Gradability and Modality: Evidence from Samoan

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“Of course, some race of supermen might always consider all possibilities when trying
to decide what ought to be the case, or what ought to be done.” (Sloman 1970, p. 388)

1 Introduction

The Samoan predicate *sili* (‘be preferable, be advisable’) is employed to express goal-oriented weak necessity. As in (1) to (5), it thus used when conveying preferences and priorities. Syntactically, it patterns with other modals, cf. (6) to (7).

(1) E tap sili [ona ‘e nofo i lalo].
   TAP advisable that you sit \( \text{PREP. down} \)
   ‘You should sit down.’

(2) E leai, e sili [ona ‘e alu ‘i lou aiga ma…]
   TAP absent TAP advisable that you go to your family and
   ‘No, go to your own family and…’
   (Mareko 5:19)

(3) Pei e sili [ona ou fesili i le fomai]…
   ‘Looks like I should ask the doctor…’

(4) E sili [pe‘a faapena foi ‘oe].
   TAP advisable when likewise you
   ‘You should do likewise.’

(5) Masalo e sili [ona ‘e tau mai iate a’u le itu’aiga galu’ega ‘o lo’o faia e lou tama].
   ‘I think you should tell DIR. PREP. me the type work TAP do by your father
   ‘I think you should tell me about the kind of work that your father does.’

(6) Ua tatau [ona o’u alu ‘i la’u piriota].
   TAP necessary that I go to my period
   ‘I must go to my class now.’
   (Mosel and Hovdhaugen 1992, p. 599, ex. (15.68))

(7) E mafai [na tautau e Malia le ata]…
   TAP possible that hang by Mary the picture
   ‘It is possible for Mary to hang up the picture…’
   (Villalta 2007, p. 9, ex. (15b))

1 Abbreviations used in glosses include \( \text{DEM.} = \text{demonstrative, DIR.} = \text{directional particle, PART.} = \text{particle used in the Prepositional Phrase of degree constructions, pl.} = \text{plural, pres.} = \text{present tense, PREP.} = \text{plain-vanilla preposition, PRN.} = \text{pronoun, sg.} = \text{singular, subj.} = \text{subjunctive, TAP} = \text{tense-aspect particle, TOP.} = \text{marker of topicalization.} \)
An analysis of *sili* as just another modal, along the lines of Kratzer (1981, 1991) and much subsequent work, thus suggests itself. However, I suggest an analysis under which *sili* relates propositions or individuals to their value on a scale, thereby adding, from a crosslinguistic perspective, to the growing body of work exploring degree-based analyses of modality (cf. e.g. Villalta (2008) and Lassiter (2011)).

The overall question behind this research project concerns how natural languages choose to encode **scalarity**: Is scalarity overtly represented via degree variables or rather introduced into the composition much more indirectly through underlying ordering relations?

## 2 Background: Modals as Quantifiers over Possible Worlds

(8) **Possibility Modals as Existential Quantifiers:**

\[ mafai ('be possible') \] \( \eta = \lambda w_{(s,t)}. \lambda p_{(s,t)}. \exists w' \in \text{MAX}_{\text{order}(w)}(\cap \text{access}(w)) : p(w') \]

(9) **Necessity Modals as Universal Quantifiers:**

\[ tatu ('be necessary') \] \( \eta = \lambda w_{(s,t)}. \lambda p_{(s,t)}. \forall w' \in \text{MAX}_{\text{order}(w)}(\cap \text{access}(w)) : p(w') \]

(10) **Domain Restrictions of Possibility and Necessity Modals**

via Accessibility Relations and Ordering Sources (cf. e.g. Kratzer (1981, 1991)):

### Step 1

![Set of Possible Worlds](image1)

### Step 2

![Accessible Worlds](image2)

### Step 3

![Highest-Ranked Worlds](image3)

(11) **Strong and Weak Necessity**

(Cartoon by Carolita Johnson, *The New Yorker*)

Signs read “Employees must wash hands.” and “Non-Employees really ought to wash their hands, too.”
Under the standard analysis, sili would then have the lexical entry in (13), which it would share with its English counterparts should and ought to, universally quantifying over a subset of the circumstantially accessible possible worlds in which all goals are achieved. Here, scalarity is encoded as part of the contextually provided ordering sources but cannot be compositionally accessed directly.

\[
\text{[sili]}^{w} = \lambda w(s), \lambda p(s, t), \forall w' \in \max_{\text{order 1}(w)}(\max_{\text{order 2}(w)}(\cap \text{access}(w))) : p(w')
\]

3 Evidence in Favor of a Degree-Based Approach

Support for a degree-based analysis of sili comes from a number of constructions that seem to overtly manipulate degree arguments, most importantly operators such as the comparative. More specifically, evidence comes from

1. the well-behaved degree predicate sili (‘great, high’), which expresses a relation between individuals and degrees,
2. the association with other scales with certain types of clausal complements, and
3. the occurrence of sili with clausal complements on the weak necessity reading in a variety of degree constructions.

1. Sili can also function as a plain-vanilla degree predicate with a noun-phrase as one of its arguments: In its Positive form, it shares the interpretation of unmarked degree predicates in Samoan as essentially a superlative, cf. (16) and (18). Its use in the comparative with the directional particle atu (‘away’) is illustrated in (19) and (20), with the standard of comparison introduced by a Prepositional Phrase. Compatibility with degree modifiers such as lava (‘very’) is illustrated in (21).

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2. Not all types of clausal complements of *sili* receive the preference readings of the kind in (1) to (5) above: If the main predicate of the embedded clause introduces an ordering relation on some other degree scale, this scale can also be used for the comparison of alternative propositions.

(16) ‘O ia ‘o le ali’i sili.
TOP. he TOP. the chief great
‘He is the highest chief.’
(Milner 1966, p. 209)

(17) Acceptability judgment task: The Birthday Party
Ich überlege, was ich am Abend zu einer Geburtstagsfeier anziehen möchte. Ich habe ein rotes und ein schwarzes Kleid oder aber einen Hosenanzug zur Auswahl. Ich möchte deine Meinung hören und frage:

(18) ‘O le fēa e sili?
TOP. the which TAP great
‘Which is the best?’

(19) E sili atu le umi o Ioane [iā Malia].
TAP great DIR. the height of John PREP. Mary
‘John’s height is greater compared to Mary.’

(20) Ua sili atu [i lō le 10 talo].
TAP great DIR. PREP. PART. the ten taro
‘These are more than ten taro roots.’
(Milner 1966, p. 209)

(21) E sili lava le faasamoa!
TAP great very the Samoan.language
‘The Samoan language is the very best!’

(22) ‘O ai e sili [ona ‘e fēa i ai]?
TOP. who TAP much that you fear PREP. + PRN.
‘Whom do you fear most?’

(23) ‘O le ā le vaega o le tala e sili [ona ‘e fiafia i aii]?
TOP. the what the section of the story TAP great that you like PREP. PRN.
‘Which parts of the story did you like best?’

(24) ‘O le mea lava e fetaui ma ou faalogona,
TOP. the thing very TAP meet with your feeling
‘o le mea lena e sili [ona aoga mo ‘oe].
TOP. the thing DEM.sg. TAP great that use for you
‘Whatever feels right for you will work best.’


(26) Prompt: “Wie heißt der höchste Berg?”
(What’s the name of the highest mountain?)

(27) ‘O ai le mauga e sili [ona maualuga]?
TOP. who the mountain TAP great that high
‘What is the highest mountain?’

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3 Translation: I’m wondering about what to wear to a birthday party tonight. I’m considering wearing either my red or my black dress or the suit that I have. I want to know what you think and ask you the following question:

4 Translation: I’m writing a report about Samoa but I can’t quite remember whether Mauga Silisili or Mauga Mataaga is the highest mountain in Samoa. I ask one of my Samoan friends.
3. Even on the preference reading with a clausal complement, *sili* can participate in these degree constructions, as is illustrated by the comparatives in (29) and (31).

(29) E *sili* *atu* ona ‘e savali [nai lo’o le ave o le taavale].
TAP advisable DIR. that you walk PREP. PART. the drive of the car
‘It is better to leave by foot than to drive.’

(30) Context: Taumafai ina ia mafai ona ‘a’ai tamaiti i le mea’ai o le taeao. O le alu i le aoga a’o la e gaogao le manava, o lona uiga o le tele a la o taimi o le a ‘ai ia kipi poo mea suamalie i vaiaiga mulimuli ane ai.
Try and ensure children eat breakfast. Leaving for school on an empty stomach means children are more likely to snack on chips or sweets later.

(31) E *sili* *atu* ona amata le aso i le mea’ai o le taeao i le cereal…
TAP advisable DIR. that begin the day PREP. the food of the morning PREP. the cereal
‘It is better to begin the day with cereals for breakfast…’

These facts fall out straightforwardly from an analysis of *sili* as a type-polymorphic degree predicate.

4 Analysis

Gradable predicates in English are assumed to express relations of type ⟨s, ⟨d, (e, t)⟩⟩ (cf. e.g. Stechow (1984) and Beck (2011)). I propose that Samoan degree predicates share the semantics of their English counterparts, cf. the lexical entry in (32).

(32) [ *maualuga* (*high*) ] = λw(s).λd(d).λx(e). HEIGHT_w(x) ≥ d

These predicates then combine with a variety of operators such as the comparative, the superlative, and the covert Positive. In Samoan, the Positive, however, differs from its English counterpart in that it does not make reference to some standard (cf. e.g. Kennedy (2007), Stechow (2009), and Solt (2011)), but introduces a contextually restricted universal quantifier, as in (35).

(33) Comparative Operator:
[ *atu* _c_⟨e,t⟩ ] ^g = λR_d(⟨e,t⟩). MAX(λd. R(d)(x)) > g(c)
(cf. also Hohaus (2010) and Hohaus (2012b))

(34) Maximal Operator:
[ MAX ] = λD_d(e,t). (∀d’ [D(d') → d' ≤ d]]

(35) Covert Positive Operator in Samoan:
[ *pos* _C_⟨e,t⟩ ] ^g = λR_d(⟨e,t⟩). λx(e). ∀y [ (g(C))(y) & y ≠ x → MAX(λd. R(d)(x)) > MAX(λd'. R(d')(y))]  
(cf. also Hohaus 2012a)

(36) _John is tall._
“John is taller than average.”

(37) Covert Positive Operator in English:
[ *pos* _C_⟨e,t⟩ ] ^g = λR_d(⟨e,t⟩). λx(e). MAX(λd. R(d)(x)) > average(g(C))
(cf. also Stechow 1984, p. 60)

Evidence for (35) comes from the fact that sentences such as (42) and (39) are reliably rejected by native speakers in acceptability-judgment tasks in contexts such as (41) and (38). Under the semantics in (35), this behavior is expected.

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(38) Acceptability judgment task: The Temperature Chart

(39) 

#E mafanfana Iuni.
TAP warm June
‘June is warm.’

Comment: “E mafanfana Iulai.”
(July is warm.)

(40) Acceptability judgment task: The Basketball Players

(41) 

#E umi Malia.
TAP tall Mary
‘Mary is tall.’

Comment: “E umi Falani. ‘O Malia e puupuu.”
(Frank is tall. Mary is short.)

(42) 

[ (42)] \[= 1 \]
iff \forall y[(g(C))(y) \& y \neq Mary \rightarrow \text{MAX}(\lambda \text{d.HEIGHT}(\text{Mary}) \geq d) > \text{MAX}(\lambda \text{d.HEIGHT}(y) \geq d)]
iff \forall y[(g(C))(y) \& y \neq Mary \rightarrow \text{HEIGHT}(\text{Mary}) > \text{HEIGHT}(y)]
with \( g(C) = \{ \text{Frank, Mary} \)
(47) E sili ai lo’u moe i loimata maligi.
TAP great PRN. my sleep PREP. tear pour
(Lit.) ‘My sleep in pouring tears is preferable.’
‘I’d rather sleep in tears.’

(48) E sili le puipua.
TAP great the prevention
‘Prevention is preferable.’

However, the degree predicate sili is special in that it also allows for proposition-level complements, cf. the revised lexical entry in (49) and the revised POS-operator in (50).

(49) \[ \text{sili}^{\#} = \lambda w. \lambda \mu. (\alpha. \mu w (\alpha) \geq d), \]
with \( \alpha \) of type \( \langle c \rangle \) or \( \langle s, t \rangle \).

(50) \[ \text{POS}_{C,(s,t)}^{\#} = \lambda R. \lambda d. (\alpha. \mu. (\forall \beta [[g(C)](\beta)) \& \beta \neq \alpha \rightarrow \text{MAX}(\lambda d. R(d)(\alpha)) > \text{MAX}(\lambda d'. R(d')(\beta))), \]
with \( \alpha \) of type \( \langle c \rangle \) or \( \langle s, t \rangle \).

(2) E leai, e sili [ona ‘e alu ‘i lou aiga ma...] 
TAP absent TAP advisable that you go to your family and
‘No, go to your own family and...’
(Mareko 5:19)

(51) Logical Form:

\[ \begin{array}{c}
\lambda w_2 \\
\langle s, t \rangle \\
\langle (s, t), t \rangle \\\n\langle (d, (s, t)), (s, t), t \rangle \\
\lambda w_1 \\
\langle s, t \rangle \\
\langle (e, s, t), t \rangle \\
\langle (e, (e, s, t)), (e, s), t \rangle \\
\langle (e), t \rangle \\
\langle (e, (e), t) \rangle \\
\langle (e) \rangle \\
\end{array} \]

Focus might help determine the set of contextual alternatives in the comparison. The free variable introduced by the POS-operator may be constrained by the focus semantic value of the embedded clause (cf. Rooth (1985, 1992) for focus semantics and Heim (1999) for focus in degree constructions).

(52) \[ [2]^{\#} = \lambda w. \forall q [[g(C)](q) \& q \neq \lambda w'. \text{you-go-to-your-family}_{w'} \rightarrow \text{MAX}(\lambda d. \mu w (\lambda w'. \text{you-go-to-your-family}_{w'} \geq d)) > \text{MAX}(\lambda d'. \mu w (q \geq d'))] = \]
\[ \lambda w. \forall q [[g(C)](q) \& q \neq \lambda w'. \text{you-go-to-your-family}_{w'} \rightarrow \mu w (\lambda w'. \text{you-go-to-your-family}_{w'}) > \mu w (q)], \]
with \( \mu \) a measure function on the preference scale and \( g(C) = \{ \lambda w. \exists x [\text{go-to}_{w}(x)(g(3))] \} \)

(53) \[ g(C) = \{ \lambda w. \text{you-go-to-your-family}_{w}; \lambda w'. \text{you-don’-t-go-to-your-family}_{w'} \} \]
Acceptability judgment task: Heights
Malia ist 1,78 Meter groß. Ioane ist 1,82 groß. Falani ist 1,86 Meter groß.6

E sili [ona umi Falani].
TAP great that tall Frank
‘Frank is the tallest.’

Under the degree-based analysis, all of the data above as well as the focus-sensitivity of sili with respect to the relevant sets of alternatives are easily explained.

5 Discussion and Concluding Remarks

In contrast to the account in Villalta (2008) for Spanish, the analysis presented here did not have to stipulate a new covert operator but could make use of the POS-operator in the Samoan inventory of degree operators. This raises the question whether in Spanish, the respective POS-operator could also do the job and opens up an interesting source of exploration for variation.

Victoria quiere que Marcela venga al picnic.
‘Victoria wants Marcela to come to the picnic.’
(Villalta 2008, p. 470, ex. (5))

\[ \text{querer (‘want’)} = \lambda w_{(s)} \cdot \lambda d_{(d)} \cdot \lambda p_{(s,t)} \cdot \lambda x_{(e)} \cdot \text{DESIRABILITY}_{w,x}(p) \geq d \]
(Villalta 2008, p. 513)

\[ [\emptyset C_{(s,t)}]^q = \lambda R_{(d,((s,t),(e,t)))} \cdot \forall q ([q(C)](q) \& q \neq p \rightarrow \max (\lambda d. R(d)(p)(x)) > \max (\lambda d'. R(d')(q)(x))] \]
(Villalta 2008, p. 514)

“I will thus propose that, for predicates such as want, the comparison relation is introduced by an abstract $\emptyset$-morpheme. Notice that, in such an analysis, the $\emptyset$-morpheme has the meaning of a superlative morpheme, rather than an absolute morpheme (as it is the case for adjectives).”
(Villalta 2008, p. 514)

Even in the verbal domain, a language should make use of the inventory of operators available, and Spanish as well as English should employ a version the covert Positive operator that has already been posited for the adjectival domain. We would then expect propositional attitude verbs in English and Spanish to exhibit Positive-like (rather than Superlative-like) behavior, e.g. under negation as in (61) and in allowing for alternatives higher-ranked than the embedded proposition.

\[ \text{John is not tall.} \rightarrow \text{John is small}. \]

I leave this question, as well as the question in how far other Samoan modals should be assigned a degree-based semantics, for future research to explore.

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6 Translation: Mary is 5’8” tall. John is 5’9” tall. Frank is 6’1” tall.
I am indebted to the Samoan native speakers that, at various stages, have contributed to this project.

References


