Argument Structure, Causation, and Voice in Paiwan
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1. Introduction
• Some brief definitions in this paper:
  A. What is Argument Structure (AS)?
     (i) AS refers to the lexical representation of grammatical information about a predicate. (Grimshaw 1990: 1) For example,
     \[
     \begin{array}{c}
     \text{kill} \\
     \text{Head} \\
     \text{Predicate} \\
     \text{Event}
     \end{array}
     \begin{array}{c}
     (\text{John} > \text{Bill}) \\
     (\text{Subject} > \text{Object}) \\
     (\text{Arg. 1} > \text{Arg. 2}) \\
     (\text{Causer} > \text{Patient})
     \end{array}
     \begin{array}{c}
     \text{GRAMMATICAL RELATION} \\
     \text{ARGUMENT STRUCTURE} \\
     \text{SEMANTIC ROLE}
     \end{array}
     \]
     (ii) AS is the system of structural relations holding between heads (nuclei) and the arguments within the syntactic structures projected by nuclear items.

     \[
     \begin{array}{c}
     \text{VP}_{1} \\
     \text{VP}_{2}
     \end{array}
     \begin{array}{c}
     \text{NP}_{\text{CAUSER}} \\
     \text{John}
     \end{array}
     \begin{array}{c}
     \text{V}_{1} \\
     \text{CAUSE} \\
     \text{NP}_{\text{PATIENT}} \\
     \text{Bill}
     \end{array}
     \begin{array}{c}
     \text{R} \\
     \text{BECOME} \\
     \text{killed}
     \end{array}
     \begin{array}{c}
     \text{<SUBJ>} \\
     \text{<OBJ>}
     \end{array}
     \]

     B. What is Causation?
     A causative construction (i) involves two events, i.e. a causing event vs. a caused event (Shibatani 1976: 1), and (ii) more specifically, it concerns with the specification of an extra argument, a Causer, onto a basic clause (Dixon 2000: 30).

     \[
     \begin{array}{c}
     \text{VP}_{1} \\
     \text{VP}_{2}
     \end{array}
     \begin{array}{c}
     \text{NP}_{\text{CAUSER}} \\
     \text{storm}
     \end{array}
     \begin{array}{c}
     \text{V}_{1} \\
     \text{CAUSE} \\
     \text{NP}_{\text{PATIENT}} \\
     \text{door}
     \end{array}
     \begin{array}{c}
     \text{AP} \\
     \text{blow} \\
     \text{open}
     \end{array}
     \begin{array}{c}
     \text{<SUBJ>} \\
     \text{<OBJ>}
     \end{array}
     \]

     Causing Event
     Caused Event
C. What is Voice [Focus]?
Voice is a subject-selection trigger, agreeing with different theta-roles of the Subject DP. (Kreoger 1993, Chang 1997)

(1) a. Paiwan (Anna H. Chang 2000: 97-100)
   na-t<em>ekeL ti palang ta vava.    
   PFV-<AF>drink NOM Palang OBL wine  
   [AV/AF]---->|SUBJ: ACTOR]  
   ‘Palang drank wine.’

b. tekeL-en a zua vava ni palnag.    
   drink-PV NOM that wine GEN Palnag    
   [PV/PF]---->|SUBJ: THEME]  
   ‘Palang drank the wine.’

c. k<in>eLem-an ni palang tjay kalalu a icu a goku.    
   <PFV>hit-LF GEN Palang OBL Kalalu NOM this LNK school 
   [LV/LF]---->|SUBJ: LOCATION]  
   ‘Palang hit Kalalu at this school,’

d. si-tjamaku nimadju a ku-ungecu.
   if-smoke 3SG GEN NOM 1SG.GEN-pipe    
   [IV/IF]---->|SUBJ: INSTRUMENT]  
   ‘He smoke with my pipe.’

• Goals:
  a. We will show that there exist three types of morphological causation in Paiwan, i.e. p-i-N ‘cause to be at’, p(-)u-N ‘cause to have’, and pa-N ‘cause to apply’. The former is distinguished from the latter two with respect to their AS and lexical semantics.
  b. We try to argue that the locative *p(-)u- ‘cause to move’ and *p(-)u- ‘cause to have’ can be reconstructed in PAn, which revises Blust’s (2003a) PAn morphological forms.

2. Argument Structure and Causation
2.1 Three types of morphological causation in Paiwan
2.1.1 Type I: p-i- ‘cause to be at’
• Both the location verb i(-) ‘be at’ and the caused location verb p-i- ‘cause to be at’ in Paiwan incorporate¹ a Location argument cukui ‘table’ in (2).

¹ See Change and Wu 2005 for details of incorporation analysis.
(2) a. Ø-i-cukui a ku-hung.
   AV-be-at-table NOM 1SG.GEN-book
   ‘My book is on the table.’

   b. ku-p/<in>-i-cukui a hung.
   1SG.GEN-CAUS<-PFV.PV>-be-at-table NOM book
   ‘I put the book on the table.’

2.1.2 Type II: *pu- ‘cause to have’

* In contrast to the causative location verb *p-i- ‘cause to be at’, the affixal causative
  locatum verb *pu- ‘cause to have’ takes a Theme argument as it complement and attaches
  onto it, as shown in (3).

(3) a. pu-makalialaw=aken tua 'ereng-an.
   CAUS.have-fabric=1SG.NOM OBL lie-LOC
   ‘I spread a fabric on the bed.’

   b. ku-p/<in>-u-makalialaw a su-'ereng-an.
   1SG.GEN-CAUS.have<PFV.PV>-fabric NOM 2SG.GEN-lie-LOC
   ‘I spread a fabric on you bed.’

   c. ku-si-pu-makalialaw tua ku-'ezung a su-makalialaw.
   1SG.GEN-IV-CAUS.have-fabric OBL 1SG.GEN-window NOM 2SG.GEN-fabric
   ‘I take your fabric to spread onto my window.’

* The causative locatum verb *pu- differs from the caused location verb *p-i- in that (i) the
  former cannot incorporate any case marker while the latter can, as shown in (4), and (ii)
  the Theme argument occurs within the deverbal nominals in the former type while the
  Theme argument must occur outside the deverbal nominals in the latter type, as
  illustrated in (5).

(4) a. na-p-i-tua-gaku=aken tua su-zidrusia.
   PFV-CAUS-be-at-OBL-school=1SG.NOM OBL 2SG.GEN-car
   ‘I parked your car in the school.’

   b. na-p-u(-*tua*)-makalialaw=aken tua 'ilatj-an.
   PFV-CAUS-have-OBL-fabric=1SG.NOM OBL lie-LOC
   ‘I spread a fabric on the chair.’

(5) a. na-Ø-pacun=anga=sun tua ku-pu-atial-(a)n?
   PFV-AV-see=COS=2SG.NOM OBL 1SG.GEN-CAUSE.have-salt-NMLZ
‘Did you see my slat shaker/container?’

b. na-∅-pacun=anga=sun tua ku-pa-p-i-zua-(an) tua
    PFV-AV-see=COS=2SG.NOM OBL 1SG.GEN-RED-CAUS-be.at-there-NMLZ OBL
    atia?
salt
‘Did you see my slat shaker/container?’

2.1.3 Type III: pa- ‘apply to’

- Another instance of the causative locative verbs involves with pa- verbs in Paiwan. This type comprises of a general causative head pa- and a Theme argument, as shown in (6).

(6) a. pa-∅-kava=(a)ken tjay camak tua su-kava.
    CAUS-have-cloth=1SG.NOM OBL Camak OBL 2SG.GEN-cloth
    ‘I dressed Camak with your garment.’
b. ku-pa-∅-kava-in ti camak tua su-kava.
    1SG.GEN-CAUS-have-cloth-PV NOM Camak OBL 2SG.GEN-cloth
    ‘I dressed Camak with your garment.’
c. ku-si-pa-∅-kava a su-kava tjay camak.
    1SG.GEN-IV-CAUS-have-cloth NOM 2SG.GEN-cloth OBL Camak
    ‘I dressed Camak with your garment.’

- It is worth noting that the morphological causatives pu- and pa- patterns together with respect to their PV and IV/BV construction. Namely, the Goal argument acts as the grammatical subject in PV constructions (cf. 3b and 10b) while the Theme argument serves as the grammatical subject in IV/BV constructions (cf. 3c and 10c).

2.2 Morphological structure and L(exical)-syntax

- A lexical projectionist approach cannot properly explain why only a Location DP argument rather than a theme DP argument can be incorporated into (caused) location verbs. In contrast, a L(exical)-syntax analysis can explain such a constraint: head movement must obey ECP (cf. Baker 1998). The syntactic derivation of (2b), (3b), and (6b) is shown in (7a-c).
Why syntax? We consider such a derivation as syntactic operation because this derivation obeys the Head Movement Constraint, as shown in (8-9). When the Why L-syntax? This derivation may take place in the lexicon in that it exhibits some characteristic of lexical rules: phonological idiosyncracy, as shown in (10).

(8) a. Head Movement Constraint

Head movement of X to Y cannot skip an intervening head Z.

b. *John shelved, his books on $t_i$. 

(9) a. *p-u,-makalilaw-aken i $t_i t_j$ tua 'ereng-an. 

CAUS-have-fabric=1SG.NOM be.at OBL lie-LOC

'I spread a fabric on the bed.'

b. ku-p-<in>-i-tjaladj (i) tua kadrung a inepic. 

1SG.GEN-CAUS-<PFV>-be.at-inside be.at OBL keg NOM pencil

'I put the pencil into the keg.'

(10) a. [pa- + i-] $\rightarrow$ [p-i- ]

b. [pa- + u-] $\rightarrow$ [pu- ]

2.3 * A Brief comparison with Other Formosan Languages

2.3.1 Puyuma

- Teng (2007) argues that there are two types of verbal affix pu- in Puyuma: One type is attached onto a locative nominal while the other is attached onto a common nominal. As shown in (11a), the causative verb p-u- ‘put into’ attracts a Location argument Takuban ‘youth house’ while in (11b) the verb attracts a Theme argument bini ‘seed’.

(11) Teng (2007)

a. p-u-Takuban Da lalak na ma’iDangan. 

CAUS-MOT-youth.house ID.OBL child DEF.NOM elder

'The elders sent the children into Takuban.'

b. pu-a-bini’ i uma’ na babayan.
put-PROG-seed LOC farm DF:NOM woman

'The woman was sowing the seeds in the farm.'

- Here we propose that (i) the caused location verb *pu-* in (11a) consists of a CAUSE head with a MOTION head and (ii) the caused locatum verb *pu-* in (11a) is decomposed into a CAUSE head with a HAVE head. Based on L-syntax model, the examples in (11) have the following syntactic representations (12a) and (12b):

(12) a. 

```
   Voice
   3 NP_ACT 3 V_CAUSE
   Voce^0 vP ma'idangan
   3 'elder'
   3 NP_ACT 3 VP
   u- pu'takaban
   'go to' 'youth house'
   3 NP_LOC
   V_MOTION
   3 NP_THE
   lalak
   'child'

```

b. 

```
   Voice
   3 NP_ACT 3 V_CAUSE
   Voice^0 vP babayan
   3 'woman'
   3 NP_ACT 3 VP
   u- binir
   'have' 'seed'
   3 NP_LOC
   V_HAVE
   3 NP_THE
   i uma'
   'house'
```

- Finally, Puyuma also has another type of caused locatum *pa-* verbs, as shown in (17). Like Paiwan *pa-* verbs, the caused locatum verbs *pa-* 'cause to acquire' attracts a Theme argument *susu* 'breast'. The syntactic derivation of (13b) is illustrated in (13b).

(13) Huang (2000: 58)

a. Ø-pa-Ø-susu=ku Da walak.
   AV-CAUS-have-breast=1S:NOM OBL child
   'I breast-fed a child.'

b. [IP [0 pa-susu [VOICE [VOICE [VP [V_CAUSE [VP [V_HAVE [VP [NP [susu]]] walak]]]]] ==aken]] ==aken] ==aken]

2.3.2 Amis

- Wu (2006: 313) points out that when the causative *pa-* is added onto a root which refers to an object, the compositional interpretation can paraphrase as CAUSE TO HAVE; cf. (14).
(14) Coastal Amis (Wu 2006: 313)
   a. Ma-na’ay kaku pa-nanum t-u sayta.
      NEUT-reluctant IS.NOM CAU-water DAT-CN soda
      ‘I don’t want to add water to the soda.’
      *‘I don’t want to add soda (to something).’
   b. Pa-dateng kaku t-u lafang.
      CAU-vegetable IS.NOM DAT-CN guest
      ‘I serve the guests dishes.’

(19) a. [... [VP [VCAUS 0 pa- [VP [VHAVE 0 Θ [NP namum] sayta] kaku]]]
   b. [... [VP [VCAUS 0 pa- [VP [VHAVE 0 Θ [NP dateng] lafang] kaku]]]

2.4 Two Types of Morphological causation *pu- in PAn

- Blust (2003a: 451-452) argues that the causative prefix *pu- ‘cause to move to’ can also be reconstructed in PAn and that it is bound up with the PAN motion prefix *mu-. First, Blust argues that reflexes of *mu- and *pu- are paired together in Puyuma and Thao: The former expresses self-propelled movement while the latter denotes caused movement. Second, Blust argues that although the reflex of *mu- has apparently been lost in Paiwan, the reflex of *pu- is still kept, as illustrated in Table 1.

Table 1: Reflexes of PAn *mu- and *pu- in Paiwan, Puyuma and Thao (Blust 2003a: 452-3)

<table>
<thead>
<tr>
<th>LANGUAGE</th>
<th>REFLEX</th>
<th>EXAMPLE</th>
<th>REFLEX</th>
<th>EXAMPLE</th>
</tr>
</thead>
</table>
| Paiwan   | ---    | ---     | pu-    | a. pu-alak ‘give birth to’ (< alak ‘child’)  
|          |        |         |        | b. pu-zalum-an ‘water container’ (< zalum ‘water’)  
|          |        |         |        | c. pu-ca’i ‘defecate’ (< ca’i ‘excrement’)  |
| Puyuma   | mu-    | a. mu-dare ‘descend; land’ (< dare ‘earth’)  
|          |        | b. mu-enai ‘enter the water’ (< enai ‘water’)  
|          |        | c. mu-tra’i ‘defecate’ (< tra’i ‘water’)  | pu-    | a. pu-dare ‘put on the ground’ (< dare ‘earth’)  
|          |        |         |        | b. pu-enai ‘sprinkle water on’ (< enai ‘water’)  
|          |        |         |        | c. pu-tra’i ‘spread’ |
We argue that the PAn *pu- ‘cause to have’, like the PAn *pu- ‘cause to move to’, can be reconstructed because the former is well attested in number of Formosan languages, including Paiwan, Puyuma, Thao, Kavalan, Siraya, Bunun, and Saaroa, as shown in Table 2. Accordingly, we revise Blust’s (2003a) PAn morphological forms.

<table>
<thead>
<tr>
<th>LANGUAGE</th>
<th>PREFIX</th>
<th>EXAMPLE</th>
<th>ROOT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paiwan</td>
<td>pu-</td>
<td>a. pu-zaljum-an ‘water contain’</td>
<td>a. zaljum ‘water’</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. pu-atica ‘add salt into’</td>
<td>b. atia ‘salt’</td>
</tr>
<tr>
<td></td>
<td></td>
<td>c. pu-makalilaw ‘spread fabric on’</td>
<td>c. makalilaw ‘fabric’</td>
</tr>
<tr>
<td>Puyuma</td>
<td>pu-</td>
<td>a. pu-walrak ‘make someone pregnant out of wedlock’</td>
<td>a. walrak ‘child’</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. pu-ruma ‘get married; have a family’</td>
<td>b. ruma ‘house’</td>
</tr>
<tr>
<td></td>
<td></td>
<td>c. pu-kawi-an ‘wood deposit’</td>
<td>c. kawi ‘wood’</td>
</tr>
<tr>
<td>Thao</td>
<td>pu-</td>
<td>a. pu-sazum-an ‘to be watered, be irrigated’</td>
<td>a. sazum ‘fresh water’</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. pu-azazak ‘make someone pregnant’</td>
<td>b. azazak ‘child’</td>
</tr>
</tbody>
</table>

2 The data sources are as follows: the Bunun data come from Zeng (2006); the Kavalan data are drawn from Li and Tsuchida (2006); the Paiwan data is drawn from our field notes and Blust (2003b); Puyuma data are drawn from Cauquelin (1991), Huang (2000), and Blust (2003b); Pazih data are drawn from Li and Tsuchida (2001); Thao data come from Blust (2003a, b); Siraya data come from Adelaar (2004); finally, the Saaroa data are drawn from our field notes.
<table>
<thead>
<tr>
<th>Language</th>
<th>Word</th>
<th>Meaning</th>
</tr>
</thead>
</table>
| Kavalan  | pu-  | a. pu-lamsu ‘pay tax’  
b. pu-‘iu ‘apply medicine’ |
|          |      | a. lamsu ‘tax’  
b. iu ‘medicine’ |
| Siraya   | pu-  | pu-alak ‘produce a child, beget’  
pu-pänäx ‘put forth, bring forth, propose’ |
|          |      | a. alak ‘child’  
b. pänäx ‘the open’ |
| Bunun    | pu-  | a. pu-danum-an ‘a paddy field’  
b. pu-kmasia ‘put sugar (into somewhere)’  
c. pu-sau-an ‘the place where somebody sets the dogs free to hunt’ |
|          |      | a. danum ‘water’  
b. kmasia ‘sugar’  
c. asu ‘dog’ |
| Saaroa   | pu-  | a. pu-‘urai ‘add oil into machine’  
b. pu-a-sahlumu ‘add water into’ |
|          |      | a. urai ‘oil’  
b. sahlumu ‘water’ |

3. Conclusion
- We have shown that there exist three types of morphological causation in Paiwan, i.e. p-i-N ‘cause to be at’, p(-)u-N ‘cause to have’, and pa-N ‘cause to apply’. Each of them can be decomposed into two bound verbs, i.e. V<sub>LOC</sub> and V<sub>HAVE</sub>, each of which is realized as the incorporation verb i-, and the affixal u- and the zero-form <i>Ø</i> in Paiwan.
- We try to argue that the causative locatum verbal prefix *p(-)u- ‘cause to have’ as well as the PAN causative locative verbal prefix *p(-)u- ‘cause to move can both be reconstructed in PAN, which revises Blust’s (2003) PAN morphological forms.

References


D’extrême-orient.


Appendix

1. Verb Classes, Causation and Voice

• Based on Levin’s (1993) verb classification, we take a closer look at the relationship between argument structures of change-of-location/ change-of-possession verbs (i.e. verbs of putting, verbs of change of possession, and verbs of motion in Levin’s framework) and voice systems in Paiwan.

1.1 Change of location

1.1.1 Putting verbs

• There is a mismatch between the theta role of a Subject DP and voices in Putting Verb Constructions, as shown in (1-2).

(1) Type 1

a. pa-djeké-djékec=aken tua ata ?(p-i) tua tjara.
   CAUS-RED-rice=1S.NOM OBL lazurite.bead CAUS-be.at OBL ring
   [AV] [Subj: ACTOR] [THEME] [LOCATION]
   ‘I lodge a lazurite bead in a ring.’

b. ku-pa-djékec-en a tjara tua ata.
   1S.GEN-CAUS-rice-PV NOM ring OBL lazurite.bead
   ‘I lodge a lazurite bead in the ring.’
   [PV] [Subj: LOCATION] [THEME]

c. ku-si-pa-djékec a ata tua tjara.
   1S.GEN-IV-CAUS-rice NOM lazurite.bead OBL ring
   ‘I lodge the lazurite bead in a ring.’
   [IF] [Subj: THEME] [LOCATION]

d. ku-pa-djèkec-an a ata p-i tua tjara, dri?
   1S.GEN CAUS-rice-BV.PROJ NOM lazurite.bead CAUS-at OBL ring OK
   ‘Let me lodge the lazurite bead in a ring, OK?’
   [IF.PROJ] [Subj: THEME] [LOCATION]

d’. pa-djèkec-an, (*ni)camak, a ata p-i-tjara
   CAUS-rice-BV.PROJ GEN Camak NOM lazurite.bead CAUS-be.at-ring
   ‘Camak, lodge the lazurite bead in a ring, please!’

e. ku-pa-djeké-aw/*-ay a tjara tua ata, dri?
   1S.GEN CAUS-rice-PV.PROJ/LV.PROJ NOM ring OBL lazurite.bead OK
   ‘Let me lodge a lazurite bead in the ring, OK?’
   [PV] [Subj: LOCATION] [THEME]
(2) Type 2

a. l<em>ui=aken tua zaljum p-i-kadrun<e>g/ (*tua kadrung). fill<AV>=1S.NOM OBL water CAUS-be.at-keg/ OBL keg
   ‘I filled water into a keg.’
   [AV] [Subj: ACTOR] [THEME] [LOCATION]

b. ku-l<in>ui a zaljum p-i-kadrun<e>g/ (??tua kadrung).
   1S.fill <PFV>PV> NOM water CAUS-be.at-keg/ OBL keg
   ‘I filled the water into a keg.’
   [PV] [Subj: THEME] [LOCATION]

c. ku-lui-an tua zaljum a kadrung.
   1S.fill-BV.PROJ OBJ water NOM keg
   ‘Let me fill the keg with water!’
   [IF.PROJ] [THEME] [Subj: LOCATION]

d. ku-si-lui tua zaljum a kadrung.
   1S.fill-IV OBJ water NOM keg
   ‘I filled the keg with water.’
   [IF] [THEME] [Subj: LOCATION]

e. ku-s<in>i-lui tua zaljum p-i-kadrun<e>g a gungu.
   1S.fill-IV<PFV> OBJ water CAUS-be.at-keg NOM rubber.tube
   ‘I fill water into a keg via the rubber tube.’
   [IF] [THEME] [LOCATION] [Subj: INSTRUMENT]

<table>
<thead>
<tr>
<th>Type</th>
<th>Meaning</th>
<th>AV</th>
<th>PV</th>
<th>LV</th>
<th>BV</th>
</tr>
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<tbody>
<tr>
<td>Type 1</td>
<td>fill in</td>
<td>l&lt;em&gt;ui (Actor)</td>
<td>l&lt;in&gt;ui (Theme)</td>
<td>---</td>
<td>si-lui (Goal/Instrument)</td>
</tr>
<tr>
<td></td>
<td>put</td>
<td>pi-tjaladj (Actor)</td>
<td>p&lt;in&gt;i-tjaladj (Theme)</td>
<td>---</td>
<td>si-pi-tjaladj (Instrument)</td>
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<tr>
<td>Type 2</td>
<td>lodge</td>
<td>pa-djekeck (Actor)</td>
<td>pa-tjekeck-en (Location)</td>
<td>---</td>
<td>si-pa-tjekeck (Theme)</td>
</tr>
<tr>
<td></td>
<td>put</td>
<td>pu-atia (Actor)</td>
<td>p&lt;in&gt;u-atia (Location)</td>
<td>---</td>
<td>si-pu-atia (Theme)</td>
</tr>
<tr>
<td></td>
<td>dress</td>
<td>pa-kava (Actor)</td>
<td>pa-kava-in (Location)</td>
<td>---</td>
<td>si-pa-kava (Theme)</td>
</tr>
</tbody>
</table>

Table 1: Voices and subject selection in Paiwan

- A brief comparison with Tsou:
Table 2: Voices and subject selection in Tsou

<table>
<thead>
<tr>
<th>Language</th>
<th>Meaning</th>
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<th>BV</th>
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<tr>
<td>Tsou</td>
<td>put</td>
<td>mosi</td>
<td>sia</td>
<td>sii</td>
<td>sii-neni</td>
</tr>
<tr>
<td></td>
<td>(Actor)</td>
<td>(Theme)</td>
<td>(Goal)</td>
<td>(Beneficiary)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>fill in</td>
<td>tmoeapho</td>
<td>teapha</td>
<td>teaphi</td>
<td>teaphi-neni</td>
</tr>
<tr>
<td></td>
<td>(Actor)</td>
<td>(Theme)</td>
<td>(Goal)</td>
<td>(Beneficiary)</td>
<td></td>
</tr>
</tbody>
</table>

1.1.2 Motion verbs

- There is a *perfect correspondence* between the theta role of a Subject DP and voices in Putting Verb Constructions, as shown in (3).

(3) Type 1

a. m-eke-kelj=aken.
   AV-RED-run=1S.NOM
   ‘I am running.’
   \[AV \rightarrow [Subj: ACTOR]\]

b. ku-in-ekelj=anga a icu a a-ekelj-en.
   1S.GEN-PFV.PV-run=COS NOM this LNK RED-run-NMLZ
   ‘I have run a race.’
   \[PV \rightarrow [Subj: THEME]\]

c. ku-ekekelj=esun.
   1S.GEN-run-BV.PROJ=2S.NOM
   ‘Let me run for you.’
   \[BV.PROJ \rightarrow [Subj: BENEFICIARY]\]

d. ku-si-ekelj a kucu a tjuligagicil
   1S.GEN-IV-run NOM shoe LNK high.heel
   ‘I run with high-heel shoes’
   \[IF \rightarrow [Subj: INSTRUMENT]\]

- However, there is also a *mismatch* between the theta role of a Subject DP and voices in Putting Verb Constructions, as shown in (4-5).
(4) Type 2
  a.  $<em\text{-}a\text{-}\text{paridrayan}=aken.$
      go.to<$AV\text{-}Paridrayan=1S\text{-}\text{NOM}$
      ‘I go to Paridrayn.’
      [AV] ←−−−−→ [Subj: ACTOR]
  b.  ku-s<$in\text{-}a\text{-}\text{paridrayan-an \ ka \ tjelu \ a \ cavil.}$
      1S\text{-GEN\text{-}go.to<$PFV\text{-}Paridrayan\text{-AN when three LNK \ year.}$
      ‘Three years ago, I had been to Paridrayan.’
      [?PFV/\text{-}LF] ←−−−−−→ [Subj: Ø]
  b'.  *ku-sa-paridrayan-en-$\text{-in.}$
      1S\text{-GEN\text{-}go.to-$\text{Paridrayan-PV\text{-PV}$
      *ku-s<$in\text{-}a\text{-}\text{paridrayan}$
      1S\text{-GEN\text{-}go.to<$PFV.PV\text{-}Paridrayan}$
  c.  ku-si-sa-paridrayan a utupay.
      1S\text{-GEN\text{-IV\text{-}go.to-$\text{Paridrayan \ NOM\text{-motorcycle}$
      ‘I go to Paridrayan by motorcycle.’
      [IV] ←−−−−−→ [Subj: INSTRUMENT]
  c'.  uru=su-si-sa-inu a su-k<$in\text{-}cau a ka-kan-en?$
      IRR=2S\text{-GEN\text{-IV\text{-}go.to-$\text{where NOM 2S\text{-GEN\text{-take<$PFV.PV$> LNK RED\text{-eat-NMLZ}$
      ‘Where will you take your food toward?’
      [IV] ←−−−−−−→ [Subj: THEME]

(5) Type 3
  a.  tj<em\text{-}alun=anga ti camak i-tjukuvul.$
      arrive<$AV=\text{COS NOM Camak be.at-Tjukuvul}$
      ‘Camak has arrived in Tjukuvul.’
      [AV] ←−−−−→ [Subj: ACTOR] [LOCATION]
  b.  tjalun-en ni camak a i-tjukuvul.$
      arrive-PV GEN Camak NOM be.at-Tjukuvul
      ‘Camak arrived in Tjukuvul at the earliest.’
      [PV] ←−−−−−−→ [Subj: LOCATION]
  c.  ku-tjalun-an a inalan i-tjawadran.
      1S\text{-GEN\text{-}arrive-LV NOM village be.at-Tjawadran
      ‘I had been to Tjawadran Village.’
      [LV] ←−−−−→ [Subj: LOCATION]
  c'.  a i\text{-}cu a ka-kan-en, tjalun-an tjay tja-ina!
      NOM this LNK RED\text{-eat-NMLZ arrive-BV.PROJ OBL 1P.INCL.GEN\text{-mother}
      ‘This food, hand over it to our Mom!’
      [BV.PROJ] ←−−−−−−→ [Subj: THEME] [LOCATION]
d. su-s<in>i-tjalun a ka-kan-en tjay tja-ina?
   2s.GEN-IV<PFV>-arrive NOM RED-eat-NMLZ OBL 1P.INCL.GEN-mother
   ‘Did you hand the food over to our Mom?’
   [IV] ←-..........→ [Subj: THEME] [LOCATION]

d’. si-tjalun ni-a-madju a ku-zidrusia tjalu-uma’.
   IV-arrive GEN-PL-3S NOM 1S.GEN-car arrive-home
   ‘They arrived home by my car.’
   [IV] ←- -------- → [Subj: INSTRUMENT]

- **Observation:**
  
  (a) In the Manner Verb Constructions and Directed Motion Constructions, there is a perfect correspondence between four voices and the theta-roles of the Subject DP.
  
  (b) In the Path Verb Constructions, there exists a *mismatch* between the theta role of a Subject DP and voices.

<table>
<thead>
<tr>
<th>Type</th>
<th>Meaning</th>
<th>AV</th>
<th>PV</th>
<th>LV</th>
<th>BV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 1</td>
<td>run</td>
<td>m-ekelj (Actor)</td>
<td>in-ekelj (Theme)</td>
<td>---</td>
<td>si-ekelj (Instrument /Beneficiary)</td>
</tr>
<tr>
<td></td>
<td>fly</td>
<td>l&lt;em&gt;angui (Actor)</td>
<td>langui-(i)n (Theme)</td>
<td>---</td>
<td>si-langui (Instrument /Beneficiary)</td>
</tr>
<tr>
<td></td>
<td>climb up</td>
<td>r&lt;em&gt;aiz (Actor)</td>
<td>r&lt;in&gt;aiz (Theme)</td>
<td>---</td>
<td>si-raiz (Instrument)</td>
</tr>
<tr>
<td></td>
<td>climb up</td>
<td>lje-vavaw (Actor)</td>
<td>lje-vavaw-en (Theme)</td>
<td>---</td>
<td>si-lje-vava-vavaw (Instrument)</td>
</tr>
<tr>
<td>Type 2</td>
<td>go to</td>
<td>s&lt;em&gt;a-timur (Actor)</td>
<td>---</td>
<td>---</td>
<td>si-sa-timur (Theme/Instrument)</td>
</tr>
<tr>
<td>Type 3</td>
<td>arrive at</td>
<td>tj&lt;em&gt;alun (Actor)</td>
<td>tj&lt;in&gt;alun (Goal)</td>
<td>tjalun-an (Goal)</td>
<td>si-tjaun (Instrument)</td>
</tr>
</tbody>
</table>

- **A comparison with Tsou:**

<table>
<thead>
<tr>
<th>Language</th>
<th>Meaning</th>
<th>AV</th>
<th>PV</th>
<th>LF</th>
<th>BV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tsou</td>
<td>run</td>
<td>peayofU (Actor/Theme)</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>fly</td>
<td>toesoso (Actor/Theme)</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>climb</td>
<td>(co)capo (Actor/Theme)</td>
<td>---</td>
<td>cap-i (Goal)</td>
<td>---</td>
</tr>
</tbody>
</table>

Table 5: Voice systems in Tsou
<table>
<thead>
<tr>
<th>arrive at</th>
<th>sUc’UhU (Actor/Theme)</th>
<th>---</th>
<th>sUc’Uh-i (Goal)</th>
<th>---</th>
</tr>
</thead>
<tbody>
<tr>
<td>go</td>
<td>uso (Actor/Theme)</td>
<td>us-a (Goal/Cause)</td>
<td>---</td>
<td>us-neni (Beneficiary/Cause)</td>
</tr>
</tbody>
</table>

1.2 *Change of possession*

1.2.1 Dative verbs

1.2.1.1 goal vs. theme

- The configurational asymmetries in Double Object Constructions:
  
  (6) Reflexives
  
  a. I showed Mary herself.
  
  b. *I showed herself Mary.

  (7) Variable binding
  
  a. I gave every worker, his, paycheck.
  
  b. *I gave its, owner every paycheck.

  (8) NPIs
  
  a. I showed no one anything.
  
  b. *I showed anyone nothing.

- VP-shell structure: alternative analysis (Harley 2002)

  (28) a. Dative
  
  \[ \text{vP} \]
  
  \[ \text{v'} \]
  
  \[ \text{v} \]
  
  \[ \text{PP} \]
  
  \[ \text{CAUSE DP} \]
  
  \[ \text{P} \]
  
  \[ \text{a letter} \]
  
  \[ \text{P}_{loc} \]
  
  \[ \text{to Mary} \]
  
  \[ \text{P}_{have} \]

  b. Double object
  
  \[ \text{vP} \]
  
  \[ \text{v'} \]
  
  \[ \text{v} \]
  
  \[ \text{PP} \]
  
  \[ \text{CAUSE DP} \]
  
  \[ \text{P} \]
  
  \[ \text{P}_{loc} \]
  
  \[ \text{to Mary} \]
  
  \[ \text{P}_{have} \]

- VP-shell structure in Paiwan: Goal c-commands Theme

  (9) Variable binding

  a. ru=v<en>ai=aken tua ma-citi-citil ninpu tua
  
  IRR=give<AV>=1S,NOM OBL P-RED-one worker OBL
  
  k<in>i-tjan-an ni-a-madju.
  
  get<NMLZ>-money-NMLZ GEN-PL-3
  
  ‘I gave every worker, his, payment.’
b. ru=v<en>ai=aken tua k<in>i-tjan-an ni-a-madju tua
   IRR=I give<AV>=1s.NOM OBL get<NMLZ>-money-NMLZ GEN-PL-3 OBL
   ma-citi-citil ninpu
   P-RED-one worker
   ‘*I gave his payment every worker.’

(10) *VoiceP

(11) Pronominal co-index

a. pa-tavelak=aken tjay camakI tua padung ni-madju$$.j$
   CAUS-pass=1s.NOM OBL CamakOBL stick GEN-3
   ‘I passed Camak, his/her stick.’

b. pa-tavelak=aken tua padung ni-madju$$.j$ tjay camakI
   CAUS-pass=1s.NOM OBL stick GEN-3 OBL Camak
   ‘I passed Camak, his/her stick.’

c. pa-tavelak=aken tua padung ni camakI tjay madju$$.j$$
   CAUS-pass=1s.NOM OBL stick GEN Camak OBL 3s
   ‘I passed him$$.j$$ Camak’s stick.’

(12) *‘VoiceP

dpact

=aken ‘I’ 3

Voice

v

DP

pa-

vCAUSE

3

DP

LOC

V

5

3

V

5

dp

have

DP

THE

kinitijan niamadju

‘his payment’

Padung nimadju

‘his/her stick’
1.2.2 Change of Possession Verbs
1.2.2.1 change of possession verbs

- Like most Putting Verb Constructions, there is also a mismatch between the theta role of a Subject DP and voices in Change of Possession Verb Constructions, as shown in (13). It is worth noting that the change-of-possession verb in (14) is not a really double object/double complement verb because in the AF construction the Receipt DP is marked with a genitive marker.

(13) Type 1

a. na-pa-vai/v<en>ai=anga=aken tjanusun tua paisu.
   PFV-CAUS-give/give<AV>=COS=1S.NOM 2S.OBL OBL money
   'I gave you money.'
   [AV] [Subj: ACTOR] [GOAL] [Theme]

b. ku-v<in>avi=anga=sun tua paisu.
   1S.GEN-give<PFV.PV>=COS=2S.NOM OBL money
   'I gave you money.'
   [PV] [Subj: GOAL] [Theme]

c. ku-vai-an tjanusun a paisu.
   1S.GEN-give-BV.PROJ 2S.OBL NOM money
   'I gave you money.'
   [BV.PROJ] [GOAL] [Subj: Theme]

d. ku-si-vai tjanusun a paisu.
   1S.GEN-IV-give 2S.OBL NOM money
   'I gave you money.'
   [BV] [GOAL] [Subj: Theme]

(14) Type 2

a. pa-cikel=aken tua paisu ni leke'ay.
   CAUS-return=1S.NOM OBL money GEN Leke'ay
   'I refund Leke'ay money.'
   [AV] [Subj: ACTOR] [Theme] [POSSESSOR]

b. ku-pa-cikel-in a paisu ni leke'ay, tjaymadju,.
   1S.GEN-CAUS-return-PV NOM money GEN Leke'ay 3S.OBL
   'I refund Leke'ay money.'
   [PV] [Subj: THEME] [POSSESSOR] [GOAL]

c. ku-pa-cikel-an a paisu nimadju, tjay leke'ay*,.
   1S.GEN-CAUS-return-BV.PROJ NOM money 3S.GEN OBL Leke'ay
   'I will refund Leke'ay, his* money.'
   [BV.PROJ] [Subj: THEME][POSSESSOR] [GOAL]
d. ku-si-pa-cikel tjay leke’ay, a paisu nimadju<sub>i</sub>.  
1S GEN-BV-CAUS-return OBL Leke’ay NOM money 3S GEN  
‘I will refund Leke’ay, his<sub>i</sub> money.’  
[BV] [GOAL] [Subj: THEME] [POSSESSOR]

- Note that there exists a perfect theta-agreement between the Subject DPs and voices.

(15) Type 3  
a. v<en>eli=a<en>en tua tjelu a vasa (a k<em>em>asi)  
buy<AV>=1S NOM OBL three LNK taro LNK come.from<AF>  
tjay muakai.  
OBL Muakai  
‘I bought three taros from Muakai.’  
#‘I bought Muakai three taros.’  
[AV] [Subj: ACTOR] [Theme] [SOURCE]

b. ku-v<en>eli tjay muaki a tjelu a vasa.  
1S GEN- buy<PFV.PV> OBL Muaki NOM three LNK taro  
‘I bought the three taros from Muakai.’  
#‘I bought Muakai the three taros.’  
[PV] [SOURCE] [Subj: THEME]

c. ku-veli-an=esun tua tjelu a vasa (i) tjay muakai.  
1S GEN- buy-BV.PROJ=2S NOM OBL three LNK taro 1 OBL Muakai  
‘Let me buy you three taros from Muakai!’  
[BV.PROJ] [Subj: BENEFICIARY] [THEME] [SOURCE]

d. ku-si-veli=sun tua tjelu a vasa tjay muakai.  
1S GEN- BV-buy=2S NOM OBL three LNK taro OBL Muakai  
‘I bought you three taros from Muakai.’  
[BV] [Subj: BENEFICIARY] [THEME] [SOURCE]

1.2.2.2 possessive verbs  
- There is a connection between the stative possessive verb <em>pu</em>- ‘have; be full of’ and the caused locatum verb <em>p-u</em>- ‘cause to have’ in Paiwan.

(16) a. pu-vasa=men=aravac tua icu a t'uma.  
be.full.of-taro=1p.nom=very obl this LNK field  
‘We get a bumper taro from this field.’  
[Resultant] > [Cause]
b. ru=p-u-vasa=men(*=aravac) tua 'uma.
   irr=caus-have-taro=1p.nom=very obl field
lit. 'We put taros into the field.'
   'The field is used to plant taros.'
   [Causer] > [Goal]

2. Preliminary Analysis

2.1 Previous approaches

- Do the syntax-based theta-agreement approaches tell the whole story? No, as we have seen in the above sections.
- Does the syntax-based case reflection approach get the whole picture? No, because:
  In the case reflection approach, the BV/IV is viewed as a high applicative head. However, it wrongly predicts that the Theme argument will not act as the Subject DP when the verb is inflected for the Oblique case (i.e. si-) in Paiwan. There exists a double dissociation between case reflection and Subject selection.
- How about the syntax-based light verb approach? No, it suffers from the same problem as the case reflection approach.
- How about semantics-based Macro-role approach? No, the puzzle cannot be clarified.

2.2 Structural implications

- Seediq data
  (17) Holmer (1999: 426)
  a. S-tabu -mu dapa sudu nii. [Instrument as Subject]
     IF-feed 1S.GEN cow hay this
     'I shall feed cows with this hay.'
  b. S-qalang -daha lmiqu ka dapa. [Beneficiary as Subject]
     IF-fence 3P.GEN forest NOM cow
     'They fence in (a section of) forest for the cow.'
  c. S-bege -mu Pawan lukus -mu. [Theme as Subject]
     IF-give 1S.GEN Pawan clothes 1S.GEN
     'I give Pawan my clothes.'
  d. S-p-iimah -mu Pawan sino nii. [Theme as Subject]
     IF-CAUS-drink 1S.GEN Pawan winethis
     'I invite Pawan to drink this wine.'
  (18) Holmer (1999: 435)
  a. S-bege -mu Pawan lukus -mu. [Theme as Subject]
     IF-give 1S.GEN Pawan clothes 1S.GEN
     'I give Pawan my clothes.'
b. B-n-iq-an -mu pila -mu laqi nii. [Goal as Subject]  
Pret-give-LF 1s.GEN money 1s.GEN child this  
‘I gave my money to this child’  
c. B-n-iq-an -mu heya patis nii ciga.[Thme as Subject]  
-Pret-give-LF 1s.GEN 3s.Acc.long book this yesterday  
‘I gave him/her this book yesterday.’

• Holmer’s generalization

(19) a. Causative  
   V1P  
   3  
   V1’ Spec  
   3  
   AGT  
   V1⁰ V2P  
   3  
   cause 3  
   p- V2’ Spec  
   3  
   CAUSE  
   V2⁰ O  
   do PAT  

(20) Holmer’s generalization (Holmer 1999: 436)  
For both causatives and ditransitives, PF/LF is used to show that a non-Agent has  
been made clause subject. PF is used for further optional specification, i.e., that  
the patient of V2⁰ has become subject.

• Holmer’s generalization is also observed in Paiwan data, as shown in (21) and  
represented in (22).

(21) a. ku-si-pa-djekec a ata tua tjara.  
1s.Gen-iv-caus-rice NOM lazurite.bead OBL ring  
‘I lodge the lazurite bead in a ring.’  
b. ku-si-lui tua zaljam a kadrung.  
1s.Gen-iv-fill OBL water NOM keg  
‘I filled the keg with water.’
There is an analogy between the causative and ditransitive constructions in Formosan languages and the causative FI/FP constructions (33-35) in French.

(23) *Faire-infinatif (FI)* and *faire-par (FP)* constructions in French

a. Gianni fare riparare la macchina a Mario. *(FI)*
   Gianni make repair the car to Mario
   ‘Gianni made Mario to repair the car.’

b. Gianni fare riparare la macchina da Mario. *(FP)*
   Gianni make repair the car by Mario
   ‘Gianni made Mario to repair the car.’

(34) a. *Guasti 1996: Derivation of FI*

\[
\begin{align*}
\text{fare}_1 &\qquad \text{<<causer, event>> benefactive} & \quad \text{① Causer assigned} \\
\text{reparare} &\qquad \text{<agent, theme>} & \quad \text{② Event assigned} \\
\text{VP}_1 &\qquad \text{③ Benefactive assigned} \\
\text{QP} &\quad \text{④ Agent assigned} \\
\text{V}'_1 &\quad \text{⑤ Theme assigned}
\end{align*}
\]
b. *Guasti 1996: Derivation of *FP*

\[
\text{fare}_2 \quad \langle \text{causer, event} \rangle \\
\text{riparare} \quad \langle \text{theme} \rangle \\
\quad \langle \text{Causer assigned} \rangle \\
\quad \langle \text{Event assigned} \rangle \\
\quad \langle \text{Theme assigned} \rangle \\
\]

(25) Folli and Harley (2007: 207-208)

a. *FI*

\[
\begin{array}{c}
\text{Gianni} \\
3
\end{array} \\
\begin{array}{c}
\text{vP} \\
3
\end{array} \\
\begin{array}{c}
\text{Gianni} \\
3
\end{array} \\
\begin{array}{c}
\text{v} \\
3
\end{array} \\
\begin{array}{c}
\text{v} \\
3
\end{array} \\
\begin{array}{c}
\text{v} \\
3
\end{array} \\
\begin{array}{c}
\text{v} \\
3
\end{array} \\
\begin{array}{c}
\text{DP} \\
3
\end{array} \\
\begin{array}{c}
\text{a Mario} \\
3
\end{array} \\
\begin{array}{c}
\text{DP} \\
3
\end{array} \\
\begin{array}{c}
\text{riparare} \\
3
\end{array} \\
\begin{array}{c}
\text{la macchina} \\
3
\end{array} \\
\begin{array}{c}
\text{DP} \\
3
\end{array} \\
\begin{array}{c}
\text{riparare} \\
3
\end{array} \\
\begin{array}{c}
\text{la macchina} \\
3
\end{array} \\
\end{array}
\]

- In the spirit of Guasti (1996), we view the I/BV head licenses an upper causative head, triggers the second (low) argument to be demoted as an adjunct. Thus, the higher Causer argument and the lowest Theme argument are the only two true arguments in the tree-participant verb constructions in Paiwan. Under the generalized Θ-agreement approach, an IV head attracts the only Non-Actor argument to check his un-interpretable [NAV] feature. This is why the “subject-choice-mismatch” puzzle arises.

---

3 The argument structure is derived from *riparare* <agent, theme> by lexical operation.