first model focus argument was tested as a fixed effect, but was not significant (for Focus=Agent:  $p = 0.7$ , for Focus=Object:  $p = 0.8$ , Broad Focus was the intercept;  $N = 128$ , log-likelihood =  $-83.3$ ). Speaker was the random effect (Item was also tested as a random effect but was not significant). In the second model, broad focus sentences were excluded so Focus Type could be tested. Focus argument and Focus Type were tested as fixed effects, but were not significant (for Focus=Agent:  $p = 0.3$ , for Focus Type=QUD:  $p = 0.5$ , the intercept was Focus=Object, Focus Type=Contrastive;  $N = 93$ , log-likelihood =  $-64.9$ ). Speaker was the random effect (item was tested as a random effect but was not significant). The interaction between focus argument and focus type was tested but was not significant. These models confirmed there are no focus effects on the strength of the accent on the agent in VAO sentences.

As can be seen in the second and third panels of Table 3, non-final objects were more likely to have !H\* accents, whereas final objects were more likely to have full L+H\* accents, and were never unaccented, consistent with what was found in section 4.2. There also seems to be an effect of focus argument on accent strength within both non-final and final objects: for the non-final objects, those in object focus were more likely to have L+H\* accents, whereas for the final objects, those in both broad focus and object focus were more likely to have L+H\* accents. In agent focus, there seems to be an effect of focus type, where for both non-final and final objects, the object is more likely to be realised with a L+!H\* accent in QUD agent focus, and a !H\* accent in contrastive agent focus. There does not seem to be an effect of focus type for object focus, however.

Ordinal logistic regression mixed models were fitted to test the likelihood of accents of different strengths on objects. In the first model focus argument and position (final or non-final) were tested as fixed effects, and Speaker as a random effect (item was also tested but was not significant) ( $N = 128$ , log-likelihood =  $-126.5$ ). The model showed that in Agent Focus, weaker accents are more likely than in Broad Focus (the intercept), although this effect was only marginally significant

( $\beta = -0.79$ ,  $p = 0.085$ ); Object Focus was not significantly different to Broad Focus ( $p = 0.3$ ). Non-final objects were also more likely to be realised with weak accents than Final objects (the intercept) ( $\beta = -1.37$ ,  $p = 0.004$ ). The interaction between focus argument and position was tested but was not significant. In the second model, broad focus sentences were excluded so focus type could be tested. The interaction of focus argument and focus type was tested as a fixed effect, and Speaker as a random effect (item was also tested but was not significant) ( $N = 93$ , log-likelihood =  $-93.2$ ). The model showed that in Agent Focus, weaker accents are more likely than in Object Focus (the intercept) ( $\beta = -2.06$ ,  $p = 0.001$ ), but that this effect was smaller when it was an QUD Agent focus than Contrastive Agent focus ( $\beta = 1.74$ ,  $p = 0.036$ ). The simple effect of QUD focus was not significant ( $\beta = -0.83$ ,  $p = 0.12$ ). The effect of Position was also tested, but was not significant, so it was excluded from the model. These models therefore largely support the analyses of focus effects on accent type in the previous paragraph.

There is therefore only limited evidence for in situ prosodic marking of focus. There are no focus effects on agents in VAO sentences. This could be because accent effects on the agent were obscured by the pitch rise from the H- tone (or because the agent is in fact only marked with a L+H- phrase accent); however, I will assume this is a general restriction. For objects, there is a trend for these to be realised with full L+H\* accents in object focus, and with weaker accents in agent focus. This trend was strongest for contrastive agent focus. This could be emphatic pitch accent raising as described by Mosel and Hovdhaugen (1992:42). However, it is far from consistent, with L+!H\*/H\* accents often used in all focus conditions. It is also limited to objects. In broad focus, the object is more likely to be fully accented if it is final than non-final, consistent with the final rise being a non-prominence lending phrase accent not related to focus. My account is then that, because the agent is in the initial prosodic phrase, which is maximally prominent, it is already inherently prominent, and its prominence cannot be varied further. The prominence of the object, in the following phrase, can vary according to its focus status, though this is not consistent (see further section 6). The one example of emphatic raising given in Mosel and Hovdhaugen (1992:42) is a word in a non-initial phrase.

Once again, different patterns were found for different speakers. The data for the three younger speakers, N, T and E, who used VAO sentences in at least object and broad focus, is shown in the lower part of Table 3 (the other younger speaker, F, usually fronted focus). QUD focus and contrastive focus are grouped (as these patterned similarly), as are final and non-final objects (since there were few sentences with time adverbials for these speakers). As can be seen, there was a much stronger trend to mark objects in object focus with L+H\* accents, and objects in agent focus with !H\* accents. The object was also less likely to have an L+H\* in broad focus. T and E were 'no syntactic focus' speakers, and N a 'front agent focus' speaker. The other 'front agent focus' speaker, M, who was older, did not show this trend. This suggests that in situ prosodic marking of focus, as opposed to fronting, is increasingly favoured to mark focus by younger speakers; and the final accent may no longer be solely an edge-marking phrase accent. However, like the older speakers, these speakers did not show effects of focus on the accent type for the agent. This suggests that for young speakers there is some sort of hybrid, or unstable, focus marking system, the exact nature of needs to be investigated further. As suggested in section 3, this could stem from contact-related language change because of the influence of English, which primarily uses in situ prosodic marking of focus.

## 6. Discussion and conclusion

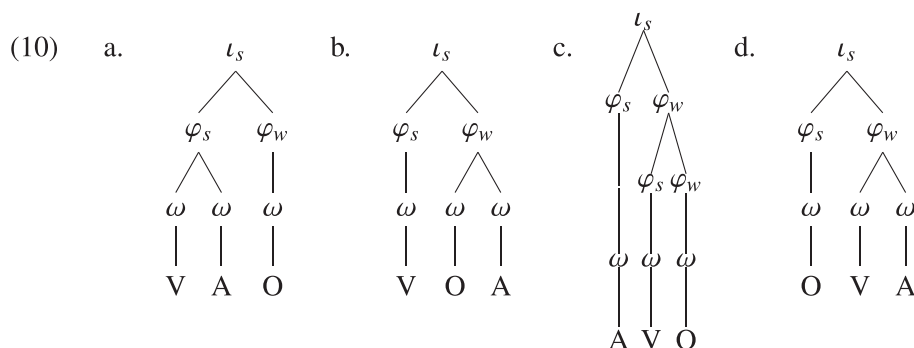
This was the first major study looking at the prosodic and syntactic expression of focus in Samoan. QUD focus and contrastive focus on agents and objects were examined for seven native Samoan speakers in a picture description task. In terms of syntactic marking, it was found that different speakers had different strategies. Two speakers consistently fronted the focus. Two other speakers usually fronted agent foci, but not object foci. The remaining three used the basic VAO word order in all focus conditions. Speakers did not consistently distinguish QUD and contrastive focus syntactically. In terms of prosodic marking, it was found that the initial phrase was the position of maximal prosodic prominence, in that it ended in a high phrase tone (H-), accents in the following phrase were downstepped, and any pitch accents suppressed (but not the final phrase accent and other phrase tones). This provided support for the hypothesis that the (fronted) syntactic 'focus position' is aligned with the maximal prosodic prominence. Among the speakers who used VAO word order in all focus conditions, or for object focus, there was a trend to mark the object with an L+H\* accent in object focus, L+!H\* in broad focus and !H\* or no accent in agent focus. However, this was not statistically significant nor consistent. There were no focus effects on the type of accent on the agent. There were no consistent prosodic differences between QUD and contrastive focus, apart from a small tendency for the object in QUD agent focus to be realised with a stronger accent (L+!H\*) than the object in contrastive agent focus (!H\*).

These results do not seem to correspond particularly well to the remarks related to focus in Mosel and Hovdhaugen (1992). There was no evidence in these data that the focus directly follows the verb, contrary to what seemed to be implied in Mosel and Hovdhaugen (1992:448–451) (or what was recently claimed for Tongan, Otsuka, 2005). In fact, there were only three examples of VOA word order, all in broad focus from one speaker. This could be because the focus contexts used here did not match well with the discourse contexts Mosel and Hovdhaugen (1992) had in mind. My best

interpretation of their examples is that post-verbal ordering reflects information status, i.e. new before given (cf. Prince, 1981), rather than focus. This would be interesting to look at in future research. There was some evidence of the emphatic pitch accent raising that Mosel and Hovdhaugen (1992:42) imply can be used on any word “for contrastive purposes”. However, speakers used it to mark both QUD and contrastive focus, and only on objects. Further, it was only used by younger speakers, and then inconsistently, suggesting that this is rather a new, emerging use of prosodic prominence in Samoan. The use of ‘o-fronting to mark focus broadly fits two of Mosel and Hovdhaugen’s (1992:474–475) list of pragmatic uses of this construction, i.e. referring to contrastive participants, and as a means of emphasis; although these do not seem to imply it is the primary means of focus marking. One reason for this could be that much of Mosel and Hovdhaugen’s (1992) data was from written sources, and ‘o-fronting may be more common in spoken than written language (cf. Ochs, 1982). There was one example in the data of ‘o-fronting apparently marking a theme (or topic), i.e. an AVO sentence used for object focus, which did not have noticeably different intonation to the other AVO sentences. However, in future research it would be interesting to explore the intonation of fronted phrases used for the other pragmatic purposes suggested by Mosel and Hovdhaugen (1992), including marking themes, to see if they have different intonation from the focus-marking fronted phrases, as found for Māori by Bauer (1991). The results are consistent with Hohaus & Howell’s (2014) proposal that ‘o is a morphological focus marker; at least for the older speakers. It remains to be seen though how the other uses of ‘o fronted phrases, e.g. topic marking, can be fitted within this proposal.

As discussed in section 1.1, the claim that the initial focus position in Samoan correlates with the position of maximal prosodic prominence should be evaluated within an analysis of the overall prosodic structure of Samoan and its relationship to syntax (cf. Büring, 2009). There seem to be three levels of prosodic structure in Samoan: the prosodic word ( $\omega$ ), usually marked by an L+H\* pitch accent on the lexical head; the phonological phrase ( $\varphi$ ), marked on its right edge by a H- phrase tone; and the intonation phrase ( $\iota$ ), marked on its right edge (in declarative sentences) by an L+H- phrase accent and an L% boundary tone. Each prosodic word maps onto a lexical head, plus any surrounding particles (usually to the left, though including demonstratives to the right); each intonational phrase usually maps onto a sentence; the mapping of the phonological phrase onto syntax is less clear (see below) (cf. Selkirk, 2011).

In my analysis, the intonational phrase is left-headed, so the metrical structure of the sentence types in these data is:



The prominence of the initial phrase is marked over the whole phrase: where the initial phrase consisted of two prosodic words (in VAO sentences), both were marked with L+H\* accents (although the agent also carried the H- phrase tone, so its accent status was ambiguous). The pitch range in the following phrases was downstepped, and pitch accents suppressed (though not any following phrase tones). In this respect, Samoan resembles Bengali (see Hayes and Lahiri, 1991; Büring, 2009). However, Samoan is typologically unusual, in that at the prosodic word level, prominence is marked on the head, whereas at the phonological phrase level, it is marked over the whole phrase (though see Burdin et al., 2015 for discussion of other languages with mixed systems). From these data, it is difficult to tell the headedness within phonological phrases, as in most phonological phrases containing at least two prosodic words the second was marked by a phrase tone or phrase accent (hence this is not shown in (10)); this will be left as a question for future research. In future research, I also plan to consolidate this phonological analysis with acoustic analyses.

For the focus fronting speakers, Samoan is an ‘edge’ language, in Büring’s (2009) terms. That is, the prosodic structure is inflexible, so the focus must be placed in the position of maximal prominence, i.e. fronted. In this respect, Samoan resembles Hungarian (Szendrői, 2003; Büring, 2009; Genzel et al., 2015); although in Hungarian focus fronting is claimed to only apply to contrastive focus (see section 1.1), whereas here it seems to be the focus marking strategy for all foci (though there is empirical evidence that QUD foci can be fronted in Hungarian as well, e.g. see Genzel et al., 2015). Prosodically-motivated fronting to mark focus in general (not just contrastive focus) has also been found in Sardinian (Remberger, 2010; Jones, 2013) and Eastern Catalan (Vanrell and Fernández Soriano, 2013). Further, as was found for Hungarian by Genzel et al. (2015), focus-marking in itself seems to lower the prominence of the post-focal material despite

focus being realised in a fixed position. That is, in the AVO and OVA sentences, all post-focal words that did not carry phrase tones (H- or L+H-) had their accents suppressed (no accent or !H\*); whereas for the VAO sentences, the object was often realized with a L+!H\* accent in the VAOT sentences (see the tonal realizations in (9)).

The 'front agent focus' speakers seem to show the same focus-marking strategy, except that they have an apparent constraint against fronting objects. In a range of languages, an asymmetry has been noted in the treatment of focus on subjects versus non-subjects: focus on subjects needs to be explicitly marked, while focus-marking on 'non-subjects' is optional (see Zimmermann, 2011). (Interestingly, *ko*-fronting only applies to subjects in Māori, including agents in active transitive clauses as Māori is not ergative, Bauer, 1991). The general argument is that subjects are usually not focal and therefore a focused subject needs to be marked as it is unexpected (Zimmermann, 2011). This argument follows if we define subjects in discourse terms in Samoan, i.e. across languages agents are usually topical or given and therefore can be described as discourse subjects (cf. du Bois, 1987).

The implication of this is that, for the older of the two 'front agent focus' speakers, at least, broad and object focus are not distinguished. This is a well-known pattern across languages, e.g. English and many Romance languages, where it is usually held to follow from the asymmetry noted above, i.e. the object is by default maximally prominent, while non-default prosody or syntax is needed to make the subject prominent (e.g. Selkirk, 1995; Ladd, 2008; Féry, 2013). In my analysis, however, the subject (agent) and not the object is by default prosodically prominent (see (9a) and (10a)), although the nature of this prominence is somewhat different to the English or Romance cases (i.e. objects usually carry the nuclear pitch accent, as opposed to agents here which are in a whole phonological phrase which is prominent). One possibility is that when the agent is in the post-verbal position, this is only consistent with broad focus or predicate focus, not narrow focus on the agent; so the agent needs to be fronted to mark narrow focus on it (Szendrői, 2003 makes a similar argument for focus scope on post-verbal arguments in Hungarian). It is not clear though why this should not be the case for objects. This remains a challenge for my analysis.

For the 'no syntactic focus' speakers, the pattern is quite different. For these speakers, there seems to be in situ prosodic marking of focus. However, this was only signalled by the strength of the accent on the object, not the agent. That is, a strong (L+H\*) accent on the object signals object focus, a weaker accent (L+!H\*) broad focus, and a weak accent (!H\*) agent focus. However, this division was not used consistently, nor was it statistically significant. The lack of any prosodic distinctions on the agent would seem surprising given more familiar cases of in situ prosodic focus marking. However, it would fit with the agent already being prominent in the initial prosodic phrase. That is, this is equivalent to the lack of a clear prosodic distinction between broad and object focus in English and Romance languages, where the object is maximally prominent in the basic word ordering. However, this evidently does not fit with the analysis of the 'front agent focus' speakers above. The patterns of these two groups can probably only be reconciled if we consider the 'no syntactic focus' speakers and the 'front agent focus' speakers to effectively have different grammars with respect to focus marking because of language change in the former group. Ideally, data from more speakers is needed to see how common these three focus-marking strategies are, to try to reconcile this evidence.

There were no consistent differences found between QUD and contrastive focus in these data. Therefore, for Samoan at least, it makes sense to think of there being one unified construct 'focus', rather than distinct syntactic or prosodic reflexes for 'informational' and 'contrastive' focus (as per Rooth, 1992, Steedman, 2000, Krifka, 2008, Calhoun, 2010, see further section 1.1). Samoan is also apparently different in this regard from the closely related language Tongan (Otsuka, 2005) (see section 1.2). However, the methodology used in the two studies (elicitation versus production experiment) was quite different, so this deserves further exploration.

My analysis assumes the final L+H- accent is a boundary marker, not a prominence-lending pitch accent. As discussed in section 4.2, this fits with its use, at least by the older speakers, who consistently produced L+H- accents on the final word, regardless of the sentence type or focus condition. It is also consistent with my analysis of final phrase accents in questions, discussed in section 4.2. This is, however, a rather large extension of Grice et al.'s (2000) proposal, where phrase accents only surfaced as pitch accents where there was sufficient material following the nuclear accent (though for a similar usage in Irish, see Elfner, 2012). This raises the important question of what independent evidence can be used to distinguish prominence-lending from non-prominence-lending pitch accents. For instance, in the Eastern European languages investigated by Grice et al. (2000), it was reasonably straight-forward to ascertain the intuitions of native speakers that the high phrase accents in questions were not prominence-lending, because of the strong association between the nuclear accent and focus in those languages. It is less clear how to probe native speaker intuitions in Samoan where there is no nuclear accent. This will need to be addressed in future research.

The appearance of a phonological phrase boundary before the absolutive when it is post-verbal is still to be accounted for, assuming the H- phrase tone marks a phonological phrase boundary. My suggestion in section 1.1 that this could mark the beginning of a focus phrase, with the focus encoded in the absolutive, clearly does not hold. However, Yu's (2009) analysis of the H- tones as tonal case markers is also problematic. As Yu acknowledges, this would be highly unusual for this language family. Further, there seems to be no difference between these and the H- tones at the ends of fronted phrases, in terms of their realisation or downstepping effect on accents in subsequent phrases, suggesting they are the

same post-lexical boundary markers. Yu's (2009:section 4.1) arguments against the H- tone marking a phrase boundary are also not conclusive. She says firstly that the division into phrases should be sensitive to length/heaviness, and yet the H- appears even when the absolutive is a pronoun, i.e. it does not cliticise into the preceding phrase in this case. However, Samoan has both clitic and non-clitic pronouns. Post-verbally, non-clitic pronouns are used, and these appear to be 'heavy' (e.g. they can be contrastive) (see Chung, 1978:34–37), so this does not necessarily follow. Secondly, Yu argues that the H- disappears under *pro*-drop or extraction of the absolutive, showing it cannot directly mark a syntactic domain. However, prosodic phrasing is standardly held to align only with overt syntactic structure (Truckenbrodt, 1999).

Yu is right, though, that case information is not standardly taken to be passed directly from syntax to prosody to inform phrasing, and on a standard generative account of the structure of these sentences, there is no obvious reason for a syntactic boundary before the absolutive (see discussion of (6) in section 1.2). One possibility, that I wish to pursue in future work, is that the H- tones mark the division between predicate and subject (in the traditional binary sense, see Rothstein, 2001; Carnie, 2007). The absolutive argument would then compulsorily be the subject, meaning Samoan is more deeply ergative than previously thought. In VAO sentences the agent would be in the predicate, though its status in VOA sentences is unclear. As noted in section 1.2, in related languages constructions analogous to 'o-fronting have been analysed persuasively as predicates followed by headless relative clauses (Massam, 2000; Bauer, 1991, 1997; Paul, 2001), i.e. a sentence like 'O Sione na tosoa le maea (8c) should be translated "Who pulled the rope was Sione" (in subject-predicate order). Related to this, Polynesian, and other Austronesian, languages are commonly analysed using a predicate-subject division, rather than verb phrase-noun phrase, in part because of the many sentences without verbs (e.g. Massam, 2000; Bauer, 1997; Paul, 1998; Travis, 2005) (this is also broadly consistent with Mosel and Hovdhaugen's approach). If this follows in Samoan, it provides a unified analysis of the phonological phrase division in these data. This analysis is tentative at the moment, as evidently it has profound implications and requires much substantiation. The relationship with information structure remains largely to be worked out. It appears that the predicate-subject division usually maps onto rheme-theme structure, but the division itself is purely syntactic, and can be nested (as shown by (10c)). I am currently pursuing this further.

Finally, although it was not an aim to investigate language change, some interesting differences were uncovered between the two older speakers (39 or older), and the five younger speakers (25 or younger). Firstly, while the older speakers mostly fronted focus, most of the younger speakers used VAO order in all focus conditions. This suggests use of 'o-fronting may be declining. Secondly, most of the younger speakers used the strength of the accent on the object to distinguish object and broad/agent focus, albeit not consistently. The two older speakers never did this (although one only produced VAO sentences in broad focus). This suggests a change toward prosodic marking of focus in situ. Thirdly, while the older speakers consistently used L+H- on the final word in the sentence, which fits with my analysis of this as a boundary marker, for the younger speakers this accent was more variable, suggesting it was sensitive to information structure. All of these differences are consistent with contact-related language change related to the greater use of English by younger Samoan speakers (cf. Thomason, 2001; Queen, 2012). Although it is a rather rough measure of language dominance, this would also fit with the participants' reports on the percentage of time they speak Samoan each day (see Table 1). The two older speakers, and the one younger 'front focus' speaker (F), all reported predominantly speaking Samoan, whereas the other speakers reported speaking English more than half the time, or did not answer the question. The younger 'front agent focus' speaker (N), also reported speaking English more than Samoan. However, N is also the only male speaker, and if this were a change in progress, we might expect male speakers to be more conservative (e.g. see Labov, 2010). Note that it is my understanding from talking to Samoan speakers that these contact effects originate from the greater use of English in Samoa by younger Samoan speakers than by the previous generation, rather than greater English dominance since moving to New Zealand (cf. Queen, 2012). Among the speakers in this experiment there were no consistent effects on the linguistic features I examined of the years spent in New Zealand, even though this varied considerably for both younger and older speakers (see Table 1). Evidently, this a very small sample, particularly for the older speakers, and a great deal more research is needed on the use of English by Samoan speakers of different ages and genders in Samoa and New Zealand, to investigate whether this is indeed contact-induced language change.

In conclusion, this study has shown that while the marking of focus in Samoan has many parallels with patterns observed in other languages, there are features of Samoan prosody which are unusual (such as the apparent division of phonological phrases according to a predicate-subject syntactic organisation, the mix of head-based and phrase-based prominence marking and the use of pitch accents as boundary tones). The analysis has thrown up many promising avenues for future research. It is hoped it will contribute to our understanding of the complex interactions between prosody, syntax and information structure cross-linguistically.

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## Appendix A

- (11) *Na 'ai e Sione le siamu anapō*  
 PAST eat ERG Sione DET jam last night  
 ‘Sione ate the jam last night’
- (12) *Na salu e Moana le malae ananafi*  
 PAST sweep ERG Moana DET field yesterday  
 ‘Moana swept the field yesterday’
- (13) *Na teu e Felila le moega analeilā*  
 PAST make ERG Felila DET bed earlier  
 ‘Felila made the bed earlier’
- (14) *Na a'a e Sione le paelo ananafi*  
 PAST kick ERG Sione DET bucket yesterday  
 ‘Sione kicked the bucket yesterday’
- (15) *Na toso e Sione le maea analeilā*  
 PAST pull ERG Sione DET rope earlier  
 ‘Sione pulled the rope earlier’
- (16) *Na vili e Felila le uila ananafi*  
 PAST ride ERG Felila DET bike yesterday  
 ‘Felila rode the bike yesterday’
- (17) *Na tipi e Moana le meleni anapō*  
 PAST cut ERG Moana DET watermelon last night  
 ‘Moana cut the watermelon last night’
- (18) *Na amo e Kalolo le 'alā ananafi*  
 PAST carry ERG Kalolo DET rock yesterday  
 ‘Kalolo carried the rock yesterday’
- (19) *Na tufa e Leone le pelē anapō*  
 PAST deal ERG Leone DET cards last night  
 ‘Leone dealt the cards last night’
- (20) *Na 'ai e Moana le 'umala analeilā*  
 PAST eat ERG Moana DET kumara earlier  
 ‘Moana ate the kumara earlier’
- (21) *Na fusi e Kalolo le teine ananafi*  
 PAST hug ERG Kalolo DET girl yesterday  
 ‘Kalolo hugged the girl yesterday’
- (22) *Na 'ai e Leone le puligi anapō*  
 PAST eat ERG Leone DET pudding last night  
 ‘Leone ate the pudding last night’
- (23) *Na pu'e e Iona le maile ananafi*  
 PAST catch ERG Iona DET dog yesterday  
 ‘Iona caught the dog yesterday’

- (24) *Na si'i e Leone le nofoa analeilā*  
PAST carry ERG Leone DET chair earlier  
'Leone carried the chair earlier'
- (25) *Na vali e Kalolo le uila analeilā*  
PAST paint ERG Kalolo DET bike earlier  
'Kalolo painted the bike earlier'
- (26) *Na amo e Iona le suō analeilā*  
PAST carry ERG Iona DET spade earlier  
'Iona carried the spade earlier'
- (27) *Na palu e Kalolo le simā anapō*  
PAST mix ERG Kalolo DET cement last night  
'Kalolo mixed the cement last night'
- (28) *Na tao e Felila le puligi ananafi*  
PAST bake ERG Felila DET pudding yesterday  
'Felila baked the pudding yesterday'
- (29) *Na su'i e Felila le 'aluga ananafi*  
PAST sew ERG Felila DET pillow yesterday  
'Felila sewed the pillow yesterday'
- (30) *Na tosi e Iona le laina analeilā*  
PAST draw ERG Iona DET line earlier  
'Iona drew the line earlier'

## Appendix B. Supplementary Data

Supplementary data associated with this article can be found, in the online version, at <http://dx.doi.org/10.1016/j.lingua.2014.11.007>.

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