AFLA 23
The Proceedings of the 23rd Meeting of the Austronesian Formal Linguistics Association

edited by
Hiroki Nomoto, Takuya Miyauchi and Asako Shiohara

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The Austronesian Formal Linguistics Association (AFLA) is an organization that promotes the study of Austronesian languages from a formal perspective. The 23rd Annual meeting of the Austronesian Formal Linguistics Association (AFLA 23) was held at Tokyo University of Foreign Studies, Japan in June, 2016. Of the 30 papers presented at the conference, 20 are included in this volume, with contributions on languages including Tagalog, Malay/Indonesian and Formosan languages in Taiwan and on topics covering syntax, semantics and phonology.

Asia-Pacific Linguistics

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College of Asia and the Pacific
The Australian National University

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Preface

The 23rd Annual Meeting of the Austronesian Formal Linguistics Association (AFLA 23) was held on 10–12 June 2016 at Tokyo University of Foreign Studies. The programme consisted of 27 presentations in addition to three plenary talks by Edith Aldridge, Paul Kroeger and Hooi Ling Soh. This volume includes 20 papers from the conference. Abstracts for these papers underwent peer review prior to acceptance to and presentation at the conference. In light of this, the papers included in this volume did not undergo further peer review.

Hiroki Nomoto, Takuya Miyauchi and Asako Shiohara

DESCRIPTIVE VS. EXPRESSIVE REDUPLICATION IN KIMARAGANG

Paul Kroeger
GIAL & SIL Intl.
paul_kroeger@gial.edu

Jim Johansson
SIL Malaysia
jim_johansson@sil.org

In addition to the familiar use of CV-reduplication in Philippine-type languages to mark imperfective aspect, a distinct but partially homophonous category of CV-reduplication is found in Kimaragang which we label EMPHATIC REDUPLICATION. Emphatic reduplication contributes primarily expressive rather than descriptive (truth-conditional) meaning, as indicated by the fact that its semantic contribution is "immune" to negation and questioning. We suggest that the primary function of emphatic reduplication is to mark the current proposition as being "newsworthy" in some sense, but a number of secondary functions are observed as well.

1.   Introduction

This paper discusses the functions of CV-reduplication in Kimaragang Dusun, an endangered Philippine-type language of northeastern Borneo. Many Philippine-type languages use CV-reduplication in verbs to mark imperfective or non-completive aspect. CV-reduplication has aspectual functions in Kimaragang as well, specifically marking the continuous and habitual aspects. However, many instances of CV-reduplication in Kimaragang do not encode any specific aspectual meaning. In this paper we provide evidence for a distinct category, which we label EMPHATIC REDUPLICATION, that contributes primarily expressive (or "affective") meaning, rather than descriptive (truth-conditional) meaning.

There are several reasons to expect that expressive uses of reduplication should be fairly common cross-linguistically. Recurring semantic functions of reduplication include several which are clearly expressive in nature, including endearment, contempt, derogation, disorder, carelessness, lack of control, aimlessness, etc. (see Regier 1994 and references cited there). Moreover, reduplication is frequently used to form diminutives and augmentatives, both of which frequently acquire expressive functions. Finally, ideophones (which frequently bear expressive content) often have a reduplicated structure. In spite of these connections between reduplication and expressive meaning, relatively few cases of expressive reduplication have been documented.[1] We suspect that many more such cases exist, but have thus far been unrecognized.

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[1] One frequently cited example is discussed in Zwicky & Pullum (1987).

2.   Expressive vs. descriptive meaning

Lyons (1995:44) defines EXPRESSIVE (or AFFECTIVE) meaning as "the kind of meaning by virtue of which speakers express, rather than describe, their beliefs, attitudes and feelings," in contrast to DESCRIPTIVE (or PROPOSITIONAL) meaning which determines denotations and truth values.

Kaplan (2004) distinguishes "subjective" expressives (like *ouch*), which express the speaker's attitudes and feelings, from "objective" expressives (like *oops*), which express something about situations in the external world. The definition quoted above from Lyons focuses on the "subjective" type, and these have been the focus of most work on expressives. But Kaplan claims that the difference between descriptive vs. expressive meaning is not the type of information conveyed, but rather the way in which that information is conveyed (describing vs. expressing or "displaying").[2] In section 5 below we show that emphatic reduplication in Kimaragang has objective as well as subjective expressive functions.

Expressive meaning has a number of characteristic properties which distinguish it from descriptive meaning. These include: a. INDEPENDENCE from truth-conditional content; b. NONDISPLACEABILITY (normally anchored to the perspective of the speaker at the moment of speaking); c. IMMUNITY to negation, questioning, or challenge; d. SCALABILITY and REPEATABILITY; e. DESCRIPTIVE INEFFABILITY (often difficult to paraphrase, explain, or translate). f. Markers of expressive meaning often have several possible meanings, with the correct interpretation depending heavily on context (cf. Cruse 1986, 2000; Potts 2007; Fortin 2011).

3.   Expressive reduplication in Kimaragang nouns

Before getting into the details of Kimaragang verb morphology, in this section we illustrate some of the expressive uses of CV-reduplication in nouns. The most common use of CV-reduplication in nouns is to express negative attitudes toward the referent of the NP, or toward a situation within which the referent of the NP plays a central role. For example, the partial reduplication of the noun *linomumut* 'rice porridge' in (1a) expresses the speaker's feeling that plain rice porridge without any side dishes is not an adequate meal. The reduplication of the noun *bosikal* 'bicycle' in (1b) expresses the speaker's evaluation of an old, worn-out bicycle as being nearly worthless. The reduplication of the noun *boos* 'boss' in (1c) is a mark of disrespect, and the reduplication of *gata* 'frog' in (1d) expresses the inappropriate and unwelcome nature of the gift. The reduplication of the noun

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[2] It seems that Kaplan's distinction has not been widely adopted in subsequent work on expressive meaning. Perhaps Kaplan's "objective" expressive items might be better analyzed as ideophones, in the sense of Dingemanse (2012). Dingemanse characterizes ideophones as expressions which "depict" or "perform" their semantic content, rather than describing it.

tongondu 'woman' in (1e) expresses the disapproval of a jealous wife, and probably also indicates that the referent of the NP is not a relative or close acquaintance.

(1) a. *Li-linomumut*   no   nakan   ku   tu'   asot   rinapa.
    DUP-rice.porridge FOC PST.eat.OV 1sg.GEN because not.exist viand
    'Plain rice porridge was all I ate, because I didn't have any viand/side dish.'

   b. Ginaray   no   i   *bo-bosikal*   di   Uddui   nga'
    worn.out   already NOM DUP-bicycle GEN (name) but
    korikot   po sid botung.
    POTENT.arrive   still at rice.field
    'Uddui's bicycle is a wreck, but it can still get to the paddy field.'

   c. *O-ki-kibak*   a   *bo-boos*   nga' agarang mari ilo'.
    STAT-DUP-short   NOM DUP-boss but fierce   really that
    'The boss is a little short man, but he is really harsh/fierce.'

   d. *Bu-buka-a'*   dialo it odia nga' *ga-gata*=i'   bala' iri.
    DUP-open-OV.ATEMP 3sg NOM gift but DUP-frog=FOC MIR this
    'He/she opened the present, and it was a frog!'

   e. Isay ot   aa'   oruol o   ginawo dot   miuruk-uruk kow
    who NOM NEG hurt NOM heart   COMP eat.together 2pl.NOM
    di *to-tongondu* mangakan.
    GEN DUP-woman   AV.eat
    'Who wouldn't be hurt/upset, when you were eating together with some strange woman?'

      The expressive meaning contributed by reduplication often reinforces a part of the descriptive content of the sentence. For example, the expressive function of the nominal reduplication in (1b) reinforces the entailed descriptive content of the lexical predicate *ginaray* 'worn out', but there is no sense of redundancy as there would be if the reduplication had a purely descriptive function. As mentioned in the preceding section, expressive meaning is scalable and repeatable. Another aspect of this property is that expressive meaning is reinforceable in ways that descriptive meaning is not. Reinforcing an entailed component of meaning with additional descriptive content normally leads to unnatural redundancy (Cruse 1986:12; Sadock 1978:294).

      The exhaustive focus particle *no* in (1a) contributes the descriptive content 'only'.[3] The nominal reduplication in that example expresses the speaker's attitude toward the fact that rice porridge is the only food item available. Similar cases of expressive reduplication combining with exhaustive focus are seen in examples (2b-c) below.

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[3] The same particle appears in its aspectual sense in (1b), meaning roughly 'already'.

The expressive function of emphatic reduplication in nouns is often reinforced by emphatic reduplication of one or more verbs within the same sentence, as illustrated in (1d). The verbal reduplication in this example does not encode imperfective aspect; the clause is a simple perfective description of a telic event. Rather, it is another instance of emphatic reduplication. This example also illustrates how the verum focus (or polarity focus) clitic *=i'* is frequently used to reinforce the expressive impact of emphatic reduplication.[4]

The noun *siin* 'money' is often reduplicated when the speaker is bemoaning a lack of money, as illustrated in (2a-b). The same pattern is used with other kinds of possessions as well, as illustrated in (2c). Such cases clearly involve a negative attitude toward the situation being described, rather than a negative attitude toward the referent of the NP itself. The reduplication of the noun *wagas* 'uncooked rice' in (2b) reflects the feeling that rice is not the most appropriate or preferred contribution to make in that situation (e.g., to the bereaved family at a funeral).

(2) a. Opod   ringgit   po   ot   *si-siin*   ku   diti.
    ten   dollar   yet   NOM   DUP-money   1sg.GEN   this
    'Just ten ringgit is all the money I have left.'

  b. *Wa-wagas*   no   ot   itarabang   ya   diti   tu'   asot
    DUP-rice   FOC   NOM   IV.donate   1pl.EX.GEN   this   because   not.exist
    si-siin   ya.
    DUP-money   1pl.EX.GEN
    'We are only donating uncooked rice, because we don't have any money.'

  c. Onom   nenan   no   i   *ma-manuk*   piniara   ya.
    six   CLS   FOC   NOM   DUP-chicken   PST.raise.OV   1pl.EX.GEN
    'It was only six chickens that we raised.'

  d. *Mi-minaan*   no   dialo   *poo*ruruko'   it   *si-siin*   yo.
    DUP-AUX.PST   FOC   3sg   IV.display.ATEMP   NOM   DUP-money   3sg.GEN
    'He was (proudly) showing (all) his money.'

In contrast, the reduplication of *siin* 'money' in (2d) expresses the speaker's disapproval of the obnoxious behavior of someone that has too much money. This expressive content is reinforced by emphatic reduplication of the auxiliary verb *minaan* 'AUX-past', and by vowel lengthening in the stem prefix of the main verb *po-ruruk-on* 'show'. The contrast between the uses of *si-siin* in (2a-b) vs. (2d) is a good illustration of the variable and context-dependent nature of expressive meaning.

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[4] The CV-reduplication of the adjective *okibak* 'short' in (1c) may simply be (descriptive) intensification, but it may also be intended as emphatic reduplication to reinforce the expressive content of the nominal reduplication in that example. The reduplication of the verb root in *miuruk-uruk* 'eat together' is purely morphological, being triggered by the reciprocal prefix *pi-*.

4.   Aspectual reduplication in Kimaragang

This section provides a brief description of the descriptive uses of CV-reduplication in Kimaragang verbs, focusing on two uses which are potentially homophonous with emphatic reduplication, namely the continuous and habitual aspects. In section 5.1 we discuss morphological criteria which allow us to distinguish emphatic reduplication from these aspectual uses.

There are also a number of affixes which trigger CV-reduplication, either optionally or obligatorily. Examples include: *pi-*DUP-X 'do X frequently/quickly' (e.g. *pi-ba-basa* 'read frequently'); VOICE-*pi-*(DUP-)X 'do X reciprocally' (e.g. *m-pi-sa-sawo* 'marry each other' (AV)); *ko-*DUP-X 'cause/reason for X-ing' (e.g. *ka-pa-patay* 'cause of death'); etc. These forms will generally not be homophonous with emphatic reduplication, due to the presence of the triggering affix, so we do not discuss them further in this paper.

4.1.   Continuous aspect

Continuous aspect specifies that the described situation extends beyond the boundaries of topic time. We follow Comrie (1976) in using the label CONTINUOUS (rather than PROGRESSIVE) because this aspect can be used for states as well as events. The morphological expression of continuous aspect depends on the form of the stem. The various allomorphs are illustrated in (3). The forms listed in (3a-b) are labeled AV (Active Voice), because this is how they most commonly occur. However, these forms can also be used in non-active clauses to express a result state, e.g. *m-ogot-ogot* 'tied up'; *muu-tumbongon* 'parked'.

(3)   Allomorphs of continuous aspect in Kimaragang:

   a. AV, consonant-initial root
   darun 'rain'   *maa-darun* 'raining'
   tulud 'fly'   *muu-tulud* 'flying'
   sigup 'tobacco; to smoke'   *mii-sigup* 'smoking'
   togom 'feverish'   *moo-togom* 'having a fever'
   geet 'to scratch something'   *mee-geet* 'scratching'

   b. AV, vowel-initial root
   akan 'eat'   *m-akan-akan* 'eating'
   ogot 'tie'   *m-ogot-ogot* 'tied up' (result state)
   udan 'to coil, untangle'   *m-udan-udan* 'coiling'
   irak 'laugh'   *m-irak-irak* 'laughing'

   c. Non-AV, consonant-initial root
   sigar 'turban, head-dress'   *si-sigar-on* 'being worn as a turban'
   birit 'hold'   *bi-birit-on* 'being held'

kuut 'grasp'	*ku-kuut-an* 'being grasped'
rolop 'gobble up, devour'	*ro-rolop-on* 'being devoured'

d. Non-AV, vowel-initial root

akan 'eat'	*a\<ka>kan-on* 'being eaten'
irak 'laugh'	*i\<ra>rak-an* 'being laughed at'
inum 'drink'	*i\<nu>num-on* 'being drunk'
ubat 'medicine'	*u\<ba>bat-on* 'being treated (medically)'

AV forms for consonant-initial roots (*mVV*-ROOT) are unambiguously continuous aspect. Other allomorphs are potentially ambiguous, but there are certain syntactic environments where the continuous aspect is strongly preferred. These include perception complements, as in (4); picture-taking descriptions of the form 'took a picture of NP X-ing', as in (5); and bare adverbial clauses expressing simultaneous events as in (6).

(4) a. Nokito   ku   yalo   *muu-duom*   do   wagas.
     PST.see.OV 1sg.GEN 3sg.NOM AV.CONT-chew ACC uncooked.rice
     'I saw him *chewing* uncooked rice.'

   b. Neemot   ku   it   karabaw dialo *moo-kotop*
     PST.see.OV 1sg.GEN NOM buffalo 3sg AV.CONT-graze
     sid   disan dot   talun-alun.
     LOC   edge   GEN   road
     'I saw his water buffalo *grazing* on the side of the road.'

   c. Nokorongow oku   dot   *mii-giyak*   sid   gowuton.
     PST.AV.hear 1sg.NOM COMP AV.CONT-scream LOC jungle
     'I heard something/someone *screaming* in the jungle.'

(5) a. Minaan   ku   gambaro'   i   Paul *muu-duom*
     PST.AUX 1sg.GEN picture.OV.ATEMP NOM Paul AV.CONT-chew
     do   wagas.
     ACC uncooked.rice
     'I took a picture of Paul *chewing* uncooked rice.'

   b. Minaan   gambaro'   di   Welin i   aki
     PST.AUX picture.OV.ATEMP GEN Welin NOM Grandfather
     moo-podsu   sid   bawang do   Togomonggis.
     AV.CONT-bathe LOC river   LNK Togomonggis
     'Welin took a picture of Grandfather *bathing* in the Togomonggis river.'

(6) a. *Muu-duom*   yalo   do   wagas di   kooli   oku.
     AV.CONT-chew 3sg.NOM ACC rice   COMP AV.POT.return 1sg.NOM
     'He was *chewing* uncooked rice when I got home.'

b. *Moo-kotop*   it   karabaw dialo sid   disan dot talun-alun
   AV.CONT-graze   NOM buffalo 3sg LOC edge GEN road
   di   talib   oku   kasarap.
   COMP AV.pass.by.ATEMP 1sg.NOM this.morning
   'His buffalo was *grazing* at the side of the road when I passed by this morning.'

c. *Maa-gamas*   i   iyay   di   sigup   yo   di
   AV.CONT-cut.grass NOM mother ACC tobacco 3sg.GEN COMP
   korikot   oku.
   AV.POT.arrive 1sg.NOM
   'Mother was *clearing* the grass/weeds in her tobacco patch when I arrived.'

Other forms are generally not acceptable in these environments. The examples in (7) illustrate that the HABITUAL form (to be described in the next section) cannot occur in these environments.

(7) a. *Mii-sigup*/**mooN-(s)igup*   yalo   di   talib
      AV.{CONT/*HABIT}-smoke   3sg.NOM   COMP   AV.pass.by.ATEMP
      oku   sid   walay yo.
      1sg.NOM   LOC house 3sg.GEN
      'He was *smoking* when I passed by his house.'

b. Ginambar   oku   dialo tiya di   *maa-tayip*/**maaN-(t)ayip*
   PST.picture.OV 1sg.NOM 3sg   time LNK AV.{CONT/*HABIT}-type
   oku   bala' diri.
   1sg.NOM   MIR   this
   'He/she took a picture of me *typing* (to my surprise)!'

The examples in (8) illustrate how these syntactic environments can be used to disambiguate reduplicated verb forms. The reduplicated forms used in these examples are ambiguous between continuous and emphatic uses, but in these contexts only the continuous reading is possible.

(8) a. Neemot   ku   i   baju ku,   *bo-boju-on*   di   Medol.
      PST.see.OV 1sg.GEN NOM shirt 1sg.GEN CONT-wear-OV GEN Medol
      'I saw my shirt *being worn* by Medol.'

b. *Bo-boyuk-on*   dialo i   tanak yo   di   korikot   oku.
   CONT-rock-OV 3sg   NOM child 3sg.GEN COMP AV.POT.arrive 1sg.NOM
   'Her child was *being rocked* by her in the cloth swing when I arrived.'

c. *Mirak-irak*   yalo   dit   ginambar   ku.
   AV.CONT-laugh 3sg.NOM COMP PST.picture.OV 1sg.GEN
   'He was *laughing* when I took his picture.'

d. Nokito   ku   dot   *a\<ka\>kan-on* do   tasu i   manuk.
   PST.see.OV 1sg.GEN   COMP   CONT-eat-OV   GEN   dog   NOM   chicken
   'I saw the chicken *being eaten* by a dog.'

4.2. Habitual aspect

Habitual aspect is marked by two primary allomorphs: vowel lengthening for prefixed base forms, as in (9), and CV-reduplication as in (10).[5] Habitual forms of vowel-initial base forms like those in (11) are best treated as vowel lengthening, and not CV-reduplication applied to a single vowel. A distinct pattern of CV-reduplication, skipping the initial vowel as illustrated in (3d), is used for continuous aspect and emphatic reduplication. The contrast between vowel lengthening vs. CV-reduplication gives rise to minimal pairs like: *u-umbuson* 'habitually used as vegetable (OV)' vs. *um\<bu\>buson* 'used as vegetable (OV)' (continuous/emphatic).

(9) prefixed base forms:

BASE FORM		**HABITUAL**	
manakaw (m-poN-*takaw*)	'steal' (AV)	maanakaw	'habitually steals; thief'
momudut (m-poN-*wudut*)	'lie' (AV)	moomudut	'habitually lies; liar'
mogintong (m-pog-*intong*)	'look at' (AV)	moogintong	'seer'
mogurab (m-pog-*urab*)	'hunt w/ blowgun' (AV)	moogurab	'hunter'
mokirayow (m-poki-*rayow*)	'to seek praise; show off' (AV)	mookirayow	'habitually showing off'
pokigangatan (poki-*gangot*-an)	'place to seek firewood' (DV)	pookigangatan	'place firewood is habitually sought'
kopolidon (ko-*palid*-on)	'place where one may get lost' (LV)	koopolidon	'place where people always get lost'
pangalasan (poN-*olos*-an)	'borrow from' (DV)	paangalasan	'habitually borrowed from'
pongolopot (Ø-poN-*lopot*)	'use for wrapping' (IV)	poongolopot	'normally used for wrapping'
padagang (Ø-po-*dagang*)	'to sell' (AV)	paadagang	'sells for a living; dealer'

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[5] For some speakers, vowel lengthening also applies to the reduplicated syllable in forms like (10). (Vowel lengthening in such forms appears to be an option for marked emphasis for all speakers.) For these speakers, habitual aspect will rarely if ever be homophonous with emphatic reduplication.

(10) non-prefixed base forms: consonant initial

BASE FORM			HABITUAL	
l<um>*agu*	'sing' (AV)		lu-lumagu	'habitually sings' (e.g. when drunk)
t<um>*angi*	'dissolve' (AV)		tu-tumangi	'soluble'
r<um>*asak*	'dry up' (AV)		ru-rumasak	'habitually dries up (river)'
sambayang-on	'worship at' (LV)		sa-sambayangon	'place one normally worships'
rusap-on	'make traditional medicine' (OV)		ru-rusapon	'commonly used for traditional medicine'

(11) non-prefixed base forms: vowel initial

BASE FORM		HABITUAL	
akan-on	'eat' (OV)	a-akanon	'edible'
umbus-on	'cook vegetables' (OV)	u-umbuson	'used as a vegetable'
olos-on	'borrow' (OV)	o-oloson	'habitually borrowed'

5.   "Emphatic" reduplication in Kimaragang

We begin this section by discussing morphological criteria for distinguishing emphatic reduplication from other uses of CV-reduplication, then go on to discuss the most common semantic functions of emphatic reduplication.

5.1.   Identifying emphatic reduplication

As we have seen, CV-reduplication in Kimaragang verbs is potentially ambiguous. In addition to the syntactic contexts discussed in section 4.1, there are certain morphological properties that help us to distinguish emphatic reduplication from purely aspectual uses of CV-reduplication (continuous or habitual). First, past tense inflection cannot co-occur with continuous or habitual aspect, as illustrated in (12-13), but is common with emphatic reduplication (see examples in sections 5.2-5.3). The reduplicated forms in exx. (12b) and (13b) are morphologically possible, but cannot be interpreted with continuous or habitual meaning; they can only be cases of emphatic reduplication. (The most common allomorph of continuous aspect, *mVV-*, never co-occurs with past tense.)

(12) Continuous:
    a. Nemot   ku   ilo'   tanak *bo-boyuk-on*   di   tidi.
        PST.see.OV 1sg.GEN that.NOM child DUP-swing-OV GEN mother
        'I saw the child being rocked in the *bayuk* (cloth swing) by its mother.'

    b. *Nemot ku ilo' tanak *bi-b*<in>*ayuk-Ø* [DUP-<PST>swing-OV] di tidi.

(13) Habitual:

    a. Siri   ot   *sa-sambayang-on* ku   dit   mii-sikul   oku   po
       there NOM DUP-worship-LV 1sg.GEN COMP CONT-school 1sg.NOM still
       'That is where I used to worship/attend church when I was in school.'

    b. *Siri ot *si-s\<in\>ambayang-on* [DUP-\<PST\>worship-LV] ku dit miisikul oku
       po.

       Second, only emphatic reduplication allows "infixing" reduplication with consonant-initial base forms. CV-reduplication which expresses continuous or habitual aspect always seems to copy the initial CV of the base, when the base begins with a consonant; but in emphatic reduplication it is possible to copy a non-initial CV, as in *ma\<nga\>ngakan* (from *mangakan* 'eat.AV'); *mo\<ni\>niag* (from *moniag* 'forbid.AV').

       In such cases the copied CV generally contains the first root vowel (roots: *akan* 'eat'; *tiag* 'forbid'). However, emphatic reduplication also allows some variation in the site of the CV copying, e.g. *moki\<tu\>tulung* vs. *mo\<ki\>ki-tulung* 'ask for help (AV)' (root: *tulung* 'help'); *poki-a\<ka\>kan-an* vs. *poki-\<'a\>'akan-an* 'ask/want to eat (DV)'. This variable position of the CV-reduplication is found only with emphatic reduplication.

       Finally, transitive Active Voice forms (and certain other prefixed forms) exhibit contrastive allomorphs for all three categories under discussion: *mii-tiag* (continuous), *mooniag* (habitual), *mo\<ni\>niag* (emphatic) 'forbid'; *maa-takaw* (continuous), *maanakaw* (habitual), *ma\<na\>nakaw* (emphatic) 'steal'.

       This evidence makes it clear that emphatic reduplication is a distinct morphological category, and not just a polysemous sense of one of the descriptive aspectual categories. Having established the formal distinctness of emphatic reduplication, we now proceed to illustrate its expressive functions. We will ignore here the use of verbal reduplication to reinforce expressive reduplication of nouns, as seen in examples (1d) and (2d), and focus on the purely verbal functions. We begin with the most common "subjective" expressive functions (in Kaplan's terms), which express the speaker's attitudes and feelings, and then illustrate the "objective" expressive functions, which express something about situations in the external world.

5.2.   "Subjective" expressive uses of emphatic reduplication

The core subjective meaning of emphatic reduplication seems to be that the speaker feels the described situation to be newsworthy or noteworthy in some way. Some typical examples are presented in (14). The situation described in (14a) is

inherently newsworthy because it flouts conventional expectations.[6] The situation described in the first clause of (14b) is newsworthy because it is unexpected given the circumstances described in the second clause. The situation described in the second clause of (14c) is newsworthy because it contradicts the speaker's previous belief, which is described in the first clause. In this example the use of emphatic reduplication to express surprise reinforces the meaning of the mirative particle *bala'ay*.

(14) a. Okon.ko' *ki-k<in>asut-Ø* dialo it kasut yo,
    NEG   DUP-<PST>shoe-OV 3sg NOM shoe 3sg.GEN
    nisawit nogi sid kayab.
    PST.IV.hang PRTCL LOC shoulder
    'He didn't wear his shoes on his feet, he hung them over his shoulder instead.'

  b. *Mi-minawus*   no i raami dot yangko otomow po.
    DUP-<PST>AV.burn ASP NOM straw COMP although green still
    'The straw burned completely, even though it was still green.'

  c. Tantaman ku sompusasawo yaalo', *mi-ob<pi>pinee* bala'ay.
    think   1sg married.couple 3pl RECIP-<DUP>sibling MIR
    'I thought they were husband and wife, but it turns out they are brother and sister.'

    Further examples involving unexpected situations are presented in (15). Notice that in all four of these examples, the emphatic reduplication of the verb is reinforced by the presence of the verum focus (or polarity focus) clitic *=i'*.

(15) a. *Ti-t<in><um>ingab=i'* yalo dat tampasuk tangansow.
    DUP-<PST><AV>bite=FOC 3sg.NOM ACC cassava tough
    'He/she (actually) did take a bite of that tough old cassava.'
    [perhaps he said he would not eat it, but then ate it anyway]

  b. "Aku   mangakan do sungot" ka dialo,
    NEG.1sg AV.eat   ACC sago.grub say 3sg
    dot *mina<nga>ngakan=i'*.
    COMP <DUP>AV.PST.eat=FOC
    'He said, "I'm not going to eat sago grubs," but he *did* eat them.'

  c. *Mino<ki>ki-tulung=i'*   yalo dogon dot yangko
    <DUP>AV.PST.ask.for.help=FOC 3sg.NOM 1sg.ACC COMP although

---

[6] Notice that the attitude expressed by emphatic reduplication in example (14a) takes scope over the entire sentence, including the sentential negation marker *okon ko'* in the first clause. We return to the issues of scope and negation in section 6 below.

mamabakak   dogon   dot   araat oku   yoku.
AV.mock   1sg.ACC COMP evil   1sg.NOM 1sg.NOM.EMPH
'He/she actually (had the nerve to) ask me for help, even though he/she mocks me (saying) that I am evil!'

d. *Si-sinumadayan*=i'   i   iyay   sid   botung,
DUP-PST.AV.all.day=FOC   NOM mother LOC   rice.field
yangko   asot   *lu-lutu*   diri.
although NEG.exist DUP-wrapped.food this
'Mother worked all day long in the rice field, even though she didn't bring any lunch.' [suggests that Mother was not planning to or not expected to work all day]

As (15c) and the first clause of (15d) illustrate, emphatic reduplication is often used for situations that are not only unexpected but also unwelcome. (The nominal reduplication in the second clause of (15d), which parallels the examples in (2) above, further indicates the speaker's unhappiness over the situation.) For this reason, emphatic reduplication is often used for expressions of disapproval and/or scolding, as illustrated in (16). Notice that the disapproval expressed by emphatic reduplication in (16a) reinforces the speaker-oriented particle *katoy*, which also indicates disapproval.

(16) a. Aso   no   weeg, minaan   katoy dialo *bu-buak-o'*   modsu.
not.exist ASP water AUX.PST PTCL 3sg DUP-waste.OV AV.bathe
'There is no water left, he wasted it when he was bathing.'

b. *Mi-minakut*   ko   no   dogo   dot   okon.ko'
DUP-AV.PST.accompany 2sg.NOM FOC 1sg.ACC COMP NEG
katatad   ko   dino mamanaw.
AV.POT.endure 2sg.NOM that AV.walk
'You came with me, but you don't have the endurance to walk (the whole way).' [as if speaking to small child].

c. *Si-sirung-on*   dialo i   sirung ku   koniab.[7]
DUP-sun.hat-OV 3sg   NOM sun.hat 1sg.GEN yesterday
'He wore my sun hat yesterday.' [suggests it was done without prior knowledge or permission of owner, without good reason, and that the speaker is annoyed]

---

[7] A *sirung* is a sun hat made of palm leaves. Examples like (16c) show that tense marking is optional in emphatic reduplication. The past tense form would be obligatory in a simple neutral description of the situation: *S<in>irung-Ø* (past)/**Sirung-on* (non-past) *dialo i sirung ku koniab*. 'He wore my sun hat yesterday.' This neutral description implies there was a valid need and the hat was borrowed with permission, in contrast to the reduplicated version in (16c).

d. *Su-sumapul*   po   yalo   do   sawo   do   tulun.
DUP-AV.salvage FOC 3sg.NOM ACC spouse GEN person
'He just scooped up another man's wife.' (rather than courting an
unmarried woman in the expected way)

5.3.   "Objective" expressive uses of emphatic reduplication

Emphatic reduplication seems to have some recurring uses which express aspectual
features of the described situation, but it is not clear that it has any core aspectual
meaning. Several of these recurring uses are illustrated in the examples below, and
they do not seem to share any component of meaning in common. Notice also that
that this "aspectual" use of emphatic reduplication is compatible with either an
unbounded/imperfective interpretation, as seen in (17–18), or a bounded/perfective
interpretation, as seen in (19). We tentatively identify the reduplication in these
examples as having an objective expressive function. [8] We provide further
supporting evidence for this proposal in section 6.

(17) Inceptive / 'begin to'
    a. It   kayu dot *su-sumuni*   ot   awasi onuwon do giriyan.
    NOM wood REL DUP-AV.sprout NOM good take.OV ACC fence.pole
    'Saplings that are just beginning to grow/sprout are the best ones to take for
    fence poles.'

    b. *Lu-lumeeng*   no yalo   tu'   buason   no   diiri.
    DUP-AV.grow.old ASP 3sg.NOM because gray.haired ASP this
    'He/she is beginning to get old because his/her hair is turning gray.'

    c. *Ru-rumangkama*   no diiri i   bayag   di   iyay.
    DUP-AV.creep   ASP this NOM sweet.potato GEN mother
    'Mother's sweet-potato plants are beginning to spread.'

(18) 'Do briefly'
    a. Pongindad   po   sino=d   sulap toruay,   *gu-gumamas*
    AV.wait.for.IMPER ASP there=LOC hut short.time DUP-AV.cut.grass
    oku   po siti tanaman ku   do   toruduy.
    1sg.NOM ASP here planted.DV 1sg.GEN GEN string.bean
    'Wait there in the garden shack a little while, I'm going to clear the grass
    around my string beans (briefly).'

    b. Kada'   po mindoo,   *gu-gumustan*   oku   po.
    NEG.IMPER ASP AV.descend DUP-AV.back.up 1sg.NOM ASP
    'Don't get out (of the car) yet, I'm going to back up (a little bit).'

---

[8] As noted in footnote 2, an alternative approach might be to classify these "objective" expressive
functions of emphatic reduplication as ideophonic uses (Dingemanse 2012).

   c. *Tu-tumanud*   oku   po   dialo dot   ruay   id   botung.
      DUP-AV.accompany 1sg.NOM ASP 3sg   LNK short.time LOC rice.field
      'I'm going with him to the rice field for a short time.'

(19) 'Do first' / 'prior' (sequential action)
   a. *Si-sinumalam*   po   it   musu   om tampar-o'
      DUP-AV.PST.shake-hands ASP NOM enemy and hit-OV.ATEMP
      nogi   yalo.
      PRTCL 3sg.NOM
      'His enemy shook hands with him and then hit him.'

   b. *Pi-pisokon*   po   i   tapuy sid   ropuan om eduan   nogi.
      DUP-extinguish-OV ASP NOM fire   LOC firebox and leave.DV PRTCL
      'Put out the fire in the kitchen first, and only then you can leave it.'

5.4.   Other uses of emphatic reduplication

Another recurring use of (what seems to be) emphatic reduplication is for expressing softened commands or urging someone to do something, often with the implication that 'this is for your own good'. This use is difficult to classify as either expressive or descriptive; we present some examples here, but do not attempt further analysis in the present paper.

(20) a. *Tu-tumingab*   po   pogi   dat   guol milom opuunan.
      DUP-AV.bite   FOC PRTCL ACC   taro lest   cursed.DV
      'Take a bite of the taro so you don't suffer a curse.'

   b. *Su-sumopung* mosik,   eduan   ko   dialo sumikul.
      DUP-AV.early AV.get.up leave.DV 2sg.NOM 3sg   AV.school
      'Wake up early (tomorrow) or he might leave you behind going to school.'

   c. *Ju-jumaga*   sid K.K. tu'   orompit o   sogee
      DUP-AV.guard LOC (name) because   crowded NOM   headhunter
      tidino   ka=bo.
      now   HEARSAY=PRTCL
      'Be careful while you are in KK, because they say the place is full of head-hunters.'

6.   Emphatic reduplication is "immune" to negation and questioning

Potts (2007) argues that expressive content constitutes a separate dimension of meaning from the descriptive propositional content of the sentence. One of the key pieces of evidence which supports this analysis is the fact that expressive meaning is immune to negation, questioning, or challenge. In this section we show that meanings contributed by emphatic reduplication cannot be interpreted within the scope of negation or questioning.

Kimaragang, like Malay/Indonesian, has two distinct morphemes which can be used to negate sentences (Kroeger 2014a,b). *Amu* (short form: *aa*) is the standard (clause-level or predicate) negation marker, corresponding to Malay *tidak*, and *okon ko'* is the "external" (sentence-level or propositional) negation marker, corresponding to Malay *bukan*. Expressive functions of emphatic reduplication are never interpreted under the scope of negation. Notice in the following examples that the negation is crucially part of the content which the speaker regards as being newsworthy. This is true even with "external"/sentence-level negation, as seen in (21c), which repeated from (14a).

(21) a. Aa   no   díiri   *mi-mindakod*   yalo   sid   walay ya,
     NEG ASP this   DUP-AV.ascend   3sg.NOM LOC house 1pl.EX.GEN
     dinumangki   dit   kikaraja   no   it   tanak ya.
     PST.AV.jealous COMP exist-work ASP NOM child 1pl.EX.GEN
     'He doesn't enter our house anymore, he got jealous because our child has a job already.'

   b. Amu   *ko<yu>yuu*   dialo i   tusing yo   sampay
     NEG   <DUP>IV.POTENT.part.with 3sg NOM shoe 3sg.GEN until
     dudunon   yo   modop.
     sleep.with.OV 3sg.GEN AV.sleep
     'She is very fond of [lit: 'can't part with'] her cat, she even sleeps with it.'

   c. Okon ko' *ki-kinasut* dialo it kasut yo, nisawit nogi sid kayab.
     'He didn't wear his shoes on his feet, he hung them over his shoulder.'

In section 5.3 we suggested that the use of emphatic reduplication to mean 'begin to X' is an (objective) expressive function, rather than a descriptive aspectual function. This hypothesis is supported by the fact that the inceptive component of meaning cannot be negated in such constructions. Example (17c), repeated here as (22a), can be paraphrased using the predicate *timpuun* 'begin' as in (22b). As the contrast in (23) demonstrates, the 'begin' component of meaning can be negated when it is encoded by a separate predicate (23a), but not when it is expressed by emphatic reduplication (23b).

(22) a. *Ru-rumangkama*   no   diiri i   bayag   di   iyay.
     DUP-AV.creep   ASP this NOM sweet.potato GEN mother
     'Mother's sweet-potato plants are beginning to spread.'

   b. Tumimpuun   no   rumangkama i   bayag   di   iyay.
     AV.begin   ASP AV.creep   NOM sweet.potato GEN mother
     'Mother's sweet-potato plants are beginning to spread.'

(23) a. Okon ko' tumimpuun nogi rumangkama i bayag di iyay, oleed no diiri.
     'Mother's sweet-potato plants are not beginning to spread, it has been a long time already.'

b. *Okon ko' ru-rumangkama* nogi i bayag di iyay, oleed no diiri.
(intended meaning as in 23a)

In contrast, descriptive aspectual meanings such as those expressed by habitual, continuous, and frequentive aspects do fall within the scope of negation, as illustrated in the following examples:

(24) a. habitual aspect:

Okon.ko' *paa-dagang*   yalo   do   tubat.
NEG   AV.HABIT-sell 3sg.NOM   ACC   medicine
'He is not a medicine dealer/seller.' (does not imply the person never sells or has never sold medicine, only that it is not a habitual action)

b. continuous aspect:

Okon.ko' *mii-rilik*   yalo   dit   tinumalib   oku,
NEG   AV.CONT-clear.brush   3sg.NOM   COMP   AV.PST.pass   1sg.NOM
mingkaso   nopo.
AV.play   only
'He wasn't clearing brush when I passed by, he was just playing around.'

c. frequentive aspect:

Sagay   noobas   no   ino   tanak do   kandayon nopo,
reason   PST.accustomed   ASP   that.NOM   child COMP hold.OV   only
amu *kopirurumak*   nu   bala.
NEG AV.FREQ.lay.down   2sg.GEN   MIR
'No wonder your baby is accustomed to being held all the time, you do not lay him down frequently.'

By saying that emphatic reduplication is immune to questioning, we mean that the expressive meaning contributed by emphatic reduplication can never be the focus of a question, nor can it be part of the "at-issue" content (the content which is being questioned). It appears that emphatic reduplication cannot occur in Yes-No questions, as illustrated in (25–26), the interrogative versions of examples (15a) and (16a).

(25)   *_Ti-tinumingab_=i'   yalo   dat   tampasuk   tangansow   oy?
DUP-PST.AV.bite=FOC   3sg.NOM   ACC   cassava   tough   Q
(intended: 'Did he/she actually take a bite of that tough cassava?')

(26)   *Aso   no   weeg, minaan   dialo *bu-buak-o'*   modsu   oy?
not.exist ASP water AUX.PST 3sg   DUP-waste.OV   AV.bathe Q
(intended: 'There is no water left, did he waste it when he was bathing?')

Emphatic reduplication can occur in the presupposition of a content (Wh-) question, as seen in the following examples, but in such cases the scolding or complaining attitude expressed by reduplication is never part of the "at issue"

content of the question. For example, the two questions in (28) have exactly the same "at issue" content. Our primary language consultant explained the difference by saying that the two sentences mean the same thing, but the reduplicated version (28a) sounds like the speaker is angry, while this is not the case with the non-reduplicated version (28b).

(27) a. Nunu ot *mi-minangan* nu sid talob tu'
    what NOM DUP-AV.PST.do 2sg.GEN LOC market because
    linumiyot ko=i' oy?
    AV.PST.disappear 2sg.NOM=FOC Q
    'What did you do at the market that took you so long?'

   b. Nokuro.tu' amu ko *si-sinumobut* siti=d dagay owo?
    why NEG 2sg.NOM DUP-AV.PST.arrive here=LOC 1pl.EX PRTCL
    'Why didn't you come to visit us?'

(28) a. Isay ka ot *min<tu>tulis* diti tobon diti?
    who PRTCL NOM <DUP>AV.write.on this wall this
    'Who was it that wrote on this wall?'

   b. Isay ka ot *mintulis* diti tobon diti?
    (same meaning as previous example)

In contrast, descriptive aspectual content which is encoded by reduplication can be part of the "at issue" content of the question. The habitual meaning is an important part of the "at issue" content in (29a), and the continuous/progressive meaning is an important part of the "at issue" content in (29b).

(29) a. *Moonungu* ino karabaw duyu oy?
    AV.HABIT-gore that.NOM buffalo 2pl.GEN Q
    'Is your buffalo in the habit of goring people?'

   b. *Mii-sigup* yalo di talib ko sid walay oy?
    AV.CONT-smoke 3sg.NOM COMP AV.pass 2sg.NOM LOC house Q
    'Was he smoking when you passed by the house?'

7. Emphatic reduplication is distinct from focus

One might expect to find a strong correlation between newsworthiness and information structure, and in particular with focus. There is probably a statistical tendency for emphatic reduplication to occur on focused items more often than on presupposed items, but this correlation is not absolute.

Emphatic reduplication is clearly compatible with focus. We have seen a number of examples in which emphatic reduplication occurs on a predicate that bears the verum focus (or polarity focus) clitic *=i'*. Similarly, we have seen emphatic reduplication on nouns that are marked with the exhaustive focus particle *no* as in (1a), (2b-c).

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A QUD-BASED ACCOUNT OF THE DISCOURSE PARTICLE *NAMAN* IN TAGALOG[*]

Scott AnderBois
Brown University
scott_anderbois@brown.edu

Although the Tagalog second position particle *naman* is often regarded as marking contrast, we show that it also has plainly non-contrastive uses including to convey obviousness. We develop a unified account of contrastive and non-contrastive uses of *naman* in a QUD-framework as marking the closure of the prior immediate QUD. While the focus here is on *naman* in declaratives, we briefly explore the prospects of extending the account to its use in imperatives and with predicate adjectives.

1. Introduction

Tagalog has a rich inventory of second position clitics conveying temporal, modal, evidential, and other meanings. While their syntactic and prosodic properties have been much discussed in recent literature (e.g. Kroeger (1998), Billings (2005), Anderson (2009), Kaufman (2010)), their semantics and pragmatics (outside of the reportative *daw*) have remained largely unstudied since Schachter and Otanes (1972)'s seminal work (henceforth, S&O). One of the most puzzling of these clitics is the discourse particle *naman*. On the basis of examples like (1), *naman* is often described as a marker of 'contrast' and given translations like 'on the other hand', 'but', 'anyway', and 'also'.[1]

(1) Nagaaral   si Linda. Naglalaro   naman si Carmen.
     learn.AV.Impf Dir Linda play.AV.Impf naman Dir Carmen
     'Linda is studying. Carmen, on the other hand, is playing.'   Schachter and
     Otanes 1972

While this sort of example seems straightforward, there are three main reasons why characterizing the meaning of *naman* generally is less than straightforward.

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[1]The following abbreviations are used for glosses: AV Agent Voice, Comp complementer, Imper imperative, Impf Imperfective aspect, Lnk Linker, Neg negation, Nmlz nominalizer, Pfv perfective, PV patient voice, Q question particle, Top topic. We neutrally gloss the case markers as Dir direct for *ang*, Indir indirect for *ng*, and Obl oblique for sa.

First, contrary to the above description, there are many examples, such as (2), for which the notion of 'contrast' is quite clearly inappropriate. Indeed, the inclusion of *naman* here seems to heighten the sense of agreement between the two speakers, as reflected in the the use of 'of course' in the English translation.

(2)   **Context:** A asks B "Will you marry me?". B replies:
        Oo naman.
        yes naman
        'Yes, of course.'

Second, although *naman* does occur in many cases of contrast, it is infelicitous in contexts like (3), which plainly includes a contrast, albeit of an intuitively stronger sort.

(3)   Hindi si   John yung   kumain   ng   tinola, ngunit si   Bill
        NEG   Dir John that.LNK   eat.AV.PFV Indir   soup   but   Dir   Bill
           (#naman) iyon
           naman   that
        'John wasn't the one who ate the soup, but rather it was Bill'

Finally, as S&O note, the apparent function of *naman* can be quite different across different sentence types. For imperatives like (4), for example, they describe *naman* as contributing "politeness together with mild reproach". Sentences with predicate adjectives of certain types like (5), on the other hand, are claimed to convey a "critical or negative attitude" on the part of the speaker.

(4)   Tulung-an   mo   naman ako.
        help.IMPER-PV   2SG.INDIR   naman 1SG.DIR
        'Please help me. (Don't just sit there.)'   Schachter and Otanes 1972

(5)   Marumi naman ito
        dirty   naman this
        'This is dirty (and I'm displeased).'   Schachter and Otanes 1972

In this paper we tackle the first two of these problems, developing a unified account of *naman* in declaratives as marking the closure of the prior immediate Question Under Discussion (QUD) in the sense of Roberts (1996), Ginzburg (1996), and others. In contrastive uses, the prior immediate QUD is marked closed, and the sentence containing *naman* happens to address a sister immediate QUD. Non-contrastive uses differ in that the sentence containing *naman* does not address a sister QUD, but either the same QUD or a sub-question of it. The remaining paper is structured as follows: §2 presents data from contrastive uses of *naman* and introduces a QUD-

based analysis. §3 shows several kinds of cases where *naman* is felicitous with no contrast present. §4 refines the QUD-based analysis to handle these cases with no contrast. §5 offers tentative thoughts on the prospects of extending the account to other sentence types. §6 concludes.

2. Contrastive uses of *naman* and QUDs

2.1. Two contrastive uses of *naman*

Schachter and Otanes (1972) describe two different uses of *naman* with declarative sentences (p. 425): (i) "to express dissimarility between two situations", and (ii) "to express a shift of viewpoint". They illustrate the former with the examples in (6). For example, in (6a), *naman* highlights the (independently adducible) fact that the situation of Carmen differs from the one just discussed, in this case Linda's. While this example does not make use of other conventionally encoded informational structural notions like topic and focus (see Kaufman (2005) for an overview of information structure in Tagalog), other examples, such as (6b), do make use of such elements.

(6) a. Nagaaral   si   Linda. Naglalaro   naman si   Carmen.
         learn.AV.IMPF DIR Linda play.AV.IMPF   naman DIR Carmen
         'Linda is studying. Carmen, on the other hand, is playing.'   Schachter and
         Otanes 1972
     b. Bumili   ako   ng   karne kahapon. Ngayon, isda naman.
         buy.AV.PFV 1SG.DIR INDIR meat yesterday today   fish naman
         'I bought meat yesterday. Today, (it will be) fish (instead).'   Schachter and
         Otanes 1972

We can compare this use with that of a far more well-studied contrastive element: English *but*. Literature on *but* distinguishes at least three different types of uses for *but*, as illustrated in (7) (see Toosarvandani (2014) for a recent summary).

(7) a. The player is tall, but agile.   **Counterexpectational**
     b. Liz doesn't dance, but sing.   **Corrective**
     c. John is tall, but Bill is short.   **Semantic Opposition**

The use of *naman* in (6), then, intuitively corresponds to the Semantic Opposition subtype as there is no indication that the two situations compared with one another aren't expected to co-occur and certainly there is no correction to be had in these examples. The use of *naman* in counterexpectational scenarios is felicitous as well, as illustrated in (8). However, it is not *naman* itself which conveys the counterexpectation here, but rather some other element is needed along with *naman* to convey this stronger meaning. Here, it is the coordinator *pero* 'but' (borrowed from Spanish) and *ngunit* 'but' also often plays this role.

(8) May umuugoy   talaga-ng   duyan ng   bata, pero wala   naman
     exist rock.AV.IMPF really-LNK cradle INDIR child but   not.exist naman

     tao.
     person
     'Something is really rocking the child's cradle, but no one is there.'   Martin
     2004

The second use S&O identify is "to express a shift of viewpoint", typically between two conversational participants such as speaker and hearer, as in (9). While this use may differ somewhat functionally, as we will see in §2.2, these uses are straightforwardly unified in terms of the QUDs they make use of.

(9) a.   **Context:** A asks: *Kumusta ka?* 'How are you?'. B responds:
          Mabuti. Ikaw   naman?
          fine   2SG.DIR naman
          'Fine. And [what about] you?' (Alt. 'Your turn.')   Schachter and Otanes
          1972
     b.   Juan ang pangalan ko.   At ang iyo   naman?
          Juan DIR name   1SG.INDIR and DIR 2SG.INDIR   naman
          'My name is Juan. And yours?'   Schachter and Otanes 1972

2.2.   Contrastive *naman* in a QUD framework

One of the most central developments in the study of the structure of discourse in recent decades has been the development of the notion of Questions Under Discussion (QUDs). The QUD is a hierarchically structured set of abstract questions we are jointly endeavored to resolve at a given moment (e.g. Ginzburg 1996, Roberts 1996, Rojas-Esponda 2014a though we follow Roberts 1996 most closely here). Following Büring 2003, it can be useful to think about the progression of the QUD over the course of a conversation using the graphical representation of the D-tree, in (10). Each node in the tree represents a 'move' in the discourse[2] with assertions serving a terminal nodes in the tree. For each move m, QUD(m) can be determined by traversing up the tree from that move, where dominance reflects entailment/sub-questionhood relations. More frequently, we are interested only in the Immediate QUD (often simply called *the* QUD), Imm-QUD(m), which is the question that immediately dominated m.

---

[2]I use scare quotes here since moves in this technical sense have some potentially counterintuitive properties. First, moves are semantic objects rather than actual speech acts. Second, as such, moves need not have any actual speech act associated with them. This will typically be true of Questioning moves more than assertive moves, though either is in principle possible.

(10)
```
                         Who ate what?
                         /           \
              Who ate the beans?    Who ate the eggplant?
              /        |        \
   Fred ate the beans  Mary...    ...
```
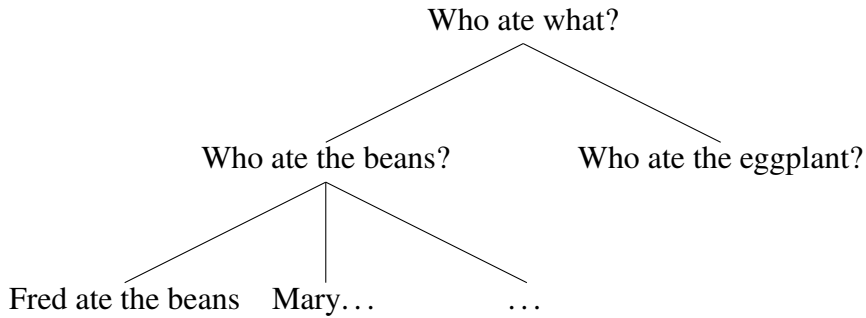
While immediate QUDs can be overtly present in the discourse in the form of utterances used to perform the speech act of questioning, QUDs including the immediate QUD are typically implicit. That is to say, like Stalnaker (1978)'s Common Ground (CG), the QUD is a shared mental object and so one of the things that interlocutors in a successful discourse must do is to coordinate on what the QUD looks like. For the CG, this is necessary in order to ensure that one's utterances are *informative*, while for the QUD this coordination is in service of making sure one's contributions are *relevant*. Just as presuppositions signal aspects of what the speaker takes the CG to be like, so too notions like topic and focus give the addressee information about what assumptions the speaker is making about the QUD at a given moment.

Beyond (certain kinds of) topic and focus, one of the means of solving this coordination problem in many languages is through the use of discourse particles which signal particular kinds of QUD configurations. For example, Eckardt 2007 analyzes German *noch* as signaling a series of prior positive answers to sisters of the immediate QUD. Simplifying significantly, Davis 2009 argues that Japanese *yo* encodes relevance to the immediate QUD (among other contributions). Finally, Rojas-Esponda 2014b claims that German *doch* signals a reopening of a previously closed immediate QUD.

One of the more complex elements conveying information about the QUD has been claimed to be Contrastive Topic (CT), as encoded by rise-fall-rise intonation in English (the so-called 'B accent'). Büring 2003 analyzes English CT as indicating a QUD *strategy*. While we won't bother to define strategies formally, the basic claim is that whereas focus conveys information about the immediate QUD, CT is claimed to conventionally make reference to an entire subtree structure, indicating not only the immediate QUD, but also the presence of a sister to that QUD, as in (11).

(11)
```
                      Who ate what?
                      /           \
          What did Fred eat?    What did Mary eat?
                  |                     |
   Fred_{CT} ate the beans_F    Mary_{CT} ate the eggplant_F
```
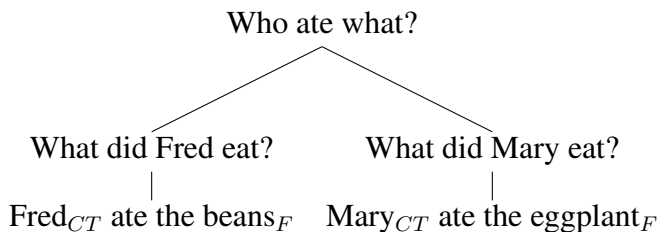
However, we might also think of CT as being 'decomposed' into two different parts following Constant 2014 (we gloss over over important details of the intonational encoding). First, the presence of CT intonation in the utterance signals that a shift between two sister QUDs is taking place. Second, the location of CT intonation and the location of focus within the sentence more generally constrain what these two sister QUD are, in particular that the QUDs differ in the value of the CT-marked element. Returning to *naman*, we can see that the contrastive uses we have seen thus far plausibly involve this first element, signalling a shift between QUDs or equivalently the closure of the prior immediate QUD and opening of a sister QUD. We see this in D-tree form in (12).

(12) Nagaaral   si   Linda. Naglalaro   naman si   Carmen.
      learn.AV.IMPF DIR Linda play.AV.IMPF naman DIR Carmen
      'Linda is studying. Carmen, on the other hand, is playing.'   Schachter and
      Otanes 1972

(13)   What is everyone doing?
                       /   \
        What is Linda doing?   What is Carmen doing?
              | |
        Linda is studying   Carmen *naman* is playing
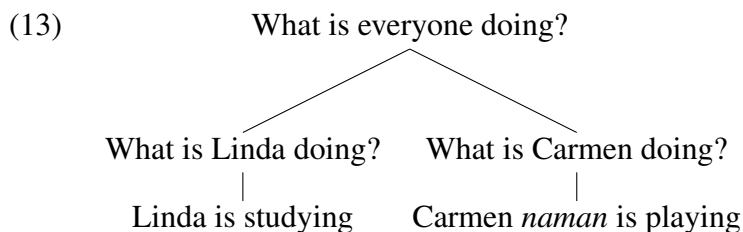
Even limiting ourselves to contrastive uses of *naman*, however, some important differences emerge. First, the second function of English CT – constraining the values of the two sister QUDs – is not part of what *naman* contributes. Pragmatic topic and focus, as described by Kroeger 1993 and Kaufman 2005, may independently play this role (e.g. in (6b)), however examples with neither of these elements like (12) show that they need not. More generally, since unlike Tagalog, English has obligatory deaccenting, focus and therefore CT are often obligatory as well as discussed by Büring 2003 and Constant 2014.[3]

Second, English CT can be 'forward-looking', occurring on the sentence preceding the QUD shift, whereas *naman* is only 'backward-looking'. While clearly an important difference, recent work on CT cross-linguistically has claimed that CT in other languages can be 'backward-looking' (Constant 2014 in Chinese, Mikkelsen 2016 in Karuk). Finally, beyond CT, contrastive *naman* is very similar to Toosarvandani (2014)'s analysis of the semantic opposition use of *but*, which similarly is claimed to involve a shift between immediate QUDs. While there are important differences to be sure, contrastive uses of *naman* can be fruitfully analyzed like English

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[3]As Constant 2014 discusses extensively, English CT in fact includes focus intonation as a subpart of it (setting aside boundary tones, F= H*, CT = L+H*). So, we really could speak of focus in English as simply being the consequence of the obligatory nature of deaccenting.

CT and *but* as signalling a shift between two immediate QUDs.

3.   Beyond contrast: other uses of *naman*

While we have seen some differences between *naman* and more well-studied markers of contrast, the examples thus far nonetheless are cases of contrast, both intuitively and formally in the sense that they involve sister QUDs. However, contrary to S&O's brief description of *naman* in declaratives, *naman* is felicitous in cases which do not fit even this more general notion of contrast. That *naman* does not *always* express contrast at all is arguably reflected in Bloomfield 1917's brief remark that *naman* "expresses transition to another subject, hence *often* also mild contrast" (emphasis mine).

  Descriptively, there are two uses where no contrast is found: (i) to convey the obviousness of the previous immediate QUD, and (ii) to signal a move to a sub-question/sub-issue of the previous immediate QUD. The first of these are cases where the addition of *naman* serves to highlight the obviousness of the statement the speaker is making. Perhaps the clearest illustration that this is not contrastive in any sense comes from examples like (14), where the rest of the utterance's content is contributed by anaphoric response particle *oo* 'yes'. However, we also this meaning illustrated without *oo* 'yes' in naturally occurring and elicited examples, (15-16).

(14)   **Context:** A asks B "Will you marry me?". B replies:
       Oo naman.
       yes naman
       'Yes, of course.'

(15)   **Context:** A Facebook discussion about whether a recipe which calls for steaming a chocolate cake counts as 'no-bake'.
       "Of course po. Steaming is definitely not baking. Steamed ang siopao. Hindi *naman* yun baked. Lol!"

(16)   **Context:** Responding to the question 'Who likes chocolate?'
       Lahat naman ay   mahilig sa   tsokolate
       all   naman TOP fond   OBL chocolate
       'Everyone likes chocolate (duh!)'

  Beyond the simple expression of obviousness, a closely related use of *naman* is in concessives like (17), from a pop song lyric. Here, the use of *kahit* 'even, although' explicitly marks the speaker's concessive stand, with *naman* furthering this by noting that not only is there no hope, but that this is obvious or known. This connection with concessives perhaps also supports the conjecture that *naman* historically arose from the combination of the two particles *na* and *man*, since *man* is described by S&O as playing a role in concessives more generally.

(17) Kahit   alam namang   walang   pag-asa,   ang puso
   although know naman.LNK not.exist.LNK NMLZ-hope DIR heart

   ko-ng   ito-'y   'di   pamimigay
   1SG.INDIR-LNK this-TOP NEG be.free

  'Even though I know there's obviously no hope, my heart won't be available (to anyone else)'

In addition to conveying obviousness, *naman* may also be used in cases where the speaker signals a shift to discuss a further detail or follow-up on the previous QUD.[4] While the example in (18a) may seem to rely on the obviousness of the primary answer (i.e. that we should eat), the example in (18b) does not appear to be of this sort. The sentence does not convey that it is obvious that he cancelled, but rather merely that the speaker has shifted from the issue of whether he is going to the sub-issue of why he is not coming and/or how the speaker knows he is not coming.

(18) a. **Context:** Spkr is asked what the speaker and hearer should do today.
   Marami namang   restaurant sa   mall.
   many   naman.LNK restaurant OBL mall
   'Well, there are many restaurants at the mall.'

  b. **Context:** Addr states that Juan is going to the concert. Spkr replies:
   Hindi siya   pupunta, nagcancel naman siya.
   NEG 3SG.DIR go   cancel   naman 3SG.DIR
   'He's not going, he cancelled.'

To summarize, we have seen both elicited and naturally occurring examples where *naman* does not in any sense convey contrast, but rather indicates obviousness, or a move to discuss more specific details of the previous issue, whether or not its resolution was obvious.

4. A unified QUD-based analysis

As discussed above, we assume Roberts 1996's definition of the CG and QUD. Informally, QUD is a function from a discourse "move" m to a stack of questions ordered by precedence and constrained by sub-questionhood, while CG is a function from a discourse "move" m to a set of propositions which is the speaker and hearer's Common Ground. We refer the reader to Roberts 1996 for more formal definitions for reason of space. One crucial notion for present purposes which we will define explicitly is that of the Immediate QUD:

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[4]One point to which we return later is that such sub-issues are actually not straightforward under leading QUD formalisms. For Roberts 1996, they do count as sub-questions, but the dynamics prevent a straightforward treatment of such follow-ups. Even under the less stringent formulation of Rojas-Esponda 2014a, such issues still cannot be captured straightforwardly. See Onea 2016 for extended discussion of these considerations.

(19)   IMM-QUD(m) = the unique question q such that for all $q' \in$ QUD(m) where $q \neq q', q' < q$

Within this framework, I claim that the effect of *naman* is simply to signal the closure of the prior QUD explicitly. More formally, we can state its effect as in (20).

(20)   A move m consisting of an utterance containing an instance of *naman* indicates that IMM-QUD$(m-1)$ is (or should be) entailed by CG(m)

As discussed in §2.2, this effect can be seen as one of the components of Contrastive Topic in English. However, whereas English CT also had the effect of signally a transition to a sister question and constraining this sister in a particular way, *naman* under our definition does not itself indicate anything about the current QUD-structure (i.e. it does not constrain IMM-QUD(m) in any particular way). While *naman* itself imposes no restrictions on IMM-QUD(m), this importantly does not mean that the possible current IMM-QUDs are unconstrained. In particular, we assume following Rojas-Esponda 2014a (and less directly, Roberts (1996) and Büring (2003)) that D-trees in general have default rules of traversal which freely allow for the transitions from a node to a sister node or from a node to a child node, but only allow moves to parent nodes when the current immediate QUD is resolved to the maximal extent possible.

So, while *naman* marks IMM-QUD$(m-1)$ as resolved, it does not indicate any sort of non-monotonic revision to the overall QUD structure. The various contrastive and non-contrastive uses we have seen can therefore be analyzed as different kinds of IMM-QUD(m), as follows:
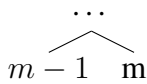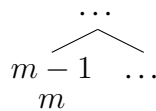
Contrastive	**Obviousness**	**Transition to subquestion**
$\cdots$	$\cdots$	
$m-1$ m	$m-1$ $\cdots$	$\cdots$
	m	$m-1$ $\cdots$
		$\cdots$ m
(Sisterhood)	(Identity)	(Subquestion)
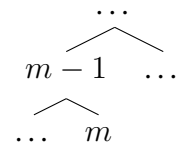
Which option is found in a given example is determined not by *naman* but by the other means such as co-occurring discourse markers like *pero* 'but' and *ngunit* 'but', information structural notions like topic and focus, and of course general world knowledge. For contrastive uses of *naman*, the relevant IMM-QUDs are as seen in (21).

(21) a. Nagaaral   si   Linda. Naglalaro   naman si   Carmen.
       learn.AV.IMPF DIR Linda   play.AV.IMPF naman DIR Carmen
       'Linda is studying. Carmen, on the other hand, is playing.'

     b. IMM-QUD$(m-1)$: 'What is Linda doing?'

     c. IMM-QUD(m): 'What is Carmen doing?'

Therefore, *naman* in the second clause, corresponding to move m, indicates that IMM-QUD$(m-1)$ is settled by CG(m), in this case because move $m-1$ resolved it. There are no particular elements of the second clause which indicate the QUD that it addresses. For example, this sentence contains no conventional marking of topic or focus and givenness-driven deaccenting does not occur in Tagalog (Kaufman 2005). Nonetheless, move m can only be interpreted as addressing a sister QUD and hence *naman* serves to reinforce this independent adducible shift. While we have given the most likely values for IMM-QUD here, nothing in principle prevents alternatives such as 'Who is studying?' and 'Who is playing?'.

Obviousness uses including concessives arise when IMM-QUD$(m-1)$ and IMM-QUD(m) are identical to one another. In such a case, then, *naman* has the effect of signalling that the speaker regards this question as one that should already be settled prior to the utterance containing *naman*. Given the independent difficulties in capturing the appropriate sub-issue relationships discussed above, we will not spell out the account in detail for this case. However, we hope it is clear that given an independently viable theory of this sort, the account of the *naman* data of this sort will be straightforward.

(22) a. **Context:** Responding to the question 'Who likes chocolate?'
       Lahat naman ay   mahilig sa   tsokolate
       all   naman TOP fond   OBL chocolate
       'Everyone likes chocolate (duh!)'

     b. IMM-QUD$(m-1)$: 'Who likes chocolate?'

     c. IMM-QUD(m): 'Who likes chocolate?'

Finally, we can see that the account not only captures the cases where *naman* is felicitous, but also correctly rules out cases where *naman* is infelicitous. The first case are corrections with the same QUD, as we have seen above in (3) and in a different format in (23). Although these are quite clearly contrastive in a certain sense, such uses are infelicitous with *naman*. This is expecially clear in this example here since both speakers make use of contrastive focus, which is indicated formally here through the use of the cleft construction. As Kaufman (2005) puts it, an "XP in the construction [XP [*ang* YP] occupies a focus position." Since the contrastive focus construction conventionally marks the QUD as 'Who ate the soup?' in both sentences, we can tell definitively that the QUD remains the same throughout. The context does not support an obviousness interpretation and indeed this would seem to be at odds with the use of focus in (23b), which conveys precisely that the speaker

regards the question as being open prior to uttering (23b). The use of *naman* is therefore correctly predicted to be infelicitous.

(23) Infelicitous with direct corrections:

a. Si   John ba ang kumain   ng   tinola?
    DIR John Q DIR eat.PFV.AV INDIR soup
    'Was John the one who ate the soup?'
b. Hindi, si   Bill (#naman) yung   kumain   ng   tinola.
    No   DIR Bill naman   that.LNK eat.PFV.AV INDIR soup
    'No, it was Bill who ate the soup.'

The second case where *naman* is infelicitous is in transitions to a superquestion, either by invalidating its presuppositions, as in (24). Situations where the transition to the superquestion is to resolve it directly, rather than reject its appropriateness altogether do not license *naman* either. Note that there are cases where the utterance containing *naman* may itself happen to provide a complete answer to the superquestion together with previously answered sister questions, but *naman* is already licensed such a case by virtue of the move to a sister question. These two uses are precisely the ones that Rojas-Esponda 2014a claims the German *überhaupt* (English 'at all' often provides a good gloss) is specialized for.

(24) Infelicitous in transition to superquestion:

a. Kailan mo   pinatay   si   Fred?
    when   2SG.INDIR kill.PFV.PV DIR Fred
    'When did you kill Fred?'
b. Hindi ko   (#?naman) siya   pinatay
    NEG   1SG.INDIR naman   3SG.DIR kill.PFV.PV
    Intended: 'I didn't kill him at all.'[5]

The third and final class of cases are non-sequiturs and other attempts to change the QUD structure altogether. One might think that *naman* would be quite natural here since the speaker is quite ostentatiously closing the impolitic IMM-QUD in (25a) and marking what is quite clearly a shift in topic in (25b). While these cases have the speaker conveying the prior QUD to longer be appropriate, they are in fact making a more drastic shift in both cases, one which would require non-monotonic revision to the overall QUD structure rather than merely transitioning between different nodes within a single well-formed D-tree. As in the transition to superquestion cases, then, it is the general default constraints on QUD traversal

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[5]This example has a marginal 'degree use' meaning I didn't exactly kill him (i.e. I didn't go that far). See §5.2 on such uses with gradable adjectives.

which prevent the use of *naman* in these examples.

(25)   Infelicitous in non-sequiturs:

a.   **Context:** A has stated that Professor Smith is a jerk. B tries to change the topic:
#Maaraw naman ngayon.
sunny   naman today
Intended: 'What a beautiful day! (Implic: I want to change the topic)'

b.   **Context:** A has just stated that José is from Manila. B says:
#Alam mo   naman ba na   ang Manila ay   ang
know 2SG.INDIR naman Q COMP DIR Manila TOP DIR
  pinakamalaking siyudad sa   Pilipinas?
  biggest.LNK   city   OBL Philippines
Intended: 'By the way, did you know Manila is the biggest city in the Philippines?'

One final case which is a bit more tricky is the infelicity of *naman* in cases of parallelism, such as (26). On the face of it, such cases appear to be just like semantic opposition cases above, only the particular lexical items happen to prevent such opposition from occurring. Since these examples do not conventionally constrain IMM-QUD (e.g. through the use of focus), the values for IMM-QUD are in principle free. So while the account rules out the possibility that such an example would be felicitous in a context where IMM-QUD($m-1$) = IMM-QUD(m) = 'Who is studying?', nothing rules out the alternative D-tree where IMM-QUD($m-1$) = 'What is Linda doing?' and IMM-QUD(m) = 'What is Carmen doing?'.

(26)   #Nagaaral   si Linda. Nagaaral   naman si Carmen.
learn.AV.IMPF DIR Linda play.AV.IMPF naman DIR Carmen
'Linda is studying. Carmen is studying #(too).'

While we leave more detailed exploration of this point to future work, we believe the answer lies not in *naman* itself but in more general properties of parallelism and additive particles like Tagalog *din/rin* and English *too*. In particular, it seems to be a robust fact across a variety of languages that such particles are often more or less obligatory in discourses of exactly this sort. Moreover, it has been suggested in Krifka 1999 that such particles force the higher level QUD, in this case 'Who is studying?', in order to avoid giving rise to what he dubs the 'distinctiveness constraint'. So, while a more fleshed out account along these lines is needed to rule out such cases, I hope to have shown that they plausibly can be explained by appeal to more general principles regarding the expression of discourse parallelism plus the previously established infelicity of *naman* in cases with identical, open immediate QUDs.

5. Extending the analysis to other sentence types

While space prevents detailed treatments of either case, we turn now to briefly explore the prospects of extending the account to other sentence types which S&O describe as having quite different functions.

5.1. Imperatives

Recall from the introduction that Schachter and Otanes (1972) describe *naman* in imperatives as conveying "politeness together with mild reproach". One potential way to extend the account here is by seeing a decision to choose a particular action of a set of possible actions as being the same sort of formal object as a QUD (see, e.g. Davis (2009)). *naman* in imperative move m, then, would be predicted to signal that the decision to perform the action should already be settled by $\text{CG}(m)$. Preliminary support from contrasts like (27):

(27) ✓ **Context:** You can see that my foot is stuck and that I am in pain.
      # **Context:** Unbeknownst to you, my foot is stuck under a table.
      Tulung-an   mo   naman ako.
      help.IMPER-PV 2SG.INDIR naman 1SG.DIR
      'Please help me. (Don't just sit there.)'   Schachter and Otanes (1972)

The 'mild reproach' part of S&O's characterization, then, arises as an implicature stemming from the fact that the speaker feels the need to utter the imperative at all, given that the CG should, in their view, lead the addressee to perform the action in question. As for the politeness side of the coin, the basic idea is that the imperative with *naman* is more polite in a way since it draws on the conversational participants' prior shared goals, rather than the speaker's own individual goals. That is, it conveys something like 'Given what we both know about your goals, you should help me', whereas imperatives more generally can be used to change the goals of other agents: 'Given what I want, you should help me'.

5.2. Predicate adjectives

Regarding predicate adjectives, S&O claim that the addition of *naman* expresses "critical or negative attitude", giving (28) as examples supporting this claim.

(28) {Marumi/mahal} naman ito.
      dirty/expensive   naman this
      'This is expensive/dirty (and I am unpleased).'

However, the examples they choose have adjectives which are naturally negatively valenced. When we move to consider positive antonyms of these, the opposite

inference appears to emerge:

(29) {Malinis/mura}   naman ito.
      clean/affordable naman this
      'This is clean/affordable (and I am pleased).'

While we of course cannot rule out the possibility that a unified account will not be possible and that *naman* is best analyzed as being polysemous, there are at least two plausible ways one might try to extend the account. First, we might claim that *naman* in these cases signals a transition to a sub-question about the *degree* to which the predicate holds. This option might also be appealing for exclamative cases (not shown here), which S&O include in their generalization as well. Second, we might claim that *naman* signals that a prior decision problem/QUD (here, 'Can I buy/use it?') is resolved. These two possibilities are not mutually exclusive, both in the sense that they could each be right for different cases and in the sense that they naturally go together, somewhat similar to the contribution of *too* in alternative English translations like 'This is too dirty/expensive.'. The speaker's attitude then, would arise either directly from the exclamative semantics or from inferences about the decision problem the addressee has chosen to invoke. For example, if I want to buy an item, but then find out the it exceeds the maximal amount which I would pay, it is not hard to infer my attitude about this, especially if I choose to point this out to you.[6] As in the case of imperatives, the discussion here should be taken merely as suggestions of future ways the account here might be extended beyond simple declaratives (i.e. those without predicate adjectives).

6.   Conclusions

To sum up, we have argued that *naman* in declaratives conveys that the prior QUD is or should be entailed by the CG prior to the utterance containing *naman*. Based on this, we have shown that different uses of *naman* are due to different current immediate QUDs: sister IMM-QUDs in cases of contrast, identical IMM-QUDs in obviousness uses, and sub-issues in yet other cases. Beyond providing a unified account of *naman*, the account contributes to the broader cross-linguistic picture by placing *naman* within the context of other QUD-related discourse particles, intonation, and other related elements.

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[6]In many cases, there of course may also be other elements–in particular intonational ones including paralinguistic ones–which help convey the addressee's emotion/attitude.

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PHILIPPINE-TYPE "VOICE" AFFIXES AS A'-AGREEMENT MARKERS: EVIDENCE FROM CAUSATIVES AND DITRANSITIVES*

Victoria Chen
University of Hawai'i
ychen6@hawaii.edu

This paper investigates the shared case patterns in causative and ditransitive constructions across Philippine-type Formosan languages and demonstrates how they motivate a nominative-accusative analysis for the Philippine-type voice system. With novel data from Puyuma, Amis, and Seediq, I argue that (i) pivot-marking in Philippine-type languages is better analyzed as a marker of information structure status (topic), rather than the reflex of structural absolutive/nominative Case, and (ii) Philippine-type voice affixes are better analyzed as A'-agreement markers, rather than transitivity/applicative marking. Last, I discuss how the agreement approach to voice affixes offers an unitary account for the lack of noun/verb distinction in Philippine-type languages.

1.   Introduction

Many Philippine-type languages have been reported to share the same case pattern in productive causatives, as illustrated in (1). To remain theory neutral, I use the abstract labels pivot, X, and Y to stand for the morphological marking on the sole phrase in a clause eligible for A'-extraction, non-pivot external arguments, and non-pivot internal arguments, respectively, throughout the paper.[1]

(1)   Shared case pattern in productive causatives in Philippine-type languages

	Actor voice	Patient/Locative voice	Circumstantial voice
Causer	*Pivot*	*X*	*X*
Causee	*Y*	*Pivot*	*Y*
Causand	*Y*	*Y*	*Pivot*

[1] The abstract labels pivot, X, and Y in (1) correspond to the conventional gloss 'absolutive/ nominative', 'ergative/genitive', and 'oblique', respectively, in the relevant literature. Note that many extra-Formosan Philippine-type languages do not exhibit a morphological distinction between X and Y, including Tagalog, Malagasy, and Chamorro. Nevertheless, given the wide distributions of an X/Y distinction in higher-level Austronesian languages, it is uncontroversial that an X/Y distinction can be traced back to Proto-Austronesian (Blust 2015, Ross 2006).

As shown in (1), the selection of the pivot in a productive causative is indicated by voice morphology on the verb. When pivot-marking falls on the Causer, the causative sentence is marked in AV. When pivot-marking falls on the Causee, the sentence is marked in PV/LV. When pivot-marking falls on the Theme of the caused event, referred to as *Causand* in this paper, the sentence is marked in CV, as shown in the Puyuma data (2a-c). For the sake of simplicity, I refer to these constructions as AV-causative, PV-causative, and CV-causative, respectively.

(2) a. Ø-pa-deru=ku   kan   senten   dra   abay.
      AV-CAU-cook=1SG.PIVOT   SG.Y   Senten   ID.Y   rice.ball
      'I asked Senten to cook sticky rice balls.'   [AV-causative]

    b. ku=pa-deru-aw/-ay   i   senten   dra   abay.[2]
      1SG.X=CAU-cook-PV/LV   SG.PIVOT   Senten   ID.Y   rice.ball
      'I asked Senten to cook sticky rice balls.'   [PV/LV-causative]

    c. ku=pa-deru-anay   kan   senten   na   abay.
      1SG.X=CAU-cook-CV   SG.Y   Senten   DF.PIVOT   rice.ball
      'I asked Senten to cook sticky rice balls.'   [CV-causative]

Similar to the case of productive causatives, voice-conditioned argument-marking alternation is attested in ditransitive constructions among Philippine-type languages (e.g. Holmer 1998, Rackowski 2002, Chang 2011, Kuo 2015). As illustrated in (3), when a ditransitive clause is marked with AV, PV/LV, and CV, pivot-marking falls on the Agent, Recipient, and Theme, respectively, as exemplified in the following Puyuma data (4a-c).

(3)   Shared case pattern in ditransitives[3]

	Actor voice	Patient/Locative voice	Circumstantial voice
Agent	*Pivot*	*X*	*X*
Recipient	*Y*	*Pivot*	*Y*
Theme	*Y*	*Y*	*Pivot*

(4) a. Ø-beray=ku   kan   atrung   dra   aputr.   [AV-ditransitive]
      AV-give=1SG.PIVOT   SG.Y   Atrung   ID.Y   flower
      'I gave Atrung flowers.'

---

[2] According to my fieldwork data, all three languages exhibit the same case pattern in PV-marked and LV-marked causatives. Native speakers consider the two types as interchangeable, although PV-marked causatives are used more commonly.

[3] Some ditransitive verbs in Formosan languages exhibit a lexical gap between the PV- and LV-form, such as *beray* 'give' in Puyuma (4b), which can only be licensed under LV. Other than such cases, PV-and LV-marked ditransitive verbs take the same case pattern and are considered interchangeable by the speakers.

b. ku=beray-ay   i   atrung   dra   aputr.   [PV/LV-ditransitive]
   1SG.X=give-LV SG.PIVOT   Atrung ID.Y   flower
   'I gave Atrung flowers.'

c. ku=beray-anay kan   atrung   na   aputr.   [CV-ditransitive]
   1SG.X=give-CV SG.Y   Atrung DF.PIVOT   flower
   'I gave Atrung flowers.'

According to available descriptions, the shared case patterns in causatives and ditransitives described above in (1)-(4) are attested in at least 12 Philippine-type languages: Atayal (Huang 2005), Puyuma (Kuo 2015, Chen 2016), Amis (Kuo 2015, Chen 2016), Seediq (Holmer 1998, Tsukida 2010), Tsou (Lin 2009, Chang 2015), Paiwan (Chang 2006), Bunun (Zeitoun 2000), Saisiyat (Yeh 2000, Zeitoun et al. 2015), Tagalog (Rackowski 2002), Ilocano (Silva-Corvalán 1978), Cebuano (Tanangkingsing 2009). Together, these languages cover eight of the ten Austronesian primary branches, providing important clues to how a Philippine-type voice system works in terms of Case-licensing and voice alternation.

The goal of this paper is to examine the Case-licensing mechanism in a Philippine-type voice system by investigating the interaction between voice alternation and the argument-marking pattern in causatives and ditransitives in Puyuma, Amis, and Seediq, three Philippine-type Formosan languages from different Austronesian primary branches. With novel data from the three languages, I argue for the following analysis for Philippine-type Formosan languages (5):

(5)   Main claims of the paper
   a. X marks structural nominative Case from T available in all finite CPs, rather than an inherent ergative Case available only in non-Actor voice clauses.
   b. Y marks structural accusative Case from Voice^0 available under all voices, rather than a lexical Case from V^0.
   c. Pivot-marking is a marker of information structure status (topic) that overrides morphological case, rather than the morphological reflex of structural absolutive Case.

The remainder of the paper is organized as follows. I first summarize the theoretical assumptions of the ergative approach to Philippine-type languages, and discuss its predictions of the distributions of pivot, X, and Y (§2). I then analyze the structure of productive causatives in Puyuma, Amis, and Seediq, and discuss its implication for the nature of pivot-marking (§3). I then move on to the structure of ditransitives, with a particular focus on the structural relation between Recipient and Theme under different voice types (§4). Based on the findings from causatives and ditransitives, I present a nominative-accusative analysis for the voice system of Puyuma, Amis, and Seediq (§5) and an A'-agreement analysis for Philippine-type voice affixes presented in (§6). Last, I discuss the implications of this analysis for noun/verb homophony in Philippine-type languages (§7). Section 8 concludes.

2.   Theoretical background

Whether Philippine-type languages exhibit an ergative, accusative, or typologically unique alignment has been a long-standing question in Austronesian syntax. One well-received analysis built on the ergative approach to these languages argues for the analysis in (6).

(6)   The ergative approach to Philippine-type languages (Aldridge 2004, to appear)
    a. Actor voice clauses are intransitive/antipassive constructions; non-Actor voice clauses are transitive.
    b. X marks inherent ergative Case assigned by transitive $Voice^0$. Therefore, it is available only in non-Actor voice clauses.
    c. Y marks lexical oblique Case from V^0 when structural case is not available.[4]
    d. Pivot-marking realizes structural absolutive Case from C/T assigned to the highest Caseless argument in a clause.[5]
    e. Under (d), Locative and Circumstantial voice affixes are analyzed as reflexes of a high applicative head, which licenses a specific non-core argument as a high applicative phrase that can access absolutive Case.

Under the analysis in (6), the morphological marking pivot, X, and Y are predicted to show the following distributions (7):

(7)   Distributions of pivot-, X-, and Y-marking under the ergative analysis
    a. X-marked phrases are restricted to external argument positions.
    b. Y-marked phrases are restricted to internal argument positions.
    c. Pivot-marking is available only to the highest Caseless phrase per clause.
    d. A pivot-marked phrase in LV/CV clauses (e.g. Locative/Instrument/ Benefactor) is base-generated higher than the internal argument.

    In what follows, I begin with the discussion of the structure of productive causatives in Puyuma, Amis, and Seediq, and reconsider the ergative analysis by examining the compatibility between the predictions in (7) and the causative case pattern.

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[4] Note the lexical Case analysis of Y-marking (6c) is in fact incompatible with the assumption that Y does not present on the internal argument of PV clauses because structural absolutive Case is available to it (6d). Given the standard assumption that non-structural Cases are licensed prior to structural Cases (e.g. Harley 1995, Woolford 2006, Preminger 2011), the absence of Y-marking on the internal argument in PV clauses is unexpected, if Y marks a quirky Case.

[5] Aldridge (to appear) proposes a revised analysis of her (2004) proposal, which argues that Philippine-type languages lack C-T Inheritance, with all movements driven by a sole probe, uφ. Under this analysis, pivot-marking realizes nominative Case from C.

3.   Productive causative

As in many other Austronesian languages, productive causatives in Puyuma, Amis, and Seediq are formed by affixal morphology on the verb that freely combines with different voice markers. To investigate the property of pivot-marking, the case pattern in CV-causatives deserves special attention, where pivot-marking obligatorily falls on the Causand, i.e. the Theme of the caused event, with the Causer and the Causee X-marked and Y-marked, respectively, as shown in (8a-c).

(8) a. ku=pa-salem-anay   kan siber   na   dawa.   [Puyuma]
        1SG.X=CAU-grow-CV SG.Y Siber   DF.PIVOT   millet
        'I asked Siber to grow the millet.'

  b. sa-pa-pi-tangtang   aku   ci-kulas-an   ku   futing.   [Amis]
      CV-CAU-PI-cook-CV   1SG.X   PN-Kulas-Y   PIVOT   fish
      'I asked Kulas to cook the fish.'

  c. s-p-seeliq=mu   Ø walis   ka   rodux   nii.   [Seediq]
      CV-CAU-butcher=1SG.X   Y Walis   PIVOT chicken this
      'I asked Walis to buchter the chicken.'

The case pattern above raises an important question for the ergative approach to Philippine-type languages: if pivot marks absolutive Case, as assumed under the ergative analysis (6d), how does it skip the Y-marked Causee and marks the Causand in CV-causatives? The following summarizes three plausible analyses of the causative that are compatible with the absolutive Case analysis for pivot-marking.

(9)   Three possible analyses of the structure of CV-causative
    a. The Causand is an applied object licensed by a high applicative head, thus is structurally higher than the Causee.
    b. The Causee is inherently Case-licensed by a preposition, thus does not intervene in the absolutive Case licensing of the Causand.
    c. The Causee is inherently Case-licensed by an applicative head, thus does not intervene in the absolutive Case licensing of the Causand.

As illustrated in (9), there are essentially two possible structural relations in CV-causatives that are compatible with the absolutive Case analysis of pivot marking: (i) the Causand is structurally higher than the Causee, as in (9a), and (ii) the Causee is not an intervener with respect to absolutive Case-licensing. The high applicative analysis in (9a) is consistent with the ergative analysis, which suggests that the pivot-marked phrase in LV/CV clauses as licensed by a high applicative phrase that occupies the highest internal argument position (6e) (e.g. Ippolito 2000, Pylkkänen 2002, Folli and Harley 2007, Legate 2014).

Binding diagnostics applied to CV-causatives in Puyuma, Amis, and Seediq suggest that the first two analyses (9a-b) are untenable. Across the three languages, a Y-marked Causee in CV-causatives can bind into a pivot-marked Causand with the reflexive and bound variable interpretations obtained, as in (10a-c). This suggests that the Causee is structurally higher and c-commands the pivot-marked Causand.

(10)   Binding relations in CV-causatives in Puyuma, Amis, and Seediq

a.   ku=pa-sabsab-anay   kana bangsaran driya tu=paliding.   [Puyuma]
     1SG.X=CAU-wash-CV   SG.Y   young.man every 3.POSS.PIVOT=car
     'I made every young man$_{<i>}$ wash his$_{<i>}$ car.'   (✓ bound variable reading)

     sa-pa-pi-nengneng aku   ci-afan-an cingra   *(tu) i   dadingu. [Amis]
     CV-CAU-PI-see   1SG.X PN-Afan-Y 3SG.PIVOT REF LOC mirror
     'I made Afan$_{<i>}$ look at herself in the mirror$_{<i>}$.' (✓ reflexivization)

c.   s-p-trima=mu   Ø   knkingal laqi ka   baga=daha.   [Seediq]
     CV-CAU-wash=1SG.X Y every   child PIVOT hand=3PL.POSS
     'I made every child$_{<i>}$ wash his$_{<i>}$ hands.'   (✓ bound variable reading)

The finding that the Y-marked Causee apparently c-commands the pivot-marked Causand in CV-causatives indicates that the high applicative analysis for the CV affixes (6e) cannot be maintained, which wrongly predicts the pivot-marked Causand to c-command the Y-marked Causee. It also argues against the prepositional analysis for Causee (9b), according to which the Y-marked Causee is a *by*-phrase that does not c-command the pivot-marked Causand.[6]

This leaves us with the third option, in which a Causee in a CV-causative is inherently Case-licensed by an applicative head (9c). Under this analysis, CV-causatives have a mono-eventive structure with a non-agentive Causee. Given the crosslinguistic observations on mono-eventive causative constructions with an applicative Causee, CV-causatives are predicted to be unable to license (i) adverb of frequency that modifies the caused event, and (ii) agent oriented adverb that modifies the Causee (e.g. Pylkkänen 2002, Legate 2014).

However, it turns out that CV-causatives in Puyuma, Amis, and Seediq are compatible with (i) and (ii). First, in all three languages, the caused event of CV-causatives can be independently modified by the adverb of frequency 'again', as in (11a)-(c) suggesting that CV-causatives are bi-eventive rather than mono-eventive.

(11)   CV-causatives modified by the adverb of frequency 'again'

a.   ku=pa-base-anay   kanku=walak   <u>masal</u> na   kiping. [Puyuma]
     1SG.X=CAU-wash-CV   1SG.POSS.Y=child <u>again</u> DF.PIVOT clothes

---

[6] It should be noted that a *by*-phrase in many languages, including English, may bind into an internal argument without c-commanding relation. Thus, the claim that the by-phrase analysis for the Causand (9b) is untenable relies also on the diagnostics presented in (11) and (12), that a Causee in CV-causatives are agentive and licensed by an independent VoiceP.

'I asked my child<✓> to wash the clothes again<✓>.' (My child did it again)

b. sa-pa-pi-tangtang ni lisin <u>heca</u> ci-sawmah-an kuna   titi.   [Amis]
CV-CAU-PI-cook   X Lisin <u>again</u> PN-Sawmah-Y PIVOT.that pork
'Lisin made Sawmah<✓> cook that fish again<✓>.' (Sawmah did it again)

c. s-p-hanguc=mu   Ø iwan <u>dungan</u> ka   sari nii.   [Seediq]
CV-CAU-cook=1SG.X Y Iwan <u>again</u>   PIVOT taro this
'I made Iwan<✓> cook this taro again<✓>.' (Iwan did it again)

Second, across the three languages, the caused event in CV-causatives can be modified by agent-oriented adverbs, suggesting that the Causee is licensed as a normal external argument, as shown in (12a-c).

(12)   CV-causatives with agent-oriented adverbs that modify the Causee
a. ku=pa-base-anay   kan   sawagu <u>pakirep</u>   na   kiping. [Puyuma]
1SG.X=CAU-wash-CV SG.Y Sawagu <u>rigorously</u> DF.PIVOT clothes
'I asked Sawagu<✓> to wash the clothes rigorously<✓>.'

b. sa-pa-pi-tangtang ni panay ci-afan-an kuna   futing <u>pina'un</u>. [Amis]
CV-CAU-PI-cook   X Panay PN-Afan-Y PIVOT.that fish   <u>carefully</u>
'Panay asked Afan<✓> to cook that fish carefully<✓>.'

c. s-p-sais=mu   Ø robo <u>murux</u>   ka   lukus.   [Seediq]
CV-CAU-sew=1SG.X Y Robo <u>independently</u> PIVOT clothes
'I asked Robo<✓> to sew the clothes independently<✓>.'

The above observations suggest that the absolute Case analysis for pivot-marking cannot be maintained under any of the three tentative analyses for the structure of productive causatives. Further, they show that CV-causatives across the three languages are bi-eventive and have an agentive Causee. This suggests that CV-causatives in these languages involve an independent VoiceP that licenses the Causee as a normal external argument, as illustrated in (13).

(13)   The bi-eventive structure of CV-casuatives in Puyuma, Amis, and Seediq

T
┌──
│ Causer │
[X-marked]

│ Causee │
[Y-marked]

VP
┌──
│ Causand │ [Pivot-marked]
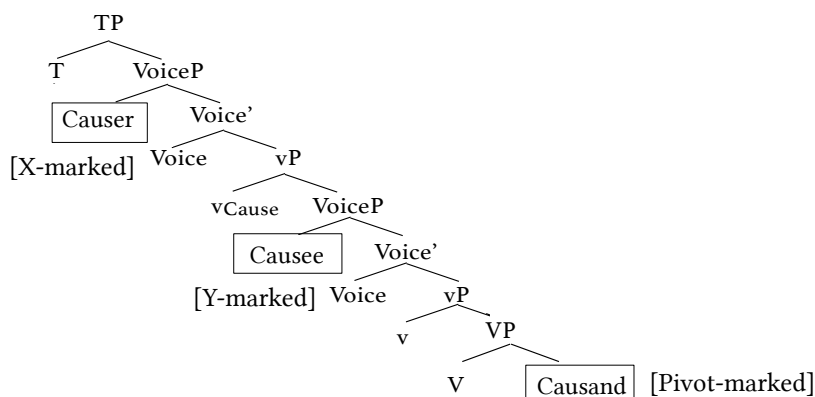
The structure of CV-causatives presented in (13) provides important clues that argue against the ergative approach to the three languages. First, under the ergative analysis, the Y-marking on the Causee realizes lexical oblique Case from V^0. However, given the findings of the structure of CV-causatives, it is unclear how a lexical oblique Case can be available at the embedded external argument position, raising doubts to the oblique Case analysis for Y. Second, given that the Causee in CV-causatives across the three languages is an external argument that is not licensed by an inherent Case or a preposition, the fact that pivot-marking can skip the Causee and marks the Causand suggests that the licensing of pivot-marking does not respect locality, therefore does not behave like structural Case-licensing.

In sum, the examination of the structural relations among the arguments in causatives across Puyuma, Amis, and Seediq reveals that the case-marking on the Causee and Causand are difficult to account for under an ergative analysis. Before proposing an alternative analysis for pivot, X, and Y, I turn to the case pattern in ditransitives in the next section and discuss its implications for what we have learned from causatives.

4. Ditransitive

As described in section 1, similar to productive causatives, ditranstives in Philippine-type languages also exhibit voice-conditioned case alternations on the arguments. When a ditransitive is marked in AV, PV/LV, and CV, pivot-marking falls on the Agent, Recipient, and Theme, respectively.

Under the analysis that pivot-marking realizes absolute Case, the fact that it appears on different arguments under different voice would have to mean that there is voice conditioned *argument structure alternation* in ditransitives, which allows different arguments to become the highest Caseless phrase in a clause, so that they are accessible to absolutive Case (6d).

However, the results of binding diagnostics suggest invariable structural relations among arguments in ditranstive clauses regardless of voice types. As exemplified in the Puyuma data (14)-(15), regardless of whether a ditransitive sentence is marked with AV, PV, or CV, the Recipient always asymmetrically c-commands the Theme. The same observation is obtained in Amis and Seediq.

(14) Puyuma: a Recipient always c-commands a Theme regardless of voice[7]
  a. ∅-beray=ku   [kantu=lribun] [kan tinataw   kana kiakarun driya]
    AV-give=1SG.PIVOT [3.POSS.Y=wages] [SG.Y 3S.POSS.mother LK laborer every]
    'I gave every laborer's$_{<i>}$ mother his$_{<i/*j>}$ wages.' (✓ bound variable reading)
  b. ku=beray-ay [kantu=lribun] [i   tinataw   kana kiakarun driya]
    1SG.X=give-LV [3.POSS.Y=wages] [SG.PIVOT 3S.POSS.mother LK laborer every]
    'I gave every laborer's$_{<i>}$ mother his$_{<i/*j>}$ wages.' (✓ bound variable reading)

---

[7] Note that Puyuma is a language with flexible word order among nominals. Nevertheless, a Recipient can always bind into a Theme even if the Theme precedes the Recipient in linear order, as in (14a)-(c).

    c.   ku=beray-anay [tu=lribun]   [kan tinataw   kana kiakarun driya]
          1SG.X=give-CV [3.POSS.PIVOT=wages] [SG.Y 3S.POSS.mother LK   laborer   every]
          'I gave every laborer's$_{<i>}$ mother his$_{<i/*j>}$ wages.' (✓ bound variable reading)

(15)   Puyuma: a Theme does not c-command a Recipient regardless of voice

    a.   ∅-beray=ku   [kantu=walak]   [kantu=lribun   kana kiakarun driya]
          AV-give=1SG.PIVOT [3.POSS.Y=child] [3.POSS.Y=wages LK   laborer   every]
          'I gave his$_{<i>}$ child every laborer's$_{<*i/j>}$ wages.'   (✗ bound variable reading)

    b.   ku=beray-ay   [tu=walak]   [kantu=lribun   kana kiakarun driya]
          1SG.X=give-LV [3.POSS.PIVOT=child] [3.POSS.Y=wages LK   laborer   every]
          'I gave his$_{<i>}$ child every laborer's$_{<*i/j>}$ wages.'   (✗ bound variable reading)

    c.   ku=beray-anay [kantu=walak]   [tu=lribun   kana kiakarun driya]
          1SG.X=give-CV [3.POSS.Y=child] [3.POSS.PIVOT=wages LK   laborer   every]
          'I gave his$_{<i>}$ child every laborer's$_{<*i/j>}$ wages.'   (✗ bound variable reading)

Here, I follow the standard assumption that a double-object construction (DOC) involves a Recipient that asymmetrically c-commands the Theme, whereas a prepositional dative construction involves a Recipient and a Theme that c-command each other (e.g. Pylkkänen 2002, Bruening 2010). The present observation that a Recipient always asymmetrically c-commands a Theme (15a-c) thus strongly suggests that ditransitive constructions across the three languages exhibit the structure of a double-object construction (DOC) regardless of voice type (16).

(16)   The structure of ditransitives in Puyuma, Amis, and Seediq
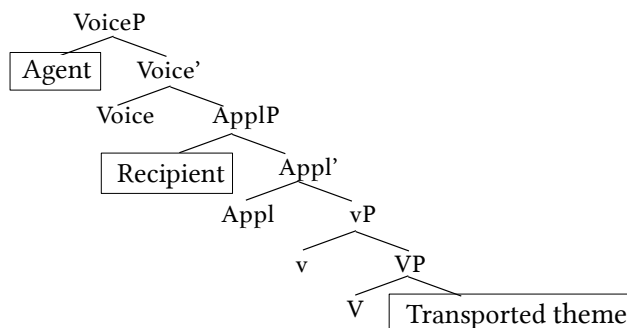
The absence of voice type conditioned argument structure alternation in ditranstives (14)-(15) poses a serious challenge to the ergative analysis of Philippine-type voice system. Similar to what we observed in productive causatives (section 3), the data from ditransitives suggest that the licensing of pivot-marking is not subject to locality, and is free to appear on a different argument under different voice types. Therefore, I conclude that an absolute Case analysis of pivot under the ergative analysis in (6d) is untenable.

5.   An accusative approach to Philippine-type Formosan languages

I argue that what remains unexplained under the ergative approach to the case patterns in causatives and ditranstives can be straightforwardly accounted for under a nominative-accusative analysis of the Philippine-type voice system, as summarized in (17).

(17)   The proposed analysis of the Philippine-type voice system
   a. Y marks accusative Case from Voice^0 available under all voice types. Therefore, there is no transitivity distinction between Actor voice and non-Actor voice clauses.
   b. X marks nominative Case from T assigned to the highest Caseless phrase in all finite clauses.
   c. Pivot is a topic marker that overrides morphological case and highlights the information structure status (topic) of a constituent.
   d. Philippine-type voice affixes morphologically encode an A'-agree relation between an A'-head (Topic^0) and a unique phrase per clause that bears a [topic] feature.

Under the present proposal, the case-licensing mechanism in CV-causatives can be captured as follows:

(18)   Analysis: Case-licensing in CV-causative

a.

T
└→ Causer
[X=NOM]

│
└→ Causee
[Y=ACC]

☞ ECM

VP
Causand

[Y=ACC] pivot

b.

	AV-causative	PV-causative	CV-causative
Causer	~~X~~ *pivot*	X	X
Causee	Y	~~Y~~ *pivot*	Y
Causand	Y	Y	~~Y~~ *pivot*

As shown above, the Causer always receives nominative Case (i.e. X) assigned by T, with the Causee and the Causand receiving structural accusative Case (i.e. Y) from the matrix and embedded Voice^0, respectively. The argument-marking alternations among different voice types is accounted for under the analysis that what has been conventionally analyzed as a "voice" marker in fact signals which

phrase in a clause bears a [... overlapping]
phrase is overridden by the [...]
marking alternation condit[...]

The present analys[...]
ditransitives, according to [...]
structurally highest phrase [...]
Y-marking on both the Re[...]
from the double-accusativ[...]
DOC (Pylkkänen 2002). S[...]
conditioned case alternatio[...]
a corresponding voice mar[...]
feature and carries the pivo[...]
is morphologically encode[...]
marker, as illustrated in (19[...]

(19)　　Analysis: Case-licensing in CV-ditransitive in Puyuma, Amis, and Seediq

a.

b.

	AV-ditransitive	PV-ditransitive	CV-ditransitive
Agent	~~X~~ *pivot*	X	X
Recipient	Y	~~Y~~ *pivot*	Y
Theme	Y	Y	~~Y~~ *pivot*
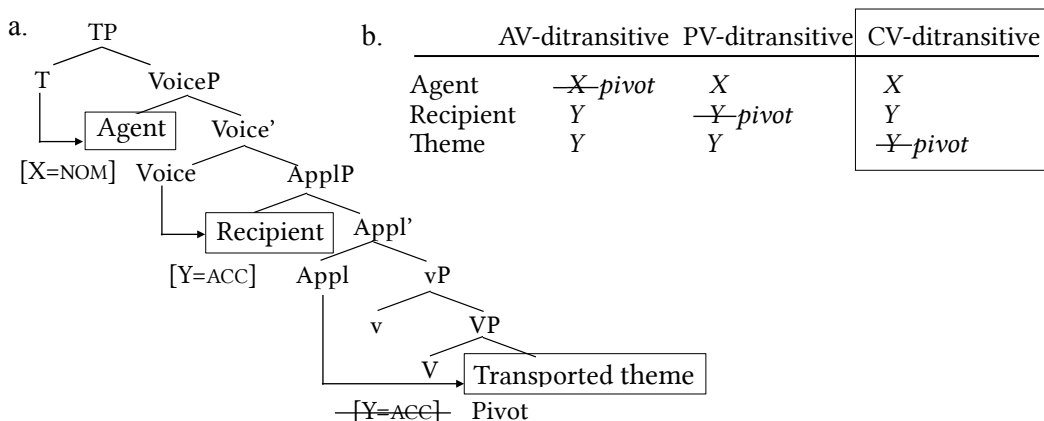
In sum, the mapping between pivot-selection and voice-marking under the present analysis can be summarized in the following way: when the structurally highest phrase in a clause (Causer/Agent) bears a [topic] feature, the clause is marked in AV; when the second-high argument in a clause (Causee/Recipient) bears a [topic] feature, the clause is marked in PV; when the lowest phrase in a clause (Causand/Theme) bears a [topic] feature, the clause is marked in CV.

The following section discusses how this observation can be captured under an agreement analysis of Philippine-type voice affixes.

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[8] See Erlewine (2016) for a similar topic analysis for pivot-marking in Atayal.

[9] This analysis is made on the finding that AV- and PV/LV-causatives in the three languages share the same bi-eventive structure with CV-causatives. Due to space limitation, I am unable to present relevant data in this paper. See Chen (2016) for a more detailed discussion.

45

6. What makes a Philippine-type voice system?

Given what have been observed from causatives and ditransitives, I argue that Philippine-type voice affixes are agreement morphology indicates an A'-agree relation between Topic and a specific phrase within a CP.[10]

Under this analysis, an AV affix morphologically encodes an A'-agree relation between an A'-head (Topic^0) and the *subject* of a clause, which bears a [topic] feature. Thus, in an AV clause, nominative case (i.e. X) on the subject is overridden by pivot-marking, with the rest of the phrases in the clause carrying their morphological case. In a PV clause, the *direct object* carries a [topic] feature and enters into an Agree relation with Topic^0. Therefore, the accusative case (i.e. Y) on the direct object is overridden by pivot-marking, with the external argument carrying its morphological case (X). In an LV clause, a temporal/locative phrase bears a [topic] feature and enters into the Agree relation. Therefore, the external and internal argument (if any) in the clause carry X- and Y-marking, respectively, with the temporal/locative phrase pivot-marked.[11] Finally, in a CV clause, an *indirect object/adjunct* bears [topic] feature and agrees with Topic^0, with the rest of the arguments in the clause carrying their morphological case. The figures below illustrate how the argument-marking patterns in ditransitives (20a), causatives (20b), and simple clauses (20c) are derived under the present analysis.

(20)   An agreement approach to voice affix under the proposed analysis

a. Ditransitive   b. Causative   c. simple clause

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7. Additional supporting evidence

7.1. Voice affixes as agreement markers

The agreement approach to Philippine-type voice affix offers a straightforward account for an important observation attested across Puyuma, Amism and Seediq, that productive causatives exhibit only one voice affix per sentence (see §3), although they involve two independent VoicePs. Under the analysis, according to which voice affixes encode an A'-agree relation unique in a CP, the fact that bi-eventive causatives exhibit only one "voice" affix is correctly predicted. On the other hand, the absence of a distinct voice affix for the caused event is unexpected under the ergative analysis, according to which voice affixes are the morphological reflexes of independent $Voice^0/Appl^0$ (Aldridge 2004 et seq.).

7.2. Pivot as a topic marker

The topic-marker analysis of pivot-marking is supported by independent evidence from the three languages. Across Puyuma, Amis, and Seediq, a discourse topic must be pivot-marked. As shown in the Seediq dialogue (21), in answering the question 'What happened to Robo?', the discourse topic 'her (Robo)' must be marked as the pivot (A1). A sentence describing the same event but does not mark the topic as pivot is considered infelicitous (A2).

(21) Pivot placement in Seediq dialogue

Q: gaga   hmuwa   ka   robo di?
   PROG   what.happen   PIVOT   Robo PART
   'What happened to Robo?'

A1: ✓ s<n>ebuc   na temi | ka   heya. | A2: *s<m><n>ebuc | heya | ka   temi.
      <PRF.PV>beat X Temi | PIVOT 3SG | <AV><PRF>beat | 3SG.Y | PIVOT Temi
    'Temi beat her.'   ('Temi beat her.')

   Furthermore, in Puyuma, base-generated hanging topics carry obligatory pivot-marking, suggesting a connection between pivot-marking and topichood. As shown in (22), the hanging topic 'Isaw' is thematically identified with the X-marked embedded proclitic, yet must bear the pivot-marking at the hanging topic position.

(22) Topic-marking in Puyuma

| i/*kan | isaw$_i$ i   ma-ladram=ku   [dra tu$_i$=patrakaw-ay=yu].
| PIVOT/*X | Isaw   PART AV-know=1SG.PIVOT [C   3.X=slander-LV= 2SG.PIVOT]

   '(As for) Isaw, I know that he slandered you.'

7.3. Implication: Austronesian noun/verb homophony

Finally, I argue that the present approach to Philippine-type voice affix offers a simple account for the well known noun/verb homophony phenomenon in Philippine-type languages, in which a *voice affix* in verbal environments share the same form with a corresponding *nominalizer* in nominal environments (relative clauses/clefts), as illustrated in the Seediq data (23a-c).

(23) a. ┌─────────┐
        │ puq-un │ na dakis   ka   rodux.
        │ eat-PV │ X Dakis PIVOT   chicken
        └─────────┘
        'Dakis will eat the chicken.'   [V]

   b. ┌──────────────┐
        │ puq-un   │ (/na dakis)
        │ eat-PV.NMZ   │ (/X   Dakis)
        └──────────────┘
        'thing eaten (/by Dakis)' [N]

   c. [DP rodux/∅   [CP Opi ┌─────────────┐ na   dakis   <ti>]]
                              │ puq-un   │
      [DP chicken/∅ [CP Opi │ eat-PV.NMZ │ X   Dakis   <ti>]]
                              └─────────────┘
        'the chicken/the thing that Dakis will eat'   [N, RC]   [Seediq]

Under the agreement approach to voice affix, the homophony between (23a) and (23b-c) follows from the analysis that both realize an A'-agree relation inside a CP; when a CP is embedded under a D-shell, the morphological reflex of the Agree relation is conventionally described as a nominalizer.

8.   Conclusion

This paper has investigated the nature of voice-conditioned case alternations in causatives and ditransitives in three Philippine-type Formosan languages, Puyuma, Amis, and Seediq, and demonstrated how they are better accounted for under a nominative-accusative analysis for the Philippine-type voice system and an A'-agreement analysis of Philippine-type 'voice affixes'. I discussed how the agreement approach to Philippine-type languages captures several empirical facts that remain unexplained if voice morphology is the morphological reflex of individual Voice[0]/Appl[0], as assumed under the ergative analysis, and argue that the agreement approach offers a simple account for the well-known noun/verb homophony phenomenon in Philippine-type languages.

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RE-LABELING "ERGATIVE": EVIDENCE FROM FORMOSAN*

Victoria Chen   Shin Fukuda
University of Hawai'i   University of Hawai'i
ychen6@hawaii.edu   fukudash@hawaii.edu

This paper examines the distributional restrictions on two basic case markers in morphologically conservative Philippine-type languages: (i) the morphological marking on the pivot, conventionally labeled "absolutive"/"nominative", and (ii) the morphological marking on non-pivot external arguments, conventionally labeled "ergative"/"genitive", and demonstrates that they are better analyzed as a marker of informational structure status (topic) and the reflex of structural nominative Case, respectively. With novel data from Puyuma, Amis, and Seediq, we present a nominative-accusative analysis for Philippine-type Formosan languages with an A'-agreement analysis for Philippine-type voice affixes, and argue for the presence of an A/A'-distinction in Philippine-type voice system.

1.   Introduction

There is a consensus in the Austronesian comparative literature that a Philippine-type four-way voice system can be traced back to Proto-Austronesian, which is reconstructed as having the four-way argument-marking distinction presented in (1) (Blust 2015, Ross 2009, 2006, Reid 1979).[1][2]

(1)   A four-way case distinction reconstructable to Proto-Austronesian
  (i)   *Pivot*: the morphological marking on the sole phrase in a clause eligible for A'-extraction
  (ii) *X*:   the morphological marking on non-pivot external arguments
  (iii) *Y*:   the morphological marking on non-pivot internal arguments
  (iv) *Z*:   the morphological marking on locative phrases

[1] To remain theory neutral, we refer to the case markers reconstructed as 'nominative', 'genitive', and 'oblique' in Blust (2015), Ross (2006), and Reid (1979) as pivot, X, and Y, throughout the paper.

[2] Aldridge (2016) makes a different proposal, claiming that the Philippine-type voice system did not emerge after the split off of Rukai, a Formosan language that exhibits only an active-passive contrast synchonically. It is nevertheless uncontroversial that the four-way case distinction in (1) can be traced back to the ancestor of all Philippine-type Austronesian languages.

The case distinction in (1) is preserved in the majority of Philippine-type Formosan languages. The shared case pattern among these languages is presented in (2).

(2)   The distributions of pivot-, X-, Y-, and Z-marked phrases under each voice

	Actor voice	Patient voice	Locative voice	Circumstantial voice
External argument	Pivot	X	X	X
Internal argument	(Y)[3]	Pivot	(Y)	(Y)
Locative	(Z)	(Z)	Pivot	(Z)
Instrument/Benefactor	(Y)	(Y)	(Y)	Pivot

Whether the voice system morphologically encoded by such a case pattern exhibits an ergative, accusative, or typologically unique alignment has long been a core concern in Austronesian syntax. One well received analysis built on the ergative approach to these languages analyzes (2) in the following way (3):

(3)   The ergative approach to Philippine-type languages (Aldridge 2004, to appear)
    a.   X marks inherent Case from transitive Voice (ergative).
    b.   Pivot marks structural absolutive Case from T/C (absolutive/nominative).
    c.   Y marks lexical Case from the verb (oblique).

Under this analysis, the absence of X-marking in Actor voice is attributed to the assumption that Actor voice clauses are intransitive/antipassive constructions that have no ergative Case to assign to the external argument (4a), whereas all non-Actor voice clauses are transitives with a *transitive Voice^0* assigning ergative Case to the external argument (4b). To account for how certain non-core arguments receive pivot-marking in Locative (LV) and Circumstantial (CV) voice clauses, it is additionally proposed that an LV/CV affix is the morphological reflex of a high applicative head, which licenses a non-core phrase as an applied object at [Spec ApplP], where the applied object is Case-licensed by absolutive Case as it is structurally the highest Caseless phrase in the clause (Aldridge 2004 et seq.) (4c).

(4)   Case-licensing in a Philippine-type voice system under the ergative analysis

a. Actor voice   b. Patient voice   c. Locative voice

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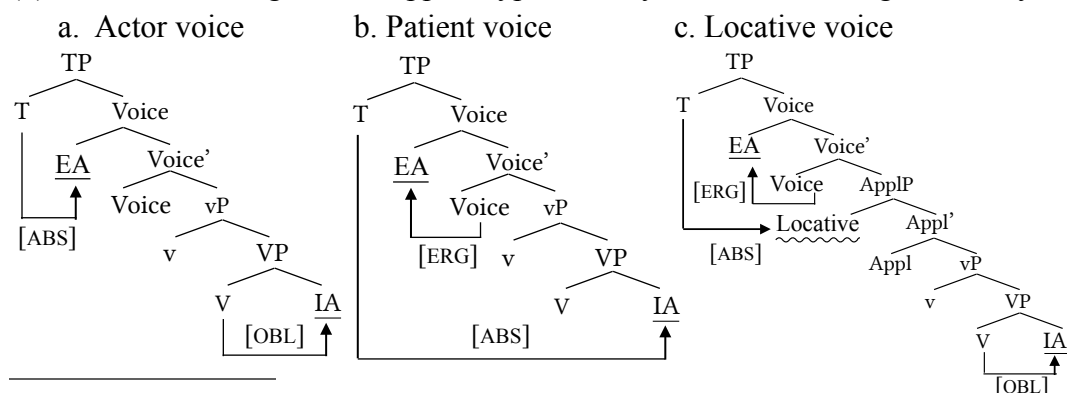
[3] Parentheses in (2) indicate that the presence of the phrase is optional.

In this paper, we examine the ergative approach to Philippine-type languages in (3) by investigating the distributions of X-marking and pivot-marking in three Philippine-type Formosan languages, Puyuma, Amis, and Seediq, each of which belongs to a different Austronesian primary-level branch and exhibits a pivot-only constraint in A'-extraction and an elaborate case distinction presented in (2). With novel data from the three languages, we argue against an absolute and ergative Case analysis for pivot and X, respectively, and put forward the following analysis:

(5)   Main claim of the paper
   a. Philippine-type languages are nominative-accusative, rather than ergative.
   b. X realizes structural nominative Case assigned by finite T.
   c. Pivot is a topic marker that overrides morphological case.
   d. Philippine-type languages employ an obligatory A'-agree relation between an A'-head (Topic[0]) and a specific phrase that bears a [topic] feature. A phrase with a [topic] feature carries pivot-marking regardless of its Case status.
   e. Following (b)-(d), Philippine-type languages exhibit an A/A'-distinction, with [Spec TP] as the subject position and promotion-to-pivot as an A'-phenomenon.

The remainder of the paper is organized as follows. We first describe the distributional restrictions of X-marking in Puyuma, Amis, and Seediq, and show that they are incompatible with an inherent ergative Case analysis for X (§2). We then investigate the nature of the pivot-marking with novel binding data from the three languages, which argue against a structural absolute Case analysis for pivot-marking (§3). Following sections 3 and 4, we present a nominative-accusative analysis for the three languages, with the proposal that pivot is a topic marker, rather than the reflex of nominative/absolutive Case (§4). We then discuss the shared binding facts in Philippine-type languages, which lend further supports to the topic analysis for pivot-marking (§5). Section 6 concludes.

2.   The distribution of X-marking

Under the ergative approach to Philippine-type languages, X-marking realizes an inherent ergative Case assigned by transitive Voice[0] (3a). Therefore, its presence is predicted to be associated with the presence of *transitive Voice[0]* and restricted to *external argument position*. In this section, we begin with the case pattern in a specific construction shared by Puyuma, Amis, and Seediq, where X-marking departs from the external argument position and the presence of transitive Voice[0].

2.1.   Puzzle 1: X-marking on unaccusative subjects

Across Puyuma, Amis, and Seediq, when an LV/CV clause contains an intransitive verb, the sole argument of the verb is obligatorily X-marked regardless of its argument status, as illustrated in (6)-(8).

(6)   Puyuma: X-marking on intransitive subject[4]

  a.   tu=unkun-ay   na   kalikali.   [unergative]
       3.X =jump-LV   DF.PIVOT   ditch
       'He/she jumped across the ditch.'

  b.   tu_i=atel-ay   (kandri na balasa)_i na   ruma'.   [unaccusative]
       3.X =fall-LV (X.this LK stone)   DF.PIVOT   house
       'It/this stone fell on the house.'

(7)   Amis: X-marking on intransitive subject

  a.   ka-keru-an[5] aku   ku   luma'   aku.   [unergative]
       dance-LV   1SG.X   PIVOT   house   1SG.POSS
       'I danced in my house.'

  b.   ka-tulu'-an   aku   kuna   lalan.   [unaccusative]
       slip-LV   1SG.X   PIVOT.that   road
       'I slipped on that road.'

(8)   Seediq: X-marking on intransitive subject

  a.   p-puyas-an   na laqi   ka   sapah=mu.   [unergative]
       IRR-sing-LV X child   PIVOT   house=1SG.POSS
       'The children will sing in my house.'

  b.   h-huqil-an   na riso   nii   ka   paran.   [unaccusative]
       IRR-die-LV   X young.man this   PIVOT Paran
       'This young man will die in Paran.'

        If unaccusativity (Perlmutter 1978, Burzio 1986) holds for intransitive verbs in all three languages, the data above suggest that X-marking is insensitive to the external/internal distinction among intransitive subjects, as it appears on both external arguments selected by unergative verbs (e.g. 'sing', 'dance', 'run') and internal arguments selected by unaccusative verbs (e.g. 'fall', 'slip', 'die'), therefore contradicting the inherent ergative Case analysis of X-marking (3a).

        That unaccusativity is present in all three languages is evidenced by three independent pieces of evidence. First, across the three languages, putative unaccusative verbs take an AV affix distinct from that for putative unergative and transitive verbs (9).

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[4] Unlike Amis and Seediq, Puyuma does not productively employ Locative voice to license intransitive roots, and prefers to express them under Actor voice. Nevertheless, a limited number of intransitive roots, both unergative and unaccusative, can still be combined with an LV affix.

[5] In Amis, Locative voice is expressed by the circumfix *ka- ...-an* or *pi-...-an*, conditioned by the transitivity of the root. When an LV affix is combined with an intransitive root, *ka-...-an* is obligatorily used. Thus, the prefix *ka-* in (7a-b) is not an additional morpheme (e.g. irrealis marker) attached to the verb, but a part of the LV circumfix *ka-...-an*. A relevant description of Amis LV affixes can be found in Wu (2006).

(9)   Morphological distinction in the AV voice affix

	Unaccusative verb	Unergative/transitive verb
Puyuma	*mu-*	*<em>*
Amis	*ma-*	*<um>* (unergative), *mi-* (transitive)
Seediq	*m-*	*<m>*

Second, across the three languages, putative unaccusative verbs like 'fall' can form lexical causatives by adding a Causee to the clause without employing causative morphology on the verb. Putative unergative verbs like 'sing' cannot form lexical causatives, and require causative morphology to form syntactic causatives, as exemplified in Puyuma examples (10a-b).

(10)   Asymmetry in lexical causative licensing
a. mu-atel la   na   ladru ✓(dra balri).   [Unaccusative]
   AV$_1$-fall PRF DF.PIVOT mango   (ID.Y wind)
   'The mango fell/Wind made the mango fall.'

b. s<em>enay na   walak (*kana sinsi).   [Unergative]
   <AV$_2$>sing   DF.PIVOT chid (DF.Y   teacher)
   'The child sang/*The teacher made the child sing.'

Third, in all three languages, putative unergative verbs allow the licensing of a Y-marked cognate object that shares the same morphological form with the verb stem (e.g. 'sing', 'dance', 'dream'), while putative unaccusative verbs do not, as shown in Seediq examples (11a-b).

(11)   Asymmetry in cognate object licensing
a. k<m><n>eeki=ku   ✓(Ø kingal keeki).   [Unergative]
   <AV><PRF>dance=1SG.PIVOT   (Y one   dance)
   'I danced (a dance).'

b. m<n>-takur=ku   (*Ø kingal takur).   [Unaccusative]
   AV<PRF>fall=1SG.PIVOT (Y one   fall)
   'I fell (*a fall).'

Given the evidence above, we conclude that unaccusativity is manifested in all three languages, and that the X-marked Patient-like phrases in the LV clauses (6b), (7b), and (8b) are licensed as internal arguments. The observation that X-marking appears on internal arguments (i.e. unaccusative subjects) suggests that an inherent ergative Case analysis for X is untenable. Moreover, it reveals an argument-marking pattern difficult to account for under the ergative approach to Philippine-type languages: under the ergative analysis, an internal argument in unaccusative LV clauses (e.g (6b), (7b) and (8b)) is predicted to be Case-licensed by lexical Case from the verb in the same way an internal argument gets Case-licensed under Actor voice (i.e. Y=oblique (3c)), as illustrated in (13).

(13)   LV clauses with unaccusative verbs under the ergative analysis (3)

TP
T   Voice
Ø   Voice'
Voice [Ø]   ApplP
→ Locative   Appl'
PIVOT = [ABS]
Appl   vP
v   VP
V   IA
Y = [OBL]   ?

- The empirical case pattern

	LV
Locative phrase	pivot
Undergoer	X/*Y
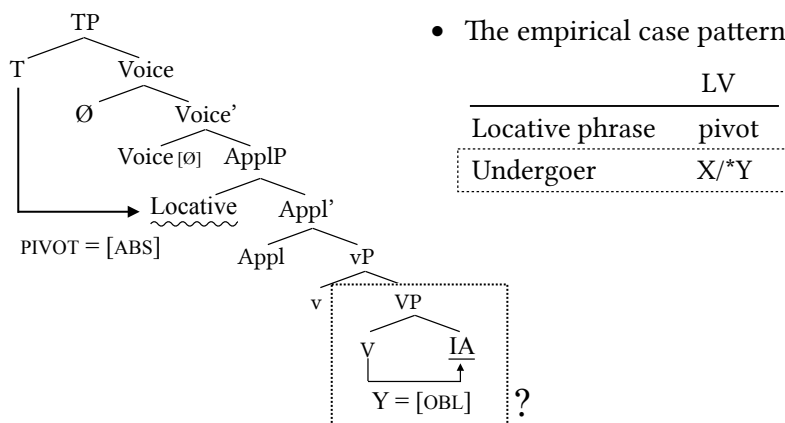
However, as already shown in (6)-(8), the internal arguments in unaccusative LV clauses are not Y-marked, and must bear X-marking.[6]

Importantly, the case pattern in the intransitive clauses under discussion further reveals a mismatch between X-marking and transitive Voice^0, which is unexpected under the ergative analysis. It is commonly assumed in the Formosan literature that all non-Actor voice clauses are *transitive*, with the X-marking presented in such clauses assigned by the transitive Voice head. However, given that the LV clauses in (6b), (7b), and (8b) involve an unaccusative verb, the assumption that they contain a *transitive Voice⁰* is difficult to maintain.

To conclude, the structure and argument-marking pattern in unaccusative LV clauses from the three languages reveal that X does not behave like an inherent Case.[7] In what follows, we turn to another distributional restriction of X-marking, which provides further evidence against the inherent Case analysis for X-marking.

2.2.   Puzzle 2: distributional restriction of X in productive causatives

Under the inherent ergative Case analysis of X, the number of X-marked phrases present in a sentence is predicted to correlate with the number of transitive Voice^0 available in it. Therefore, multiple X-marking within a single CP is expected to be possible, if the CP involves more than one VoiceP.

An ideal environment to examine this prediction is productive causative. Productive causatives in Puyuma, Amis, and Seediq are bi-eventive in structure and

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[6] Besides the three Formosan languages discussed here, X-marked undergoers in unaccusative LV clauses are also attested in Tagalog (Kaufman p.c.).

[7] A parallel case pattern is also attested in CV clauses with an intransitive verb, as exemplified in the following data from Seediq (12a-b).

(12) a. s-osa=mu   qduriq hori ka   dakis. b. s-knarux na robo ka   knrudan=na.
     CV-go=1SG.X escape Puli PIVOT Dakis   CV-be.sick X Robo PIVOT age=3SG.POSS
     'I fled to Puli because of Dakis.'   'Robo got sick because of age.'

involve an agentive Causee and an independent VoiceP that licenses the caused event, as evidenced by the fact that (i) the Causee can be modified by agent-oriented adverbs (14a), (ii) the Causee can bind into the Causand in variable and anaphora binding (14b), and (iii) the caused event can be independently modified by an adverb of frequency (14c), as exemplified in the CV-causative data below.

(14) a. A Causee may be modified by agent-oriented adverbs in CV-causatives

    ku=pa-pukpuk-anay   kan   sawagu <u>pakirep</u>   na   suwan. [Puyuma]
    1SG.X=CAU-beat-CV SG.Y Sawagu <u>severely</u> DF.PIVOT dog
    'I made Sawagu<✓> beat the dog severely<✓>.'

  b. A Causee may bind into a Causand in CV-causatives

    sa-pa-pi-nengneng aku   ci-aki-an <u>cingra</u>   *(tu) i   dadingu. [Amis]
    CV-CAU-PI-see   1SG.X PN-aki-Y <u>3SG.PIVOT</u> <u>REF</u> LOC mirror
    'I made Aki<i> look at himself<i> in the mirror.'

  c. The caused event may be independently modified by adverb of frequency

    s-p-pahu=mu   Ø temi <u>dungan</u> ka   lukus   nii.   [Seediq]
    CV-CAU-wash=1SG.X Y Temi <u>again</u>   PIVOT clothes this
    'I made Temi<✓> wash the clothes again<✓>.' (Temi did it again)

    Given (i)-(iii), we propose that CV-causatives across the three languages involve two independent VoicePs, with the Causee licensed as an external argument at the embedded [Spec VoiceP], as in (15a).[8] The shared case pattern in CV-causatives across the three languages is presented in (15b).

(15) a. The structure of causative   b. The shared case pattern[9]

	AV-causative	PV-causative	CV-causative
Causer	*pivot*	X	X
Causee	Y/*X	*pivot*	Y/*X
Causand[10]	Y	Y	*pivot*

T

Causer

Causee

VP

Causand
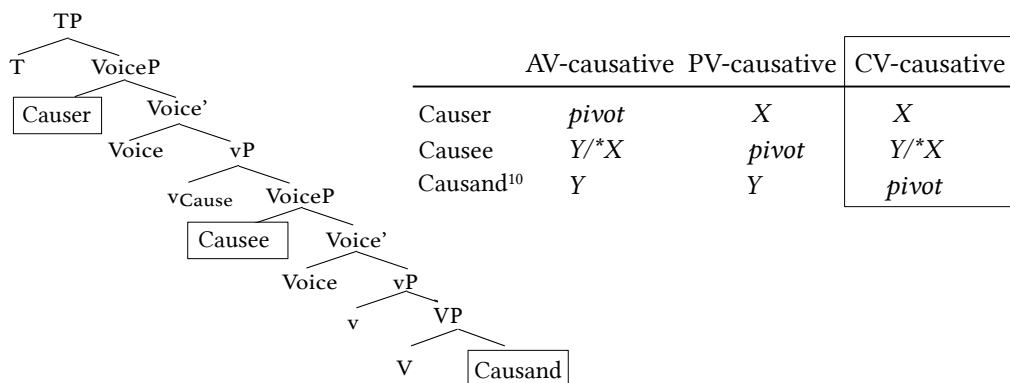
    Given that the Causee in CV-causatives is licensed as an external argument, X-marking is predicted to be available to the Causee, if X realizes an inherent ergative Case, since the embedded Voice[0] is an available ergative Case licensor, as illustrated in (16).

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[8] See Chen (same volume) for a more detailed discussion of Formosan causatives.

[9] For the sake of simplicity, we refer to the Theme of the caused event as *Causand* in this paper.

(16)   An expected case pattern in CV-causatives under the ergative analysis for X

C/T *Causer* Voice v_{Cause} [VoiceP *Causee* Voice *v* V *Causand*]]

[X=ERG]   [X=ERG]   [PIVOT=ABS]
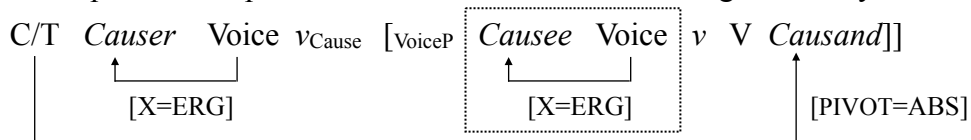
However, while ergative-marked Causee has been reported in typologically diverse range of ergative languages, including Macushi (Cabrid), Trumai (isolate), Kabardian (Kabardians), Qiang (Tibeto-Burman), and Agul (Caucasian) (Abbott 1991, Abitov et al. 1957, Guirardello 1999, LaPolla 1996), in Puyuma, Amis, and Seediq, only a *Causer* is eligible for X-marking (15b). A non-pivot-marked Causee in AV- and CV-causatives can only receive Y-marking, as shown in the following CV-causative data (17a)-(c). To the best of our knowledge, the same case-marking restriction is attested across Philippine-type languages, namely, that X-marking is available only to the highest argument within a CP.

(17) a. (*tu=)ku=pa-saletra'-anay   kan sawagu i   senten.   [Puyuma]
         (*3.X=)1SG.X=CAU-slap-CV | SG.Y Sawagu | SG.PIVOT Senten
         'I asked Sawagu to slap Senten.'

   b. Ø   ci-ofad   ku   sa-pa-pi-kalat aku   tu/*nu   wacu.   [Amis]
       NEU PN-Ofad   PIVOT   CV-CAU-PI-bite 1SG.X | Y/*X   dog |
       'Ofad is the one that I made the dog bite.'

   c. s-p-tinun=mu   Ø/*na   robo   ka   lukus.   [Seediq]
       CV-CAU-weave=1SG.X | Y/*X   Robo | PIVOT   clothes
       'I asked Robo to weave the clothes.'

In sum, given the presence of an embedded Voice⁰ in productive causatives, the fact that X-marking is available only to the *Causer* remains unexplained under the ergative Case analysis of X. The observed mismatch between X-marking and external theta role/transitive Voice⁰, as well as the unexpected restriction on the distribution of X-marking in productive causatives, calls for a reconsideration of the inherent Case analysis of X.

3.   Pivot does not mark absolutive/nominative Case

In the discussion so far, we have presented evidence against an inherent Case analysis of X-marking. In what follows, we move on to present our argument against the absolutive Case analysis for pivot-marking (3b) by examining its predictions regarding the structure of LV/CV clauses in Philippine-type languages.

As discussed in section 1, an important implication of the absolutive Case analysis for pivot-marking is that LV/CV clauses must involve *argument structure alternation* that allows arguments with different thematic roles to be accessible to absolutive Case. Under this analysis, a pivot-marked phrase in LV/CV clauses is

analyzed as an applied object base-generated in the specifier of a high applicative head, which is structurally higher than internal arguments (18a).

On the other hand, if pivot-marking does *not* realize absolutive Case, as we argue to be the case, the assumption that LV/CV clauses involve argument structure alternation is unnecessary. According to this proposal, a pivot-marked Locative/Instrument/Benefactor phrase may remain an adjunct PP adjoined to the verb phrase, as illustrated in (18b).

The two analyses make different predictions with respect to the binding relations among arguments in LV/CV clauses. Under the ergative analysis, an internal argument in LV/CV clauses is predicted to be unable to bind into the pivot phrase, as the pivot is analyzed as an applied argument at [Spec, High ApplP] that c-commands the internal argument (18a). Under the second analysis, however, an internal argument is predicted to be able to bind into the pivot phrase, i.e. a PP adjunct, if the PP is right-adjoined to the verb phrase (Bruening 2014), as in (18b).[10]

(18)   a. Pivot = absolutive Case   b. Pivot ≠ absolutive Case
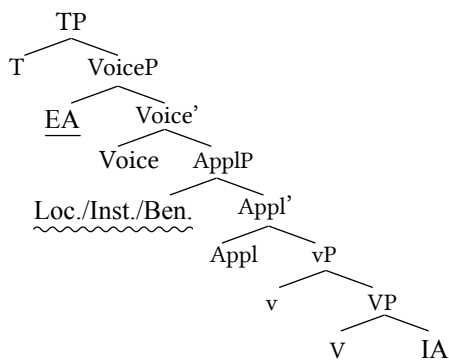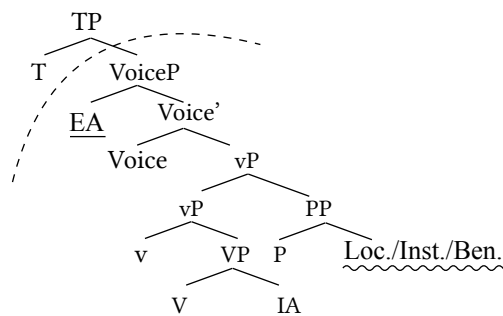
Binding diagnostics applied to LV/CV clauses suggest that the second proposal (18b) makes the correct prediction. Across Puyuma, Amis, and Seediq, an internal argument can bind into a pivot-marked Locative, Instrument, or Benefactor phrase in an LV/CV clause, as evidenced by the bound variable reading obtained with the pivot-marked pronominal bound by the quantifier internal argument (19a-c).

(19)   Binding relations between the pivot and the Theme in CV clauses

  a. ku=deru-anay [tu=si'uy]   [kantu=bu'ir kana taynaynayan driya].
     1SG.X=cook-CV [3.POSS.PIVOT=pot] [3.POSS.Y=taro LK mothers   every]
     'I cooked every mother's$_{<i>}$ taro with her$_{<i/j>}$ pot.' (✔ bound variable reading) [Puy]

  b. sa-pi-tangtang aku   [tu futing nu cimacima a tamdaw] [ku   si'uy nangra].
     CV-PI-cook   1SG.X [Y fish POSS every   LK person] [PIVOT pot 3PL.POSS]
     'I cooked every mother's$_{<i>}$ fish with her$_{<i/j>}$ pot.' (✔bound variable reading)[Amis]

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[10] According to Bruening's (2014) proposal of precede-and-phase-command, when a PP is right-adjoined to a VoiceP, it may be bound by the internal argument, as long as (i) the internal argument precedes the PP in linear order, and (ii) both are under the same phase (i.e. VoiceP).

c. s-beebu=mu   [Ø knkingal laqi] [ka   qreti=daha].   [Seediq]
    CV-beat=1SG.X [Y every   child] [PIVOT   stick=3PL.POSS]
    'I beat every child_{<i>} with his_{<i/j>} stick.' (✓ bound variable reading)

That an internal argument can bind into the pivot-marked phrase in an LV/ CV clause is compatible with the prediction of the non-applicative approach to LV/ CV clauses (18b), while it poses a serious challenge to the ergative/applicative approach to LV/CV clauses (18a), as it fails to predict the binding relation between the pivot and the internal argument attested in (19).

4. An accusative analysis of Philippine-type Formosan languages

We argue that what remains unexplained under the ergative approach to X (§2) and pivot (§3) can be straightforwardly accounted for under the following analysis (20).

(20) a. X marks structural nominative Case assigned by finite T.
     b. Pivot is a topic marker that is independent of Case and overrides
        morphological case.

In what follows, we show how the present analysis correctly predicts the case patterns and binding facts discussed in the previous sections.

4.1.   X = structural nominative Case from T

As shown in section 2, across Puyuma, Amis, and Seediq, X-marking is insensitive to the external/internal argument position among intransitive subjects, but is restricted to the structurally highest argument in productive causatives. Such a distributional restriction follows directly from a structural nominative Case analysis for X, which predicts that X-marking (i) is assigned only to the structurally highest argument in a clause, (ii) can Case-license both unergative and unaccusative subjects, and (iii) is unique in a CP. This analysis correctly predicts the appearance of X-marking on both unergative and unaccusative subjects, as well as its restriction to the Causer in productive causatives.

4.2.   Pivot = topic marker

Given that an absolutive Case analysis for pivot fails to account for the binding facts in LV/CV clauses (§3), we argue that pivot is better analyzed as a marker of information structure status (topic) that is independent of Case and overrides morphological case.[11] Under this analysis, a phrase that bears a [topic] feature always carries pivot-marking regardless of its Case status.

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[11] See Chen (same volume) for independent evidence from Formosan causatives and ditransitives against the absolutive Case analysis for pivot-marking.

The topic analysis of pivot-marking correctly predicts the case-marking pattern in unaccusative LV clauses. In section 4.1, we argue that the X-marking of the undergoer in an unaccusative LV clause follows directly from a nominative Case analysis of X. However, such an analysis is incongruent with the assumption that LV/CV clauses involve a pivot licensed as a high applicative phrase, as is a necessarily assumed under the absolutive Case analysis for pivot-marking. This is shown in (21a): under the high applicative analysis of LV/CV clauses, the applied argument in [Spec, High ApplP] would intervene between T and the internal argument, wrongly ruling out such sentences. On the other hand, under the topic analysis of pivot-marking, nominative Case and pivot-marking are independent of each other. A pivot-marked locative adjunct does not compete with the internal argument for nominative Case, and thus correctly predicts a nominative-marked (X-marked) undergoer in unaccusative LV clauses (21b).

(21) a. Pivot = absolutive Case (✗)   b. Pivot = topic marker (✓)
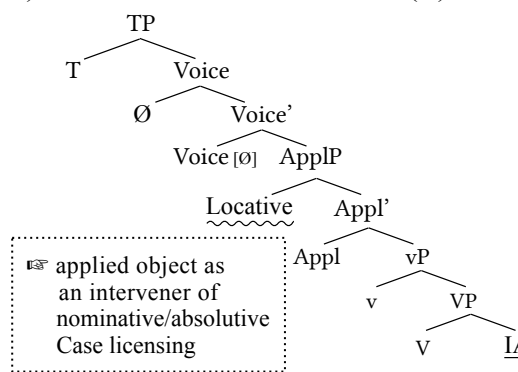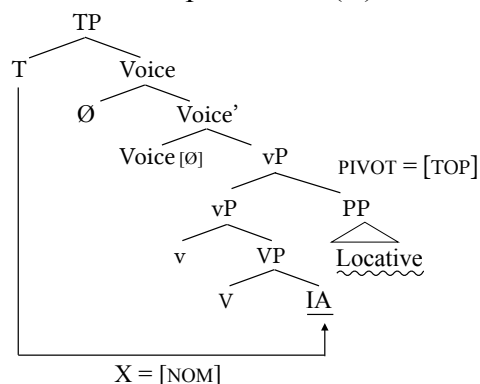
4.3.   Philippine-type voice affix = A'-agreement marker

Following the topic analysis of pivot-marking, we argue that Philippine-type languages employ an obligatory A'-agree relation between an A'-head (Topic) and a specific phrase within a CP that bears a [topic] feature, with the Agree relation morphologically encoded as voice morphology on the verb. Under the present proposal, the interaction between Case-licensing, voice marking, and the argument-marking pattern in a Philippine-type language that bears a four-way case distinction in (2) is accounted for under the analysis summarized below.

In a Philippine-type language, the structurally highest argument in a clause always receives nominative Case (i.e. X) from T, with the direct object (if any) Case-marked by accusative Case (i.e. Y) from Voice[0].[12] Locative adjuncts are marked with a specific preposition (i.e. Z), with other types of adjuncts Case-licensed by a preposition that shares the same morphological marking with

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[12] See Chen (same volume) and Chen and Fukuda (2016) for independently motivated evidence from Formosan causatives, ditransitives, raising-to-object, and restructuring constructions for a structural accusative Case analysis for Y-marking.

accusative Case (i.e. Y). On top of this case-marking system, any phrase that bears a [topic] feature carries obligatory pivot-marking.

In an AV clause, the *subject* bears a [topic] feature and enters into an A'-agree relation with the Topic head (labeled Top in (22)). Therefore, the topic marker (i.e. pivot) overrides the nominative case (X) on the subject, with the internal argument carrying overt accusative case (Y). The Agree relation between *subject* and the Topic head is morphologically encoded as an AV affix on the verb, as illustrated in (22a). In a PV clause, the *direct object* bears a [topic] feature and enters into an A'-agree relation with $Topic^0$, with the Agree relation morphologically encoded as a PV affix. Therefore, the direct object in a PV clause bears pivot-marking, with the external argument carrying overt nominative case (X) (22b). Finally, in an LV/CV clause, a specific temporal/spatial adjunct (LV) or indirect object/adjunct (CV) bears a [topic] feature and agrees with $Topic^0$. Thus, a specific 'non-core' phrase bears pivot-marking, with the external and internal argument (if any) carrying nominative (X) and accusative (Y) case, respectively, as in (22c).[13]

(22)   a. *"AV-agreement"*   b. *"PV-agreement"*   c. *"LV/CV-agreement"*
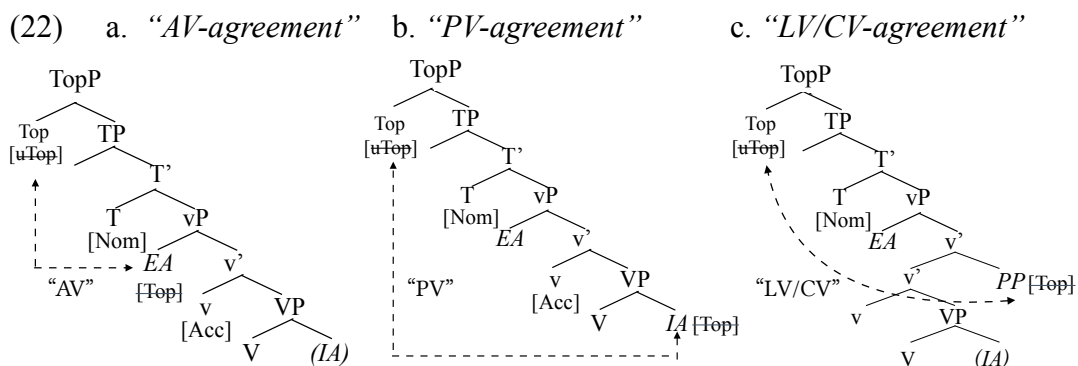
Under the proposed analysis, the design of a Philippine-type voice system is illustrated in (23), which presents the Case-marking and Agree relation within a PV clause as an example.

(23)   Proposal: the design of a Philippine-type voice system

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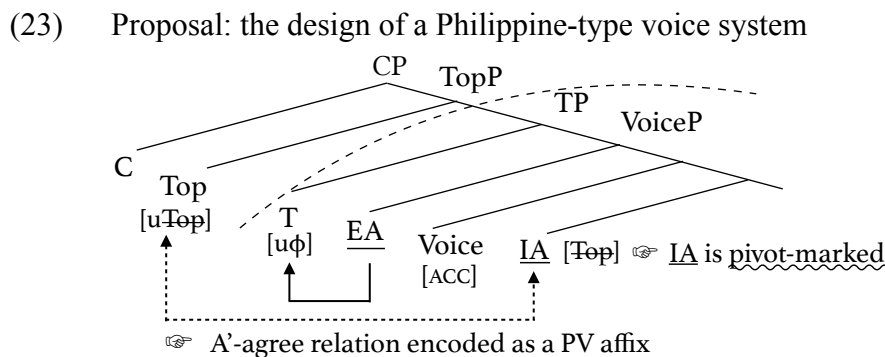
[13] See Chung (1994), Richards (2000), Pearson (2001), Rackowski (2002), and Erlewine et al. (to appear) for a family of agreement/extraction approaches to voice affixes in Chamorro, Tagalog, Malagasy, and Atayal.

Following the proposal of Feature-Inheritance (Richards 2007, Chomsky 2008), we propose that the complexity of a Philippine-type voice system derives from its employment of both a topic-probe and a φ-probe. The φ-probe is inherited by T, which attracts the highest phrase in a clause to [Spec TP] and checks nominative Case (X). Therefore, the subject position in a Philippine-type language is [Spec TP], and the binding relations within a clause are defined within TP, as illustrated in (23). On the other hand, a topic-probe, inherited by a separate head, must enter into an A'-agree relation with a phrase that bears a [topic] feature in the clause, with the Agree relation morphologically indexed as "voice" morphology.

5.   Supporting evidence

Under the proposed analysis, according to which (i) pivot is a topic marker independent of Case, and (ii) Philippine-type voice affixes morphologically encode A'-agree relation, a pivot-marked element is expected to show A'-properties under standard diagnostics (24a-c). In what follows, we demonstrate that this prediction is indeed observed across Philippine-type languages.

(24)   A- and A'-properties (van Urk 2015:23)

		A-properties	A'-properties	
a.	Reconstruction for Condition C	✘	✓	☞ findings in Puyuma,
b.	New antecedent for anaphor	✓	✘	Amis, and Seediq
c.	Weak Crossover	✘	✓	

First, promotion-to-pivot across Puyuma (25a), Amis (25b), and Seediq (25c) does not trigger a Condition C violation, as is also attested in Tagalog (Aldridge 2004:100), and Malagasy (Pearson 2001:102), suggesting that promotion-to-pivot does not create a new binder or affect the binding relations within a clause, as is expected under the topic analysis for pivot-marking.[14]

(25) a. ✓tu$_i$=tusuk-aw taytaaw   kan isaw$_i$. b. ✓ma-palu ni aki cinga   tu.
      3.X=stab-PV 3SG.PIVOT.REF SG.X Isaw   PV-beat X Aki 3SG.PIVOT REF
      'Himself, Isaw gave an injection. [Puyuma]   'Himself, Aki beat.'   [Amis]

Second, in Puyuma, Amis, and Seediq, promotion-to-pivot does not create an new antecedent for anaphor, as shown in (26a-b).

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[14] Crucially, in the Nilotic language Dinka, which has been shown to lack an A/A'-distinction, the same construction triggers a Conditioned C violation (van Urk 2015:116). Compare (25c) with (25d).

(25) c. ✓ spi-un   na iwan ka   heya nanaq.   d. *Rˈɔt-dè   à-nhɛ́ɛr   Bôl.
      dream-PV X Iwan PIVOT 3SG   REF   self-SG.3SG 3S-love.OV Bol.GEN
      'Herself, Iwan dreamt of.'   [Seediq]   ('Himself, Bol loves.')   [Dinka]

(26) a. *tu$_i$=tusuk-aw kantaaw$_i$ i   isaw.   b. *ma-palu nira tu Ø   ci-aki.
     3.X=stab-PV   3SG.X.REF SG.PIVOT Isaw   PV-beat   3SG.X REF PIVOT PN-Aki
     ('Isaw, himself gave an injection.) [Puyuma]   ('Aki, herself beat.')   [Amis]

Finally, promotion-to-pivot in all three languages exhibits a Weak Crossover effect (Postal 1972, Lasnik & Stowell 1991), another typical A'-property. As exemplified in the Puyuma data (27), a pivot-marked quantifier Locative phrase cannot bind into a pronominal Theme which c-commands the base-position of the pivot phrase.

(27)   ku=pubini'-ay [kantu=dawa]   [tu=uma'   kana maidrangan driya].
       1SG.X=sow-LV [3.POSS.Y=millet] [3.POSS.PIVOT=field LK   old.person every]
       'In every old person's$_{<i>}$ field, I sowed his$_{<*i/j>}$ millet.'   [Puyuma]

     Given the observations above, we argue that a topic analysis of the pivot accurately accounts for the binding characteristics found in these three languages, and suggests that a pivot phrase occupies an A'-position.[15,16]

6.   Conclusion

In this paper, we have investigated the properties of two basic types of morphological marking found in conservative Philippine-type languages: i) the marking on the pivot phrases (pivot), and ii) the marking on non-pivot external arguments (X). With novel data from Puyuma, Amis, and Seediq, we demonstrated that the distributions of pivot and X are incompatible with a structural absolutive and inherent ergative Case analysis. Rather, the observed distributional facts follow straightforwardly from the analysis that (i) pivot is a marker of information structure status (topic) that overrides morphological case, and (ii) X marks structural nominative Case from T. Pursing this analysis, we show that pivot phrases in Formosan languages exhibit A'-properties, as expected under a topic analysis of the pivot. The present proposals provide novel empirical support for a unitary accusative approach to Philippine-type voice systems, in line with previous analyses on other Philippine-type languages, Chamorro (Chung 1994), Tagalog (Richards 2000, Rackowski 2002), and Malagasy (Pearson 2001).

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[15] We remain agnostics in this paper as to whether agreeing with Topic[0] triggers A'-movement of the goal (i.e. the pivot). Note that the binding facts in (25)-(27) are compatible with both an A'-movement and an agreement-without-movement analysis of the pivot.

[16] Aldridge (to appear) argues for the lack of A/A'-distinction in Philippine-type languages, claiming that [Spec CP] is a Case position that must be filled, with all movements driven by a sole probe, uφ. However, under this analysis, promotion-to-pivot is predicted to show A-properties, which is incompatible the observed binding facts in (24a)-(24c). See also footnote 14 for relevant data.

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LEXICAL ASPECT AND ASPECTUALLY UNMARKED PREDICATES IN ATAYAL[*]

Sihwei Chen
University of British Columbia
sw.chen@alumni.ubc.ca

This paper examines the aspectual properties of aspectually unmarked predicates in Atayal, which have been previously characterized as being neutral between perfective and imperfective. By diagnosing lexical aspectual classes in Atayal, I show that the reading of unmarked predicates is not underspecified but conditioned by the lexical aspect, which can be accounted for by proposing a null neutral aspect (Smith 1997). The described event must begin but need not stop/culminate. To formulate the non-culmination effects, I draw on Altshuler's (2014) analysis of Russian imperfective, but I depart from Altshuler in not reducing neutral aspect, but incorporating it as a partitive operator that includes an initial stage of events inside reference time. This analysis has a typological implication for encoding non-culmination effects in different aspectual operators.

1.   Introduction

In many Formosan languages (the Austronesian languages of Taiwan), predicates marked with voice but without any aspectual marker have been dubbed as 'neutral forms' in the literature (Ross 1995, Zeitoun et al. 1996). This term is not simply based on morphology, but also reflects the range of meanings: Sentences with neutral verbs can refer to a past or present situation, and they may describe a progressive, non-progressive episodic, or habitual event. This functional view seems to suggest that neutral forms are temporally and aspectually underspecified.

This paper expands on the aspectual properties of neutral forms in Atayal (Squliq dialect, spoken in Hsinchu County, Taiwan). I will rename neutral forms as unmarked predicates for avoiding associating them with a prior assumption. The aim of this paper is to examine the hypothesis that unmarked forms are aspectually neutral. Since lexical aspect and viewpoint aspect are shown to interact with each other cross-linguistically, I first present the basic distinction of lexical aspectual classes in Atayal. Second, I show that the range of meanings of unmarked

predicates is not free but varies with the lexical aspect. This cannot be accounted for by current theories of (im)perfectivity, but supports Smith's (1997) neutral aspect. I also review Altshuler's (2014) partitive analysis of Russian imperfective, which shares many similarities with the Atayal unmarked predicates, but I show that neutral aspect cannot be dispensed with even if viewpoint aspects are analyzed as partitive operators. I then give an analysis modifying Altshuler's proposal.

The paper is organized as follows. Sections 2 presents diagnostics for five lexical aspectual classes. Section 3 discusses the aspectual reading of unmarked predicates, and discusses potential analyses based on (im)perfectivity. Section 4 reviews Smith's (1997) neutral aspect and Altshuler's (2014) analysis of Russian imperfective, and gives a proposal drawing on ideas of both analyses; I also mention a typological implication of this proposal. Section 5 concludes the paper.

2. Diagnostics for Lexical Aspect in Atayal

This section is to establish basic Atayal lexical aspectual classes (but not to exhaust differences between them or to identify every possible lexical class). Lexical aspect typically interacts with viewpoint aspect in languages. In Atayal, the readings of unmarked predicates and of predicates marked with the perfect aspect can distinguish between three types of eventive classes, and detect ambiguity between inchoative and homogeneous states. To distinguish between achievements and states, I use a language-specific construction for testing the durativity of events.

2.1. Readings when combined with unmarked predicates

Activity and accomplishment events in unmarked forms behave differently from achievements and inchoatives. While the former do not entail final points (i.e., termination points for activities and culmination points for accomplishments, see section 2.2), the latter do. This is evidenced by event continuation and culmination cancellation tests (cf. Smith 1997; Bar-el 2005). Unmarked activity events can be conjoined with an assertion that the event continues without introducing infelicity, as shown in (1); also, the final point of the activity event can be cancelled, as shown in (2).[1]

(1)   m-ngilis qu tali' ru   *ki'a cyuw   m-ngilis na'*.[2]
        AV-cry   ABS Tali' CONJ may PROG.DIST AV-cry   still
        ?'Tali cried, and he may be still crying.'

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[1] Note that non-culmination effects appear to be similar to being able to continue, but I distinguish them because the two criteria do not always coincide in languages; for example, non-culminating accomplishments can be cancelled but cannot continue in Hindi (Singh 1998) and Thai (Koenig and Muansuwan 2000).

[2] Abbreviations follow the Leipzig Glossing Rules, with the following amendments: AV = actor voice; CONJ = conjunction; LV = locative voice; PRT = particle; PV = patient voice.

(2)   m-ngilis qu tali' ru *nyuw*   *ini'* *hawh*   *na'*.
        AV-cry   ABS Tali' CONJ PROG.PROX NEG   give.up.AV yet
        ?'Tali' cried, and he hasn't stopped it yet (lit. he hasn't given up crying).'

Similar facts are observed for accomplishments. Their unmarked uses are compatible with an assertion that the event is continued, as shown in (3), and one that the event is not culminated, as shown in (4):

(3)   kblay-un na   yutas   qutux lubuw ru *cyuw*   *kblay-un* *na'*.
        make-PV ERG grandpa one   harmonic CONJ PROG.DIST make-PV still
        ?'Grandpa made a harmonic, and he is still making it.'

(4)   kblay-un ni   watan sa   kawas wayal ga *ini'* *tmasuq*   *na'*.
        make-PV ERG Watan LOC year   past TOP NEG finish.AV still
        ?'Watan built the house last year, but he didn't finish (building) it yet.'

Conversely, unmarked achievements entail culmination, as exemplified in (5), where the dying event is incompatible with an assertion of non-completion. Note that since the progressive aspect in Atayal gives rise to a result state rather than a preparatory process to an achievement, the test whether the dying event is able to continue using the progressive is not applicable.

(5)   #m-huqil qu mlikuy=nya' la, *ulung*   *ini'* *huqil*.
         AV-die   ABS man=3S.GEN PRT fortunately NEG die.AV
         Intended for #'Her husband died, but fortunately he didn't die.'

Stative verbs are ambiguous between inchoative states and homogeneous states. For instance, with a punctual *when*-clause, the verb *mbka'* 'be/get broken' can obtain an inceptive reading in (6) or a progressive reading in (7). Note that inceptive readings preferably require the final particle *la*.[3]

(6)   *m-bka'*   qu tubung sa m-zyup=saku'   blihun la.   (Inchoative)
        AV-broken ABS window LOC AV-enter=1S.ABS door   PRT
        'The window got broken when I entered the door.'

(7)   *m-bka'*   qu tubung sa   m-zyup=saku'   blihun.   (Homogeneous)
        AV-broken ABS window LOC AV-enter=1S.ABS door
        'The window was broken when I entered the door.'

Unmarked inchoative states behave like unmarked achievements in entailing

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[3] Since I have not investigated conditions on the presence/absence of *la*, I have to leave aside the issue whether to attribute states' inchoativity to *la*. See Gorbunova's (2015) proposal that *la* is a discontinuative/iamitive marker, which locates the focus time after (or at) some change-point.

culmination. Trying to cancel the completion of initial change of state in inchoative states results in infelicity:

(8)   Context: *Yayut eats a lot. She's getting fat but fortunately she hasn't gotten fat (her size is okay).*
         #qthuy   qu   yayut   lga   *ini'*   kqthuy   la.
          fat.AV   ABS   Yayut   PRT.TOP   NEG   fat.AV   PRT
          Intended for #'Yayut got fat but she didn't get fat/is not fat.'

The entailment difference is further confirmed by the interpretation of time adverbial phrases. Time phrases in Atayal, which are marked optionally by locative case, may be interpreted as English *at-*, *in-*, or *for*-phrases, depending on the lexical aspectual class. When co-occurring with an activity or accomplishment predicate, a time phrase is only interpreted as punctual, coinciding with the inception of the event:[4]

(9)   m-nbuw *sa cyugal spung* qu   tali' la.   (Activity)
         AV-drink LOC three   hour   ABS Tali' PRT
         'Tali' started drinking at three o'clock.'
         ≠ 'Tali' drank for three hours.' / ≠ ??'Tali' drank in three hours.'

(10)   kblay-un=nya'   *qutux kawas* ngasal qasa.   (Accomplishment)
         make-PV=3S.ERG one   year   house that
         'He will start to build that house in one year/one year later.'
         ≠ 'He built that house in one year.' / ≠ ??'He built that house for one year.'

With an achievement, by contrast, the time phrase can in addition specify the time that elapses before the event, parallel to an *in*-phrase or *at*-phrase:

(11)   tayhuk   b'bu' rgyax   *sa   qutux spung* la.   (Achievement)
         arrive.AV top mountain LOC   one   hour   PRT
         'He arrived the summit in one hour.' or 'He arrived the summit at one o'clock.'
         ≠ ??'He arrived the summit for one hour.'

Regarding states that are ambiguous between two readings, a time phrase is interpreted as an *in*-phrase if the state is inchoative, but as a *for*-phrase if it is homogeneous:

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[4] Note that unlike sentences of actor voice, those of non-actor voice in Atayal allow future interpretation without additional marking so (9) and (10) differ in their temporal interpretation. This should not concern us.

(12) qthuy *qutux kawas* qu tali' la.   (State)
      fat.AV one   year   ABS Tali' PRT
      'Tali' got fat in one year.' or 'Tali' was fat for one year.'

To sum up, time phrases can function as *at*-phrases or *in*-phrases for unmarked achievements and inchoative states, but only as *at*-phrases for unmarked activities and accomplishments. Also, homogeneous states are proved to be different from eventive classes by the availability of *for*-phrases (as shown in (12) above); eventive verbs require a special construction for modifying the event duration (see section 2.3).

2.2.   Readings when combined with the perfect

We have seen that activities and accomplishments do not entail culmination, namely, the two classes in unmarked forms lack the usual assumed telicity contrast. However, there is evidence that they do have telicity contrast in Atayal. Atayal has a perfect aspect marked with the preverbal auxiliary *wal*. When combined with *wal*, accomplishment and achievement events must culminate: The culmination cancellation test fails for an accomplishment in (13) and an achievement in (14).

(13) *wal* kblayun ni watan sa kawas wayal (#*ga ini' tmasuq na'*).
      PRF make.PV ERG Watan LOC year past   TOP NEG finish.AV still
      'Watan built the house last year (#but he didn't finish building it).'

(14) Context: *You describe to your friend how Rimuy's husband survived an accident.*
      # *wal* m-huqil qu mlikuy=nya' la, *ulung*   *ini'   huqil*.
        PRF AV-die ABS man=3S.GEN PRT fortunately NEG die.AV
      Intended for #'Her husband died, but fortunately he didn't die.'
      Consultant's comment: "No!" "Maybe I haven't taught you how to say "DIED" and NOT DEAD"?"

Likewise, applying the same test to inchoative states results in infelicity, as shown in (15). (16) shows that homogeneous states are incompatible with *wal*.

(15) *wal* balay m-'uy   hiya' (#*ga nyux*   *ini' k'uy   la*).
      PRF truly AV-tired 3S.N TOP PROG.PROX NEG tired.AV PRT
      Intended for #'He got tired but has not gotten tired/is not tired.'

(16) Context: *Describe how Wagi' had a difficult time living in those old days.*
      #*wal* m-'uy   sraral qu wagi'.
        PRF AV-tired before ABS Wagi'
      Intended for 'Wagi' was tired before.'

By contrast, the entailment cancellation test is not readily applicable to *wal*-marked activity events; the consultant's comment in (17) suggests that the event is not inherently telic, as it cannot be "finished" but may be stopped. I take this as a hint that activities do not have an inherent endpoint, i.e., they are atelic.

(17)   *wal* m-ngilis qu   tali' (*#ga   ini'=nya'   suqiy*).
      PRF AV-cry ABS Tali'   TOP NEG=3S.ERG finish.PV
      Intended for 'Tali' cried but he didn't finish.'
      Consultant's comment: "*Suqiy* is not used for crying; you should use *ini' hawh* 'not stop'."

The reading of time phrases confirms the telicity contrast between *wal*-marked accomplishments and activities. While a time phrase is interpreted as an *in*-phrase for the former, as shown in (18), it modifies the duration of an activity event, as shown in (19). Therefore we can conclude that activities and accomplishments constitute different lexical classes.

(18)   *wal*=nya'   kblayun *sa   qutux kawas* qu   ngasal qasa la.
      PRF=3S.ERG build.PV LOC one   year   ABS house that PRT
      'He built that house in one year.'

(19)   *wal* m-ngilis *qutux spung* qu   tali'.
      PRF AV-cry one   hour   ABS Tali'
      'Tali cried for one hour.'

2.3.   (Un)availability of *ryax*-construction 'spend X-time'

To modify the duration of an event, Atayal can use a pseudo-cleft construction, with a time phrase in the initial predicate position, and the verb *ryax* 'spend, take' in the presupposed nominal position. This construction is available to every aspectual class except achievements, as shown in (20-23). The consultant's comment in (23) suggests that the sentence would force an unusually lengthy dying event.

(20)   cyugal spung ryax   m-qwas ni   ciwas la.   (Activity)
      three hour   spend AV-sing ERG Ciwas PRT
      'Ciwas sang for three hours.' (lit. 'What Ciwas spent on singing is three hours.')

(21)   cyugal spung ryax=nya'   m-nbuw qwaw la.   (Accomplishment)
      three   hour spend=3S.ERG AV-drink wine   PRT
      'He drank wine for three hours.' (lit. 'What he spent on drinking wine is three hours.')

(22) qutux kawas ryax qthuy ni tali' la.   (State)
     one year spend fat ERG Tali' PRT
     'Tali' is fat for one year. (lit. 'What Tali' spent on being fat is one year.')

(23) #qutux kawas ryax=nya'   m-huqil la.   (Achievement)
     one year spend=3S.ERG AV-DIE PRT
     #'He died for one year.' (lit. 'What he spent on dying is one year.')
     Consultant's comment: "(Laughing a lot) You are saying it took him one year from losing his last breath to being buried. Unless there is such a miracle…"

2.4. Summary

The results of the diagnostic tests are summarized in Table 1. We have seen that unmarked forms divide eventualities between (a) activities, accomplishments, (b) achievements and inchoative states, and (c) states. The perfect aspect further singles out activity events. Last, achievements contrast to the others in lacking duration. Therefore I conclude that there are at least five aspectual classes in Atayal.

	Activity	Accomp.	Achievement	State	
				inchoative	state
unmarked	no culmination		w/ culmination		state
time phrase	at	at	at/in	at/in	for
perfect aspect	termination	culmination	culmination	inchoative	*
durativity	yes	yes	no	yes	

Table 1: Lexical aspectual classes in Atayal

3. Aspectually-unmarked Predicates

Aspectually unmarked predicates in Atayal have been described as allowing either imperfective or perfective readings (Huang 1993, Zeitoun et al. 1996). For example, the translation given for (24) suggests that the sentence can have a *non-progressive*, a *progressive*, or a *habitual* reading:[5]

(24) m-ihiy=ku'   laqi'.
     AV-beat=1S.ABS child
     'I beat (past) a child.' / 'I am beating a child.' / 'I (usually) beat child(ren).'
        (Wulai Squliq, Zeitoun et al. 1996: 24; morpheme glosses modified)

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[5] Since this paper is concerned with aspect, I leave issues of temporal interpretation aside.

In this section, I argue that unmarked predicates are not neutral or underspecified, but share uniform aspectual properties.

3.1.   No Progressive Readings

There is evidence that unmarked forms lack an event-in-progress interpretation, unlike what is described in the prior literature. In a telephone conversation that forces an interpretation that describes an event ongoing at the speech time (a test adopted from Reis Silva and Matthewson 2007), an unmarked eventive is infelicitous, unless overtly marked with the progressive aspect *cyux/nyux*, as exemplified in (25).

(25)   Context: *Your brother is calling to ask you to pick him up. You say, "I can't come…."*
a. #... yalaw gi mgluw=sami   m-nbuw qwaw ki   rangi'=mu.
    because together.AV=1PL.EXCL.ABS AV-drink wine COM friend=1S.GEN
    Intended for '… because I am drinking with my friends.'
    Consultant's comment: "It's a past tense"; "You are explaining you didn't
    come because you drank with your friend."
b. … yalaw gi *nyux*=sami   mgluw   m-nbuw   qwaw
    because PROG.PROX=1PL.EXCL.ABS together.AV AV-drink   wine
    ki   rangi'=mu.
    COM friend=1S.GEN
    '… because I am drinking with my friends.'

In section 4.5, I will return to the discrepancy between the result here and what is described in the literature.

3.2.   Events must begin

As discussed in section 2.1, the event described by unmarked predicates vary with respect to encoding final points (i.e., culmination/termination). Regarding initial points, all the lexical classes, including inchoatives but excluding homogeneous states (see (6-7) above), behave the same in yielding an inceptive reading when modified by a punctual clause:

(26)   kt-an=maku' hiya' lga,   m-ngilis hiya' la.   (Activity)
    see-LV=1S.ERG 3S.N PRT.TOP AV-cry 3S.N PRT
    'When I saw him, he cried.'

(27)   tayhuk qu tali' ga, kblay-un=naha   qu ngasal la. (Accomplishment)
    arrive.AV ABS Tali' TOP make-PV=3PL.ERG ABS house PRT
    'When Tali' arrived, they built the house.'

Researcher: "Is that they waited for Tali' and only started to build the house when he came?" Consultant: "That's correct!"

(28) m-wah=saku'   lga,   m-huqil hiya' la.   (Achievement)
      AV-come=1S.ABS PRT.TOP AV-die   3S.N PRT
      'When I came, he died.'

Note that the reading in (28) is not simply inceptive but instantaneous as the punctual clause picks out the entire event. This is expected given that achievements are not durative.

Table 2 summarizes the aspectual properties of eventive predicates in unmarked forms. Viewing from both initial and final points of events, it is evident that achievements and inchoatives differ from activities and accomplishments in being properly included in reference time; I illustrate this in (29), where the former are termed as changes-of-state and the latter non-changes-of-state.

	inceptive readings w/ punctual clause	failure to terminate/culminate	ability to continue
Activities	√	√	√
Accomplishments	√	√	√
Achievements	√ (instantaneous)	*	n.a.
Inchoative states	√ (inchoative)	*	n.a.

Table 2: Eventives in unmarked forms

(29) a. Non-changes-of-state   b. Changes-of-state
               ET   ET

                RT   RT
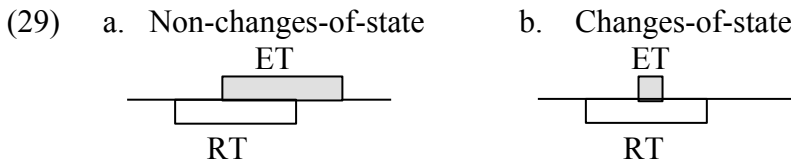
3.3.   Perfective, Imperfective, or Neither?

The aspectual properties of unmarked predicates cannot be characterized by either perfective or imperfective aspect, standardly analyzed as reversing the containment relation between the event time and the reference time (e.g., Kratzer 1998):

(30) a. Perfective: Event time included in reference time
        $\lambda P_{<l, st>}. \lambda t_i. \lambda w_s. \exists e_l [\tau(e) \subseteq t \ \& \ P(e)(w) = 1]$
     b. Imperfective: Reference time included in event time
        $\lambda P_{<l, st>}. \lambda t_i. \lambda w_s. \exists e_l [t \subseteq \tau(e) \ \& \ P(e)(w) = 1]$

As given in (30), unmarked activities and accomplishments do not delineate final points, in contrast to perfective; unlike imperfective, which leaves both initial and final points open, unmarked eventives have an inceptive reading, and unmarked

achievements and inchoatives culminate (rather than being coerced). Similarly, proposing an aspect ambiguous between perfective and imperfective cannot solve the problem.

Another possibility is that the culmination of accomplishments is removed independently, as it is done by an imperfective operator in Thai (Koenig & Muansuwan 2000), or by the control transitivizer in Salish languages (Bar-el 2005 and Bar-el et al. 2005). Adopting such an approach, Atayal unmarked predicates are best analyzed as having a (null) perfective, by which inceptive readings with every lexical class and culmination of achievements are expected, whereas accomplishments are unusual due to extra semantics. The fact that activities and accomplishments can continue can also be explained if viewing two units of activity events as the same event. This analysis, however, has a difficulty in unifying the entire aspectual system. Recall that Atayal has a perfect form that leads to culmination entailment with accomplishments (see section 2.2). If Atayal accomplishment stems had no final point, the perfect sentence could terminate without entailing that any culmination has been reached, contrary to the fact. The culmination effect cannot be encoded in the perfect aspect *wal* either as it would force undesired final points for activities.

Alternatively, we may suppose that accomplishment stems are ambiguous between a non-culminating and a culminating reading (e.g., Tatevosov 2008), and *wal* only applies to the culminating form but not the other, yielding the right results. Such an analysis requires further evidence for the ambiguity of accomplishment stems in the language.[6]

4.   Analysis

4.1.   Neutral aspect

Smith (1997) proposes a viewpoint aspect that is neither imperfective nor perfective aspect, dubbed 'neutral aspect', which "includes the initial point and at least one internal stage of a situation (where relevant)" (Smith 1997: 81). The precise interpretation of internal stages of an event is conditioned by eventuality type. An achievement is instantaneous and has no internal stages so neutral aspect spans the entire event, whereas for activities and accomplishments, neutral aspect spans only one stage of the event, and thus no final point is ensured. In spite of the misleading name, neutral aspect in Smith's proposal is not "neutral" at all but a special viewpoint that allows reference to the beginning point of an event and part of its temporal structure, but not to the final point.

The neutral aspect correctly predicts the use of unmarked predicates in Atayal: The event denoted by the neutral aspect must begin within the reference

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[6] Technically speaking, the analysis that I propose below can be also seen as extending Bar-el's and this analysis: Atayal needs a null version of the morpheme that takes away culmination, and *wal*-marked accomplishments do not contain this null morpheme (p.c., Lisa Matthewson).

time, but need not reach any particular culmination/termination point. The fact that achievements are forced to culminate is due to their unique temporal structure.

4.2. Dispensing with Neutral Aspect?

Altshuler (2014) gives a formal analysis of Russian imperfective, which also exhibits the culmination difference between achievements and non-achievements. Altshuler proposes that the Russian imperfective is a partitive operator STAGE, as given in (31a), which denotes a function that returns VP-event stages. Event stages are defined as less-developed versions of an event by Landman (1992).[7] As given in (31b), the STAGE operator combines with a set of events *P* and requires an event *e'* that is instantiated in the actual world *w** to be a *non-proper* part of a *P*-event *e* in a 'near enough' world *w*.

(31) a. $[[\text{IPF}]] = \lambda P \, \lambda e' \, \exists e \, \exists w[\text{STAGE}(e', e, w^*, w, P)]$
   b. $[[\text{STAGE}(e', e, w^*, w, P)]]^{M,g} = 1$ iff (i)–(iv) holds:
   (i) the history of *w* is the same as the history of *w** up to and including $\tau(e')$
   (ii) *w* is a reasonable option for e' in *w**
   (iii) $[[P]]^{M,g}(e, w) = 1$
   (iv) $e' \subseteq e$ (Altshuler 2014: 754)

Altshuler assumes that achievement events are atomic stages.[8] In the application of (31b-iv), an atomic stage trivially develops into itself in the actual world and presumably in every other possible world. Hence an achievement is expected to have culmination entailments. By contrast, accomplishment events comprise at least two stages, and thus any of the event stages will satisfy the truth-conditions of the imperfective, and no culmination is entailed.

Although this analysis is similar in spirit to Smith's neutral aspect, both leaving the culmination difference to the internal structure of events, Altshuler argues that neutral aspect can be dispensed with once the STAGE operator is parameterized in languages to impose a maximal stage requirement, which is satisfied when a VP-event culminates or ceases to develop in the actual world. For instance, Russian imperfective lacks this requirement, allowing events to go on, as shown in (32), but Hindi perfective appeals to stages that have ceased to develop, as shown in (33):

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[7] According to Landman (1992), sets of events can be ordered by a 'part-of' relation and a 'stage-of' relation, where "to be a stage, a part has to be big enough and share enough with e so that we can call it a less developed version of e" (Landman 1992:23).
[8] This is different from proposals (e.g., Rothstein 2004) where achievement events are assumed to have no stages.

(32)   Ja *e-l*   tort, i   sejčas   prodolžaju ego est'.
       I eat.IPF-PST.1S cake and now   continue   it   eat.INF
       'I was eating cake and now I am still eating it.' (Altshuler 2014: 759)

(33)   #maayaa-ne   biskuT-ko   *khaa-yaa* aur use ab tak khaa rahii   hai.
        Maya-ERG   cookie-ACC eat-PFV   and it   still eat   PROG be.PRS
       Intended for 'Maya was eating the cookie, and is still eating it.' (ibid.)

Adopting this analysis, Atayal unmarked predicates would be considered to be an imperfective as the described event need not culminate/stop and can continue, exactly like the Russian imperfective. Yet Atayal unmarked predicates and Russian imperfective are not the same regarding the relation of event time to reference time. The Russian imperfective requires the reference time to follow a (sub)part of the event, i.e., the reference time is included inside the result state of an event stage (see Altshuler 2012):

(34)   Nedelju nazad Marija po-celova-l-a   Dudkina.
       Week   ago   Maria   PFV-kissed-PST.3S-FEM Dudkin
       On *dari-l*   ej cvety i   *priglaša-l*   ee v teatr.
       He give.IPF-PST.3S her flowers and invite.IPF-PST.3S her to theatre
       'A week ago, Maria kissed Dudkin. He had given her flowers and had
       invited her to the theatre.'   (Altshuler 2012:61)

By contrast, the Atayal unmarked predicates have inceptive readings (see section 3.2), which will require the reference time to include the initial part of event stages. This suggests that simply focusing on whether an event reaches final points or not cannot capture relevant differences between aspectual operators (see also Arregui 2014). The difference brings us back to the hybrid behaviour of neutral aspect, which complements perfective and imperfective in terms of how an event is viewed with respect to *both* initial and final points. Therefore Atayal unmarked forms present as rejection of reducing neutral aspect.

4.3.   The Proposal: Initial Stages of Events

I propose that sentences of unmarked predicate in Atayal carry a null neutral aspect in the sense of Smith (1997). Modifying Altshuler's (2014) idea about the Russian imperfective, the Atayal neutral aspect is analyzed as encoding a partitive operator in (35), which I term I(intial)-STAGE. As given in (35a), the null aspect denotes a function from a set of events to a property of times and it is true of a time t such that t includes the running time of an *initial stage* of the P-event.

(35)   a. [[NEU]] = $\lambda P\, \lambda t\, \exists e\, \exists e'\, \exists w'$ [I-STAGE$(e, e', w, w', P) \wedge \tau(e') \subseteq t$]
   b. [[I-STAGE(e, e', w, w', P)]]$^{\mathrm{M,g}}$ = 1 iff (i)–(iv) holds:
   (i) the history of w' is the same as the history of w up to and including $\tau(e)$
   (ii) w' is a reasonable option for e in w
   (iii) [[P]]$^{\mathrm{M,g}}(e', w') = 1$
   (iv) $e \preccurlyeq e'$ iff $\tau(e) \preccurlyeq \tau(e')$ and $e \sim e'$

The notion of 'initial-stages' in (35b-iv) is borrowed from Landman (2008) and Landman and Rothstein (2012): e is an initial-stage of e', $e \preccurlyeq e'$, iff $\tau(e)$ is an initial subinterval of $\tau(e')$, and e and e' are cross-temporally identical. Activities and accomplishments differ in whether initial-stages are incrementally homogeneous with respect to the VP-event; for instance, the initial-stage of an accomplishment like 'eating a mango' is big enough to count as eating, but not itself an event of eating a mango (see Landman and Rothstein 2012 for motivating initial-stages to account for subinterval property of activities).

4.4.   Explaining the Facts

As with Altshuler, I also assume (a) that an event stage going on in the actual world is a part of the event continued in some possible world, and (b) that achievements denote a set of atomic stages. These explain the contrastive behaviour of accomplishments vs. achievements (as well as inchoatives) in culmination entailments: An achievement (or an inchoative state) has an atomic stage, which trivially develops into itself in every world, yielding culmination entailments, whereas a stage of an accomplishment event that satisfies the null aspect is never identical to the completed event. Within the framework of event stages, this analysis can also explain the possible continuation of a non-achievement event. Without restricting development of an event (which may be required for other languages), any bigger part of that event, which shares the same initial stage, could keep developing beyond the initial stage. Last, the Atayal neutral aspect differs from the Russian imperfective aspect in inceptive readings. The inclusion of the running time of initial stages inside the reference time thus correctly accounts for the inceptive readings for events of every lexical class in Atayal.

4.5.   The Discrepancy of Allowing Progressive Readings

Recall that Atayal unmarked forms are reported in the literature to have progressive readings but I showed they are infelicitous in progressive contexts (section 3.1), I suggest two possible reasons for this discrepancy. Dialect variation is one of them. The work in Huang and Zeitoun et al. is based on the variety spoken in Wulai (New Taipei City), while my consultants are from Taoshan (Wufeng, Hsinchu County). Another reason is methodological. In out-of-the-blue translation tasks, were no reference time is given, the translation may simply reflect a reading close to the

speaker's intended one. My consultants often commented that unmarked predicates are "progressive forms", "present forms", or "present progressive forms" when they did translation tasks, but firmly rejected them when targeted sentences are embedded in progressive contexts. My proposal that unmarked predicates encode a neutral aspect can explain this apparent contradiction: The neutral aspect is partially similar to the progressive in allowing the event to continue; yet it doesn't target the middle of an event (stage) as the progressive aepct does.

4.6.   Typological implication

The analysis has a typological implication for encoding non-culmination effects: In addition to perfective (e.g., in Thai and Hindi), imperfective (e.g., in Russian), and progressive aspect (e.g., in English), a modal component can be built into neutral aspect. Within a typology of partitive operators, the language difference can be explained by relating the runtime of event stages to reference time in different ways, as what has been assumed for aspects: RT includes $\tau(e)$ in perfective, $\tau(e)$ is includes RT in imperfective/progressive, and $\tau(e)$ overlaps RT in neutral aspect.

5.   Conclusion

For the present paper, I have identified five lexical aspectual classes in Atayal and shown that the reading of unmarked predicates varies with the lexical class, both of which were not previously documented. Based on the finding, I argue that the Atayal unmarked predicates have a null neutral aspect in the sense of Smith (1997). The neutral aspect includes the initial point and one internal stage of an event. The observed culmination entailment for achievements and inchoatives independently follow from the nature of those events that lacks internal stages.

  The neutral aspect is in spirit similar to Altshuler's (2014) analysis of Russian imperfective, but the latter intends to reduce neutral aspect by the parameterized constraints on partitive operators. While my analysis is built on Altshuler's, I argue that the property of the Atayal unmarked predicates is not captured simply by focusing on final points of the event, but supports neutral aspect. I analyze the Atayal neutral aspect as an Initial-STAGE operator, which yields an initial stage of the event that continues and culminates in a possible world that closely resembles ours, and requires that the initial stage is included in the reference time. This work contributes to uncovering the aspect of so-called neutral forms and it introduces a new typology for encoding non-culmination effects.

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MULTIPLE EXTRACTION AND VOICE IN TOBA BATAK*

Michael Yoshitaka Erlewine
National University of Singapore
mitcho@nus.edu.sg

I investigate $\overline{\text{A}}$-extraction in Toba Batak. Contrary to the claims of previous work on the language (especially Cole and Hermon 2008), I show that multiple, simultaneous extractions to the left periphery is possible, though only in limited configurations. The pattern of possible and impossible multiple extractions motivates a particular organization of the left periphery: specifically, features associated with C and T begin on a single head, probing together, and then splitting if joint probing yields no matching target. I model this using *CT head-splitting* (Martinović 2015). The distribution of the optional particle *na* further supports this approach. Finally, I discuss lessons for the analysis of Austronesian voice and the role of Case.

1.   Introduction

Work on comparative formal syntax has identified two positions in the clause periphery, traditionally labeled C and T,[1] which are commonly associated with two very different sets of properties (Chomsky 1986, a.o.). T is commonly associated with properties of subjects, including ϕ-agreement and nominative case assignment, and often requires a nominal specifier, satisfied through A-movement (the EPP property). In contrast, the specifier of C is the landing site of $\overline{\text{A}}$-movement and, accordingly, C is the locus of $\overline{\text{A}}$-probes which attract constituents with certain information-structural status, which may or may not be nominal. This division of labor between C and T is remarkably common across language families of the world.

However, in the Austronesian language family, such a clear division of labor between the canonical functions of C and T is not immediately apparent. Many Austronesian languages exhibit a "voice" system where one particular argument is privileged with a particular case form and $\overline{\text{A}}$-extraction is limited to this argument, combining properties traditionally associated with C and T (see Erlewine, Levin, and Van Urk 2015, to appear, for an overview). Some authors have in fact proposed that this priviledged argument occupies Spec,TP (Guilfoyle, Hung, and Travis 1992, a.o.) while others associate it with Spec,CP (Richards 2000; Pearson 2001, a.o.).

[1]C refers to *complementizer*, associated with clause-typing semantics, and T refers to *tense*, associated with finiteness and temporal interpretation. I simply refer to these heads as C and T here and concentrate on their functions as heads associated with certain syntactic processes.

In this paper, I investigate patterns of $\overline{\text{A}}$-extraction in Toba Batak, spoken in northern Sumatra. My work here is based primarily on elicitation with two speakers currently living in Singapore. The patterns of $\overline{\text{A}}$-extractions available in the language motivates a particular architecture of C and T, which helps resolve the tension inherent to Austronesian voice systems, summarized briefly above. In particular, I propose that the traditional division of labor between C and T is extant in Toba Batak, but this is not immediately visible due to these functions often being combined onto a single head. This can be modeled through a range of *feature inheritance* theories (Chomsky 2008; Ouali 2008; Fortuny 2008; Legate 2011, a.o.), but is most naturally captured under Martinović's (2015) theory of *CT head-splitting*, wherein C and T begin the derivation as a single head, CT, which splits under certain circumstances.

2. Toba Batak basics

2.1. Voice and word order

Toba Batak has a two-way "voice" system similar to that of neighboring Malayic languages. Consider the examples in (1) below, which are two ways of saying 'Poltak read the book.' The marker *si* precedes proper names (PN).

(1) a. *Man*-jahar buku *si Poltak*.　　　b. *Di*-jahar　si Poltak *buku*.
　　 ACT-read book PN Poltak　　　　　　　PASS-read PN Poltak book
　　 'Poltak read the book.'

The two sentences in (1) differ in the choice of *pivot*—the one argument that commands a privileged status, italicized here. The prefix on the verb (also italicized) reflects the choice of pivot argument. Following previous literature (van der Tuuk 1864/1971; Schachter 1984a; Cole and Hermon 2008), I refer to *maN-* (1a) as AC-TIVE and *di-* (1b) as PASSIVE, though I should warn against conflation with Indo-European active/passive alternations. The non-pivot DPs—the ACTIVE theme *buku* in (1a) and the PASSIVE agent *si Poltak* in (1b)—must be adjacent to the verb; I return to this and related facts in section 6.

　　The canonical declarative order is verb-initial, but pivot-initial clauses as in (2) are common in elicitation. Cumming 1984 reports on a corpus study where one third of declaratives were found to have such a fronted pivot. She describes this fronting as associated with topichood and reports that such fronted topics are "overwhelmingly definite" or generic; I will therefore describe this as topicalization.

(2) a. *Si Poltak* [*man*-jahar buku ＿].　　b. *Buku* [*di*-jahar　si Poltak ＿].
　　 PN Poltak ACT-read book　　　　　　　book PASS-read PN Poltak
　　 'Poltak read the book.'

　　If a single DP is $\overline{\text{A}}$-extracted, it must be the pivot. This is true in the topicalization examples in (2) above and is also explicitly reflected in the *wh*-fronting contrasts in (3–4) below:

(3)   *Agent wh-question* ⇒ ACT:
 a.✓*Ise* [*mang*-allang pinahan-on __]?
  who ACT-eat pork-this
 b.*Ise [*di*-allang __ *pinahan-on*]?
  who PASS-eat pork-this
  'Who ate this pork?'

(4)   *Patient wh-question* ⇒ PASS:
 a.*Aha [*man*-uhor __ *si   Poltak*]?
  who ACT-buy PN Poltak
 b.✓*Aha* [*di*-tuhor   si   Poltak __]?
  who PASS-buy PN Poltak
  'What did Poltak buy?'

As noted above, A̅-movement being restricted to the one designated pivot argument is familiar from many other Austronesian languages.

   Non-DP constituents do not participate in the voice alternation. In stark contrast to DPs, the fronting of non-DPs is independent of the choice of voice. The PP 'for who' can be *wh*-fronted (5) out of both active and passive clauses, with corresponding changes in postverbal DP word order.

(5)   *Extraction of non-DPs does not interact with voice:*
 a.✓[Tu   ise] [*man*-uhor buku *si   Poltak*]?   (*maN-tuhor > manuhor*)
  DAT who   ACT-buy   book PN Poltak
 b.✓[Tu   ise] [*di*-tuhor   si   Poltak *buku*]?
  DAT who   PASS-buy PN Poltak book
  '[For who] did Poltak buy the book?'

Examples (3–5) here are from my own elicitation work but these same patterns are described in Clark 1984, 1985 and Cole and Hermon 2008. A̅-extraction of DPs is limited to the pivot argument, whose choice is cross-referenced by voice morphology, whereas the extraction of non-DPs is independent of the choice of voice.

2.2. Optionality of *wh-* and focus-fronting

I will take a moment here to show that *wh*-movement in Toba Batak is optional but preferred, as is the fronting of exhaustive focus with 'only.' We have seen examples of *wh*-questions with fronting and this is the preferred strategy in elicitation. However, Toba Batak also allows for *wh*-in-situ. The examples in (6) below show embedded *wh*-questions with and without fronting.

(6)   *Both wh-movement and wh-in-situ are grammatical:*
 a. Hu-boto   [*ise* [*mang*-allang pinahan   ___]].
  PASS.1sg-know   who   ACT-eat pork
 b. Hu-boto   [*mang*-allang pinahan *ise*].
  PASS.1sg-know   ACT-eat pork who
 c. Hu-boto   [*di*-allang ise   *pinahan*].
  PASS.1sg-know   PASS-eat who pork
  'I know [who ate the pork].'

The embedding in (6) provides evidence that the language truly allows *wh*-in-situ, rather than allowing *wh*-in-situ only in matrix questions through specialized constructions such as echo questions or so-called "declarative syntax questions" (Bobaljik and Wurmbrand 2015), both of which cannot be embedded.

The availability of both movement and in-situ *wh*-questions also extends to non-DP, adjunct *wh*-words as well, as seen by the embedded 'when' questions in (7). (Both linear positions of *andigan* 'when' in (7b) are grammatical.) The embedded questions in (7) are all ACTIVE, but PASSIVE variants of (7a,b), with corresponding changes in the order of postverbal DPs, are also all grammatical.

(7)   *Wh-movement is optional for adjuncts too:*
   a. Hu-boto   [andigan [*man*-uhor buku *ho*]].
       PASS.1sg-know   when   ACT-buy   book you
   b. Hu-boto   [*man*-uhor buku {andigan} *ho* {andigan}].
       PASS.1sg-know ACT-buy   book when   you   when
       'I know [when you bought the book].'

Constituents with the exhaustive focus particle 'only' *holan* similarly prefer to be fronted, but can also be in-situ:

(8)   *Focus-fronting preferred but both ok:*
   a. [*Holan si   Poltak*] [*mang*-allang indahan ___].
        only PN Poltak   ACT-eat   rice
   b. *Mang*-allang indahan [*holan si   Poltak*].
       ACT-eat   rice   only PN Poltak
       'Only POLTAK ate rice.'

It's worth stepping back here and noting that, at this point, we have no evidence for the existence of distinct processes of "*wh*- or focus-fronting" in Toba Batak. Recall that the language independently allows for the fronting of topics (see e.g. (2)), which I called *topicalization* above, following Cumming 1984. The facts presented thus far are compatible with the language being *wh*/focus-in-situ at its core, together with a general fronting process which can freely front pivots and non-DPs.

In the next section, I turn to patterns of multiple extraction in Toba Batak. One lesson will be that we must ultimately recognize *wh*/focus-fronting as a distinct process in the language, independent of the free fronting of pivots as in (2). For convenience, I will refer to both *wh*-phrases and constituents modified by *holan* 'only' as "formally focused," formalized as [+FOC].

3. Multiple extractions in Toba Batak

I now investigate the possibility of $\overline{\text{A}}$-extracting multiple constituents simultaneously to the left periphery in Toba Batak. Very little previous work has attempted to investigate such multiple simultaneous fronting. When it comes to DP arguments, the characterization given above and in all previous work on Toba Batak—that only the pivot DP can be fronted—immediately predicts that the fronting of multiple DPs should be impossible. And at first glance, this appears to be correct:[2]

(9)   *Wh agent, regular DP patient:*
   a. *Ise* [mang-alang pinahan]?
     who   ACT-eat   pork
   b. *Pinahan-on* [di-allang ise]?
     pork-this   PASS-eat who
   c. *Ise pinahan-on [mang/di-allang]?
     who pork-this   ACT/PASS-eat
     'Who ate the pork?'

(10)   *Wh patient, regular DP agent:*
   a. *Aha* [di-tuhor   si   Poltak]?
     what   PASS-buy   PN   Poltak
   b. *Si   Poltak* [ma-nuhor aha]?
     PN   Poltak   ACT-buy   what
   c. *Aha   si   Poltak [maN/di-tuhor]?
     what   PN   Poltak   ACT/PASS-buy
     'What did Poltak buy?'

Examples (9a,b) are two grammatical forms of the matrix question 'Who ate the pork?' As noted above, Toba Batak allows for fronting of the *wh*-word, which must be the pivot (9a), and also allows *wh*-in-situ and free topicalization of definite pivot DPs, resulting in (9b). This topicalization and *wh*-movement cannot cooccur to yield a *wh* DP followed by a topic DP, as observed in (9c).[3] The contrast in (10) is completely parallel, but with a referential agent and *wh* patient. Cole and Hermon (2008, p. 183) discuss data such as (9c, 10c) as further support for their view that non-pivot DPs are frozen and cannot move, to be discussed in section 6.

     This situation changes, however, if the two DPs in question are a *wh* DP and a DP with the exhaustive focus particle *holan*; in other words, if both are formally

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[2]I do not indicate postverbal gap positions here.

[3]The opposite order—a topic DP followed by a *wh* DP—is grammatical as a matrix *wh*-question (i). However, there are reasons to believe that (i) is a hanging topic construction that should be distinguished from a true multiple extraction. First, this topic requires a following prosodic break, indicated by # in (i), unlike other preverbal constituents that are studied here. Second, this word order is disallowed in embedded clauses (ii).

(i)   Buku-i   *(#) *ise*   [*man*-jahar   ]?
     book-that   who   ACT-read
     ≈ 'That book, who read?'

(ii) *Hu-boto   [buku-i   (#) *ise*   [*man*-jahar   ]].
     PASS.1sg-know   book-that   who   ACT-read
     Intended: 'I know [who read that book].'

In what follows, I will disregard such hanging topic constructions.

focused. The examples in (11–12) below show that it is possible to front the *wh* DP followed by the DP with 'only' (c), in addition to fronting just the *wh*-word (a) as the pivot or just the DP with 'only' (b) as the pivot.[4] Here too I italicize the pivot DP on grammatical examples, as determined by the choice of voice morphology on the verb.

(11)　　*Wh agent, 'only' patient:*
　　a.　*Ise*　[mang-allang holan indahan ___]?
　　　　who　ACT-eat　　only　rice
　　b.　*Holan pinahan* [di-allang ise　___]?
　　　　only　pork　　　PASS-eat who
　　c.　Ise　*holan pinahan* [{*mang/✓di}-allang ___ ___]?
　　　　who only　pork　　{*ACT/✓PASS}-eat
　　　　'Who ate only rice/pork?'

(12)　　*Wh patient, 'only' agent:*
　　a.　*Aha*　[di-allang holan si　Poltak ___]?
　　　　what　PASS-eat only　PN　Poltak
　　b.　Holan si　Poltak [mang-allang aha　___]?
　　　　only　PN Poltak　ACT-eat　　what
　　c.　Aha　*holan si　Poltak* [{✓mang/*di}-allang ___ ___]?
　　　　what only　PN Poltak　{✓ACT/*PASS}-eat
　　　　'What did only Poltak eat?'

　　　　Examples of the form of (11–12) have never before been described. The availability of these multiple extraction variants in (11c) and (12c) has a number of implications for our understanding of Toba Batak syntax. First, contrary to all previous descriptions of Toba Batak, we learn that it is possible to front multiple constituents to the left periphery. Second, the contrast between examples (11–12) where multiple extraction is possible and the earlier examples in (9–10) above shows us that the grammar must distinguish *wh*/focus-fronting from the free fronting of topical, referential constituents, e.g. topicalization as in (2) above.[5] Third, when multiple DPs are fronted, voice morphology tracks track the choice of DP fronted to *immediately preverbal* position: PASSIVE in (11c) and ACTIVE in (12c). Fourth and finally, non-pivot DPs *can* be moved, contrary to the explicit claims and predictions of Cole and Hermon 2008, which will be discussed further in section 6.

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[4]The opposite order, with the *only* DP above the *wh*-phrase, is also ungrammatical, which I take to be for reasons of semantic interpretation; see e.g. Beck 2006. I have thus far not been able to elicit any multiple *wh*-questions.

[5]In particular, this shows that approaches such as in the recent Aldridge to appear, where all extraction is taken to be driven by a [uϕ] probe (equivalent to [uD] here), are not rich enough to capture the full pattern of Toba Batak extraction.

The situation is different still with a DP and non-DP. The examples in (13) below show that the simultaneous extraction of a non-DP *wh*-phrase and a non-focused, referential DP, in that order, is grammatical.[6]

(13)   *Simultaneous fronting of non-DP wh and topic DP is grammatical:*
   a.   Andigan *buku-i*   [{*maN/$\checkmark$di}-tuhor   si   Poltak __ __]?
        when   book-that   {*ACT/$\checkmark$PASS}-buy   PN   Poltak
   b.   Andigan *si   Poltak* [{$\checkmark$maN/*di}-tuhor   buku __ __]?
        when   PN Poltak   {$\checkmark$ACT/*PASS}-buy   book
        'When did Poltak buy the book?'   (*maN-tuhor > manuhor*)

The availability of the multiple extractions in (13) is perhaps unsurprising, given that the fronting of non-DPs does not interact with voice, as we saw in (5). However, it's important to note that it is not simply the case that the simultaneous extraction of any DP and non-DP is grammatical. Examples in (14) show that the combination of a *wh* DP and a referential non-DP is ungrammatical in either order:

(14)   *Simultaneous fronting of wh DP and referential non-DP is ungrammatical:*
   a.   *Ise*   [man-angko buku [PP sian toko buku] __]?
        who   ACT-steal   book   from store book
   b.* *Ise*   [PP sian toko buku] [man-angko buku __ __]?
        who   from store book   ACT-steal   book
   c.* [PP Sian toko buku] *ise*   [man-angko buku __ __]?
           from store book   who   ACT-steal   book
        'Who stole books from the book store?'

The evidence presented here shows that multiple extractions are possible in Toba Batak but only in a particular, limited set of configurations, summarized in (15) below. The data here shows an interaction between being nominal or not ([±D]) and the presence or absence of formal focus (*wh* or focus with 'only,' [±FOC]).

(15)a.* [+FOC, +D] [−FOC, +D] V...   (9–10)
   b.$\checkmark$ [+FOC, +D] [+FOC, +D] V...   (11–12)
   c.$\checkmark$ [+FOC, −D] [−FOC, +D] V...   (13)
   d.* [+FOC, +D] [−FOC, −D] V...   (14b)
   e.* [−FOC, −D] [+FOC, +D] V...   (14c)

Specifically, we observe that *wh*/focus-fronting—a traditional function of C—and the attraction of nominals—traditionally a function of T, the EPP—interact in a nontrivial fashion in Toba Batak. In the next section, I present my proposal which derives this distribution in (15) from a particular understanding of the C-T connection.

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[6]The opposite order is grammatical but involves a hanging topic; see footnote 3 above.

4.   Proposal

The pattern of grammatical multiple extractions in Toba Batak prompts us to reconsider the relationship between C and T. I propose that the key to the Toba Batak extraction patterns observed is to take the probes associated with C and T—[uFOC] and [uD], respectively—and allow them to first *probe jointly* for a target that simultaneously satisfies both probes (featurally, [+FOC, +D]). If this probing fails to find a target, the probes then probe separately. I assume that such joint probing presupposes that the probes [uFOC] and [uD] originate on the same head.

My work here is not the first to propose that there is a nontrivial relationship between the features and functions of C and T. Work on topics such as subject extraction asymmetries (Pesetsky and Torrego 2001, a.o.) and the morphosyntax of C and T (see e.g. Fortuny 2008 for a review) have all converged on the idea that there must be a tight connection between C and T. One prominent approach to the C-T relationship is the *feature inheritance* hypothesis of Chomsky 2008 which proposes that the features of T such as ϕ-agreement and Case-licensing probes all originate on C and are passed down to T. See also Ouali 2008; Fortuny 2008; Legate 2011 for additional discussion of feature inheritance.

Here I will adopt a recent, alternative conception of the C-T connection which I think most naturally derives the Toba Batak facts. This is the *CT head-splitting* hypothesis of Martinović 2015, which states that the traditional heads C and T start their life as a single head, CT,[7] but "splitting occurs in cases where a feature cannot be checked" (Martinović 2015, p. 64). This approach is motivated by Martinović's study of Wolof clause structure and extraction asymmetries.

In order to concentrate here on the left periphery of Toba Batak, I will abstract away from the details of the derivation of basic, verb-initial clauses in Toba Batak. I will, however, assume that the pivot DP occupies a designated position—the specifier of VoiceP—with the Voice head tracking this choice of DP in Spec,VoiceP. I will, however, briefly return to related questions of clause structure in section 6.

I begin by discussing the simple case where we will front a single *wh* or focused DP pivot. The CT head probes jointly for [uFOC,uD] and finds a matching target: the focused pivot DP at the edge of VoiceP. Attracting this DP to Spec,CTP results in the fronting of a single DP, the formally focused pivot.

(16)

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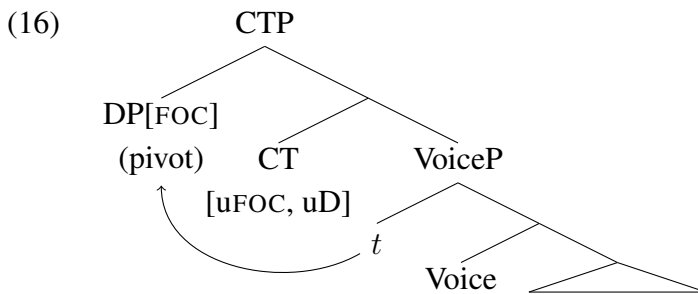
[7]Aldridge 2015 also discusses the application of a joint CT head for Austronesian languages.

I note that unfronted pivot DPs in Spec,VoiceP are postverbal. The tree in (16) is meant to simply illustrate that the pivot argument is hierarchically highest in VoiceP.

Having found a matching target for joint probing by [uFOC, uD] in (16), the CT head has no motivation to split. Following movement of the pivot, CT may probe again for [uFOC, uD]. If it finds another [+FOC, +D] target past the pivot position, it can move it.[8] In such a case, I propose that CT remerges with its projection and *reprojects* (thick arrow in (17)),[9] in order to host an additional specifier. I will present evidence for this reprojection of the CT head in section 5.

(17)   *CT reprojection for multiple extraction by [uFOC, uD] joint probing:*
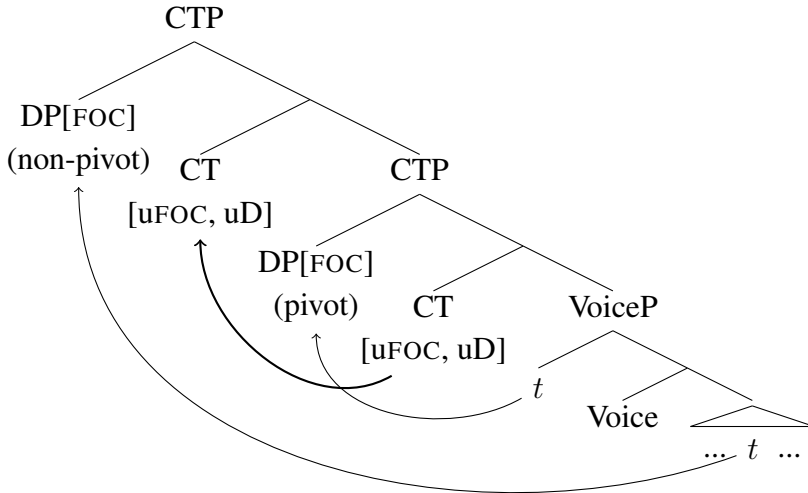
This approach derives the fact that, when two formally focused DPs are fronted as in (11–12), the immediately preverbal DP will be the pivot. The pivot is highest in the VoiceP and therefore will necessarily be the first target moved by CT.

Now consider a case where no DPs in the clause are formally focused. First, CT will probe for [uFOC, uD], but will find no target. It will therefore split into C and T with the traditional division of labor: C is the host of the [uFOC] probe and T is the host of [uD]. This is illustrated in (18) below. Probing by [uD] on T allows for the free fronting of the [−FOC] pivot DP to Spec,TP—what I called topicalization above in (2). Probing by [uFOC] on C can front any [+FOC] constituent to Spec,CP, which in this case will necessarily be a non-DP, as we are considering the case where no DP in the clause is formally focused. This movement to Spec,CP alone yields the fronting of focused non-DPs as in (5).

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[8]I assume that all arguments are generated within VoiceP, with VoiceP properly containing the traditional *v*P. Here I presume no Phase Impenetrability effects arising from the possible phasehood of VoiceP or *v*P. See Cole, Hermon, and Yanti 2008 §9 for a similar conclusion.

[9]See Iatridou and Kroch 1992, Watanabe 1992, Browning 1996, and references there on so-called *CP-recursion*. See also more general discussion of head-reprojection in Surányi 2005, Georgi and Müller 2010, and references there.

(18)   *CT split into C and T:*

CP
Non-DP[+FOC]
(non-pivot)   C   TP
[uFOC]
DP[−FOC]
(pivot)   T   VoiceP
[uD]
t
Voice   .... *t* ...
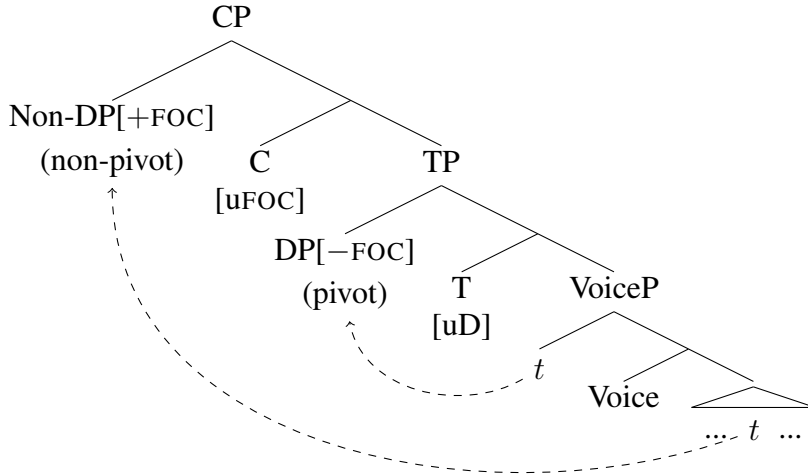
Each of these movements can apply optionally and independently (optionality in-
dicated by dashed arrows in (18)). When both apply simultaneously, we yield the
configuration where a formally focused non-DP precedes a non-focused pivot DP as
in (13), the second of our two[10] grammatical multiple extraction configurations (15).

Finally, I consider the case where the pivot DP is [−FOC] but there is a lower
[+FOC, +D] constituent in the clause. We begin with CT probing jointly for [uFOC,
uD]. Although a matching [+FOC, +D] target is present in the structure, the higher,
intervening [+D] pivot will trigger *defective intervention* (originally Chomsky 2000),
causing joint probing by [uFOC, uD] on CT to fail. CT will then split, resulting in
the same configuration in (18) above.

There is one remaining problem with the approach just outlined. If a lower,
non-pivot DP is formally focused, the [uFOC] probe on the split C head (18) could
attract the focused DP. When combined with the optional fronting of the non-focused
pivot DP to Spec,TP, this alone would predict the multiple extraction of a focused
DP followed by a non-focused pivot DP to be grammatical, contrary to fact (9–10).
However, this fronting of a non-DP to Spec,CP will fail for principled reasons of
Case-licensing, as will be discussed in section 6.

The proposal here yields the correct pattern of grammatical and ungrammat-
ical multiple extractions in Toba Batak, summarized in (15) above. This pattern
reflects a sensitivity to both the features [±FOC] and [±D], with [+FOC, +D] con-
stituents having more extraction possibilities than those that bear [+FOC] or [+D]
but not both. This proposal also hints at a new understanding of the relationship be-
tween Austronesian voice systems, where A̅-extraction is often limited to the pivot
DP, and more familiar systems with distinct C and T functions. In Toba Batak, we
see that the default is for CT to jointly probe and attract a formally focused pivot DP,
while the split C-T configuration reflects the traditional division of labor between the
heads C and T, familiar from the syntax of many other language families.

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[10]Not counting those involving hanging topics; see footnote 3.

5.   **Evidence from the particle *na*[11]**

One aspect of $\overline{\text{A}}$-extractions in Toba Batak that I have not yet discussed is the optional particle *na*. This particle often appears preverbally in examples with a single $\overline{\text{A}}$-extraction as in (19a). In cases of long-distance extraction, *na* can appear by the final landing site of movement as well as at the embedded clause edge (19b). This particle *na* is generally included in translations but is never judged to be obligatory.[12]

(19)   *The particle na:*
    a. *Ise*   (*na*) modom?
       who   NA sleep
       'Who is sleeping?'
    b. Aha (*na*) di-dok   si   Uli [(*na*) di-allang si   Poltak]?
       who NA PASS-say PN Uli   NA PASS-eat PN Poltak
       'What did Uli say that Poltak ate?'   (*na...na* ok too)

Both of my speakers agree on the availability of *na* in the cases of single *wh* or focused DP extractions as in (19). However, there are other configurations where judgments systematically diverge. The symbol % in (20) indicates grammaticality for Speaker A but not Speaker B. There is no position where Speaker B accepts *na* but Speaker A does not. Both speakers' judgment patterns are robust across sessions.

(20)   *Configurations with systematic variation:*
    a. *Andigan* (*%na*) di-tuhor   ho   buku-i?
       when   NA PASS-buy you book-that
       'When did you buy that book?'
    b. *Andigan* (*na) buku-i   (*%na*) di-tuhor   ho?
       when   NA book-that   NA PASS-buy you
       'When did you buy that book?'

The consistent pattern of idiolectal variation here can be straightforwardly captured under my proposal. I propose that Speaker A employs *na* as the realization of the feature bundle [T] whereas Speaker B uses *na* to spell out the more specific feature bundle [C, T]. As the unsplit CT head has the categorial features [C, T], both speakers allow *na* in the examples in (19) where the pivot is formally focused and thus CT remains unsplit. In the examples in (20), the pivot is [−FOC] so CT will necessarily split; we then predict that Speaker B will use no *na* whereas Speaker A will allow *na* in the position of the T head. Neither speaker allows for *na* in between

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[11]I thank Martina Martinović for a stimulating conversation which prompted me to revisit my notes on the particle *na*, which led to the discovery presented in this section.
[12]The particle *na* also introduces relative clauses, in which case its presence *is* obligatory. Here I do not discuss relative clauses and leave their detailed investigation for future research.

the *wh* non-DP and the unfocused DP in (20b) because this is the position of the split C head, which matches neither [T] nor [C, T].

Now consider the case of the multiple extraction of two formally focused DPs. Here both speakers allow for the pronunciation of *na* after each DP and in particular allow *na* to be pronounced in both positions simultaneously:

(21)   *The particle na with two wh/focus-fronted DPs:*
Ise   (✓*na*) holan pinahan (✓*na*) di-allang?
who   NA only   pork   NA PASS-eat
'Who eats only pork?'   (*na...na* ok too)

This configuration is precisely where my proposal predicts that the CT head will re-project as in (17). The availability of the particle *na* in both positions simultaneously in (21) supports the CT reprojection view presented above, and is not predicted under alternative proposals such as the simple use of multiple specifiers on CTP.

6.   The role of Case in Toba Batak

Finally, I turn to the role of abstract Case in Toba Batak. Although nominals in Toba Batak do not bear any case morphology, I argue that there is nonetheless a system of nominal licensing (abstract Case) which plays a crucial role in governing Toba Batak clause structure and word order.

The first motivation for a system of nominal licensing in Toba Batak comes from the following word order restriction. Although postverbal constituents can generally be in any order, the non-pivot DP in a transitive clause must be adjacent to the verb. Example (22) below is reproduced from Schachter 1984a, p. 125.[13] We see that the adverb *nantoari* 'yesterday' can be placed freely, with the exception of the position between the verb and the non-pivot DP:

(22)   *Adding nantoari 'yesterday' to (1a,b):*
  a. {Nantoari} mang-ida {*nantoari} si Ria {nantoari} *si Torus* {nantoari}.
      yesterday ACT-see   PN Ria   PN Torus
  b. {Nantoari} di-ida   {*nantoari} si Torus {nantoari} *si Ria* {nantoari}.
      yesterday PASS-see   PN Torus   PN Ria
      'Torus saw Ria yesterday.'

Cole and Hermon 2008—the only contemporary syntactic analysis of Toba Batak clause structure—derives this adjacency effect as follows. They propose that all other arguments necessarily move out of the VoiceP constituent, followed by fronting and freezing of the VoiceP. Their analysis is explicitly designed to yield

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[13]For what it's worth, my speakers do not recognize the name *Torus*, suggesting instead that these sentences are about *Sitorus*, with the proper name marker *si* dropped; *si Sitorus* is possible here.

two effects. First, it explains the adjacency requirement observed in (22), assuming that adjuncts such as *nantoari* are necessarily generated outside of VoiceP. Second, it predicts that non-pivot DPs cannot be fronted. Cole and Hermon present data akin to (9–10) above, where a *wh* DP and a referential DP cannot be simultaneously fronted, as support for the latter prediction: extraction of DPs is limited to the pivot, they say, and therefore multiple extraction of two DPs is predicted to be impossible.

I have however shown above that the simultaneous extraction of two co-argument DPs is in fact possible, provided that both DPs are [+FOC]; see (11c) and (12c) above. This teaches us that it is false that non-pivot DPs cannot be fronted and it is also false that non-pivot DPs must necessarily stay verb-adjacent. At the same time, the rejection of the Cole and Hermon approach to Toba Batak syntax means that an alternative explanation for the adjacency facts in (22) must be proposed.

I take the adjacency effect in (22) to be a consequence of a need to Case-license the non-pivot DP through adjacency with the verb. I follow Erlewine, Levin, and Van Urk (2015, to appear) in taking a core property of Austronesian voice systems to be that pivot DPs are Case-licensed by virtue of becoming the pivot. I propose that, in Toba Batak, there is no Case-licensor for DPs internal to the VoiceP. DPs can be licensed by Agreement with the [uD] probe of (C)T or under adjacency with the verb, which can be analyzed as a form of morphological merger or akin to pseudo-noun-incorporation.[14] Evidence for this licensing-by-adjacency comes from the fact that the postverbal non-pivot DP forms a phonological unit together with the verb for the purposes of stress assignment, as observed and discussed in Emmorey 1984.

Recall that in the grammatical multiple extractions of DPs in (11c) and (12c), CT never splits into the separate C and T heads. Both fronted DPs have therefore been Agreed with by the [uD] probe on the CT head, in the process of joint probing by [uFOC, uD]. This Agreement with [uD] Case-licenses both DPs. This explains the grammaticality of the multiple extractions in (11c) and (12c), even though the non-pivot DP is not adjacent to the verb.

In contrast, consider the ungrammatical multiple fronting of a formally focused DP followed by a referential pivot DP in (9c) and (10c). In these cases, I claim that CT splits into the traditional C and T heads, with T attracting the referential pivot DP with its [uD] probe and C attracting the non-pivot *wh* DP with its [uFOC] probe. The problem is as follows. The non-pivot in (9c) and (10c) are not Case-licensed in their base position—as they are not adjacent to the verb at PF—nor are they Agreed with by a [uD] probe, as their fronting is due to the [uFOC] probe alone. In this case, the fronted non-pivot DP cannot be Case-licensed, leading to ungrammaticality.

To summarize, even though Toba Batak does not exhibit overt case alternations, nominals must be (abstract Case) licensed. This licensing helps explain the verb-adjacency of post-verbal non-pivot DPs, discussed in both Schachter 1984a and Cole and Hermon 2008, while also allowing for the limited possibility of fronting the non-pivot DP in multiple extractions. The proposal of Cole and Hermon 2008, in contrast, predicts that non-pivot DP extractions can simply never occur.

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[14]See Levin 2015 and references there on licensing by adjacency.

7.   Conclusion

At first glance, Toba Batak exhibits the familiar Austronesian extraction restriction, where Ā-extraction is limited to the pivot DP, whose choice is cross-referenced on the verb. A closer look shows that multiple extractions—and in particular the simultaneous fronting of two DPs—are possible in certain limited configurations. The observed pattern motivates the view that (a) both [uFOC] and [uD] probes exist in Toba Batak and are associated with C and T, respectively, as is common in many non-Austronesian languages, but (b) these two probes prefer to *probe jointly* from a single head. I model this interaction using the CT head-splitting hypothesis of Martinović 2015, together with head reprojection where necessary, and show that the distribution of the particle *na* in two consistent idiolects offers overt morphological evidence for this proposal.

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THE INCHOATIVE ASPECT IN SAMOAN[*]

Vera Hohaus

Eberhard Karls Universität Tübingen

vera.hohaus@uni-tuebingen.de

Against the backdrop of the LF architecture of tense and aspect in Samoan, we offer a formal semantic analysis of the Samoan temporal-aspectual marker *'ua* as an inchoative aspect which may access the decomposition structures of telic predicates.

1. Introduction

The paper is the first step towards a comprehensive formal semantic analysis of the temporal-aspectual system of Samoan, a Polynesian language with approximately 370,000 speakers worldwide (Lewis 2009). It is part of a larger endeavor of understanding the building blocks of temporal-aspectual meaning crosslinguistically.[1] Our focus will be on the aspectual marker *'ua*, which in the descriptive literature, is commonly compared to the English Perfect.[2] An example is in (1).

(1)   **'Ua   timu.**
      TAM(?) rain
      'It has started raining.'/ 'It is raining now.'

A systematic contrastive analysis of the two languages will show that this is a misleading comparison. Rather, the particle encodes the inchoative aspect. We will additionally argue that it has a positive setting of the Visibility Parameter (Rapp & von Stechow 1999, Beck & Snyder 2001) and may hence access the decomposition structures of telic predicates, thereby giving rise to an eventive/ resultative-ambiguity.

The paper is structured as follows: We will first provide some background on the temporal-aspectual system of Samoan (section 2) and then proceed to look at the syntactic distribution of *'ua* and its meaning contribution compared to the English Perfect (section 3). From the data, we will conclude that adopting a standard analysis

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[1] We cannot do the growing body of crosslinguistic semantic research on tense and aspect justice here. See for instance Matthewson (2006), Tonhauser (2011,2015), Cable (2013), Bittner (2014), Matthewson, Quinn & Talagi (2015), Mucha (2013,2015), and Bochnak (2016).
[2] See especially Downs (1949: 10), Marsack (1975: 31), Hunkin (1992: 85), but also some caveats in Mosel & Hovdhaugen (1992), Mosel & So'o (1997) and Mosel (2000).

of the English Perfect for this particle is undesirable. We propose a more adequate analysis of *'ua* as marking inchoativity/inception in section 4. Section 5 concludes.

2. Background

While the goal of this paper is to suggest a syntax and semantics for one particular aspectual marker in Samoan, this endeavor cannot be successful without taking the overall architecture of tense and aspect in the language into consideration. This section provides a concise introduction: Samoan uses a number of sentence-initial free functional morphemes (TAMs) to guide the temporal-aspectual interpretation of a sentence. In a restricted number of environments, these markers are optional.[3] If overt, they may only be superseded by proposed, focused material:[4,5]

(2) a. ***Sā*** *alu Malia e asi Ioane i lona fale.*
        TAM(past) go Mary TAM(gen.) visit John PREP. his house
        'Mary went to visit John in his house.'

     b. [*'O Malia*] ***sā*** *alu e asi Ioane i lona fale.*
         FOC. Mary TAM(past) go TAM(gen.) visit John PREP. his house
         'It was Mary who went and visit John in his house.'

At the core of the paradigm are the aspectual particles *'o lo'o* and *sā/na*, which are in complementary distribution and mark the imperfective as well as the (past) perfective respectively. Examples are in (2) as well as in (3) to (4). Other TAMs include *'o le'ā* for the future, *e* for generic sentences, and *'ua*, the topic of this paper.

(3) ***'O lo'o*** *siva le teine.*
     TAM(ipfv.) dance the girl
     'The girl {is/ was/ will be} dancing.'

(4) a. *****Sā*** ***'o lo'o*** *siva le teine.*
         TAM(past.pfv) TAM(ipfv.) dance the girl
         'The girl was dancing.'

     b. *****'O lo'o*** *sā* *siva le teine.*
         TAM(past.pfv) TAM(ipfv.) dance the girl
         'The girl was dancing.'

Let's stick with the imperfective and the perfective for a moment, though: We hy-

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[3] See Mosel & Hovdhaugen (1992) for examples and some discussion.

[4] See Hohaus & Howell (2015) for the semantics of focus and interrogatives in Samoan.

[5] Unless otherwise indicates, all examples come from the author's fieldwork. Over the past seven years, data has been collected from a total of 40 speakers as well as from print and on-line publications. Data were elicited following the methodology outlined in Matthewson (2004, 2011). All examples are in their original orthography. Abbreviations used in glosses include ERG. = ergative case marker, FOC. = focus marker, gen. = generic, PREP. = preposition, PRN. = pronoun, and TAM = tense-aspect marker.

pothesize that *'o lo'o* as well as *sā/na* sit in Asp, (5). Their semantic function is to map the eventuality described by the verb phrase onto its running time $\tau(e)$ and relate it to the evaluation time (type $\langle\langle v,t\rangle,\langle i,t\rangle\rangle$), (6-a) and (6-b).[6]

(5)

$$
\begin{array}{c}
\text{TP}_{\langle t\rangle} \\
\diagdown \\
\text{T}_{\langle i\rangle} \quad \text{AspP}_{\langle i,t\rangle} \\
\mid \quad\quad \diagdown \\
t_{7,\langle i\rangle} \quad \text{Asp}_{\langle\langle v,t\rangle,\langle i,t\rangle\rangle} \quad \text{VP}_{\langle v,t\rangle} \\
\mid \quad\quad\quad \\
\textit{'o lo'o}\text{ (ipfv.)} \quad \ldots \\
\textit{sā/na}\text{ (pfv.)}
\end{array}
$$
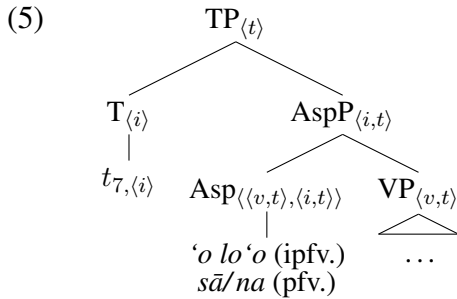
(6)   a. $[\![\,\textit{'o lo'o}\,]\!] = \lambda p_{\langle v,t\rangle}.\,\lambda t_{\langle i\rangle}.\,\exists e\,[p(e)=1\ \&\ \tau(e)\supset t]$

    b. $[\![\,\textit{sā/na}\,]\!] = \lambda p_{\langle v,t\rangle}.\,\lambda t_{\langle i\rangle}: t\ll t_{\text{utterance}}.\,\exists e\,[p(e)=1\ \&\ \tau(e)\subseteq t]$

Evidence in favor of an analysis of *'o lo'o* and *sā/na* as aspectual markers rather than tenses comes from that fact that in the case of *'o lo'o*, the evaluation time may be in the past or in the future, but it may also be the utterance time (and is preferably so in out-of-the blue contexts), (3). We capture this fact in (5) by assuming a free temporal variable in T, which is assigned a value from the utterance context via the variable assignment function g. As *sā/na* are in complementary distribution with *'o lo'o*, it is plausible to assume that they also sit in Asp. However, this pair of markers must combine with a past evaluation time, unlike *'o lo'o*. We capture this restriction in the (for our purposes slightly simplified) lexical entry in (6-b) as a presupposition on the temporal argument this particular aspectual operator may combine with. Under this setup, a sentence such as (3) will receive the interpretation in (7).

(7)   a. $[\![\,[_{\text{VP}}\ldots]\,]\!]^g = [\lambda e_{\langle v\rangle}.\,e\text{ is an event of the girl dancing}]$

    b. $[\![\,[_{\text{AspP}}\ldots]\,]\!]^g = [\lambda t_{\langle i\rangle}.\,\exists e\,[e\text{ is an event of the girl dancing}\ \&\ \tau(e)\supset t]]$

    c. $[\![\,[_{\text{TP}}\ldots]\,]\!]^g = \exists e\,[e\text{ is an event of the girl dancing}\ \&\ \tau(e)\supset g(7,\langle i\rangle)]$
       with $g(7,\langle i\rangle)$ the contextually provided evaluation time

Samoan thus is a superficially fairly tense-less language, in that it leaves the evaluation time of an utterance more or less up to the context by relying on free temporal variables.[7] Where does *'ua* fit in this architecture? We turn to this question next.

3.   Data

Given the LF architecture outlined in the previous section, we might expect this third frequent TAM to realize an other aspectual operator of type $\langle\langle v,t\rangle,\langle i,t\rangle\rangle$ that sits in Asp and is thus in complementary distribution with the imperfective and the (past)

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[6] See also Comrie (1976), Smith (1997) and Kratzer (1998).

[7] Other such languages without dedicated temporal markers are discussed in Bittner (2014), Matthewson (2006), Tonhauser (2011), Mucha (2013,2015) and Bochnak (2016).

perfective. This is not the case: *'Ua* may not co-occur with *sā/na*, although it may combine with *'o lo'o*. Both versions of (8) are ungrammatical, regardless of the context they are used in. (9) provides some examples of *'ua* together with *'o lo'o*. Note however that examples of this type are not very frequent and are hard to elicit in natural-production type tasks.

(8) a. ***Sā***   ***'ua***   *ma'i Ioane.*
       TAM(pfv.) TAM(?) sick John
       (Intended:) 'John had been sick.'

    b. ***Na***   ***'ua***   *ma'i Ioane.*
       TAM(pfv.) TAM(?) sick John
       (Intended:) 'John had been sick.'

(9) a. ***O loo***   ***ua***   *afiofio mai matai o le nuu*
       TAM(ipfv.) TAM(?) DIR. chief of   the village TAM(gen.)
       e   *fai*   *usu*   *i*   *le*   *aumala mai*   *Siamani!*
       make reception PREP. the travelling.party from   Germany
       'The chiefs of the village have come
       to greet the travellers from Germany.'

    b. *'A*   *'o*   *lae* ***'olo'o***   ***'ua***   *tagi le tama,...*
       but FOC. this TAM(ipfv.) TAM(?) cry the boy
       'But now the boy was crying,...'
       (Mosel & Hovdhaugen 1992: p. 354, no. (7.121))

    c. *Va'ai' i*   *na*   *fetu* ***'o lo'o***   *ua*   *agiagia ai*;
       look   to those star TAM(ipfv.) TAM flutter   PRN.
       'Look at those stars which are waving on it (=the Samoan flag)!'
       (from the Samoan national anthem)

(9) does however not warrant an analysis of *'ua* as tense: Just like in the case of the imperfective, the particle does not restrict the evaluation time of a sentence in any way: It may be the utterance time as in (1) above or as in (10) and (11).

(10) ***Ua***   *mafai*   *nei*   *e*   *Ruta ona iloa*   *mea. ...*
       TAM(?) possible now ERG. Ruth that recognize thing
       Sa   *tauaso a*   ***ua***   *vaai!*
       TAM(pfv.) blind   but TAM(?) see
       'Ruth is now able to recognize things. ... She was blind but now she sees.'
       (Mosel & Hovdhaugen 1992: p. 352, no. (7.114))

(11) a. From an imaginary radio report on the independence celebrations:
    b. ***Ua***   *tau a'ao atu*   *e*   *ia*   *le fu'a ole*   *sa'olotoga.*
       TAM(?) present   DIR. ERG. PRN.(3sg.) the flag of.the freedom
       'He is now handing over the flag of freedom.'

The evaluation time may however also be prior to the utterance time in the past, as in

(12) and (13), or in the future, as shown in (14).

(12) *Sā   talanoa le tama ma lona tamā, **'ua***   ***fiafia*** *le tamā. . .*
       TAM(past) talk   the boy with his father TAM(?) happy the father
       'The boy talked with his father and the father was happy. . .'
       (Mosel & Hovdhaugen 1992: p. 351, no. (7.109))

(13) *Ina **ua**   feiloa'i Pita ma lona toalua*
       when TAM(?) meet   Peter with his wife
       i   le tausaga e   1963,. . .
       PREP. the year   TAM(gen.) 1963
       'When Peter first met his wife in 1963,. . .'

(14) One of your cousins likes to make up stories about the future in which a lot
       of strange things happen. This morning, he was telling you: *Tomorrow, my
       friend Sina will find this small bottle on the beach. And as she is very nosy,
       I know that she will drink it. And then she will shrink. And as a result:*

       a. ***Ua***   *pu'u'upu'u Sina.*
            TAM(?) small   Sina
            'Sina will be small.'

So, what is the semantic contribution of *'ua*? We will approach this question by
taking as our starting point the observation that *'ua* often behaves like the English
Perfect.[8] And indeed, it does, but only for eventive, telic predicates: (15) may be
used in a situation in which Kathy has just completed painting the wall red. However,
the sentence is also acceptable in a situation in which Kathy has just started painting.
Likewise, (16) allows for a Perfect-like reading and is acceptable in a situation in
which Iosefo wants to assure his mother that he has done his chores and cleaned the
family car. It is however also an acceptable reply in a situation in which he has just
started cleaning the car when his mother inquires after it. Lastly, (17) can be used
in a situation in which you have just finished your cup of kava but also in the one
described, where you have just been handed the cup and are about to drink.

(15) ***'Ua***   *vale   e   Cathy le fā'alo i   le lanu mūmū.*
       TAM(?) paint ERG. Cathy the wall   PREP. the color red
       'Cathy has painted the wall red.'/ 'Cathy has started painting the wall red.'

(16) ***'Ua***   *fa'a-mamā   e   a'u   le ta'avale.*
       TAM(?) CAUSE+clean ERG. PRN.(1sg.) the car
       'I have cleaned the car.'/ 'I have just started cleaning the car.'

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[8] Mosel & Hovdhaugen (1992: 350) refer to *'ua* as the "perfect particle". Downs (1949: 10)
identifies it as a "sign of the present perfect". Marsack (1975: 31) and Hunkin (1992: 85)
both say that it is used ". . . to express the perfect tense. This is the most common use." Mosel
& So'o (1997: 22) however write: "The particle *'ua* indicates that something has changed."

(17) a. Upon being offered the cup during a kava ceremony:

   b. *Fa'afetai*, **ua**   *ou*   *inu*.
       thank.you TAM(?) PRN.(1sg.) drink
       'Thank you, I am now able to drink.'

When it comes to predicates that encode other *Aktionsarten*, the dissemblance between the English Perfect and Samoan *'ua* is even more striking: With atelic eventive predicates such as (18) as well as (1) from the introduction, the particle indicates that the respective eventuality has just started.

(18) a. Upon being shown the grave of his friend Lazarus:

   b. **'Ua**   *tagi Iesu*.
       TAM(?) cry Jesus
       'Then, Jesus cried.'/ 'Jesus started crying.'

   c. #*Jesus has cried*.

The particle is also frequently used with stative predicates to indicate that, again, a change of state has taken place and that the respective state did not hold before the evaluation time, as in (19) and (20).

(19) a. From a story about an overwhelmed history teacher:[9]

   b. **'Ua**   *ita*   *Misi Smifi*.
       TAM(?) angry Miss Smith
       'Now, Miss Smith was angry.'

   c. #*Miss Smith has been angry*.

(20) a. From a story about White Sunday:[10]
       When Ula wakes up and realizes it is October 13, 2013.

   b. **'Ua**   *fiafia tele*.
       TAM(?) happy very
       'He is very happy.'

   c. #*Ula has been very happy*.

Given our informal characterization so far, it is also not surprising that Samoan *'ua* is unacceptable with individual-level properties. An example is in (21).

(21) a. Providing a character description of your friend John:

   b. #*'O   Ioane* **'ua**   *sau mai Egelagi*.
       FOC. John   TAM(?) come from England

       'John, he has just come from England.'
       (Intended:) 'John, he is from England.'

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[9] Lisa Matthewson, "Miss Smith's Bad Day," *Totem Field Storyboards* (URL: http://totemfieldstoryboards.org/stories/miss_smith/, accessed September 25, 2015).

[10] Fiti Leung Wai & Ainslie Chu Ling-So'o, *Aso Sā Pa'epa'e* (Auckland: Read Pacfic).

c. **#'Ua**   *malie   tele Ioane.*
TAM(?) pleasant very John

'He is now very pleasant.'
(Intended:) 'He is generally very pleasant.'

In all of the relevant examples, the English Perfect is however unacceptable. The pattern that emerges is summarized in Table 1. Only in one particular case does Samoan *'ua* behave like its alleged English sibling, namely on the resultative reading.

Aktionsart		English (Present) Perfect = Samoan *'ua*	
stative predicates		✗	
eventive predicates	atelic	✗	
	telic	✗	✓

Table 1: Semantic Distribution of English *have* and Samoan *'ua*

We conclude from this brief and fairly informal discussion that adopting a standard analysis of the English Perfect for Samoan *'ua* is undesirable.[11] Instead, we would like to propose that *'ua* encodes inchoativity/ inception, the beginning of an event or state. This proposal receives further support from what we call the initiality requirement: *'Ua* is unacceptable in those contexts in which the eventuality described has started before the evaluation time of the sentence: In (22), the evaluation time is the day on which the doctor calls. The use of *'ua* conveys that the arm has only started hurting that day, which is not true in the situation described. A similar reasoning applies to (23): The context states that Mary has been hungry for the past couple of hours. However, as the consultant's comment indicates, the only interpretation available is that she suddenly became hungry. The unacceptability of *'ua* with *moto* ('unripe') in (24) is due to the fact that fruit cannot turn unripe, that is if the papaya is unripe at the time of utterance (= the evaluation time), it must have been unripe before, thus not satisfying the initiality requirement.

(22)   a.   Your grandmother broke her arm three weeks ago and has been in a lot of pain ever since. Today, her doctor called her to ask: "How are you feeling today?" She replied:

   b.   **#'Ua**   *tīgā   lo'u lima.*
TAM(inch.) painful my arm
'My arm is (now) painful.'

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[11] Under the EXTENDED NOW-analysis, the English Perfect is taken to extend the evaluation time of a sentence backwards, as in the lexical entry in (i).

(i) $[\![have]\!] = \lambda p_{\langle i,t \rangle}. \lambda t_{\langle i \rangle}. \exists t' [t$ is a final sub-interval of t' & $p(t') = 1]$

See McCoard (1978), Iatridou, Anagnostopoulou & Izvorski (2001), Portner (2003), von Stechow (2009), Matthweson, Quinn & Talagi (2015) and others for further discussion.

c. **'O lo'o** *tīgā lo'u lima.*
TAM(ipfv.) painful my arm
'My arm is (still) hurting.'

(23) a. Mary has been hungry ever since she has come home from work at 3pm today. At five o'clock, she still has not had anything to eat:

b. #**'Ua** *fia'ai Malia i le itula e lima.*
TAM(inch.) hungry Mary PREP. the hour TAM(gen.) five
'At five o'clock, Mary was hungry.'

c. Consultant's comment:
"She wasn't hungry. And the at five o'clock, she wanted to eat."

(24) a. I want to pick up a papaya from a tree but you tell me off:
b. #**'Ua** *moto le esi!*
TAM(inch.) unripe the papaya
'The papaya is now unripe!'

We take the unacceptability of the above examples to be due to the violation of the initiality requirement introduced by *'ua*. They thereby provide further evidence for an analysis of *'ua* as an inchoative aspect.

4. Analysis

This section spells out such an analysis in more detail. The sentence in (25), for instance, is true only if there is state of Mary being angry whose running time begins with the evaluation time, which in this example we can assume to be the utterance time. (See also Figure 1.) We derive these truth conditions with the lexical entry in (26), which requires that the evaluation time be the initial sub-interval of the running time of the eventuality.

(25) **'Ua** *ita Malia.*
TAM(inch.) angry Mary
'Mary is angry.'
$\exists s \, [s$ is a state of Mary being angry $\& \operatorname{beg}(\tau(s)) = t_{\text{utterance}}]$
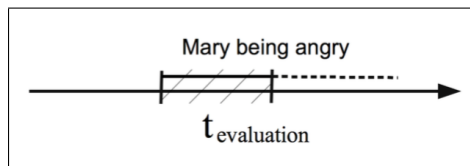
Figure 1: Inchoativity

(26) $[\![\,'ua\,]\!] = [\lambda t_{\langle i \rangle}. [\lambda e_{\langle v \rangle}. t$ is the initial sub-interval of $\tau(e)]]$
$\quad\quad = [\lambda t_{\langle i \rangle}. [\lambda e_{\langle v \rangle}. \operatorname{beg}(\tau(e)) = t]]$

The evaluation time itself is contributed by a covert temporal proform in T, which may be free and is assigned a value from the utterance context (or, in certain envi-

ronments, will be bound). In the absence of *'o lo'o* (see below), the event argument is existentially quantified off by default, as sketched in (27).

(27) $[_{TP} [_{T} t_{7,\langle i\rangle}] [1, \langle i\rangle [_{AspP_{\langle t\rangle}} \exists [_{AspP_{\langle v,t\rangle}} [_{Asp_{\langle v,t\rangle}} \text{'}ua\ t_{1,\langle i\rangle}] [_{VP_{\langle v,t\rangle}} \text{the boy cry}]]]]]$

The semantic type of *'ua* allows this TAM to – in principle – be compatible with other aspectual operators. (29) outlines the analysis for an example in which the inchoative aspect is combined with the imperfective, repeated from above.

(28)   **'O lo'o**   **'ua**   *tagi le   tama.*
         TAM(ipfv.) TAM(inch.) cry the boy
         'Now the boy was crying.'

(29)   a.
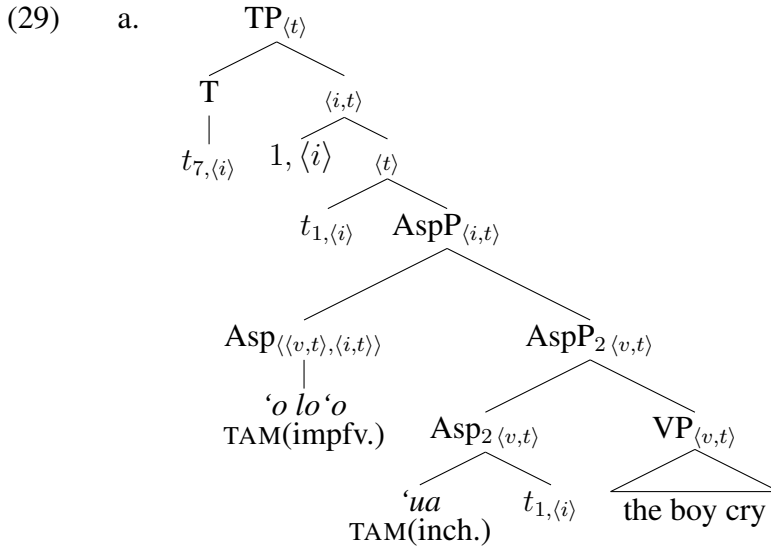
  b. $\llbracket [_{VP} \ldots] \rrbracket^g =$
       $[\lambda e_{\langle v\rangle}.\ e$ is an event of the boy crying$]$

  c. $\llbracket [_{AspP_2} \ldots] \rrbracket^g =$
       $[\lambda e_{\langle v,t\rangle}.\ \text{beg}(\tau(e)) = g(1, \langle i\rangle)\ \&\ e$ is an event of the boy crying$]$

  d. $\llbracket [1 [t_{1,\langle i\rangle} [_{AspP} \ldots]]] \rrbracket^g =$
       $[\lambda t_{\langle i\rangle}.\ \exists e\ [\tau(e) \subseteq t\ \&\ \text{beg}(\tau(e)) = t\ \&\ e$ is an event of the boy crying$]]$

  e. $\llbracket [_{TP} \ldots] \rrbracket^g = 1$ iff $\exists e\ [\tau(e) \subseteq g(7, \langle i\rangle)\ \&$
       $\text{beg}(\tau(e)) = g(7, \langle i\rangle)\ \&\ e$ is an event of the boy crying$]$

Note that the resulting truth conditions are equivalent to the truth conditions we would derive without the imperfective, which might explain why these type of examples are fairly infrequent and are reported to have an emphatic feel to them. Note also that as far as the semantic types are concerned, both *'o lo'o* and *sā/ na* could sit in the Asp-node above the inchoative aspect. The semantics proposed for *'ua* does however correctly predict that (past) perfective may not co-occur with the inchoative aspect: Their meanings are incompatible. If the evaluation time constitutes the initial sub-interval of the running time of the eventuality (inchoativity), then the entire running

time of the eventuality cannot be a sub-interval of the evaluation time (perfective).

When combined with its time argument, the inchoative aspect has the type of an eventuality modifier, type $\langle v, t \rangle$. This type does not only allow us to account for the compatibility with the imperfective, it will also come in handy when explaining the ambiguity *'ua* gives rise to with telic eventive predicates, where it can either be used at the on-set of the respective activity or once that activity is over, at the on-set of the respective results state, as in the examples in (15) and (17) above. We suggest that this ambiguity is ultimately syntactic in nature: The Samoan inchoative aspect is one of the few linguistic expressions with a positive setting of the Visibility Parameter [++DECOMP] in (30).[12] It may access the decomposition structures of telic predicates in the syntax and modify either the event or its result state.

(30)   The Visibility Parameter:[13]
        A linguistic expression can modify
                (i) only independent syntactic phrases ([-DECOMP]),
                (ii) any phrase with a phonetically overt head ([+DECOMP]),
                (iii) any phrase ([++DECOMP]).
        The default setting is [-DECOMP].

Before we continue, let's take a quick step back: Motivation for (30) originally comes from English and German, where certain adverbs like *again/wieder* give rise to the same type of eventive/resultative ambiguity with telic predicates, (31) and (32).

(31)   *Mary walked to the village again.*
        'Mary walked to the village and she had done so before. '/
        'Mary walked to the village and she had been at the village before.'

(32)   *Sue opened the door again.*
        'Sue opened the door and she had done so before.'/
        'Sue opened the door and the door had been open before.'

In (31), the result state is overtly provided by the prepositional phrase *to the village*, whereas it is lexicalized in (32). In both cases, this ambiguity is best accounted for by allowing *again/wieder* (33) to attach to the syntactic constituent that denotes the result state. In the case of lexical resultatives, this requires decomposing the predicate in the syntax into a verbal head and a small clause, thereby creating two possible attachment sites of type $\langle v, t \rangle$ for the adverb, as sketched in (34).[12]

(33) $[\![\,again\,]\!] = [\lambda p_{\langle v,t \rangle}.\,[\lambda e_{\langle v \rangle} : \exists e'\,[\tau(e') \ll \tau(e)\ \&\ p(e') = 1].\ p(e) = 1]]$

(34) $[_{\mathbf{VP}\,\langle v,t \rangle}\ [_{\mathrm{NP}}\ Sue]\ [\,\emptyset_{\mathrm{V}}\ [_{\mathbf{SC}\,\langle v,t \rangle}[_{\mathrm{NP}}\ the\ door]\ open]\,]\,]$

(35) $[\![\,\emptyset_{\mathrm{V}}\,]\!] = [\lambda p_{\langle v,t \rangle}.\,[\lambda x_{\langle e \rangle}.\,[\lambda e_{\langle v,t \rangle}.$
        $\exists R\,[R(x)(e) = 1\ \&\ \exists e'\,[\textsc{become}(p)(e') = 1\ \&\ \textsc{cause}(e)(e') = 1]]]]]$

---

[12] For further discussion, we refer the reader to von Stechow (1996), Rapp & von Stechow (1999), Beck & Snyder (2001) and Beck (2005). But see also Fabricius-Hansen (1983, 2001).
[13] This particular definition is adopted from Beck (2005, p. 14, no. (33)).

Decomposition structures are however not visible to all linguistic expressions; visibility is governed by the lexical parameter in (30). While both, English and German *again/wieder* have a [++DECOMP]-setting, there is variation between the two languages when it comes to *almost* ([++DECOMP]) versus its German equivalent *fast* ([+DECOMP]).[14] Samoan *toe* ('again') appears to be [+DECOMP] as it allows for the resultative reading with both, lexical as well as syntactic resultatives:

(36)   a.   John moved into a new apartment in 2011. One wall in the living room had been painted blue by the previous tenant. In 2013, John decided to paint the wall a bright yellow. This year, two years later, he decided that he liked the first color better and is currently painting the wall blue.

       b.   *'O lo'o   toe   valie Ioane le fa'alo* [*i   le lanu moana*].
            TAM(ipfv.) again paint John the wall   PREP. the color blue
            'John is painting the wall blue again.'

(37)   a.   Eseta was on her way from Tulaele to Vaiusu
            when she realizes that she has forgotten her phone...

       b.   ... *ma sa   toe   alu ia   [i Tulaele*].
            and TAM(pfv.) again go   PRN.(3sg.) to Tulaele
            '...and she again walked to Tulaele.'

(38)   a.   John and his friend escaped from the police, who only meant well:[15]

       b.   *Sā   fai atu loa le tama leolo i   le teine leoleo*,
            TAM(pfv.) do DIR. then the boy   police PREP. the girl   police
            *pe fa'apefea ona **toe**   ave le ato tupe   a Ioane*!
            Q how   that again give the bag money of John

            'So then the policeman asked the policewoman:
            "How are we going to return John's purse?"'

The availability of the resultative reading with *toe* ('again') provides evidence for the availability of syntactic decomposition of telic predicates in Samoan. We suggest that these decomposition structures may also be accessed by the inchoative aspect and that *'ua* is another item in the language with a [++DECOMP]-setting. We spell out the derivation of the resultative reading for two relevant examples from above, a complex resultative and a lexical resultative, in (40) and (42). Informally, we derive that there is an event of Cathy painting the wall which, by the contextual evaluation time, has resulted in the wall being red. Similarly, some appropriate action by the speaker has, by the evaluation time, resulted in the car being clean.

(39)   *'Ua   vale e   Cathy le fā'alo i   le lanu mūmū.*
      TAM(?) paint ERG. Cathy the wall   PREP. the color red
      'Cathy has painted the wall red.'

---

[14] See especially Rapp & von Stechow (1999) and Beck (2005).

[15]   TFS   Workgroup,   "On   the   Lam,"   *Totem   Field   Storyboards*   (URL: http://totemfieldstoryboards.org/stories/on_the_lam/, accessed October 9, 2015).

(40) a.

$$\text{TP}_{\langle t \rangle}$$

T — $t_{7,\langle i \rangle}$

$\langle i,t \rangle$

$1, \langle i \rangle$ $\text{AspP}_{\langle t \rangle}$

$\text{Asp}_{\langle \langle v,t \rangle, t \rangle}$ — $\exists$

$\text{VP}_{\langle v,t \rangle}$

$\text{DP}_{\langle e \rangle}$ — the wall

$\langle e, \langle v,t \rangle \rangle$

$2, \langle e \rangle$ $\text{VP}_{\langle v,t \rangle}$

$\text{DP}_{\langle e \rangle}$ — Cathy

$\langle e, \langle v,t \rangle \rangle$

$t_{2,\langle e \rangle}$ $\langle e, \langle e, \langle v,t \rangle \rangle \rangle$
(by Principle R)

$\text{V}_{\langle e, \langle e, \langle v,t \rangle \rangle \rangle}$ — paint

$\text{AspP}_{\langle v,t \rangle}$

$\text{Asp}_{\langle v,t \rangle}$ *'ua* TAM(inch.)

$t_{1,\langle i \rangle}$

$\text{PP}_{\langle v,t \rangle}$

$\text{pro}_{2,\langle e \rangle}$ $\langle e, \langle v,t \rangle \rangle$ — in the color red
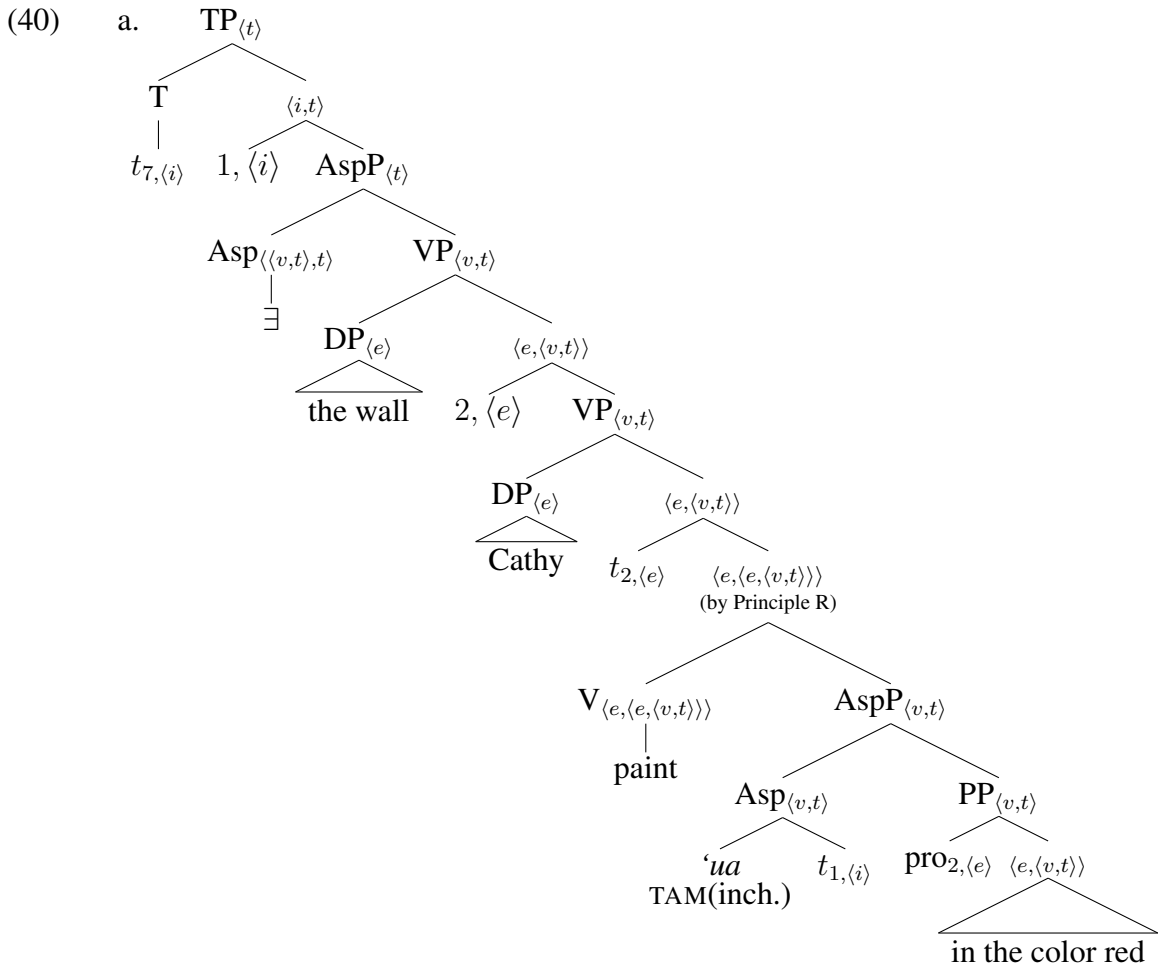
b. Principle R (von Stechow 1995):
If α is a branching node with a verb γ and β as its daughters,
and $[\![\beta]\!] \in D_{\langle v,t \rangle}$ and $[\![\gamma]\!] \in D_{\langle e, \ldots \langle e, \langle v,t \rangle \rangle \rangle}$, then
$[\![\alpha]\!] = \lambda x_1. \ldots \lambda x_n. [\![\gamma]\!](x_1) \ldots (x_n)(e) = 1$
$\& \ \exists e' [\text{BECOME}([\![\beta]\!])(e') = 1 \ \& \ \text{CAUSE}(e)(e') = 1]$

c. $[\![\, [_{\text{AspP}} \ldots] \,]\!]^g =$
$[\lambda s_{\langle v \rangle}. \ \text{beg}(\tau(s)) = g(1, \langle i \rangle) \ \& \ \text{the wall is in the state of being red}]$

d. $[\![\, [_{\text{TP}} \ldots] \,]\!]^g = \exists e \, [e$ is an event of Cathy painting the wall $\& \ \exists e' \, [\text{BECOME}$
$([\lambda s_{\langle v \rangle}. \ \text{beg}(\tau(s)) = g(1, \langle i \rangle) \ \& \ \text{the wall is in the state of being red}])(e')$
$\& \ \text{CAUSE}(e)(e')]]$

(41) ***'Ua*** *fa'a-mamā* *e* *a'u* *le ta'avale.*
TAM(?) CAUSE+clean ERG. PRN.(1sg.) the car
'I have cleaned the car.'/ 'I have just started cleaning the car.'

(42) a.
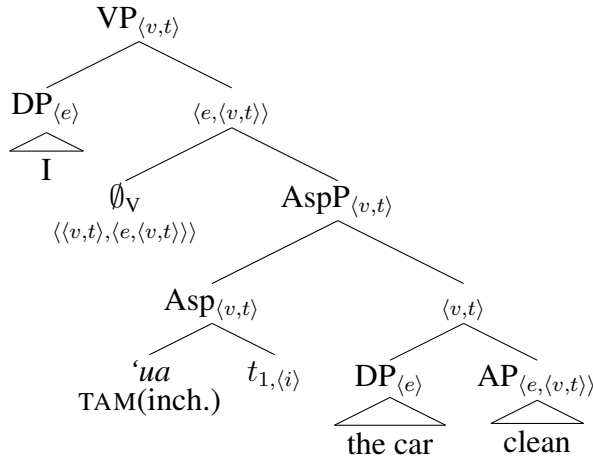
b. $[\![\,[_{\text{AspP}} \dots]\,]\!]^g =$
$[\lambda s_{\langle v \rangle}.\ \text{beg}(\tau(s)) = g(1, \langle i \rangle)\ \&\ \text{the car is in the state of being clean}]$

c. $[\![\,[_{\text{TP}} \dots]\,]\!]^g =$
$\exists e\,[e$ is an event of the speaker cleaning the car $\&\ \exists e'\,[\text{BECOME}$
$([\lambda s_{\langle v \rangle}.\ \text{beg}(\tau(s)) = g(1, \langle i \rangle)\ \&\ \text{the car is in the state of being clean}])(e')$
$\&\ \text{CAUSE}(e)(e')]]$

Decomposition by aspect is however restricted to the inchoative. Other aspectual heads like *sā/ na* and *'o lo'o* may not access these decomposition structures because they are of the wrong semantic type ($\langle\langle v, t\rangle, \langle i, t\rangle\rangle$) in the first place.

5. Concluding Remarks

To summarize, we propose to analyze the Samoan TAM *'ua* as the inchoative aspect. Under our analysis, Samoan *'ua* is also special because of its [++DECOMP]-setting, which allows it to access decomposition structures and thereby give rise to the eventive/ resultative-ambiguity with telic predicates.

Inchoativity is a potentially universally available building block of aspectual meaning across languages. Samoan and possibly most other Polynesian languages have lexicalized this building block as a functional morpheme in the paradigm of TAMs. Similar data from the literature suggest that the cognates of Polynesian *kua* all encode inchoativity.[16] For Tongan, however, Koontz-Gardoben (2007) suggest an analysis of *kuo* as a proper English-like Perfect that triggers coercion and the insertion of BECOME-operator when combined with a stative predicate. For Niuean, Matthewson, Quinn & Talagi (2015) suggest that *kua* combines inchoativity with a Perfect meaning. Future research will have to show whether these are merely differences in analysis or whether there is true semantic micro-variation among the cognates of Polynesian *kua*.

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[16] See Bauer (1997: p. 89, no. (618)) for Maori *kua*, Besnier (2000: p. 480, no. (2472)) for Tuvaluan *koo*, Elbert & Kawana Pukui (1979: p. 58) for Hawaiian *ua*, for instance.

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PROSODIC INDICATORS OF PHRASE STRUCTURE IN TAGALOG TRANSITIVE SENTENCES*

Henrison Hsieh
McGill University
henrison.hsieh@mail.mcgill.ca

To date, there has not been much consensus regarding the phrase structure of Tagalog despite the amount of research done and evidence brought to bear on this issue. This paper contributes to this ongoing discussion by presenting experimental data from the prosody of this language. The major finding of this study is that in Tagalog transitive sentences, verbs are durationally shorter when directly followed by the less syntactically prominent argument, suggesting that these arguments form tighter constituents with the verb.

1.   Introduction

As with many verb-initial langauges, much attention has been given to the phrase structure of Tagalog and its derivation. In addition to verb-initial word order, Tagalog exhibits a number of interrelated phenomena that are typically thought to interact with phrase structure. These are the so-called voice system, the case marking patterns, and the A-bar extraction restrictions. The variation between analyses proposed to account for Tagalog phrase structure is very wide. This is likely due in part to the number of interrelated phenomena that need to be accounted for, and in part to the amount of conflicting evidence, such as constituency tests, binding facts, and definiteness/specificity, that has been used to argue for the different analyses.

The main point of interest for this study is constituency. What parts of a Tagalog sentence (if any) form tighter syntactic units? Do any patterns correlate with properties of the syntactic objects involved (e.g., linear position, verb form, thematic role, case marking, etc.)? To answer this question, this paper presents experimental data on the prosody of Tagalog. As we will see, facts pertaining to word duration suggest that the answer to the first question is yes, and that the major determining factor of the grouping is case marking.

This paper is organized as follows. Section 2 presents the necessary background on Tagalog and the literature on its phrase structure. Section 3 outlines the experimental methods. Section 4 presents and discusses the findings, including

the aforementioned duration results, as well as experimental confirmation of certain word order preferences. Section 5 concludes.

2. Background

Aside from its verb-initial word order, one of Tagalog's most prominent features is the so-called Philippine-type voice system. In a Tagalog clause, voice[1] morphology on the verb tracks the thematic role of the syntactically prominent DP, marked *ang*. This is illustrated by the pair of examples in (1).

In (1a), the verb bears the infix *<um>*, signaling agent voice (AV), so the agent *bata* 'child' is marked *ang*. In (1b), the verb bears the infix *<in>*, signaling patient voice (PV),[2] so here the patient *isda* 'fish' is marked *ang*. Core arguments that are not *ang*-marked are marked *nang*,[3] as is the case in the pair below. At least two more voices are identifiable in Tagalog, but this study focuses on AV and PV.

(1) a. *Agent Voice* (AV)
    K<um>ain ang bata nang isda.
    <AV>ate ANG child NANG fish
    'The child ate fish.'

  b. *Patient Voice* (PV)
    K<in>ain nang bata ang isda.
    <PV>ate NANG child ANG fish
    'The child ate the fish.'

There is also some degree of variablilty with regards to the relative order of the post-verbal DPs. Thus, the verb-patient-agent orders in (2) are also grammatical alongside the verb-agent-patient orders in (1).

(2) a. *V-Pat-Agt order* (AV)
    K<um>ain nang isda ang bata.
    <AV>ate NANG fish ANG child
    'The child ate fish.'

  b. *V-Pat-Agt order* (PV)
    K<in>ain ang isda nang bata.
    <PV>ate ANG fish NANG child
    'The child ate the fish.'

Given the four configurations shown above, it is natural to ask whether or not there are structural differences between them, and what determines any such differences. Considering the range of different approaches taken to explain the patterns above (i.e., voice morphology, case marking, argument order), two different predictions are made with respect to this question. Here I will assume that the level of syntactic representation relevant for constituency is surface structure (i.e., after all necessary movements are made, resulting in the surface word order).[4]

The first is the prediction that [V *nang*-DP] forms a constituent to the exclusion of the *ang*-DP. This constituency is adopted by Guilfoyle, Hung, and Travis

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[1]Alternatively called focus or topic.

[2]The infix *<in>* also appears with other non-agent voices, but PV can be identified here because no other morphology is present on the verb.

[3]This marker is spelled *ng* in the standard orthography. The spelling used here better reflects its phonological form to avoid potential confusion.

[4]It should be noted, however, that some analyses account for surface structure and word order (and subsequently constituency) more explicitly than others.

(1992), who propose that the *ang*-DP raises to a right-side Spec-IP position in sentences like (1b,2a). A similar constituency is adopted by Kaufman (2009), who views the [V *nang*-DP] constituent as base-generated (as opposed to resulting from evacuation of the *ang*-DP). The two analyses also differ in how they treat (1a). Guilfoyle et al. argue that the *ang*-marked agent does not move in this example, resulting in the two DPs forming a constituent excluding V, which has raised to I. On the other hand, Kaufman does not explicitly account for the possibility of (1a). Kaufman's analysis also does not explicitly account for (2b), but this gap is shared with Guilfoyle et al., who note that this is a marked configuration.

The second prediction is that the *ang*-DP and the *nang*-DP consistently form a constituent to the exclusion of the verb, the same constituency that the Guilfoyle et al. analysis assigns to just (1a). This is the route taken by Kroeger (1993), who uses flexible post-verbal word order as evidence for a flat, non-configurational VP from which V raises to I. The same goes for the ergative approach taken by Aldridge (2004) and the Case agreement approach of Rackowski (2002), which derive verb-initial word order via head movement of the verb, leaving both argument DPs in (a configurational) *v*P. Similar to Kaufman (2009) however, the details of how the latter two analyses account for the word order variation among the DPs is unclear, so it is hard to say if these analyses predict any difference between (1b,2a) and either of (1a,2b), like Guilfoyle et al. do.

Given these predictions, the goal of this paper is to provide evidence that will hopefully help adjudicate between them. This study thus rigorously investigates the prosodic properties of "transitive" (or two-argument) sentences in Tagalog, taking (1-2) as a model, to see whether or not systematic differences between the various configurations exist.

3. Experimental Methods

The data for this study was collected via an experimental procedure where participants produced various sentences based on text prompts. Spoken sentences were recorded and then analyzed using the following procedure.

3.1. Stimuli

The stimuli consisted entirely of verb-initial sentences with roughly an agent and a patient argument, which were constructed by controlling three variables:
- voice morphology: AV vs PV,
- order of arguments: whether the *ang*- or *nang*-marked DP came first, and
- presence or absence of adjectives on both arguments.

Crossing the first two variables results in the small paradigm in (1-2). The third variable was included in an effort to help ensure ample time for potential pitch contours to be realized.[5] The result is a template of eight ($2 \times 2 \times 2$) different sentences (con-

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[5]The discussion will largely ignore the third variable since pitch is not discussed in this paper.

ditions) as illustrated by the sample experimental item in Table 1. Following this template, 16 experimental items (sets of eight sentences) were constructed for a total of 128 (8 × 16) sentences.[6] No fillers were used.

Table 1: Sample Experimental Item

Verb	Det	Adjective	Noun	Det	Adjective	Noun
'killed'		'brave'	'whale'		'ferocious'	'shark'
P<um>atay	ang		balyena	nang		pating
P<um>atay	nang		balyena	ang		pating
P<in>atay	ang		balyena	nang		pating
P<in>atay	nang		balyena	ang		pating
P<um>atay	ang	matapang na	balyena	nang	mabangis na	pating
P<um>atay	nang	matapang na	balyena	ang	mabangis na	pating
P<in>atay	ang	matapang na	balyena	nang	mabangis na	pating
P<in>atay	nang	matapang na	balyena	ang	mabangis na	pating

Note that verbs with interchangeable arguments were chosen, to allow changing of the relative order of agent and patient by changing just the positions of the DP markers *ang* and *nang* and keeping the nouns in place. The sentences above all involve a killing event with a (brave) whale and a (ferocious) shark, but differ with respect to which animal is the killer. Care was also taken to avoid verb forms that had any suffixes.

3.2.   Procedure

16 native speakers of Tagalog participated in this study. All unavoidably had some degree of proficiency in another language, particularly English. Participants were 18–45 years old at the time of the study, and were living in the capital Manila (they were either natives of the city, or of the surrounding provinces).

Data was collected through a self-paced production task, carried out via Psychtoolbox in Matlab (Brainard 1997; Pelli 1997; Kleiner et al. 2007). Each participant was shown all 128 stimulus sentences. For each sentence, participants were instructed to do the following:

- read the sentence silently to familiarize themselves with it,
- initiate recording by pressing a key,
- read the sentence aloud,
- terminate recording by pressing a key again, and
- rate the naturalness of the sentence on a 1 (worst) – 7 (best) scale.

Tokens were presented to participants in a pseudorandom order: no consecutive items were from the same item or the same condition, a token from each condition appeared exactly once in every block of eight, and a token from each item appeared exactly

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[6]A summary of all 16 experimental items is given in Appendix A.

once in every block of sixteen. Finally each sentence was presented with one of four frame sentences to anticipate late starts and early stops of the recording. These frames were pre-determined for each item.[7] Below in (3) is an example.

(3)   *Alam mo?* Pinatay nang balyena ang pating. *Yun ang kwento sa akin.*
       '*Did you know?* The whale killed the shark. *That's the story I was told.*'

3.3.   Data Processing

A total of 2048 (128×16) sound files were collected. For each sound file, leading and trailing silence was manually truncated with the assistance of a Praat (Boersma and Weenink 2013) script. During truncation, bad sound files were identified and excluded. These included cases of stuttering, disfluency, or the recorded token not matching the stimulus sentence.

Annotation of word and phone boundaries was carried out automatically using the Prosodylab Forced Aligner (Gorman et al. 2011). This procedure requires a list of transcriptions of all words contained in the dataset. A phonemic transcription based on the dialect of Tagalog spoken by the author was used.

With another Praat script, acoustic measures were extracted from (up to) seven words of interest in each annotated file. These words of interest were the verb, the markers *ang* and *nang*, both adjectives, and both nouns.

Finally, analysis of these measures was carried out using mixed effects linear regression models (via the R `lmerTest` package). This was done with the intention of filtering out any by-item and by-participant variability. Models with uncorrelated by-item and by-participant random terms were used, as correlated random terms caused non-convergence. In order to make effect sizes more comparable, all predictors were standardized by subtracting their means and dividing by two standard deviations (via the `rescale` function of the R `arm` package). To account for outliers, all models were generated by first fitting on all data, excluding datapoints whose residuals for that model fell outside 2.5 standard deviations from the mean residual value, then refitting the same model on the subset data.

4.   Results and Discussion

Three major results are reported in this paper. The first is experimental confirmation of word order preferences between the four configurations exemplified in (1-2). The remaining two pertain to the durations of the verb and the first noun, which do differ between the various configurations. It will be argued that the patterns described here support the view that the verb and the *nang*-marked DP form a constituent (excluding the *ang*-marked DP) when they are linearly adjacent.

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[7]A summary of all frames and which items they correspond to is also given in Appendix A.

4.1. Word Order Preference

The results from the naturalness ratings confirm the word order preference occasionally noted by some authors (Guilfoyle et al. 1992; Rackowski 2002, e.g.,): an *ang*-marked DP immediately following a PV verb is dispreferred. This is illustrated by the plot in Figure 1, which also shows that the highest-rated word order was PV verb followed by the *nang*-DP. The two AV configurations were rated between the two PV configurations.
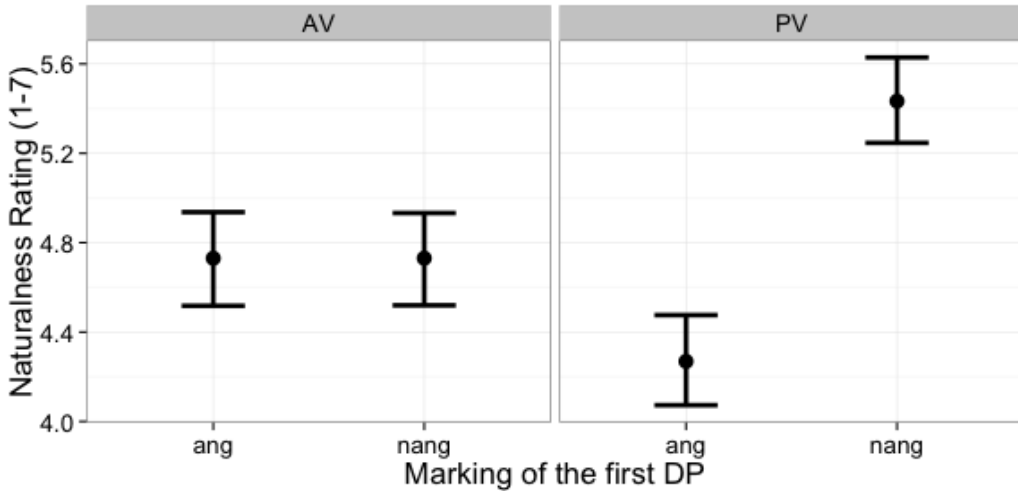
Figure 1: Means and 95% confidence intervals of naturalness ratings (1–7 scale) separated by voice and argument order

The pattern illustrated in Fig. 1 is confirmed by the model reported in Table 2 below. Five predictor variables were selected for this model: three single predictors (corresponding to the three manipulated variables listed in section 3.1: Voice, First DP, Adjective) and two interactions (for Voice–First DP and First DP–Adjective).[8] In the table below, text in parentheses indicate the value of the variable with respect to which the numbers of that row should be interpreted. For example, "Voice (PV)" means that the effect size of 1.55×10^{-2} represents the increase in (rescaled/standardized) naturalness rating *from* AV *to* PV (i.e. PV is rated higher, although not statistically significantly so, as it turns out).

Table 2 shows that the largest effect on naturalness is the interaction of voice and first DP, whereas only voice or only first DP do not have a significant effect. These results intuitively mean that while there is no relative difference between *ang*-first and *nang*-first sentences overall, we do find a difference when we separate the two voices. In PV, *nang*-first sentences are rated higher than *ang*-first sentences,

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[8]The remaining interaction, between voice and presence of adjectives, did not appear to be a relevant predictor in initial inspection of the data, so it was not included in the model.

Table 2: Mixed-effects linear regression model results for rescaled naturalness rating

Predictor	Fixed Effects			Random Effects	
	Effect Size	Std. Error	p-value	by-item σ	by-part. σ
Voice (PV)	1.55×10^{-2}	2.44×10^{-2}	0.536	5.74×10^{-2}	3.75×10^{-2}
First DP (*nang*)	1.31×10^{-1}	8.02×10^{-2}	0.122	1.01×10^{-2}	3.13×10^{-1}
Adjective (None)	6.68×10^{-2}	2.06×10^{-2}	0.006 **	4.46×10^{-2}	2.28×10^{-8}
Voice–First DP	2.41×10^{-1}	1.06×10^{-1}	0.032 *	3.02×10^{-1}	2.63×10^{-1}
First DP–Adjective	1.07×10^{-3}	3.46×10^{-2}	0.975	—	—

***: $p < 0.001$ **: $p < 0.01$ *: $p < 0.05$

and this difference in rating is greater than in AV. We also find the largest by-item and by-participant random effects for this predictor (indicating that there was a good amount of variation item-to-item and participant-to-participant), but this is likely due to the varying pragmatic naturalness of the different items and idiosyncratic rating heuristics adopted by each participant.

4.2. Verb Duration

Figure 2 below illustrates the results pertaining to duration of the verb (split again into the four conditions). Notice that the verb is consistently shorter when it is immediately followed by the *nang*-marked DP. Interestingly, between the two *nang*-first conditions, the verb appears to be shorter in PV.
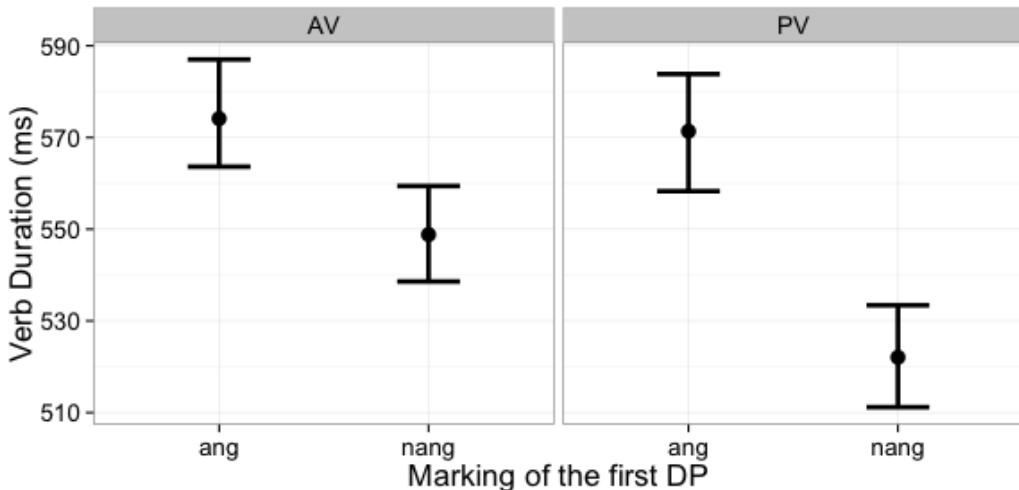
Figure 2: Means and 95% confidence intervals of absolute verb duration (ms) separated by voice and argument order

Results from the regression model run on (log) verb duration are reported in Table 3. This model uses the same predictors as the model reported in Table 2,

with the addition of a predictor corresponding to rating (standardized in the manner described in section 3.3). This predictor was added to account for the possibility that the verb duration pattern shown in Fig. 2 might be explained in part by naturalness.

Table 3: Mixed-effects linear regression model results for log verb duration

Predictor	Fixed Effects			Random Effects	
	Effect Size	Std. Error	p-value	by-item σ	by-part. σ
Voice (PV)	-2.89×10^{-2}	1.22×10^{-2}	0.032 *	4.33×10^{-2}	—
First DP (*nang*)	-6.00×10^{-2}	8.92×10^{-3}	< 0.001 ***	1.84×10^{-2}	2.04×10^{-2}
Adjective (None)	-3.22×10^{-2}	6.61×10^{-3}	< 0.001 ***	1.38×10^{-2}	1.26×10^{-8}
Stdized. Rating	-1.64×10^{-2}	1.06×10^{-2}	0.138	3.17×10^{-2}	1.47×10^{-8}
Voice–First DP	-3.98×10^{-2}	1.53×10^{-2}	0.021 *	3.41×10^{-9}	4.07×10^{-2}
First DP–Adjective	1.97×10^{-2}	1.12×10^{-2}	0.080	2.87×10^{-8}	1.01×10^{-8}

***: $p < 0.001$ **: $p < 0.01$ *: $p < 0.05$

The results from this model show that the order of arguments (First DP) has the largest effect on verb duration, such that it is much shorter when the immediately following DP is *nang*-marked. Note that like in the previous subsection, the interaction of voice and argument order has a large significant effect, confirming the difference between the two *nang*-first columns illustrated in Fig. 2. Finally, the model shows that naturalness rating is not a significant predictor of verb duration.

The effect of voice is also significant in this model, but has a large by-item random effect. In another model where verb duration is normalized by dividing by the number of phones, the effect of this predictor is no longer significant. This may be due to the specific phonological form of the voice morphemes used. For example, the difference in duration between *p<um>atay* and *p<in>atay* ('killed') might be different from the difference between *nag-dala* and *d<in>ala* ('brought').

4.3.   First Noun Duration

Finally, we have the following picture from the duration of the first noun. Figure 3 below shows a mirrored picture of Figure 2. That is, the first noun is *longer* if it is *nang*-marked (compared to the shorter verb in the *nang*-first condition). While there also appears to be a difference between the two *nang*-first conditions, this does not turn out to be a significant effect.

Table 4 shows the model results for (log) duration of the first noun, using the same predictors as the model for verb duration. The largest effect (after presence of adjectives) is that of the order of arguments (First DP): the first noun is durationally longer if it is *nang*-marked. On the other hand, the interaction between voice and order of arguments did not have a significant effect, as previously mentioned. Additionally, naturalness had an effect on first noun duration (shorter for tokens rated as being more natural), although this is the smallest of the significant effects.
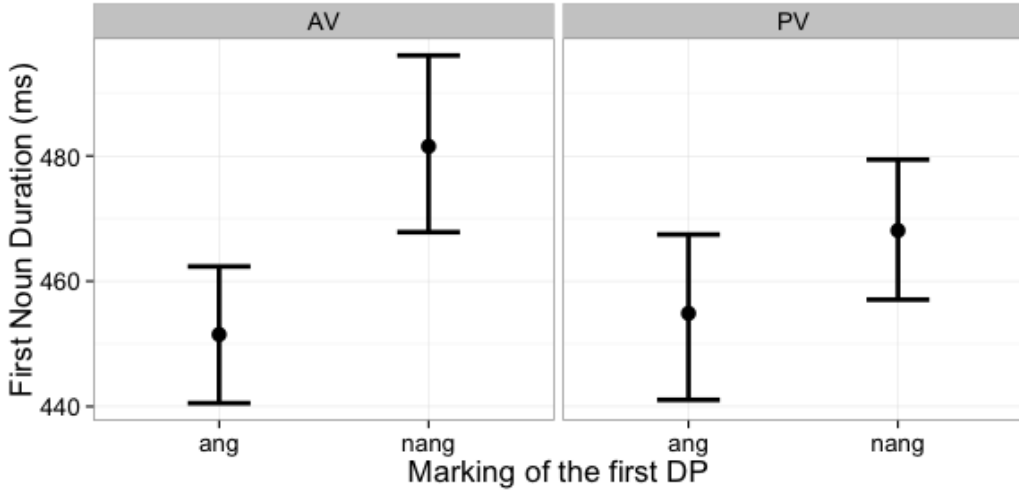
Figure 3: Means and 95% confidence intervals of absolute duration of the first noun (ms) separated by voice and argument order

Table 4: Mixed-effects linear regression model results for log first noun duration

Predictor	Fixed Effects			Random Effects	
	Effect Size	Std. Error	p-value	by-item σ	by-part. σ
Voice (PV)	-1.17×10^{-2}	6.62×10^{-3}	0.098	3.20×10^{-9}	1.50×10^{-3}
First DP (*nang*)	3.76×10^{-2}	1.23×10^{-2}	0.007 **	3.23×10^{-2}	2.56×10^{-2}
Adjective (None)	-1.31×10^{-1}	1.80×10^{-2}	< 0.001 ***	2.78×10^{-2}	6.10×10^{-2}
Stdized. Rating	-2.53×10^{-2}	1.02×10^{-2}	0.026 *	2.35×10^{-2}	4.45×10^{-3}
Voice–First DP	-2.13×10^{-2}	1.99×10^{-2}	0.302	3.17×10^{-2}	4.92×10^{-2}
First DP–Adjective	1.54×10^{-2}	1.60×10^{-2}	0.360	1.33×10^{-2}	3.37×10^{-2}

***: $p < 0.001$ **: $p < 0.01$ *: $p < 0.05$

4.4. Discussion

The results from verb duration and first noun duration taken together support the claim that the verb and the *nang*-marked DP form a constituent to the exclusion of the *ang*-marked DP when they are adjacent to each other. Recall that in the *nang*-first conditions, the verb is shorter and the first noun is longer. Taking longer duration to be an instance of phrase-final lengthening suggests that the first noun in the *nang*-first conditions is at the right edge of a phrase. Furthermore, the lack of such lengthening on the verb indicates that it is part of the same phrase as the first (*nang*-marked) DP.

On the other hand, the longer duration of the verb in *ang*-first conditions suggests that this element is a constituent by itself, as *it* is subject to phrase-final lengthening. In these cases, it would appear that the first (*ang*-marked) DP does not undergo lengthening, suggesting that it forms a constituent with the following (*nang*-marked) DP.

These results are the most in line with the predictions made by Guilfoyle et al. (1992) and Kaufman (2009), as discussed in section 2. Both analyses assign closer constituency between the verb and the *nang*-marked DP when they are adjacent. However, neither analysis immediately predicts the correct behavior for both of the *ang*-first conditions. For Kaufman (2009), even the possibility of *ang*-first sentences is not addressed directly (other than by scrambling), while for Guilfoyle et al. (1992), *ang*-first PV sentences are explicitly not generable.[9]

The data here also raise a question regarding the potentially exceptional behavior of PV verbs and their *nang*-marked agents. As previously mentioned, it has been noted that there is a preference for *nang*-marked agents to appear adjacent to the verb. This was confirmed by the data from the naturalness ratings. The duration data also seems to suggest that there is an acoustic correlate to this preference, even though preference itself did not directly have an effect on duration (at least for the verb).

5. Conclusion

This paper presented prosodic data corroborating one competing claim in the literature regarding constituency in Tagalog, namely that verbs form constituents with adjacent *nang*-marked arguments to the exclusion of *ang*-marked ones. While less has been said about the status of verbs with adjacent *ang*-marked arguments, this study suggests that these form separate constituents, the verb on its own and the *ang*-marked DP with the following *nang*-marked one.

Future work in this area might focus on the more complex, but potentially more informative pitch data. Additionally, eventual expansion to more sentence types (e.g., involving different voice forms) would yield a more complete picture of the prosodic behavior of these constructions. Finally, given that the differences dealt with here are relatively small, more work specifically designed to rule out potential phonetic explanations of the patterns discussed might be of use. For example, we might construct stimuli with adverbs or second position clitics intervening in between the sentence-initial verb and the first DP to help neutralize any potential effect the difference in phonological shape between *ang* and *nang* might cause.

A. Appendix: Summary of Stimuli

Sentence frames:
1. *Alam mo? <Target Sentence> Yun ang kwento sa akin.*
   "Did you know? *<Target Sentence>* That's the story I was told."
2. *May nalaman ako. <Target Sentence> Ang galing!*
   "I found something out. *<Target Sentence>* Wow!"

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[9]These results also line up with Tagalog's coordination behavior, pointed out by Kroeger (1993). VP-like coordination may consist of two [V *nang*-DP] constituents with a shared *ang*-DP, but not with two instances of [V *ang*-DP] and a shared *nang*-DP.

3. *Sabihin ko daw sa iyo. <Target Sentence> OK?*
   "I was told to tell you. *<Target Sentence>* OK?"
4. *Sabi daw: <Target Sentence> Totoo kaya?*
   "They say: *<Target Sentence>* I wonder if it's true."

Table 5: Summary of experimental items

AV form	PV form	English	Adjectives	Nouns
p<um>atay Frame: 1	*p<in>atay*	'killed'	*matapang na* 'brave' *mabangis na* 'fearsome'	*balyena* 'whale' *pating* 'shark'
nag-dala Frame: 2	*d<in>ala*	'brought'	*itim na* 'black' *puting* 'white'	*pusa* 'cat' *daga* 'rat'
k<um>ain Frame: 3	*k<in>ain*	'ate'	*matandang* 'old' *malaking* 'big'	*lalaki* 'man' *buwaya* 'crocodile'
h<um>ipo Frame: 4	*h<in>ipo*	'touched'	*makulit na* 'persistent' *maamong* 'tame'	*sanggol* 'baby' *aso* 'dog'
na-ngiliti Frame: 1	*k<in>iliti*	'tickled'	*mabait na* 'kind' *masayang* 'happy'	*doktor* 'doctor' *bata* 'child'
b<um>i~bili Frame: 2	*b<in>i~bili*	'buying'	*matabang* 'fat' *masiglang* 'lively'	*lapu-lapu* '(fish species)' *talaba* 'oyster'
na-ngurot Frame: 3	*k<in>urot*	'pinched'	*pikuning* 'upsettable' *masamang* 'wicked'	*nars* 'nurse' *pasyente* 'patient'
h<um>uli Frame: 4	*h<in>uli*	'caught'	*matalinong* 'smart' *maliit na* 'small'	*lobo* 'wolf' *tigre* 'tiger'
k<um>agat Frame: 1	*k<in>agat*	'bit'	*pulang* 'red' *mabagal na* 'slow'	*ahas* 'snake' *pagong* 'turtle'
b<um>ati Frame: 2	*b<in>ati*	'greeted'	*matangkad na* 'tall' *masipag na* 'hardworking'	*guro* 'teacher' *estudyante* 'student'
nang-gulat Frame: 3	*g<in>ulat*	'surprised'	*galit na* 'angry' *malungkot na* 'sad'	*unggoy* 'monkey' *ibon* 'bird'
nag-luto Frame: 4	*l<in>uto*	'cooked'	*mabahong* 'smelly' *dilaw na* 'yellow'	*manok* 'chicken' *baboy* 'pig'
na-nuntok Frame: 1	*s<in>untok*	'punched'	*maruming* 'dirty' *malinis na* 'clean'	*ipis* 'cockroach' *langgam* 'ant'
b<um>angga Frame: 2	*b<in>angga*	'crashed into'	*bagong* 'new' *magarang* 'extravagant'	*sasakyan* 'car' *dyip* 'jeepney'
nag-be~benta Frame: 3	*b<in>e~benta*	'selling'	*malakas na* 'strong' *malinis na* 'clean'	*pabo* 'turkey' *maya* 'sparrow'
na-na~nakot Frame: 4	*t<in>a~takot*	'scares'	*masungit na* 'grumpy' *magandang* 'beautiful'	*bayawak* 'monitor lizard' *paniki* 'bat'

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RECURSIVE FEET AND HIDDEN PHONOLOGY: THE CASE OF FIJIAN[*]

Gakuji Kumagai

Tokyo Metropolitan University/JSPS

gakuji1210@gmail.com

The Fijian language forbids coda consonants and consonant clusters, allowing a vowel to be inserted in English loanwords. Copy epenthesis is a repair strategy that is observed in Fijian loanword adaptation. The issue addressed here is what determines the target of vowel copy. This paper proposes that by invoking an expanded version of prosodic projection theory developed by Martínez-Paricio (2012, 2013), Fijian constructs recursive feet, which play an important role in predicting the target of vowel copy. The proposal is that copy epenthesis occurs within maximal/minimal feet where the epenthetic vowel belongs, unless the target per se is an epenthetic vowel.

1.   Introduction

Vowel epenthesis is a major repair strategy that occurs in loanword adaptation. The central issue of research has been to understand how epenthetic vowel quality is determined (see Uffmann 2007 for discussion). While some languages such as Korean and Burmese use a particular vowel of that language, others such as Shona (Uffmann 2007) and Sesotho (Rose and Demuth 2006) display assimilation to the adjacent consonant or a copying of the adjacent vowel. The topic in this paper is about vowel copy observed in Fijian loanword adaptation.[1]

Fijian exhibits copy epenthesis in a certain condition, as will be discussed in Section 2. An epenthetic vowel copies its preceding vowel when inserted in the word-final position (e.g., *mark → máka*), or its following vowel when inserted in the word-initial position (e.g., *brother → baráða*). What happens if it is inserted in the word-medial position? Gafos and Lombardi (1999) suggest that vowel copy is more likely to occur across a sonorant than an obstruent. Based on this suggestion, one hypothesizes that the target of vowel copy is predictable from the sonority sequence of consonant clusters: if an epenthetic vowel is inserted between C_1 and C_2 (i.e., $V_1C_1C_2V_2 \rightarrow V_1C_1\underline{v}C_2V_2$), where C_1 is less sonorous than C_2, then it will copy the adjacent vowel of the consonant with the higher sonority (i.e. V_2). This can predict the target of vowel copy in the examples shown in (1a), where a vowel inserted between a sonority-rising cluster such as /tr, kr/ copies its following vowel.

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[1] This paper avoids discussing vowel co-occurrences in native words. See Krupa (1966) and Alderete and Finley (2016) for details.

However, such an account is problematic for the examples in (1b): the target of vowel copy becomes its preceding vowel, though a vowel insertion occurs between a sonority-rising cluster such as /kβ, pl, pr, ŋl/.

(1)   Fijian loanwords (Relevant epenthetic vowels italicized)

	English		Fijian		English		Fijian
a.	nítrogen	→	nàit*ò*rotʃíni	b.	rugby	→	ràk*a*βí:
	télegram	→	tàlik*a*rámu		table	→	tè:p*é*li
	geógraphy	→	ʧò:k*a*ráβi		February	→	fèp*e*ru(*é*ri)
	strike	→	sìt*a*ráke		England	→	ìŋ*i*ládi

In the Optimality-theoretic framework (OT, Prince and Smolensky 1993/2004), if the target of an epenthetic vowel is simply determined by its epenthetic environments, it could be explained by constraints requiring direction of copying vowels such as AGREE-LEFT (or COPY-LEFT) and AGREE-RIGHT (or COPY-RIGHT) (e.g., Kitto 1997; Kitto and de Lacy 1999; Rose and Demuth 2006). However, since the examples in (1) suggest that the target of an epenthetic vowel in word-medial position can be either its preceding or its following vowel, such constraints are insufficient to predict the target of epenthetic vowels, at least, in Fijian.

This paper dispenses with constraints regarding directionality, and instead looks at the foot structure of loanwords, which can circumscribe the domain of the application of vowel copy in Fijian. The aim of the present paper is to show that foot structure plays an important role in determining the target of copying vowels in Fijian loanwords.

The paper is organized as follows. Section 2.1 looks at my earlier work on conditions of vowel copy in Fijian loanwords. Section 2.2 explains how to construct minimal feet in the loanwords. Section 2.3 proposes that feet display foot projections to form recursive feet in Fijian. Section 3 shows several cases of vowel copy in Fijian. Section 4 is the conclusion.

2.   Feet in Fijian

2.1.   Background

This section begins with a brief explanation of Fijian consonants. The Fijian phonemes are shown in Table 1[2]: we refer to /p, b, f, β, m/ as labial consonants, /t,

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[2] The Fijian phonemes are represented orthographically and realized phonetically as follows: <p> /p/ [p]; <b> /b/ [mb]; <t> /t/ [t]; <d> /d/ [nd]; <k> /k/ [k]; <q> /g/ [ŋg]; <f> /f/ [f]; <v> /β/ [β]; <c> /ð/ [ð]; <s> /s/ [s]; <j> /ʧ/ [ʧ]; <m> /m/ [m]; <n> /n/ [n]; <g> /ŋ/ [ŋ]; <l> /l/ [l]; <r> /r/ [r ~ ɾ]; <w> /w/ [w], <y> /j/ [j]; <dr> /dr/ [nr̃]. /dr/ is excluded in the inventory table as it is difficult to classify (see Schütz 1985 for its phonetic realization).

d, s, ʧ , n/ as coronal consonants, and /k, ɡ , ŋ/ as dorsal consonants.[3] This paper uses the phonemic transcription in the examples.

Table 1. Fijian Consonant Inventory (/p, f/ only used in loanwords)

Place / Manner	Bilabial	Labio-dental	Dental	Alveolar	Palato-alveolar	Palatal	Velar
Plosive	p b			t d			k ɡ
Affricate					ʧ		
Fricative	β	f	ð	s			
Nasal	m			n			ŋ
Tap or trill				r			
Approximant	w			l		j	

I provided an in-depth analysis of epenthetic vowel quality in Fijian loanwords from a database (808 words) compiled from Schütz (1978) and Gatty (2009). This analysis looked closely at the adjacent consonant articulation and the epenthetic environment. Table 2 shows the main strategy for each epenthetic environment. For a vowel insertion after a consonant (i.e. $C_2V_2C_1 \rightarrow C_2V_2C_1\underline{v}$), while consonantal assimilation is found after a coronal or a labial, vowel copy is found after a dorsal or a liquid. For a vowel insertion between two consonants (i.e. $C_1C_2V_2 \rightarrow C_1\underline{v}C_2V_2$), while the high front vowel /i/ is inserted in sC clusters where C is an obstruent, vowel copy is observed in complex (C_1C_2) clusters where C_1 is less sonorous than C_2 (e.g., /pl, tr, kr/).

Table 2. Summary of Vowel Epenthesis in Fijian Loanwords (Kumagai 2016a)

$C_2V_2C_1 \rightarrow C_2V_2C_1\underline{v}$

	C_1	Strategies	Rate	N	$\underline{v}$	English		Fijian
(a)	Coronals	Assimilation	82.1%	325/396	/i/	cut	→	kat*i*
(b)	Labials	Assimilation	50.7%	38/75	/u/	bomb	→	bom*u*
(c)	Dorsals	Vowel copy	62.9%	44/70	V_2	mark	→	mak*a*
(d)	Liquids	Vowel copy	61.5%	56/91	V_2	ball	→	pol*o*

$C_1C_2V_2 \rightarrow C_1\underline{v}C_2V_2$

	C_1C_2	Strategies	Rate	(N)	$\underline{v}$	English		Fijian
(e)	CC Clusters	Vowel copy	78.0%	71/91	V_2	trump	→	t*a*rabu
(f)	sC clusters	Assimilation	83.3%	35/42	/i/	spy	→	s*i*pai

It should be noted, however, that, vowel copy does also occur after a labial. Table 3 shows the insertions adjoining each vowel in each epenthetic environment. The columns in each table indicate adjacent vowels, and the rows indicate epenthetic vowels. It is remarkable that vowel copy is frequently observed in the

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[3] Kumagai (2016a) claims that the Fijian liquids are underspecified for place features.

epenthetic environments in (c, d, and e). In addition, after a labial (b), we find not only the high back vowel /u/ by assimilation but also a vowel copy in epenthetic vowel quality. In contrast to these environments, copying vowels is a rare occurrence in the environments (a, f).

Table 3. Epenthetic vowel quality in Fijian loanwords

(a) C_1 Coronal

	i	e	a	o	u
i	123	5	5	2	0
e	78	22	0	0	0
a	61	7	2	0	0
o	46	12	3	4	1
u	13	3	0	0	4

Examples of vowel copy

brass → βaras*a*
boat → bot*o*
suit → sut*u*

(b) C_1 Labial

	i	e	a	o	u
i	9	0	2	1	6
e	3	3	1	0	2
a	3	4	5	0	20
o	2	0	1	3	6
u	0	0	0	0	4

Examples of vowel copy

palm → pam*a*
table → te:p*e*li
February → fep*e*rueri

(c) C_1 Dorsal

	i	e	a	o	u
i	24	4	2	0	0
e	9	6	1	0	0
a	2	2	5	0	0
o	0	4	1	9	0
u	0	0	1	0	0

Examples of vowel copy

mark → mak*a*
taxi → tek*e*si:
October → ok*o*toβa

(d) C_1 Liquid

	i	e	a	o	u
i	16	4	2	0	0
e	14	13	1	0	1
a	1	1	11	0	0
o	1	1	2	16	0
u	3	0	1	3	0

Examples of vowel copy

ball → pol*o*
alto → al*a*to
velvet → βel*e*βeti

(e) Complex Clusters

	i	e	a	o	u
i	22	2	5	1	0
e	0	12	1	0	0
a	0	0	28	0	1
o	0	0	8	8	2
u	0	0	0	0	1

Examples of vowel copy

brother → b*a*raða
train → t*e*reni
geography → ʧo:k*a*raβi

(f) sC Clusters

	i	e	a	o	u
i	12	0	0	0	2
e	4	0	0	0	0
a	8	0	0	0	0
o	10	0	0	0	0
u	1	1	0	0	4

Examples of vowel copy

square → s*u*kuea
screw → s*u*kuru

Based on Kumagai's (2016a) survey, the generalization of vowel copy in Fijian loanwords is summarized in (2). However, this begets an analytical problem. The survey assumes some of the word-medial consonant, rather than the first consonant of the cluster, as a coda. As already shown in (1b), /a/ is inserted after /k/ in *ràkaβí*: "rugby," and /i/ after /ŋ/ in *ìŋiládi* "England," and they are counted in the environment (c) in Table 3 by assuming /k, ŋ/ as a coda. The present paper views the sequences of consonants /kβ, ŋl/ as a consonant cluster.

(2)   Vowel copy in Fijian loanwords
   a.   If an epenthetic vowel is inserted after the coda consonant (i.e., $C_1V_1C_2$ → $C_1V_1C_2\underline{v}$), and if the preceding consonant (C_2) is a dorsal, a liquid, or a labial, then the epenthetic vowel ($\underline{v}$) tends to copy the adjacent vowel (V_1).
   b.   If an epenthetic vowel is inserted between a consonant cluster (i.e., $C_1C_2V_2$ → $C_1\underline{v}C_2V_2$), and if sonority rises from C_1 to C_2 of the cluster, then the epenthetic vowel ($\underline{v}$) tends to copy the adjacent vowel (V_2).

2.2.   Minimal Feet in Fijian

This section explains how minimal feet are constructed in Fijian. In this language, bimoraic trochee feet are formed from the right edge of the word, though degenerate feet are not formed (Hayes 1995). Primary stress is placed on the penultimate mora (Blevins 1994). Illustrative examples are presented in (3).

(3)   Fijian native words

Fijian	gloss	Fijian	gloss	Fijian	gloss
(líma)	"five"	(bú:)	"grandmother"	ma(káwa)	"old"
tu(ráŋa)	"men"	se(ŋái)	"no"	(màða)(wá:)	"worthless"
ma(ráma)	"women"	(bè:)(bé:)	"moth"	(mà:)(ðáwa)	"week"

Though English loanwords usually obey the prosodic system in the same way as Fijian native words, there are additional requirements for constructing foot structure in loanwords.[4] The first requirement is that loans must preserve the original stress from the English source words (Kenstowicz 2007; Schütz 1978 et seq.). Illustrative examples are given in (4).

(4)   Fijian loanwords

English		Fijian	English		Fijian
béacon	→	(bì:)(kéni)	táxi	→	(tèke)(sí:)
belt	→	(bè:)(léti)	Fébruary	→	(fèpe)ru(éri)
strike	→	(sìta)(ráke)	bróther	→	ba(ráða)

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[4] There is neither form with a long vowel on the penultimate syllable (i.e., *CV:CV#) nor with three consecutive short unstressed syllables (i.e., *CVCVCV) (Schütz 1978 et seq.).

In OT terms, Fijian adapters enforce the adaptation-specific constraint, MAX-STRESS, which requires the stress position of source words to be preserved in the output.[5] Tableau (5) shows an OT analysis of the English word *béacon*, which becomes *bì:kéni* in Fijian. It is assumed here that loanwords as well as native words invariably follow ALIGN-RIGHT (the rightmost Foot[+min], PrWd) (henceforth, Align-Wd[+min]-R) and FOOT[+min]-BINARITY (mora) (henceforth, FT[+min]-BIN (μ)) (In this paper, constraints referring to minimal feet are denoted by [+min]). Align-Wd[+min]-R requires that the rightmost foot[+min] of the word be necessarily aligned with the right edge of the word. FT[+min]-BIN (μ) requires a foot to contain two moras. The losing candidate *(bíke)ni* violates Align-Wd[+min]-R because the rightmost foot is not aligned with the right edge of the word. The losing candidate *(bì)(kéni)* has a degenerate foot *(bì)*, thus leading to a violation of FT[+min]-BIN (μ). Despite the fact that the source word *béacon* has a primary stress on the initial syllable, the losing candidate *bi(kéni)* do not preserve the input stress, thus inviting a violation of MAX-STRESS. The losing candidate *(bike)(ní:)* has an epenthetic vowel on the final syllable that is stressed and lengthened, which violates the condition on an epenthetic vowel ({DEP-VOWEL&DEP-STRESS}), which is explained below. These four constraints are not violated by the winner *(bì:)(kéni)*.

(5) Tableau

/béa$_1$con/	Align-Wd[+min]-R	FT[+min]-BIN (μ)	MAX-STRESS	DEP-VOWEL & STRESS	DEP-STRESS
→ (bì:$_1$)(ké$_2$ni$_3$)					$_1$(é$_2$)
bi$_1$(ké$_2$ni$_3$)			W$_1$		$_1$(é$_2$)
(bì$_1$)(ké$_2$ni$_3$)		W$_1$			$_1$(é$_2$)
(bí$_1$ke$_2$)ni$_3$	W$_1$				L
(bì$_1$ke$_2$)(ní:$_3$)				W$_1$	$_1$(í$_3$)

The second requirement is that epenthetic vowels must not be a head of the foot. This condition can be expressed as {DEP-VOWEL&DEP-STRESS} (abbr. {DEP-V&S}) (Kumagai 2015).[6] In definition, {DEP-V&S} is violated if a vowel with no correspondent in the input is given stress in the output. Yet this is a violable constraint in Fijian loanword adaptation (Kenstowicz 2007). As shown in (6a), English words with biconsonantal cluster in coda position (CVCC: e.g., *belt*; *táble*; *Óxford*) are adapted as (σ́:)(σ́σ).[7] In (6b), English words with triconsonantal cluster

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[5] MAX-STRESS is always enforced unless loanwords undergo nativization (Kumagai 2014).

[6] This paper uses local conjunction of OT, but Kenstowicz (2007) accounts for this by proposing Prosodic Prominence (PP) Hierarchy and related constraints in which violations are given by counting the total number of steps along the hierarchy.

[7] Note that word-final consonant clusters are sometimes subject to deletion (Schütz 1978, 2004).

in onset position (CCCVC: e.g., *spring*; *strike*; *scrum*) are adapted as (σ̀σ)(σ́σ). While the forms in (6a, 6b) preserve the primary stress of the original word, they have an epenthetic vowel that lies in the head of the foot.

(6)   Violation of {DEP-V&S}

	English CVCC	→	Fijian (σː)(σ́σ)		English CCCVC	→	Fijian (σ̀σ)(σ́σ)
a.	belt	→	(bèː)(léti)	b.	spring	→	(sìβi)(ríŋi)
	táble	→	(tèː)(péli)		strike	→	(sìta)(ráke)
	Óxford	→	(òː)(kòsi)(βóte)		scrum	→	(sìka)(rámu)

Tableau (7) shows that {DEP-V&S} is ranked below Align-Wd[+min]-R. For the optimal candidate *(bèː)(léti)*, the penultimate syllable receives stress despite containing an epenthetic vowel, which leads to a violation of {DEP-V&S}.

(7)   Align-Wd-R[+min] » {DEP-V&S}

/be$_1$lt/	Align-Wd[+min]-R	DEP-V&S
→ (bèː$_1$)(lé$_2$ti$_3$)		$_1$(é$_2$)
(bé$_1$le$_2$)ti$_3$	W$_1$	L

In Fijian, two consecutive moras must not be left unfooted in native words and loanwords (Kenstowicz 2007). This can be expressed by LAPSE-2[+min], which penalizes a sequence of two unstressed moras (or syllables) of the word not separated by a Foot[+min] boundary. Tableau (8) shows that {DEP-V&S} is outranked by LAPSE-2[+min]. The optimal candidate *(sìta)(ráke)* incurs violations of {DEP-V&S}, as the epenthetic vowel in the first syllable is assigned stress. Note that the losing candidate *sita(ráke)* has two consecutive unfooted moras, which means a violation of LAPSE-2[+min].

(8)   LAPSE-2[+min] » {DEP-V&S}

/stri$_3$ke/	LAPSE-2[+min]	DEP-V&S
si$_1$ta$_2$(rá$_3$ke$_4$)	W$_1$	L
→ (sì$_1$ta$_2$)(rá$_3$ke$_4$)		$_1$(ì$_1$)

The third requirement is that inherited short vowels are disallowed from receiving stress and undergoing lengthening. This can be expressed as {DEP-STRESS&DEP-MORA} (abbr. {DEP-S&M}) (Kumagai 2015). In definition, {DEP-S&M} is violated if a vowel is stressed and lengthened in the output. It should be noted that this condition is also violable. Examples in (9) show that the inherited short vowel in the final syllable is stressed and lengthened in the adapted form.

(9)   Violation of {DEP-S&M}

English		Fijian	English		Fijian
táxi	→	(tèke)(síː)	rúgby	→	(ràka)(βíː)
Málta	→	(mòlo)(tá)	úlser	→	(àla)(sá)
pláster	→	pa(làsi)(tá)	chémistry	→	(kèː)(mìsi)ti(ríː)

Tableau (10) shows that {DEP-S&M} is ranked below {DEP-V&S}. For the optimal candidate *(tèke)(síː)*, the lengthened vowel in the final syllable violates {DEP-S&M}, while there is no violation of {DEP-V&S} since it has no stressed epenthetic vowels. For the losing candidate *(tèː)(kési)*, the epenthetic vowel on the penultimate syllable receives stress, which invites a violation of {DEP-V&S}, while there is no violation of {DEP-S&M}.

(10)   {DEP-V&S} » {DEP-S&M}

/$tá_1xi_3$/	DEP-V&S	DEP-S&M
→ ($tè_1ke_2$)($síː_3$)		$_1$($íː_3$)
($tèː_1$)($ké_2si_3$)	W_1($é_2$)	L

Furthermore, epenthetic vowels are prohibited from undergoing lengthening. Since long vowels are invariably stressed in Fijian, this condition can be rephrased as disallowing epenthetic vowels from receiving stress and undergoing lengthening. This condition is, in most cases, enforced in Fijian loanword adaptation.

2.3.   Recursive Feet in Fijian

This section expounds how recursive feet are formed in Fijian. Recursive structures in phonology are possible, as the advent of OT allows constraints to be violable (see Selkirk 1996, 2009, 2011 for details). However, the recursive structures of Syllable and Feet are still viewed as impossible (Itô and Mester 2009:145) or as an open question (Kabak and Revithiadou 2009:105). Nevertheless, Martínez-Paricio (2012, 2013) proposes that feet display maximal/minimal projections, accounting for the phonological processes observed in various languages. For instance, Wargamay allows a stray syllable to be incorporated into the following trochaic foot, thereby forming a recursive foot (i.e., σ(σ́σ) → <σ(σ́σ)>, where the parentheses denote a non-recursive foot, and angle brackets denote a recursive foot). This allows us to make a generalization that vowel lengthening takes place at the head of the recursive foot. Constructing recursive feet is a useful tool to account for the process.

This paper proposes that Fijian exhibits foot projections, showing that they play a role in accounting for copy epenthesis in English loanwords. The paper uses "hidden phonology" in its title because it assumes that a language with trochaic feet has the potential to form recursive feet, even if it does not put in an appearance

in the native phonology of the language. Since Fijian, like Wargamay, forms trochaic feet, it can make use of foot projections, though there is as yet no evidence of it in native Fijian phonology.

For the original prosodic projection theory (Itô and Mester 2007 et seq.), prosodic categories are allowed to show maximal/minimal projection and a head/non-head. Definitions of a recursive category α are offered in (11).

(11)   Definitions (Itô and Mester 2007 et seq.)
   a.   Maximal projection of α: α not dominated by α
   b.   Minimal projection of α: α not dominating α

With two binary features [±max] and [±min], four types of a prosodic category α are illustrated in (12).[8] A category α in (12a) involves no projection, as it neither dominates nor is dominated by the same prosodic category α. That is, it can be referred to as α[+max][+min]. The minimal projection α in (12b) can be referred to as α[–max][+min], as it does not dominate α but dominates another prosodic category α-1, while it is dominated by α. The maximal projection α in (12b) can be referred to as α[+max][–min], as it shows opposite features to the minimal projection α, that is, it is not dominated by α but by another prosodic category α+1 while it dominates α. An intermediate projection α in (12b) dominates and is dominated by α, and thus it can be referred to as α[–max][–min].

(12)   a.   b.
                                              α+1
                                                |
                α+1 α ←   [+max][–min]
                  | | the maximal projection
                α ←   [+max][+min] α ←   [–max][–min]
                  | no projection | an intermediate projection
                α-1 α ←   [–max][+min]
                                                | the minimal projection
                                              α-1

Martínez-Paricio (2012, 2013) expands on Itô and Mester's theory, suggesting that feet can also be recursive. Projection of feet is defined in (13) and illustrated in (14).

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[8] α[+max] refers to a prosodic category α not dominated by another α. α[+min] refers to a prosodic category α that dominates no α. α[–max] refers to a prosodic category α dominated by another α. α[–min] refers to a prosodic category α that dominates the same category α.

(13)   Definitions of projection of feet (Φ) (Martínez-Paricio 2012:264)
    a.   Maximal projection of Φ: Φ not dominated by Φ
    b.   Minimal projection of Φ: Φ not dominating Φ

(14)   Projections of Foot (Φ)
    a.   b.

Φ   [+max][−min]
   Φ   [−max][+min]   Φ   [+max][+min]
σ́   σσ   σσ

    c.

Φ   [+max][−min]
   Φ   [−max][−min]
      Φ   [−max][+min]
σ́   σ   σσ
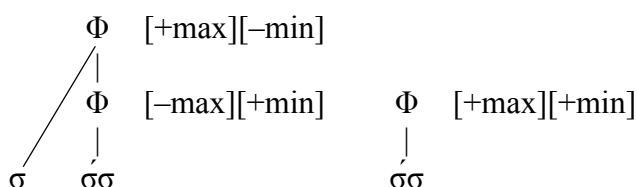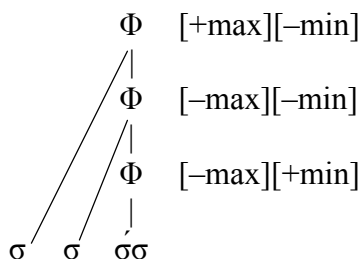
Suppose, here, a language with trochaic feet. With two binary features [±max] and [±min], four types of feet are illustrated in (14). Foot[+min] is referred to as a minimal foot, and Foot[−min] as a recursive foot. Foot[+max][−min] in (14a) is a foot that dominates another foot, but is not dominated by other feet. Foot[−max][+min] in (14a) is dominated by a recursive foot, but dominates no feet. Foot[+max][+min] in (14b) neither dominates any feet nor is dominated by any feet. Foot[−max][−min] in (14c) is dominated by a recursive foot, and dominates another foot. In Fijian, the structures in (14a) and (14b) are allowed, but the structure in (14c) is disallowed because of LAPSE-2[+min].[9]

3.   Vowel Copy in Fijian Loanword Adaptation

This section proposes three conditions on copy epenthesis in Fijian, and then looks at how they work to determine the target of vowel copy. There are three conditions of copy epenthesis in Fijian loanword adaptation. The first condition is that the copied vowel must be adjacent to the copying vowel. Given that an epenthetic

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[9] In fact, Martínez-Paricio (2013) mentioned that the structure in (14c) might be improbable in natural language, due to the joint effect of other prosodic constraints (e.g., LAPSE; EXHAUSTIVITY).

vowel ($\underline{v}$) is inserted in a hypothetical form $CV_2CV_1C\underline{v}CV_1CV_2$, copying V_1 is favored over copying V_2 because the epenthetic vowel is closer to V_1 than to V_2.[10]

The second condition is that the copied vowel must have a correspondent in the input. A significant consequence of this condition is that epenthetic vowels are prohibited from interacting with each other. In other words, each of the epenthetic vowels involving vowel copy is determined independent of each.

The third condition requires copy epenthesis to occur within the Foot [±max/±min] to which the epenthetic vowel belongs. This means that foot structure plays a role in delimiting the domain of vowel copy. This proposal takes recourse to the assumption made in Nespor and Vogel (1986/2007) that prosodic categories involve the domain of phonological processes.

The three conditions are summarized in (15). In this paper, we refer to each condition as ADJACENCY CONDITION, BASE CONDITION, and FOOT CONDITION, respectively.

(15)   Vowel Copy Conditions
    a.   ADJACENCY CONDITION
        Interacting segments are required to be as close as possible.
    b.   BASE CONDITION
        Copy an inherited vowel.
    c.   FOOT CONDITION
        Copy a vowel within the Foot[±max/±min] to which the epenthetic vowel belongs.

Importantly, while ADJACENCY and BASE are inviolable, FOOT COND is violated only if the foot containing an epenthetic vowel also contains another. For the rest of this section, we will look at three types of vowel copy observed in Fijian loanwords.

(16)   Three types of vowel copy in Fijian loanwords

	ADJACENCY	BASE	FOOT	Domain of vowel copy
Type I	Enforced	Enforced	Enforced	Foot[+min]
Type II	Enforced	Enforced	Enforced	Foot[−min]
Type III	Enforced	Enforced	Violated	-

Illustrative examples of Type I are provided in (17). In (17a), when an epenthetic vowel is inserted in the word-final position, it is incorporated into a Foot[+min] with the preceding vowel. The epenthetic vowel copies the preceding non-epenthetic vowel within the Foot[+min] to which it belongs. In (17b, c, d), vowel epenthesis is found in the word-medial position. A vowel is inserted in a

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[10] This condition can also be referred to as Locality or Adjacency Condition (e.g., Kitto and de Lacy 1999; Kawahara 2004).

sonority-falling cluster /lt, lβ/ in (17b), but in a sonority-rising cluster /pr, kβ, ŋl, kr, tr/ in (17c, d). Despite this difference, the preceding vowel of the epenthetic vowel is copied in (17b, c), but the following vowel is copied in (17d). How can these differences be accounted for? An advantage of the FOOT CONDITION is that it provides a simple account for the target of vowel copy in these cases: copy a vowel within the Foot[±max/±min] to which the epenthetic vowel belongs.

(17)   Type I (Relevant epenthetic vowels italicized)

	English		Fijian		English		Fijian
a.	cake	→	(kék*e*)	b.	Málta	→	(mòl*o*)(táː)
	mark	→	(mák*a*)		vélvet	→	(βèl*e*)(βéti)
	ball	→	(pól*o*)		álto	→	(àl*a*)(tóː)
c.	Fébruary	→	(fèp*e*)<ru(éri)>	d.	Mìcronésia	→	(mài)(kòro)<ne(sía)>
	rúgby	→	(ràk*a*)(βíː)		Métropole	→	(mèː)(tòro)(pólo)
	Éngland	→	(ìŋ*i*)(ládi)		nítrogen	→	(nài)(tòro)(ʧíni)

    Type II allows vowel copy to take place within the maximal feet. The epenthetic vowel in the examples (18a) copies the following vowel, which enforces FOOT COND in the sense that copying vowels occurs within the foot.[11] The data (18b) highlights the present proposal with recursive feet. Though the epenthetic vowel in the examples shown in (18b) has two options to determine the target of the vowel copy (i.e. the preceding or following vowel), it copies the following rather than the preceding vowel because FOOT COND requires that vowel copy occur within the foot. The data in (18b) show that maximal feet help in circumscribing the domain in which vowel copy applies.

(18)   Type II (Relevant epenthetic vowels italicized)

	English		Fijian		English		Fijian
a.	bróther	→	<b*a*(ráða)>	b.	télegram	→	(tàli)<k*a*(rámu)>
	pláster	→	<p*a*(làsi)>(táː)		geógraphy	→	(ʧòː)<k*a*(ráβi)>
	train	→	<t*e*(réni)>		télegraph	→	(tàle)<k*a*(ráβu)>
	trump	→	<t*a*(rábu)>		prógram	→	<po(ròː)><k*a*(rámu)>[12]
	cross	→	<k*o*(lósi)>		páragraph	→	(pàra)<k*a*(ráβu)>
	cream	→	<k*i*(rímu)>		núclear	→	(nìu)<k*i*(lía)>

    In Type III, FOOT COND is violated while the other two conditions are enforced. This type can be found in English source words with word-final bi- or word-initial tri-consonantal clusters, as illustrated in (19). These words form a foot containing two epenthetic vowels. Due to BASE, these vowels do not copy each

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[11] There are also examples to which assimilation, rather than vowel copy, applies (e.g., *block* → *buloko*; **boloko*).
[12] We can also find another form *paròːkarámu* in our database.

other in Fijian. Thus, vowel copy takes place across the foot boundary of the minimal foot.

(19)　　Type III (Relevant epenthetic vowels italicized)

	English		Fijian		English		Fijian
a.	belt	→	(bè:)(l*é*ti)	b.	spring	→	(sìβi)(ríŋi)
	táble	→	(tè:)(p*é*li)		strike	→	(sìt*a*)(ráke)
	Óxford	→	(ò:)(kòsi)(βóte)		scrum	→	(sìk*a*)(rámu)

It can be concluded that, while ADJACENCY and BASE are inviolable, FOOT COND is sometimes violable. This can be analyzed in OT shown in (20).

(20)　　Tableau

			Copied Vowel	ADJACENCY	BASE	FOOT COND
→	/belt/	(bè:$_1$)(lé$_2$ti$_3$)	e$_1$			*
		(bè:$_1$)(lí$_2$ti$_3$)	i$_3$		*!	
→	/strike/	(sì$_1$ta$_2$)(rá$_3$ke$_4$)	a$_3$			*
		(sì$_1$ti$_2$)(rá$_3$ke$_4$)	i$_1$		*!	
		(sì$_1$ti$_2$)(rá$_3$ke$_4$)	e$_4$	*!	*!	
→	/Óxford/	(ò:$_1$)(kò$_2$si$_3$)(βó$_4$te$_5$)	o$_1$			*
		(ò:$_1$)(kì$_2$si$_3$)(βó$_4$te$_5$)	i$_3$		*!	
		(ò:$_1$)(kò$_2$si$_3$)(βó$_4$te$_5$)	o$_4$	*!		*

To summarize, we saw three types of vowel copy in Fijian loanwords. For Type I, the epenthetic vowel copies the vowel within the minimal foot (Foot[+min]) where it belongs. For Type II, vowel copy occurs within the recursive foot (Foot[−min]). For Type III, the epenthetic vowel copies the vowel across the boundary of the minimal foot where it belongs, in order to enforce BASE. This type suggests that, while ADJACENCY and BASE are inviolable, FOOT COND is violable.[13]

4.　　Conclusion

This paper addressed the issue concerning the target of vowel copy in Fijian. When a vowel is epenthesized in the word-medial position, it targets its preceding vowel in some cases but its following vowel in others. The target of vowel copy is bidirectional, and is also unpredictable from the sonority sequence of consonant clusters sandwiching the epenthetic vowel. The paper proposed that Fijian constructs recursive feet, which play an important role in predicting the target of vowel copy. The proposal is that vowel copy occurs within the maximal/minimal

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[13] This paper omits a discussion of non-recursion-based analyses. Interested readers should see Kumagai (2016b).

feet to which the epenthetic vowel belongs, except that the target vowel per se is an epenthetic vowel.

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THE EVENT STRUCTURE OF AMIS INTRANSITIVE MANNER/RESULT VERBS: A LEXICALIST ANALYSIS [*]

Jonathan Kuo
Academia Sinica
kuojona@gmail.com

This paper identifies manner/result root categories in Amis and discusses how they conspire with a pair of verbal morphology *mi-/ma-* to determine the argument structure of the derived verb. In Amis, *ma-* has been reported to crosscut actor voice and undergoer voice functions. This paper argues for the need to distinguish "undergoer voice" *ma-* verbs from other voice-marked transitive verbs given the optionality of the genitive participant in the former. The intransitive analysis of *ma-* verbs results in the seemingly lack of difference between manner and result verbs. To solve this puzzle, I justify manner/result complementarity based on a felicity judgment task involving a construction free from the influence of voice morphology. Adopting the lexicalist approach, I analyze *mi-* and *ma-* as primitive predicates ACT and BECOME, respectively. *Mi-*$\sqrt{}_{manner}$ and *ma-*$\sqrt{}_{result}$ verbs have a simple event structure, whereas *mi-*$\sqrt{}_{result}$ verbs are formed as a result of template augmentation. The presence of *ma-*$\sqrt{}_{manner}$ verbs is not predicted under this framework due to the violation of well-formedness conditions. I draw insights from syntactic approaches to causer exclusivity and discuss the possibility of *ma-*$\sqrt{}_{manner}$ verbs to develop as an innovation.

1.   Introduction

Many studies on argument/event structure acknowledge MANNER/RESULT dichotomy as a fundamental contrast (e.g. Rappaport Hovav and Levin 1998; Embick 2004; Harley 2005; Alexiadou et al. 2015). For example, result verbs in English allow causative/inchoative alternation. Example (1) illustrates labile alternation in English in terms of Haspelmath 1993, characterized by the use of the same coding (e.g. zero) for the causative and inchoative variants.

(1) a. *John **broke** the ball*. (cf. *John **hit** the ball*.)   CAUSATIVE
    b. *The ball **broke***.   (cf. **The ball **hit***.)   INCHOATIVE

Amis exhibits a symmetrical voice system (Himmelmann 2005) and manifests equipollent alternation, as shown in (2).[1] Following the ergative analysis, I use

AV/UV labels to indicate syntactic intransitivity/transitivity, and identify nominative-oblique and genitive-nominative case frames accordingly.[2]

(2) a. **Mi-fawah** ø-ci   aki   t-u-ra   sasingaran.   CAUSATIVE
        AV-open   NOM-PN Aki OBL-CN-that   window
        'Aki opened that window.'

    b. **Ma-fawah** k-u-ra   sasingaran.   INCHOATIVE
        AV-open   NOM-CN-that window
        'That window opened'

   b'. Ma-fawah   n-i   aki   k-u-ra   sasingaran.   CAUSATIVE?
        UV-open   GEN- PN Aki   NOM-CN-that   window
        'Aki opened the window.'

Examples (2a-b) demonstrate an ideal parallel of English causative/inchoative alternation, if not for (2b'): the *mi-* result verb 'open' corresponds with the causative variant whereas the *ma-* counterpart appear to correspond with the inchoative variant. Example (2b') shows the heterogeneity of *ma-* in Amis: among all voice markers, *ma-* is found to crosscut actor voice and undergoer voice.

      In this study, I show that the transitive analysis of *ma-* verbs (Wu 2007) is weakened given the optionality of the genitive-marked participant. The argument structure of AV and "UV" *ma-* verbs can be unified under the intransitive view, which holds for both manner and result roots. For expository and comparative purposes, I present *mi-/ma-* voice alternation of both manner and result verbs below.

(3) a. Mi-palu ø-ci   aki   t-u-ra   tamdaw.   NOM-OBL
        AV-beat   NOM-PN Aki OBL-CN-that   person
        'Aki is beating that person.'

    b. Ma-palu   (n-i   aki)   k-u-ra   tamdaw.   (GEN)-NOM
        AV-beat   GEN-PN Aki   NOM-CN-that   person
        'That person was beaten (by Aki).'

(4) a. Mi-fawah ø-ci   aki   t-u-ra   sasingaran.   NOM-OBL
        AV-open   NOM-PN Aki OBL-CN-that   window
        'Aki opened that window.'

    b. Ma-fawah (n-i   aki)   k-u-ra   sasingaran.   (GEN)-NOM
        AV-open   GEN- PN Aki   NOM-CN-that window
        'That window opened' or 'That window was opened (by Aki).'

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[1] Amis is the largest Formosan language, primarily spoken on the east coast of Taiwan. The data presented in this study come from the Central dialect.
[2] The following non-Leipzig abbreviations are used in the glossing: AV-actor voice, CN-common noun marker, PN-personal/proper noun marker, UV-undergoer voice.

Examples (3) and (4) together make two important points. First, both *mi-* and *ma-* are AV in terms of syntactic intransitivity, regardless of root categories and case frames. Second, manner and result verbs in Amis have the same morphosyntactic behavior: both allow *mi-/ma-* alternation, with their derivatives having identical case frames—an apparent counterexample for the existence of manner/result dichotomy.

This study aims to solve the puzzle regarding the function of two actor voice markers *mi-* and *ma-*, and the seemingly lack of manner/result opposition in Amis. Adopting the predicate decomposition approach, I analyze *mi-* and *ma-* as distinct primitive predicates ACT and BECOME in terms of Rappaport Hovav and Levin (RH&L) 1998. Accordingly, Amis *mi-*$\sqrt{}_{\text{manner}}$ verbs and *ma-*$\sqrt{}_{\text{result}}$ verbs involve a simple event structure, and select actor and undergoer as the nominative argument, respectively. *Mi-*$\sqrt{}_{\text{result}}$ verbs involve a complex event structure via template augmentation. I further show that the presence of *ma-*$\sqrt{}_{\text{manner}}$ verbs is undesirable within the lexicalist analysis.

The study is organized as follows: section 2 presents the theoretical orientation of this study. Section 3 reexamines the heterogeneity of *ma-* in Amis and proposes an intransitive view on *ma-* verbs with the GEN-NOM case frame, followed by the justification of manner/result complementarity. In section 4, I lay out my main analyses of three of the four voice-marked manner/result verbs, and identify *ma-*$\sqrt{}_{\text{manner}}$ verbs as an exceptional case. Section 5 discusses the theoretical foundation for the emergence of GEN-NOM case frame for *ma-* verbs, which might further motivate the formation of *ma-*$\sqrt{}_{\text{manner}}$ verbs. Section 6 concludes the study.

2.   Manner vs. Result Verbs: RH&L's Decomposition Approach

Intuitively speaking, manner verbs (e.g. 'hit') specify as part of their meaning a manner in which an action is carried out, while result verbs (e.g. 'break') specify a result state. The manner/result dichotomy is grammatically relevant as it gives rise to distinct argument realization patterns (Fillmore 1970; RH&L 1998). For example, the two verb types in English differ with respect to the acceptability of unspecified and non-subcategorized object, and the compatibility with causative/inchoative alternation, as shown below.

(5) a. *Shelly swept/scratched/**hit**/carved/sewed/knit.*
    b. **Kelly **broke**/dimmed/filled/covered/obtained/inserted.*
       (Alexiadou and Anagnostopoulou 2013)

(6) a. *John **hit** the ball/*The ball **hit**.*
    b. *John **broke** the ball/The ball **broke**.*

The argument realization difference between manner and result verbs has been addressed in various frameworks (RH&L 1998; Embick 2004; Harley 2005;

Alexiadou et al. 2015; inter alia). The theoretical orientation of this study is based on RH&L 1998 and subsequent work. In their framework, a predicate decomposition is made up of two major types of components. A ROOT represents the idiosyncratic element of meaning and has an ontological categorization, whereas PRIMITIVE PREDICATES are responsible for the event structure template. The ontological type of a root is crucial as it determines the basic association with a particular event structure. The LEXICALIZATION CONSTRAINT drawn from a set of canonical realization rules is provided in (7).

(7)   The lexicalization constraint: A root can only be associated with one primitive predicate in an event schema, either as an argument or a modifier. (RH&L 2010:25)

RH&L argue that manner roots modify the predicate ACT and result roots are arguments of BECOME. The event structure of English manner and result verbs is summarized below:

(8)   Manner/result complementarity in English
   a.   manner verbs:
        [x ACT <*MANNER*> y]   (e.g. *John swept* (*the floor*).)
   b.   cause-unspecified result verbs:
        [y BECOME <*RESULT*>]   (e.g. *The window broke*$_{\text{ITR}}$.)
   b'. externally caused result verbs:
        [[x ACT] CAUSE [y BECOME <*RESULT*>]] (e.g. *John broke*$_{\text{TR}}$ *the window*.)

The labels x and y represent actor and non-actor participants. In (8b'), both x and y are instances of STRUCTURE PARTICIPANTS, characterized by their association with the primitive predicates ACT and BECOME. In addition, RH&L address the possibility of an undergoer to appear as a ROOT PARTICIPANT (underlined in (8a)). Compared to the structure participant, which must be realized, a root participant can be left unexpressed, hence the contrast between manner/result verbs in (5). As for causative/inchoative alternation, I propose, following RH&L (2012), that cause-unspecified result verbs involve a simple event structure, whereas externally-caused result verbs involve a complex event structure; compare (8b) and (8b'). The result category is associated with the undergoer by default; the actor/causer is incorporated into the event via TEMPLATE AUGMENTATION (RH&L 1998:111).[3]

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[3] RH&L (2012) abandon the decausativization view proposed previously in L&RH (1995:108) and argue instead that the anticausative/inchoative form of the verb is basic.

3. The Argument Structure of Intransitive Manner/Result Verbs in Amis

3.1. Revisiting UV *ma-* Verbs in Amis

The heterogeneity of *ma-* in Amis has long been discussed in the literature (Liu 2003; Wu 2006; Huang and Sung 2008; Tsukida 2008; inter alia). Here, I focus on the curious finding that *ma-* appears to crosscut AV and UV functions. For expository purpose, I assume the ergative analysis of voice system and case marking in Amis (Wu 2006:451): AV verbs are syntactically intransitive whereas UV verbs are syntactically transitive. (9a) exemplifies the cases where *ma-* falls into the AV category for having the NOM-OBL case frame; (9b) suggests a UV analysis of *ma-* in other cases because of the GEN-NOM case frame.

(9) a. **Ma**-ulah kaku   t-u-ra   wawa.   NOM-OBL
        AV-like 1SG.NOM OBL-CN-that child
        'I like that child'

   a' Mi-kilim kaku   t-u-ra   wawa.   NOM-OBL
        AV-search 1SG.NOM OBL-CN-that child
        'I am looking for that child.'

   b. **Ma**-palu aku   k-u-ra   wawa.   GEN-NOM
        UV-beat 1SG.GEN NOM-CN-that child
        'I beat that child.'

   b'. Kilim-en aku   k-u-ra   wawa   GEN-NOM
        search-UV 1SG.GEN NOM-CN-that child
        'I will seek the boy (for sure).'

The role of *ma-* within the non-actor voice (NAV) category can be further specified: it has been analyzed as a patient voice (PV) (or plain undergoer voice in Wu 2007) marker due to shared semantic/thematic correspondence with *-en*, as opposed to the locative/instrumental voice markers. In discussing the differences between *ma-* and *-en*, Zeitoun et al. (1996) maintain that the two markers produce distinct tense readings: past vs. nonpast (see (9b) vs. (9b')). Wu (2007) points out that the default tense-aspect-modality reading carried by a voice marker can be neutralized, and argues instead that the fundamental difference between *ma-* and *-en* verbs lies in the degree of agentivity. Examples (10a) and (10c) show that *ma-* verbs may allow either an agent or a non-volitional causer; (10b) and (10d) suggests that volitionality is an essential part of the logical structure of *-en* verbs.

(10) a. Ma-patay n-i   sawmah k-u-ra   wacu.
        UV-dead   GEN-PN Sawmah NOM-CN-that dog
        'Sawmah killed that dog.'

    b. Patay-en n-i   sawmah k-u-ra   wacu.
        dead-UV   GEN-PN Sawmah NOM-CN-that dog
        'Sawmah will kill that dog (for sure).'

   c. Ma-patay n-u   kalapiyat k-u-ra   wacu.
      UV-dead   GEN-CN lightning NOM-CN-that dog
      'The lightning killed the dog.'
   d. *Patay-en   n-u   kalapiyat k-u-ra   wacu.
      dead-UV   GEN-CN lightning NOM-CN-that dog
      Intended for 'The lightning will kill that dog (for sure).'

I shall come back to the difference between the agent and the causer in section 5. Here, I point out another significant difference between PV *ma-* verbs and *-en* verbs. Unlike typical NAV verbs, whose genitive-marked actor/causer is obligatory, *ma-* verbs actually allow their genitive participant to be left unexpressed.[4] Consider (11).

(11) a. Q: Ma-ma'an k-u-ra   fafuy? b. Q: Ma-ma'an k-u-ra   wacu?
        MA-what NOM-CN-that pig   MA-what NOM-CN-that dog
        'What happened to that pig?'   'What happened to that dog?'
      A: **Ma**-adup (n-i   aki)   A: **Ma**-patay (n-u   kalapiyat)
        AV-hunt   GEN-PN Aki   AV-dead   GEN-CN lightning
        k-u   fafuy.   k-u   wacu.
        NOM-CN pig   NOM-CN dog
        'The pig was hunted (by Aki).'   'The dog died (from lightning).'

The role of *ma-* in the interrogative verb *ma-ma'an* will be made clear in section 4. In (11), both the question and the answer parts indicate the grammaticality of *ma-* verbs without the genitive participant. One-argument *ma-* verbs provide a dilemma regarding *ma-*'s glossing: the UV (or PV) glossing (e.g. (9)-(10)) better reflects the thematic correspondence as well as the GEN-NOM case frame; the AV glossing better accommodates syntactic intransitivity, thereby distinguishing *ma-* verbs from

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[4] Typical NAV verbs presuppose the participation of a genitive argument under the ergative analysis. However, I should point out that in Amis, PV *-en* verbs sometimes may occur without a genitive participant. Consider (i) for example.

(i) tangtang-en (isu)   k-u-ra   tali!
   cook-PV   2SG.GEN NOM-CN-that taro
   '(You) cook that taro!'

      The optionality of the genitive participant in cases such as (i) reflects the use of *-en* in imperative constructions, where the agent is often left unexpressed because its referent can readily be identified by context (i.e. the addressee). Embracing the agentivity of *-en* verbs as shown in (10) and (i), I do not take Amis *-en* verbs to be intransitive. The difference between *ma-* and *-en* verbs may also be supported by Tsukida's (2008:288) survey of texts: in which she found 47 percent of the *ma-* verbs occur without the genitive participant, whereas only 14 percent of the *-en* declarative sentences occur without the genitive participant.

typical NAV verbs (Tsukida 2008).[5] Embracing an intransitive view on *ma-* verbs, I change *ma-*'s glossing from UV to AV (and adjust the English free translation accordingly) in (11) and the following examples.

3.2. Manner/Result Complementarity in Amis

The intransitive analysis of *ma-* verbs in Amis nevertheless creates what seems to be an unexpected consequence from the perspective of manner/result dichotomy. The following examples show that both manner verbs and result verbs allow either *mi-* or *ma-* affixation, and accordingly have the same syntactic behavior in terms of case marking and the selection of the nominative argument.

(12) a. Mi-palu   ø-ci   aki t-u-ra   tamdaw.   NOM-OBL
      AV-beat   NOM-PN Aki OBL-CN-that person
      'Aki is beating that person.'
   b. Mi-fawah ø-ci   aki t-u-ra   sasingaran.   NOM-OBL
      AV-open   NOM-PN Aki OBL-CN-that   window
      'Aki opened that window.'

(13) a. Ma-palu   (n-i   aki) k-u-ra   tamdaw.   (GEN)-NOM
      AV-beat   GEN-PN Aki NOM-CN-that person
      'That person was beaten (by Aki).'
   b. Ma-fawah (n-i   aki) k-u-ra   sasingaran.   (GEN)-NOM
      AV-open   GEN-PN Aki NOM-CN-that window
      'That window opened' or 'That window was opened (by Aki).'

I argue that Amis manifests manner/result complementarity at the root level, with the contrast neutralized as a result of voice affixation. Ideally, the empirical support for root categories should come from constructions free from the effect of voice morphology. Inspired by Wu's (2006) diagnostic based on ideophone-forming constructions, I develop a novel test to justify manner/result complementarity in Amis. Consider the following example.

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[5] If the syntactic intransitivity of *ma-* manner verbs holds, it challenges Wu's (2007) "dual presence" analysis of *ma-*, which recognizes both AV and UV usage for result roots, but identifies only the UV usage for activity-denoting roots. See Huang and Sung (2008:175-179) and Jiang (2011) for a similar criticism.

(14)   Context: the participant responsible for the event unknown to the responder
a. Felicity judgment on "√_{manner} *sanay*"   b. Felicity judgment on "√_{result} *sanay*"
Q: Cima ku mi-palu-ay tu   tamdaw?   Q: Cima ku mi-fawah-ay tu   sasingaran?
    who NOM AV-beat-AY OBL person   who NOM AV-open-AY OBL window
    'Who beat the person?'   'Who opened the window?'
A: Ca'ay ka-fana', **#palu sanay**.   A: Ca'ay ka-fana', **fawah sanay**.
    NEG   KA-know beat like.that   NEG   KA-know open   like.that
    '(I) don't know. (He) was just beaten   '(I) don't know. (It) just opened
    like that.'   like that.'

The diagnostic begins with a content question involving a pseudo-cleft construction, with *cima* 'who' as the nominal predicate, followed by the headless relative clause. The embedded verb takes the *mi-* marker to indicate the external argument of the event in discussion, and the "factual" marker *-ay* for the modification function (Wu 2006). The answer part starting with 'I don't know' is particularly designed to specify the context that the responder has no knowledge about the participant responsible for the bringing about of the event. As shown in (14), my consultants come up with different judgments about the "√ *sanay*" construction: it is not felicitous for roots like *palu* 'beat', but appropriate for others like *fawah* 'open'.

　　　　The √ *sanay* construction provides the proper context in which the basic event template of manner/result roots can be detected free from the contamination of voice marking. The outcome of the felicity judgment fits nicely with RH&L's proposal. The felicity of √_{result} *sanay* is supported by the association between the undergoer y and predicate BECOME. The oddity of √_{manner} *sanay* arises from the affinity of manner roots with the actor.

4.　　　The Proposed Analysis

I analyze *mi-* and *ma-* as distinct primitive predicates ACT and BECOME in terms of RH&L 1998 according to their respective association with structure participants x and y. Further support of this analysis comes from the interpretation of a pair of interrogative verbs with *mi-/ma-* marking. As shown in (15), for the root *ma'an* 'what'—which presumably falls out the scope of manner/result categorization—*mi-* affixation derives the interrogative verb questioning about the activity ('do what'), whereas *ma-* affixation derives "the other verb" questioning about the becoming of the argument ('what happened').

(15) a. Mi-ma'an   Ø-ci   lisin?
         ACT-what   NOM-PN   Lisin
         'What is Lisin doing?'
     b. Ma-ma'an   Ø-ci   lisin?
         BECOME-what   NOM-PN   Lisin
         'What happened to Lisin?'

Similar views on *mi-/ma-* from a semantic perspective have been proposed in some other studies (Tsukida 2008; Lin 2015; Kuo 2015). In this study, the identification of so-called actor voice markers as primitive predicates enables a lexicalist analysis parallel to that of English manner/result verbs. The event structure template of Amis *mi-*√$_{manner}$ verbs and *ma-*√$_{result}$ verbs is shown in (16).

(16)   Amis *mi-/ma-* verbs with a simple event structure:
     a. *mi-*√$_{manner}$ verbs: [x ACT<*MANNER*> y]   (e.g. (12a))
     b. *ma-*√$_{result}$ verbs: [y BECOME <*RESULT*>]   (e.g. (13b))

As mentioned in section 2, the two ontological categories differ in their lexicalized meaning: a manner root modifies the ACT predicate, thereby selecting the structure participant x; a result root serves as the complement of BECOME, thereby selecting the structure participant y. Importantly, *mi-*√$_{manner}$ and *ma-*√$_{result}$ verbs involve the simple event structure and have only one structure participant, hence the syntactic intransitivity and the selection of actor vs. undergoer as the nominative argument, respectively.

I further argue that *mi-*√$_{result}$ verbs involve an event structure identical to that of the English causative variant. In contrast to *mi-*√$_{manner}$ verbs as in (16a), these verbs involve a complex event structure, with the BECOME subevent as the backbone of the template, and an additional ACT subevent as a result of template augmentation.[6] See (17).

(17)   *mi-*√$_{result}$ verbs: [[x ACT] CAUSE [y BECOME <*RESULT*>]] (e.g. (12b))

So far, I have applied structural decomposition to three of the four voice-marked manner/result verbs, with the remainder of *ma-*√$_{manner}$ verbs. Intuitively, it is tempting to present an analysis of *ma-*√$_{manner}$ parallel to that of *mi-*√$_{result}$ verbs, that is, to propose the involvement of a complex event structure such as (18).

(18)   *ma-*√$_{manner}$ verbs: [[x ACT<*MANNER*>] CAUSE [y BECOME <*RESULT*>]]
     (A problematic analysis for (13a))

The logic of (18) is as follows: *ma-*√$_{manner}$ verbs supposedly have the ACT subevent as the backbone of the template; *ma-* affixation introduces the BECOME subevent as a result of template augmentation. The analysis is however untenable upon

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[6] Note that the surface morpheme is *mi-* alone, rather than *mi-ma-* (or *ma-mi-*), despite the involvement of both ACT and BECOME. The realization of multiple primitive predicates in single morphological marking can be defended. In section 2, I showed that verbs with the same coding (e.g. *break*$_{ITR}$ and *break*$_{TR}$) may have distinct event structures. Within the syntactic approach, where primitive predicates as treated as functional v heads, the fusion of heads is likely to be realized in one vocabulary item (Halle and Marantz 1993).

scrutiny of RH&L's framework. Consider below the two well-formedness conditions which RH&L (1998) deem necessary.

(19)   Subevent identification condition: Each subevent in the event structure must be identified by a lexical head (e.g. a V, an A, or a P) in the syntax.
(RH&L 1998:112)

(20)   Structure participant condition: There must be an argument XP in the syntax for each structure participant in the event structure.
(RH&L 1998:113)

As stated in (19), the augmentation of a subevent crucially relies on the presence of a lexical head in syntax. For example, the resultative reading for *Phil swept*manner *the floor clean*result relies on the secondary predicate *clean*, which identifies the BECOME subevent. The analysis proposed in (18) does not hold because it violates this condition: as shown previously, *ma-*$\sqrt{}$manner verbs alone can license y without the participation of a result root. According to (20), a structure participant must be syntactically realized as an argument. The optionality of x in *ma-*$\sqrt{}$manner verbs challenges the very foundation of the template augmentation analysis, that is, [x ACT<*MANNER*>.] in (18). Given this finding, the actor is not supposed to be associated with the ACT subevent.

The well-formedness of Amis *ma-*$\sqrt{}$manner verbs as well as their origin deserves an independent paper. In the next section, I will briefly discuss the emergence of GEN-NOM case frame for *ma-* verbs, which serves as a prerequisite for my working hypothesis about the formation of *ma-*$\sqrt{}$manner verbs as an innovation.

5.   The Emergence of the GEN-NOM Case Frame for *ma-*$\sqrt{}$manner Verbs

In previous sections, the NOM-OBL and GEN-NOM case frames of Amis *ma-* verbs were presented as if they were always in complementary distribution (for the sake of simplicity). My hypothesis regarding the presence of *ma-*$\sqrt{}$manner verbs is inspired from the finding that a small number of *ma-* verbs allow both case frames.[7]

(21) a. Ma-ulah   kaku   t-u-ra   wawa.   NOM-OBL
       BE-like   1SG.NOM   OBL-CN-that   child
       'I like that child.'

                                                              * (GEN)-NOM

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[7] As opposed to BECOME, BE is used in (21a) to characterize the presence of *ma-* in verbs denoting a plain state. See Wu (2006) for the tests to distinguish plain states from result states.

    b. Ma-palu   (aku)   k-u-ra   wawa.   (GEN)-NOM
       BECOME-beat   1SG.GEN   NOM-CN-that child
       'That child was beaten (by me).'

                                                          * NOM-OBL
    c. **Ma-patay**   k-u   oner (t-u   sapaiyu).   NOM-OBL
       BECOME-dead NOM-CN snake OBL-CN medicine
       'The snake died from the medicine/poison.'
    c'. **Ma-patay**   (nira)   k-u   oner.   (GEN)-NOM
        BECOME-dead 3SG.GEN NOM-CN snake
       'The snake died (because of him/her).' or
       'The snake was killed (by him/her).'

Kuo (2015b) analyzes intransitive *ma-√*$_{result}$ verbs as instances of anticausative, and claims that the anticausative *ma-* extended from its original domain (i.e. √$_{result}$) to the other domain (i.e. √$_{manner}$). Space consideration prevents me from presenting the hypothesis in detail. In the remainder of this section, I focus on the theoretical foundation for the emergence of GEN-NOM case frame for *ma-* verbs and sketch my proposal for *ma-√*$_{manner}$ verbs as an innovation. Consider (22) for a careful investigation on the argument structure of *ma-patay*.

(22) a. Ma-patay   k-u   oner (**t-u   sapaiyu**).
        BECOME-dead NOM-CN snake OBL-CN medicine
        'The snake died from the medicine/poison.'
    b. Ma-patay   (**nira**)   k-u   oner.
        BECOME-dead 3SG.GEN NOM-CN snake
        'The snake died (because of him/her).' or
        'The snake was killed (by him/her).'
    b'.*Ma-patay   k-u   oner   **cingranan**.
        BECOME-dead NOM-CN snake   3SG.OBL
        Intended for 'The snake died (because of him/her).' or
        'The snake was killed (by him/her).'

Examples (22a) and (22b) readdress the possibility for a causer to be marked with OBL or GEN. An important observation is drawn from (22b) and (22b'): an animate causer must be marked with GEN.

       In light of the syntactic approaches to causer exclusivity (e.g. Alexiadou 2014; Alexiadou et al. 2006, 2015), I argue that the causer participant of Amis *ma-patay* is always licensed in vP rather than VoiceP regardless of its case marking. The genitive marking for the animate causer is likely to be "borrowed" from the same marking for the agent in typical NAV verbs by analogy. This explains why *ma-patay* with the animate causer can have ambiguous readings with respect to the control of change-of-state event (i.e. 'die' vs. 'kill'). In my hypothesis, I argue for the extension of the resultative usage of *ma-* to manner roots, motivated by the

surface similarity between intransitive *ma-*√$_{result}$ verbs and typical NAV (transitive) verbs in terms of case frame and the selection of the nominative argument.

The current discussion provides a possible scenario to accommodate *ma-*√$_{manner}$ verbs in Amis, whose presence is not predicted by the lexicalist approach, but likely born as a result of change in light of the syntactic approaches to the projection of external arguments. The full elaboration of this hypothesis as well as its verification awaits further investigation. If proven valid, this hypothesis can provide a diachronic account for the heterogeneity of *ma-* in Amis. The treatment of *ma-* as a member of NAV inventory as proposed in synchronic studies of Amis reflects how resultative *ma-* ends up "ACTing" like a transitive because of the encyclopedic meaning of √$_{manner}$.

6.   Conclusion

The present study investigate the argument structure of manner/result verbs in Amis, whose voice alternation results in the same case pattern: NOM-OBL for the *mi-* counterpart and (GEN)-NOM for the *ma-* counterpart. I take this finding as the supporting evidence for an intransitive view on *ma-* verbs across root categories, and argue for the need to examine the functions of so-called actor voice markers *mi-/ma-* in terms of their respective contribution to the event structure. I embrace manner/result complementarity and justify its existence at the root level in Amis based on a felicity judgment task. The identification of *mi-/ma-* as primitive predicates ACT/BECOME enables a decomposition analysis parallel to that of English manner/result verbs. *Mi-*√$_{manner}$ verbs and *ma-*√$_{result}$ verbs have a simple event structure whereas *mi-*√$_{result}$ verbs have a complex event structure as a result of template augmentation. With respect to *ma-*√$_{manner}$ verbs, I discuss a possibility to conceive them as an innovation motivated by the (GEN)-NOM case frame which first originated in the context of intransitive result verbs.

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PHRASAL COPYING IN MALAGASY[*]

Edward L. Keenan
UCLA
edward.keenan1@gmail.com

Baholisoa Ralalaoherivony
Université d'Antananarivo
rabaholy@gmail.com

Paul Law
City University of Hong Kong
paul.law@cityu.edu.hk

Ravaka Julie Razanamampionona
Université d'Antananarivo
julierazanamampionona@gmail.com

1.   Introduction

Here we study *Phrasal Copying* in Malagasy, which productively copies syntactic constituents that are phonologically and semantically interpreted. It differs from *reduplication,* which targets phonologically defined syllable sequences which may have no syntactic or semantic status. Reduplication in Malagasy is fully consistent with the general characterization in Raimy (2011:2383).

Our analysis supports Travis (2001) in which "syntactic reduplication" (our phrasal copying) and reduplication are handled in different components of the grammar. It is most compatible with a traditional approach in which the syntactic component has access to the output of the morphological component, contra the approach in Distributed Morphology (DM) (Halle and Marantz, 1993).

We first, briefly, illustrate the form and interpretation of reduplication and then turn to Phrasal Copying. For an overview of Malagasy reduplication see Keenan and Polinsky (2001:570-574). A more formal and detailed version is Keenan and Razafimamonjy (1998).

(1) a.   bé 'big', bèbé 'fairly big'
         fótsy 'white', fòtsifótsy 'whitish'
    b.   hadíno 'forget', hadìnodíno 'forget a bit'
         latábatra 'table', latàbatábatra 'sort of a table'
    c.   háingana 'quickly', hàingan*k*áingana 'kind of quickly'
         fántatra 'known', fànta*p*ántatra 'known a bit'

Typically the meaning of a reduplicated form is a weakening of its unreduplicated source. Occasionally reduplication has a frequentative meaning (*miteny* 'speaks',

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miteniteny 'jabbers') and reduplication may optionally accompany adjectival comparison: *Faly* (or *falifaly*) *noho Rabe Rasoa* 'Rasoa is happier than Rabe'.

Formally reduplication applies to roots and some active verbs. It is formed by copying the stressed syllable and everything to its right up to the word boundary. Main stress, indicated by ´, shifts rightward as indicated, the original stress reverting to secondary status. The copied sequence of syllables then combines with the base form in accordance with combination rules used elsewhere: (pseudo)object incorporation, compounding and possessive head incorporation (Keenan and Ralalaoherivony 2000). This triggers any of 7 consonant mutations whereby an initial continuant in the copy mutates to its closest non-continuant. (1c) illustrates *h* ⇒ *k* and *f* ⇒ *p*.

Crucially, what is copied phonologically is not in general interpretable semantically and so is not a morpheme, word, or phrase. In (1b) *dino* is not a morpheme in *hadíno* 'forget/forgotten', it is just the end of the root *hadíno* beginning with the stressed syllable. Similarly *tábatra*, the copied part in (1b), is not a word or morpheme.

Many roots are nouns, some are adjectives and most function words are roots. But roots are almost never verbs. They must take voice and tense affixes to function as verbs (Verbs have no person/number agreement). Several verbal roots are not meaningful units: Thus *omé* 'give' is not a morpheme, but *maN+omé = manomé* is the present tense active verb 'give' and its reduplicated form is *manomèmé*. *maN* itself = *m+aN*, where *aN* is an active voice marker and *m* alternates with past tense *n* and future/irrealis *h*. From *manomèmé* we cannot tell if we have reduplicated the simple active form – Dup(*maN+omé*)=Dup(*manomé*)= *manomèmé* – or reduplicated the root and then prefixed *maN* – *maN*+Dup(*omé*)=*maN*+(*omèmé*)=*manomèmé*. For some roots both forms are heard. From *vóno* 'hit, kill' we form the active *mamóno* and two reduplicated forms: Dup(*mamóno*)=*mamònomóno* and *maN*+Dup(*vóno*)=*maN+vònovóno*= *mamònovóno*. For some roots only the active verb is reduplicated: *maN+léha=mandéha*, syllabified as *ma.ndé.ha*, reduplicated is *mandèhandéha*,[1] **mandèhaléha*. But for suffix passives, (*-Vna*), the most common type, we only get root reduplication: The passive of *vóno* is *vonóina*, which reduplicated would yield the ungrammatical **vonòinóina*. The correct form reduplicates the root first: Dup(*vóno*)+*ina*= *vònovonó+ina*=*vònovonóina* (with stress hiatus).

2.   Phrasal Copying

Phrasal copying, less widely attested (hence studied) than reduplication, is well acknowledged in the predicate cleft construction in West African languages (see Kobele 2008 for Yoruba, Kandybowicz 2008 for Nupe and Koopman 1983 for

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[1]   *nd* expresses a prenasalized /d/. All stops in Malagasy have a phonemically distinct prenasalized version (see Keenan and Polinsky 1998:564-565).

Vata).[2] Here a copy of the predicate is moved to clause-initial position, as illustrated in (2) for Fongbe (cf. Law and Lefebvre 1995:8, 15, 16):

(2) a. Súnu ɖé gbà mɔ́tò ɔ́ wὲ.
    man a destroy car DET DET
    'A man destroy the car (this event–that the car would be destroyed–is new)
  b. Gbà wὲ súnu ɖé gbà mɔ́tò ɔ́.
    destroy DET man a destroy car DET
    'It is destroy that a man did to the car (not e.g., fix it).'

(3) a. Kɔ̀kú lìn ɖɔ̀ súnu ɖé gbà mɔ́tò ɔ́ wὲ.
    Koku think say man a destroy car DET DET
    'Koku thinks that a man destroyed the car.'
  b. Gbà wὲ Kɔ̀kú lìn ɖɔ̀ súnu ɖé gbà mɔ́tò ɔ́.
    destroy DET Koku think say man a destroy car DET
    'It is destroy that Koku thinks that a man destroyed the car.

The copying we treat in Malagasy however does not form (pseudo)clefts, but does commonly target predicates:

(4) a. Mamboatra trano Rabe. (*mamboatra* = m+aN+voatra)
    repair house Rabe PRES+ACT+root
    'Rabe is repairing a house.'
  b. Mamboatra dia mamboatra trano Rabe. (intensive house repairing)
  c. Mamboatra fe mamboatra trano Rabe. (desultory house repairing)

(4b,c) copy the tensed active verb (past and future tenses are also natural here) separating it by *dia,* (4b), and *fe,* (4c). (4b) means that Rabe is very actively engaged in house repairing, while *fe* in (4c) indicates that his heart isn't in it.

    These examples illustrate the first difference between phrasal copying and reduplication. Intensification in (1b) is due to the intensifier *dia*, not the mere fact

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[2] Plausibly some form of syntactic copying is seen in Mandarin (i) Li and Thompson (1981:Ch 13).

  (i) Tā niàn shū *(niàn) de hěn kuài.
    3SG read book read PRT very fast
    'S/He reads very quickly.'

  Even English adverbials like *day after day*, *week after week*, etc. may illustrate copying (though the copies need not be fully identical: *Hour after excruciating hour he waited for the verdict*.
    Malagasy has other "copy" constructions. A quite productive one is the formation of free relatives: *na iza na iza* 'whoever, lit., or who or who', *na inona na inona* 'whatever, lit., or what or what', and similarly with *aiza* 'where', *ahoana* 'how', etc. These can be internally augmented with lexical Ns: *na fanafody inona na fanafody inona* 'whatever medicine, lit., or medicine what or medicine what', etc (see Paul 2005).

of repeating the verb.[3] In (4c) the verb is also repeated, but the attenuative *fe* attenuates the meaning of its argument. Our analysis is to treat these particles as coordinate conjunctions (different ones with different meanings, as *and* vs *or*). They combine with an expression and its copy and have the same grammatical category as the expression they copy.[4]

Secondly, in distinction to reduplication, phrasal copying may target syntactically complex constituents:

(5) a. [Mamboatra trano dia/fe mamboatra trano] Rabe.
       repair   house DIA/FE repair   house   Rabe
       'Rabe is intensively/half-heartedly repairing a house.'

   b. [Mamboatra ny   tranony   dia/fe mamboatra ny   tranony] Rabe.
       repair   DET   house.3SG DIA/FE repair   DET   house.3SG Rabe
       'Rabe is intensively/half-heartedly repairing his house.'

We note a subtle meaning difference between (5a) and (4b). In (4b) only the action of repairing is intensified, whereas in (5a) it is specifically repairing houses that is intensified. In (5a) we copy the transitive verb and its bare NP object, unsurprising as bare NP objects form tight constituents with their transitive verbs. But in (5b) the copy includes a syntactically complex definite object, one that would allow adverbs like *hiangana* 'quickly' to separate it from its transitive verb.

Clearly then phrasal copying can target syntactically complex constituents. But there are limits. Our speakers rejected both (6a,b):

(6) a. *Mamboatra trano honenan-ny fanakaviany dia   mamboatra trano
        repair   house live-DET   family.3SG   DIA   repair   house
        honenan-ny fanakaviany Rabe.
        live-DET   family.3SG   Rabe
        'Rabe is really repairing the house in which his family will live in.'

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[3] We note that *dia* occurs with negated adjectives without phrasal copying:

   (i) Tsy dia tsara izany.
        not DIA good   that
        'That isn't very good (but may be OK).'

[4] We note though that *dia* is a very widely used grammatical particle. It has an 'and then' reading, (ia), and also is a topicalizer, (ib):

   (i) a. N-i-petraka izy <u>dia</u> n-i-tomany.
           PST-ACT-sit   3SG DIA   PST-ACT-cry
           'S/he sat and then cried.'
        b. Ny Aiay dia biby   (tsy fahita   afa-tsy eto Madagasikara)
           DET Aiay DIA animal not   see   except   here Madagascar
           'The Aiay is an animal (not seen except here in Madagascar)'.

   In contrast, the attenuative *fe* is rare.

b. *Mamboatra   trano   amin-ny   birikiny   dia   mamboatra   trano
   repair   house with-DET brick.3SG DIA   repair   house
   amin-ny   birikiny   Rabe
   with-DET   brick.3SG Rabe
   'Rabe is really repairing the house with his bricks.'

On the other hand (7a,b) were accepted, (7a) with a context restriction:

(7) a. Nanolotra fanomezana ho azy   dia   nanolotra fanomezana ho azy.
     offered   gift   for 3SG DIA offered   gift   for 3SG
     aho.
     1SG
     'I really offered her a gift.'

   b. Tsy mahay mihira dia   tsy   mahay mihira izy.
     not able   sing   DIA not   able   sing   3SG
     'He really can't sing.'

(7a) is appropriate in a context in which she refuses my offer and I insist that it is a gift, not a sale or obligation. In (7b) we see that certain of the very limited material that occurs preverbally in simple declaratives can be copied, but (7b) means more than that he can't sing (e.g. say he has a sore throat); it means he is a lousy singer. So it is not unreasonable to think of *tsy mahay mihira* in (7b) as a complex predicate. Still, phrasal copying may include negation and modals.

    We are not clear how to define precisely the bound on how much material can be phrasally copied. In examples that follow we see that significant complexity can be copied, so phrasal copying is not limited to single prosodic words. Nor is it simply a question of phonological weight, which may nonetheless be a factor. Also in several cases *dia*-copies were judged more acceptable than *fe*-copies.

    We note that passive predicates, (8a), as well as ones derived by possessive head incorporation (Keenan and Ralalaoherivony 2000) may be copied, (8b):

(8) a. Kapohiko (kapoka+ina+ko) dia kapohiko   ilay alika.
     beat.PASS.1SG   DIA   that dog
     'That dog was really beaten by me.'

   b. Nihem-bidy   dia   nihem-bidy   ireto akanjo ireto.
     decrease.PST-price DIA decrease.PST-price those clothes those
     'Those clothes decreased in price.'

    Among the well attested instances of phrasal copying are cases of adjectival and adverbial modifiers and predicates. (9a) is typical. (9b) illustrates the copying of adjectival complements and (9c) copying of overt comparatives.

(9) a. Marary dia/fe   marary izy.
     sick   DIA/FE   sick   3SG
     'He is very/kind of sick.'

   b. Tezitra t-amin-i   Koto   dia tezitra t-amin-i   Koto   aho.
     angry   PST-with-DET   Koto   DIA angry PST-with-DET Koto   1SG
     'I am very angry with Koto.'

   c. Hendry noho   izy dia hendry noho   izy i   Soa.
     wise   against 3SG DIA wise   against 3SG DET Soa
     'Soa is way better behaved than him.'

We see adverbial copying in (10). In (10b), a textual example, it is embedded:

(10) a. Miteny m-i-adana   dia   miadana izy.
      talk   PRES-ACT-slow DIA   slow   3SG
      'He talks very slowly.'

    b. Nasainy   nanao sakafo haingana dia haingana Ilaimanga.
      ask.PASS.3SG did   meal fast   DIA fast   Ilaimanga
      'Ilaimanga was asked by him to prepare a meal very quickly.'

Dia-copying can even force certain agent nominalizations to take on an intensive reading, though replacement by *fe* here was judged unacceptable.

(11) Mpamboly dia mpamboly   Rabe.
    planter   DIA planter   Rabe
    'Rabe is really a planter.'

Lastly PP complements are often marked for tense and can function as predicates. Possibly (12) is an instance of copying headed sentential complements:

(12) Maniry ho   any aminao dia   maniry ho   any aminao aho.
    want   FUT LOC P.2SG   DIA   want   FUT LOC P.2SG   1SG
    'I really want to go to your house.'

Lastly we note that the [X *dia/fe* X] applies most naturally when X denotes something that can be intensified or attenuated. For example,

(13) a. *?Tonga dia   tonga Rabe.
      Arrive DIA   arrive Rabe

    b. *?Ao   an-trano dia ao   an-trano Rabe.
      LOC   at-house DIA LOC   at-house Rabe

A forced reading on (13b) would be where Rabe is physically in the house but mentally his mind is elsewhere.

3.   Analysis

As indicated, we treat *dia* and *fe* as syntactic conjunctions taking two copies of the projection of any of various categories as complements. The syntactic category of the derived expression is the same as that of the conjuncts. Our analysis explains four different facts.

First, as the two conjuncts are copies, it follows that they are identical. In (14), the agent phrases in the two conjuncts must be morphologically the same:

(14) a. Kapohin-dRabe dia kapohin-dRabe ny   alika.
        beat.PASS-Rabe DIA beat.PASS-Rabe DET dog
        'The dog was really beaten by Rabe.'
    b. Kapohiny   dia kapohiny   ny   alika.
        beat.PASS.3SG DIA beat.PASS.3SG DET dog
        'The dog was really beaten by him.'
    c. *Kapohin-dRabe dia   kapohiny   ny   alika.
        beat.PASS.Rabe DIA   beat.PASS.3SG DET dog
        'The dog was really beaten by Rabe.'

These data support that the second conjunct cannot be syntactically analyzed independently of the first. (14c) is ungrammatical if the agent in the second conjunct is a pronoun coreferential with the proper name agent phrase in the first conjunct, even though the two conjuncts are semantically the same.

Second, our analysis accounts for why the conjunction occurs just where the base without the copy can occur:

(15) a. *Trano   mamboatra Rabe. (cf. (4a)).
       house   repair   Rabe
       'Rabe is repairing a house.'
    b. *Trano   mamboatra dia/fe   mamboatra Rabe. (cf. (4b,c))
       house   repair   DIA/FE repair   Rabe
       'Rabe is really repairing a house.'

Third, the *dia* and *fe* conjunctions select their (identical) arguments, rather than having one derived by movement from the other. This accounts for the modest selection restrictions they impose – the X in [X *dia/fe* X] must denote something that can be intensified or attenuated. Moreover it differs dramatically from Predicate Cleft constructions which do move the predicate, (3b), (16) shows that predicate movement is not possible in Malgasy.

(16) a. Heveriko fa   mianatra dia mianatra izy.
        think.1SG that study   DIA study   3SG
        'I think that he is really studying.'

b. *Mianatra no heveriko fa dia mianatra izy.
   study   FOC think.1SG that DIA study   3SG
   'It's study that I think he is studying.'

c. *Mianatra dia no heveriko fa mianatra izy.

d. *Mianatra no dia heveriko fa mianatra izy.

e. *Mianatra dia mianatra no heveriko fa izy.

Fourth, as the phrase arising from phrasal copying with *dia/fe* is of the same category as the base, it can undergo the same syntactic processes as those for the projection of the base. For instance, just as the base can be conjoined with the conjunction *sady/sy* 'and' or clefted, so can the phrase arising from phrasal copying with *dia/fe*. Also it is even possible to iterate the [X *dia* X] construction, as in (17d), though *fe* is not acceptable here:

(17) a. Nahia sady hatsatra izy.
        thin   and pale   3SG
        'He/she is thin and pale.'

   b. Nahia dia nahia sady hatsatra dia hatsatra izy.
      thin   DIA then and pale   DIA pale   3SG
      'He/she was extremely thin and extremely pale.'

   c. Tsy maintsy nandalo amin-ny lavabato   ety   dia ety
      necessary passed with-DET underwater-cave narrow DIA narrow
      sy   lalina kokoa voa   tonga. (Textual example)
      and deep   very before arrive
      'It was necessary to pass through the underwater cave which was extremely narrow and very deep before arriving.'

   d. [[Noana dia noana] dia [noana dia noana]] aho.
       hungry DIA hungry DIA hungry DIA hungry 1SG
       'I am really very hungry'

This ability to iterate, however limited, is another way in which phrasal copying is distingished from reduplication, which does not iterate: *miteny* ⇒ *miteniteny* ⇒ **miteniteniteny* "speaks often often".

When non-arguments, like *maika* 'quickly' in (18a), are clefted, the main verb takes the circumstantial voice. Its phrasally copied form does as well, (18b).

(18) a. Maika no tsy maintsy hanatanteraha<u>na</u>   ny   fanambadiana.
        quick FOC necessary accomplish.CIRC DET   wedding
        'It's quickly that the wedding must be accomplished.'

   b. Maika dia maika no   tsy maintsy hanatanteraha<u>na</u> ny anambadiana.
      quick DIA quick FOC necessary accomplish.CIRC DET wedding
      'It's very quickly that the wedding must be accomplished.'

The examples in (17) and (18) show that the two copies of a base and *dia/fe* form a syntactic constituent and have the same syntactic distribution as the base. (19) is further support for this that the Ss with predicates of the form [X dia X] can be negated in the usual way:

(19) Tsy [manga feo dia manga feo] izy.
      not blue voice DIA blue voice 3SG
      'He is not a great singer but he can still carry a tune.'

Equally Ss with intensified predicates are not frozen, like exclamatory Ss in English (cf. *How quickly he answered the question!* vs *The boy that how quickly answered the question* and *It was that question that how quickly he answered*), but still feed relativization, (20), and polar question formation, (21), for example:

(20) Ny lehilahy (izay) mamboatra dia mamboatra trano.
      the man that repair DIA repair house
      'The man who is really involved in house repairing'

(21) Mamboatra dia mamboatra trano ve Rabe?
      repair DIA repair house ? Rabe
      'Is Rabe seriously involved in house repairs?'

4.   Consequences for linguistic theory

Facts relating reduplication and phrasal copying (conjunction) have implications for linguistic theory, in particular, for the interaction between morphology and syntax. The relevant fact is that reduplication feeds phrasal copying, so this kind of coordination must be able to access the output of morphological rules, as in (22b). On the other hand, coordinate structures, such as [X *dia* X] among others do not lie in the domain of the reduplication relation, supporting that reduplication and phrasal copying lie in different components of the grammar with phrasal copying applying in syntax after reduplication in morphology.

(22) a. Miteny dia miteny Rabe.
          speak DIA speak Rabe
          'Rabe is speaking intensively'
     b. Miteniteny dia miteniteny Rabe.
          speak DIA speak Rabe
          'Rabe is babbling/jabbering intensively.'
     c. *Miteny dia miteniteny Rabe.
     d. *Miteniteny dia miteny Rabe.

Crucially, reduplication cannot apply to just one copy, (22c,d). These data are hard to capture in the DM model in which syntax precedes morphology.

In the traditional model in which the morphology component precedes the syntax component and terminal elements, i.e., the actual words, are inserted in the syntactic structure, and then are subject to syntactic operations, i.e., movement and coordination, then the exclusion of the examples in (22c,d) is quite straightforward. At the point where we find the syntactic structures such as those in (23a,b), the latter with reduplication, the former without, phrasal copying in syntax applies to yield the forms in (22a,b) respectively:

(23) a. Miteny Rabe.
      speak   Rabe
      'Rabe is speaking.'
   b. Miteniteny   Rabe.
      speak   Rabe
      'Rabe speaks often/is babbling.'

It is not possible to derive the examples in (22c,d) by phrasal copying, since it operates on two copies of the same phrase.

In the DM model of Halle and Marantz (1993) in which the morphology component of grammar follows the syntax component and terminal elements are inserted only after syntactic operations have applied, it is difficult to rule out the examples in (22c,d). To see this point, consider the structure in (24a) formed in syntax where √ is a root with certain (abstract) morphosyntactic features. Lexical insertion after syntax of the terminals *miteny* and *Rabe*, what Halle and Marantz (1994:275) call Late Insertion in their DM theory, in the structure in (24a) would derive the example in (23a):

(24) a. √   √
     [PRES, ACT, …]   [MASC, PROPER NAME, …]
   b. √   √   √   √
     [PRES, ACT, …]   [INT] [PRES, ACT, …]   [MASC, PROPER NAME, …]

If phrasal copying applies to the structure in (24a) in syntax, with the root whose feature is INT (for intensification), Late Insertion of the terminal *dia* in the [INT] root and *miteny* in the two other roots would derive the example in (22a).

In the morphology component, reduplication can apply to the two roots flanking the [INT] root in (24b), deriving the example in (22b). Unless specifically stipulated, reduplication may well apply to only one of the two roots. This would derive, incorrectly, the examples in (22c,d).

To exclude this possibility, it must be stipulated that reduplication necessarily applies to the two roots. But there seems to be no morphological reason for this constraint on the two copies formed by phrasal copying, for it is an operation in syntax.

It seems that the traditional view of ordering morphology before syntax can explain the ungrammaticality of the examples in (22c,d) more straightforwardly than the DM theory. The fact that reduplication cannot apply to the output of syntactic phrasal copying follows directly from it being an operation confined to the morphology component that is ordered before the syntax component.

Appendix: Abbreviation

ACT=active
DET=determiner
FUT=future
LOC=locative
MASC=masculine
P=preposition
PASS=passive
PL=plural
PRES=present
PRT=particle
PST=past
SG=singular

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ON DERIVING THE COPULA-INITIAL STRUCTURE IN ULIVELIVEK*

Shih-Yueh Jeff Lin
New York University
syjefflin@nyu.edu

The question whether Austronesian languages have category distinctions and how the copular structure is derived is particularly important in light of the recent finding that at least one Austronesian language actually has a copular verb and distinguishes verbal and non-verbal predicates (Richards 2009). The goal of this paper is to explore the copula-initial structure in Ulivelivek, a dialect of Puyuma. I will show that the word *maw* is a copular verb in the sense of Montague (1974) that expresses the identity between individuals. This paper will also demonstrate that there is a strict selectional restriction between the copula and different types of syntactic categories, which lends support to the existence of category distinctions. Finally, I propose a remnant movement analysis to account for the copula-initial order.

1.   Introduction

The question whether Austronesian languages have category distinctions is an issue under debate (Richards 2009, and cf. Foley 1998; Gil 2000; Kaufmann 2009), particularly because it is often tough to identify the copular verb that is often silent in Austronesian languages and multi-functional cross-linguistically. This paper aims to show that the evidence from Ulivelivek indicates that at least some Austronesian languages do have a copula as well as category distinctions. To be specific, the Ulivelivek data that contain the word *maw* 'COP' as in (1) will be examined to show that *maw* is a copular verb in the sense of Montague (1974) as well as the main predicate that only selects some specific syntactic category, so the paper also supports the claim that category distinctions can be found.

(1)   maw a   sinsi   i   Asing.   *Copular sentence*[1]
        COP ABS.IND teacher ABS Asing
        'Asing is a teacher.'

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[1]Abbreviations: 1S/2S/3S = first/second/third person singular; AV = agent voice; ABS = absolutive; BV = benefactive voice; COP = copula; DEF = definite; DEM = demonstrative;

The second question to be addressed is how to derive the copula-initial word order. Under the assumption that Specifier-Head-Complement is the universal word order (Kayne 1994), it is argued that either the V head alone undergoes movement operation to some higher functional head (Emonds 1980; McCloskey 1996), or the VP undergoes phrasal movement to the specifier position of some functional projection (Massam 2000; Rackowski and Travis 2000). I will argue that the copular structure in Ulivelivek is derived by remnant VP raising, which advocates the latter approach.

This paper is organized as follows. Section 2 demonstrates the data, and it will be argued there that *maw* is the Montagovian copula. Section 3 will lay out the proposal to account for the copula-initial word order, and show the evidence for the remnant movement approach. Section 4 concludes this paper.

2. *Maw* as the copula in Ulivelivek

Traditionally, Puyuma, a Formosan language spoken in the south-east part of Taiwan, is subdivided into two major dialects (Teng 2008). Nanwang dialect is spoken in Nanwang Village. Katipul dialect is spoken in the other villages, including Halipay, Kasabakan, Katipul, Likavung, Tamalakaw, and Ulivelivek. This study is based on Lin 2015 and the fieldwork of Ulivelivek during June 2015 to May 2016.

2.1. Evidence for the copular verb

The word *maw* in Ulivelivek appears in the sentence-initial position in the following contexts: nominal sentences, focus sentences, and *wh*-interrogative sentences. The question whether *maw* can be treated as the copula is tricky, because it can possibly be either a functional element such as a complementizer (e.g. see Carnie 1995 for *Is* in Irish) or a predicate. Below I will provide the evidence for the latter option.

(2) a. maw a   sinsi   i Asing.   *Nominal sentence*
       COP ABS.IND teacher ABS Asing
       'Asing is a teacher.'
    b. maw i   Asing na   m-ekan kana   vavuy.   *Focus sentence*
       COP ABS Asing ABS.DEF AV-eat OBL.DEF pork
       'Asing is the person that ate the pork.'
    c. maw i   eman na   m-ekan kana   vavuy? *Wh-ex-situ question*
       COP ABS WH   ABS.DEF AV-eat OBL.DEF pork
       'Who is the person that ate the pork?'

First of all, as pointed out by Teng (2008), one important condition on Ulive-

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ERG = ergative; FUT = future; IV = instrumental voice; IND = indefinite; IRR = irrealis; PV = patient voice; RED = reduplication; OBL = oblique; PRED = predicate; PV = patient voice.

livek reduplication is that only lexical elements like nouns, *ngiyaw-ngiyaw* 'cats,' or verbs, *n-a-nimun* 'be going to bathe,' can be reduplicated, but not functional elements such as complementizers **za-za* or articles, e.g. **ka-kana/*kana-kana*. This is particularly clear in the derived nominal *ma-izang-an* 'senior' that contains the AV prefix *ma-*, the root adjective *izang* 'large/great', and the nominalizer *-an*. The plural form of the derived nominal is expressed by reduplication. Crucially only the lexical root can be reduplicated, *ma-**iza**-izang-an* 'seniors.' In other words, the AV marker and the nominalizer that are functional in nature cannot be reduplicated either separately or together with the adjectival root, e.g. **ma-iza-ma-izangan* or **ma-izang-an-izang-an*. Now, if *maw* is verbal, then we expect that *maw* can be reduplicated, which is true as shown in (3).[2]

(3) maw-maw a   sinsi   i   Asing.   *Reduplication*
      RED-COP ABS.IND teacher ABS Asing
      'Only Asing is a teacher.'

Second, although *maw* does not co-occur with any voice marker, it can be inflected with other kinds of affixes such as the prefix *ka-* 'future,' or the pronoun enclitics[3] *-ku/-yu* 'ABS.1S/ABS.2S, ' which is a typical property of lexical verbs in Ulivelivek. In addition, when it is inflected with *ka-*, *maw* must remain overt, which is reminiscent of the behavior of the Russian copula.

(4) a. ka-maw a   sinsi   i   Asing.   *Affixation*
         FUT-COP ABS.IND teacher ABS Asing
         'Asing will be a teacher.'
    b. maw=ku   a   sinsi.   *Cliticization*
         COP=ABS.1S ABS.IND teacher
         'I'm a teacher.'

Third, Carnie (1995) claims that in Irish non-verbal predicates, the nominal part is really the main predicate, by pointing out that Irish nominal predicates and verbal predicates use the same negation marker. If Carnie's claim for Irish is on the right track, then the Ulivelivek nominal part *a sinsi* 'a teacher' as in example (2a) cannot be the main predicate, because the negative counterpart of the sentence has its own unique negation marker. Specifically, the negation marker *'azi* is used for most of the verbal predicates in Ulivelivek, while the copular verb has its special negative counterpart *aməlri* 'NEG.COP.' If *a sinsi* in (2a) is really the main predicate and there is not any category distinction, then we would expect the negation form to be *'azi* for the nominal sentence, which is similar to the phenomenon in Irish in the sense that the verbal predicates and nominal predicates use the same negation

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[2]Reduplication in Ulivelivek can express various kinds of meaning, including, but not limited to, plurality, progressive, future tense, nominalization, and focus.

[3]The third person pronoun clitic has no overt absolutive form in Ulivelivek.

marker. In contrast, if the nominal sentence is actually the copular verb construction, the negation form should be *aməlri*. As illustrated in (5), the latter prediction is borne out.

(5) a. *'azi a   sinsi i   Asing.   *General negation*
       NEG ABS.IND teacher ABS Asing
       'Asing is not a teacher.'

 b. aməlri   a   sinsi i   Asing.   *Negative copula*
    NEG.COP ABS.IND teacher ABS Asing
    'Asing is not a teacher.'

Finally, Carnie also argues that Irish sentence-initial *Is* is not a copular verb based on the observation that the appropriate answer for polar questions in Irish must be the affirmative or negated form of the main verbs in the question, because modern Irish does not have polarity particles such as *yes* and *no* in English. *Is* is not allowed to be used in this way to answer any polar question so *Is* cannot be the main verb. Quite the opposite, *maw* and its negation form *aməlri* in Ulivelivek can be used as the appropriate answer for polar questions, as in (6).[4]

(6) a. a   'alum nu-tr⟨in⟩ima'-an   a-daman?
       ABS.IND meat ERG.2S-buy⟨PERF⟩ yesterday
       'Is it the meat that you bought yesterday?'

 b. maw/aməlri.
    COP/NEG.COP
    'It is/It isn?t.'   *Response to polar question*

So far, it has been shown that *maw* is the main verb, as evident from reduplication, affixation, cliticization, negation, and the response to polar questions. The evidence also has shed some light on the problem whether Austronesian languages really have a copular verb and category distinctions. For instance, it has sometimes been claimed that Tagalog lacks category distinctions (Foley 1998; Gil 2000; Kaufmann 2009), due to the absence of the overt copula. However, Richards (2009) argues that the copula actually can be found in Tagalog embedded clauses, though it usually remains silent in the main clauses. If the analysis for Ulivelivek *maw* is on the right track, then it supports the claim that copular verbs can be found in Austronesian languages. Before we move on to discuss the meaning of the copula and its selectional restriction, it is worth to further clarify the point that the copula as the main predicate can be verbal and lexical.

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[4]Note that in this way, *amelri* is also a verb, which is evident from its future form, *ka-amelri* 'will not be.'

2.2.   On the absence of voice morphology

To say that the copula *maw* is the main verb is to assume the classical view that the copula starts low in the derivation as the main predicate that selects its own DP arguments, and then the copular verb moves to either the head position or the specifier position of some functional projection so in this sense, the copula becomes functional, which can be traced back to Emonds (1976) and Stowell (1983). In English, for instance, the copular verb in the sentence *John is a syntactician* raises to T^0 to take the tense feature for its morphological realization. I will show in the next section that the Ulivelivek copula raises to some specifier position via phrasal movement. Crucial here is that the copula can be verbal when it is externally merged into the syntactic derivation, and subsequently moves to the functional domain.

However, the absence of voice morphology on *maw* seems to be a potential problem for our lexical treatment, because there seems to be a tendency that main predicates in voice languages are usually marked with voice markers, for example:

(7) a. m-ekan kana   vavuy i   Asing.   *Agent voice (*AV*)*
       AV-eat OBL.DEF pork ABS Asing
       'Asing ate the pork.'

    b. tu-ekan-aw   na   vavuy ni   Asing.   *Patient voice (*PV*)*
       ERG.3S-eat-PV ABS.DEF pork   ERG Asing
       'Asing ate the pork.'

    c. ku-avak-anay   za   dawa i   Asing. .   *Benefactive voice (*BV*)*
       ERG.1S-pack-BV OBL.IND millet ABS Asing
       'I packed some millets for Asing.'

    d. ku-avak-anay   za   dawa na   luvuk. *Instrumental Voice (*IV*)*
       ERG.1S-pack-IV OBL.IND millet ABS.DEF bag
       'I packed some millets with the bag.'

Why is *maw* never marked with any voice marker, if it is really verbal in nature? I believe that this is because the statement in (8) for the relation between predicates and voice morphology is invalid.

(8)   Given a linguistic object X,   *Invalid statement*
       if X is a predicate, then X is marked with a voice marker.

This is because actually some Ulivelivek predicates such as *lrikelrike* 'laugh' and *sa'ar* 'like' are never marked with any voice marker. In addition, many Ulivelivek adjectives can be used as the main predicate without being inflected with any voice marker, for example:

(9) atras izu na   ruma.   *Unmarked adjectival predicate*
     tall DEM ABS.DEF house
     'That house is tall.'

An even more serious problem for the inference in (8) is that Ulivelivek verbs are also unmarked in imperative sentences, as shown in (10). Given the statement, it has to be concluded by *modus tollens* that the verb *ekan* 'eat' in the imperative sentence is not a verb or predicate, which is an obvious contradiction.

(10) ekan kana   vavuy.   *Imperative sentence*
      eat OBL.DEF pork
      'Eat the pork.'

Thus, I suggest that the correct inference for the relation between voice markers and predicates is actually the one in (11), which seems true for voice languages, so far as I know. The inference does not say anything about whether or not an unmarked X such as *maw* can be a predicate, neither its *modus tollens* does, so the absence of voice morphology is no longer problematic for the lexical treatment. This also means that some independent evidence is required to determine whether *maw* is really a predicate, as shown in the previous section.

(11) Given a linguistic object X,   *Valid statement*
      if X is marked with a voice marker, then X is a predicate.

2.3.   The Montagovian treatment

According to the discussion, *maw* is the main verb, but it is still necessary to determine whether or not it is a copula. I will show that *maw* is the copular verb that expresses the meaning of equality, as suggested by Quine (1960) and formalized by Montague (1974).

Montague translates English *be* into $\lambda\wp\lambda x[\wp(\lambda y[x = y])]$ that subcategorizes a generalized quantifier of type $\langle et, t\rangle$ and a type e argument.[5] The formalization unifies the predicational meaning where *be* combines with an indefinite NP, and the specificational meaning where *be* combines with an definite NP. Partee (1987) notes that Montague's treatment does not allow English *be* to be composed with other type $\langle e, t\rangle$ predicates, which is an unwelcome result for English, so she proposes that English *be* should be translated into $\lambda P\lambda x[P(x)]$ that subcategorize a type $\langle e, t\rangle$ predicate and a type e argument.[6] However, Partee (1987, p.127) also points out that "the choice between the analyses will depend heavily on syntactic considerations."

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[5]More precisely, Montague's analysis is formalized within the intensional framework of PTQ, though here I will use Partee's notation for ease of comparison.

[6]Note that Montague's treatment is not abandoned by Partee, but rather it corresponds to the type-shifter BE.

Crucial here is that Montague's formalization predicts that the copula can only co-occur with DPs, while Partee's predicts that the copula can co-occur with a broad range of predicates like adjectives as in English. Now, if *maw* always selects two DPs but not other types of syntactic categories, then we can conclude that *maw* is the copular verb that consistently co-occurs with DPs as argued by Montague. Consider the nominal sentence in (12). From now on, the DP on the left-hand side is referred to as DP$_{obj}$, and the other one as DP$_{sbj}$.

(12) maw [a   sinsi]$_{obj}$ [i   Asing]$_{sbj}$.   *Nominal sentence*
      COP ABS.IND teacher ABS Asing
      'Asing is a teacher.'

The novel observation is that the copula must co-occur with two DPs. In (13a-b), the DP$_{obj}$ must contain a D^0 material. The bare NP predicate is not allowed in the nominal sentence, which is another empirical evidence that supports the existence of category distinctions, at least between nouns and verbs. This can be understood if *maw* is the Montagovian copula that only subcategorizes the generalized quantifier *a sinsi*, but not the bare NP predicate of type $\langle e, t \rangle$. The further evidence comes from the adjectival predicate as in (14a) which is not allowed to co-occur with the copula. In contrast, in (14b), the adjective is preceded by the absolutive definite article *na*. Here the copular verb can appear in the sentence, but the adjective is no longer the main predicate. Rather it is nominalized into the DP linked by *maw* to express the meaning *the big orange*. Again, this means that the copula *maw* must subcategorize two DPs, which is correctly predicted by Montague's formalization.

(13)a. *sinsi i   Asing.   *Bare NP predicate*
       teacher ABS Asing
       'Asing is a teacher'
    b. maw *(a)   sinsi i   Asing.   *Obligatory D^0*
       COP ABS.IND teacher ABS Asing
       'Asing is a teacher.'

(14)a. (*maw) ma'izang na   'asiru.   *Adjectival predicate*
       COP   AV-big   ABS.DEF orange
       'The orange is big.'
    b. maw na   ma'izang na   'asiru.   *Nominalization*
       COP ABS.DEF AV-big   ABS.DEF orange
       'The orange is the big one.'

2.4.   Interim summary

In this section I have argued that the Ulivelivek word *maw* is the main verb of the copular structure, showing its capability for different types of morphological marking

that usually go with lexical verbs. The absence of voice morphology is a problem for the lexical treatment as long as the correct inference rule is adopted. Finally, given its semantics of equality (Montague 1974), it has also been shown that the copula must subcategorize two DPs, which backs up the existence of category distinctions.

3.   On deriving the copular structure

I will set up the stage by showing the structural relation as well as the position of clitics, in order to lay out the proposal. The evidence for the phrasal movement approach will also be shown.

3.1.   The structural relation

The structural relation between DP_{sbj} and DP_{obj} in the nominal sentences can be determined by the tests from Condition C and anaphoric binding, which show that the DP_{sbj} asymmetrically c-commands the DP_{obj}. The example of Condition C violation is shown in (15). The subject pronoun *i intaw* in the DP_{sbj} position is not allowed to be co-indexed with the DP *i Asing*, which is embedded in the DP_{obj} position, entailing that the DP_{sbj} asymmetrically c-commands the DP_{obj}. This is also confirmed in example (16) by anaphoric binding.[7] Specifically, in (16a) the DP_{sbj} can bind the pronoun in the DP_{obj} position, but in (16b) the DP_{obj} cannot bind the pronoun embedded in the DP_{sbj} position.

(15)   *maw [tu-draw-draw-an   kana tu-zekalr   ni $Asing_i]_{obj}$ i $intaw_i$.
        COP   GEN.3S-RED-elder   OBL GEN.3S-tribe GEN Asing   ABS 3S
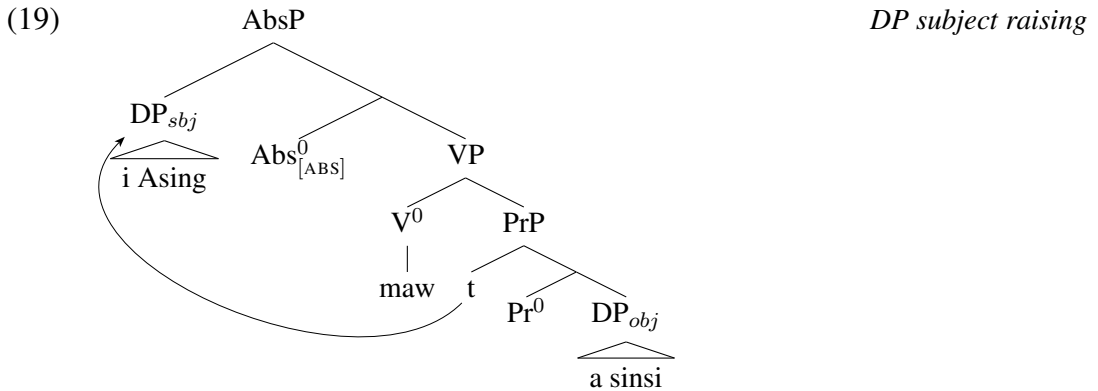   'He is the elder of Asing's tribe.'   *Condition C violation*

(16)a. maw [tu-drawdrawan $kanantu_i$ zekalr]$_{obj}$ i $Asing_i$.
        COP   GEN.3S-RED-elder   GEN.3S   tribe   ABS Asing
        'Asing is the elder of his tribe.'
    b. *maw i $Asing_i$ [tu-drawdrawan $kanantu_i$ zekalr]$_{obj}$.
        COP   ABS Asing GEN.3S-RED-elder   GEN.3S   tribe
        'The elder of his tribe is Asing.'   *Anaphoric binding*

As for cliticization, there is an important fact about the word order of the copular structure. Although Ulivelivek generally allows VOS-VSO alternation for verbal predicates, the VSO word order is possible for predicational nominal sentences only if the subject is a pronoun clitic as shown in (17c), which is going to become crucial for the underlying structure.

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[7] As in Chamorro (Chung 1998), anaphoric binding in Ulivelivek seems to require the antecedent DP to c-command the pronoun. For example, in possessive construction, a possessor cannot bind an object pronoun out of its host DP.

(17) a. maw   a   mu-wa-'uma   i   Asing.   *VOS*
      COP   ABS.IND   AV.RED-farm   ABS   Asing
      'Asing is a farmer.'

   b. *maw   i   Asing   a   mu-wa-'uma.   **VSO*
      COP   ABS   Asing   ABS.IND   AV.RED-farm
      'Intended: Asing is a farmer.'

   c. maw=ku/=yu   a   mu-wa-'uma.   *VS*_{CL}*O*
      COP=ABS.1S/ABS.2S   ABS.IND   AV.RED-farm
      'I am a farmer/you are a father.'

In short, it is pointed out that the DP_{sbj} asymmetrically c-commands the DP_{obj} , and the VSO word order is allowed only if the DP_{sbj} is a pronoun clitic. Otherwise, VOS is the basic word order for the copular construction

3.2. The remnant movement analysis

I assume the small clause approach (Heycock 1994; den Dikken 1995; Moro 1997) for copular verbs, so in Ulivelivek, *maw* takes a small clause as its complement, which is headed by Pr^0 as proposed by Bowers (1993). The copula will subsequently move to the higher functional domain.

According to the underlying structure in (18), *maw* is the main verb, and the DP_{sbj} asymmetrically c-commands the DP_{obj}. At first sight, however, the structure seems incompatible with Montague's proposal, because the copula does not subcategorize the two DPs. This problem can be solved if we assume that Pr^0 denotes the higher order variable that is bound by the copular verb that expresses the Montagovian equality relation. We will return to this problem again later.

(18)   VP   *Underlying structure*

$$\exists x[teacher(x) \wedge \text{As} = x]$$

V^0 : maw
$$\lambda\wp\lambda u[\wp(\lambda v[u = v])]$$

$\lambda\mathcal{R}$

PrP
$$\mathcal{R}(\lambda Q\exists x[teacher(x)\wedge Q(x)])(\text{As})$$

DP_{sbj} As_e i Asing

Pr^0 $\mathcal{R}_{\langle\langle et,t\rangle,\langle e,t\rangle\rangle}$

DP_{obj} $\lambda Q\exists x[teacher(x)\wedge Q(x)]$ a sinsi

The next step is to merge the VP with the functional head that assigns the absolutive case to both DPs. I will call this functional head Abs^0, and assume the standard analysis for multiple case marking that the functional head assigns the case to the DPs via the syntactic operation Multiple Agree (Chomsky 2000; Hiraiwa 2005), as in e.g. Russian or Japanese. The DP_{sbj} then undergoes syntactic movement to the specifier of AbsP.

(19)   AbsP   *DP subject raising*

$$DP_{sbj}$$
i Asing $Abs^0_{[ABS]}$ VP

V^0 PrP

maw   t

Pr^0 DP_{obj}

a sinsi

Finally, the VP raises to the specifier of TP to satisfy EPP in V1 languages (Massam 2000), assuming that the T head carries the [PRED] feature. In Ulivelivek, the VP headed by the copular verb *maw* undergoes remnant movement to the specifier position of TP as in (20), which accounts for the copula-initial word order without violating the highly restrictive view of phrase structure as argued by Kayne (1983, 1994). The relative order between C elements and *maw* shows that the VP remnant movement targets Spec-TP. For instance, in (21a) *maw* must follow the topic marker *mu* 'TOP' when the subject is topicalized. In addition, in (21b) Ulivelivek embedded clauses are marked by *za* 'COMP', and *maw* must follow *za* in the embedded clause.

(20)   TP   *Remnant VP movement*

VP

V^0 PrP T^0 AbsP
[PRED]

maw t_i DP_i Abs^0 t

Pr^0 DP   i Asing
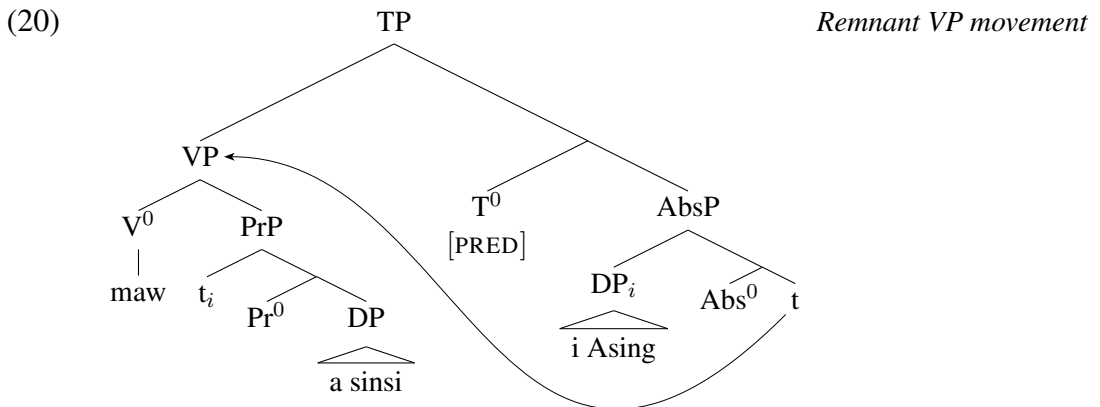
a sinsi

(21) a. [i   Asing]$_i$ mu [$_{TP}$ maw a   mu-wa-'uma t$_i$].   *Topicalization*
ABS Asing TOP   COP ABS.IND AV-RED-farm
'As for Asing, he is a farmer.'

b. ma-lralrup=ku   [$_{CP}$ za   [$_{TP}$ maw a   sinsi   i   Asing]].
AV-forget=ABS.1S   COMP   COP ABS.IND teacher ABS Asing
'I forget that Asing is a teacher.'   *Embedded clause marker*

In short, I have laid out the proposal to account for the the observation we made in the previous section that *maw* is a verb, as well as the copular-initial word order and the structural relations. Next, I would like to present more evidence in favor of the phrasal movement approach.

3.3.   Evidence for the phrasal movement analysis

First of all, the evidence comes from the coordination structure. As in many other V1 languages, the subject DP in Ulivelivek can be preceded by a coordinated VP with two conjuncts, each of which contains its own verb and DP complement. Chung (2006) points out that in these V1 languages, if the V-head and the DP are moved separately, the movement violates the Coordinate Structure Constraint (Ross 1967). Thus, the coordinated VP must be allowed to undergo phrasal movement across the subject as a single constituent. As in (22), two copular VPs also can be conjoined in Ulivelivek.

(22) a. [m-ekan za   vavuy] zi [tr-em-ekel za   kutral] i   Asing.
AV-eat   OBL.IND pork   CONJ drink⟨AV⟩   OBL.IND wine   ABS Asing
'Asing ate some pork and drank some wine.'

b. [maw a   sinsi] zi [maw a   mu-wa-'uma] i   Asing.
COP   OBL.IND teacher CONJ COP   OBL.IND AV.RED-farm ABS Asing
'Asing is a teacher and a farmer.'   *VP coordination*

Second, the phrasal movement approach must be viable in Ulivelivek, given the fact that the language has the serial verb construction. In Ulivelivek the serial verb construction has two basic word orders, V$_1$-V$_2$-O-S and V$_1$-V$_2$-S-O. Under the assumption that the underlying word order is S-V$_1$-V$_2$-O, if the word order is derived by V^0-raising, then V$_2$ must have been allowed to undergo head movement across V$_1$ first, followed by the head movement of V$_1$ again across the raised V$_2$, each of which obviously violates the head movement constraint (Travis 1984), as represented in the configuration (24). On the contrary, the VP raising approach yields the simpler account for the two basic word orders. The first word order is derived simply by V$_1$P raising, while if the object scrambles out of the V$_1$P, then the result is V$_1$-V$_2$-S-O. Thus, VP raising must be allowed in Ulivelivek.

(23) a. sa'ar m-ekan kana   vavuy i   Asing.   *SVC (V_1-V_2-O-S)*
           like AV-eat OBL.DEF pork ABS Asing
           'Asing likes to eat the pork.'

      b. sa'ar m-ekan i   Asing   kana vavuy.   *SVC (V_1-V_2-S-O)*
           like AV-eat Asing OBL.DEF pork
           'Asing likes to eat the pork.'

(24)   *[V_1^0 [V_2^0 [S . . . t . . . t . . . O]]]   *HMC violation*

Finally, the position of Ulivelivek particles also indicates that the copula-initial word order is derived by phrasal movement. For example, in (25a) the Q-particle appears in the position between the DP_{obj} and DP_{sbj}. This is a natural consequence if the VP headed by *maw* can raise further to the specifier position of some functional projection which is headed by the Q-particle *awlra* through the syntactic derivation. Besides, the aspect particles *lra* 'perfective' and *ziya* 'irrealis' also can follow the DP_{obj} as in (25b-c). The word order suggests that the VP has been moved to the specifier of AspP. And then the AspP is pied-piped to the specifier position of TP, in a way similar to the phrasal movement approach for word formation as argued by Koopman and Szabolcsi (2000) and Koopman (2005). The phrasal movement approach also allows us to derive the future form *ka-maw* 'will be' if we assume that *ka-* is a modal prefix that heads some functional projection and takes the VP as its complement, and the functional projection as a whole raises to Spec-TP for the final word order.

(25) a. [$_{FP}$ [$_{VP}$ maw a   sinsi] awlra] i   Asing?   *Q-particle*
                 COP OBL.IND teacher Q   ABS Asing
           'Is Asing a teacher?'

      b. [$_{AspP}$ [$_{VP}$ maw a   sinsi] lra] i   Asing.   *Perfective aspect*
                  COP OBL.IND teacher PERF ABS Asing
           'Asing has been a teacher.'

      c. [$_{AspP}$ [$_{VP}$ maw a   sinsi] ziya] i   Asing.   *Irrealis aspect*
                  COP OBL.IND teacher IRR   ABS Asing
   'Asing is about to be a teacher.'

In contrast, the V^0-raising approach will have to solve the problem raised by Head Movement Constraint if these particles are functional heads, and the problem as to why the internal object must go along with the V^0 through the derivation. Thus, I conclude that the phrasal movement approach is favored.

3.4. The alternative analysis and its problem

Let us return to the problem as noted in section 3.1 and consider the alternative analysis that is not adopted, in which the copula *maw* syntactically selects two DPs, for example, $[_{FP}$ DP$_{sbj}$ [*maw* DP$_{obj}$]]. The problem of the alternative is that the VS$_{CL}$O word order cannot be derived. Specifically, after subject raising and VP remnant movement, the result will be $[_{TP}$ $[_{VP}$ *maw* DP$_{obj}$]$_i$ ... $[_{ABSP}$ DP$^{CL}_{sbj}$ ... t$_i$]], which wrongly predicts that the clitic should follow the DP object.

(26) a. *maw a   mu-wa-'uma=ku.   *VOS$_{CL}$
        COP   ABS.IND   AV.RED-farm=ABS.1S
        'I am a farmer.'

    b. *maw a   mu-wa-'uma lra=ku.   *VOAspS$_{CL}$
        COP   ABS.IND   AV.RED-farm PERF=ABS.1S
        'I have been a farmer.'

   In contrast, the proposed analysis can solve this problem as long as we assume, following Kayne (2002), that pronouns start as a constituent that merges with the antecedent. Specifically, the pronoun clitic merges with a silent DP antecedent,[8] and the silent DP alone moves to Spec-AbsP, while the clitic stays in-situ so eventually the VS$_{CL}$O word order will be derived, which also naturally explains why VSO word order is available only when the subject is a clitic, as illustrated in (27). The proposed solution cannot save the alternative analysis, because eventually the clitic will precede the copula.

(27)   *Silent antecedent and clitic pronoun*
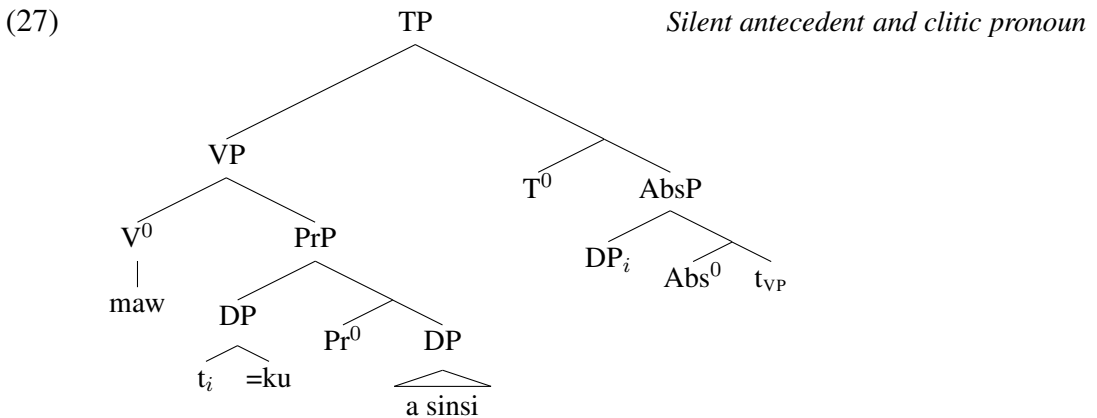
   To sum up, in this section I propose the small clause approach for the Ulivelivek copular construction, and argue that the copula-initial word order is derived by remnant movement. The evidence comes from the coordination structure, serial verb construction, and the position of the particles.

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[8]Because of space limitations, I will leave out the question about the status of the silent DP.

4.   Conclusion and implication

This paper demonstrates the Ulivelivek data and argues that *maw* 'COP' is a copular verb, based on its capability of morphological markings that are also the typical characteristics of other lexical verbs. Since Ulivelivek nominal sentences need the copula, it becomes clear that there is a sharp distinction between verbal and non-verbal predicates. It is also argued specifically that *maw* is a Montagovian copula so the selectional restriction that only DPs are allowed to co-occur with *maw* is observed, excluding other syntactic categories, which constitutes another piece of evidence for the existence of category distinctions. I argue in the second half that the underlying structure is the small clause construction, and the copula-initial word order is derived by the remnant VP raising, which accounts for the effect of Condition C violation and anaphoric binding. One important implication of the proposed analysis is that *wh-ex*-situ construction in Ulivelivek may also be derived from predicate-fronting, resulting into the structure of *wh*-pseudocleft (Aldridge 2002), because the copular verb can also be observed in Ulivelivek *wh-ex*-situ questions as noted in section 2. More evidence is required, which calls for future work.

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PASSIVES AND CLITIC DOUBLING: A VIEW FROM CLASSICAL MALAY*

Hiroki Nomoto
Tokyo University of Foreign Studies
nomoto@tufs.ac.jp

This paper investigates the hybrid type *di-* passive in Classical Malay, in which the agent occurs twice in a clause, namely as the third person enclitic and in the agentive PP (*di-V=nya oleh DP*). I argue that the construction is an instance of clitic doubling involving external arguments by pointing out its similarities to direct object clitic doubling. I propose a formal analysis of the hybrid type, according to which the core clitic doubling properties common to both constructions stem from the semantically dependent nature of clitic pronouns. This study supports Baker, Johnson, and Roberts's (1989) basic insight of comparing passives to clitic doubling.

1.   Introduction

In Classical Malay, the passive agent may occur twice in a clause, namely as the post-adjacent third person enclitic =*nya* and as a part of the agentive PP, as in (1).

(1)   Hybrid type: *di*-V=*nya oleh* DP
        maka di-lihat=*nya* [oleh *mereka itu*] ada se-orang Cina   baharu
        and   PASS-look=3   by   them   that be   one-CLF   Chinese just
          bangun dari   tidur.[2]
          get.up   from sleep
        'and they saw a Chinese man who had just gotten up.' (Abd.H 296:14)

I refer to this passive type as the 'hybrid type' for the reason clarified below (section 2). The existence of the hybrid type has been noted in the relevant literature (e.g. Cumming 1991; Sato 1997). However, no serious study has been done regarding its characteristics.[3] Empirically speaking, this paper points out similarities between

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[2]This paper uses the following non-standard abbreviation not included in the Leipzig Glossing Rules. PART: particle.
[3]Recently, Kartini Abd. Wahab and I have examined its frequency compared to those of the three other *di-* passive types in the two 19th century texts studied by this paper (Nomoto and Kartini 2016).

the hybrid type and direct object clitic doubling (section 3). Theoretically, the paper proposes an analysis of the syntax and semantics of the hybrid type that takes into account its clitic doubling aspect (section 4). The other *di-* passive subtypes are also analysed in such a manner that all subtypes are neatly connected.

Classical Malay is a language of literature, and hence does not represent the Malay language spoken in the 19th century or earlier. In fact, it is thought to reflect the state of spoken Malay at much earlier time, given the general spoken-written divide found in Malay up to the present as well as the fact that literary language tends to follow an older established style.

The main source of data for this study consists of the following three 18th and 19th century texts: *Hikayat Hang Tuah* (18th century; Tuah), *Hikayat Abdullah bin 'Abdul Kadir* (19th century; Abd.H) and *Hikayat Marakarma* (19th century; Misk). Classical Malay texts usually have multiple manuscripts and editions which differ in form and content. This is because it was the norm of traditional Malay literature that scribes modified the language and story to suit the linguistic and sociocultural taste of their age. This study uses the Malay Concordance Project (`http://mcp.anu.edu.au/`). The versions of the three texts adopted in this study are thus those available there, unless otherwise noted.[4]

2.   Classical Malay passives

As in Modern Malay, Classical Malay has two kinds of passives: '*di-* passives' with the passive marker *di-* and 'bare passives' with no overt voice marker.[5] In bare passives, the external argument (e.g. agent, experiencer) occurs immediately before a bare verb; auxiliaries, adverbs and negation, if any, must precede them, as shown in (2).[6] It is the *di-* passive that is directly relevant to this study.

(2)   Bare passive: Aux/Adv/Neg DP$_{ext}$ V
    a. anak bini=nya itu   *boleh kompeni beri* gaji
       child wife=3   that can   company give allowance
       'the Company can give his wife and children an allowance' (Abd.H 234:12)

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[4]They are Kasim 1975 (*Hikayat Hang Tuah*), Sweeney 2006 (*Hikayat Abdullah bin 'Abdul Kadir*) and Inon Shaharuddin 1985 (*Hikayat Marakarma*).

[5]Bare passives are referred to by various names in the literature: 'object-preposing construction' (Chung 1976), 'Passive Type 2' (Dardjowidjojo 1978), 'pasif semu' [pseudo-passive] (Asmah 2009), 'object(ive) voice' (Arka and Manning 1998; Cole, Hermon, and Yanti 2008), and so forth.

[6]Classical Malay as well as Modern Malay have another voice that involves a bare verb, i.e. 'bare actives', which has been dismissed by some previous authors as either nonexistent or a variant of bare passives. Bare actives differ from bare passives in that the external argument *precedes* Aux/Adv/Neg (DP$_{ext}$ Aux/Adv/Neg V). Crucially, without the presence of Aux/Adv/Neg, one cannot distinguish between these two bare voices. See section 2 of Nomoto 2015 for my view of Malay voice system.

b. alur   yang *boleh kapal lalu*
     channel REL can   ship   pass
     'channels along which ships can pass' (Abd.H 328:7)

Di- passives can be subclassified according to how the external argument is encoded. Like English passives, the external argument can be implicit (3) or expressed by an *oleh* 'by' phrase (4). In addition, the external argument can also occur immediately after the passive verb (5). The third person pronoun in this position cliticizes to the verb, as in (5b).

(3)   Implicit type: *di*-V
     Dari   mana   datang Enci' Nakhoda dan apa   *di-cari*?
     from where   come   Mr.   Captain   and what PASS-look.for
     'Where did you come from and what are you looking for, Captain?' (Abd.H 43:1)

(4)   *Oleh* type: *di*-V *oleh* DP
     Maka duit   itu   *di-ambil*   *oleh bapa=nya*
     and   money that PASS-take   by   father=3
     'And the money was taken by their father' (Abd.H 17:11)

(5)   DP type: *di*-V DP
     a. tiada ia *di-makan hulat*
       not   it PASS-eat   worm
       'it [= knowledge] is not eaten by worms' (Abd.H 23:11)
     b. Serta *di-lihat=nya* nakhoda itu
       and   PASS-look=3 captain   that
       'And he [= my father] looked at the captain' (Abd.H 43:13)

Furthermore, the example in (1) above is a hybrid of the *oleh* type and the DP type, involving both an *oleh* phrase and a post-adjacent third person pronoun. This hybrid type is no longer available in Modern Malay. (6) provides another example of the hybrid type. In this example, the *oleh* phrase and the passive verb occur before the internal argument. While the *oleh* phrase is almost exclusive to the postverbal region in Modern Malay, it moves around quite freely for information structural reasons in Classical Malay.

(6)   *oleh ibu*   *bapa=ku*   *di-jemputkan=nya*-lah segala adik kakak dalam
     by   mother father=my PASS-invite=3-PART   all   sibling   in
       Melaka
       Malacca
     'my parents invited all their siblings in Malacca' (Abd.H 32:4)

Virtually nothing is known about the hybrid type to date except its existence. In the next section, I argue that the hybrid type involves clitic doubling.

3.   Hybrid type as a clitic doubling construction

3.1.   Clitic doubling

In a clitic doubling construction, the clitic and its double together refer to a single individual rather than two distinct ones. The example in (7) below illustrates direct object clitic doubling in Rioplatense Spanish. The clitic *lo* before the verb does not refer to an individual separate from Juan, denoted by the full DP *Juan*. Conversely, *lo* and *Juan* together refer to a single individual, i.e. Juan.

(7)   Rioplatense Spanish (Jaeggli 1986:32)
      Lo   vimos   a Juan.[8]
      him we.saw   A Juan
      'We saw Juan.'

The hybrid type *di-* passive in Classical Malay resembles this construction. The clitic =*nya* must refer to the same individual as that denoted by the full DP in the *oleh* phrase. The latter DP is comparable to the clitic's double in clitic doubling.
Two clear differences exist between the two constructions. First, the Spanish construction above and other phenomena discussed in the clitic doubling literature involve internal arguments, whereas the Malay construction involves external arguments. Second, the double (i.e. the full DP) occurs in an argument position in the former, but not in the latter. As seen in section 2, an *oleh* phrase can move rather freely, indicating that it is an adjunct. The second difference is presumably related to the first one. This is because an asymmetry exists between internal and external arguments with regard to the nature of the position in which it is first merged, namely, complement to V and specifier of v, respectively. In an active transitive clause like (7), complement to V allows a full DP to remain there. By contrast, specifier of v in a passive clause does not allow a full DP to remain there.[9]
If the second difference is a principled one related to the first, it does not warrant rejecting a clitic doubling construction whose double is not an argument. In fact, some authors (for example, Anagnostopoulou, to appear) consider the argumenthood of the double as a defining property of clitic doubling. However, that is

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[8]Under Jaeggli's analysis, *a* transmits the case that the verb has to assign.

[9]I assume that a DP can stay there if it is syntactically cliticized. This means that an external argument that looks like a full DP in bare passives (2) and DP type *di-* passives (5) in fact has undergone syntactic cliticization. Given that only pronouns have special clitic forms in Malay, the morphological effect of syntactic cliticization can be observed only for pronouns, but not for common nouns and proper names.

the case only insofar as internal arguments are concerned. Hence, the hybrid type *di-* passive in Classical Malay can be considered a clitic doubling construction if it has clitic doubling properties. The next section demonstrates that indeed it does.

3.2.   Clitic doubling properties

The hybrid type *di-* passive has the following four properties associated with direct object clitic doubling (hereafter simply 'clitic doubling') reported in the literature (Anagnostopoulou, to appear): (i) optionality of doubling; (ii) special preposition; (iii) high referentiality of the referent; and (iv) clausemate condition on the clitic and its double. I will discuss these properties one by one below.

3.2.1. Optionality

Clitic doubling is known to be optional. That is, a clitic doubling sentence is still grammatical if either the clitic or its double is omitted. Thus, the Spanish sentence in (7) is grammatical without the clitic *lo*. It is also grammatical without the full DP *a Juan*, in which case the clitic alone refers to a contextually salient individual. This ability to refer differentiates clitics from agreement markers. The former can refer either by themselves or together with a full DP, whereas the latter cannot refer but can indicate the presence of a referring expression in a certain syntactic position.

The optionality of doubling in the sense above is also found with the hybrid type *di-* passive in Classical Malay. The counterpart without the clitic is the DP type like (5a), where the external argument is a full DP. The external argument DP in (5a) is non-referential, but it can be referential as well, as in (8).

(8)   pakaian segala anak raja-raja itu   semuanya *di-suruh*   *permaisuri*
       clothes all   child king-PL that all   PASS-order queen
          kenakan kepada anak=nya.
          put.on   to   child=3
       'the queen ordered that all the clothes of those kings' children be put on her child.' (Misk 23:13)

The counterpart without the double is the DP type seen in (5b), where the external argument is a clitic pronoun. As shown in the translation, the enclitic =*nya* in this example refers to the author's father. Hence, it should not be analysed as an agent agreement marker.[10]

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[10]Nor is the enclitic =*nya* a spell-out of 'restrictive ϕ-features' proposed by Legate (2014) for verbal prefixes in the closely related language Acehnese. Restrictive ϕ-features are adjoined to a Voice head and restrict the external argument in terms of ϕ-features. They are not pronominal, and hence do not refer.

3.2.2. Special preposition (Kayne's Generalization)

In Romance clitic doubling, the double of a clitic is introduced by a special preposition. The relevant preposition in the Spanish example in (7) is *a*. Clitic doubling is unavailable unless a language has such a special preposition (Kayne's Generalization).

    The preposition *oleh* can be regarded as the Malay equivalent of Spanish *a*. The preposition that introduces the external argument in *di-* passives must be *oleh*. (9) shows that the external argument of *kedengaran* 'to be heard' and *terdengar* 'to be heard', which are both derived from the root *dengar* 'to hear', can be introduced by the preposition *kepada* 'to'. However, the related *di-* passive verb *didengar* only allows *oleh* to introduce its external argument, as shown in (10).

(9) a. Maka kedengaran-lah khabar itu *kepada* orang2 Cina   yang kaya2
        and   be.heard-PART news   that   to   people Chinese REL rich

           dan kapitan   Cina
           and headman   Chinese
        'And the news was heard by the rich Chinese people and Chinese headmen' (Abd.H 320:1)

    b. Maka setelah terdengar khabar itu   *kepada* raja, maka ia   memberi
        and   after   be.heard   news   that   to   king then   he   give

           titah
           command
        'And after the king heard the news, he gave a command' (Abd.H 68:3)

(10)   Maka apabila di-dengar   *oleh* Holanda akan khabar Inggeris hendak
        and   when   PASS-hear by   Holland of   news   British   is.going.to

           membuat negeri di Singapura itu,
           make   state   at Singapore that
        'And when the Holland heard the news that the British was going to make a state in Singapore,' (Abd.H 198:8)

3.2.3. High referentiality

The direct object in clitic doubling is known to receive a highly referential interpretation.[11] Languages vary as to the required level of referentiality: definites (e.g. Greek), specifics (e.g. Rioplatense Spanish), or both definite and specifics (e.g. Romanian) (Anagnostopoulou, to appear). Rioplatense Spanish examples showing this point are given in (11).

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[11]According to Anagnostopoulou (to appear), animacy also affects the possibility of clitic doubling. Indeed, most *di-* passives examined in this study have animate external arguments. However, some have inanimate external arguments such as *ghali* 'galley' and *peluru* 'bullet'.

(11)   Rioplatense Spanish (Suñer 1988)
    a. La oían   a {Paca / la niña}.   (definite, specific)
       her they.listened A Paca   the girl
       'They listened to {Paca/the girl}.'
    b.*Lo alabarán   al   niño que termine primero.   (definite,
       him they.will.praise A+the boy who finish   first   non-specific)
       'They will praise the boy who finishes first.'

The external argument in the hybrid type *di-* passive is also high in referentiality. I examined all instances of hybrid type *di-* passives that appear in the three 18th to 19th century texts. It was found that all but one of the 245 instances are definite (241 instances) or specific indefinite (3 instances). I consider the example in (12) to be the sole exception. The relevant argument is *orang* 'people'. This word occurs very frequently in the DP type to denote non-specific human(s), but it is rarely used in the *oleh* and hybrid types. In fact, one could analyse *orang* in (12) as specific indefinite, referring to a specific group of people who should not have known about the murder plan. As a result, there will be no exception in the three texts.

(12)   Pada malam itu Patih Gajah Mada pun tiada tidur duduk membicarakan peker-
        jaan hendak membunuh Laksamana,
        kerana   pekerjaan=nya itu   semuanya di-ketahui=nya oleh *orang*.
        because operation=3   that all   PASS-know=3 by   person
        'That night, Prime Minister Gajah Mada did not sleep a wink, discussing the
        operation of killing the Admiral (= Hang Tuah), because that operation of his
        had been entirely known to people.' (Tuah 273:7)

It is interesting to note that while the external argument of the hybrid type is either definite or specific, the DP type has non-specific indefinite external arguments in most, if not all, cases (see (5a)). However, this does not mean that the DP type does not allow external arguments with high referentiality. For instance, the external argument is the third person enclitic pronoun =*nya* in (5b) and a bare definite DP *permaisuri* 'the queen' in (8). DPs with overt determiners and proper names are also possible. In other words, the set of the DPs allowed for the hybrid type and that of the DPs allowed for the DP type do not complement each other. Conversely, the former is a subset of the latter. This inclusion relationship underlies the optionality discussed in section 3.2.1 above.

3.2.4. Clausemate condition

One important difference between direct object clitic doubling and object agreement is that while the clitic and its double must occur in the same clause in clitic doubling, agreement can be long-distance, crossing a clause boundary (Anagnostopoulou, to appear). It is not possible to check by means of elicitation whether an *oleh* agentive

phrase can occur outside the clause hosting the passive verb encliticized by =*nya* in Classical Malay. However, it turned out that the two occur in the same clause in all 245 hybrid type *di-* passive examples in the three texts.

3.3. Alternative analysis as clitic dislocation

There is a clitic construction that resembles but is distinct from clitic doubling, namely clitic dislocation. Examples from Rioplatense Spanish are given in (13). Unlike clitic doubling, clitic dislocation does not require a special preposition introducing the full DP, as shown in (13b). In other words, it is not subject to Kayne's Generalization (cf. section 3.2.2).

(13)   Rioplatense Spanish (Anagnostopoulou, to appear)
    a. A Juan, lo   vimos   ayer.
       A Juan him we.saw yesterday
       'We saw Juan yesterday.'
    b. El libro, lo compramos ayer.
       the book   it we.bought   yesterday
       'We bought the book yesterday.'

If the hybrid type is a clitic dislocation construction, it is anticipated that some agentive phrases occur without *oleh* ('DP *di*-V=*nya*' or '*di*-V=*nya* DP'). In fact, one of the 245 examples follows this pattern:

(14)   Setelah sudah   di-mandikan itu   maka *di-perbuat*=*nya orang*-lah
        after   already PASS-bathe   that then PASS-treat=3   people-PART
           seperti adat   raja-raja yang besar-besar berputera.
           like   custom king-PL REL great   have.prince
        'After [Princess Ratna Dewi's newly-born daughter was] bathed by people, she was treated by them as great kings customarily do when they got a prince.' (Misk 8:16)

Interestingly, in the version edited by J. S. A. van Dissel (Abu Bakar 1985), the relevant portion does not appear in the hybrid type but in the DP type: *di-perbuat orang* without the clitic =*nya*.

There are a few possible reasons why the version included in the Malay Concordance Project (Inon Shaharuddin 1985) appears in the unusual hybrid type without *oleh*. First, the two manuscripts from Sri Lanka consulted by Inon Shaharuddin may indeed have had the clitic =*nya*. Note that even if they did, there is still the possibility that the original author could have written =*nya* by mistake, given that he did not use the pattern elsewhere in the same text. Second, an error could have been made in the course of transliteration either in Abu Bakar 1985 or Inon Shaharuddin 1985. Classical Malay texts were written in a variant of Arabic scripts called Jawi. The

clitic =*nya* might have been mistakenly dropped or added when Jawi scripts were romanized. It is not clear at the moment which of these possibilities is actually the case. Therefore, I shall put aside the problematic *oleh*-less hybrid type, and conclude that the hybrid type is not a clitic dislocation construction.

4.   Analysis

This section presents a formal analysis of the syntax and semantics of the hybrid type *di-* passive, which was identified as a clitic doubling construction involving external arguments in the last section.

4.1.   Syntax

I propose the base structure in (15a) for the hybrid type *di-* passive. This structure minimally differs from that of the DP type, shown in (15b), in having the agentive PP adjoined to vP.[12] Since the agentive PP is an adjunct, it is optional (cf. section 3.2.1). The external argument is merged in Spec,vP and assigned a θ-role there, as it is in the active. The passive differs from the active in having the passive v (v_{pass}), which lacks the accusative case assignment ability. Following Bruening (2013), I assume that the passive marker (*di-*) and the 'by' phrase both c-select a passive vP headed by v_{pass}.
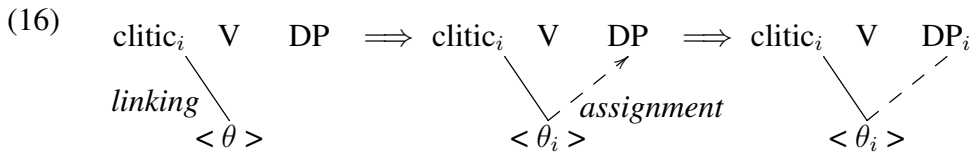
(15) a. Hybrid type

b. DP type
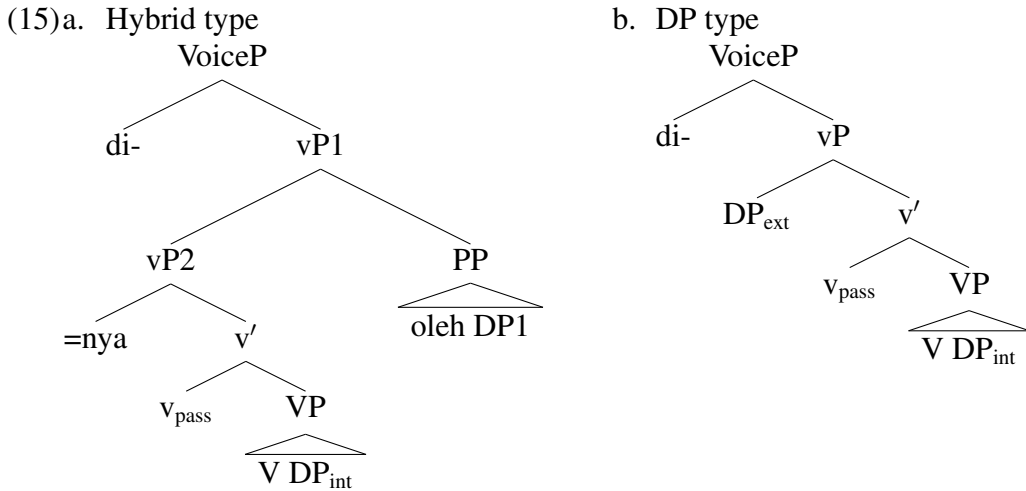
Previous analyses of (object) clitic doubling capture the joint reference by the clitic and its full DP double by syntactic means. There are three major approaches, of which only one is feasible for analysing the hybrid type *di-* passive. First, Harizanov

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[12]The surface orders 'DP_{int} *di*-V=*nya oleh* DP1' and 'DP_{int} *di*-V DP_{ext}' are obtained through the movement of V to v to Voice (and possibly further to T) and that of DP_{int} to Spec,TP. One of the notable differences between Classical Malay and Modern Malay is the abundance of verb-initial clauses in the former. Verb-initial order results from the remnant movement of VoiceP: '[*di*-V=*nya oleh* DP1] DP_{int}' and '[*di*-V DP_{ext}] DP_{int}'.

(2014) and Kramer (2014) analysed a clitic and its double as the head and tail of a movement chain, to which a single θ-role is assigned. In the clitic doubling construction, both head and tail are overtly spelled out, as in resumption. An analysis along these lines is unlikely for clitic doubling involving external arguments discussed in this paper. This is because the putative movement will take place from Spec,vP to within the PP adjoined to vP. Such a movement is unconceivable as a normal kind of movement.[13]

Another syntactic approach treats the clitic as an agreement morphology agreeing to its double DP (Sportiche 1996). Since an agreement morphology does not receive independent interpretation, the issue of joint reference does not arise in the first place. However, this analysis is not plausible because there are facts suggesting that the clitic in both object clitic doubling and the hybrid type *di-* passive is not an agreement morphology (see sections 3.2.1 and 3.2.4).

Finally, Jaeggli (1986) argues that a clitic and its double are base-generated in their surface positions, and accounts for their joint reference by indirect co-indexation through linking to the θ-grid. The diagram in (16) schematically shows how this co-indexation takes place. It is assumed that clitics must have a referential index and that they are not assigned a θ-role. The index of a clitic is claimed to be linked with a θ-role in the θ-grid of the verb hosting the clitic. If this θ-role is assigned to the clitic's double, the clitic and its double DP will end up with the same index, resulting in joint reference.

(16)   clitic$_i$ V   DP $\implies$ clitic$_i$ V   DP $\implies$ clitic$_i$ V   DP$_i$

linking   *assignment*

$<\theta>$ $<\theta_i>$ $<\theta_i>$

According to Jaeggli, co-indexation in this way is required to satisfy Borer's (1984) Complement Matching Requirement (or the Grid Matching Requirement in Borer and Grodzinsky 1986), which guarantees the uniformity of indices associated with a θ-role.

This last approach, though oldest among the three, is more promising than the other two as a general analysis of clitic doubling applicable to clitic doubling involving external as well as internal arguments. It is similar in spirit to the semantic analysis presented below in that joint reference is explained by a condition on θ-role assignment. Besides its purely syntactic nature, it differs from my analysis in that the special preposition (cf. section 3.2.2) is no more than a case transmitter and plays no role in the account of joint reference.[14]

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[13]The same objection applies to a movement analysis of clitic doubling whereby the clitic and its double start as a single nominal constituent and subsequently the clitic moves out, an extension of Uriagereka's (1995) or Nevins's (2011) analysis of object clitic doubling.

[14]Two other clitic doubling properties discussed in section 3.2 can be accounted for as follows. (i) The clitic's double must be highly referential (cf. section 3.2.3) because a θ-role linked

4.2.   The semantics of clitic doubling

I will now offer an alternative semantic analysis of the hybrid type *di-* passive in Classical Malay. Similar to Jaeggli (1986), I argue that the association between a clitic and its double is not created by movement or agreement but rather by a condition on θ-role assignment. However, unlike Jaeggli and many others, I take θ-roles to be essentially semantic objects, the assignment of which may be partly constrained by morphosyntax. Borer's (1984) Complement Matching Requirement, which plays a crucial role in enabling joint reference in Jaeggli's analysis, is a syntactic condition on syntactic objects such as indices and the syntactic operation of linking. The present analysis does not resort to these syntactic devices, but instead relies on basic semantic tools such as θ-roles and the θ-Criterion. It must be noted here that I have adopted a semantic conception of the θ-Criterion. The reasoning behind this decision is that since θ-roles are semantic objects, the condition regulating their assignment (that is, the θ-Criterion) should be semantic as well. I will return to this point below. The proposed analysis is also intended to apply to clitic doubling involving internal arguments with necessary adjustments.

The basic idea is that clitic pronouns are dependent not just phonologically but also semantically. Just as a clitic pronoun cannot be pronounced independent of its phonological host, it also cannot be interpreted, more specifically it cannot fulfil its referring potential, without the support of its semantic host. What counts as a clitic's semantic host comes in two types: a referential expression in the same clause or a salient entity in the discourse. Clitic doubling is a construction that involves the first type, whilst a clitic construction without doubling involves the second type. In the case of *di-* passives, they are the hybrid type (*di-*V=*nya oleh* DP) and the DP type whose external argument is the enclitic =*nya* (*di-*V=*nya*) respectively. The external argument expressed by the *oleh* phrase in the hybrid type, which is the clitic's double, must be highly referential, in order for it to serve as the semantic host of the clitic. In short, the high referentiality of a clitic's double follows from the dependent nature of the clitic.

I propose deriving the relevant semantic dependency as a consequence of the θ-Criterion. I assume the denotations in (18a) and (18b) for vP2 and PP in (15a), repeated below as (17) in a labelled bracket notation. The 'Init(iator)' role encompasses various external θ-roles such as agent, causer and experiencer. Notice that the clitic pronoun =*nya* is assigned a θ-role, as shown in (18a). In this respect, clitic pronouns behave as pronouns, but not as agreement morphology. Significantly, (18a) and (18b) contain the same initiator role. They are combined to yield (18c).

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with the referential index of a clitic cannot be assigned to a non-referential DP such as *no one*, which does not come with a referential index. A problematic aspect of this account is that it draws too sharp of a distinction between the DPs allowed in clitic doubling and those which are not, despite the observed cross-linguistic variation as to what is considered "highly referential." (ii) The clitic and its double are clausemates because in object clitic doubling, because the clitic attaches to the verb that takes the doubled DP as its complement.

(17)   [$_{\text{VoiceP}}$ di- [$_{vP1}$ [$_{vP2}$ =nya [$_{v'}$ v [$_{VP}$ V DP$_{int}$]]] [$_{PP}$ oleh DP1]]]

(18)a. $[\![vP2]\!] = \lambda e.\text{V-ing}(e) \wedge \text{Theme}([\![DP_{int}]\!], e) \wedge \text{Init}([\![=nya]\!], e)$
    b. $[\![\text{oleh DP1}]\!] = \lambda f_{\langle s,t\rangle}\lambda e.f(e) \wedge \text{Init}([\![DP1]\!], e)$
    c. $[\![vP1]\!] = \lambda e.\text{V-ing}(e) \wedge \text{Theme}([\![DP_{int}]\!], e) \wedge \text{Init}([\![=nya]\!], e) \wedge \text{Init}([\![DP1]\!], e)$

The θ-Criterion requires the identity of $[\![=nya]\!]$ and $[\![DP1]\!]$. As noted above, this study assumes that the θ-Criterion is a semantic principle. This semanticized θ-Criterion is a biuniqueness condition that holds between a θ-role and a referent to the effect that a θ-role (from the same tier, cf. Jackendoff 1990) is assigned to only one referent and a referent is assigned only one θ-role. Under this definition, =*nya* and DP1 must refer to the same individual in order to comply with the θ-Criterion because their denotations are both assigned the same initiator role. Otherwise, the initiator role would be assigned to more than one referent, violating the θ-Criterion.

It must be emphasized that the analysis above should not be understood in syntactic terms. As correctly pointed out by one of the reviewers of my AFLA abstract, the θ-Criterion as generally assumed in syntactic theories will rule out the hybrid type as ungrammatical. This is because θ-roles in syntax are concerned with argument *expressions* rather than their denotations; θ-roles are syntactic markers that determine an expression's interpretation. The syntactic version of θ-Criterion dictates that a θ-role cannot be assigned to two distinct DPs. It is thus impossible to assign the same initiator role to both the clitic =*nya* and DP1, without giving rise to ungrammaticality.

4.3.   Consequences of the analysis: Clitic doubling properties

The proposed semantic analysis accounts for three of the four clitic doubling properties discussed in section 3.2. First, in the present analysis, the preposition *oleh* 'by' is not just a meaningless case assigner/transmitter. It also plays the significant role of guiding the clitic to its semantic host by means of a θ-role. Joint reference by a clitic and its double DP is made possible because the two are assigned the same θ-role. This explains why clitic doubling involves a special preposition (Kayne's Generalization). A special preposition is special in that it assigns a θ-role that is generally associated with a particular syntactic position. For example, Malay *oleh* assigns an external θ-role (termed "initiator") encompassing more particular roles such as agent, causer and experiencer. This role is generally associated with Spec,vP. Similarly, Spanish *a* assigns an internal θ-role encompassing more particular roles such as theme, stimulus and goal. This role is generally associated with complement to VP. Some languages rely on morphological cases rather than adpositions to indicate different thematic relations. Kayne's Generalization is expected not to hold in at least some such languages. Indeed, Balkan languages such as Greek and Bulgarian are cited as counterexamples to Kayne's Generalization (Anagnostopoulou, to appear). In these languages, clitic doubling is possible without a special preposition. Nouns in Balkan languages have richer case morphology than Malay and Romance.

Next, the high referentiality of a clitic's double has to do with the fact that a clitic pronoun is inherently referential. Since a clitic is referential, the DP with which it shares a denotation, namely its double, must also be referential. This much is also predicted by Jaeggli's syntactic analysis, but not by more recent approaches based on movement and agreement. I think that the cross-linguistic variation regarding the degree of referentiality arises from subtle semantic differences found in clitic pronouns in different languages, specifically in terms of a clitic's inherent referential strength. I claim that the mechanism of unifying the denotations of two different DPs, namely a clitic and its double, to satisfy the θ-Criterion works only when their combined referential strength exceeds a certain level. A weak clitic pronoun must depend on its host more than a stronger one to function as a full-fledged referential pronoun, which means that its host must be stronger than that of the latter.

Finally, the clausemate condition follows from the mechanism of θ-role mediated joint reference discussed above. Given that an event argument is existentially closed at VoiceP, the success of the relevant mechanism is guaranteed only within the same VoiceP. This is because an *oleh* 'by' phrase introduced outside of the VoiceP containing the clitic specifies the initiator of a distinct event, which is not necessarily identical to the role assigned to the clitic.

5.   Conclusions and implications

This paper has demonstrated that the hybrid type *di-* passive in Classic Malay is a clitic doubling construction involving external arguments. Moreover, it has provided a semantic analysis of its clitic doubling properties.

The proposed analysis of the hybrid type *di-* passive can be extended to the implicit and *oleh* 'by' types, which are also found in English. One can postulate a null pronoun in Spec,vP instead of the overt third person clitic *=nya* (cf. Collins 2005; Nomoto and Kartini 2014). This null pronoun differs from *=nya* in one crucial aspect: it is unspecified in terms of person and number. Hence, the agent does not need to be highly referential (and third person) in the *oleh* type, unlike in the hybrid type, though both involve clitic doubling. Moreover, the agent can be arbitrary in the implicit type. The proposed analysis with a null pronoun achieves the same result as analyses capitalizing on existential closure of the external argument (e.g. Bruening 2013; Legate 2014). However, only the former can capture the synchronic and diachronic connection between different passive subtypes in Malay (see Nomoto and Kartini 2016 for the passive continuum in Malay).

The hybrid type *di-* passive behaving similarly to object clitic doubling means that Baker, Johnson, and Roberts (1989) are basically correct in comparing passives to clitic doubling. They analyse the passive *-en* as a clitic doubled by a *by* phrase. As in my analysis, *-en* as a clitic receives an external θ-role. They claim that *-en* forms a θ-chain with the DP in the *by* phrase. The θ-Criterion prevents the latter DP from receiving a separate θ-role. Thus, it can be said that my analysis is a semantic reincarnation of Baker, Johnson, and Roberts's syntactic analysis, as both deal with the issue of joint reference by means of the θ-Criterion. One important difference be-

tween the two analyses concerns the role of a special preposition. In Baker, Johnson, and Roberts's analysis, it is a mere case assigner and does not assign its own θ-role. Hence, the *by* occurring in passives has no obvious relation to the preposition *by* in other contexts; they just happen to be homophones.[15] In my own analysis, however, it is crucial for a special preposition to have its own θ-role to assign, for the purpose of realizing joint reference in clitic doubling.

In conclusion, a clitic doubling analysis of passives is worth a serious reconsideration. With passives as a type of clitic doubling, the scope of the study of clitic doubling should broaden considerably. This study indicates that properties common to clitic doubling in general—that is, clitic doubling involving external as well as internal arguments—stem from the semantically dependent nature of clitic pronouns and the general semantic principle of θ-Criterion. Syntactic mechanisms to connect a clitic and its double DP may differ across constructions (external vs. internal arguments) and across languages.

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[15]Bruening (2013) criticizes such a view, showing parallelisms between *by* phrases in passives and nominals.

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POSSESSOR RAISING IN TRUKU SEEDIQ

Mayumi Oiwa
University of Hawai'i at Mānoa
moiwa@hawai.edu

This paper provides a formal analysis for the possessor raising constructions (PRCs) in Truku Seediq (Atayalic, Austronesian). Evidence for a raising approach, rather than a base-generation one, is twofold. First, PRCs contrast with another type of external possession (*a la* Payne and Barshi 1999), which involves no raising. Second, the restrictions on these constructions can be largely accounted for by possibilities of agreement and case-feature checking, if we assume the possessor to have vacated the possessive phrase it originates in. I further argue that Truku allows T and *v* to have multiple specifiers. Thus, PRCs consist of double-nominative and double-accusative patterns, in which both the possessum and the raised possessor check case features with a single head (i.e., T and *v*, respectively).

1.   Introduction

This paper provides a formal account of possessor raising construction (PRCs) in the Truku variety of the Seediq language (Atayalic, Austronesian). Possessor raising is a process that gives rise to "external possession" (Payne and Barshi 1999:3), a phenomenon where "a semantic possessor-possessum relation is expressed by coding the possessor…as a core grammatical relation of the verb and in a constituent separate from that which contains the possessum".

In Truku PRCs, the possessor alone, rather than the entire possessive phrase, assumes the sentential pivot position. Meanwhile, the possessum appears within the predicate, in its base-generated position. I present two kinds of evidence for the *raised* status of the possessor; that is, it has moved out of the possessive phrase that it originated in. First, PRCs contrast with another type of external possessor constructions (EPCs), which I refer to as EPC II, in various aspects: (i) realization of the possessor's phi-features on the possessum, (ii) cliticization of the possessor on the predicate, (iii) the ability of the possessor to be clefted, and (iv) applicability to inalienable vs. alienable possession. These differences indicate that, although the possessor and the possessum do not form a surface constituent in PRCs, the two DPs are not syntactically independent. In contrast, the possessive relationship between two DPs holds only at the semantic level in EPC II. The second piece of evidence for possessor raising is found in the restrictions of its application.

Specifically, possessor raising is only allowed from the possessive phrase whose case matches the verbal morphology, such that it would be attracted to the pivot position if possessor raising did not take place. In addition, no possessor can raise out of the Agent of an AV-marked transitive verb. While I attribute the latter restriction to semantic factors, the former falls out naturally if the possessor and the possessive phrase bear an identical case. They can simultaneously be in a case-feature checking relation with an identical head only if one originated inside the other, thus justifying the raising analysis. I propose that such multiple feature-checking relations are made possible by the parameter settings that permit Truku to have more than one specifier for both T and *v*.

This paper is organized as follows. First, I will provide a basic syntactic description of Truku Seediq. The next section introduces the PRCs side by side with EPCs without possessor raising. Following this, I will address and provide explanations for the aforementioned restrictions placed on the PRCs. I will then propose a mechanism for possessor raising in Truku, which involves multiple feature-checking relations. Finally, the paper concludes with a discussion of remaining issues and remarks.

2. Background on the language

2.1. Voice

Truku has a so-called Philippine-type four-way voice system, with Actor Voice (AV), Patient Voice (PV), Locative Voice (LV), and Circumstantial Voice (CV). Philippine-type languages are commonly described as having voice markers that correspond to the thematic role born by the syntactically prominent DP, which I refer to as the *pivot* of a sentence. For instance, the pivot of a sentence whose verb bears AV morphology must be the Actor.

(1) S\<m\>bug=ku   kingal boyak[1]   (AV)
     shoot\<AV\>=1SG.PIV   one   wild.pig.ACC
     'I shot one wild pig.'

(2) S\<n\>ipaq=mu   ka   huling   gaga   (PV)
     hit\<PFV.PV\>=1SG.NOM   PIV   dog.ACC   DIST
     'I hit that dog.'

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[1] Abbreviations: ACC = accusative, AV = Actor Voice, CV = Circumstantial Voice, DEC = declarative, DIST = distal, EXCL = exclusive, FIN = finite, GEN = genitive, INCL = inclusive, LV = Locative Voice, NOM = nominative, OBL = oblique, PFV = perfective, PIV = pivot, PL = plural, PROG = progressive, PROX = proximal, PST = past, PV = Patient Voice, SG = singular, STAT = stative.

(3) Krut-an   qsurux   bubu   ka   puyan (LV)
    cut-LV   fish.ACC   mother.NOM PIV   kitchen
    'Mother cut the fish in the kitchen.'

(4) S-krut=mu   qsurux   ka   yayu nii   (CV)
    CV-cut=1SG.NOM   fish.ACC   PIV   knife PROX
    'I cut fish with this knife.'

I follow Richards' (2000) approach to Tagalog and that of Pearson's (2005) to Malagasy in treating "voice" in Truku to be a kind of A'-agreement. That is, voice morphology indexes the *case* born by the pivot, *not* its thematic role. The DP to be pivot moves into this position via A'-movement, rather than a case-driven movement. For example, AV morphology and PV morphology indicate that the pivot bears nominative case and accusative case, respectively. LV and CV clauses are treated as applicative constructions, whereby the voice marking corresponds to the oblique case born by the applied pivot.

2.2.   Case

Upon the A'-agreement account of so-called Philippine-type voice systems, case-feature checking applies uniformly across voice types. The Actor consistently checks nominative case, and the Patient checks accusative case. In Truku, pronouns and phrasal DPs have distinct case-marking patterns, which are often non-transparent. There are two sets of second-position clitic pronouns, and two sets of free pronouns.

(5)   Truku pronoun inventory

	Free		Clitic	
	Neutral	ACC/OBL	Pivot	GEN/NOM
1SG	yaku	knan	=ku	=mu
1PL.INCL	ita	tanan	=ta	=ta
1PL.EXCL	yami	mnan	=nami	=name
2SG	isu	sunan	=su	=su
2PL	yamu	munan	=namu	=namu
3SG	hiya	hiyaan	Ø	=na
3PL	dhiya	dhiyaan	Ø	=dha

Pivot clitic pronouns encode the sentential pivot. The pivot may be expressed simultaneously as a pivot clitic and as a DP/pronoun preceded by the pivot marker *ka* (clitic doubling). In such cases, a pronoun from the free, neutral set follows *ka*.

(6) S<m>bug=ku   bowyak   (ka   yaku)
     shoot<AV>=1SG.PIV   wild.pig:ACC   PIV   1SG
     'I shot a wild pig.'

The possessor in a possessive construction is marked by a genitive clitic.

(7) bubu=mu
     mother=1SG.GEN
     'my mother'

Nominative case is homophonous with genitive case. Thus, the same set of clitics used to mark possessors act as second-place enclitics to mark the Actor in non-Actor Voice (NAV) sentences. However, they do not surface in AV sentences, because the nominative argument is given the pivot status, i.e., pivot-marking overrides nominative case-marking.

(8) S<n>ipaq=mu   ka   huling gaga
     hit<PFV.PV>=1SG.NOM   PIV   dog   DIST
     'I hit that dog.'

Accusative case is encoded via free pronouns. Oblique case-marking on peripheral arguments is homophonous with accusative case. Therefore, they are marked with an identical set of pronouns.

(9) Q<m>iyut   knan   ka   huling gaga
     bite<AV>   1SG.ACC   PIV   dog   DIST
     'That dog bit me.'

(10) B<n>gay   Kuras   knan   ka   lukus nii
     give<PFV.PV> Kuras.NOM   1SG.OBL   PIV   clothes PROX
     'Kuras gave these clothes to me.'

Neutral pronouns are caseless. They are used in the pivot position (6), the clefted position, as well as in conjunction with the reflexive *nanak*.
     Phrasal DPs in Truku are normally unmarked for case (e.g., *bowyak* 'wild pig' in (6) for accusative case, and *Kuras* in (10) for nominative case). One exception is accusative/oblique case on [+human] nouns, which can be optionally marked by the suffix *-an* (12). Note that the accusative/oblique pronouns also carry this *-an* ending.

(11) S<m><n>ipaq=ku   laqi   /lqi-an
     hit<AV><PFV>=1SG.PIV   child.ACC   child-ACC
     'I have hit the child.'

3.   External possession constructions

3.1   External possession constructions in a typological perspective

As defined earlier, external possession is a phenomenon in which two entities that are in a possessive relationship do not form a syntactic constituent. It is a widespread phenomenon both over vast geographical regions and across language families, practically encompassing the entire globe. Hence, external possession manifests itself in quite diverse ways. According to Payne and Barshi (1999:3), the external possessor is expressed as a core grammatical relation such as "subject, direct object, indirect object or dative, or as ergative or absolutive depending on the language type — but not,... as an oblique". It is also a core argument of a predicate, be it intransitive, transitive, or ditransitive. Moreover, such a possessive relationship cannot be the product of certain predicates, like *have*, *own*, or *be*, that contain the possessor as part of their argument frames.

The following constructions from French (12) and Japanese (13) provide a case in point. In French "possessor dative"[2] constructions (12b), the possessor appears as a dative clitic (*lui* '3SG.DET') while the possessum with a definite determiner stands as a direct object (*la main* 'the hand').

(12)   *French* (Deal 2013:2)
  a. J'ai   pris   sa   main   Non-EPC
      I-have taken   his   hand
  b. Je   lui   ai   pris   la   main   EPC
      I   3SG.DET   have   taken   the   hand
      'I took his hand.'

In Japanese double-nominative constructions, both the possessor and the possessum bear nominative case-marking. The relative ordering of the possessor, the possessum, and the predicate remains identical between (13a) and (13b). However, an adverb may intervene the possessor and the possessum in (13b), suggesting that the two do not form a constituent.

(13)   *Japanese* (Ura 1996:100)
  a. Mary-no   (*totemo)   kami-ga   naga-i   Non-EPC
      Mary-GEN   very   hair-NOM   long-be
  b. Mary-ga   (totemo)   kami-ga   naga-i   EPC
      Mary-NOM   very   hair-NOM   long-be
      'Mary's hair is (very) long.'

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[2] According to Haspelmath (1997), possessor datives are an areal feature of Europe, found not only in Indo-European languages but also in Basque, Maltese, and Hungarian.

It is important to clearly distinguish "external possession" and "possessor-raising". As stated earlier, the former is a descriptive term that overarches a variety of constructions in which the possessor and the possessum do not form a constituent. Some instances of external possession have been analyzed as possessor raising (see Landau 1999 for Hebrew, Ura 1996 for Japanese and Korean, and Cinque and Krapova 2008 for Bulgarian, among others). Yet, external possession does not presuppose possessor raising, which is defined in Ura 1996 as "an operation by which a DP contained within another DP is moved out of the host DP" (100).

3.2.   Two types of EPCs in Truku

There are two types of EPCs in Truku. I will tentatively refer to them as EPC I and EPC II, the first of which I identify as PRCs. Compare EPCs I (14a) and II (14b) with the non-external possession sentence (15), which has a possessive phrase as pivot. In both EPCs I and II, the pivot (*Iming*) is understood to be in a possessive relationship with another DP (*duriq* 'eye') in the sentence. In the following paired examples, *a*-sentences and *b*-sentences represent EPC I and EPC II, respectively.

(14) a. Paru   duriq=na   ka   Iming
         big:STAT.FIN   eye.NOM=3SG.GEN   PIV   Iming
         'Iming's eyes are big.' / 'Iming has big eyes.'

   b. Paru   duriq   ka   Iming
         big:STAT.FIN   eye   PIV   Iming
         'Iming has big eyes.' / 'Iming is (a) big-eyed (person).'

(15)   Paru   ka   duriq   Iming
         big:STAT.FIN   PIV   eye   Iming.GEN
         'Iming's eyes are big.'

Notice the nuanced difference in the English translation. Semantic focus is on the possessum in EPC I, while it is on the possessor in EPC II. In other words, (14a) describes Iming's eyes, whereas (14b) is a description of Iming as an individual. By the same token, unlike EPC II, EPC I does not semantically deviate from sentences with a possessive phrase as pivot. This observation suggests that EPC I is derived from such an underlying structure, perhaps via raising. On the other hand, EPC II is an independent construction in which the possessor and the possessum are base-generated as separate DPs. Though they are *interpreted* as being in a possessive relationship, they are not syntactically coded as such.

Aside from their semantic difference, the two types of EPCs also display a number of contrasts in the syntax. First, the person/number information about the possessor is co-indexed on the possessum in EPC I as a genitive clitic, while it is absent in EPC II. In (14a), the possessum *duriq* 'eye' hosts the third person

singular genitive clitic =*na*, which is co-refential with the possessor *Iming*. On the assumption that EPC I is essentially a PRC, I propose that the genitive clitic is a pronominal copy of the raised possessor. In contrast, co-referentiality is not overtly marked in EPC II, since no raising takes place.

EPC I also differs from EPC II in that the possessor attaches to the predicate as a clitic (=*ku* '1SG.GEN' in (16b)[3]) in the latter, but not in the former.

(16) a. Paru(*=ku)   duriq=mu   (ka   yaku)
        big:STAT.FIN=1SG.PIV eye.NOM=1SG.GEN   PIV   1SG
        'My eyes are big.'
    b. Paru=ku   duriq (ka   yaku)
        big:STAT.FIN=1SG.PIV eye   PIV   1SG
        'I am (a) big-eyed (person).'

This is perhaps an indication that the possessor in EPC II truly is a sentential pivot. On the other hand, the possessor's failure to trigger cliticization in EPC I may be due to its *derived* pivot status achieved via raising. This is purely speculative as the process of cliticization itself has not been analyzed for the language.

Yet another contrast between EPCs I and II lies in their compatibility with clefts. Clefting of the external possessor is questionable in the former, while acceptable in the latter.

(17) a. ?Iming ka   paru   duriq=na
        Iming PIV   big:STAT.FIN   eye=3SG.GEN
        IM: 'It is Iming whose eyes are big.'
    b. Iming ka   paru   duriq
        Iming PIV   big:STAT.FIN   eye
        'It is Iming who is big-eyed.' / 'The big-eyed person is Iming.'

I suspect that this restriction pertains to the aforementioned contrast in semantic focus; EPC I is *about* the possession as a whole, whereas EPC II is *about* the possessor. The possessor in EPC I, despite being the syntactic pivot, is not the theme of the sentence. Therefore, it cannot be further foregrounded by clefting.

Finally, as we have seen in (14) and (16), both EPCs I and II can be applied to inalienable possession, which involves body parts and part-whole relationships. Only EPC I is compatible with alienable possession (18).

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[3] Note that the pivot clitic is phonetically null for in the third person, making its absence/presence not directly observable in (14–15).

(18) a. Ga   naqih   kuxul   laqi =na
       PROG.DIST   bad:STAT.FIN feelings.NOM child.GEN=3SG.GEN
       ka   Iming
       PIV   Iming
       'Iming's child is sad.'

   b. *Ga   naqih   kuxul   laqi   ka   Iming
       PROG.DIST   bad:STAT.FIN feelings.NOM child   PIV   Iming
       IM: 'Iming's child is sad.'

Once again, the inapplicability of EPC II to alienable possession can be attributed to the theme of the sentence. A statement such as 'Kuras' dog escaped' is by necessity *about* 'Kuras' dog', rather than 'Kuras'. Thus, it conflicts with the focus given to the possessor in EPC II. A comparable distinction is found in Bulgarian, for which Cinque and Krapova (2008) propose two types of external possession. One consists of "possessor datives" akin to those found in Romance languages, and occurs with inalienable possession only. Cinque and Krapova analyze this first type to involve *no* raising. Conversely, they treat the second type as "true" possessor raising, which applies to both alienable and inalienable possession.

      To recapitulate, EPCs I and II are distinguished from each other both semantically and syntactically. The realization of the possessor's phi-features on the possessum indicates that the former raised out of the DP containing the latter. Despite assuming the pivot position, the possessor in EPC I fails to cliticize onto the predicate. Moreover, it is not the topic of the overall statement. As a result, it cannot undergo clefting. At the same time, the non-topicality of the possessor permits EPC I to be used in both inalienable and alienable possession. The facts above indicate that EPC I is derived from an underlying structure where the possessor and the possessum form a single DP. On the other hand, at no point in the derivation of EPC II do the possessor and the possessum form a single unit; such a possessive relationship is purely interpretive.

4.   Restrictions on possessor raising

4.1.   Restrictions due to A'-agreement

Besides its numerous differences from EPC II, EPC I is also characterized by certain restrictions that lend further support for the raising analysis. First, extraction of the possessor is allowed only from the possessive phrase that would otherwise be pivot. In other words, if the verb in an EPC I is AV-marked, the raised possessor must originate in a possessive phrase with nominative case (i.e., the Actor). By the same token, if the verb is PV-marked, only the possessor of a possessive phrase with accusative case (i.e., the Patient) can raise to the pivot position. This rule is also observed in Tsukida's (2009) grammar of Seediq. For example, in (19a), the possessive phrase *tunux Iming* 'Iming's head' bears accusative case and is thus

attracted to the pivot position. In its possessor raising counterpart (19b), I assume that the possessive phrase also bears accusative case, but it is only the possessor DP that is attracted to the pivot position. In each of the following paired examples, the *a*-sentence has a possessive phrase as pivot (non-external possession), and the *b*-sentence is a PRC.

(19) a. Paq-un=mu   ka   tunux   Iming
        hit-PV=1SG.GEN   PIV   head   Iming.GEN

    b. Paq-un=mu   tunux=na   ka   Iming
        hit-PV=1SG.GEN   head.ACC=3SG.GEN   PIV   Iming
        'I hit Iming's head.'

Possessor raising is not permitted out of the Agent of a PV-marked verb, since it bears nominative, not accusative, case.

(20) a. Qyut-un=ku   huling   Kuras
        bite-PV=1SG.PIV   dog.NOM   Kuras.GEN

    b. *Qyut-un=ku   huling=na   ka   Kuras
        bite-PV=1SG.PIV   dog=3SG.GEN   PIV   Kuras
        'Kuras' dog bit me.'

Similarly, possessor out of the Patient of an AV-marked verb is ruled out, because the voice morphology attracts to the pivot position a DP with accusative, rather than nominative, case.

(21) a. S<m><n>ipaq=ku   tunux   Iming
        hit<AV><PFV>=1SG.PIV   head.ACC   Iming.GEN

    b. *S<m><n>ipaq=ku   tunux=na   ka   Iming
        hit<AV><PFV>=1SG.PIV   head.ACC=3SG.GEN   PIV   Iming
        'I hit Iming's head.'

This requirement for A'-agreement would be unexpected if EPC I was not derived through actual raising. That is, if the pivot originated *outside* of the DP containing the possessum, there is no reason why agreement between the former and the voice morphology should take place.

4.2.   Restrictions due to semantic conflict

There is a second exception to possessor raising, which cannot be accounted for from an A'-agreement perspective. Namely, raising out of the Agent of a transitive AV-marked verb is prohibited.

(22) a. M-n-ekan   uqun=mu   ka   huling Kuras
       AV-PFV-eat   food.ACC=1SG.GEN   PIV   dog   Kuras.GEN

     b. *M-n-ekan   uqun=mu   huling=na   ka   Kuras
       AV-PFV-eat   food.ACC=1SG.GEN   dog.NOM=3SG.GEN   PIV   Kuras
       IM: 'Kuras' dog ate my food.'

In contrast, the Actor of an AV-marked *intransitive* verb can be raised without a problem.

(23) a. Ga   m-uyas   ka   laqi   Masaw
       PROG.DIST   AV-sing   PIV   child   Masaw.GEN

     b. Ga   m-uyas   laqi=na   ka   Masaw
       PROG.DIST   AV-sing   child.NOM=3SG.GEN   PIV   Masaw
       'Masaw's child is singing.'

To the extent that the Actor bears nominative case regardless of transitivity, there is no *a priori* reason why (22b) should be ungrammatical. I propose that this ban is semantically, rather than syntactically, motivated. Transitive subjects encoded as external possessors are so rare across languages (Payne and Barshi 1999), that some, including Baker (1988), erroneously conclude that they are non-existent. Although Payne and Barshi offer no explanation for this tendency, I hypothesize that it pertains to the notion of affectedness. According to Shibatani 1994, an "extra-thematic argument"–an argument of a verb that is not a direct participant in the predicated event–is more easily incorporated into a sentence if it is highly relevant to the said event. Cross-linguistically, extra-thematic arguments, including external possessors, often must be interpreted as either adversatively or positively affected by the event. However, this affectedness constraint is overridden when the relationship between the possessor and the possessum is an inalienable one. For instance, in Indo-European possessor dative constructions, "the dative nominal systematically receive distinct interpretations depending on whether or not a body part is involved…when it is, no adversative interpretation is forced. When it is not, the adversative [or benefactive] reading accrues" (Shibatani 1994:463). A similar situation is found in the EPCs of other languages like Mohawk and Chukchee, as well as indirect passives in Japanese and other East Asian languages. In contrast, Truku EPC I in general is not subject to a constraint of this sort. For instance, the possessor *Masaw* in (23) is not affected by his child's singing in any way.[4] Nevertheless, I propose that the notion of affectedness does come into play in the presence of two participants–Actor and Patient–associated with a transitive verb. Externally coding the Actor, instead of the Patient, would conflict with the fact that the latter is inherently the more directly affected of the two. Even so, this is not to say that raising from the transitive subject is impossible. In fact, it has been attested

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[4] This is under the assumption that 'child' is treated as an alienable possession in Truku. Note that the language does not grammaticaly code (in)alienability.

in languages like Korean and Japanese (Ura 1996), as well as Nyikina and Nyulnyul languages of Australia (McGregor 1999).[5]

5.   The raising mechanism

In previous sections, I demonstrated that EPC I is a possessor raising construction. One crucial question to be addressed, then, is *how* the possessor moves out of the possessive phrase and raises to the pivot position. I hypothesize that possessor raising in Truku is made possible due to the parameter settings allowing T and *v* to project multiple specifier position. In turn, these heads can simultaneously hold feature-checking relations with the entire possessive DP and the possessor DP. Thus, possessor raising from the Actor is a double-nominative construction, whereas raising from the Patient is a double-accusative construction.

Following Abney (1987), I assume the following structure for possessive phrases in which the possessor is located in the Spec, D position.

(24)   Structure of the possessive DP

```
        DP (possessive)
         ___/\___
   DP (possessor)   D'
                   _/\_
                  D    NP
```
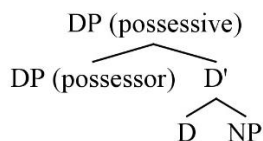
For possessor raising from the Actor, both the possessive DP and the possessor DP are generated with nominative case. Since the possessor DP is not in the checking domain of T, the entire possessive DP is attracted to Spec, T. With the possessive DP's nominative case feature checked and deleted, the possessor DP may now move into the outer specifier of T, where it, too, checks nominative case with T. The raising operation for (14a), repeated here as (25), is schematized in (26).

(25)   Paru   duriq=na   ka   Iming
        big:STAT.FIN   eye.NOM=3SG.GEN   PIV   Iming
        'Iming's eyes are big.' / 'Iming has big eyes.'

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[5] While the former two languages are quite liberal in their application of EPCs to transitive subjects, it is restricted in the latter languages to cases where the subject uses his/her body part instrumentally to perform an action.

(26)   Double-nominative possessor raising construction
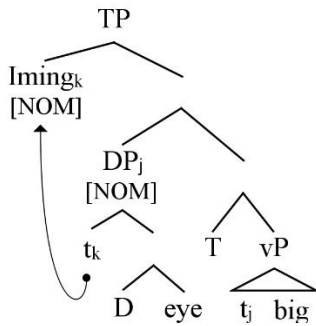
Possessor raising from the Patient operates in much the same way. Both the possessive DP and the possessor DP are generated with accusative case. After the possessive DP checks its accusative case-feature with *v* and deletes it, the possessor DP moves into *v*'s outer specifier position to also check its accusative case.[6] The raising operation for (19b), repeated here as (27), is schematized in (28).

(27)   Paq-un=mu   tunux=na   ka   Iming
         hit-PV=1SG.GEN   head.ACC=3SG.GEN   PIV   Iming
         'I hit Iming's head.'

(28)   Double-accusative possessor raising construction
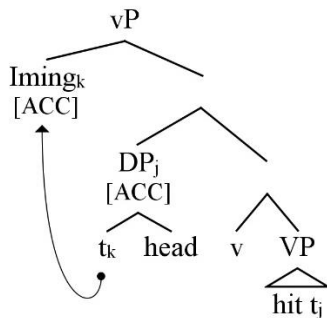
        I model this mechanism after Ura's (1996) account for possessor raising in Japanese and Korean. Japanese and Korean have a possessor raising pattern in which both the possessor and the possessum carry the nominative case marker.

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[6] Due to limitations of space, whether the Actor's base generated at the innermost or outermost specifier position of *v* will not be discussed in this paper.

(29)   *Japanese* (Ura 1996:100)
   a. Mary$_i$-ga   (totemo)   [t$_i$ kami]-ga   naga-i
       Mary-NOM   very   hair-NOM   long-be
   b. [Mary-no   (*totemo)   kami]-ga   naga-i
       Mary-GEN   very   hair-NOM   long-be
       'Mary's hair is (very) long.'

(30)   *Korean* (Haycock and Lee 1984:784)
   a. John$_i$-i   [t$_i$ pay]-ka   aphu-ta
       John-NOM   stomach-NOM ache-DEC
   b. [John-uy   pay]-ka   aphu-ta
       John-GEN   stomach-NOM ache-DEC
       'John has a stomachache.'

Furthermore, Korean also has a construction where both the possessor and the possessum bear accusative case markers. This latter option is not available in Japanese.

(31) *Korean* (Cho 1990:320)
   a. Mary-ka   John$_i$-ul   [t$_i$ tali]-lul   cha-ess-ta
       Mary-NOM   John-ACC   leg-ACC   kick-PST-DEC
   b. Mary-ka   [John$_i$-uy   tali]-lul   cha-ess-ta.
       Mary-NOM   John-GEN   leg-ACC   kick-PST-DEC
       'Mary kicked John's leg.'

(32)   *Japanese* (Ura 1996:110)
   a. *John-ga   Mary$_i$-o   [t$_i$ atama-o]   nagut-ta
       John-NOM   Mary-ACC   head-ACC   hit-PAST
   b. John-ga   [Mary-no   atama]-o   nagut-ta
       John-NOM   Mary-GEN   head-ACC   hit-PST
       'John hit Mary's head.'

Ura attributes this difference to the two languages' parameter settings. Whereas T tolerates one (or more) unforced violation of Procrastinate (Chomsky 1995) in both languages, only in Korean does *v* also tolerate it, even though the nominal feature of *v* in the language is weak. Thus, multiple specifiers of T are available in both languages. Multiple specifiers of *v* are also available in Korean, but not in Japanese. In fact, all four possible combinations of the two parameter settings are attested: languages in which possessor raising is never allowed (e.g., English and German), those that permit it from only the object position (e.g., Kinyarwanda, Swahili, and Chamorro), those that permit it from only the subject position (e.g., Japanese), and

those that allow it from both positions (e.g., Korean) (Ura 1996). Under the current analysis, Truku should be included in the last category.[7]

Additional support for the double nominative/accusative account of Truku possessor raising is found in the fact that it may not take place out of DPs with oblique case. LV and CV morphology enables applied arguments like locations, instruments, benefactives, and reasons, to serve as the pivot. Even so, the possessor of applied arguments cannot be externally coded.

(33) a. T<n>qi-an=mu   ka   sapah   Ikung
      sleep<PFV>-LV=1SG.NOM   PIV   house   Ikung.GEN
   b. *T<n>qi-an=mu   sapah=na   ka   Ikung
      sleep<PFV>-LV=1SG.NOM   house.OBL=3SG.GEN   PIV   Ikung
      'I have slept in Ikung's house.'

(34) a. S-lingis=mu   ka   bubu   Kuras
      CV-cry=1SG.NOM   PIV   mother Kuras.GEN
   b. *S-lingis=mu   bubu=na   ka   Kuras
      CV-cry=1SG.NOM   mother.OBL=3SG.GEN PIV   Kuras.GEN
      'I cry for Kuras' mother.'

As far as I am aware, no language is known to allow multiple specifiers for the Appl head. Possessor raising from applied arguments are ruled out as there exists no landing site for the extracted possessor where it can check oblique case.

6.   Remaining issues and conclusion

This paper has presented a formal account for one of the two types of external possession constructions in Truku Seediq. It is a possessor raising construction whereby the possessor DP moves out of the possessive DP that it is base-generated in, and moves into the sentential pivot position. Truku PRCs come in two versions. In double nominative PRCs, both the possessive DP and the extracted possessor DP check nominative case with T. In the double accusative variety, the two DPs each check accusative case with *v*. This multiple feature-checking is made possible by the parameter settings of the language that allow T and *v* to project more than one specifier position.

There are a few remaining questions to be answered in order to provide stronger support for these hypotheses. First, in section 3.2., I observed that the raised possessor failed to trigger cliticization on the predicate. This is unexpected under the current assumption that it occupies the slot for a sentential pivot. However, the process of cliticization in Truku itself is yet to be analyzed. Thus, a general account of cliticization needs to be worked out before I attempt to provide

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[7] Note, however, that unlike Truku, possessor raising in Japanese and Korean takes place out of inalienable possession only.

an explanation for the behavior of the raised possessor. Furthermore, the raised possessor needs to be examined for other putative subject properties. According to Munro 1999, derived subjects (including the raised possessor) in Chickasaw (Muskogean) also exhibit some (e.g., control of optional third person plural marking, diminutive marking, and switch-reference morphology), but lacks other (e.g., morphology that unambiguously shows agreement with a typical subject) subject properties.

Second, I proposed a multiple feature-checking account for possessor extraction in Truku based on cross-linguistic analogues from Korean and Japanese. Besides the possibility of double-accusative possessor raising, Ura (1996) offers another contrast between the two languages as supporting evidence for violability/inviolability of Procrastinate for *v*. Unlike Korean, Japanese does not allow optional overt object shift in simple transitive (as opposed to ditransitive) clauses. This suggests that it lacks an outer Spec, *v* above the subject as a landing site for the shifted direct object–the position where the raised possessor would also land. In order to pursue the line of analysis presented in this paper, language-internal evidence for the existence of multiple specifiers of T and *v* in Truku will be crucial.

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PERSON MARKING IN THREE OCEANIC LANGUAGES[*]

Elizabeth Pearce
Victoria University of Wellington
elizabeth.pearce@vuw.ac.nz

The paper proposes that the contrasting morphosyntax of CNPs versus pronoun/Proper name objects in Fijian, Iaai and Drehu, is accounted for as an effect of a [+person] feature. Objects lacking this feature can only be externally A'-bound *pro*s.

1.   Introduction

In this paper I present an analysis of three transitive constructions that are found in three Oceanic languages: Fijian, Iaai and Drehu (the latter two being languages of the Loyalty Islands, New Caledonia). All three languages have unmarked VOS constituent ordering. In Drehu the unmarked VOS ordering has ergative case marking and there is also an alternative aspectually conditioned SVO ordering lacking the ergative case marking on the Agent argument (Moyse-Faurie 1997: 228). Iaai and Drehu are considered to belong to a Southern Oceanic linkage, independent of the Fijian subgrouping membership in a Central Pacific linkage (e.g., Lynch et al 2002: 884-890).

The three constructions, which I label as Classes I-III, are distinguished broadly in accordance with the category membership of the direct object:

(1)   *Direct objects in Fijian, Iaai and Drehu*
         Class I: Common noun phrase DPs
         Class II: Proper names and pronouns
         Class III: Bare Ns

As illustrated for Fijian in (2), Class I objects can be separated from the verb by an (aspectual) adverbial marker, but, with Class II and III objects, the adverbial marker follows the object.[1]

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[1] All data is presented in the orthography of the respective languages. Glosses have been adapted for uniformity and they conform to the Leipzig Glossing Rules (http://www.eva.mpg.de/lingua/resources/glossing-rules.php), except for: AG 'Agent', ASP 'Aspect', CNT 'Continuous', HAB 'Habitual', INCH 'Inchoative', LIM 'Limitative', P 'Preposition', PAUC 'Paucal', PERS Personal', PROC 'Process' and PTCL 'Particle'.

(2) a. E **vuke-a**   **tiko** na   gone o   Waisale.   Class I
3SG help-TR   CNT the   boy DET Waisale
'Waisale is helping the boy.' [Aranovich 2013: 473]

 b. A   **kaci-vi** Kele **tiko** o   koya.   Class II
PST call-TR Kele CNT DET he
'He was calling Kele.' [Aranovich 2013: 473]

 c. Au a   **taga** ura   **tiko** e na   bogi.   Class III
1SG PST catch prawn   CNT in DET night
'I was catching prawns last night.' [Aranovich 2013: 470]

As can also be observed in (2), the forms of the verb are distinct across the three classes: with a bare verb in Class III, and distinct transitivity suffixes in Classes I and II. The constructions in the three languages are alike in that they all have morphological distinctions in the verb forms of the three Classes and in that their Class II and III objects must immediately follow the verb. As we will see also, with non-overt objects, the construction is Class I in all three languages.[2]

Previous studies of the syntax of these three constructions have focused on the analysis of the forms in one particular language (e.g., for Fijian: Alderete 1998, Aranovich 2013; for Drehu: Moyse-Faurie 1997; for Iaai: Pearce 2001). There are, however, differences between the languages in the details as to how the three constructions are manifested. This paper attempts to answer the question: How can the microparametric manifestations across the three languages contribute to an understanding of the central characteristics of the constructions?

The analysis that is undertaken in this paper of the sentence forms across the three languages brings out differences in the realizations that are linked the availability or not of *pro* objects in accordance with extraction type, in interaction with a [+/-personal] categorization of pronouns and proper names. In essence, I propose in this paper that the Class I objects are A'-bound *pro*s that are distinguished from post-verbal objects in lacking a [+personal] feature.

Section 2 reviews the main points brought out in previous analyses of the syntax of the constructions as they have been applied to the languages individually. Section 3 provides an account of the differences between the three languages in terms of the class membership characteristics of overt and non-overt objects. Section 4 develops an analysis of the role of A'-binding in the use of Class I *pro* objects. The conclusions in section 5 attempt to situate the discussion in the paper with respect to further research on the issues that are raised.

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[2] As is the case with complement clauses, the discussion of which I leave aside here for reasons of space.

2.   Previous syntactic analyses

2.1.   Fijian

The Fijian direct object constructions have been studied in a number of works, including: Arms (1974), Pawley (1986), Alderete (1998), Kikusawa (2000, 2001) and Aranovich (2013). In the most recent analysis of the syntax of the constructions, Aranovich (2013) distinguishes the locations of the objects as follows:
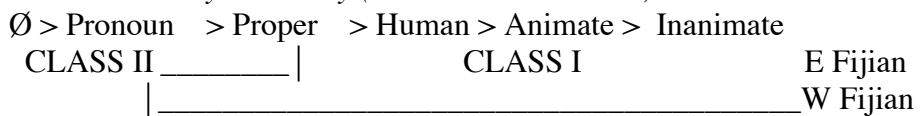
(3)   *Direct object syntax in Fijian (Aranovich 2013)*
                        Suffix   *Syntax*
            Class I: *-Ca* [AGRO]   IP-adjoined
            Class II: *-Ci* [TR]   VP-internal
            Class III: -   N-incorporation

For Aranovich the Class II suffix, *-Ci* (in which 'C' is some consonant) is a transitivity marker and the Class I suffix *-Ca* is an object agreement marker indexing the VP-internal *pro* object argument.[3] In contrast to the Class I and II construction, the Class III construction is intransitive: it can be transitivized with the addition of causative or applicative morphology (Aranovich 2013: 482-487).

Given that there are West Fijian dialects that only include pronouns in Class II, Aranovich proposes that the basis for the distinction in the Class I and Class II objects is to be viewed as resulting from a choice that the languages make with respect to the treatment of the object in terms of an animacy hierarchy in which there are different cut off points for different dialects:

(4)   *Person/Animacy hierarchy (Aranovich 2013: 493)*
            Ø > Pronoun   > Proper   > Human > Animate > Inanimate
             CLASS II _____| CLASS I   E Fijian
                        |_____W Fijian

For East Fijian dialects, including Standard Fijian, both proper names and pronouns are included in Class II, whereas for Rotuman and West Fijian dialects only pronouns are included in Class II (Kikusawa 2000, 2001, Kissock 2003).

Alderete (1998) also argues for Class I dislocation for Fijian and proposes a type-theoretic approach to the Class I versus Class II patterns in accordance with which the Class I objects are canonically of type <e,t>, whereas Class II objects are of type <e>:

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[3] This analysis of the suffixal forms is in agreement with the analyses adopted in Pawley (1973), Arms (1974) and Schütz (1985).

(5)   *Type-shifting categories (Alderete 1998)*
                        Objects
         Class I: <<e,t> t>
         Class II: <e>
         Class III: <e,t>

Fijian then lacks the type-lifting mechanism allowing direct composition of the transitive verb with the full DP argument being of type , <<e,t>,t>. However, as Aranovich (2013: 494) points out, whilst these type-theoretic distinctions can account for the Standard/East Fijian class membership, they fail to account for the differing Class memberships in Rotuman and East Fijian.

2.2.   Drehu

Moyse-Faurie (1997) brings out a distinction in the valency effects with the Class III construction in Drehu. Classes I and II are transitive with ergative subjects, whereas in the Class III construction, as with intransitives, the subject lacks the ergative case marking.

(6) a.   xen jë   hi   itre koko **hnei angatr**.   Class I
         eat DIR INCHOAT   PL   yam AG   3PL
         'They start eating the yams.' [Moyse-Faurie 1997: 234]

   b.   Kola   nangëë angatr **hnei   Wajoxumë**.   Class II
         PROG   accept 3PL   AG   Wajoxumë
         'Wajoxumè accepts them.'   [Moyse-Faurie 1997: 236]

   c.   Xeni itra   jë   hi   **angatr**.   Class III
         eat bounia DIR INCH   3PL
         'They start eating bounia.' [Moyse-Faurie 1997: 234]

For Moyse-Faurie (1997) both the Class II and Class III constructions have incorporated objects, but the Class II construction lacks the detransitivization effects observed in Class III. As shown also by Aranovich (2013) for Fijian, the intransitivity of the Drehu Class III construction is manifested also in the possibility of the inclusion of a transitivity suffix on the V-N sequence, along with an additional argument, in this construction.

2.3.   Iaai

Pearce (2001) proposes an account for the transitive constructions in Iaai that locates the syntactic distinctions in the structure of the object. According to this analysis, Class III objects are bare NPs, and Class I and II objects are both DPs. The Class I/Class II divide is then attributed to a difference in the content of the D head: with Class II objects the D is filled by the raised pronoun or proper name N.

(7)   *Direct object syntax in Iaai (Pearce 2001)*

    Class I: $[_{DP}$ D $[_{NP}$ N ..]]   No incorporation of DP
    Class II: $[_{DP}$ $[_{D}$ N$_i$ $[_{NP}$ **t**$_i$]]   N-incorporation from head of DP
    Class III: $[_{NP}$ N]   N-incorporation from head of NP

Under this account, when the head of the object is filled by N in both Class II and Class III, it raises and incorporates to the verb. Aranovich (2013) objects to this analysis on the basis that the two kinds of incorporation do not provide the required distinctions in the Class II/Class III valency effects. Whilst one could counter this objection by treating the valency distinction in terms of the DP versus NP constituency of the object, the incorporation account that is assumed in Pearce (2001) is also, however, problematic in that, on a left-adjunction view of N-raising, the N should be to the left of the V, rather than on its right. In my reconsideration of the data here, I will take on board the view that the Class I overt object is vP-external and that the V-Object adjacency in Classes II and III reflect outcomes involving phrasal movement, giving rise to the post-object positioning of the aspectual/adverbial particles.

3.   Cross-linguistic Class membership distinctions

3.1.   Pronouns and Proper Names

In Standard Fijian the ClassI/II object divide corresponds to a contrast in articles borne by DPs in other contexts in sentences. The article with common noun phrases (CNPs) is *na* and with pronouns and proper names it is *(k)o*, both of which I gloss as 'DET':

(8) a.   Era   sā   tiko   **na**   gone.
         3PL ASP CNT DET child
         'The (many) children are present.' [Churchward 1941: 15]
    b.   Ena   lako **ko**   koya.
         3SG.FUT go   DET 3SG
         'He will go.'   [Churchward 1941: 14]
    c.   E   vuke-a   tiko   **na**   gone **o**   Waisale.   (=(2a))
         3SG help-TR   CNT DET boy   DET Waisale
         'Waisale is helping the boy.' [Aranovich 2013: 473]

In (8a) the CNP subject bears the article *na* (as does the object in (8c)). The pronoun subject in (8b) and the proper name subject in (8c) appear with the article *(k)o*.[4]

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[4] For discussion of the forms of the pronoun and proper name article in Fijian dialects, see Kikusawa (2000, 2001).

Polynesian languages, which belong to the same Central Pacific subgrouping as Fijian, also exhibit a robust distinction between articles/case marking forms with pronouns and proper names versus CNPs. In Māori, for example, the Personal article is *a* and the (definite) article has the form *te*:

(9) a.   Kei   runga   **te**   pukapuka   i   **te**   tēpu.
          at   on.top   the   book   P   the   table
          'The book is on the table.'   [Harlow 2007: 157]

  b.   Kua   tae   mai   **a**   Hēmi   hei   āwhina   i   **a**
          T/A   arrive   PROX   PERS   Hēmi   T/A   help   ACC   PERS
          koe.
          2SG
          'Hēmi has come to help you.'   [Harlow 2007: 158]

It appears that the Fijian and Polynesian languages have maintained a Personal category distinction from Proto-Oceanic but with but with distinct morphological reflexes. A variety of categorially distinct article forms have been reconstructed for the larger Proto-Oceanic grouping (Lynch 2001, Lynch et al 2002: 70-72), shown in Lynch (2001) as:

(10)   *Proto Oceanic articles (Lynch 2001: 224)*
          *e, *i   personal
          *qa   personal
          *dri   feminine
          *na, *a   common non-human
          *ta   common non-human

Whereas *ta is the source for Māori *te*, Fijian *na* is a reflex of *na. Geraghty (1983: 356) mentions the possibility of Fijian *(k)o* as a reflex of the Proto-Eastern Oceanic proper article *qa, but he observes that Fijian *(k)o* "shows formal disparity, but functional similarity" with PEO[Proto-Eastern Oceanic] *qa.[5]

Whilst languages of the Central Pacific subgroup have these distinct article forms, which in the case of Fijian languages matches with the Class I/II divide in the syntax of objects, neither Iaai nor Drehu have such distinct article forms with independent (subject) DPs. In other contexts, however, the two Loyalty Islands languages have contrasting constructions with Class I/II nominals.

In Drehu a particle *i* (a likely reflex of the *i personal article shown in (10)) occurs before pronouns and proper names in possessive/partitive constructions:

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[5] The analysis is complicated by the fact that Polynesian languages have a variety of uses of a particle *ko* < *ko Proto-Polynesian, as discussed in Clark (1976: 44-47). In particular, in Polynesian languages *ko* is a marker of initial Topic/Focus constituents.

(11) a. la   uma   ne   la   qatreföe
         DET   house   PTCL   DET   old.woman
         'the old woman's house'

   b. la   uma   i   angeic
         DET   house   PTCL   3SG
         'his house'

   c. la   uma   i   Hagee
         DET   house   PTCL   Hagee
         'Hagee's house'   [Moyse-Faurie 1983: 59]

In Iaai, presentative constructions are distinct for CNPs, proper names and pronouns:

(12) a. ûnya   wanakat
         PRESENTATIVE   child
         'It is the child.'

   b. jia   Poou
         PRESENTATIVE   Poou
         'It is Poou.'

   c. inya
         1SG
         'There is me.'   [Ozanne-Rivierre 1976: 154-155]

On the supposition that DPs include functional structure in addition to D and N projections (e.g., Giusti 2002, Pearce 2012), we could suppose that the Fijian forms suggest the presence of a Classifier projection to which the features [+/-personal] are assigned. Such an interpretation could then imply that Iaai and Drehu have a corresponding Classifier head, but with Ø or other realizations for the [+/-personal] content. The issue then for the analysis of the Class I/II divide is that of the mechanisms by which the distinct Class I/II surface forms are derived in the constructions in the three languages in terms of the features and the role of such a Classifier head.

3.2.   Null objects

The three languages differ in terms of what can be a null object in the Class I construction.

3.2.1.   Class I/Class II suffixes with non-overt objects

The common characteristic of the Class I construction in all three languages is that they have a *pro* object that is linked to a DP in some vP external position. Data from Fijian suggests that the Class I *pro* is A'-bound, whereas the Class II

construction can have an A-bound non-overt object. In Fijian the verb occurs in the Class II form in the passive and reciprocal constructions. In these constructions the merge position of the object argument is non-overt:

(13) a. sa   tobo-**ki**   na   vuaka
        ASP catch-TR   DET pig
        'The pig was caught.'
  b. eratou   vei-loma-**ni**.
        3PL   RECP-love-TR
        'They love each other.'   [Aranovich 2013: 471]

In these constructions the object role is identified as linked to the syntactic subject of the clause. In all other Class II constructions the object is an overt pronoun or proper name.

    In cases of A'-binding with a preposed object, the construction is either Class I with a non-overt object or Class II with an overt pronoun object. The Standard Fijian examples following in (14) have an initial Topic with the Class I verb form:

(14) a. O   koya,   au   a   kaci-**va** tiko.
        DET 3SG   1SG PST call-TR CNT
        'I was calling her.'
  b. O   Ema, au   a   kaci-**va**.
        DET Ema 1SG PST call-TR
        'I called Ema.'
  c. *O   koya,   e   keve-**ti**   tiko na   marama.
         DET   3SG   3SG carry-TR   CNT DET woman
        'The woman was carrying her,' [Aranovich 2013: 476]

    The Drehu example in (15) has the verb in the Class I form with an initial Topic and the Iaai example in (16) has a Class I verb with a relativized object Topic:

(15) *Drehu*
    Ame la   nu   celë   tre   hna   traan hnei kak.
    TOP DET coconut.tree PROX   then PST plant AG   dad
    'As for this coconut tree, dad planted it.' [Moyse-Faurie 1983: 199]

(16) *Iaai*
    Haba daa   eang   oge-e   hadruâ me   e   gaan.
    TOP boy   PROX   1SG-COMPL help   COMP 3SG big
    'As for this boy that I helped, he was big.' [Samuel Wadjeno]

In all of these cases, the use of the Class I forms in A'-binding constructions supports the analysis that the CNP Class I object in the VOS ordering is in an A'-position. That is, as illustrated with the Fijian suffixal forms in (17), the distributions are summarized as follows:

(17)   *Binding and suffixes with non-overt object*
         A-binding   **-Ci**   Class II
         A'-binding   **-Ca**   Class I

3.2.2.   Resumptive pronouns with CNP objects

The three languages differ in terms of where the Class I *pro* object is obligatory and where the vP-internal object position may be realized by a (resumptive) pronoun in the Class II construction. Both Fijian and Drehu are more liberal than is Iaai in allowing the use of resumptive pronouns.

In Fijian a third person object may either be non-overt in the Class I construction, or overt in the Class II construction:

(18) a.   Au-na   kau-**ta**   ki koronuvuli.   Class I
           1SG-FUT   bring-TR   P school
           'I will take him to school,'
    b.   Au-na   kau-**ti**   **koya** ki koronuvuli.   Class II
           1SG-FUT   bring-TR   3SG P school
           'I will take him to school.'   [Kikusawa 2000: 184]

Even when the CNP object is overt, the inclusion of the overt pronoun object can have a disambiguating function:[6]

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[6] Although the use of apparent composite sequences including a pronoun followed by a CNP, as in (i), is possible, the positioning of the aspectual markers in (iia,b) indicates that, at least in these examples, the pronoun is separate from the following CNP:
(i)   Era   la'o   [o   ira   a   gone].
         3PL   go   DET 3PL   DET child
         'The children are going.'   [Dixon 1988: 33]
(ii) a. Erau   na   lako-**vi**   iratou **tiko**   na   qasenivuli   na   luve-qu.
         3DU   FUT   go-TR   3PL   CONT   DET teacher   DET   child-my
         'My (two) children will be going to see the teachers.'   [Kikusawa 2001: 93]
     b. Seti,   seti,   o   iko   sa   dau   nanu-**mi**   ira   **tu**   **ga**
         no   no   DET   2SG   ASP   HAB   remember-TR   3PL   INDF   LIM
         na   yalewa.
         DET   women
         'No, no, you generally just remember the women.'   [Aranovich 2013: 477]

(19) Eratou rai-**ca** na gone o iratou.
    3PL   see-TR DET child DET 3PL
    'They saw a child/children.'   [Kikusawa 2000: 176]

(20)a. au rai-**ca** a gone.
        1SG see-TR DET child
        'I see the child.'
   b. au rai-**ci** **'ea** a gone
        1SG see-TR 3SG DET child
        'I see the child.'
   c. au rai-**ci** **ira** a gone
        1SG see-TR 3SG DET child
        'I see the children.' [Dixon 1988: 34]

    Drehu also allows for the inclusion or not of an overt third person pronoun. Here also, without the pronoun, the construction is Class I, but when the pronoun is included the construction is Class II:

(21) a. Angeic a dreuth la uma.   Class I
       3SG   PRS set.fire.to DET house
       'He sets fire to the house.'   [Moyse-Faurie 1997: 230]
   b. Angeic a dreuth.   Class I
       'He sets fire (to something).'   [Moyse-Faurie 1997: 230]
   c. Eni a lep la nekönatr.   Class I
       1SG PRS hit   DET child
       'I hit the child.'   [Moyse-Faurie 1997: 231]
   d. Eni a lep-i angeic.   Class II
       1SG PRS hit-TR   3SG
       'I hit him.'   [Moyse-Faurie 1997: 232]

    In Iaai, except for the interrogative pronouns, there is no overt 3SG object pronoun. Personal pronouns with Dual, Paucal and Plural number are overt in the Class II construction.
    In summary, the possible realizations for 3SG (non-interrogative) objects across the three languages are as follows (in which '-' indicates the unavailability of the construction):

(22)   *3SG Direct object exponence*

	Class I	Class II
Iaai	pro	-
Fijian	pro	*koya*
Drehu	pro	*angeic*

3.2.3. *Wh* pronoun objects

In all three languages, as with other overt pronoun objects, the Class II construction is used with an overt post-verbal 'who' object.

The examples in (23) below show the contrasting constructions with 'what' and 'who' objects in Iaai. The 'who' object is not subject to *wh*-movement and it occurs in the post-verbal position in the Class II construction. The 'what' object is subject to *wh*-movement, resulting in the Class I form with a *pro* object.

(23) a. **Ieû** u-mwe **wâ**?   Class I
       what 2SG-PROC see
       'What do you see?'   [Ozanne-Rivierre 1976: 145]
   b. U-mwe **oo iaa**?   Class II
      2SG-PROC see who
      'Who do you see?'   [Ozanne-Rivierre 1976: 145]

In a multiple *wh*-question the 'what' object can be post-verbal, but in the Class I construction:

(24) a. Iaa a-me **an ieû**?   Class I
       who 3SG-PROC eat what
       'Who is eating what?'
   b. Iaa a-me **ön iaa**?   Class II
      who 3SG-PROC eat who
      'Who is eating who?'   [Samuel Wadjeno]

The use of the Class I verb form with *ieû* 'what' in post-verbal position in (24a) suggests that the construction conforms to the syntax of CNPs in which *ieû* is here vP-external and there is a post-verbal *pro* object.[7]

For 'what' questions in Boumaa Fijian, Dixon shows two Class I options, with and without preposing of *a cava* 'what':

(25) a. **A cava** o aa rai-ca i waa'olo levu?
       DET what 2SG PST see-TR P road big
       'What did you see on the main road?'
   b. O aa rai-ca **a cava** i waa'olo levu?
      2SG PAST see-TR DET what P road big
      'What did you see on the main road?'   [Dixon 1988: 171]

Although *a cava* 'what' immediately follows the verb in (25b), from the presence of the common article *a* it can be inferred that *a cava* has both the form

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[7] This conclusion for Iaai could be tested on data including post-verbal aspectual markers. The prediction is that aspectual markers would precede the *ieû* object in the (24a) construction.

and the syntax of a vP-external CNP. (On the contrast between the Class I presence versus the Class II absence of the determiner, see also the contrast between independent *o koya* in (14a) versus Class II post-verbal *koya* in (18b)).

Also in Boumaa Fijian, there are three options for 'who': post-verbal in the Class II construction (26a), preposed in the Class I construction (26b), or preposed and with a resumptive pronoun in Class II (26c):

(26) a. O   aa   rai-**ci**   **cei**?   Class II
         2SG   PST   see-TR   who
         'Who did you see? [Dixon 1988: 170]

   b. **O**   **cei**   o   aa   rai-**ca**?   Class I
         DET who   2SG   PST   see-TR
         'Who did you see?'   [Dixon 1988: 170]

   c. **O**   **cei**   o   aa   rai-**ci**   **'ea**?   Class II
         DET who   2SG   PST   see-TR   3SG
         'Who did you see?' [Dixon 1988: 170; (26c) possible, but less preferred]

In allowing the optional resumptive pronoun in the Class II construction, these Boumaa Fijian constructions are in parallel with the possible constructions with overt and non-overt non-*wh*-pronouns, as seen in (18) - (20).[8]

The Drehu examples in (26) show the use of the Class I construction with preposed *nemen* 'what' and the Class II construction with post-verbal *drei* 'who':

(27) a. **Nemen** la   hnei eö   hna qaj-**a**?   Class I
         what   PROX   AG 2SG PST   say-TR
         'What did you say?'

   b. Hna humu-**thi**   **drei** hnen la   joxu?   Class II
         PST kill-TR   who AG   DET chief
         'Who did the chief kill?'   [Moyse-Faurie 1983: 190-1]

Moyse-Faurie (1983) also gives the following examples with post-verbal *nemen* 'what' in what she glosses as the Class III construction:

(28) a. Eö   a   hnyimaa-**nemen**?
         2SG   PRS   laugh.at-what
         'What are you laughing at?'

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[8] With however the difference that, whereas the resumptive pronoun is optional with a preposed non-*wh* object in Standard Fijian, in Bouma Fijian it is obligatory:
(i) a.   O   Mere o   aa   rai-ci   **'ea**.
         DET   Mere 2SG   PST   see-TR   3SG
         'As for Mere, you saw her.'
   b.   *O Mere o aa rai-ci. [Dixon 1988: 170]

b. Angeic a   kuci-**nemen**?
    3SG   PRS do-what
    'What is he doing?'   [Moyse-Faurie 1983: 190]

Because the verb form *kuci* is non-distinct for Class II and Class III (it has the form *kuca* in Class I) and because I have not seen data on distinct forms for the verb 'laugh at' in (28a), the basis for the Class III attributions is underdetermined from the data that is given.[9]

3.3. Summary

Summarized in (29) below are the possible occurrences in the Class I/II constructions of overt and non-overt pronouns in constructions with non-*wh*- and *wh*-pronouns.

(29) *3SG Post-verbal exponence*

	3SG		'who'		'what'	
	I	II	I	II	I	II
Iaai	pro	-	-	*iaa*	pro	-
Fijian	pro	*koya*	pro	*cei*	pro	*'ea* (BFij)
Drehu	pro	*angeic*	pro	*drei*	pro	(*nemen*?)

Iaai differs from both Fijian and Drehu in the unavailability of *wh*-movement with a 'who' object. Both Fijian and Drehu also allow the use of 3SG resumptive pronouns, which Iaai does not. As discussed with respect to the examples in (28a,b), there is some unclarity around the Class membership of Drehu post-verbal *nemen* 'what', either Class II or III. We may note, however, that, given that in other respects the Drehu data matches up with the Fijian data, it is possible that these two languages could have parallel syntax also with 'what' objects.[10] But, in the absence of relevant data this possibility must be left for further research.

4.   Movement and A'-binding

The analysis of the data in section 3 has shown that, although there are differences between the languages in terms of what may be a *pro* object and in what constructions a resumptive pronoun may occur, the common characteristics are: (i) that overt post-verbal personal pronouns systematically occur in the Class II construction and (ii) that *pro* objects systematically occur in the Class I construction. For the shared characteristics there are two key aspects of the object syntax that we would like to understand: (i) the role of object ϕ-features with

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[9] An additional factor with respect to the form *kuci-nemen* 'do-what' is that it may be a lexicalized compound and thus, for this reason, in line with the Class III attribution.
[10] In that case, the prediction would be that post-verbal *nemen* in Drehu would be Class I.

respect to the licensing of *pro* and with respect to the verb morphology realizations and (ii) the syntactic mechanisms that are at play in the contrasting placement possibilities for the different classes of objects.

Rizzi (1997) gives evidence for the presence versus the absence of pronouns in initial Topic versus initial Focus constructions, as illustrated in the contrasting forms in Italian (as also in the corresponding English forms):

(30) a. Il   tuo libro, **lo** ho   letto.   Topic
        the your book   it have.1SG read
        'Your book, I have read it.'

    b. IL   TUO LIBRO, ho   letto (, non il   suo).   Focus
        the your book   have.1SG read   NEG the his
        'Your book, I read (, not his).'   [Rizzi 1997: 286]

Supposing that Topics are merged in the CP domain, but that Focused constituents (including *wh*-constituents) can be in derived CP positions, the contrast in (30a)/(30b) could suggest that the pronoun occurrences could be distinguished in terms of use versus non-use of movement. However, for Cinque (1990: 151-152) an A'-bound empty category may be present in a structure either by direct merge or as the outcome of A'-movement. Across the data that we have seen in the three Oceanic languages, we have taken it that empty objects and resumptives are A'-bound in some way.

Aside from the differences between the languages in the use of resumptive pronouns, there is just one aspect of the available data that is suggestive of a Topic/Focus differentiation. Whereas, as in the Boumaa Fijian example (26c) a resumptive 3SG pronoun may cooccur with *wh*-moved 'who', the resumptive is obligatory with an initial Proper name or non-third person pronoun Topic (see also fn. 8):

(31) a. O   Roopate   saa mai   rai-**ci** Nato.
        DET Roopate   ASP PROX see-TR Nato
        'As for Roopate, he came to see Nato.'

    b. O   Nato saa   mai   rai-**ci** 'ea o   Roopate.
        DET Nato ASP PROX see-TR 3SG DET Roopete
        'As for Nato, Roopate came to see him.'

    c. *O   Nato saa   mai   rai-**ca** o   Roopate.
        DET Nato ASP PROX see-TR DET Roopate
        'As for Nato, Roopate came to see him.'   [Dixon 1988: 247]

(32)   O   'emudrau au   aa   rogo-**ci** 'emudrau.
        DET 2DU   1SG PST hear-TR   2DU
        'As for you two, I heard you two.' [Dixon 1988: 247]

There is also evidence from Iaai that the non-availability of *pro* with a non-singular human referent gives rise to a resumptive pronoun with a Topic as antecedent. The example below in (33a) is in contrast with (33b) (repeated from (16)), in which the Topic is 3SG:

(33) a.   Haba jee   wanakat   oge-e   **hadruöö ödrin**   me
           TOP PAUC   child   1SG-COMPL help   3PAUC COMP
           ödrin   gaan.
           3PAUC big
           'As for the children that I helped, they were big.'
    b.   Haba daa   eang   oge-e   **hadruâ** me   e   gaan.
           TOP boy   PROX   1SG-COMPL help   COMP   3SG   big
           'As for this boy that I helped, he was big.' [Samuel Wadjeno]

In both these examples the initial topic is the antecedent for a relative clause-internal object. Not unexpectedly for Iaai, there cannot be a non-3SG *pro* object.

The Fijian data brings out differing effects in the use or not of resumptive pronouns under A'-binding, but we have also seen at least three distinctions in the antecedent functions/locations, with antecedents in a post-verbal position and with antecedents as initial Topics or *wh*-constituents. Given that data from other languages attests to a range of Topic and Focus positions in the CP domain (as in Benincà and Poletto 2004 and references therein), we can envisage a syntax in which phrasal movement into the CP domain results in the post-verbal placement of CNP objects, themselves merged/located in the CP domain. Because overt objects precede subjects in the unmarked VOS constituent ordering, assuming the Antisymmetry view of Kayne (1994), post-verbal objects must at least be vP-external. If the subjects are in Spec,TP, then such objects should be in the CP domain.

What is it then that disallows the appearance of CNPs vP-internally? There is either a requirement for the extraction of such DPs or there is a failure of feature matching between a transitive verb and a CNP object. Under both these interpretations the crucial factor is in the contrasting feature composition of the different classes of DPs. The approach of Pearce (2001), shown in (7), exploited the N-to-D raising possibility of Longobardi (1994) for pronouns and Proper names as the essential factor distinguishing Class II from Class I. However, as shown in the discussion in section 2, such an analysis does not of itself account for the differing argument status of Class II and Class III objects. Furthermore, we have seen evidence that DPs in non-object roles exhibit a Personal/Common contrast (articles in Fijian and syntactic distinctions in other constructions in Iaai and Drehu). In terms of their behaviour, pronouns and Proper names are [+personal] and all other kinds of DPs, including *pro*s, are [-personal]. This means that, whatever the precise internal composition of object constituents, there is an agreement requirement between the verb and a [personal] feature on the object.

On the view that both Class I and Class II objects are DPs, whereas Class III objects are NPs, we remain with an open question as to mechanisms inducing the absence of articles with Class II objects in Fijian, contrasting with use of articles with personal DPs in other positions. [11]

5.   Conclusions and prospects

The investigation that has been undertaken in this paper of object positions in three Oceanic languages with VOS constituent ordering has come to a view that material preceding overt CNP subjects is located in the CP domain as the result of phrasal movement(s). Given that as part of this analysis CNP objects are assumed to be always located in the CP domain (but in different possible locations within that domain), one is also led to consider whether CNP subjects should also be viewed as occupants of positions in the CP domain. The Topic status of the CNP objects that has been proposed here is akin to the treatment of VOS subjects in Malagasy in Pearson (2005). However, for Pearson, such Topics are right-adjoined in CP and there is thus no movement requirement to account for the pre-subject location of objects. This style of account would be applicable to the derivations of the surface sequencings observed in the Oceanic languages studied here, but at the expense of a rejection of the Antisymmetry view. If both CNP subjects and objects are located in left-branching Topic positions then the raised constituent on their left must be TP.

Although I believe that I have shown that Fijian, Iaai and Drehu have A'-bound *pro* objects and that such objects are distinguished across the three languages in their lacking a [+personal] feature, there remain many questions around the details of licensing mechanisms distinguishing overt and non-overt objects and around the nature of the features applicable to the composition of the CP domain. These questions are also of interest for possible future work on the understanding of VOS syntax in languages belonging in Oceanic subgroupings in which there are many other languages with SVO or VSO constituent orderings.

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[11] But not in all other positions, as complements of prepositions align with complements of verbs (as in the paradigms shown in Aranovich 3013: 474).

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THE ROLE OF VOICE MORPHOLOGY IN PROCESSING TAGALOG A-BAR DEPENDENCIES*

Jed Sam Pizarro-Guevara   Matthew Wagers
UC Santa Cruz   UC Santa Cruz
jpguevar@ucsc.edu   mwagers@ucsc.edu

The present study investigates the role of Tagalog voice morphology in real-time sentence processing. Because voice morphology packages information about the subject's thematic relation and structural position, we hypothesized that it can sharpen the comprehenders' predictions by allowing them to project the structure of *v*P and thus guide their interpretation of incoming linguistic material. Using a Stops-Making-Sense task, we tested whether verbs inflected with voice morphology were linked to their arguments any faster than controls without visible inflection. We found evidence that verbs inflected with *-um-* did facilitate the comprehension of agent *wh*-questions, but verbs inflected with *-in-* did not facilitate the comprehension of patient *wh*-questions. We argue that voice morphology does permit the comprehender to predictively extend their syntactic representations. However, whether it immediately feeds interpretation is mediated by other factors, such as the availability of alternative parses. We conjecture that the syntax of argument *wh*-questions in Tagalog affects the time-course of parsing, such that they are interpreted less 'actively' than comparable constructions in English.

1.   Introduction
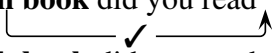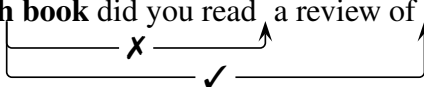
Processing A-bar dependencies incrementally is challenging for comprehenders for at least two reasons. First, comprehenders need to link a moved phrase (the FILLER) with an empty category (the GAP), whose position is not unambiguously indicated by the evidence in the input (Fodor 1978). Instead, the presence of a gap is inferred from the absence of a constituent in the position where the filler is to be expected. Second, the distance between the filler and the gap is unbounded. That is, it can span multiple clauses (Wagers and Phillips 2014). These two properties, exemplified in (1), could leave comprehenders uncertain as a sentence unfolds about how to associate the filler

and the gap—until after encountering evidence in the input confirming the presence of the gap. Thus, of particular interest to psycholinguists is the question of how comprehenders process these types of syntactic dependencies in real-time without delaying their interpretation.

(1) a. The **fruits** that the farmer placed _ in the basket were still unripe.
   b. The **fruits** that the lady told the farmer to place _ in the basket were unripe.

A large body of experimental evidence indicates that comprehenders do not wait for disambiguating evidence to associate a filler with a gap. Instead, they predictively posit a gap at each available position that would allow this dependency to be resolved without violating a grammatical constraint (Phillips and Wagers 2007, a.o.). This predictive association of the filler with the gap has been referred to as the ACTIVE FILLER STRATEGY (Frazier 1987), and this can be exemplified in (2) below. First, consider (2a): comprehenders identify the string *Which book* as a filler. Upon encountering the verb *read*, they attempt to associate the filler with a gap corresponding to the direct object of the verb. After encountering the rest of the linguistic input, they realize that their prediction is consistent with the input and thus, they arrive at the correct interpretation. Now consider (2b): comprehenders again identify the string *Which book* as a filler. Upon encountering the verb *read*, they once again attempt to associate the filler with the gap corresponding to the direct object. However, after they encounter the string *a review*, they realize that their initial association is incorrect and must reanalyze. Upon encountering the preposition *of*, they re-associate the filler with a gap corresponding to the object of the preposition. Finally, when they encounter the string *last night*, they realize that their re-association is consistent with the input and thus, they arrive at the correct interpretation.

(2) a. **Which book** did you read last night?
   b. **Which book** did you read a review of last night?

While comprehenders' initial association may be correct, as in (2a), this is not guaranteed. This may turn out to be wrong and thus, may need to be revised, as in (2b). When viewed this way, predictively associating a filler with a gap is a risk that comprehenders take when interpreting A-bar dependencies in real-time. With this in mind, the question that we are interested in is the following: what types of linguistic cues do comprehenders employ to guide their predictions, ease the uncertainty, and facilitate their interpretations of A-bar dependencies in real-time?

We investigate this question with respect to voice morphology found in Tagalog, an Austronesian language spoken in the Philippines. As it has been described in the literature in great detail, voice morphology in Tagalog (and related languages) encodes the thematic relation and the structural position of the subject, the *ang*-marked

DP.[1] Thus, it could potentially provide a rich source of information for comprehenders during real-time sentence processing. In addition, voice morphology interacts with other parts of the grammar and restricts what DPs can undergo A-bar extraction. Thus, by delimiting what filler can be involved in an A-bar dependency, it could potentially narrow down the hypothesis-space when attempting to associate a filler with a gap in real-time. In the present study, we ask whether Tagalog voice morphology facilitates the real-time comprehension of argument *wh*-questions by allowing comprehenders to sharpen their predictions about the incoming input.

The paper is organized as follows: section 2 gives an overview of the relevant morpho-syntactic properties of Tagalog; section 3 describes the experiment and presents the results; and section 4 concludes by relating the results to what we know about Tagalog morpho-syntax and psycholinguistics, more generally.

2. Tagalog voice and extraction

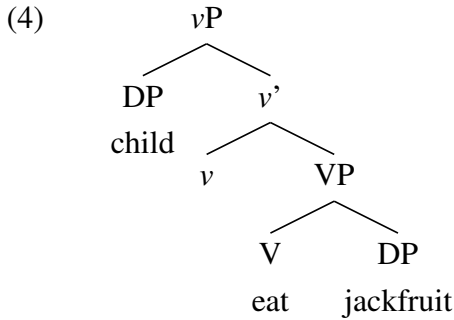### 2.1. The basics of voice morphology

In the descriptive literature, Tagalog verbs are said to carry overt voice morphology that encodes information about the thematic relation and structural position of the subject, the *ang*-marked DP (Schachter and Otanes 1983). Even though there are different morphological exponents of voice, the present study focuses only on *-um-* and *-in-*. The *-um-* in (3a) indicates that the subject of the clause is the agent, which is mapped to the external argument. The *-in-* in (3b) indicates that the subject of the clause is the patient, which is mapped to the internal argument.[2]

(3) a. K<*um*>ain ng=langka ang=*bata*.　　　*Subject: agent, external argument*
　　　 buy<AV>　 jackfruit　 child
　　　 'The child ate jackfruit.'

　　 b. K<*in*>ain ng=bata ang=*langka*.　　　*Subject: patient, internal argument*
　　　 eat<PV>　 child　　 jackfruit
　　　 'The child ate the jackfruit.'

In the theoretical literature, voice morphology has been analyzed in at least two ways: agreement with the abstract Case of the subject (Rackowski 2002; Rackowski and Richards 2005), and as spell-outs of *v* (Aldridge 2012). Despite their differences, these two analyses propose comparable syntactic representations for verbs involving *-um-* and *-in-*, as seen in (4) and (5), respectively.
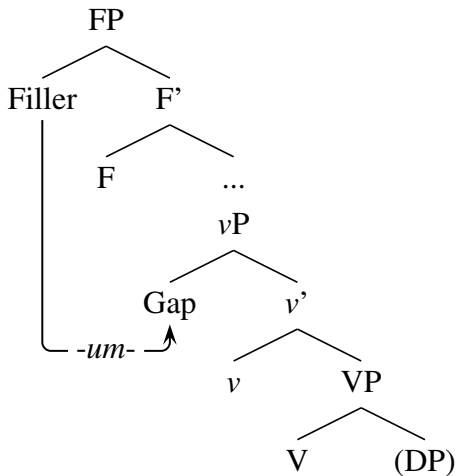
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[1]We abstract away from the controversial status of subjecthood in Tagalog and related languages. We use the term subject for expository ease. For an overview of the syntactic properties (and the controversy) associated with *ang*-marked DPs, we invite the readers to consult Chapter 2 of Kroeger 1993 as a starting point.

[2]We used the following abbreviations in the paper: AV = actor voice, ITER = iterative aspect, LNK = linker, PN = proper name, PV = patient voice, RECPERF = recent perfective aspect.

(4)

```
              vP
          ╱        ╲
        DP          v'
       child      ╱    ╲
                 v      VP
                      ╱    ╲
                     V      DP
                    eat   jackfruit
```

(5)

```
              vP
          ╱        ╲
        DP          vP
     jackfruit   ╱     ╲
              DP         v'
             child    ╱    ╲
                     v      VP
                   [EPP]   ╱   ╲
                          V     t_i
                         eat
```
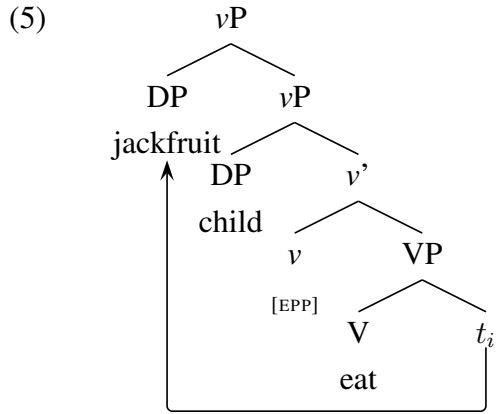
These representations are relevant because we hypothesize that *-um-* and *-in-* facilitate real-time comprehension by allowing comprehenders to project the internal structure of *v*P. In other words, we claim that when comprehenders identify that there is an A-bar dependency involved and they encounter a verb with either *-um-* or *-in-*, they are able to quickly access these mental representations, thereby facilitating the resolution of the dependency and interpretation of the linguistic signal. This process could be considered a generalized version of the Active Filler Strategy (Wagers, Borja, and Chung 2015) and can be schematized in (6a) and (6b).

(6) a. When comprehenders identify an A-bar dependency and encounter verbs that have *-um-*, they are able to project a verbal spine akin to (4), where the gap that needs to be linked to the filler is the agent DP occupying [Spec, *v*P]

```
              FP
          ╱        ╲
      Filler        F'
        │        ╱     ╲
        │       F       ...
        │              vP
        │            ╱    ╲
        │          Gap     v'
      -um-                ╱   ╲
                         v     VP
                             ╱    ╲
                            V     (DP)
```

b. When comprehenders identify an A-bar dependency and encounter verbs that have *-in-*, they are able to project a verbal spine akin to (5), where the gap that needs to be linked to the filler is the externalized patient DP (via [EPP]) occupying [Spec, *v*P]
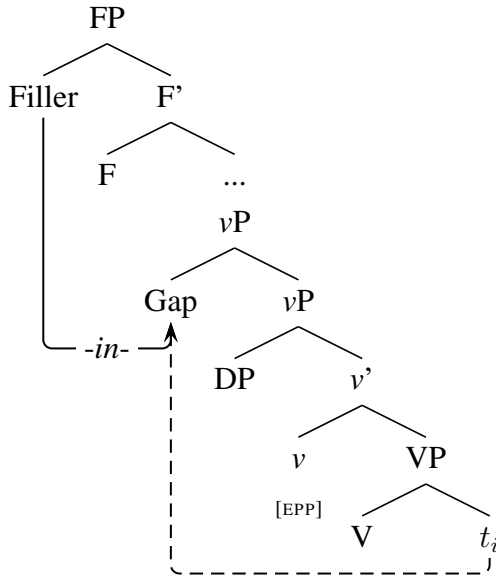
2.2. Interaction with extraction

Voice morphology interacts with A-bar dependencies to give rise to the extraction restriction in Tagalog (and other related languages): only the subject can be extracted (Aldridge 2002; Rackowski 2002). In other words, when the verb has *-um-*, only the extraction of the agent is licit, as in (7a); extraction of the patient is illicit, as in (7b). When the verb has *-in-*, only the extraction of the patient is licit, as in (7c); extraction of the agent is illicit, as in (7d). These patterns are schematized in Table 1 (left panel).

(7) a. *Alin-g*   *babae*   ang=s<*um*>ipa ng=lalaki?   *-um-, agent-extraction*
     which-LNK   woman   kick<AV>   man
     'Which woman kicked a man?'

   b. *Alin-g   lalaki ang=s<*um*>ipa *ang=babae*?   *-um-, patient-extraction*
     which-LNK   man   kick<AV>   woman
     Intended: Which man did the woman kick?

   c. *Alin-g*   *lalaki* ang=s<*in*>ipa ng=babae?   *-in-, patient-extraction*
     which-LNK   man   kick<PV>   woman
     'Which man did the woman kick?'

   d. *Alin-g   babae   ang=s<*in*>ipa *ang=lalaki*?   *-in-, agent-extraction*
     which-LNK   woman kick<PV>   man
     Intended: Which woman kicked the child?

Table 1: Patterns of extraction: (Left) based on previous studies; and (Right) based on our recent work with speakers

| | | Extracted DP | |
		Agent	Patient
Voice	*-um-*	✓	✗
	-in-	✗	✓

| | | Extracted DP | |
		Agent	Patient
Voice	*-um-*	✓	✗
	-in-	?	✓

However, based on our work with speakers, we found that these patterns are not as clear-cut as previously described. Sentences like (7a–c) above accord with the previous descriptions. Sentences like (7d) exhibit great inter-speaker variability: some of the speakers categorically reject them and this pattern is consistent with previous descriptions; others fully accept them, contra previous descriptions; most speakers find them acceptable, albeit more degraded than (7a) and (7c) but better than (7b). These patterns are schematized in Table 1 (right panel).

To determine whether these judgments are robust across a wider range of speakers, we conducted an offline acceptability judgment survey and recruited 80 speakers (40 M; 40 F, 18–35 years old; M_{age} = 23.33) from the University of the Philippines–Diliman. The survey used a 2×2 factorial design, crossing MORPHOLOGY (*-um-*, *-in-*) and EXTRACTION (Agent, Patient). The speakers were instructed to rate the acceptability of 16 sentences using a 7-point Likert scale, with 1 being *hindi mabuti* 'unacceptable (literal: not good)' and 7 being *mabuti* 'acceptable (literal: good).' Graphical summaries of the data are provided in Figure 1.
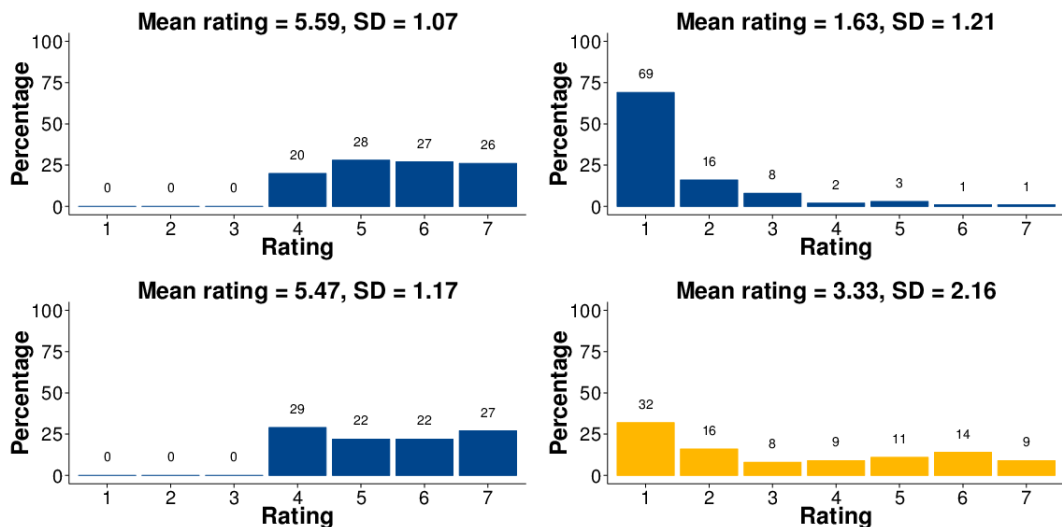

Figure 1: Breakdown of ratings per condition: (a) agent is extracted and verb has *-um-*; (b) patient is extracted and the verb has *-um-*; (c) patient is extracted and the verb has *-in-*; and (d) agent is extracted and the verb has *-in-*. The interaction between MORPHOLOGY and EXTRACTION was statistically significant, b = -6.09, $t(237)$ = -30.90, $p < .001$.

Our survey confirmed that the patterns based on our work with speakers are robust. The ratings for sentences like (7a) and (7c) accord with our description, as well as with previous ones: agent-extraction when the verb has *-um-* and patient-extraction when the verb has *-in-* were rated high, with all speakers rating them at least a 4. The ratings for sentences like (7b) also accord with our description, as well as with previous ones: patient-extraction when the verb has *-um-* were rated low, with 93% of the ratings 3 or lower. However, for sentences like (7d), which involve agent-extraction when the verb has *-in-*, there was great-interspeaker variability. Approximately a third of the observations were rated as a 1, but the remaining two-thirds were more or less divided evenly across the other ratings. Later, we will appeal to this variability across speakers to account for the apparent *-um-/-in-*-asymmetry observed in real-time processing.

2.3.   Without voice

To isolate the independent contribution of voice morphology in real-time processing, we need to compare the time-course of dependency formation when verbs exhibit voice and when they do not. Tagalog allows us to make this comparison because in certain aspects, the verb does not (obligatorily) exhibit voice: in the iterative (Schachter and Otanes 1983, pp. 398–9) and in the recent perfective (Kroeger 1993, p. 50). Crucially, they impose comparable restrictions on A-bar dependencies as verbs with *-um-* and *-in-*, respectively.

When iteratives exhibit no voice morphology, only the agent can be extracted, as in (8a). This similarity in extraction restriction with *-um-*-marked verbs creates a minimal contrast that allows us to isolate the contribution of *-um-* in real-time processing. When recent perfectives have an obligatorily specific co-argument (i.e., proper name or pronoun) that is *ng*-marked, only the patient can be extracted, as in (8b). This similarity in extraction restriction with *-in-*-marked verbs creates a near-minimal contrast that allows us to isolate the contribution of *-in-* in real-time processing. A summary of these pairwise comparisons is provided in Table 2 below.

(8) a. Maganda ang=hostes na   bati-nang-bati ng=mga=bisita.
         beautiful hostess   LNK   greet:ITER   visitors
         'The hostess that kept on greeting visitors is beautiful'
         *The hostess that the visitors kept on greeting is beautiful.
     b. Maganda ang=hostes na   kakabati   lang ni=Inday/niya.
         beautiful hostess   LNK   greet:RECPERF just PN/3SG
         *The hostess that just greeted Inday/her is beautiful.
         'The hostess that Inday/she just greeted is beautiful'

Table 2: Pairwise comparisons to isolate the contribution of voice in real-time processing using the verb *kain* 'eat' to demonstrate the various forms

	Extracted DP	
	Agent	Patient
With voice	*-um*-marked verbs	*-in*-marked verbs
	k*um*akain	k*in*ain
With no voice	Iteratives	Recent perfectives
	kain nang kain	kakakain

3. The experiments: Isolating the effect of voice morphology

Two online experiments were conducted to isolate the independent contribution of voice morphology on processing A-bar dependencies in Tagalog. A phrase-by-phrase non-cumulative moving window STOPS-MAKING-SENSE paradigm (Boland, Tanenhaus, Garnsey, and Carlson 1995) was used to detect local plausibility effects in *wh*-questions. Under this paradigm, we manipulated how plausible a filler would be as one of the co-arguments of a verb, based on the information encoded by voice morphology, and based on how interpretations are constrained in voiceless iteratives and in recent perfectives with obligatorily specific *ng*-marked co-arguments.

This paradigm is a version of self-paced reading in which participants advance through the sentence one phrase at a time. However, they can choose at any phrase to abandon the sentence, if it 'stops making sense.' The intuition is that the sentences will be nonsensical in a way that only becomes apparent when the participants are able to integrate all of the linguistic material into a coherent whole. When participants have indicated that the sentence stopped making sense, we can infer that they have assembled the pieces of the sentence into a meaningful unit at that point in time. As a result, the implausibility of a filler will frustrate their expectations that the sentence will make sense, and these frustrated expectations can provide us a window about the time-course of how the filler came to be associated with the gap.

3.1. Participants

Eighty Tagalog speakers (40 F and 40 M; 18-35 years old; $M_{age} = 23.33$; $SD_{age} = 4.53$) were recruited from the University of the Philippines–Diliman. They also responded to the offline questionnaires and participated in the two online experiments. They received a Starbucks gift card, valued at 400 PHP ($\approx$ 8.50 USD), for participating.

3.2. Materials

The experiments employed a 2×2 factorial design, crossing VOICE (+Voice, -Voice) and FILLER PLAUSIBILITY (+Plaus, -Plaus). Twelve semantically non-reversible transitive verbs were chosen for the experiments. Two 12-item sets were created: one

for comparing agent-extractions, as in (9); and one for comparing patient-extractions, as in (10). Each item was distributed across four lists via the Latin Square design. Each participant saw one of the lists intermixed with 48 distractors in randomized order.

 To create the experimental items involving agent-extractions, we started out with a plausible sentence where the verb exhibited *-um-*, as in (9a). Building off (9a), we manipulated the plausibility by switching the co-arguments, as in (9b); we also manipulated the presence of voice, while holding plausibility constant, by switching the verb's aspect to iterative, as in (9c). Building off (9c), we manipulated the plausibility by switching the co-arguments, as in (9d).

(9) a. Alin-g bata ang=kumakain parati ng=lechon...? *+Voice, +Plaus*
   which-LNK child eat\<AV\>   always roasted pig
   'Which child is always eating roasted pig...?'

  b. Alin-g   lechon ang=kumakain parati ng=bata...? *+Voice, -Plaus*
   which-LNK roasted pig eat\<AV\>   always child
   'Which roasted pig is always eating a child...?'

  c. Alin-g bata ang=kain-nang-kain ng=lechon...?   *-Voice, +Plaus*
   which-LNK child eat:ITER   roasted pig
   'Which child kept on eating roasted pig...?'

  d. Alin-g   lechon ang=kain-nang-kain ng=bata...?   *-Voice, -Plaus*
   which-LNK roasted pig eat:ITER   child
   'Which roasted pig kept on eating a child...?'

 To create the experimental items involving patient-extractions, we started out with a plausible sentence where the verb exhibited *-in-*, as in (10a). Building off (10a), we manipulated the plausibility by replacing an inanimate filler with an animate one, as in (10b); we also manipulated the presence of voice, while holding plausibility constant, by switching the verb's aspect to recent perfective, as in (10c). Building off (10c), we manipulated the plausibility by replacing an inanimate filler with an animate one, as in (10d).

(10)a. Alin-g   alak ang=ininom niya kani-kanina lang...? *+Voice, +Plaus*
   which-LNK wine drink\<PV\> 3SG recently just
   'Which wine did he/she just drink...?'

  b. Alin-g   babae ang=ininom niya kani-kanina lang...? *+Voice, -Plaus*
   which-LNK woman drink\<PV\> 3SG recently just
   'Which woman did he/she just drink...?'

  c. Alin-g   alak ang=kakainom lang niya...?   *-Voice, +Plaus*
   which-LNK wine drink:RECPERF just 3SG
   'Which wine did he/she just drink...?'

d. Alin-g   babae   ang=kakainom lang niya...?   *-Voice, -Plaus*
   which-LNK woman drink:RECPERF just 3SG
   'Which woman did he/she just drink...?'

3.3. Procedure

The experiments were developed and presented using Linger (Rohde 2003). Participants were first introduced to a word-by-word self-paced moving window reading task to familiarize themselves with the presentation. The sentences initially appeared as a row of dashes, and participants were instructed how to advance through the sentence phrase-by-phrase. After several practice trials, they were instructed how to indicate a sentence "stops-making-sense": they were instructed to read the sentences in the same way as before with one crucial difference. After each word, they had the option to continue with the presentation or abort it and move on to the next trial if the sentence stopped making sense.

3.4. Analysis

For each condition, we computed a DISCRIMINABILITY SCORE for each participant at each region. We defined this measure as the difference between percentage of plausible trials rejected and percentage of implausible trials rejected in that region (expressed as empirical logits). A positive score means that participants were rejecting implausible sentences at a higher rate relative to their plausible counterparts. A negative score means the reverse: participants were rejecting plausible sentences at a higher rate relative to their plausible counterparts. A score of 0 means that they were rejecting plausible and implausible sentences at an equal rate.

To assess the effect of plausibility and voice morphology on the ability to discriminate implausible sentences from their plausible counterparts in agent- and patient-extractions, linear mixed-effects models of discriminability were estimated at each region in *R* (R Core Team 2015) using *lme4* (Bates, Mächler, Bolker, and Walker 2015). We entered into each region's regression VOICE as a fixed effect and estimated random intercepts for participants. No random slopes were estimated due to non-convergence. Also included in the model were the weights of each observation by the reciprocal of the variance.

3.5. Results: Agent-extraction

Figure 2 (left panel) shows the raw rejection rates for each condition. Our results revealed that at the Verb-region, participants were rejecting implausible sentences more than their plausible counterparts. This effect persisted the Verb+1-region, where the co-argument occurred.

Figure 2 (right panel) shows the discriminability scores for both verb types. At the Verb-region, the discriminability score of *-um*-marked verbs was reliably
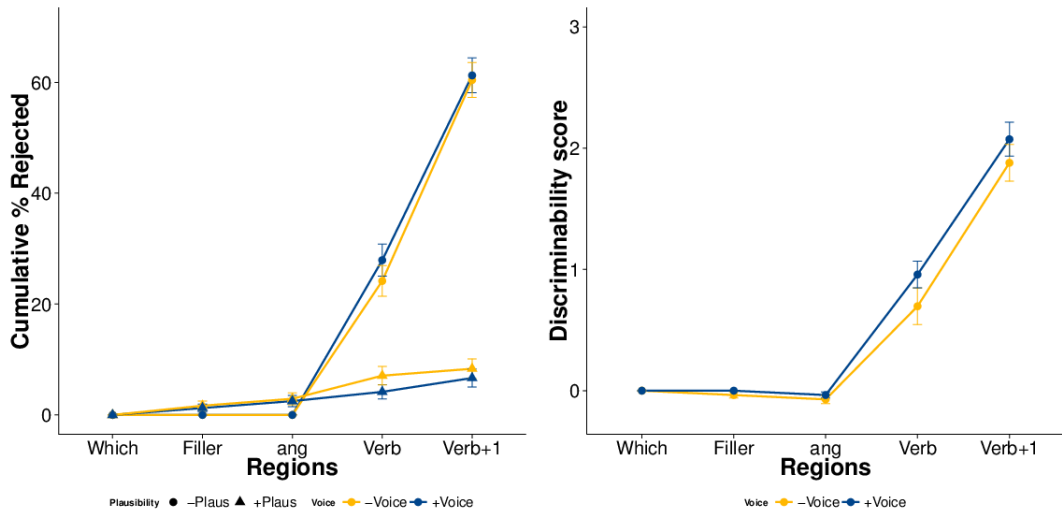
Figure 2: (Left) Cumulative % rejections of the four conditions at each region: triangles represent plausible sentences; circles, implausible sentences; blue lines represent *-um*-marked verbs; gold lines, verbs in the iterative. (Right) Discriminability scores by voice at each region: blue lines represent *-um*-marked verbs; gold lines, verbs in the iterative.

higher than that of verbs in the iterative. Implausible sentences with voice morphology led to higher rates of correct rejections than those without, and plausible sentences with voice morphology led to fewer erroneous rejections.

We take this difference as evidence that participants could compute a partial interpretation for the sentence more quickly when there was visible voice morphology. As expected, this effect was neutralized at the Verb+1-region when information about the co-argument became available.

3.6. Results: Patient-extraction

Figure 3 (left panel) shows the raw rejection rates for each condition. Our results revealed that at the Verb-region, participants were rejecting implausible sentences more than their plausible counterparts. This effect persisted the Verb+1-region, where the co-argument occurred.

Figure 3 (right panel) shows the discriminability scores for both verb types. At the Verb-region, the discriminability score of *-in*-marked verbs was not reliably higher than that of verbs in the recent perfective. Implausible sentences with voice morphology and those without had comparable rates of correct rejections.

Unlike *-um*-marked verbs, we do not have evidence that participants could compute a partial interpretation for the sentence more quickly when there was visible voice morphology, contra our hypothesis. As expected, this effect (or lack thereof) persisted through the Verb+1-region when information about the co-argument became available.
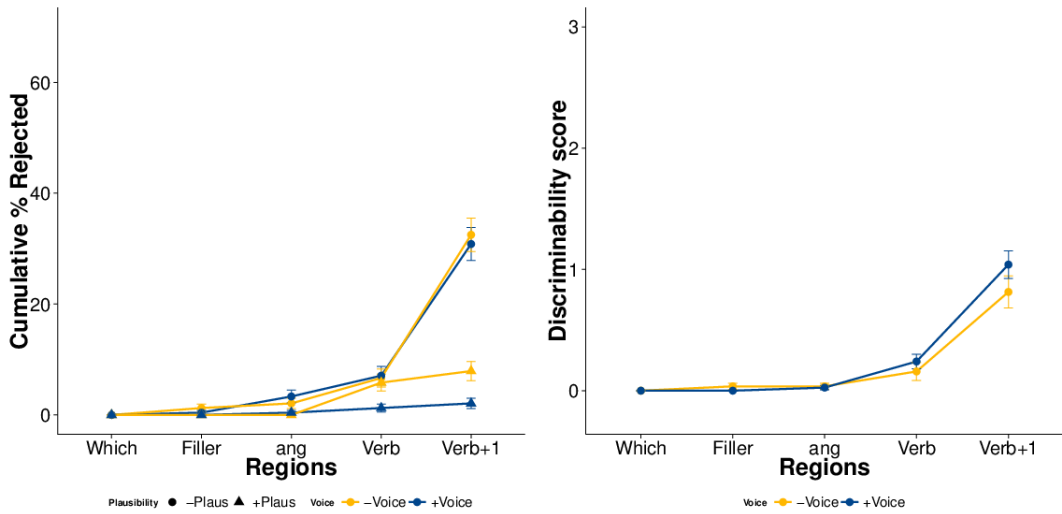
Figure 3: (Left) Cumulative % rejections of the four conditions at each region: triangles represent plausible sentences; circles, implausible sentences; blue lines represent *-in*-marked verbs; gold lines, verbs in the recent perfective. (Right) Discriminability scores by voice at each region: blue lines represent *-in*-marked verbs; gold lines, verbs in the recent perfective.

4.   General discussion and conclusion

We found evidence that *-um-* facilitated the comprehension of argument *wh*-questions. We did not find any evidence that *-in-* did, however. These results leave us with two questions. First, there is the asymmetry question: why is there an asymmetry in the effect of *-um-* and *-in-*? Second, there is the attenuation question: why is the effect of voice attenuated? That is, if voice morphology packages all that information about the subject that is crucial for structure-building, why are the rejection rates of implausible sentences when the verb exhibited voice low?

Consider the asymmetry question first. We found an apparent asymmetry between the effect of *-um-* and *-in-* in real-time comprehension. Before proceeding, it is important to note that these findings are not unique to the present study. Comparable *-um-/-in-* asymmetries have previously been reported in acquisition studies (Tanaka 2016; Pizarro-Guevara 2014). Based on these facts, should we conclude then that only *-um-* facilitates A-bar comprehension, while *-in-* does not—despite the fact that they both encode the thematic relation and the structural position of the subject? We claim that despite this apparent asymmetry, both *-um-* and *-in-* do facilitate the comprehension of A-bar dependencies—with an important caveat. Their facilitatory effects are mediated by other factors, such as the availability of alternative parses.

Recall that there is considerable inter-speaker variation when the agent is extracted and the verb exhibits *-in-*. Such variability allows for a sentence that starts like (11) to have multiple possible continuations: an agent-extraction that becomes implausible when the co-argument *niya* is encountered, as in (11a); an agent-extraction

that remains plausible when the co-argument *ang alak* is encountered, as in (11b); and finally, an instance of sub-extraction, as in (11c).[3]

(11) Alin-g   babae   ang=ininom...
      which-LNK woman   drink<PV>

    a. ... niya kani-kanina lang...?   *Implausible agent-extraction*
       ... 3SG recently   just
       #Which woman did s/he just drink recently...?

    b. ... ang=alak kani-kanina lang...?   *Plausible agent-extraction*
       ... wine   recently   just
       'Which woman just drank the wine recently...?'

    c. ... ng=lalaki ang=alak niya...?   *Plausible sub-extraction*
       ... man   wine   3SG
       'Which woman is the one whose wine a man drank?'

It could be that comprehenders are entertaining these possible continuations when they encounter a verb with *-in-* and thus, they reserve rejecting the sentence until there was disambiguating evidence (i.e., the co-argument). Figure 4 presents some suggestive evidence from their unrejected reading times.[4] Statistical analyses reveal that there is a plausibility effect at the Verb-region, suggesting that participants are registering the potential semantic anomaly as indicated by the elevated reading times of the circles over the triangles.

Now consider the attentuation question. We provide in Table 3 a summary of the rejection rates in our experiment when participants had direct evidence to reject an implausible sentence (i.e., when the co-argument was introduced at the Verb+1-region). What is driving these attenuated rejection rates?

Table 3: Summary of rejection rates data in Tagalog from the present study

	-um-	*-in-*
+Plaus	7%	2%
–Plaus	61%	31%

We conjecture that the syntax of argument *wh*-questions in Tagalog affects the time-course of parsing. In Tagalog argument *wh*-questions, their *wh*-initiality is derived via a pseudo-clefting strategy (Aldridge 2002, a.o.). That is, the *wh*-phrase functions as the predicate, while the rest of the material is a headless relative. If we

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[3]We thank Norvin Richards for pointing out the possibility of a sub-extraction parse, and Elsie Or and other linguists from the University of the Philippines–Diliman for their grammaticality judgments. It should be noted that not all speakers allow sub-extraction, however.
[4]Segment-by-segment reading times of those who chose to continue the presentation at each region were also collected. We refer to these reading times as unrejected reading times.
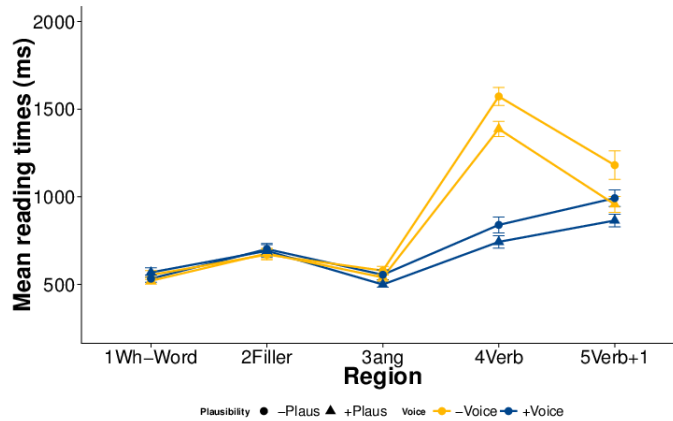
Figure 4: Mean (unrejected) reading times in *ms* for patient-extractions at each region by plausibility and voice: triangles represent plausible sentences; circles, implausible sentences; blue lines represent *-in*-marked verbs; gold lines, verbs in the recent perfective.

assume that there is a temporal lag between the time at which comprehenders access syntactic structure and assign interpretation, then we have a potential explanation for the discrepancy in rejection rates. More specifically, the attenuated results in Tagalog could be due to the fact that the relation between the filler and the gap is not a direct one but rather is *mediated* via predication. We speculate that this is why we see relatively low rejection rates even for *-um*-marked verbs, although future research is required to understand how this interacts with task demands and anomaly type.

To conclude, in this study, we aimed to investigate the functional impact of voice morphology on the comprehension of A-bar dependencies. We found that *-um-* facilitated the participants' ability to comprehend *wh*-questions. We did not find any evidence that *-in-* did. Despite this apparent asymmetry, we maintain that voice morphology does facilitate comprehension. However, its effect is mediated by other factors, like the availability of alternative parses. We conjecture that the syntax of argument *wh*-questions in Tagalog affects the time-course of parsing, such that they are interpreted less 'actively' than comparable constructions in English, where the relation between the filler and the gap is direct.

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AN IN-SITU SYNTAX OF SLUICING IN INDONESIAN[*]

Yosuke Sato
National University of Singapore
ellys@nus.edu.sg

Following the in-situ theory of sluicing recently developed by Kimura (2010) and Abe (2015), this paper proposes that sluicing in Indonesian consists of deletion of all TP-internal materials except the *wh*-phrase in situ as an alternative to the now conventional movement analysis of sluicing championed by Merchant (2001) and much subsequent work. This in-situ theory of Indonesian sluicing provides a unified explanation for otherwise perplexing properties of this construction, including category-dependent island-(in)sensitivity, the contrasting distribution of the question particle *–kah* and P-stranding under *wh*-questions and sluicing, and the absence of the clause-mate requirement on multiple sluicing. There are two significant implications of the in-situ theory of sluicing. One is that the theory affords the simples possible account of island-insensitivity under sluicing without recourse to repair, an important result given that the conceptual and empirical underpinnings of the repair-based approach have been vigorously contested in the latest literature on ellipsis (Barros et al. 2014). The other is that the in-situ derivation is deterministically enforced by two interface conditions regulating unselective binding and string-vacuous *wh*-movement. The analysis thus supports the minimalist conjecture that syntactic computation takes place to meet interface conditions imposed from partly language-external sound and meaning components.

1. Introduction

Merchant (2001) proposes that sluicing, as illustrated in (1a), is derived through regular *wh*-movement, followed by TP-deletion at PF, as shown in (1b, c).

(1) a. John bought something, but I don't know what.
   b. … but I don't know [$_{CP}$ what$_i$ [$_{C'}$ C$_{Q[E]}$ [$_{TP}$ he bought t_i]]] (*wh*-movement)
   c. … but I don't know [$_{CP}$ what$_i$ [$_{C'}$ C$_{Q[E]}$ [$_{TP}$ he bought t_i]]] (TP-deletion)

Here, I propose the in-situ theory of sluicing, originally proposed by Kimura (2010), as further articulated by Abe and Hornstein (2012), and Abe (2015), to Indonesian sluicing. The in-situ theory maintains that sluicing consists of deletion of all TP-internal materials minus an in-situ *wh*-phrase. According to this theory, the example in (1a) will be re-analyzed as shown in (2).

(2) … but I don't know [$_{CP}$ C$_{Q[E]}$ [$_{TP}$ he bought what]]
                     *   String-Vacuous Movement

Why must the *wh*-phrase stay in situ in (2)? Suppose that there is a PF output economy condition, as stated in (3).

(3)   PF Output Economy Condition on Externalization:
         Unless required for convergence, avoid string-vacuous application of Move.
         (George 1980; Chomsky 1986, 1995)

The [E] feature of the C head instructs the PF component that its TP complement be unparsed for externalization. The hypothetical *wh*-movement in (2), then, would be string-vacuous and blocked by (3), thereby yielding the in-situ structure for sluicing.

2. *Wh*-Questions in Indonesian: Ex-Situ or In-Situ?

To lay the groundwork for the in-situ theory of Indonesian sluicing developed in section 3, here I will review the syntax of *wh*-questions in Indonesian, focusing on the movement vs. in-situ options for *wh*-phrases and their (in)-sensitivity to islands.
      First, *wh*-phrases containing nominal restrictors such as *apa* 'what', *siapa* 'who', and *di mana* 'in what place' can move or stay in-situ, as shown in (4) and (5). On the other hand, *wh*-phrases not containing such restrictors, such as *kenapa* 'why' and *bagaimana* 'how', cannot stay in situ but must undergo overt *wh*-movement, as shown in (6).

(4) a. **Apa$_i$**   yang   kamu   pikir   Esti   akan   beli t_i?
        what   COMP   you   think   Esti   will   buy
        'What do you think Esti will buy?'
    b. Kamu pikir   Esti   akan   beli   **apa**?
        you   think   Esti   will   buy   what
        'What do you think Esti will buy?'

(5) a. **Di mana$_i$**   Esti   mem-beli   buku t_i?
        in where   Esti   AV-buy   book
        'Where did Esti buy a book?'

b. Esti   mem-beli   buku   **di mana**?
   Esti   AV-buy   book   in where
   'Where did Esti buy a book?'

(6) a. **Kenapa**ᵢ   Esti   mem-beli   buku   yang   mahal   *t*ᵢ?
       in where   Esti   AV-buy   book   COMP   expensive
       'Why did Esti buy an expensive book?'
   b.* Esti   mem-beli   buku   yang   mahal   **kenapa**?
       Esti   AV-buy   book   COMP   expensive   why
       'Why did Esti buy an expensive book?'

I assume Cole and Hermon's (1998) analysis of *wh*-questions in Indonesian/Malay, according to which the interrogative operator may either appear as a single lexical entry with the *wh*-variable, or be base-generated in [Spec, CP] separately from the *wh*-variable. The former option yields overt *wh*-movement, as in English, whereas the latter option yields *wh*-in-situ, with the *wh*-variable being unselectively bound by the interrogative operator, as in Chinese. Suggestive evidence for this hybrid analysis of the optionality of *wh*-movement in Indonesian comes from the observation that those *wh*-words such as *apa* 'what' and *mana* 'where' which can stay in situ can be used as a variable in non-interrogative contexts whereas those *wh*-words such as *kenapa* 'why' and *bagaimana* 'how' can only ever be used as a *wh*-variable bound by the operator. This contrast is illustrated in (7a–c).

(7) a. Saya   tidak   mau   mem-beli   **apa-apa**.
       I   NEG   want   AV-buy   what-what
       'I don't want to buy anything.'
   b. Saya   tidak   mau   pergi   ke   **mana-mana**.
       I   NEG   want   go   to   where-where
       'I do not want to go anywhere.'
   c.* Saya   tidak   mau   me-nagis   **kenapa-kenapa**.
       I   NEG   want   AV-cry   why-why
       'I do not want to cry for any reason.'

Second, as first noted by Saddy (1991), *wh*-movement in Indonesian, is island-sensitive, be it overt or covert movement, while *wh*-in-situ is island-insensitive and stays in situ throughout the syntactic derivation. Examples (8a–c) illustrate full *wh*-movement, partial *wh*-movement and *wh*-in-situ, respectively.

(8) a.   [CP1 **apa**ᵢ   yang   kamu   pikir [CP2 Esti   kira   [CP3   Pak Yanto
              what   COMP   you   think   Esti   expect   Mr.Yanto
         beli   *t*ᵢ   kemarin]]]?
         buy   yesterday
         'What do you think Esti expects Mr. Yanto bought yesterday?'

b. [CP1 Kamu   pikir   [CP2 **apa$_i$**   yang Esti   kira   [CP3   Pak   Yanto
     you   think   what   COMP Esti   expect   Mr.   Yanto
    beli t_i kemarin]]]?
    buy   yesterday
    'What do you think Esti expects Mr. Yanto bought yesterday?'

c. [CP1 Kamu   pikir   [CP2   Esti   kira   [CP3   Pak   Yanto   beli
     you   think   Esti   expect   Mr.   Yanto   buy
   apa   kemarin]]]?
   what   yesterday
    'What do you think Esti expects Mr. Yanto bought yesterday?'

With this in mind, consider now the island-(in)sensitivity of the three *wh*-question strategies. The ill-formedness of the examples in (9a, b) shows that both overt and covert *wh*-movement obeys island constraints. The grammaticality of the examples in (10a, b), on the other hand, proves that *wh*-in-situ is island-insensitive.

(9) a.* **Siapa$_i$** yang   kamu   suka [DP cerita yang t_i meng-kritik   itu]?
     who   COMP   you   like   story   COMP   AV-criticize   DEM
     'Who$_i$ do you like the stories that t_i criticized?'

   b.* Kamu   kira   [DP   cerita   bahwa **siapa$_i$**   yang t_i meng-kritik
       you   think   story   that   who   COMP   AV-criticize
      Jon]   itu   di-jual?
      John   DEM   PV-sell
      'Who$_i$ do you think that the story that t_i criticized John was sold?'

(10) a. David   men-cari   [DP peneliti   yang   me-nemukan **apa**]?
       David   AV-look for   researcher COMP   AV-discover   what
        'Intended: David is looking for the researcher who discovered what?'

    b. David   men-cari   [DP peneliti   yang   bekerja   **di mana**]?
        David   AV-look for   researcher COMP   work   in where
         'Intended: David is looking for the researcher who works where?'

With this much background, we are now ready to explore the empirical consequences of the in-situ theory of sluicing in Indonesian in the following section.

3. The In-Situ Derivation of Sluicing in Indonesian

Let us now see how the in-situ theory of sluicing works, using (11) as an example.

(11) Esti   mem-beli   <u>sesuatu   yang mahal</u>   di sini,
      Esti   AV-buy   something   COMP expensive   in here
      tapi   saya   tidak   ingat   **apa**.
      but   I   NEG   remember   what
      'Esti bought something expensive here, but I don't remember what.'

This example is analyzed as shown in (12). Here, everything within the TP constituent undergoes PF deletion except the *wh*-phrase *apa* 'what', which stays in situ due to the aforementioned economy condition banning the string-vacuous movement. This derivation converges because *apa* 'what' is a noun-containing *wh*-phrase which can therefore be licensed in situ by unselective binding at LF.

(12)   … tapi saya tidak ingat [$_{CP}$ C$_{Q[E]}$ [$_{TP}$ Esti mem-beli apa]]

The distribution of the question particle *–kah* provides support for the view that *wh*-phrases remain in situ under sluicing. Fortin (2007) observes that this particle can co-occur with fronted *wh*-phrases, but not with in-situ *wh*-phrases, as evidenced by the contrast between (13a) and (13b).

(13) a. **Apa(-kah)**$_i$ yang Ali   beli t_i?
        what-Q   COMP Ali   buy
        'What did Ali buy?'
     b. Ali   beli   **apa(-*kah)**?
        Ali   buy   what-Q
        'What did Ali buy?'   (Fortin 2007:56)

The in-situ theory predicts that the *wh*-sluice cannot co-occur with the particle whereas the movement-based theory predicts that it can. Example (14) indicates it is the prediction of the former theory, not the latter theory, that is correct.

(14) Ada   <u>seseorang</u>   yang me-nelepon   tadi   …   coba   tebak
      exist   someone   COMP AV-phone   just now   try   guess
      siapa(*kah).
      who-Q
      'Someone phoned just now… try to guess who.'   (Fortin 2007: 207, 208)

3.1.   Deriving Island (In-)Sensitivity in Indonesian Sluicing

The in-situ theory of sluicing provides a principled explanation for island (in-)sensitivity exhibited by this construction. Example (15) is a case in point, where the *wh*-remnant *subjek mana* 'which subject' is within the Complex NP Island.

(15) Saya   tahu   yang   David   mau   bertemu   peneliti
     I   know   COMP   David   want   meet   researcher
     yang   mengajar   <u>subjek tertentu</u>   di Unidip,
     COMP   teach   subject certain   in Unidip
     tapi   saya   sudah   lupa   **subjek mana**.
     but   I   already   forget subject which
     'I know David wants to meet the researcher who teaches a certain subject in
     Unidip (Diponegoro University), but I already forgot which subject.'

The lack of the island effect is a straightforward consequence of the in-situ theory
of sluicing: the *wh*-remnant remains in situ, as shown in (16), so that there is no
wh-movement to speak of.

(16) … lupa [$_{CP}$ C$_{Q[E]}$ [$_{TP}$ David … [$_{DP}$ peneliti yang … $\boxed{\text{subjek mana}}$ di Unidip]]

The same analysis holds true for the island-insensitivity exhibited by a locative
wh-phrase such as *di mana* 'where', as shown in (17). Recall that this *wh*-phrase,
which contains a nominal restrictor, can be licensed in situ through unselective
binding.

(17) David   mau   bertemu   peneliti   yang   bekerja
     David   want   meet   researcher   COMP   work
     <u>di   negara tertentu</u>,   tapi   saya   sudah   lupa
     in   country certain   but   I   already   forget
     di   negara   mana.
     in   country   which
     'David wants to meet the researcher who works in a certain country, but I
     already forgot in which country.'

The in-situ theory makes a different prediction concerning sluicing cases
with adverbial *wh*-phrases such as *kenapa* 'why'. We have seen in section 2 that
this type of *wh*-phrase must undergo movement to [Spec, CP] for interrogative
interpretation. As this movement is required for convergence, it meets the
economy condition stated in (3). Given this, the in-situ theory predicts that the
adverbial *wh*-remnant should trigger island effects in the structural context akin
to (16) and (17). Example (18) shows that this prediction is indeed borne out.

(18)* David   mau   bertemu   peneliti   yang bekerja   di
      David   want   meet   researcher   COMP work   in
      Bali   <u>untuk alasan akademik</u>,   tapi   saya   sudah lupa **kenapa**.
      Bali   for   reason academic   but   I   alreadyforget why
      (* under the downstairs reading)
      'David wants to meet the researcher who works in Bali for some academic
      reason, but I already forgot why.'

The example in (18) is ungrammatical because the *wh*-movement of *kenapa* 'why',
required for convergence, violates the Complex NP Island. Note, of course, that, if
we remove the island from (18), the sentence should be grammatical. Example (19)
(as well as the possibility of the matrix reading in (18)) shows that this is the case.

(19) David   mau   bekerjadi Bali   <u>untuk alasan akademik</u>,
     David   want   work in Bali   for   reason academic
     tapi saya   sudah   lupa   **kenapa**.
     but I   already forget why
     'David wants to work in Bali for some academic reason, but I already forgot why.'

The above exposition makes clear that the in-situ theory of sluicing affords the
simplest possible account of island-insensitivity, namely that there is no island
effect when there is no movement (cf. Chung et al. 1995). The proposed analysis
indicates that contemporary issues regarding islands and PF repair (Merchant
2001) need to be re-thought if no movement were involved in (certain cases of)
sluicing.

3.2.   P-Stranding under Sluicing in an Otherwise Non-P-Stranding Language

The in-situ theory of sluicing in Indonesian also allows for an illuminating account
of the somewhat mysterious distribution of P-standing under sluicing in the
language. [1] Merchant (2001) has established the cross-linguistic generalization
shown in (20) in favor of his *wh*-movement analysis of sluicing.

(20) Preposition-Stranding Generalization (Merchant 2001:92)
     A language *L* will allow preposition stranding under sluicing if *L* allows
     preposition stranding under regular *wh*-movement.

To illustrate this generalization, using English and Greek, English allows P-
stranding under full-fledged *wh*-questions, as shown in (21a). Thus, this language
also allows P-stranding/omission under sluicing, as shown in (21b).

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[1] I thank Mitcho Yoshitaka Erlewine (p.c.) for suggesting the analysis developed in this section.

(21) a. Who was he talking with?

    b. Peter was talking with someone, but I don't know who. (Merchant 2001:92)

Greek, on the other hand, disallows P-stranding under regular *wh*-movement, as shown in (22a). Thus, this language also blocks P-stranding/omission under sluicing, as shown by the ungrammaticality of the DP sluice.

(22) a. * Pjon   milise   me?
        who   she.spoke with
        'Who did she speak with?'

    b. I   Anna milise me   kapjon, alla dhe   ksero *(me) pjon.
       the Anna spoke with   someone but   NEG   I.now   with who
       'Anna spoke with someone, but I don't know (with) who.'

                                 (Merchant 2001:94)

The generalization above ties the availability of P-omission/stranding under sluicing to its availability under regular *wh*-movement, and vice versa. Thus, to the extent that it holds true, the generalization supports the movement theory of sluicing. As first pointed out by Fortin (2007) and later extensively discussed by Sato (2010, 2011), Indonesian does not behave as predicted by the generalization. Examples (23a, b) show that Indonesian is a non-P-stranding language under *wh*-questions. However, this language allows P-stranding under sluicing, as shown by the grammaticality of the P-less sluice in (23c).

(23) a. * Siapa   yang   kamu berdansa dengan?
        who   COMP you   dance   with
        'Who did you dance with?'

    b. Dengan   siapa kamu berdansa?
       with   who   you   dance
       'With whom did you dance?'

    c. Saya ingat   Ali   berdansa dengan   seseorang,
       I   remember Ali   dance   with   someone
       tapi saya   tidak tahu (dengan)   siapa.
       but I   NEG   know with   who
       'I remember Ali danced with someone, but I don't know (with) who.'
                                   (Sato 2011:343)

I follow Chomsky (1972), Lasnik (2005) and my own earlier work (Sato 2010, 2011) and assume that the distinction between P-stranding and pied-piping structures boils down to the optional percolation of the focus-/*wh*-feature of the DP onto its dominating PP, as shown in (24a) and (24b). In (24a), the PP has the relevant feature which makes it the closest target for movement into [Spec, CP], yielding the pied-piping derivation. In (24b), on the other hand, the feature in

question remains within the DP so that this phrase is subsequently moved into [Spec, CP], yielding the P-stranding derivation.

(24) a. Focus-feature percolation   b. No focus-feature percolation

PP [Foc]   PP

P   DP   P   DP [Foc]

With this assumption in place, consider now the derivations of pied-piping and P-stranding under *wh*-questions, shown in (25a) and (25b), respectively.

(25) Pied-Piping vs. P-Stranding under *Wh*-Questions
      a.   b.

PP [Foc]   PP

P′   P′

P   DP   P (=phase) DP [Foc]
                                            *
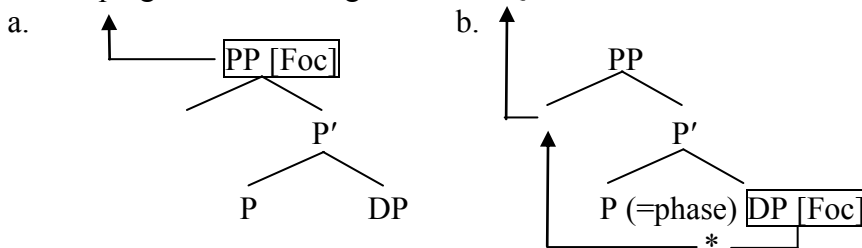
The derivation in (25a) converges because the PP, the closest element to the C head due to the feature percolation, undergoes wh-movement to [Spec, C]. What is wrong with the derivation in (25b), then? Suppose that PPs are phases in the sense of Chomsky (2000) so that the DP complement of the P head must move to its specifier on its way to [Spec, CP], as in (25b). Note that this short movement is blocked by the so-called Anti-Locality Condition (Abels 2003), which blocks the movement of an XP from the complement of a head H to its specifier. It follows that P-stranding is blocked under regular *wh*-movement. It is to be stressed that the derivation in (25b) fails due to the *wh*-movement having taken place. In other words, this derivation converges if the DP stays in its base position. The in-situ theory of sluicing advocated here guarantees precisely this outcome. Accordingly, both the pied-piping and P-stranding derivations converge under sluicing, as shown in (26a, b).

(26) Pied-piping vs. P-stranding under sluicing
      a.   PP [Foc]   b.   PP

                     P′   P′

         P   DP   P   DP [Foc]
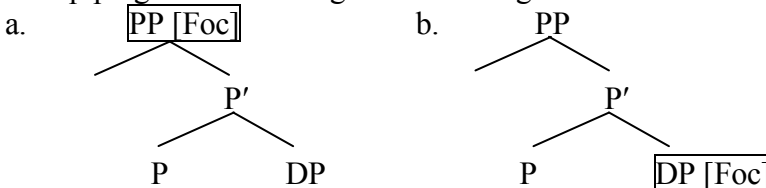
4.   Extensions of the In-Situ Theory to Multiple Sluicing in Indonesian

In this section, I will briefly explore important empirical consequences of the in-situ theory developed thus far as extended to multiple sluicing, a construction type which has heretofore never been described, much less analyzed, in the literature on Indonesian, except for the brief mention of this construction in Sato (2010, 2011).

Consider first some grammatical and ungrammatical examples of multiple *wh*-questions as a preliminary to the investigation of multiple sluicing.

(27)   **Siapa** beli   **apa**?
who   buy   what
'Who bought what?'   (cf. Saddy 1991:208)

(28)   **Siapa** beli   buku itu   **di mana**?
who   bought book   DEM   in where
'Who bought that book where?'

(29) * **Siapa** beli   buku   itu   **kenapa**?
who   buy   book   DEM   why
'Who bought that book why?'

(30) * **Kenapa**ᵢ **siapa**   beli buku itu *t*ᵢ?
why   who   buy book   DEM
'Who bought that book why?'

(31) * **Kenapa**ᵢ kamu beli **apa**   *t*ᵢ?
why   you   buy what
'What did you buy why?'

One consistent pattern regarding multiple *wh*-questions based on these examples is that they are only grammatical when they involve a pair of two nominal *wh*-phrases such as *siapa* 'who', *apa* 'what' and *di mana* 'where', as shown in (27–28). The construction is ungrammatical when it involves an adverbial *wh*-phrase such as *kenapa* 'why', whether the phrase remains in situ, as illustrated in (29) or moves across to [Spec, CP], as illustrated in (30, 31). It is not my concern here to develop an explicit theory of multiple *wh*-questions which captures the pattern noted here. The point I would like to make here is that whatever form such a theory might take, the in-situ theory makes an important prediction that the grammaticality of the examples in (27–31) should be mirrored in the multiple sluicing constructions based on these examples because the latter should be derived through the former via the deletion of all TP-internal materials minus multiple in-situ *wh*-phrases. This prediction is indeed borne out. For reasons of space, I produce only three examples of multiple sluicing in (32–34), which are based on the multiple *wh*-question sources shown in (27–29), respectively.

(32) Esti   bilang <u>seseorang</u>   mem-beli   <u>sesuatu   yang mahal</u>
      Esti   say   someone   AV-buy   something   COMP expensive
      di pasar ini   kemarin,   tapi saya tidak ingat **siapa apa**.
      in market DEM   yesterday   but I   NEG remember who   what
      'Esti said that someone bought something expensive in this market
       yesterday, but I don't remember who what.'

(33) Esti   bilang <u>seseorang   politisi   terkenal   tertentu</u> tinggal
      Esti   say   someone   politician   famous   certain live
      <u>di   rumah tertentu   di   lingkungan-nya</u>,   tapi   saya
      in   house certain   in   neighborhood-her   but   I
      sudah   lupa **siapa di   rumah   yang   mana**.
      already forget who   in   house   COMP   which
      'Esti said that a famous politician lives in a certain house in her
      neighborhood, but I already forgot who in which house.'

(34) *Esti   bilang <u>seseorang   politisi   terkenal   tertentu</u>
      Esti   say   someone   politician   famous   certain
      datang ke   rumah-nya   <u>untuk beberapa   alasan</u>, tapi   saya
      come   to   house-her   for   some   reason but   I
      sudah   lupa **siapa kenapa**.
      already forget who   why
      'Esti said that a famous politician came to her house for some reason, but I
      already forgot who why.'

The in-situ theory correctly predicts that the multiple sluicing sentences in (32–33) are fine because their underlying wh-question sources are themselves grammatical, as we saw in (27–28). By contrast, the sluicing case in (34) is ungrammatical because its derivational source, shown in (29), is ungrammatical.

The in-situ theory, as applied to multiple sluicing, also correctly allows us to uncover three novel observations regarding this construction. First, we have seen that island-insensitivity under sluicing was straightforwardly predicted by the current theory because (nominal) *wh*-phrases remain in situ within the TP deleted at PF. Thus, the same theory predicts that the second nominal *wh*-phrase under multiple sluicing should be island-insensitive. This prediction is borne out in (35). Here, the second *wh*-phrase *apa* 'what' is contained within the Complex NP Island in the syntactic structure feeding TP-ellipsis, but the output sluice is grammatical.

(35) <u>Seseorang</u>   bertemu [_{DP} wanita yang mem-beli   <u>sesuatu</u>
    someone   meet   woman COMP AV-buy   something
    <u>yang   mahal</u>],   tapi saya   sudah   lupa **siapa apa**.
    COMP expensive   but I   already   forget who what
    'Someone met the woman who bought something expensive, but I already
     forgot who what.'

Second, we have seen in section 3.2 how the in-situ theory of sluicing interacts with certain locality principles to yield the contrasting distribution of P-stranding under non-elliptical *wh*-questions and sluicing. The same theory thus predicts that multiple PP *wh*-remnants should be able to strand the prepositions behind. The grammaticality of the two P-less sluices in (36) shows that this is the case. [2]

(36) Esti   bilang kamu bicara <u>dengan seseorang</u> <u>tentang</u>   <u>sesuatu</u>
    Esti   say   you   talk   with   someone   about   something
    <u>yang   penting</u>   di   sini   kemarin,   tapi
    COMP important   in   here   yesterday   but
    saya   tidak tahu   **(dengan)**   **siapa (tentang)**   **apa**.
    I   NEG know   with   who   about   what
    'Esti said that you were talking with someone about something important here
    yesterday, but I don't know (with) who (about) what.'

Finally, my current analysis states that multiple sluicing results from the deletion of all materials within the complement of the matrix interrogative C head. Suppose now that two nominal *wh*-phrases in the input structure for the multiple sluicing construction belong to two different clauses, as schematically represented in (37). Nothing in the in-situ theory of sluicing blocks this scenario. Thus, we predict that multiple sluicing in Indonesian should be immune to the so-called clause-mate requirement, which has been shown to constrain multiple sluicing in other languages such as English (Lasnik 2014) and Japanese (Takahashi 1994; Takano 2002). Example (37) proves that multiple sluicing in Indonesian indeed does not obey this constraint.

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[2] Among the four logically possible patterns in (36) regarding P-stranding, shown below, my consultants found (ia, c, d) perfect in contrast to (ib), which they found slightly awkward.

(i) a.   dengan siapa   tentang apa   (PP-PP)
   b.? dengan siapa   apa   (PP-DP)
   c.   siapa   tentang apa   (DP-PP)
   d.   siapa   apa   (DP-DP)

I can only speculate that this judgment may be relegated to some stylistic or processing factors.

(37) [TP1 <u>seseorang</u>   bilang [TP2   Esti   mem-beli   <u>sesuatu</u>   <u>yang</u>
        someone   say   Esti   AV-buy   something   COMP
     <u>mahal</u>   di pasar   ini   tapi   saya tidak   tahu
     expensive   in market   DEM but   I   NEG   know
     siapa   **apa**.
     who   what
     'Someone said that Esti bought something expensive in this market, but I don't know who what.'

This example is fine despite the fact that the *wh*-remnants *siapa* 'who' and *apa* 'what' occur within two different TPs. The lack of the clause-mate requirement, though mysterious for movement-based analyses, is exactly what is predicted by the in-situ theory of sluicing, for the *wh*-phrases in question do not undergo any movement.

5. Conclusion

In this paper, I have argued for the in-situ theory of sluicing in Indonesian. I have shown that this theory is enforced by two conceptually natural interface conditions, one blocking the application of string-vacuous movement and the other regulating the word-sensitive availability of in-situ *wh*-licensing. The theory allows for a unified explanation for otherwise perplexing properties associated with Indonesian sluicing, including the contrasting distribution of the question particle –*kah* and P-stranding under sluicing and *wh*-questions, island (in-)sensitivity, and the absence of the so-called clause-mate requirement on multiple sluicing.

    The beauty of the analysis is that the interaction of the two interface conditions with Indonesian grammar provides a fully deterministic derivation for its sluicing. The analysis thus substantiates the minimalist guideline that syntactic computation takes place to meet legibility conditions imposed by partly language-external systems. One of the important theoretical consequences of this paper is that the in-situ theory captures island-insensitivity under sluicing without recourse to PF repair (Merchant 2001). This is a significant result since its empirical and conceptual underpinnings have been vigorously contested in the latest "there is no repair" revolution (Fukaya 2007; van Craenenbroeck 2010; Abels 2011; Barros 2014; Barros et al. 2014), which argue that PF island repair is an illusion created by the availability of non-isomorphic syntactic structures for the ellipsis site, with no island violations to speak of.

    The in-situ theory developed here raises several important questions for future investigations of sluicing. One of them is what the in-situ theory says about other languages such as English (Merchant 2001), Hungarian (van Craenenbroeck and Lipták 2006) and Hindi-Urdu (Gribanova and Manetta to appear), for which Merchant-style movement to a left-peripheral position has been argued to be involved in the derivation of sluicing, with remarkable

empirical results? Although I must leave a comprehensive discussion of this typological question for another occasion, it is clear that the in-situ theory is consistent with the movement-based theory because the economy condition stated in (3) affords a bit of leeway for language-particular grammatical properties to enable the in-situ syntax to converge at the syntax-external interface components. How do such properties look like? The present study reveals that there is a clustering of properties which seem to work as diagnostic of the in-situ derivation: unselective binding, no island effects under in-situ *wh*-questions, and contrastive distribution of P-stranding under elliptical and non-elliptical questions. Arabic in fact has this particular set of properties. Wahba (1984) observes that in-situ *wh*-questions in Arabic are island-insensitive while Leung (2014) shows that the P-stranding profile in this language is identical to that found in Indonesian. It remains to be seen whether there are other languages for which the in-situ theory has better empirical coverages over the movement-based alternative championed by Merchant (2001) and much subsequent work.

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PSEUDO-CLEFT CONSTRUCTIONS IN THE SUMBAWA BESAR DIALECT OF SUMBAWA [*]

Asako Shiohara

ILCAA, Tokyo University of Foreign Studies

asako@aa.tufs.ac.jp

This paper examines pseudo-cleft constructions in the Sumbawa Besar Dialect of Sumbawa, a language spoken in the western part of Sumbawa Island. A distinct feature observed in Sumbawa is that it has oblique pseudo-cleft constructions in which the second NP is a headless relative clause introduced by a lexical NP. Oblique pseudo-cleft constructions have a constraint in that the focused NP cannot be an indefinite NP. Observation of a piece of conversation suggests two typical usages of pseudo-cleft constructions in general: one is the wh-question sentence in which a wh-word is the focused NP, and the other is a declarative sentence in which a demonstrative is the focused NP; the latter has a function for relating "active" referents to other situations.

1. Introduction

Sumbawa (indigenous designation: Samawa, ISO-639-3 code SMW) is a language spoken in the western part of Sumbawa Island, Indonesia. It belongs to the Bali-Sasak-Sumbawa subgroup of the Malayo-Polynesian branch of the Austronesian language family. In this paper, we examine pseudo-cleft constructions in the Sumbawa Besar dialect of Sumbawa through elicitation with a native speaker consultant and through observation of spoken conversation[1] (see Shiohara 2013 for details of the dialect distribution of Sumbawa).

[1] The data on which this paper is largely based was collected in the city of Sumbawa Besar. The elicitation was gathered via Facebook messages in 2014–2016. I am grateful to the people who assisted me in my research, especially Dedy Muliyadi (Edot), Syamsul Bahri, Iwan and Ibu Sulastri. The transcription employed here basically follows the orthography of Indonesian, using the following conventions: ng for [ŋ] , ny for [ɲ], c for [tʃ], j for [dʒ], y for [j], and e for [ə]. There are also some additional distinctions in the transcription of some vowels, as in open-mid unrounded front vowel è [ɛ], the close-mid unrounded front vowel é [e], a the open-mid rounded back vowel o [ɔ], and the close-mid rounded back vowel ó [o]. Finally, an apostrophe (') is used to show. word-final stress when it is heavier than usual (e.g., *sólé'* 'borrow').

Like many Western Malayo-Polynesian languages such as Malay (Cole et al. 1999) and Tagalog (Kroeger 1993, 2009, Kaufman 2005) Sumbawa has pseudo-cleft constructions. Sumbawa exhibits distinct features in that it has oblique pseudo-cleft constructions focusing on an entity of peripheral relations, such as location, destination, and company, as well as core pseudo-cleft constructions.

This paper is organized as follows. In section 2, syntactic features of the cleft constructions are introduced. In section 3, the pragmatic functions of pseudo-cleft constructions observed in spoken conversation are investigated. Section 4 provides a summary.

2. Pseudo-cleft construction

2.1. Pseudo-cleft construction focusing on the NP of core relations

Before starting the discussion on pseudo-cleft constructions, we need to examine the outline of Sumbawa syntax based on Shiohara 2013. Sumbawa is basically a verb initial and prepositional language. The case frame of the independent NP exhibits an ergative pattern, in that both the single core argument (S) and the undergoer argument (P), which typically expresses a transitive patient, occur in a morphosyntactically unmarked form, while the actor argument (A), which typically expresses a transitive agent, occurs in a PP form with the preposition *ling*.

(1)   ka=teri'   tódé   nan
        PST=fall   child   that
        'That child fell.'

(2)   ka=ya=inum   kawa   nan   ling   nya Amin
        pst=3=drink   coffee   that   by   Mr. Amin
         'Amin drank coffee.'

Arguments like the ones shown in (3)–(5) can be made, and the ergative pattern observed above in post-predicate arguments can be neutralized in pre-predicate NPs. A transitive agent is expressed by bare NP, as in (4). A fronted NP indicates a sentence topic in examples (3)–(5).

(3)   tódé   nan   ka=teri'
        child   that   PST=fell
        'That child fell.'

(4)   nya Amin   ka=inum   kawa   nan
        Mr. Amin   PST=drink   coffee   that
        'Amin drank that coffee.'

(5)   kawa   nan   ka=ya=inum   ling   nya Amin
        coffee that   PST=3=drink by   Mr, Amin
        'Amin drank that coffee.'

A fronted NP may indicate the sentence focus when it includes the focus particle *si* or *mo*.[2]

(3)b   tódé   nan   si   ka=teri'
       child   that   FP   PST=fell
       'That child fell.'

(4)b   nya Amin   si   ka=inum   kawa nan
       Mr.=Amin   FP   PST=drink   coffee that
       'Amin will drink that coffee.'

(5)b   kawa nan   si   ka=ya=inum ling   nya Amin
       coffee that   FP   PST=3=drink by   Mr Amin
       'Amin drank that coffee.'

Examples (6)–(8) are core cleft constructions. The construction is an equative sentence formed by two NPs; the first NP expresses the sentence focus (hereafter, a focused NP) and a headless relative clause, as the second NP, which is headed by the relativizer *adè* or its short form *dè*.

(6)   tódé   nan   adè (dè)   ka=teri'
        child that   REL   PST=fell
        'That child fell.' (*The child* is the sentence focus.)

(7)   kawa nan   adè (dè)   ka=ku=inum
        book that   REL   PST=1sg=look.for
        'What I drank is that coffee.'

(8)   aku   adè (dè)   ka=inum   kawa nan
        1sg   REL   PST=drink   coffee that
        'This book is what I was looking for.'

These constructions seen in Examples (6)–(8) above are structurally equivalent to the pseudo-cleft construction in Malay shown in (9)–(11) below.

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[2] The focus particles *si* and *mo* both indicate the focus. Roughly speaking, *si* is used in a declarative sentence, as in example (3-5b), while *mo* is used in an imperative sentence or a request sentence, as in example (16)A1.

(9)   Anak   itu   yang   jatuh
       child   that   REL   fell
       'That child fell.' (*The child* is the sentence focus.)

(10)   Kopi   itu   yang   ku=minum
       book   that   REL   1sg=look.for
       'What I drank is that coffee.'

(11)   Saya   yang   minum kopi   itu
       1sg   REL   drink coffee that
       'This book is what I was looking for.'

Kroeger (2009), based on Cole et al. (1999), summarizes evidence supporting pseudo-cleft analysis for the construction of Malay. The claim is based on the assumption that a pseudo-cleft should (i) consist of two NPs; the first NP indicating the sentence focus, and the second NP being a headless relative clause and (ii) the first NP, among the two NPs, is the predicate. Malay constructions shown in examples (9)–(11) above clearly fill the formal condition (i). Condition (ii) also is filled in the constructions because the focus particle =lah may be attached to, and the negator bukan occurs before, the first NP, as shown in example (12) and (13), respectively, and therefore the first NP is considered to be the predicate.

(12)   Anak   itu=lah   yang   jatuh
       child   that=FP   rel   fell
       'It is not that child who fell.'

(13)   bukan anak   itu   yang   jatuh
       NEG   child   that   rel   fell
       'It is not that child who fell.'

The evidence observed from the negation pattern applies to the Sumbawa equivalents. The negator occurs before the predicate, and it occurs before the first NP in pseudo-cleft constructions.

(14)   siong tódé   nan   adè   ka=teri'
       NEG   child   that   REL   PST=fell
       'It is not that child who fell.'

Such constructions typically occur in a wh-question sentence, as seen in example (15)–(17).

(15) Q.   *sai'*   adè   ka=teri'
              who   REL   PST=fall
      A1.   tódé   nan   si
              fell   child   FP
      A2.   tódé   nan   adè   ka=teri'
              fell   child   REL   PST=fall

      Q. 'Who fell?'
      A1. 'That child.'
      A2. 'That child fell.' (lit. Who fell is that children.)

(16) Q.   *sai'*   adè   ka=inum   kawa   nan
              who   rel   PST=drink   coffee that
      A1.   aku   si
              1sg   FP
      A2.   aku   adè   ka=inum   kawa   nan
              1sg   rel   pst=drink   coffee that

      Q. 'Who drank that coffee?'
      A1. 'I did.'
      A2. 'I drank that coffee'. (lit. Who drank that coffee is I.)

(17) Q.   *apa*   adè   sia=inum?
              what   rel   2sg=drink
      A1.   kawa   mo
              coffee   FP
      A2.   kawa   dè   ku=inum
              coffee   rel   1sg=drink

          Q. 'What will you drink?'
          A1. 'Coffee, please.'
          A2. 'I will drink coffee.' (lit. What I will drink is coffee.)

As observed in examples (15)–(17) above, a reply utterance is formed just by one constituent specifying the focus of the question, which is accompanied by the focus particle, as in (15)–(17)A1. Replying with a cleft sentence in the answering utterance, as in (15)–(17)A2, is accepted but rare in an actual conversation.
A question word for core relation may occur in situ in Sumbawa.

(18)   ka=teri' *sai'*?
        PST=fell who
        'Who fell?'

(19)　ka=ya=inum　kawa　nan　　ling　　*sai'*?
　　　　PST=3=drink　coffee　that　　by　　　whom?
　　　　'Who bought the clothes?'

(20)　ya=sia=inum　*apa*?
　　　　fut=2sg=drink　what?
　　　　'What will you drink?'

2.2.　　Oblique Pseudo-cleft construction

Obliques are indicated by a PP in Sumbawa in unmarked verb clauses. (21) shows the list of prepositions.

(21) prepositions
　　　　ling: transitive agent (A)
　　　　kó: direction 'to'
　　　　ké: company or instrument 'with (both comitative and instrumental)
　　　　kalis/kaling: source 'from'
　　　　pang: location 'at, in'
　　　　umin: beneficiary 'for the benefit of'

A PP may occur in either the pre-predicate or post-predicate position in the Sumbawa Besar dialect (with some exceptions, as noted below), although it far more frequently occurs in the post-predicate position in spontaneous utterances. A fronted PP normally indicates the sentence focus

(22)　*ka=ku=laló*　*kó*　　*Jepang*　　*ké*　　*ina*.
　　　　PST=1sg=go　to　　　Japan　　　with　　mother
　　　　'I went to Japan with my mother.'

(23)　*ké*　　*ina*　　　　　*ka=ku=laló*　*kó*　　*Jepang*
　　　　with　　mother　　　　PST=1sg=go　to　　　Japan
　　　　'It was with my mother that I went to Japan.'

(24)　*ka=ku=datang*　　　*kalis*　*Jepang*
　　　　PST=1sg=come　　　　from　　Japan
　　　　'I came from Japan.'

(25)　*kalis*　*Jepang*　　　*ka=ku=datang*
　　　　from　　Japan　　　　PST=1sg=come
　　　　'It was Japan that I came from.'

The exception is the *ling* PP, indicating the A, which occurs in the form of a bare NP in the pre-predicate position, as shown in example (4) in section 2.1.

An NP expressing some oblique relations can be relativized, that is, headed by a lexical noun that is semantically associable to the semantic relation. Table 1 lists the lexical nouns that can be used as relativizers and the semantic relation they indicate.[3]

Table1 Lexical nouns used as relativizer

Semantic relation	Lexical noun used as a relativizer	Semantically corresponding prepositions
direction 'to'	*lakó* 'direction'	*kó*
company 'together with'	*dengan* 'company'	*ké*
source 'from'	*kalis* 'source'	*kalis*/ *kaling*: 'from'
location 'at, in'	*pang* 'place'	*pang* 'at, in'

The nouns *kalis* and *pang* have the same forms with semantically related prepositions. Examples (26)–(28) below show that they can be used as common nouns; they stand as a P argument on their own, as shown by the ordinary lexical noun *singin* 'name' in example (26).

(26) nó   ku=to'   singin
      NEG   1SG=know   name
      'I don't know the name.'

(27) nó   ku=to'   pang
      NEG   1SG=know   place
      'I don't know the location.'

(28) nó   ku=to'   kalis
      NEG   1SG=know   source
      'I don't know the start point.'

Examples (29)–(32) are relative clauses headed by each of the nouns.

(29) lakó   bakadèk   nya
      direction   play   3
      'The destination he goes for playing'

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[3] Comrie and Kuteva (2013) classifies the relativization of obliques into four types: (i) relative pronoun strategy, (ii) non-reduction strategy, (iii), pronoun-retention strategy, (iv) gap strategy. Aside from the fact that they ARE lexical nouns, the function of the lexical nouns is similar to that of a relative pronoun, and the strategy Sumbawa takes can be classified into (i).

(30)   dengan   ku=bakadèk
         company   1sg=play
         'The person I play with'

(31)   pang enti-boat nya
         plece work   3
         'The place he works'

(32)   kalis   ka=datang   nya
         source PST=come   3
         'The place he came from'

These phrases have the same syntactic function as an ordinary NP; it may be a P argument of a transitive clause, as shown in (33)–(36).

(33)   nó   ku=to'   lakó   bakadèk   nya
         neg   1sg=know   direction   play   3
         'I don't know where he goes for playing.'

(34)   nó   ku=to'   dengan   sia=bakadèk
         neg   1sg=know   company   2sg=play
         'I don't know the person you play with.'

(35)   nó   ku=to'   pang enti-boat   nya
         neg   1sg=know   plece work   3
         'I don't know the place he works.'

(36)   nó   ku=to' kalis   ka=datang   nya
         source come   source PST=come   3
         'I don't know the place he came from.'

A pseudo-cleft construction may be formed using each of the relativized NPs shown above.

(37)   dèsa   nan   lakó   bakadèk   nya
         village that   direction   play   3
         'It is to that village that he goes for playing.'

(38)   tau   nan   dengan   ku=bakadèk
         person that   company   1SG=play
         'It is that person with whom I play.'

(39) kantor nan   pang   enti-boat   nya
      office that   plece work   3
      'It is that office where he works.'

(40) dèsa   nan   kalis ka=datang   nya
      village that   source PST=come   3
      'It is that village that he came from.'

These constructions can be seen as pseudo-cleft constructions for the same reasons as for the core pseudo-cleft construction seen in the subsection 2.1. It is formed by two NPs, and the first NP between the two is considered to be the predicate, because the negator may occur before the first NP, as in (41) below.

(41) siong kantor nan   pang   enti-boat   nya
      NEG   office that   place work   3
      'It is not that village that he goes for playing'

The typical usage of this type of oblique pseudo-cleft construction is that of wh-question, as in example (42)–(45).

(42) mé   lakó   bakadèk   nya
      which   destination play   3
      'Where does he go for playing?'

(43) sai'   dengan   sia=bakadèk
      who   company   2SG=play
      'With whom do you play?'

(44) mé   pang   enti-boat   nya
      which   place work   3
      'Where does he work?'

(45) mé   kalis   ka=datang   nya
      which   start.point   PST=come   3
      'Where did he come from?'

This type of cleft construction cannot be used in the answers corresponding to the questions above, as shown in example (45)–(48)A3, respectively.

(46)　Q.　　mé　　　lako　　　　bakadèk　　　nya
　　　　　　　which　destination　play　　　　3

　　　　A1.　bakadek　　　ko　　　Jepang nya
　　　　　　　play　　　　　　to　　　Japan　3

　　　　A2.　kó　　　Jepang
　　　　　　　to　　　Japan

　　　　A3.　*Jepang　　　lakó　　　　bakadèk　　　nya
　　　　　　　Japan　　　　destination　play　　　　3

　　　　Q　　　'Where does he go for playing?'
　　　　A1　　'He goes to Japan.'
　　　　A2　　'To Japan.'
　　　　A3　　(intended meaning) 'His destination is Japan.'

(47)　Q　　　sai'　　dengan　　　sia=bakadèk
　　　　　　　who　　company　　2SG=play

　　　　A1　　ku=bakadek　ké　　　nya Amin
　　　　　　　1SG=play　　　with　Mr. Amin

　　　　A2　　ké　　　nya Amin　　（ku=bakadèk）
　　　　　　　with　Mr. Amin　　　1SG=play

　　　　A3　　*nya Amin　　dengan　　　ku=bakadèk
　　　　　　　 Mr. Amin　　friend　　　1SG=play

　　　　Q　　　'With whom do you play?'
　　　　A1　　'I play with Amin.'
　　　　A2　　'(I play) with Amin.'
　　　　A3　　(intended meaning) 'His company is Amin.'

(48)　Q　　　mé　　　pang　　enti-boat　　nya
　　　　　　　which　place　work　　　　　3

　　　　A1　　enti-boat　　　nya　　pang　kantor nan
　　　　　　　work　　　　　3　　　at　　office　that

　　　　A2　　pang　kantor nan　（enti-boat　　　nya）
　　　　　　　at　　office　that　　work　　　　　3

　　　　A3　　*kantor　　　nan　　pang　enti-boat　　nya
　　　　　　　 office　　　that　　place　work　　　　3

　　　　Q　　　'Where does he work at?'
　　　　A1　　'He works at that office.'
　　　　A2　　'(He works) at that office.'
　　　　A3　　(intended meaning) 'His working place is that office.'

(49) Q   mé   kalis   datang nya
             village that   source come   3
      A1   datang nya   kalis   Lombok
             come   3   from   Lombok
      A2   kalis   Lombok   (enti-boat   nya)
             at   office that   work   3
      A3   *Lombok   kalis   ka=datang   nya
             Lombok   source PST=come   3

      Q   'Where did he come from?'
      A1   'He came from Lombok.'
      A2   '(He came) from Lombok.'
      A3   (intended meaning) 'The place he came from was Lombok.'

In a declarative sentence, there is a constraint as to the information status of the focused NP of the oblique cleft construction: it should be an entity or location that is identifiable linguistically or situationally, as in the (a) examples in (50)–(53). The paired (b) examples in (50)–(53) in which the predicate is an indefinite NP are not accepted by my consultant.

(50)a. amat   Seketeng   lakó   nya   beli=kawa,
         marked   Seketeng   destination   3   buy=coffee
         siong   amat   Brangbiji.
         NEG   market Brangbiji
         'He goes to *the Seketeng market* to buy coffee, not to *the Brangbiji market*.'
         (lit. The destination to which he goes for buying coffee is *the Seketeng market*, not *the Brangbiji market*.)

   b. *amat   lakó   nya   beli=kawa,   siong   toko.
         market   destination   3   buy=coffee   NEG   shop
         (intended meaning) 'He goes to *a market* to buy coffee, not to *a shop*.'
         (lit. The destination to which he goes for buying coffee is a market, not a shop.)

(51)a. bodok nan   dengan   nya   bakadek   siong   bodok ta
         cat   that   company   3   play   NEG   cat   this
         'He plays with *that cat*, not with *this cat*.'
         (lit. The company with whom he plays is *that cat*, not *this cat*.)

   b. *bodok   dengan   nya   bakadek   siong   si   asu
         cat   company   3   play   NEG   FP   dog
         (intended meaning) 'He plays with *a cat*, not to *a dog*.'
         (lit. The company with whom he plays is *a cat*, not to *a dog*.)

(52)a kantor ta   pang enti-boat   nya, siong kantor nan
      office this   place work   3   neg   office that
      'He works at *this office*, not at *that one*.'
      (lit. *This office* is where he works, not *that office*.)

   b *kantor   pang enti-boat   nya, siong pabrik
      office   place work   3   neg   factory
      (intended meaning) 'He works at *an office*, not at *a factory*.'
      (lit. *An office* is where he works, not *a factory*.)

(53)a. Desa Jorok kalis   nya   siong Desa Pungka
      village Jorok starting point 3   NEG   village Pungka

      'He came from *the Jorok village*, not the *Pungka village*.'
      (lit. *A village* is where he came from, not *a city*.)

   b. *desa   kalis   nya   siong kota
      village   source   3   NEG   city
      (intended meaning) 'He came from *a village*, not from *a city*.'
      (lit. *A village* is where he came from, not *a city*.)

This type of pragmatic constraint on the focused NP is not observed in the core cleft constructions. Example (54), in which an indefinite NP stands as a focused NP, is permitted.

(54) babi ade nó   bau tu=kakan   pang ta,
     pig   REL NEG can 1PL=eat   at   this
     siong si   ayam.
     NEG   FP   chicken
     'What we can't eat here is *pork*, not *chicken*'.

3   Actual usage of pseudo-cleft clauses in conversation text

In this section, we examine the usage of pseudo-cleft constructions in a piece of conversation text, which consists of approximately 103 clauses of 1470 words. The video recording of the conversation can be seen at the following YouTube address.
https://www.youtube.com/watch?v=D8gOyhJi1VI
The transcription and translation of the video will be made available in Shiohara (forthcoming).
The number of cleft constructions is 10: 8 examples are core-cleft constructions, and 2 examples are oblique cleft constructions.

Three examples of (55)–(56) are question sentences, in which the first NP is wh-word.

(55)   apa dè satoan
        what RELask
        apa dè   bau satoan
        what REL can ask
        '(A guy comes, but you don't know the face…),
        What will you ask, what can be asked?…'

(56)   mé   pang   tedu
        which place stay
        'Where did you live?'

The remaining seven examples are declarative sentences. They all share the feature that the first NP is the anaphoric demonstrative. Examples (57)–(59) below are included in the seven examples. In these examples, the focused NP in the cleft construction refers to the entity or situation mentioned in the immediately preceding utterance, and the second NP adds description about the entity or situation.

(57)   (We made elevator parts, and)
        ada untuk   reskuker   anung Matsusita   dengki
        exist for   rice cooker that Matsushita   electric
        nan dè tu=pina
        thatREL1PL=make

        'There are also parts for a rice cooker of Matsushita denki...*that* was what we made.'

(58)   (Answering to the question asking if Japanese ask someone the number of his or her children to know the marital status of the person, as Sumbawa people do.)
        nó   roa, *nan mungkin anong   dè   beda   budaya*
        NEG like   that maybe   well   REL difference culture
        kita   tau   Samawa nè, ké   tau   nana
        1PL.INCL   person Sumbawa ITJ with person over.there

        'I is not likely..., *that may be well… the cultural difference* between us, the Sumbawa people and the people there.'

(59)   Q. mé   pang   tedu?
           which place stay
        A. tedu pang semacam…balé
           stay at   a kind of ....house

> ka=sèwa ling   perusahaan,
> PST=rent by   company
> *nan   pang   tu=tedu…*
> that   place   1PL=stay put in

Q: 'Where did you stay?'
A: 'We lived in…a house that the company rent (from someone).
   That was the place we stayed…'

4   Summary and discussion

In this study, I examined the syntactic and pragmatic features of pseudo-cleft constructions in Sumbawa. Sumbawa has cleft constructions focusing on an entity or situation of a peripheral relation, as well as constructions focusing an entity of core relations. The oblique cleft construction is used in either an interrogative sentence in which the predicate is a wh-word or in a declarative sentence in which the predicate is familiar with the listener. The oclique cleft construction cannot be used in the answer corresponding to the wh-question formed by the same cleft construction. It also has the constraint that an indefinite NP cannot occur as the focused NP.

Observation of a piece of conversation text showed that the cleft clause used in the text has either a wh-word or anaphoric demonstrative as the focused NP. This suggests that the cleft construction has two separate pragmatic functions: one is to ask wh-questions, and the other is to relate "active" referents, which is mentioned in the immediately preceding utterance, to other situations. Both functions share the pragmatic feature that the first NP is the sentence focus and is used to attract the attention of the addressee to the referent. In Sumbawa, the use of cleft sentences is not only a device to indicate the sentence focus; the focus may be indicated by a fronted NP with a focus particle, as shown in examples (3–5b) in section 2.1, or a fronted PP, as shown in example (23-24b) in section 2.2. The cleft construction presumably takes special conventionalized roles, not focus-indicating roles in general, in Sumbawa, although we need to examine more amounts of conversation text to verify this assumption.

The aforementioned pragmatic constraint observed in oblique cleft constructions may be a reflection of its pragmatic function in a declarative sentence; the referent of an indefinite NP cannot be "active" in discourse, and therefore, a clause with such an NP is not compatible with the clause's pragmatic function of attracting special attention to the referent. The reason that this constraint is observed only in oblique cleft constructions, and not in core cleft constructions, however, is not known at this stage of the study.

Abbreviations

1, 2, 3: first, second and third person, respectively, FP focus particle, FUT future, INC inclusive, INJ interjection, NEG negator, PL plural, PST past tense, REL relativizer, SG singular

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ON THE MODALITY OF TAGALOG EVIDENTIALS[*]

Jennifer Tan
Spanish National Research Council
jennifer.tan@cchs.csic.es

This paper deals with the semantic-pragmatic features of three evidential markers in Tagalog, namely the reportative *daw*, the inferential *yata* and the speculative *kaya*. Crosslinguistically, evidential markers have been mostly analyzed as either speech act operators (SAO hereafter, Faller 2002 et seq.) or as epistemic modals (Matthewson et al. 2007, Izvorski 1997, etc.). Besides providing new empirical data for Tagalog evidentials, the main contribution of this study is to examine the reliability of the standard tests used in the literature to distinguish between the two types of analysis, as applied to Tagalog. I argue that the reportative *daw* (Schwager 2010) can be analyzed as a modal despite its apparently clashing behavior regarding its interaction with interrogatives. The inferential *yata* also patterns as a modal, whereas *kaya* is a SAO, which provides interrogative force to its host utterance. Contrary to what is commonly argued for SAOs though, *kaya* is embeddable in certain contexts. I propose this is possible in cases where main clause phenomena is allowed and so it is not irreconcilable with a SAO analysis.

1. Introduction

Every language has a way of expressing source of information. This is encoded in evidential markers, which may come in the form of affixes, verbal forms, modal forms, clitics or particles (Aikhenvald 2004). The notion of evidentiality, that is, the linguistic category that encodes the speaker's information source, has received a lot of attention in the past decades, just as researchers describe and investigate the evidential systems of different languages worldwide.

As for Tagalog, Schwager (2010) provides the first thorough study of the reportative marker *daw* and mentions *yata* and *kaya* as particles that relate to information source. Kierstead and Martin (2012) and Kierstead (2015) investigate *daw* in further detail by looking into its readings with different entailment-cancelling operators. In line with these previous works on *daw*, the first contribution of this paper is to present new empirical data on Tagalog evidentials, not only for the *daw* but also for the inferential *yata* and the speculative *kaya*, which had not been systematically studied before in the literature. I show these are

not merely somewhat related to information source but should be considered evidential markers as such, in light of the data shown here.

Now a major question that has been addressed in the literature is concerned with the type of meaning evidential markers contribute to their host utterance and their non-trivial relation with modality. Views with respect to such relation range from full distinction (e.g. Aikhenvald 2004) to overlap between the two categories (e.g. Matthewson et al. 2007, Matthewson 2012 for an overview of this matter). Regarding this, a conventionally acknowledged distinction in literature on evidentials is made between modal analyses (Izvorski 1997, Garrett 2001, Faller 2006, Matthewson et al. 2007, Matthewson 2012, McCready and Ogata 2007, Waldie et al. 2009, etc.) and non-modal analyses such as Faller (2002)'s SAO analysis of Cuzco Quechua evidentials. Hence, the question arises of how to analyze Tagalog evidentials. To answer this question, the second contribution of this paper is to scrutinize the modal or non-modal analysis of *daw*, *yata* and *kaya*, by using the widely recognized tests that have been proposed in the literature to differentiate between them. Following Schwager (2010), I analyze the complex behavior of *daw* and argue against a SAO analysis and for a modal analysis or what Matthewson (2012) calls 'modal evidentials'. Likewise, *yata* should be analyzed as a modal evidential too, in view of its patterning with the St'át'imcets evidentials (Matthewson et al. 2007), whereas *kaya* is a SAO, since its use provides interrogative force to its host utterance. This is so despite its embeddability, a commonly accepted test in favor of modal analyses, which I argue is possible in environments that allow for main clause phenomena, following Haegeman (2006).

This paper is structured as follows. In section 2 I describe the basic properties of these Tagalog particles and their evidential nature. In section 3 I apply the adopted tests for justifying the (non)-modal nature of such evidentials. I focus on the embeddability of the Tagalog evidentials and their meaning contributions in interrogatives to show that *daw* and *yata* should be analyzed as so-called modal evidentials, and *kaya*, on the other hand, as a SAO type of evidential. In 4 I conclude and briefly mention some possible further issues.

2. Expression of information source in Tagalog

Information source may well be expressed with 'evidential strategies' (Aikhenvald 2004). However, some languages may grammaticize ways of expressing the speaker's source of information in evidential markers. In Tagalog, there is a set of eighteen enclitic particles that encode different types of meanings (Schachter and Otanes 1972), among which we may find the three evidential markers that are object of this study. These appear in second position in the clause, after the predicate (Kröger 1998). Their distribution across clause types is defined in the table in (1), which will be explained below. With regards to the meaning they contribute to their host utterance, I assume Matthewson (2015)'s claim that crosslinguistically, one or more than one dimension may be encoded in any

evidential marker, each of which may have a direct or indirect value. For 'evidence type' an evidential may encode either firsthand source of information (sensory information) or secondhand (through reports or reasoning). 'Evidence location' involves the speaker either witnessing the event itself or merely some of its results. 'Evidence strength' is concerned with the trustworthiness or reliability of the evidence. As can be seen in the table in (1), Tagalog evidentials are all indirect, inasmuch as their use expresses that the speaker obtained their source of information for the propositional content of the utterance through reports or reasoning. I label each particle by the evidence types encoded in them: reportative type for *daw,* inferential type for *yata* and speculative type for *kaya.* In (1) we may also see a key feature of *yata,* which is that it encodes evidence strength, as not best, thus distinguishing it from the other two, which do not encode this dimension.

(1)   Tagalog evidentials and their distribution across clause types

EVIDENTIAL DIMENSIONS	PARTICLE	DISTRIBUTION ACROSS CLAUSE TYPES	
Ev. TYPE: indirect - reportative Ev. LOCATION: report Ev. STRENGTH: -	*daw*	+ simple declarative	+ interrogatives
		+ embedded clauses	+ imperatives
Ev. TYPE: indirect - inferential Ev. LOCATION: results Ev. STRENGTH: not best	*yata*	+ simple declarative	− interrogatives
		+ embedded clauses	− imperatives
Ev. TYPE: indirect - speculative Ev. LOCATION: results Ev. STRENGTH: -	*kaya*	− simple declarative	+ interrogatives
		± embedded clauses	+ imperatives

2.1.   The reportative marker *daw*

Adding *daw* to a simple declarative sentence, as in (2), expresses that the propositional content *p* 'Pablo will come along' has been previously asserted by some *x*, which is neither the hearer nor the speaker (Schwager 2010). *Daw* introduces a presupposition of the form 'some *x* said *p*' (*íbid*.). The context in (2) shows that its evidence type is restricted to the reportative one, as speakers would find this utterance odd in a minimally different context where the speaker is simply guessing or knows that he is coming because he was seen packing. The evidence is located in a report and does not convey in itself evidence strength, that is, the speaker's evidence is neutral and (s)he does not necessarily show to have the best possible evidence for his/her claim, nor the non best.

Context: You are going on a trip and Pablo told his mother he would come along. His mother tells you and so you later tell a friend:

(2)   [predicate *Sa~sama*   [enclitic ***daw*** [argument *si*   *Pablo*]]].
          CONT~come.along   RPT   NOM   Pablo[1]
          'It is said that Pablo will come along.'

2.2.   The inferential *yata* and the speculative marker *kaya*

A speaker using *yata* in a declarative sentence, as in (3), expresses that the propositional content *p* is deduced by the speaker from some piece of evidence, and is uncertain about its truth. The evidence for *p* is obtained through reasoning. The evidence is located in results. Unlike *daw,* which does not convey evidence strength, use of *yata* implies that the speaker does not have the best possible evidence for his/her claim. Its inferential nature is shown in (3) and can be drawn from its felicity in the contexts (3i-iii) and its infelicity in (3iv-v).

Context: You are going on a trip and you invited Pablo to come along.
(3)   [predicate *Sa~sama*   [enclitic   ***yata*** [argument   *si*   *Pablo*]]].
          CONT~come.along   INFER   NOM   Pablo
          'Pablo will come along, I think.'

i.   He did not answer yet, but you know he asked for days off work on the dates of the trip. (It could be the case though that he had different plans).
ii.   He did not answer yet, but you see him packing his luggage. (It could be the case though that he is going somewhere else).
iii.   # He told you he would come.
iv.   # You know he is coming as you booked the trip together.
v.   # You guess he will because he loves travelling and usually tags along.

Kaya seems to appear in complementary distribution with *yata*. Its addition in a sentence changes its force to that of an interrogative, hence, a SAO. A speaker using *kaya* in an utterance with a propositional content *p* expresses that (s)he has a reason to speculate about *p*. The evidence type also boils down to reasoning via speculation and it is located in results, that is, there is a piece of evidence making the speaker believe and speculate about *p*. It shows an origo shift (Garrett 2001, 'interrogative flip' in terms of Speas & Tenny (2003)) to either the speaker or the addressee. In the reading in (4a) it is anchored to the speaker, so it expresses that (s)he has a reason to believe *p* but since the evidence available is limited, (s)he

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[1] Data reported in this study have been constructed and then presented in their corresponding contexts for acceptability and felicity judgment tasks (Tonhauser & Matthewson 2015) to native speakers. The translation given for each evidential is not without controversy, but future research on their semantics will hopefully help provide a better and more precise translation. Used abbreviations: 1/2/3=first/second/third   person,   AV=active   voice,   CAUS=causative, COMP=complementizer, CONT=continuative, DV=dative voice, EXIS=existential, GEN=genitive, IMP=imperative, INCL=inclusive, INFER=inferential marker, INT=interrogative, IPF=imperfective, LNK=linker, NOM=nominative, PERF=perfective, PL=plural, PV=passive voice, RPT=reportative marker, SG=singular, SPCL=speculative marker.

wonders to him/herself *p,* functioning as a rhetorical question. The reading in (4b) anchors to the addressee, and it expresses that the speaker does not expect the addressee to be completely certain about his/her answer to *p* as (s)he is assumed to base it on indirect evidence. Its speculative nature is set out in its felicity in the contexts (4i-ii) and its infelicity in (4iii-iv). [2]

Context: You invited Pablo to come along on a trip and he did not answer yet.

(4)   [predicate *Sa~sama*   [enclitic ***kaya*** [argument *si*   *Pablo*]]]?
         CONT~come.along   SPCL   NOM   Pablo

     (a)   'Will Pablo come along, I wonder?'
     (b)   'Based on what you could possibly know, do you think Pablo will come along?'

(i)   You are wondering to yourself whether or not he will come, as you know he used to accept your invitations but was lately maybe a bit more distant.

(ii)   You ask his mother, who you suspect can give a guess, as she could have seen him packing.

(iii)   # You ask his brother who you expect to know for sure as they tell each other all their plans.

(iv)   # You ask Pablo himself directly.

Here I have presented the reportative *daw*, the inferential *yata* and the speculative *kaya* in basic utterances, so as to show the meaning contribution they have for their host utterance, along with their use in different contexts. Now, we will test their possible analysis as either modal or non-modal.

3.   Evidentials: epistemic modals or speech act operators

3.1.   Antecedents

I had mentioned above a prototypical classification as either SAOs or epistemic modals for evidentials crosslinguistically. SAOs operate in an illocutionary level and specify an illocutionary force (Faller 2002, et seq.). On the other hand, epistemic modals contribute to the truth conditions quantifying over possible worlds and evidence type is considered presuppositional (Izvorski 1997, Garrett 2001, Faller 2011, Matthewson et al. 2007, Matthewson 2012 et seq., McCready &

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[2] *Kaya* may also appear with imperatives, as in (5). It expresses speculation about the desirability of the commanded action (Schachter & Otanes 1972). As is known, directive speech acts such as commands may well be expressed with an interrogative sentence as a politeness strategy or face-saving act (Brown & Levinson 1987). I will not be concerned with *kaya* in imperatives here, as it might be argued that these can be interpreted as inquiries with the form of an imperative.

Context: Pablo did not answer yet to your invitation but you want him to come, so you later say:

(5)   *Pa-sama-hin*   ***kaya***   *natin*   *si*   *Pablo*.
         CAUS$_1$~come.along-IMP   SPCL   1PL   NOM   Pablo
         'Perhaps we should make Pablo come along.'

Ogata 2007, Waldie et al. 2009). The table in (6) shows the properties that distinguish the two types of analysis and that have been used in the literature to test the (non-)modality of evidential markers crosslinguistically.

(6)   Tests for a SAO vs epistemic modal analysis (Matthewson et al. 2007)

TESTS	SAO	MODAL
felicitous if *p* is known to be false	yes	no
felicitous if *p* is known to be true[3]	yes	no
indirect evidence requirement cancellable	no	no
indirect evidence requirement blocked by negation	no	no
pass assent/dissent test	no	yes
embeddable	no	yes
allow speech-act readings in interrogatives	yes	no

As Peterson (2010) points out, it is important to take into account that many different factors may be conditioning the applicability of the tests. For instance, evidentials in Nuu-chah-nullth (Waldie et al. 2009) are not embeddable due to a certain syntactic feature of the language, which does not necessarily imply that these should be considered SAOs.

    In the following I will explore the (non-)modality of the three Tagalog evidential markers introduced above by using these tests (for a detailed description and analysis of the tests, see Faller 2002, Matthewson et al. 2007, Waldie et al. 2009, or Peterson 2010, among others). My claim is that *yata* and *daw* should be analyzed as modal evidentials, whereas *kaya* patterns as a SAO.

3.2.   Tests regarding truth values and scope with respect to negation

In the same way epistemic modals quantify over worlds, so would modal evidentials (Matthewson et al. 2007). Addition of *yata* or *daw* to a sentence with a propositional content *p* should imply that the speaker believes there is (at least) a possiblity that *p*. Therefore their use should be infelicitous if the speaker knows that *p* is false (Matthewson et al. 2007). This is the case for the inferential *yata*, as seen in (7), but not for the reportative *daw* in (8). This deviation from the standard behavior of modal evidentials is such by virtue of its reportative nature, considering reportative evidentials allow for their scope to be felicitously denied (in the form p_{rep}, but ¬*p*) due to pragmatic perspective shift (AnderBois 2014).

(7)   *#Sa~sama*   ***yata***   *si*   *Pablo, pero*   *hindi*   *naman totoo*
       CONT~come.along INFER   NOM   Pablo but   not   really true
       'Pablo will come, I think, but it is not actually true.'

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[3] In line with Waldie et al. (2009), I suggest disregarding this test for its complexity regarding the distinction between strength of assertion and directness of the evidence.

(8) *Sa~sama   **daw**   si   Pablo, pero   hindi   naman   totoo*.
     CONT~come.along RPT   NOM   Pablo but   not   actually true
     'It is said that Pablo will come, but it is not actually true.'

Secondly, modal evidentials' indirect type of evidence is considered a presupposition (Izvorski 1997). As such, *yata* and *daw* should not be cancellable, which is shown in the infelicity of the cancelling follow-up of *p* 'but I did not think this/no one said this' in (9) and (10). They should also project out of negation, as in (11) and (12). As we can see, they do not allow a reading under which the evidential markers fall within the scope of *hindi* 'not'. These two tests, however, do not consistently distinguish between the two analyses, since both have the same predictions (Waldie et al. 2009), as can be seen in the table in (6).

(9) *#Hindi **yata**   sa~sama   si   Pablo, pero   hindi   ko*
      not   INFER   CONT~come.along   NOM   Pablo but   not   1SG
      na-isip   'to.
      PERF-think   this
      'Pablo will not come, I think, but I did not think this.'
(10) *#Hindi **daw**   sa~sama   si   Pablo, pero   wala-ng*
      not   RPT   CONT~come.along   NOM   Pablo but   non.EXIS-LNK
      nag-sabi   nito.
      PERF-think   this
      'It is said that Pablo will not come, but no one said this.'
(11) *Hindi **yata**   sa~sama   si   Pablo*.
      not   INFER   CONT~come.along   NOM   Pablo
      YATA(¬ p): 'Pablo will not come along, I think.'
      # ¬ (YATA(p)): 'It is not the case that I have indirect evidence that Pablo is coming.'
(12) *Hindi **daw**   sa~sama   si   Pablo*.
      not   RPT   CONT~come.along   NOM   Pablo
      DAW(¬ p): 'It is said that Pablo will not come.'
      #¬ (DAW(p)): 'It is not the case that I have been told that Pablo is coming.'

Thirdly, since modal evidentials operate in a propositional level, they should be able to be questioned, doubted or disagreed with, which is shown in (13) and (14), thus passing the assent/dissent test (Faller 2002). In (13) we see that B is disagreeing with the modal claim that A has reasons to believe that Pablo will come along, as it it not the case that anyone heard from him yet, and is not disagreeing with Pablo coming or not. In (14), Schwager (2010)'s example, C would be disagreeing with Florian saying that Magda was at home, not with the fact that Magda was at home.

(13) A.   *Sa~sama*   **yata**   *si*   *Pablo*.
           CONT~come.along   INFER   NOM   Pablo
           'Pablo will come, I think.'

     B.   *Hindi a.*   *Hindi pa*   *siya*   *nag-pa~pa-rinig,*
           not   oh   not   still   3SG   AV-CONT~CAUS-hear
           baka   *um-ayaw*   *pa*   *'yan*.
           maybe   AV-decline   still   that
           'Oh no. We haven't heard from him yet, he might still decline.'

(14) A.   *Ano-ng*   *sabi*   *ni*   *Florian?*
           what-LNK   say   GEN   Florian
           'What did Florian say?'

     B.   *Na-sa bahay* **daw**   *si*   *Magda*.
           IN-LOC house   RPT   NOM   Magda
           'He said that Magda is at home.'

     C.   *Hindi totoo 'yon*. *Na-sa bahay nga si*   *Magda,*
           not   true   that   IN-LOC house   indeed NOM   Magda
           pero   *hindi*   *s<in>abi*   *ni*   *Florian*.
           but   not   <PERF>say   GEN   Florian
           'That's not true. Magda is at home indeed, but Florian didn't say so.'

So far, these tests have shown that *yata* and *daw* are both modal evidentials, even if *daw*'s scope can be felicitously denied, which is due to its reportative nature.

3.3.   Embeddability

Unlike SAOs, which cannot be interpreted as part of the propositional content of an embedded clause since they are illocutionary operators (Faller 2002), modal evidentials should be semantically embeddable, as they operate in a propositional level. Crucially, semantic embedding implies that the reportative and the inferential are oriented towards the subject of the matrix clause, and not to the speaker him/herself. Matthewson et al. (2007) claim that modals should be semantically embeddable under conditional antecedents, factive verbs, and verbs of saying. (15) and (16) prove this is so for *yata* and *daw,* for instance, with a verb of saying.

Context: We are discussing if there will still be class even if there is a typhoon. A classmate reports what their teacher Anna said:

(15)   *Sabi*   *ni*   *Anna*   *na*   *ba~bagyo*   **yata**.
         say   GEN   Anna   COMP   CONT~be.there.typhoon   INFER
         SAY(YATA(p)): 'Anna says there will be a typhoon, she thinks.'

(16)   *Sabi*   *ni*   *Anna*   *na*   *ba~bagyo*   **daw**.
         say   GEN   Anna   COMP   CONT~be.there.typhoon   RPT
         SAY(p): 'Anna says that there will be a typhoon.'

However, not all embedding environments seem to allow for evidential markers in them. A restricted number of languages have embeddable evidentials (Korotkova 2013), among which even less allow evidentials within the scope of the antecedent of conditionals. So far only the Japanese *soo-da* (McCready and Ogata 2007), the St'át'imcets *lákw7a* (Matthewson 2012) and the German *sollen* (Schenner 2008, 2010) have been reported to have a narrow scope interpretation in such embedding environment. Now if an evidential can fall within the scope of the antecedent of conditionals, it is considered truth-conditional (Wilson 1975, Ifantidou 2001). As we see in (17), *yata* cannot occur in conditionals, but *daw* in (18) can.

Same context as before but a classmate remembers vaguely that last rainy season, his brother did not have to go to class, so he says:

(17)   *Kung   ba~bagyo   **yata**,   wala   tayo-ng
        if   CONT~be.there.typhoon   INFER   NON.EXIS   1PL.INCL-LNK
        klase.
        class
        *IF(YATA(p)), then q: 'If I think there is a typhoon, we do not have classes.'

Same context but the teacher makes a decision on suspending classes depending on what the weather forecast says:

(18)   *Kung   ba~bagyo   **daw**,   wala   tayo-ng
        if   CONT~be.there.typhoon   RPT   NON.EXIS   1PL.INCL-LNK
        klase.
        class
        IF(DAW(p)), then q: 'If it is said that there will be a typhoon, we do not have classes.'

This contrast may be explained with the distinction between objective and subjective epistemic modality (Lyons 1977, Papafragou 2006, a.o.). The former type bases its evidence on scientific and reliable data, whereas the latter bases it on personal view and incomplete evidence. In line with conceiving a modal evidential analysis for *daw* and *yata*, this distinction is made relevant here as it directly correlates to the divergence in evidence strength between the two. Accordingly, *daw* would pattern as those called objective epistemic modals, as its evidence strength is neutral, that is, it does not in itself convey untrustworthiness, since doubt and unreliability overtones may be acquired in context. On the other hand, *yata*'s evidence strength is not the best, as it conveys the speaker's personal view and uncertainty towards his/her claim, and it is as such a subjective epistemic modal. Papafragou (2006) holds subjective interpretations of epistemic modal expressions tend to escape standard tests for truth-conditionality, which thus explains the impossibility of (17) in contrast to (16).

In conclusion, embeddable evidentials may allow for a further distinction in terms of truth-conditionality and objective or subjective epistemic modality.

3.4.   Interaction with interrogatives

Faller (2002, 2011) argues that a key property of SAOs is that they allow speech-act readings in interrogatives, that is, they scope over interrogatives, in contrast to modals, which would not be able to outscope such illocutionary act. As for *daw*, Schwager (2010) shows two possible uses in interrogative sentences: (i) a question about what has been said, as in (19), and (ii) a report of a question, as in (20). Its use in (19) is a common trait for evidentials that have been analyzed as epistemic modals in general (Garrett 2001, Matthewson et al. 2007), and so it is an expected behavior of *daw*. By using it in a question, the speaker expects the addressee to have obtained his/her answer from someone else.

Context: After a trip, you tell A about it, who later calls B to tell him about it:
(19) A. She says Pablo came to the trip even if he didn't want to.
    B. *Bakit **daw** p<in>a-sama nila si Pablo?*
        why   RPT   <PERF.PV>CAUS-come.along GEN.3PL   NOM Pablo
        'Based on what someone else said, why did they make Pablo come?'

Context: A asks if it rained and the addressee did not hear (based on Faller 2002).
(20) A.   *Um-ulan kanina?*
        PERF-rain   earlier
        'Did it rain earlier?'
    B.   *Um-ulan ba **daw** kanina.*
        PERF-rain   INT   RPT   earlier
        'Did it rain earlier, as A asks?'
    B'.   # *Um-ulan **daw** kanina.*
        PERF-rain   RPT   earlier
        '(A) said it rained earlier.'

The report of A's question in (20B) may be taken as a SAO distinctive feature, which led Schwager (2010) to claim that *daw* can affect illocutionary force, shifting the sentence to its indirect counterpart, and thus making its modal analysis unlikely. If this were the case, *daw* would be similar to the Cuzco Quechua reportative *-si* reporting questions, which modifies the illocutionary force of the utterance from that of inquiring an answer to that of presenting a question, which makes it a SAO (Faller 2002). However, (20B) shows that the utterance remains a question by adding the interrogative particle *ba*, thus taking the form INT(DAW(p)). This shows *daw* does not scope over the interrogative. Furthermore, a word-by-word indirect counterpart of (20A) would be infelicitous, as shown in (20B'), because it would be presented as an assertion of the form

DAW(p), lacking the interrogative particle *ba*. So *daw* is not really affecting illocutionary force and so it can still be analyzed as a modal evidential after all.

It is important to bear in mind at this point that *daw* introduces a presuppositional meaning (*vid*. Schwager 2010, Tan 2016 for details on a presuppositional account of *daw*). Presuppositions are known to project out of questions, that is, the meaning introduced by a presuppositional element is able to survive as an utterance implication even if it occurs under the syntactic scope of entailment-cancelling operators like interrogatives (Simons et al. 2010). This explains the ability of *daw* to have the readings in (19) and (20), as the implication of a previous report taking place survives the interrogative in both cases. Hence, a modal evidential analysis is after all more suited for *daw*.

Concerning *yata*, it cannot appear in questions, as seen in (21), and finds its interrogative counterpart in *kaya*, as shown in (22). *Kaya* is a SAO inasmuch as it gives the utterance the illocutionary force of an interrogative.[4]

(21)   *Um-ulan   **yata**   *kanina?*
       PERF-rain   INFER   earlier
       'I think it rained earlier?'

(22)   *Um-ulan*   **kaya**   *kanina?*
       PERF-rain   SPCL   earlier
       'Based on what you could possibly know, do you think it rained earlier?'/
       'Did it rain earlier, I wonder?'

Tests regarding truth values are not applicable to *kaya*, since questions have the felicity conditions that the speaker does not know the answer and assumes the addressee may know it (Searle 1969). Using *kaya* turns its host utterance into a question and is therefore not a statement, the utterance does not have truth values and those tests are not suitable here. As said before, and even if it is applicable, the scope with respect to negation test does not actually tell SAOs apart from modals. However, a test that is surprisingly applicable to *kaya* is the embeddability one. Unlike what is expected from SAOs, *kaya* can be found embedded, as in (23).

Context: We are discussing if there will still be class even if there is a typhoon as a classmate reports what their classmate Pablo asked:

(23)   *Tanong*   *ni*   *Pablo*   *kung*   *ba~bagyo*   **kaya.**
       ask   GEN   Pablo   COMP.INT   CONT~be.there.typhoon   SPCL
       ASK(KAYA(p)): 'Our teacher asks if, as she wonders, there will be a typhoon.'

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[4] I thank Nozomi Tanaka for pointing out the possibility of co-occurrence of *kaya* with another interrogative operator such as *ba*, as in cases like *Maaalala pa ba kaya nya ako* 'I wonder if (s)he will still remember me/Do you think (s)he will still remember me?'. Further research needs to be done concerning interaction and co-occurrence with other such operators.

For embedded interrogative clauses, McCloskey (2006) argues that the English *if* may select either a 'speech act interrogative' or an 'interrogative sentence radical'. In (23), the complementizer *kung* 'if' would be introducing a speech act interrogative, which allows the occurrence of *kaya*. In line with this assumption, Haegeman (2006) proposes that certain embedded clauses which are compatible with 'Main Clause Phenomena' (MCP) contain their own illocutionary force. And so the SAO *kaya* is licensed in the context of embedded interrogative clauses because the embedded clause in (23) has its own illocutionary force, expressing speaker's limited evidence for claiming *p* and in so, the justification for his/her request of an answer by using an interrogative operator such as *kaya*. Faller (2014) actually shows that the Cuzco Quechua reportative *-si* may be embedded under say verbs as well. It explains the impossibility of (24).

Context: Some classmates discussed last week if if there would be a typhoon. A missing classmate talked to the teacher, who remembered their conversation.

(24) *Na-tandaan*   *ng*   *guro*   {*na/kung*}
       PERF-remember   GEN   teacher COMP/COMP.INT
      ba~bagyo   **kaya**.
       CONT~be.there.typhoon   SPCL

Int.:   'The teacher remembered {that/whether} it is wondered if it would rain.'

In summary, upon reviewing the tests and their applicability to the Tagalog evidential markers as summarized in the table in (25), I show that *daw* and *yata* should be analyzed as modal evidentials, considering they operate at a propositional level, and that *kaya* is a SAO inasmuch as it operates in an illocutionary level, giving interrogative force to the utterance. Moreover, the Tagalog evidential system provides further evidence that a split between modal and non-modal evidentials can occur within the same language, like in Cuzco Quechua (Faller 2002) or Gitksan (Peterson 2010).

(25)   Summary of results of the diagnostics applied to Tagalog evidentials

TESTS	SAO	MODAL	*DAW*	*YATA*	*KAYA*
Known-to-be false	yes	no	**YES (reportative)**	NO	N.A.
Known-to-be true	yes	no	NO		N.A.
Cancellable	no	no	NO		N.A.
Scope wrt negation	no	no	NO		NO
Assent/dissent	no	yes	YES		N.A.
Embeddability	no	yes	**YES (with restrictions)**		
Speech-act reading in interrogatives	yes	no	**NO**		N.A.

4. Conclusions and further issues

Standard tests for (non-)modal analyses of evidential markers as applied to Tagalog evidentials show that *kaya* is a SAO despite its embeddability. On the other hand, *yata* is straightforwardly analyzed as a modal evidential, despite its non-embeddability under conditional antecedents, which is due to its subjectivity as an epistemic modal. *Daw* shows a more complex behavior, considering that, at first sight, it seemed to affect illocutionary force when used to report a question. However, this is not the case, as the report should remain a question in order to be felicitous, as seen in (20B). So its interaction with interrogatives does not invalidate a modal evidential analysis for *daw*, which was accounted for with the rest of the tests.

One of the main questions that are derived from detailed examination of the (non-)modality of Tagalog evidentials is which tests actually count as valid diagnostics to distinguish between the two types of analysis. Tests regarding scope with respect to negation and cancellability have been shown to not be able to distinguish between them (Waldie et al. 2009). The known-to-be false test does not help either in contrasting them when we are considering reportative evidentials (AnderBois 2014). The embeddability test certainly needs a revision (Faller 2014), as many factors should be taken into account in considering a distinction between the two types. The question arises as to what types of embedded clauses contain illocutionary force (Haegeman 2006) and thus license the occurrence of SAOs such as *kaya* in them, which may be able to provide an actual diverging test between them.

Moreover, an understudied matter in literature in evidentials is their interaction with imperatives (*kaya* in (5) and *daw* in (26)). Very few languages have been attested to allow evidentials in imperatives (specifically, Tariana, Northern Embera, Shipibo-Konibo and West Greenlandic), in which cases they behave as genuine commands (Aikhenvald 2004). Schwager (2010) claims that use of *daw* with the imperative results in a report of someone else's command.

Context: A orders C to eat, C did not hear:
(26) A. *K<um>ain   ka   na.*
        <AV>eat   2SG   already
        'Eat already.'
   B. *K<um>ain   ka   na   **daw**.*
        <AV>eat   2SG   already RPT
        'It is said you should eat already.'

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STRESS AND QUANTITY-SENSITIVITY IN SOME CENTRAL PAIWAN COMMUNALECTS[*]

Shih-chi Stella Yeh
National Kaohsiung Normal University
shihchiyeh@nknu.edu.tw

This study reexamines the assignment of stress of the Paiwan language spoken in several central Paiwan villages, which differs from the other communalects in treating the central vowel, schwa /ə/, as a weak element, in terms of syllable and stress. The author explores new data and argues for a quantity-sensitive account based on an intricate three-way distinction of syllable weight. It is shown that the weight of coda consonants varies due to the structure of syllables. The special property of schwa in assignment stress also parallels its restriction on distributions.

1. Introduction

This paper aims to reveal the pattern of word-level stress in several central Paiwan communalects[1], and argues for a quantity-sensitive account that relies on different weighting of coda consonants. Paiwan is an Austronesian language spoken in the southern mountainous area of Taiwan, mainly in Pingtung (屏東) and Taitung (台東) counties. In a few of the geographically central Paiwan villages, including Piuma, Kazangiljan, Qapedang, Kazazaljan, Puljeti, Ulaljuc and Kaviyangan,[2] the communalects display a stress pattern which partially differs from most Paiwan communalects. While the majority of Paiwan communalects have regular penultimate stress and treat all vowels the same in terms of stress assignment, these particular communalects disfavor schwa /ə/ as the head of prominence, resulting in shifted stress within the last two syllables. More specifically, penultimate stress is the pervasive pattern for the Paiwan language in general; stress on the final syllable appears in words with underlying vowel hiatus, monosyllabic words, and concatenation of prefix/infix plus monosyllabic words, due to phonological or

[1] In this paper, the word "communalect" is used to refer to the language spoken in a region, such as a village. The Paiwan language spoken in one village might be slightly different from another; however, the difference between them is not significant enough to facilitate subgrouping. Instead of "dialect", "communalect" might be a more neutral term.

[2] This patterning of stress is likely also displayed in a few more villages in Taitung county which were established by people who moved out of these central villages long ago.

morphological reasons. However in the communalects specified above, more factors should be considered: they avoid stress on penultimate schwa, instead shifting it to the final full vowels /i u a/. If both the penultimate and final syllables contain schwas, the location of stress depends on syllable structure—a closed syllable with schwa receives stress. It does not seem that the quality or sonority of vowels purely dominates stress, as mentioned in previous studies (Chen 2009, Yeh 2011). Moreover, the structure of the syllable and its weight both matter. When probing into the relevant details, this study argues against previous analyses that rely on a quality-sensitive or sonority-driven account, and provides new data to show that syllable weight plays a crucial role in stress in these Paiwan communalects. Word stress is sensitive to the intricate quantity of a syllable; thus, having different systems of the weight of the coda consonants are necessary. To be more precise, three values of syllable weight are needed—diphthongs and coalesced vowels are heavier than open/closed syllables with /i u a/ and closed syllables containing schwa, and open syllables with schwa are the lightest. In the following, Section 2 sketches a general picture of Paiwan phonology including phonemes, phonotactics, and syllable forms. Section 3 describes the stress of the abovementioned Paiwan communalects, together with new data. Section 4 argues that stress in Paiwan is sensitive to syllable quantity; moreover, an Optimality-Theoretic analysis (McCarthy & Prince 1993, Prince & Smolensky 1993/2004) is provided which clarifies the interaction between foot form and syllable weight. Section 5 further discusses the analysis, demonstrates similar patterns in other Austronesian languages, and concludes this paper.

2.   A Sketch of the Phonology

Before starting the data of stress assignment, understanding the basic knowledge of Paiwan phonology is prerequisite. Apart from the phonemic vowels and consonants, the distribution of segment, the structure of syllable, and rules that influence syllables are depicted. Although most knowledge has no difference from previous work (Ho 1977, 1978, Ferrell 1982, among others), this paper offers additional detailed remarks. Paiwan has four vowels /i u ə a/ without any phonemic distinction on vowel length. In other words, contrast between long vowels such as /Ci:/, and short vowels such as /Ci/, does not exist. Ho (1977:606) considers /ə/ a restricted vowel because it cannot occur in word-initial and word-final position. Although there are very few words that begin or end in /ə/ can be found,[3] the dissimilar behavior of schwa in phonotactics and metrical pattern is still parallel to Ho's understanding. A number of consonants range from 21 to 23 due to the replacement or the merging of sounds in different communalects. The consonant

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[3] The words /ənəm/ 'six' in Sinvaudjan (a southern village) begins with a schwa though it is /unəm/ in most communalects. It could be an irregular sound change from /u/ to /ə/ in several communalects. Words ending in schwa such as /quʎiŋəŋə/ 'Pouzolzia elegans (plant species)' can be found.

inventory listed is from Piuma Paiwan: /p b t d ɖ c ɟ k g q v s z ʀ ts m n ŋ ʎ ʟ r w j/. Regular sound correspondence can be found between these communalects, for example, /q/ and /ʀ/ in Piuma is replaced by /ʔ/ and /r/ respectively in Kazangiljan. A more explicit description can be referred to Ho (1978), which has illustrated correspondence and historical derivations from Proto-Austronesian based on the five different communalects located in northern, central, southern and eastern areas of Paiwan.

The structure of the syllable is not complicated. Complex syllable margins (onset and coda clusters) are not tolerated, thus, the form of a syllable is mostly confined to CV(C). The onset position allows each consonant in this language, but the coda consonant is more restricted—the word-final coda consonant can be any segment of the inventory except glides[4], while the word-internal coda consonant only accepts nasals and glides. Moreover, the word-medial glide coda can be treated as deriving from underlying vowels, and the nasal glides in the word-medial position are suspected of being the result from deleting a post-nasal schwa. To put it another way, no CVC syllables can be found word-internally except those ending in nasals /m n ŋ/ or glides /w j/; otherwise, the word-internal CV syllables are the norm.[5] A more complex part of the syllable regards vowel hiatus. This study assumes that the vowel clusters containing different vowels combine and form diphthongs in natural (fast) speech tempo, while the vowel cluster with two identical vowels coalesce (Yeh 2011), for example, /kəvava-u/ [kə.va.váw] 'drink wine (IMP)' and /pu-vasa-an/ [pu.va.sán] 'taro field'.[6] A concatenation of the two vowels results in surface diphthongs via glide formation, or coalesced vowels through coalescence. Such syllables derived from underlying vowel hiatus differ in assigning stress—they attract the supposed penultimate stress when in the final position; that is to say, penultimate stress shifts to the ultima with such heavy syllables in word-final position. The restructure of the syllable changes the weight of syllable, and thus, influences the pattern of stress.

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[4] Syllable onsets usually do not begin with glides /w/ or /j/ except the word /ki-jaja/ 'to pick, pluck'. Other words contain glide onsets are mostly loanwords from Japanese.

[5] Word-internal codas which are neither glides nor nasals can be observed in fossilized (or lexicalized) reduplication, in which the root ($C_1V_1C_2$) has undergone full reduplication ($C_1V_1C_2.C_1V_1C_2$) and become fossilized, and thus no longer identifiable. Examples are listed: /gingin/ 'longan', /vajvaj/ 'sun-dry', /viqəviq/ 'ripple', /ŋisəŋis/ 'beard', /katsakats/ 'trousers'. An intervening vowel, which is usually a schwa or a copy of the neighboring vowels, appears between two identical CVC syllables to avoid illegitimate word-internal codas. However in natural (faster) speed, the vowel would be dropped in some cases.

[6] Dissimilar points of view toward vowel hiatus can be seen in the literature. Vowel sequences are always treated as heterosyllabic in Ferrell (1982:7). Ho (1977) makes vowel clusters with rising sonority (e.g. /au/ or /ai/) simply heterosyllabic (e.g. [a.u] or [a.i]), and those with falling sonority (e.g. /ua/ or /ia/) separated by an inserted glide (e.g. [u.wa] or [i.ja]). Differently, Egli (1990:7-10) treats vowel clusters with falling sonority (/au/ or /ai/) as tautosyllabic diphthongs, rather than monophthongs in separated syllables, referring to speech tempo. Also, Chen (2006, 2009) treats vowel clusters as tautosyllabic diphthongs, with reference to glide formation.

In Paiwan, stress generally falls on the penultimate syllable (Ho 1977, Ferrell 1982). Stress shifts to the ultimate syllable under three circumstances: (i) when the final syllable of a prosodic word is derived from underlying vowel hiatus, (ii) when it is a monosyllabic word, and (iii) when a prefix/infix is adhered to a monosyllabic root. In the first situation, the underlying vowel hiatus is modified and becomes tauto-syllabic. The vowels preserve their weight and thus form a heavy syllable that attracts stress. More data are shown in (1) and (2).

(1)   *tauto-morphemic*
/sikau /	[ʃi.káw]	'net bag'
/ki-paiz/	[ki.pájz]	'fan (AV)'
/ma-guat/	[ma.gwát]	'hoarse'
/qatia/	[qa.tjá]	'salt'

        hetero-morphemic
/tsapa-u/	[tsa.páw]	'roast (IMP)'
/kəvava-i/	[kə.va.váj]	'drink wine (IMP)'
/ra-ruvu-an/	[ra.ru.vwán]	'nesting place'
/pu-ḷapi-an/	[pu.ḷa.pján]	'place of putting hollow grains'

(2)
/pu-vasa-an/	[pu.va.sán]	'taro fields'
/kali-i/	[ka.lí]	'dig (Imp)'
/katʃu-u/	[ka.tʃú]	'carry (Imp)'
/ka-kəsa-an/	[ka.kə.sán]	'kitchen'
/vəli-i/	[və.lí]	'buy (Imp)'
/kiʁimu-u/	[ki.ʁi.mú]	'come (Imp)'

For the second case, stress, of course, falls on that monosyllable since it is the only stress-bearer of a word. The third situation is due to the inability of the prefix/infix to carry stress in Paiwan; therefore stress avoids this morphological category and resides on the final syllable, which is a monosyllabic root. The above statements hold true for all Paiwan communalects. However, those mentioned seven communalects contrast to the rest in one thing: they treat schwa /ə/ differently in assigning stress, preventing schwa from being stressed within the two-syllable domain at the right edge.

3.   Different Pattern of Stress

The communalects in this study differ from the majority of Paiwan in preferring /i u a/ over schwa for stress assignment, and in treating coda consonants in two distinct ways. To begin with, within the rightmost two-syllable domain, stress tends to avoid schwa if possible. Word-final coda consonants normally do not influence the placement of stress; however, they do when the syllable nucleus is a schwa. As mentioned, the default, unmarked stress is penultimate, though this overwhelmingly common pattern is affected by the nucleus vowel and syllable

structure. For these central communalects, stress is penultimate in words without a penultimate schwa, as shown in (3) and (4). Note that the data in (3) point out two things: first, stress falls on the penultimate syllable. Second, the presence of the word-final coda has no effect on stress assignment. In other words, an open syllable (CV) equals a closed one (CVC) in syllable weight; therefore, coda consonants have no contribution to quantity and can be considered weightless. The data in (4) show the persistence of penultimate stress in a prosodic word regardless of morphological additions.

(3)

[kí.na]	'mother'	[cá.kit]	'sickle'
[ɭá.vu]	'ash'	[ŋá.ɟaj]	'saliva'
[vá.ɭi]	'wind'	[qú.vaʎ]	'hair'
[pá.na]	'river'	[vú.das]	'sand'
[qú.ɭu]	'head'	[sá.ʃiq]	'ant'
[ná.ʃi][7]	'breath'	[vá.qaŋ]	'molar'

(4)

[ma.sá.ɭu]	'believe'	[ɭu.má.mad]	'baby'
[sa.ví.ki]	'betel nut'	[mi.ɭi.mi.ɭí.ŋan]	'story'
[ta.ɭí.vak]	'healthy'	[pu.pa.dá.jan]	'rice field'

However, stress in the communalects under consideration seeks out /i u a/ and avoids schwa /ə/ within the stress domain as shown in (5), while the rest of the Paiwan communalects treat all vowels as equivalent for purposes of stress assignment. A comparison between the relevant communalects (e.g. Piuma) and other ones (e.g. Sinvaudjan) is given in (6), showing the contrasting patterns in the different communalects. It is obvious that communalects like Sinvaudjan assigns stress to the penultimate vowel regardless of its quality, whereas the central communalects examined in this study (like Piuma) avoid stressed schwa. This avoidance pattern is even clearer in suffixation: when a root-final schwa becomes the penultimate nucleus as the result of attaching a monosyllabic suffix, stress, which would otherwise be penultimate, shifts to the word-final vowel, as shown in (7). Note that the imperative suffixes themselves do not attract stress, as in the pair p<ən>áŋuɭ 'hit (AV)', and paŋúɭ-u 'hit (IMP)'. As exemplified in the data above and below, stress is confined to the last two syllables without exception. That is, there are only two positions for stress to reside—either penultimate or final—and the penultimate syllable is the preferred choice in both groups of communalects, though the presence of schwa in that syllable makes it less preferable than the ultima for stress assignment in the central communalects examined here.

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[7] The phoneme /s/ is palatalized as [ʃ] before the high vowel /i/.

(5)
[kə.rí]	'small'	[cə.v͡ús]	'sugarcane'
[sə.má]	'tongue'	[gə.ʀón]	'throat'
[va.kə.ʟ̩á]	'arrow'	[qə.zúŋ]	'window'
[qa.pə.dú]	'gall'	[qə.t͡ʃáp]	'chopsticks'
[kə.ʀíʎ]	'sparrow'	[t͡ʃu.qə.ʟ̩áʎ]	'bone'
[qu.ɾə.pús]	'cloud'	[sa.ɹə.ʟ̩úŋ]	'heavy'

(6)
Piuma	Sinvaudjan	
[kə.rí]	[kə́.ɖi]	'small'
[cə.v͡ús]	[cə́.vus]	'sugarcane'
[qə.t͡ʃáp]	[qə́.t͡sap]	'chopsticks'
[qa.pə.dú]	[qa.pə́.du]	'gall'
[qu.ɾə.pús]	[qu.ʀə́.pus]	'cloud'
[t͡ʃu.qə.ʟ̩áʎ]	[t͡ʃu.qə́.ʟ̩aʎ]	'bone'

(7)
a.	táqəd	'sleep (AV)'	taqəd-ú	'sleep (IMP)'
b.	pə-ʟ̩úsəq	'weep (AV)'	ʟ̩usəq-ú	'weep (IMP)'
c.	v<ən>átəq	'wash (clothes) (AV)'	vatəq-í	'wash (IMP)'

This leads to the question of how stress is assigned if both vowels in the two-syllable domain are schwa /ə/. As stress inevitably has to fall on one or the other, the presence of a word-final coda now becomes a relevant factor: stress falls on the final syllable if it is closed by a consonant, as shown in (8). Otherwise, stress is penultimate when both the penultimate and final syllables contain schwa and are open, as shown in (9), though schwa seldom closes a syllable in word-final position. The asymmetry between (8) and (9) suggests that the word-final coda consonant plays a crucial role; that is, the coda seems to contribute weight to a syllable. However, contrary to what has been assumed earlier based on the data in (3), the coda consonants are of little significance in terms of stress assignment unless both possible sites for stress contain schwa /ə/. This apparent inconsistency can be attributed to the greater importance of the nucleus when determing stress assignment: the weight contributed by a coda consonant is not relevant when the penultimate contains one of the vowels /i u a/, which alone satisfy the requirement of a stress bearer. However, when both possible sites for stress contain schwa, which is phonetically shorter and phonologically weaker than the other vowels, the weight contributed by a following coda consonant tips the scale in favor of stress assignment to that syllable.

(8)
[t͡ʃə.kə́ʎ]	'spouse'	[və.ʎə.və́ʎ]	'banana'
[ʟ̩ə.sə́q]	'tear'	[t͡ʃə.mə́ʟ̩]	'grass'
[və.t͡ʃə.qə́ʟ̩]	'short necklace'	[və.t͡ʃə.qə́ʟ̩]	'short necklace'

(9) [ʎa.ʎə́.ʎə] 'plant species' [l̩ə́.ɹə] 'thin'

[sa.kə́.ŋə] female name [mu.ɖə́.qə] 'fattened (animals)'

[pa.qə́.qə] '(cocks) crow' [ə́.pə] female childhood name

To summarize the data so far, penultimate stress is prevalent, though final stress occurs when the final syllable is heavier as a result of derivation from two underlying vowels Paiwan. For these central communalects, stress also avoids falling on schwa /ə/ within the two-syllable metrical domain unless the last two vowels are both schwa. Under these conditions, stress is assigned to the ultima if it is a closed syllable, but otherwise stress is placed on the penultimate.

4.   A possible analysis

This study contrasts with previous analyses based on quality-sensitive or sonority-driven accounts of stress, and instead favors a quantity-sensitive analysis that relies on a different weighting system of coda consonants than those previously proposed, along with an OT account. The reason for not categorizing the Paiwan communalects as quality-sensitive with regards to stress comes from a comparison of Paiwan to a language with true properties of quality-sensitive/sonority-driven stress. Moreover, the aforementioned are considered a type of quantity-sensitive, in which a coda consonant contributes weight only when the syllable nucleus is a schwa /ə/.

4.1.   Against A Quality-Sensitive Account

Stress in Piuma Paiwan has previously been analyzed as quality-sensitive (Chen 2009) or sonority-driven (Yeh 2011), so that the location of stress is determined by wither quality (Kenstowicz, 1997) or the sonority (de Lacy 2004). In other words, stress is conjectured to search for more sonorous vowels within the domain, based on Piuma Paiwan's preference for /i u a/ and dispreference for schwa in stress assignment. However, the problem in such previous accounts of Paiwan is that they do not adequately address the pattern of stress assignment in words containing schwa within the metrical domain. Chen (2006:83) mentions that "the right edge position must dominate the constraint of left edge for quality-sensitive stress to get a final stressed schwa" in words like /t͡sə́kəʎ/ 'spouse', but without providing a formal analysis. In addition, she points out that "penult is the most prominent position for Central Paiwan stress, but the right edge of a prosodic word becomes the optimal position for stress among equal prominent vowels in the quality-sensitive stress system", yet this statement conflicts with the fact that words with identical peripheral vowels /i u a/ still display penultimate stress (e.g. /káma/ 'father', /púnuq/ 'brain', and /kíkip/ 'eyelash'). Yeh's (2011:122) analysis adopts a set of hierarchical constraints targeting metrical peaks as well as the constraint

*Ft/ə, which penalizes every schwa in the foot. Yet, in fact, merely the constraint *Ft/ə is sufficient to account for the data provided without invoking the ranking regarding sonority. Therefore, the claim that stress in Piuma Paiwan is driven by vowel sonority (or quality) is here called into question.

This study thus argues that the aforementioned communalects do not have quantity-sensitive or sonority-driven stress for two reasons: first, the pattern of stress in words with vowels of the same sonority is distinct from those in the languages surveyed in Kenstowicz (1997) and de Lacy (2004). Second, the contrasting pattern of stress in Paiwan in CəCə́C versus Cə́Cə, which have never been mentioned previously, is evidence against the quality-sensitive analysis. For example, Takia (Ross 2002), an Austronesian language spoken in North New Guinea, displays a stress pattern driven by sonority (or vowel quality). With the sonority scale ɑ > e,o > i,u, stress in Takia must fall on the most sonorous vowel available in the last two syllables at the right edge, e.g. [ŋisáŋes] 'hawk', [ábi] 'garden', [bugugáru] 'twins', [ifunó] 's/he hit you', [mulmól] 'a kind of tree'. Otherwise stress occurs on the rightmost syllable, e.g. [tɑmán] 'father (3sg)', [ifiní] 's/he hit him', [tubún] 'his/her grandparent'. It is evident that the default stress position for Takia is the final syllable, and stress moves to the penultimate syllable only for a more sonorous vowel. Paiwan appears to be similar at first glance: the default position for stress is the penultimate syllable, and stress moves to the final syllable only for the more sonorous vowels. Yet problems emerge when words with identical vowels are considered, as stress falls on the default penultimate syllable in words such as CíCi(C), CúCu(C), CáCa(C), but not CəCə́C. The recently discovered contrast between CəCə́C and Cə́Cə further suggests that coda consonant crucially affects how syllables are weighted when the nucleus is a schwa, although words ending in schwas are rare. Thus, it seems that a syllable consisting of a schwa and a coda is heavier than an open syllable with schwa, thereby, creating the conditions under which stress is attracted to the final position. This idea is borne out by the fact that default penultimate stress emerges when both the penult and ultima are equivalent—including when both end in schwa /ə/. The above pattern implies that schwa is weak enough that the small amount of weight carried by a coda consonant can influence its ability to carry stress.

4.2.   Weight Distinctions

The scale of syllable weight in Paiwan is here posited to consist of a three-way distinction, in which schwa in an open syllable is the lightest: CVV(C) > CV(C), CəC > Cə, wherein V stands for /i u a/. CVV(C) refers to the diphthongs and coalesced syllables derived from two underlying vowels, as shown in (1) and (2) above. A CVV(C) at the right edge drags stress to final position; therefore, it must be heavier than a penultimate CV syllable. CV and CVC syllables can be understood to be of the same weight because stress falls on the penultimate syllable regardless of whether the following syllable is CV or CVC, as shown in (3) and (4) above. In other words, coda consonants do not normally play any role in the scale

of syllable weight when the nucleus is one of the non-central vowels /i u a/; that is, when the syllable nucleus is a peripheral vowel, the presence or absence of a coda consonant makes no difference, as in [kí.na] versus [vú.das]. However, in words with schwa in both of the last two syllables, CəC is treated as heavier than Cə because the former attracts stress to itself in final position when paired with a penultimate Cə. while Cə does not, as in [[ə.sə́q] versus [[ə́.ɭə], as can be seen in (8) and (9). Of course, this distinction only emerges due to the crucial existence of the asymmetry between /i u a/ and schwa /ə/, as shown in (5), which distinguishes the communalects under consideration from the rest of Paiwan. In the relevant communalects, the CV syllable is heavier than Cə so that stress avoids a penultimate schwa and instead lands on the final syllable, as in [sə.má] and [qə.zún]. This analysis further proposes that CV(C) and CəC share a position on the weight scale, as there is no positive evidence showing that CV is heavier than CəC due to the unavailability of words like CəC.CV.

It is here conjectured that the special behavior of schwa is due to its lack of a complete mora, as represented in (10). In (10a), both diphthongs and coalesced vowels are bimoraic because of their underlying properties—they are formed from two underlying vowels. (10b) shows that single vowels /i u a/ carry a single mora. A schwa alone, on the other hand, takes a defective mora, notated in gray, as shown in (10d). As mentioned in Kager's (1990) analysis of stress in Dutch, schwa is commonly treated as nonmoraic in Moraic Theory (Hyman 1985, McCarthy & Prince 1986/1996, Hayes 1989), and this moraic weightlessness of schwa predicts its stress behavior—schwa cannot receive stress. However, this study does not follow Kager's account of schwa as nonmoraic due to its ability to be stressed in Paiwan under specific circumstances—though it generally resists stress, schwa can be the foot head, e.g. [[ə́.ɭə] 'thin'. For schwa to be assigned a defective mora reinforces its phonological weakness as compared to other vowels, but also differentiates it from truly nonmoraic elements, such as consonants. In (10c), a schwa is able to share a full mora with a coda consonant. Although a coda consonant does not seem to contribute weight to a syllable when following /i u a/, it does when the nucleus is a schwa, and helps to suffice as an acceptible stress bearer. Furthermore, it is inappropriate to assume that CVC and CV are bimoraic, and that Cə is lighter with a single mora, because Paiwan has genuine bimoraic heavy syllables in the form of diphthongs and coalesced vowels derived from underlying vowels.

(10)   a. μ μ   μ μ   b. μ   c. μ   d. μ

         a u   a   V   ə C   ə
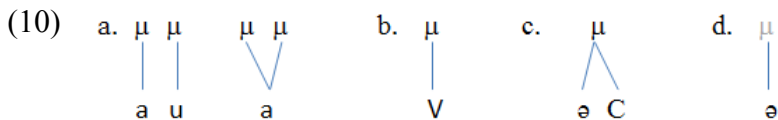
4.3. An OT Analysis

The location of stress is confined to the rightmost two syllables of a prosodic word, and penultimate stress is the overwhelming pattern seen in the data above. No secondary stress is observed. It is apparent that Paiwan usually parses a single left-headed (trochaic) foot at the rightmost edge, thus, the constraint RIGHTMOST must be dominant, requiring a prosodic word to have only one foot at the right edge. As the default position of stress is the penultimate syllable, FTFORM=TROCHAIC (henceforth TROCH) must also be ranked high; however, it could be overridden by more important requirements. Moreover, stress favors /i u a/ over /ə/, which implies that syllables with schwa are weaker than those with peripheral vowels. Furthermore, syllables derived from an underlying vowel hiatus are heavier than others, and according to the weight scale CVV(C) > CV(C) > Cə, stress is assigned to the heavier syllable of a foot. When there are only schwas in the domain, stress is attracted to the final closed syllable; otherwise the default penultimate pattern emerges. These patterns suggest that the coda consonant adds weight to the syllable only when the nucleus is a schwa /ə/, as illustrated by the scale CəC > Cə, and that stress never falls on the lighter syllable while another heavier syllable is available. Thus, with the integrated weight scale CVV(C) > CV(C), CəC > Cə, the constraint WEIGHT-TO-SRESS PRINCIPLE (WSP), which ensures that the heavier syllable in the foot obtains stress, must also be undominated. The effect of the crucial ranking WSP » TROCH can be seen when otherwise penultimate stress shifts rightward to a heavier syllable word-finally. To put it another way, left-headed prominence (parsing a trochaic foot) is violated only when the right-branching syllable weighs more than the left-branching one, so TROCH is violated to satisfy high-ranked WSP.

Only a few additional constraints are needed to deal with the pattern regarding schw, beginning with FTHEAD-MINIMALITY and WEIGHT-BY-POSITION (WBP). The former requires a minimal weight in a stressed syllable—at least the size of a mora (μ). WBP, which assigns weight to coda consonants, is further split in two: a specific WBP/ə and a general WBP. The general one is ranked relatively low so that violations of this constraint are not fatal, to allow for the fact that coda consonants generally exhibit weightless behavior. The specific WBP/ə outranks the general WBP, compelling the coda following a schwa to contribute weight. A crucial constraint DEP-μ, which penalizes any insertion of a mora, is sandwiched between the two WBP constraints, WBP/ə » DEP-μ » WBP. With this ranking, assigning a mora to the post-schwa coda satisfies the higher-ranked WBP/ə, but assigning a mora to general codas violates the more important DEP-μ. Tableaux (11-14) illustrate how the interactions between these constraints predicts the accurate optimal candidate.

In tableau (11), both candidates (a) and (b) incur a violation of the low-ranked WBP because of the mora assigned to word-final codas. Furthermore, candidate (d) incurs a fatal violation of WSP by assigning stress to the lighter

penultimate syllable. Candidates (b) and (c) form iambic feet, thereby fatally violating TROCH.

(11)

Input: /CuCaC/	RIGHTMOST	WSP	WBP/ə	FTHEAD-MIN	TROCH	DEP-μ	WBP
a. ☞(Cú$_μ$.Ca$_μ$C)							*
b. (Cu$_μ$.Cá$_μ$C)					*!		*
c. (Cu$_μ$.Cá$_μ$C$_μ$)					*!	*	
d. (Cú$_μ$.Ca$_μ$C$_μ$)		*!				*	

In tableau (12), for words with penultimate schwa, candidate (a) is ruled out because the trochaic foot locates its head in a lighter syllable, which fatally violates high-ranked WSP. Therefore, candidate (b) is optimal.

(12)

Input: /CəCa/	RIGHTMOST	WSP	WBP/ə	FTHEAD-MIN	TROCH	DEP-μ	WBP
a. (Cə́$_μ$.Ca$_μ$)		*!		*			
b. ☞(Cə$_μ$.Cá$_μ$)				*	*		

In tableau (13), candidate (a) fatally violates WBP/ə due to the lack of a mora on the post-schwa coda. Both the codas of candidates (b) and (c) receive some weight, sharing a full mora with the schwa. However, candidate (b) is ruled out because it assigns stress to the lighter syllable, which incurs a fatal violation of WSP. Candidate (c) is therefore the most competitive output. On the other hand, we see in tableau (14) that even though both syllables contain schwa, they lack coda consonants to share a mora with. Although both syllables of the foot have a defective mora, and therefore do not satisfy the basic requirement for a foot-head, one of them must carry stress. Thus candidate (a), which satisfies TROCH wins out.

(13)

Input: /CəCəC/	RIGHTMOST	WSP	WBP/ə	FTHEAD-MIN	TROCH	DEP-μ	WBP
a. (Cə́$_μ$.Cə$_μ$C)			*!	*			
b. (Cə́$_μ$.C[əC]$_μ$)		*!		*		*	*
c. ☞(Cə$_μ$.C[ə́C]$_μ$)					*	*	*

(14)

Input: /CəCə/	RIGHTMOST	WSP	WBP/ə	FTHEAD-MIN	TROCH	DEP-μ	WBP
a. ☞(Cə́$_μ$.Cə$_μ$)				*			
b. (Cə$_μ$.Cə́$_μ$)				*	*!		

Although diphthongs and coalesced vowels are not included in the above tableaux, it can be predicted that a bimoraic heavy syllable in word-final position attracts

stress due to the ranking of WSP. Thus, the pattern of stress in these Paiwan communalects is sensitive to syllable weight; that is, they exhibit a specific form of quantity-sensitivity.

5. Discussion and Conclusions

To recap, the pattern in these Paiwan communalects shows stress generally penultimate stress unless the penultimate vowel is a schwa, or the final syllable is heavier than the penult. In these cases, stress shifts to the final syllable. If both vowels within the two-syllable domain at the right edge are schwa, stress falls on a final closed syllable; otherwise, stress is assigned to the penultimate schwa. Such a stress pattern can also be observed in many languages, wherein a weaker vowel or a lighter syllable resists stress, instead shifting to a better or heavier syllable nearby. For example, in Dutch, schwa cannot take stress, and it also behaves differently from other vowels in its distribution relative to other segments and the application of certain phonological rules, e.g. consonant clusters before schwa cannot comprise a complex onset (Kager 1989). This type of pattern is also common in some Austronesian languages (Goedemans et al. 2010). For example, Malay has penultimate stress unless the penultimate vowel is schwa followed by a single consonant, in which case stress is final (Winstedt 1927, Lewis 1947). An identical stress rule has also been reported for Iban (Richards 1981). Asmah (1981:41) points out that in Malay and Iban, the schwa, which occurs only in pre-final syllables, is never stressed in open syllables (Blust 2007). In Karo Batak, stress falls on the penultimate syllable unless it contains an open schwa and the final does not (Woollams 1996). In addition, in Lamaholot (Arndt 1937) and Kulamanen (Dubois 1976), stress falls on the penultimate syllable, unless its vowel is a schwa and the final vowel is a full vowel. Moreover, in Wolff's (1993:1) reconstruction of Proto-Austronesian (PAN) stress, he mentions that PAN stress fell on the penult of the root if it was long or accented, and on the final syllable if the penult was short or unaccented. It is therefore not surprising to see that stress shifts between the last two syllables, looking for a more qualified, heavier syllable in some Austronesian languages, since they might descend from the same ancestor. In comparison to the languages in which schwa (or any central vowel) avoids carrying stress, as in Dutch or Indonesian (Cohn & McCarthy 1994/1998), the noteworthy point about Paiwan lies in the fact that schwa is still able to take stress in both open and closed syllables when there is no alternative available, though schwa is generally dispreferred as a stress-bearer. More interestingly, other communalects of Paiwan that have the same distributional restriction on schwa nevertheless treat schwa and other vowels the same with respect to stress. A comparison between the aforementioned and other Paiwan communalects may help to trace their historical development.

Another point to be considered is the system of syllable weight. In many languages where stress is sensitive to syllable weight, heavier syllables tend to attract stress, whereas lighter syllables avoid being stressed (Hyman 1985, Hayes

1995). Of course, languages differ in how they categorize different syllable structures. Some languages treat CVV as heavy, and CVC and CV as light; others consider CVV and CVC heavy, but CV light; and yet other languages have a more detailed system of distinction. After surveying many languages with quality-sensitive stress, Gordon (2002) offers a typology of phonological weight distinction, and argues that the weight system matches closely with the phonetic and perceptual parameters of total energy. His study further suggests that "phonological weight distinctions are ultimately predictable from other basic phonological properties, such as syllable structure". In rethinking the data from Paiwan, tiny clues may help to modify the analysis, as listed below: i) schwas are phonetically shorter than other vowels, ii) schwas seldom end a word (though they are able to), iii) schwas do not form an independent monosyllabic word while other vowels do. The weight of schwa may thus be predicted from these patterns, as well as from the interaction between schwa and its neighboring segments in Paiwan. As pointed out by Blust (2007:28), "the inherited Austronesian schwa is extra-short, and in general cannot hold a stress unless it geminates a following consonant. If germination does not occur, stress generally shifts one syllable to the right." It is suspicious that a schwa can take stress only when combined with a geminate. The weight system must play a role in the structure of syllables.

To sum up, this study argues that stress in these Paiwan communalects should be considered quantity-sensitive, contrary to previous analyses for quantity-insensitive (Chen 2009) or quality-sensitive/sonority-driven stress. Based on the contrast between /i u a/ and /ə/, and the distinction between Cə and CəC syllables, we assume that schwa carries a defective mora, which aligns with the weak properties it is observed to have in many other languages (Gordon et al. 2012). In addition, WSP applies differently to general coda consonants versus those following a schwa, letting schwa and the coda in a CəC syllable share a mora to satisfy the basic requirement of a foot head. Together with the contrast between diphthongs/coalesced vowels and monophthongs, the pattern of stress in the aforementioned communalects can thus be accounted for by referring to syllable quantity.

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