

PHILIPPINE-TYPE “VOICE” AFFIXES AS A’-AGREEMENT
MARKERS: EVIDENCE FROM CAUSATIVES AND DITRANSITIVES*

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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 a 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	<i>Pivot</i>	<i>X</i>	<i>X</i>
Causee	<i>Y</i>	<i>Pivot</i>	<i>Y</i>
Causand	<i>Y</i>	<i>Y</i>	<i>Pivot</i>

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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 ditransitives³

	Actor voice	Patient/Locative voice	Circumstantial voice
Agent	<i>Pivot</i>	<i>X</i>	<i>X</i>
Recipient	<i>Y</i>	<i>Pivot</i>	<i>Y</i>
Theme	<i>Y</i>	<i>Y</i>	<i>Pivot</i>

- (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 Voice⁰ available under all voices, rather than a lexical Case from V⁰.
 - 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 Voice⁰. Therefore, it is available only in non-Actor voice clauses.
 - c. Y marks lexical oblique Case from V⁰ 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.

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, $u\phi$. 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 butcher the chicken.’

The case pattern above raises an important question for the ergative approach to Philippine-type languages: if pivot marks absolute 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 absolute Case analysis for pivot-marking.

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

As illustrated in (9), there are essentially two possible structural relations in CV-causatives that are compatible with the absolute 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 absolute 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 is licensed by a high applicative phrase that occupies the highest internal argument position (6e) (e.g. Ippolito 2000, Pytkänen 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 masal na kiping. [Puyuma]
 1SG.X=CAU-wash-CV 1SG.POSS.Y=child again 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.

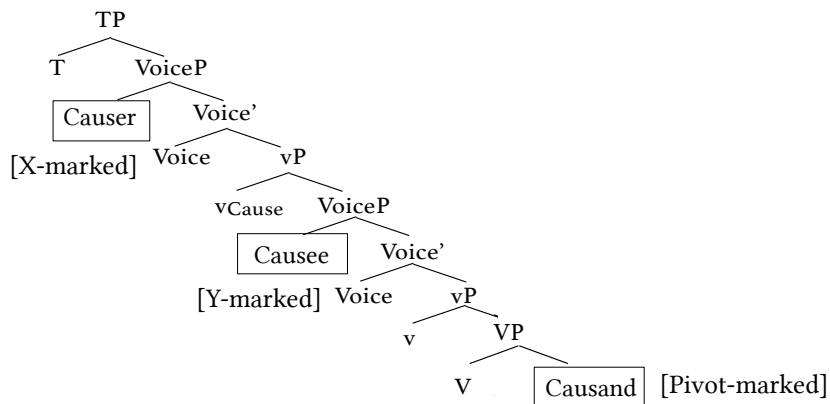
- ‘I asked my child<✓> to wash the clothes again<✓>.’ (My child did it again)
- b. sa-pa-pi-tangtang ni lisin heca ci-sawmah-an kuna titi. [Amis]
 CV-CAU-PI-cook X Lisin again PN-Sawmah-Y PIVOT.that pork
 ‘Lisin made Sawmah<✓> cook that fish again<✓>.’ (Sawmah did it again)
- c. s-p-hanguc=mu Ø iwan dungan ka sari nii. [Seediq]
 CV-CAU-cook=1SG.X Y Iwan again 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 pakirep na kiping. [Puyuma]
 1SG.X=CAU-wash-CV SG.Y Sawagu rigorously DF.PIVOT clothes
 ‘I asked Sawagu<✓> to wash the clothes rigorously<✓>.’
- b. sa-pa-pi-tangtang ni panay ci-afan-an kuna futing pina’un. [Amis]
 CV-CAU-PI-cook X Panay PN-Afan-Y PIVOT.that fish carefully
 ‘Panay asked Afan<✓> to cook that fish carefully<✓>.’
- c. s-p-sais=mu Ø robo murux ka lukus. [Seediq]
 CV-CAU-sew=1SG.X Y Robo independently PIVOT clothes
 ‘I asked Robo<✓> to sew the clothes independently<✓>.’

The above observations suggest that the absolutive 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-causatives in Puyuma, Amis, and Seediq



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 V⁰. 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, ditransitives 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 absolutive 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 ditransitive 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 voice⁷

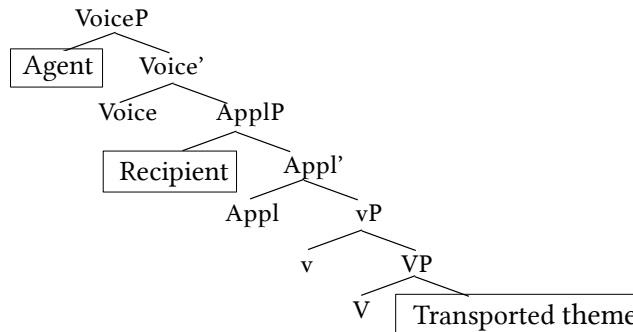
- a. Ø-beray=ku [kantu=lribun] [kan tinataw kana kiakarun driya]
AV-give=1SG.PIVOT [3.POSS.Y=wages] [SG.Y 3S.POSS.mother LK laborer every]
'I gave every laborer's_i> mother his_{i/*j}> wages.' (✓ bound variable reading)
- b. ku=beray-ay [kantu=lribun] [i tinataw kana kiakarun driya]
1SG.X=give-LV [3.POSS.Y=wages] [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>} wages.’ (✓ bound variable reading)
- (15) Puyuma: a Theme does not c-command a Recipient regardless of voice
- a. Ø-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>} 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>} 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>} 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. Pytkänen 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 ditransitives (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 absolutive Case analysis of pivot under the ergative analysis in (6d) is untenable.

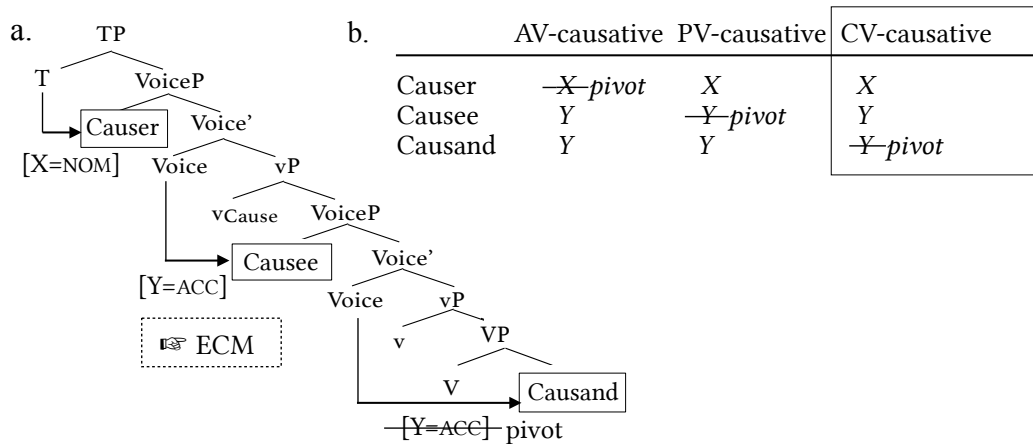
5. An accusative approach to Philippine-type Formosan languages

I argue that what remains unexplained under the ergative approach to the case patterns in causatives and ditransitives 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
- Y marks accusative Case from Voice⁰ available under all voice types. Therefore, there is no transitivity distinction between Actor voice and non-Actor voice clauses.
 - X marks nominative Case from T assigned to the highest Caseless phrase in all finite clauses.
 - Pivot is a topic marker that overrides morphological case and highlights the information structure status (topic) of a constituent.
 - Philippine-type voice affixes morphologically encode an A'-agree relation between an A'-head (Topic⁰) 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

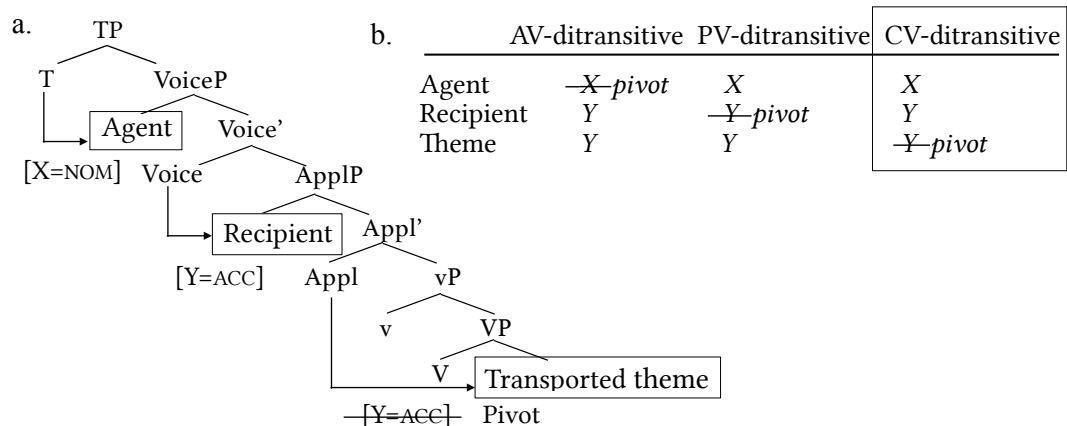


As shown above, the Causer always receives nominative Case (i.e. X) assigned by T, with the Causee and the Causand receiving structural accusative Case (i.e. Y) from the matrix and embedded Voice⁰, respectively. The argument-marking alternations among different voice types is accounted for under the analysis that what has been conventionally analyzed as a “voice” marker in fact signals which

phrase in a clause bears a [topic] feature.⁸ The morphological case of the topic phrase is overridden by the pivot-marking, thus results in the observed argument-marking alternation conditioned by voice type, as illustrated in (18b).⁹

The present analysis also provides a simple account for the case pattern in ditransitives, according to which nominative Case (i.e. X) is assigned to the structurally highest phrase, the Agent. Under an accusative Case analysis of Y, the Y-marking on both the Recipient and the Theme in AV-causatives follows directly from the double-accusative marking observed on the objects in crosslinguistic DOC (Pylkkänen 2002). Similar to the proposed analysis for causatives, the voice-conditioned case alternations in (18b) is accounted for under the analysis that with a corresponding voice marker, a different argument in a ditransitive bears a [topic] feature and carries the pivot-marking. The grammatical function of the topic phrase is morphologically encoded as what has been conventionally described as a “voice” marker, as illustrated in (19b).

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



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.

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

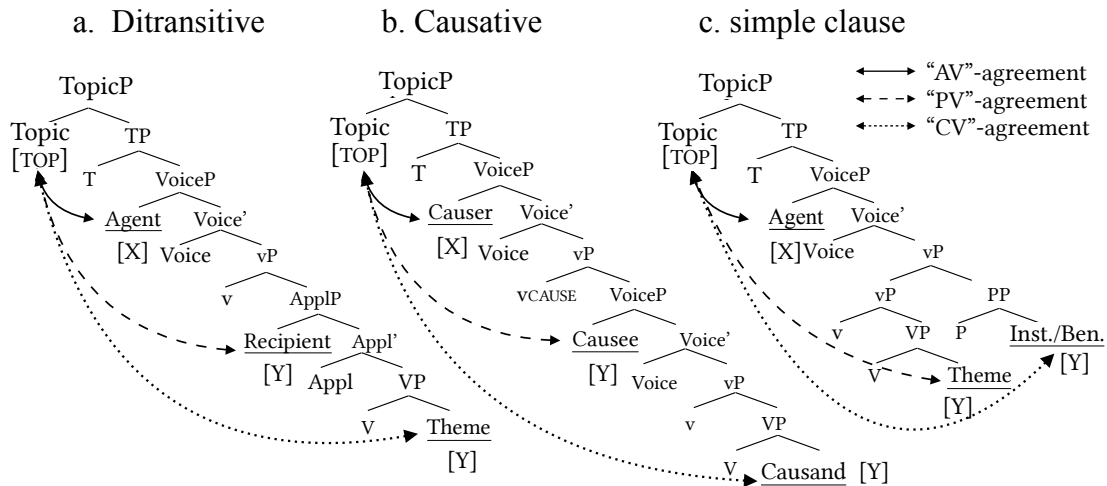
⁹ This analysis is made on the finding that AV- and PV/LV-causatives in the three languages share the same bi-eventive structure with CV-causatives. Due to space limitation, I am unable to present relevant data in this paper. See Chen (2016) for a more detailed discussion.

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 (Topic⁰) 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 Topic⁰. 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 Topic⁰, 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



¹⁰ 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.

¹¹ Based on comparative evidence across Formosan languages, I propose that a prototypical LV affix realizes an Agree relation between Topic and temporal/spatial adjuncts, despite the fact that LV verbs in many modern languages show functional expansions and function as PV verbs.

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 Voice⁰/Appl⁰ (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
eat-PV

 na dakis ka rodux. b.

puq-un
eat-PV.NMZ

 (/na dakis)
X Dakis PIVOT chicken (/X Dakis)
‘Dakis will eat the chicken.’ [V] ‘thing eaten (/by Dakis)’ [N]
- c.

[_{DP} rodux/∅	[_{CP} Op _i	<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>puq-un</td></tr><tr><td>eat-PV.NMZ</td></tr></table>	puq-un	eat-PV.NMZ	na dakis	<t _i >]]
puq-un						
eat-PV.NMZ						
[_{DP} chicken/∅	[_{CP} Op _i	<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>puq-un</td></tr><tr><td>eat-PV.NMZ</td></tr></table>	puq-un	eat-PV.NMZ	X Dakis	<t _i >]]
puq-un						
eat-PV.NMZ						

‘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 Voice⁰/Appl⁰, 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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