# Several Notes on the Semantics of the Samoan Existential Predicate *

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**Abstract** Samoan contains what has been traditionally identified as an 'expletive' functioning as a syntactic predicate (*i ai* ) in both existential and possessive constructions. This paper presents a semantic analysis of this expression, claiming that the expletive is not semantically empty but instead denotes a generalized quantifier 'exists' which composes with an adjacent constituent (its pivot) functioning to restrict the quantifier. It is argued that such a syntactic and semantic analysis has the advantage of explaining the weakness of the (in)definiteness effect in the language as well as restrictions involving tense/modal expressions and interrogatives that are unique to the existential construction. This line of explanation offers a new perspective on the Samoan "general tense" marker as a relative modal. It also prompts some speculation on cross-linguistic variation in notionally existential constructions.

**Keywords:** Samoan, syntax, semantics, expletives, generalized quantifiers

## 1 Introduction

Samoan (Polynesian) exhibits two general ways of organizing clauses. One involves the ordering Tense-Predicate-Subject-Object as seen in (1).[1] The other involves a presentative particle *'o* followed by a nominal expression, as in (2).[2]

* This paper, written originally in 2012, is based on fieldwork I conducted in Apia, Samoa in 2005. I would like to thank Matavai Tautunu for sharing his knowledge of Samoan and teaching me about it during that time.

1 I employ the following abbreviations in the glosses of Samoan examples: ERG = ergative (case), GEN = general (tense), EXP = expletive, PRT = particle, DEF = definite, POSS = possessive, SNG = singular, 1 = first person, 3 = third person, CL = classifier, ABS = absolutive (case), PART = Partitive, PRES = Present (tense), PROG = progressive (tense)

2 Examples (1) is adapted from Mosel & Hovdhaugen (1992) . Examples (2) and (3) are adapted from Clark (1969). Example (4) comes from Mosel & Hovdhaugen (1992)

(1) Sā fasi e le teine le maile
PAST hit ERG the girl the dog

The girl hit the dog

(2) ʻO le leoleo Ioane
PRT Def policeman Ioane

Ioane is a policeman

Clauses like (1) may have verbs, and prepositional phrases and noun phrases adjacent to the tense expression in the syntactic predicate position.[3]

(3) ʻOloʻo i le fale Ioane
PROG in Def house Ioane

Ioane is in the house.

(4) Sā aliʻi matua Pili
PAST chief old Pili

Pili was an old man.

DPs are possible in the syntactic predicate position adjacent to tense when they involve proprietary possession, as in (5) (cf. Clark (1969)). In the predicate position we also encounter an expletive syntactic predicate *i ai* that is used in assertions of existence like (6) and possession as in (7).

(5) E a loʻu tama le tupe .
GEN PRT 1.SNG.POSS father def money

The money is my father's.

(6) Sā i ai pia.
PAST EXP beer

There is beer.

3 See Clark (1969) for an early attempt to explain this distributional fact with an abstract syntactic 'predicate' phrase that is without a head in subsequent $\bar{X}$ terms. My own proposal is an attempt to give a semantic account for Clark's intuition without recourse to the abstract semantic verbs in the generative semantics tradition that Clark argues against.

(7) E i ai le solofanua a Ioane.
GEN EXP Def horse ABS Ioane

Ioane has a horse

This paper focuses on the use of the 'expletive' syntactic predicate *i ai* with an eye on explaining its special syntactic and semantic properties.

There is, of course, an extensive literature concerning English existential sentences like (8) that provides the inevitable backdrop for the discussion of any existential construction.[4]

(8) There were problems in the proof.

(9) There was no food.

The DP following the copula in (8)-(9) is standardly referred to as the 'pivot' while the phrase following the pivot is designated as its 'coda'. In (8 ) the syntactic subject position preceding the copula is occupied by a non-locative 'there'. This subject is usually treated as an expletive because it is non-referential, lacking its normal locative value. Such expletive subjects are often characterized as semantically inert (e.g. Chomsky (1981) where it is unable to receive a $\theta$ role) and only present to satisfy independent syntactic or morphological requirements. From this view, the semantic value of an existential sentence structure is determined by the semantic composition of the pivot and coda. One line of thought treats (the 'pivot') as a property that combines with an entity expression to yield a truth value (cf Williams (1980), Hazout (2004)). A second line of thought holds that the coda is a property that combines with an entity expression in the pivot to yield a truth value. This is the *small clause* analysis of Stowell (1978), Chomsky (1981), Safir (1982), Moro (1997) among others. Because there are existentials with a pivot but without an explicit coda (e.g. sentences like (9),) theorists often have to do the work of the coda by supplying its semantic value in some way by context, discourse or by phonologically unexpressed syntactic structure. A very different kind of analysis emerges from theories that treat *there were* in (8 )as idiosyncratically introducing a semantic predicate like 'exist'. The pivot and coda compose with that predicate, either as an argument of the predicate or as an adjunct serving to restrict that predicate (e.g. Chung & Ladusaw (2004), McNally (1998), Francez (2009).

4 See McNally (2011) for a broad overview.

These various syntactic and semantic analyses have been extended to other languages. The challenge of these extensions has been to offer a principled explanation of the variation in how other languages treat the verbal predicate, pivot and coda (both semantically and syntactically) McNally (2016). This paper is a contribution to that broad effort, and in the process I will detail several ways in which the Samoan existential construction in (6) diverges from its English counterpart in (9). In my attempt to offer an explanation for the variation apparent in the Samoan existentials, I claim that the formative *i ai* is not semantically empty or vacuous in a truth conditional sense but instead denotes a predicate 'exists'.[5] More explicitly, in terms of formal semantics, *i ai* denotes a property that is non empty in a model **M** defined by a universe *M* and an interpretation function *I* assigning extensions to non-logical expression. I will propose that the pivot semantically restricts that predicate, following the lead of Chung & Ladusaw (2004), and that the coda serves as the argument of the existence predicate. This amounts to claiming that *i ai* introduces an existential (generalized) quantifier.[6] Such an analysis is in keeping with the broader design of Samoan where quantifiers generally have the privledge of appearing in predicate position, as illustrated by (10).

(10) 'Ua toatele foi tamaiti.
PRES most CL children

There are most children

My analysis will attribute the apparent variation exhibited by the Samoan existential to the fact that the constituent functioning as the pivot in Samoan existentials varies between the syntactic subject and the tense marker.

## 2 The Existential Expletive as Generalized Quantifier

I would like to treat simple existentials like (6) by loosely adapting the analysis of English existentials developed in Francez (2007) and Francez (2009). Consider the English existential in (11) and its post copular DP, its **pivot**. For Francez, the pivot in (11) is a generalized quantifier, denoting a relation between a pair of sets. Let us take our basic semantic types to be elements

5 Alternatively one could adopt an analysis like that of McNally (1998) where the predicate is *is instantiated*. It is not clear to me if there is a substantive difference between these perspectives, but that may reflect my own limitations. Additional support for the notion that *i ai* is not semantically vacuous may also come from the fact that it appears in nominalizations as observed by Mosel & Hovdhaugen (1992) page 534.

6 See Westerståhl (2016).

and n-ary relations (that is, sets ), which we can represent as 1. Generalized quantifiers are relations between sets, that is $< 1,1 >, < 1,1,1 >$ and so on. We would assign *ghosts* in (11 ) and *pia* in (6) to the type $< 1,1 >$. Unlike other occurrences of *ghosts* and *pia* that are simple properties of the type $< 1 >$, the existential raises the type of the pivot to $< 1,1 >$. What this means is that there has to be a second set (i.e. $< 1 >$) that combines with *ghosts* (and to *pia* if we extend the analysis to Samoan existentials). Francez argues that this second set is provided by the temporal property of the clause in bare existentials like (11) and (6) that only have pivots. In more complex existential propositions that contain both a pivot and a coda as in (12), the coda can provide that second set.

(11) there are ghosts.

(12) there are ghosts in the closet.

What I wish to adapt from this account is that the temporal expression can serve as one of the sets in the binary relation of a generalized quantifer, although I will not reserve it exclusively for a coda. Unlike Francez (2009), I will treat the Samoan predicate rather than the pivot as introducing the existential quantifier. The existential quantifier introduced by *i ai* is of the type $< 1,1 >$ with the pivot and coda as providing the value of those sets. I will view the (in)definiteness restriction on the pivot of an existential sentence as a semantic restriction (cf. Peters & Westerståhl (2006) and Chung & Ladusaw (2004) among others).[7] I will assume that the pivot is limited to DPs that can serve as predicates. 'Weak' (i.e., symmetrical) quantifiers are thus allowed as pivots but 'strong' (i.e. asymmetrical) quantifiers are not.

## 3 Samoan Existentials and the (In)Definiteness Effect

English existentials like (8) allow some DPs to function as their pivot while others are avoided. Since Milsark (1974) researchers have tried to understand why definite DPs (proper names, pronouns, *this+NP*, *the+NP*, etc. ) and 'strong' quantifiers in Milsark's terms (e.g. *every, each, most*)are largely excluded as pivots in English.[8]

7 If one treated the (in)definiteness restriction as an epiphenomenon of pragmatic requirements, one would then reframe the explanation in the next section in those terms.

8 There is a second well-known restriction on English existentials: the coda is restricted to a stage level predicate, rather than an individual level predicate in the sense of Carlson (1974). Examples like (i) would seem to suggest that Samoan existentials are insensitive to this restriction as well as to the (in)definiteness restriction.

Samoan existentials behave differently in the sense that definite expressions that refer to unique individuals appear freely.

While notionally definite DPs are acceptable in Samoan existentials, proper names are rejected in the general tense, but acceptable in the present progressive.

(13) *E i ai Ioane i le fale.
GEN EXP Ioane in the house

Ioane is in the house

(14) ʻO i ai Ioane i le fale.
PRT EXP Ioane in the house

Ioane is in the house

(15) ʻO loʻo i ai Ioane i le fale.
PROG EXP Ioane in the house

Ioane is (still) in the house

Not surprisingly perhaps, indefinite DPs occur freely in Samoan existentials, regardless of the tense expression chosen.

(16) E i ai se fomaʻi i le fale.
GEN EXP a doctor in the house

A doctor is in the house

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(i) e i ai le puaʻa peti
GEN EXP the pig fat

there is the fat pig

The situation is complicated by the fact that adjectival modifiers typically come after nouns, as can be seen in (ii), so whether *peti* is a coda in i may be unclear.

(ii) e i ai le fomaʻi lela i le fali
GEN EXP the doctor good in the house

there is the good doctor in the house

(17) Sā i ai se foma'i i le fale.
PAST EXP a doctor in the house

A doctor was in the house

Morphologically definite DPs are acceptable in utterances like (18), but I am told that they seem to be used as meaning a unique doctor without assuming familiarity in the context of discourse, much as *this* is used colloquily in the (19).[9]

(18) E i ai le foma'i i le fale.
GEN EXP the doctor in the house

The doctor is in the house

(19) there is this doctor in the house.

Even more interesting is the pattern of strong quantifiers in Samoan existentials. Collins (2010) observes that sentences like (20), involving the distributive universal quantifier, are unacceptable.

(20) Sā i ai le tagata ta'itasi i le fale.
PAST EXP the people each in the house

Each person is in the house

Samoan has a phonologically unexpressed (specific) definite plural D. This unexpressed D, which denotes plurals already familiar in a discourse, occurs in existentials like (21) but does not co-occur with the general tense as suggested by (22).

(21) 'O lo'o i ai maile e lua i le fale.
PROG EXP dogs GEN two in the house

The two dogs are (still) in the house.

9 Morphologically definite determiners associated with discourse entities unfamiliar to a listener in this way occur elsewhere in Polynesian and are identified as *semi definite* in some traditional grammars (c.f. Churchward (1953)). I have discussed its interaction with Tongan existentials in Hendrick (2005).

(22) *E i ai maile e lua i le fale.
GEN EXP dogs GEN two in the house

The two dogs are in the house.

Why do Samoan existentials avoid the general tense that is used for habitual and generic statements?[10]. The answer to this question appears to be in noticing that the existential only avoids the general tense if the DP following the expletive predicate is a proper name, deictic DP, familiar definite, or a strongly quantified DP. The point is that the general tense is avoided if the DP following the predicate is a poor pivot. My suggestion is that in such cases the tense expression must function as the pivot. Yet the general tense is not suited to this role because it is a relative modal expression that involves universally quantifying over possible worlds, relative to a pragmatically assigned accessibility scale of normality.[11] What is crucial here is that universal quantification is not suitable for pivots in existentials. The oddness of (22) in comparison to (21) is that it lacks a good pivot.

## 4 Interaction with Questions

Mosel & Hovdhaugen (1992) suggest that *i ai* does not co-occur with questions. A more precise description is that questioning the pivot of a Samoan existential is semantically anomalous, much as the English (40a) is odd in comparison to (24). However, existential sentences can naturally be framed as yes-no questions and the coda can be the basis of an information question in both languages. In example (25) the existential is the basis of a yes-no question.[12] Notice that the GEN tense expression is licensed here because the indefinite partitive can function as the restrictor of the generalize quantifier introduced by the expletive predicate. The scope of the generalized quantifier is the tense expression GEN. The pivot cannot be questioned, but the coda, its adjuncts and the entire proposition can be questioned. [13]

10 The importance of this question is highlighted by the fact that some Germanic languages, in sharp contrast to Samoan, strongly favor habitual interpretations (cf. Czinglar (2002))

11 See Portner (2009) on the formal semantics of modal expressions generally. Mosel (1991) says that the tense expression *(t)e* is used in Samoan to identify possible future events that are indefinite in the sense that the inception or certainty of occurrence is not asserted. It is also used for habitual or customary states of being (even in past or future). Both certainty and habitualness are hallmarks of modal concepts.

12 This example is adapted from Mosel & Hovdhaugen (1992) page 501.

13 A similar analysis could be developed in the spirit of McNally (1997) if one takes the post-copular DP to denote a property that is asserted to be instantiated by an individual in

(23) Who is there sick?

(24) Who is sick?

(25) E i ai sina vai?
GEN EXP D.(part) water

Is there any water?

(26) O anafea sā i ai le foma'i i le fale?
PRT when PAST EXP the doctor in the house

when was the doctor in the house?

(27) O fea e i ai le foma'i?
PRT where GEN EXP the doctor

Where is the doctor?

If the semantic value of a wh-question is identified with the set of all of its true answers in a possible world (following the tradition established by Karttunen (1977)), we expect a wh-phrase to make a poor pivot in existential sentences simply by virtue of universally quantifying over true answers in a possible world. This perspective allows us to understand why wh-questions are anomalous in sentences with the general tense expression: such existential questions would lack a good pivot. The implication of this claim is that yes-no questions like (25) must, in contrast, have good pivots. One way to realize this result is to analyze the semantics of yes-no questions as denoting the existence of a non-null set of true answers in a possible world.[14]

some spatio-temporal coordinates. The problem with 13 will be that no spatio-temporal coordinates are provided to instantiate the individual property.

14 I do not know how readily wh and yes-no questions can be conjoined in Samoan. If they can be, standard assumptions suggest that we would want to assign them to the same semantic type. This could be acheived by letting the yes-no question generally denote a function taking a truth value as its argument, and letting that argument remain a free variable in the semantics proper. A discourse level operation of existential closure that provides an existential quantifier for residual free variables (cf Chung & Ladusaw (2004) ) would provide an existential quantifier in unembedded yes-no questions, but the free variable would be available to be unselectively bound by a universal quantifier when the yes-no question is conjoined with a wh-question. In Samoan sentences like (25) the free variable could be unselectively bound in the semantics proper by the existential quantifier introduced by the expletive predicate *i ai*.

## 5 Possessives

The surface syntactic organization of existential constructions in Samoan parallels that of possessive constructions, as we noted in the introduction. The sentence in (28) makes the similarity obvious. Based on our description of the existential construction, we expect the possessive construction to pattern similarly with respect to the restriction on the general tense marker. This expectation is consistent with (28) in which the general tense occurs with an adjacent indefinite DP.

(28) E iai sau ta'vale?
GEN EXP D(nsp.g).poss.2sg car

Do you have a car? p501

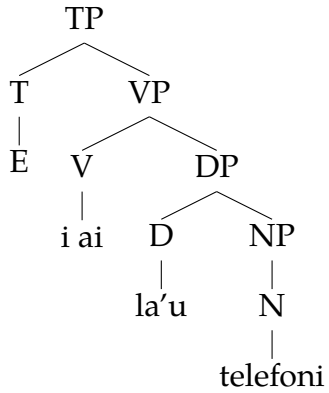
More problematic are examples like (29) in which the general tense combines with a definite D.[15]

(29) E i ai la'u telefoni.
GEN EXP D(sp.g).poss.1sg telephone

I have a telephone (lit. My telephone exists)

On the basis of examples like (29), it appears that the possessive construction departs from the pattern we have observed in the broader existential construction of Samoan.

(30)

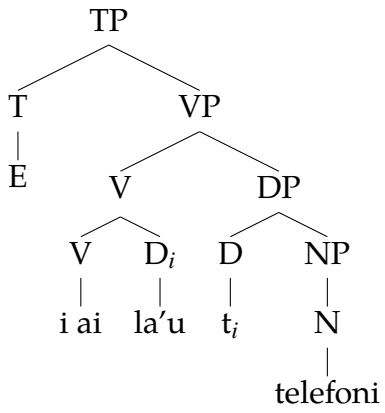



Let us assume that (29) has a syntactic structure like (30). What seems to be required in the possessive construction is a mechanism to give the existential predicate both a restrictor and a coda, and thereby license its composition

15 Example (29) is adapted from Mosel & Hovdhaugen (1992).

with the general tense. If we allow ourselves to make use of a derived level of logical form (LF) we could covertly raise the head D out of the DP, adjoining it to V, as the restrictor of the existential quantifier.[16] We can assume that such an operation is triggered by the possessive feature on D.[17] Adopting the alternative of raising the N, (30) would yield (31).[18]

(31)




Such an operation is observable overtly in the language as well. So, for example, (32) alternates freely with (33), where the possessor *a Ioane* raises overtly to the predicate position.[19]

(32) e 'i ai le solofanua a Ioane.
GEN EXP the horse PRT Ioane

Ioane has a horse

(33) e a Ioane le solofanua
GEN PRT Ioane the horse

The horse is John's

16 The D *lau* will need to denote a set (or property) rather than an individual for it to serve as the restrictor of the quantifier. Presumably *lau* in (29) denotes the set of entities possessed by the speaker.

17 In the framework of Chomsky (1995), the verb would carry an illegible possessive feature and the D would bear a legible possessive feature. D would then be forced to raise to V to erase the illegible feature in order for the derivation to converge at LF. Otherwise the structure would be filtered out as ungrammatical.

18 I am ignoring technical details here concerning the class of operations that are allowed to derive LF and the appropriate syntactic structure that should be assigned to (29). Decisions about whether *la'u telefoni* is syntactically headed by *la'u* or by *telefoni* would change the specifics of the analysis sketched here but not the overarching argument.

19 These examples are adapted from Clark (1969).

Post-nominal constituents can overtly raise to the predicate position in the language as evidenced by the alternation in (34)-(35) where a quantified expression *toatele* takes over the predicate position.

(34) ʻUa ʻi ai foi tamaiti toatele.
PRES EXP CL children most

There were most children

(35) ʻUa toatele foi tamaiti.
PRES most CL children

There are most children

Our analysis is able to explain the naturalness of generic possessive statements such 36-38. These statements involve the general tense/aspect marker *e* and a complex definite DP following the expletive predicate *i ai*, in apparent opposition to the restriction that prevents that tense/aspect marker from composing with definite DPs without an overt coda.

(36) E i ai taʻitasi i le maile vae e fa.
GEN EXP each in the dog leg GEN four

Each dog has four legs

(37) E i ai i le maile tofu vae e fa.
GEN EXP in the dog every leg GEN four

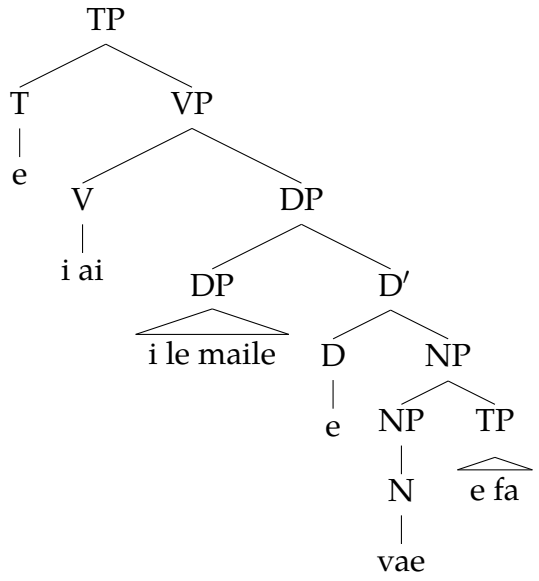
Every dog has four legs

(38) E i ai i le maile ona vae e fa.
GEN EXP in the dog all leg GEN four

All dogs have four legs

Our analysis claims that these existential statements in fact have codas. Suppose that 38, for example, has the syntactic organization in 39.

(39)




In such a case we would treat *i le maile* as a possessive DP and adjoin it to [$_V$ *iai*] at logical form as a restrictor leaving *vae e fa* to serve as the coda/nuclear scope of the predicate.[20]

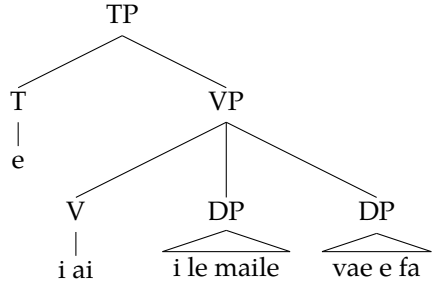
It is worth noting that possessives can serve as the basis of wh-questions, as in (40).

(40) o ai e i ai sana uō?
PRT who GEN EXP 3.sng.poss friend

Who has a friend?

20 Of course if the syntactic organization of ( 38) is (i) there would be a restrictor and a coda already present and nothing would get in the way of the statement composing with the general tense/aspect marker *e*.

(i)



(41) o ai e i ai se loto?
PRT who GEN EXP a heart

Who has a heart?

Such examples are consistent with our earlier analysis of the restriction on the general tense/modal expression in existentials if the D *sana* in 40 adjoins at logical form to the expletive predicate *i ai* as a restrictor, leaving *uō* as its coda/nuclear scope.[21] omething similar would need to be claimed for examples like 41, perhaps treating *se* as a resumptive pronoun of the wh-phrase.

(42) o ai e i ai se loto?
PRT who GEN EXP a heart

Who has a heart?

## 6 Cross-Linguistic Variation

It is possible that natural languages share (at some appropriate level of linguistic analysis) a single syntactic structure for notionally existential constructions, in the spirit of Freeze (1992). From the perspective of a unitary syntactic structure, we face the challenge of explaining the existence of cross-linguistic variation in existential constructions. Alternatively it could be that there are different syntactic structures for existentials and that there are possibly multiple semantic structures as well. Perhaps all that unifies existentials cross-linguistically is the presence of an existential quantifier and some non-canonical syntactic element or structure that serves as a discourse marker of newness, as entertained in McNally (2016). From this perspective that recognizes heterogeneous syntactic and semantic structures, we meet the complementary challenge of limiting the range of cross-linguistic variation by explaining why some types of variation is observed and not others.

Languages vary in how they express existential sentences like the English ( 8 ). We have seen that Samoan differs in at least these important ways:

- Samoan existentials use an expletive element in predicate position
- Samoan existentials contain a predicate introducing an existential generalized quantifier

21 S

- Samoan allows 'definite' DPs as pivots
- Samoan avoids the general modal/tense element in existential sentences without a coda

Conceivably, English and Samoan share the same syntactic structures at some abstract level of syntactic analysis. The properties listed above would then result from other properties of the relevant languages, yet to be discovered, that are independent of existentials. It is possible that these properties cluster together in Samoan for accidental reasons. This viewpoint would be attractive if we thought that existential sentences were not a natural class but classed together because of the contingent interplay of lexical resources and pragmatic forces that shape their deployment in speech.

Czinglar (2002) argues that some Germanic languages strongly favor habitual interpretations in existential sentences. This appears to be the converse of what we have described in Samoan. If one thought that the properties of Samoan existentials listed above clustered together accidentally it would make sense that they could vary independently and, on inspection, we might find languages that exihibited some but not all of these properties. On the other hand, if these properties reflect some deeper unifying principle, we would expect them to re-occur together naturally. While this issue is beyond the limited empirical scope of this paper, it is possible to illustrate the logic of the explanatory choice we confront by speculating briefly on the character of linguistic variation.

English existentials exhibit variation with respect to the (in)definiteness restriction exhibited by their pivots. There have been attempts to explain this variation as a product of the function that the existential construction has in communicative discourse.[22] While nothing in this paper is at odds with the discourse analysis of the variation in the (in)definiteness restriction on pivots, the analysis of the Samoan existentials given here makes available a potential semantic analysis to co-ordinate such discourse accounts with. It does this by enlarging the set of syntactic elements that can be identified as pivots (i.e. the restrictor of the existential generalized quantifier). In particular, the pivot can, at least in some sentences, be identified with the tense/modal expression, freeing other nominals from the need to restrict the existential quantifier. These other nominals then can escape the (in)definiteness restriction and need not be predicative. That is, they are free to be definite or strong quantifiers. The well-known example below in 43, taken from the Challenger Commission report and cited in Ward & Birner (1995), contains a *definite* DP after the

22 See, for example, Ward & Birner (1995) and Abbott (1997).

copula. If pivots need to be predicative, such an DP is not a good candidate for that function. Could the tense/modal expression serve the function of pivot in such cases? If so, we would then expect that modal expressions involving universal quantification over possible worlds would be unavailable in such examples.[23] The example in (44) is designed to test this prediction. I think this, and similar, examples are anomalous in contrast to (43).

(43) I think there was one flight where we had one problem. It wasn't ours, but there was that one flight.

(44) I think there must have been one flight where we had one problem. It wasn't ours, but there must have been that one flight.

The point to notice in (68a) is that the first sentence is fine: although there is a universal modal expression, it need not be a pivot because of the presence of the indefinite *one flight*. It is the second sentence that is semantically odd. Neither the universal modal nor the definite *that one flight* are good pivots. If this line of analysis is on the right track and finds corroboration elsewhere, we would be observing in English the same effect of making a tense expression the pivot of an existential that we saw in Samoan. This is the kind of general effect we would expect in cross-linguistic variation if the cluster of properties in Samoan existentials listed above were principled rather than an accidential grouping.

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23 Prince (1981) offers the naturally occuring examples in (i)-(iv). These sound quite natural both in their original form and with modals of necessity, as shown in (v)-[66]).

(i) there are the same people at both conferences

(ii) there was the usual crowd at the beach

(iii) there was the stupidest article on the reading list.

(iv) there must/has to be the same people at both conferences.

(v) there must/has to be the usual crowd at the beach.

(vi) there must/has to be the stupidest article on the reading list.

I am reluctant to consider this evidence against the analysis offered in the text above because the pivots in i)-(iv) are idiomatic in the sense that they cannot alternate freely between an indefinite and definite D. For this reason, the pivots could be acceptable here just because there is no alternative.

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