

## On Nominalizations in Paiwan<sup>\*</sup>

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Paiwan exhibits two kinds of nominalization yielding result nouns: the first takes place at the morphological level, the second at the syntactic. Both types of nominal should be distinguished from headless relatives or internally-headed relatives in Paiwan. That the nominalization of result nouns takes place at the syntactic level in languages like Paiwan may be due to the fact that focus/voice markers are required in this kind of nominalization. If so, this would appear to be problematic for Chomsky's (1995) claim that verbal affixation does not occur at the S-Structure.

Key words: nominalization, result nouns, gerunds, relativization, Paiwan, Formosan languages

### 1. Introduction

In the literature on nominalization, nominals have generally been divided into derived nominals and gerunds. Derived nominals in turn have been further classified as result nominals and process nominals. According to Grimshaw (1990), for instance, result nominals express the output of a process or an element associated with the process. Process nominals, on the other hand, express a process or an event. As illustrated in (1a) and (1b) respectively, Grimshaw points out that these two nominal

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Abbreviations used in the Paiwan examples are as follows: Acc: Accusative, AF: Agent Focus, Caus: Causative, Gen: Genitive, LF: Location Focus, Nom: Nominative, Perf: Perfectivity, PF: Patient Focus, Red: Reduplication.

types differ not only semantically, but syntactically as well:

- (1) a. The examination/exam was long/on the table.  
b. The examination/\*exam of the patients took a long time/\*was on the table.

As for gerunds, Abney (1987), for example, states that three different types have been observed in accordance with the forms of the agent and object noun phrases:

- (2) a. John singing the Marseillaise bothers me.  
b. John's singing the Marseillaise bothers me.  
c. John's singing of the Marseillaise bothers me.

Two important issues in the study of nominalization are concerned with the argument structure and word formation of nominals in view of the syntactic differences and similarities between verbs and nominals. With respect to argument structure, Grimshaw (1990), among others, argues that argument inheritance is restricted to process or complex-event nouns, the internal arguments of which need to be obligatorily realized. Bierwisch (1989), on the other hand, claims that all arguments of the base verb are inherited by the nominal, unless explicitly bound, and that internal arguments of the nominal are optional. As opposed to both Grimshaw and Bierwisch, Stiebels (1999) demonstrates that what all types of nominal have in common is that any internal argument of the base verb has to be saturated unless it becomes the referential argument of the nominal.

With respect to word formation, distinct analyses have been posited for process nominals. Chomsky (1970), Grimshaw (1990), and Sinoli (1997), for example, argue for a lexicalist approach, whereas Borer (1993), Fu (1994), Hazout (1995), and Engelhardt (2000) are in favor of a syntactic approach. Result nominals, by comparison, have generally been treated as nouns in the lexicon. As for gerunds, Chomsky (1970) and Abney (1987), among others, propose that they are syntactically derived. Sinoli (1997), by contrast, argues for a syntactic approach to verbal gerunds and a lexicalist approach to nominal gerunds.

In this paper we will examine various kinds of nominalization in Paiwan as against some of the aforementioned, and other related claims. It will be suggested that for languages like Paiwan two kinds of nominalization of result nouns are observed: one takes place at the morphological level, and the other at the syntactic level. Either type of nominal should be distinguished from the so-called headless relatives and internally headed relatives in Paiwan. There seem also to exist so-called verbal gerunds in Paiwan, which may be better analyzed as being syntactically derived. The observed distinction

between languages like Paiwan and those like English in the possibility of a syntactic nominalization of result nominals may be due to the fact that for Paiwan focus/voice markers are required to co-occur with predicate stems to form certain types of nominalization. If our analysis is on the right track, this seems to suggest that, as opposed to Chomsky (1995), attachment of affixes to predicates may still take place at the S-Structure.

## 2. Result nominals

### 2.1 ‘The degree of X-ness’

#### 2.1.1 The affixation of *-an*

Cross-linguistically, various kinds of nominalization have been observed. For instance, compare the ways of expressing ‘the time of X’ in English, Chinese, and Nahuatl (this last from Stiebels 1999) in (3-5) respectively:

- (3) a. the time of my rest  
b. my resttime
- (4) a. wo-de xiuxi-de shijian  
I-DE rest-DE time  
‘the time of my rest’  
b. wo-de xiuxishijian  
I-DE rest-time  
‘my resttime’
- (5) no-se:wi-ya:n  
1SG.P-rest-NOML  
‘the time of my rest’

As another example, to express ‘the degree of X-ness’ English (6), Chinese (7) and Paiwan (8b) given below all exhibit the operation of nominalization.

- (6) salty-ness
- (7) xian-du  
salty-degree  
‘saltiness’
- (8) a. 'apedang a/\*nua siaw.  
AF-salty Nom/Gen soup  
‘The soup is salty.’

- b. pacengceng a [ʔapedang-an \*a/nua siaw].  
 AF-appropriate Nom salty-AN Nom/Gen soup  
 ‘The saltiness of the soup is right.’

Note that in (8a) ‘*apedang* ‘salty’ functions as predicate and the subject noun phrase *siaw* ‘soup’ is marked with the nominative case *a*. In (8b), however, ‘*apedang* is suffixed by *-an* and, together with the genitive noun phrase *nua siaw*, it acts as the subject of the predicate *pacengceng* ‘appropriate’. Thus, it follows that replacement of *a* by *nua* in (8a) and that of *nua* by *a* in (8b) will result in ill-formedness.

Other cases of nominalization of this sort are illustrated in (9)-(11).

- (9) a. 'aLem'em a vasa.  
 AF-sweet Nom taro  
 ‘The taro is sweet.’  
 b. pacengceng a ['aLem'em-an nua vasa].  
 AF-appropriate Nom sweet-AN Gen taro  
 ‘The sweetness of the taro is right.’
- (10) a. vuceLel a siaw.  
 AF-cold Nom soup  
 ‘The soup is cold.’  
 b. pacengceng a [vuceLel-an nua siaw].  
 AF-appropriate Nom cold-AN Gen soup  
 ‘The coldness of the soup is right.’
- (11) a. ma-culu a siaw.  
 AF-hot Nom soup  
 ‘The soup is hot.’  
 b. pacengceng a [(ma-)culu-an nua siaw].  
 AF-appropriate Nom AF-hot-AN Gen soup  
 ‘The heat of the soup is right.’

At a first glance, sentences like (11b) seem to differ from those like (8b)-(10b) in that while (8b)-(10b) do not require any other change of the base predicate, except for the affixation of *-an*, (11b) needs a further deletion of the prefix *ma-*. A closer examination, however, indicates that in all instances of (8b)-(11b) *-an* is suffixed to the predicate stem. That is, in Paiwan AF markers are of different forms: in (8a)-(10a) the AF marker is in the form of a zero-morpheme; in (11a) it is *ma-*.

### 2.1.1.1 Nominalizer *-an* vs. LF-marker *-an*

Another thing that needs to be pointed out here concerns the morphology, syntax, and semantics of the aforementioned *-an* suffix. So far it has been shown that *-an* may function as a nominalizer, and means ‘degree’. In Paiwan *-an* may also be used as LF marker, as (12) exemplifies:

- (12) t-in-aLem-an    ni    kai    tua    vasa    a    gadu.  
       plant-Perf-LF    Gen    Kai    Acc    taro    Nom    mountain  
       ‘Kai planted taros in the mountain.’

Sentences like (12) indicate that in Paiwan the LF marker *-an* requires a place noun to be the subject of an LF-marked predicate. One might thus argue that, like the nominative noun phrase *a gadu* ‘mountain’ in (12), in (8b)-(11b) the genitive noun phrases also denote location and serve as subject of the LF-marked result nominal. Yet, it should be noticed that, unlike the *-an* in (8b)-(11b), the LF marker in (12) does not mean ‘degree’. Furthermore, only in (8b)-(11b), but not in (12), the *an*-suffixed predicates become nominals. In view of these two distinctions, it seems that there appear at least two kinds of *-an* in Paiwan, one an LF marker and the other a nominalization marker.<sup>1</sup>

### 2.1.2 The affixation of *kina-...-an*

In addition to the *an*-suffixation, Paiwan has another way of expressing ‘the degree of X-ness’. Consider, for instance, the following sentences:

- (13) a. 'aca'aca            a            [aicu a kasiv].  
       AF-tall-Red    Nom    this    A    tree  
       ‘This tree is very tall.’  
       b. pacengceng            a            [kina-'aca-an    nua    [aicu a kasiv]].  
       AF-appropriate    Nom    KINA-tall-AN    Gen    this    A    tree  
       ‘The height of this tree is right.’

<sup>1</sup> In Formosan languages, it is common for an apparently single morpheme to play various semantic or syntactic roles. See Tang et al. (1998) and Tang (1999), for instance, for a discussion of Paiwan noun-class markers, case markers, complementizers, etc. As for the issue of how focus markers are diachronically related to nominalizers in Paiwan, that we shall leave to future research.

One, however, might argue that cases like (8b)-(11b) do not involve nominalization; instead, they should be analyzed as headless relative clauses with LF-marked predicates. See the discussion in section 2.2 for arguments against such an analysis.

- (14) a. na-meLava      a      [aicu      a      makaLilaw].  
          Perf-AF-wide   Nom   this      A      cloth  
          ‘This piece of cloth is wide.’  
       b. pacengceng      a      [kina-meLava-an      nua      [aicu      a      makaLilaw]].  
          AF-appropriate   Nom   KINA-wide-AN      Gen      this      A      cloth  
          ‘The width of this piece of cloth is right.’

Unlike (8b)-(11b), in (13b)-(14b) the predicate stems are affixed with the prefix *kina-* and the suffix *-an*. Several questions then arise in cases like (13b)-(14b). For example, what are the conditions of these two different kinds of nominalization and what is the morphological structure of *kina-...-an*?

To begin with, the predicates in (15)-(16) below (repeats of (8b)-(11b) above) cannot take *kina*-prefixation, whereas those in (17)-(18) below (repeats of (13b)-(14b) above) must:

- (15) a. (\*kina-)'apedang-an  
          KINA-salty-AN  
          ‘saltiness’  
       b. (\*kina-)'aLem'em-an  
          KINA-sweet-AN  
          ‘sweetness’  
       c. (\*kina-)vuceLel-an  
          KINA-cold-AN  
          ‘coldness’  
       d. (\*kina-)culu-an  
          KINA-hot-AN  
          ‘heat’  
       (16) (\*kina-)kuDesuL-an  
          KINA-hard-AN  
          ‘hardness’  
       (17) a. \*(kina-)'aca-an  
          KINA-tall-AN  
          ‘height’  
               b. \*(kina-)meLava-an  
          KINA-wide-AN  
          ‘width’  
       (18) a. \*(kina-)kuDemeL-an  
          KINA-thick-AN  
          ‘thickness’

- b. \*(kina-)udilil-an  
KINA-red-AN  
'redness'
- c. \*(kina-)ngua'-an  
KINA-beautiful-AN  
'beauty'
- d. \*(kina-)kulay-an  
KINA-slim-AN  
'slimness'

Based on this and other evidence, it seems that if the property of the predicate can only be **seen**, the marking of the result nominal in question is *kina*...-*an*; otherwise, the suffix *-an* is used. Moreover, it seems that in addition to marking the nominal property of the base predicate, *kina*- may also be used as a kind of noun-class prefix that marks the [+ vision] property of a result nominal.<sup>2</sup>

Tang et al. (1998) state that Paiwan has a set of noun-class prefixes marking the [– common noun] status of a non-derived noun in various meanings. Similar observations have also been made about other Formosan languages; e.g., Chang et al. (1998) on Kavalan. This analysis would seem to be further buttressed by the grammaticality contrast in the presence of *kina*- between cases like (15)-(16) and those like (17)-(18), for in Paiwan both derived nouns and non-derived nouns exhibit noun-class prefixes.<sup>3</sup>

<sup>2</sup> More discussion of the morphology, syntax, and semantics of *kina*- will be given later in this section.

<sup>3</sup> Our postulation of the [+/- vision] contrast may be further evidenced by the well-formedness distinction between (ia-b) and (iib).

- (i) a. (\*kina-)saLum-an  
KINA-fragrant-AN  
'fragrance'
- b. (\*kina-)saseu'-an  
KINA-stinking-AN  
'stink'
- (ii) a. ma-Lingdel ti kui.  
AF-stand Nom Kui  
'Kui is standing.'
- b. nguangua' a [\* (kina-)Lingdel-an ni kui].  
AF-pretty-Red Nom KINA-stand-AN Gen Kui  
'Kui's figure is good.'

While *kina*...-*an* and *-an* under consideration may express other meanings like 'the smell of X', 'the shape of X', or the like, the posited affixation condition based on vision still holds.

### 2.1.2.1 *ka-*

Note that, like the suffix *-an*, the prefix *ka-* in *kina-* has also been observed in other kinds of Paiwan sentences. Tang (1999), for instance, points out that *ka-* may function as a conjunction marker, as in (19)-(20):

- (19) *ka-mangetez*      *ti*      *kai*,      *'-em-au'aung*      *ti*      *kui*.  
       when-AF-come    Nom    Kai    cry-AF-Red    Nom    Kui  
       ‘When Kai came, Kui was crying.’
- (20) a. *d-in-ukuL*    *ni*      *kai*    *a*      *vatu*    *kat(u)a*    *ngiaw*.  
       beat-PF        Gen    Kai    Nom    dog      and        cat  
       ‘Kai beat the dog and the cat.’
- b. *na-d-em-ukuL*    *ti*      *kai*    *tai*    *kui*    *ka(t(u)a)ti*    *palang*.  
       Perf-beat-AF    Nom    Kai    Acc    Kui      and            Palang  
       ‘Kai beat Kui and Palang.’

It is also demonstrated in Tang (1998, to appear) that *ka* is found with negative markers:

- (21) a. *neka*  
       not-have  
       ‘do not have’
- b. *ini/ini-ka*  
       no/not-KA  
       ‘no/not’

By comparison with (19)-(20) and (21), the discussed *ka-* in *kina-* does not seem to express anything related to ‘conjunction’ or ‘negation’. Chang (1992), on the other hand, indicates that in Paiwan state verbs and action verbs undergo different kinds of causativization. That is, *ka-* is required for the causativization of state verbs; cf. (22):

- (22) a. *tengeLay/pa-ka-tengeLay*  
       AF-like/Caus-KA-like
- b. *t-em-aLem/pa-taLem*  
       plant-AF/Caus-plant

In (22a), but not (22b), the predicate stem is prefixed by *ka-* as well as by *pa-*, the latter marking causativization in Paiwan. Similarly, Yeh (1991) indicates that *k-* is needed in



Saisiyat causative constructions for state verbs but not for action verbs.<sup>4</sup> Given that all predicates marked either with *-an* or with *kina-...-an* are stative in nature, the *ka-* in question does not seem to mark a state/action distinction, either. A further piece of evidence for such a claim is that in Paiwan [– vision] predicates like *'apedang* ‘salty’ and [+ vision] predicates like *'aca* ‘tall’ all illustrate the same kind of causativization, as in (23):

- (23) a. *pa-pe-'apedang ti kai tua siaw.*  
           Caus-PE-salty Nom Kai Acc soup  
           ‘Kai made the soup saltier.’  
       b. *pa-pe-'aca ti kui tua kasiv.*  
           Caus-PE-tall Nom Kui Acc tree  
           ‘Kui made the tree grow.’

In fact, affixation of *paka-* to these two types of predicate will yield a rather different meaning from that in (22a). Cases like (24) demonstrate this point.

- (24) a. *paka-'apedang ti kai tua siaw.*  
           PAKA-salty Nom Kai Acc soup  
           ‘Kai thinks that the soup is salty.’  
       b. *paka-'aca ti kui tua kasiv.*  
           PAKA-tall Nom Kui Acc tree  
           ‘Kui thinks that the tree is tall.’

#### 2.1.2.2 *-in-*

We now turn to the infix *-in-* in *kina-...-an*. Example (25a) contains a nominalized form, while that in (25b, a repeat of 14a) is non-nominalized. In Paiwan the prefix *na-*, co-occurring with AF predicates and expressing ‘perfectivity’, is not allowed in result nominals of this kind.<sup>5</sup> That is, predicate stems are required:

<sup>4</sup> As stated in Yeh (1991), cases like (i) below illustrate this point.

- (i) a. *'oya' pa-si'ael ka korkoring ka pazay.*  
           mother Caus-eat Acc child Acc rice  
           ‘The mother caused her child to eat rice.’  
       b. *So'o pa-k-sobaLeh switi'. yako 'okik bazae'.*  
           you Caus-inch-big a-little I not hear  
           ‘Please speak a little louder. I cannot hear you.’

<sup>5</sup> As noted later in sec. 2.2, the perfectivity marker *na-* is, however, permitted in another kind of result nominal.

- (25) a. kina-(\*na-)meLava-an/(*\*na-*)kina-meLava-an  
 KINA-Perf-wide-AN/Perf-KINA-wide-AN  
 ‘width’  
 b. na-meLava a [aicu a makaLilaw].  
 Perf-AF-wide Nom this A cloth  
 ‘This piece of cloth is wide.’

Note also that in non-nominalized sentences like (26, a repeat of 12), the infix *-in-* may appear with the non-AF predicate and carry the meaning of ‘perfectivity’:

- (26) t-in-aLem-an ni kai tua vasa a gadu.  
 plant-Perf-LF Gen Kai Acc taro Nom mountain  
 ‘Kai planted taros in the mountain.’

In addition, as opposed to ill-formed nominalized example (25a), the grammaticality of *kina-* in nominalized cases like (17)-(18) seems to suggest that the infix *-in-*, not the prefix *na-*, may appear in this type of result nominal. Nevertheless, a further comparison of nominalized (17)-(18) with non-nominalized (26) indicates that (17)-(18) do not denote the meaning of ‘perfectivity’.<sup>6</sup>

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<sup>6</sup> As the Paiwan infix *-in-* may also act as PF marker, *k-in-a-* may be found in cases without the operation of nominalization. Cf. (i) below with sentences like (26), on the one hand, and those like (17)-(18), on the other:

- (i) a. ma-sengseng ti kai tua kava.  
 AF-make Nom Kai Acc clothes  
 ‘Kai makes clothes.’  
 b. k-in-a-sengseng ni kai a kava.  
 KA-PF-make Gen Kai Nom clothes  
 ‘Kai made the clothes.’

In (ib) *k-in-a-sengseng* ‘make’ is the PF counterpart of the AF predicate *ma-sengseng* ‘make’ and it does not carry the meaning of ‘the degree of X-ness’. Instead, it may express ‘perfectivity’. Note also that affixes like *p-in-a-* may be found in the denominal PF construction, where *-in-* may denote ‘perfectivity’.

- (ii) a. pa-tutu ti kai tua kakeDian.  
 PA-breast Nom Kai Acc child  
 ‘Kai breast-feeds a child.’  
 b. p-in-a-tutu ni kai a kakeDian.  
 PA-PF-breast Gen Kai Nom child  
 ‘Kai breast-fed the child.’

This AF/non-AF opposition will be left for future study,<sup>7</sup> but it must be pointed out that in other Formosan languages it is also a fact that *-in-* in result nominals need not express ‘perfectivity’. As stated in Huang (1993:65), for instance, Squliq Atayal (Wulai) like Paiwan has the infix *-in-* that may mark the ‘perfectivity’ of a predicate:

- (27) a. m-in-wah-ku?                      hira?  
           M=Past=come-1S.BN    yesterday  
           ‘I came yesterday.’  
       b. b-in-hiy-an-saku?-nya?            hira?  
           Past=beat-AN-1S.BN-3S.G    yesterday  
           ‘He beat me yesterday.’

However, it may also appear in result nominals without the meaning of ‘perfectivity’. Below are some examples of this kind from Pawang Nayban (personal communication, 1999).

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<sup>7</sup> In view of this contrast, one might propose that the prefix *na-* is a tense marker and the infix *-in-* is a perfectivity marker, so that only *-in-* can occur in the nominalization construction. This line of thought, however, has problems. For example, in addition to the just-mentioned semantic distinction between *-in-* as perfectivity marker and *-in-* as nominalizer, in Paiwan, as pointed out in Tang (to appear), *na-* can be prefixed to various types of predicate. In other words, what is relevant for the affixation of *na-* is predicate position rather than any verbal property.

- (i) na-ti-kai            ti-madu.  
     Perf-TI-Kai    she  
     ‘She used to be called Kai.’  
 (ii) na-sa'etu            ti-madu.  
     Perf-AF-sick    he  
     ‘He got sick.’  
 (iii) na-nguangua'            ti            kai.  
     Perf-AF-pretty-Red    Nom    Kai  
     ‘Kai used to be pretty.’  
 (iv) na-i-maza            ti            Kui.  
     Perf-in-here    Nom    Kui  
     ‘Kui was here.’  
 (v) na-t-em-aLem    ti            kui            tua            saviki.  
     Perf-plant-AF    Nom    Kui            Acc    betel-nut  
     ‘Kui planted betel nuts.’

Also, as stated in footnote 5, *na-* is found in another kind of nominalization where it may denote ‘perfectivity’. As will be discussed later in sec. 2.2, it seems that in Paiwan *na-* is permitted only in nominalizations that are syntactically derived.

- (28) a. mt-ciriq  
AF-battle  
'battle'  
b. p-in-triq-an  
P-IN-battle-AN  
'battlefield'
- (29) a. m-sbka  
AF-crack  
'crack'  
b. p-in-sbk-an  
P-IN-crack-AN  
'origin'
- (30) a. yaqih  
AF-ugly  
'ugly'  
b. k-in-qih-an  
K-IN-ugly-AN  
'sin'

Notice also that in Paiwan, of the nominal counterparts of [+ vision] predicates like *'aca* 'tall' in (31a-d), only (31a) is well-formed.

- (31) a. kina-'aca(-an)  
KINA-tall-AN  
'tallness/height'  
b. \*ka-'aca(-an)<sup>8</sup>  
KA-tall-AN  
c. \*'-in-aca(-an)  
IN-tall-AN  
d. \*'aca-an  
tall-AN

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<sup>8</sup> Similarly, as opposed to (22a) and (23), cases like (i) below are ungrammatical.

- (i) a. \*(pa-)ka-tengeLay  
Caus-KA-like  
b. \*(pa-)pe-'apedang  
Caus-PE-salty  
c. \*(pa-)pe-'aca  
Caus-PE-tall

In light of the aforementioned data from Northern Paiwan and Squliq Atayal, it seems that the Paiwan infix *-in-* is polysemous, like the suffix *-an*. That is, it may mark ‘perfectivity’, PF, or nominalization. Moreover, given the fact that in Paiwan it appears only in the [+ vision] type of result nominal, it also seems to serve as a marker whereby [+ vision] result nominals may be distinguished from [– vision] ones. *Ka-* in a nominalization construction seems to function only as a noun-class marker.

The reader may recall that distinct prefixes like *ka-*, *ø-*, and, *pe-* in Paiwan causative constructions are required for predicates like *tengeLay* ‘like’ in (22a), *taLem* ‘plant’ in (22b), and *'apedeng* ‘salty’ in (23a) respectively. Such affixes, therefore, might also be treated as a kind of verb-class marker. That is, in Paiwan causative constructions, [– stative] predicates are affixed with *pa-ø-*. By contrast, [+ stative] predicates may be further subdivided into two groups: one referring to people or things takes *pa-pe-*; the other referring to mental states or events takes *pa-ka-*. While the former type is more of an individual-level predicate, the latter type includes individual-level predicates like *tengeLay* ‘like’ and stage-level predicates like *sa'etu* ‘sore’. Any further classification of discussed predicate types will be left to future study.

So far we have shown that for result nominals meaning ‘the degree of X-ness’ there are two kinds of nominal-marking. One is *-in...-an* and the other is *-an*. In the former, one might argue that *-in-* only marks noun-class. In other words, in either case the nominalizer is *-an*. This analysis, however, does not seem to be correct. Compare sentences like (32) and (33):

- (32) a. sa k-in-a-'aca(\*-an) \*a/nua kasiv.  
 SA K-IN-A-tall-AN Nom/Gen tree  
 ‘The tree is so tall.’  
 b. sa k-in-a-kulay(\*-an) \*ti/ni kui.  
 SA K-IN-A-slim-AN Nom/Gen Kui  
 ‘Kui is so slim.’
- (33) a. pacengceng a [k-in-a-'aca\*(-an) nua [aicu a kasiv]].  
 AF-appropriate Nom K-IN-A-tall-AN Gen this A tree  
 ‘The height of this tree is right.’  
 b. pacengceng a [k-in-a-meLava\*(-an) nua [aicu  
 AF-appropriate Nom K-IN-A-wide-AN Gen this  
 a makaLilaw]].  
 A cloth  
 ‘The width of this piece of cloth is right.’

Like (33a-b), (32a-b) disallow marking of *siaw* ‘soup’ and *kui* ‘Kui’ as nominative noun phrases. However, unlike (33a-b), deletion of *-an* in (32a-b) will not result in ill-formedness; in fact, *-an* cannot occur in (32a-b). Note also that while *k-in-a-X* and *k-in-a-X-an* are both result nouns, they express rather distinct meanings.<sup>9</sup> These two contrasts, thus, seem to suggest that the *-in-* under consideration may act as nominalizer in Paiwan.<sup>10</sup> Furthermore, given that in (33a-b) *-an* cannot be deleted and that in (31d) *-an* cannot occur alone with the predicate stem, it seems that for [+vision] result nominals meaning ‘the degree of X-ness’, the morphological structure is [[*-in-* [*ka-* [X]]] *-an*].<sup>11</sup> If this line of thought is on the right track, then *-in-...-an* should not be treated as circumfix.<sup>12</sup> Instead, they are two kinds of nominalizer, and affixation of *-in-* needs

<sup>9</sup> It seems that for the [+vision] type of result nominal *k-in-a-...-an* may express meanings like ‘the degree of X-ness’, ‘the smell of X-ness’, ‘the shape of X-ness’, etc., whereas *k-in-a-* means ‘X-ness’.

<sup>10</sup> A third piece of evidence for such a claim is shown by the ill-formedness of sentences like (i):

- (i) a. \**sa* (ka-)'aca(-an) *nua* *kasiv*.  
       SA KA-tall-AN Gen tree  
       b. \**sa* (ka-)kulay(-an) *ni* *kui*.  
       SA KA-slim-AN Gen Kui

<sup>11</sup> It has already been noted in this section that, in Paiwan non-nominalized constructions, the infix *-in-* may act as perfectivity marker or PF marker. In the case of the latter, *-in-* has a free variant *in-*, as illustrated in (i) from Tang (1999):

- (i) [*na-v-en-eLi* *ti* *kai* *tua* *kun*] *in-aya* *ni* *kui*.  
       Perf-buy-AF Nom Kai Acc skirt PF-say Gen Kui  
       “‘Kai bought a skirt’, Kui said.”

In nominalized sentences with *k-in-a-*, however, *in* cannot occur as an infix within the predicate stem, as the ill-formedness of (iia-b) exemplify.

- (ii) a. \**ka-l-in-aca-an*  
       KA-tall-IN-AN  
       b. \**ka-m-in-eLava-an*  
       KA-wide-IN-AN

Nor can *in* appear between the prefix *ka-* and the predicate stem:

- (iii) a. \**ka-in-'aca-an*  
       KA-IN-tall-AN  
       b. \**ka-in-meLava-an*  
       KA-IN-wide-AN

We thus posit that the considered nominalizer *in* is an infix, not a prefix, and that the affixation of *ka-* takes place earlier than that of *-in-*.

Strictly speaking, with the assumption that a predicate stem does not act as noun before the affixation of *-in-*, *ka-* may be better treated as class marker than as noun-class marker.

<sup>12</sup> Note that, as already illustrated in Taoshan Atayal (28b)-(30b), repeated below as (ib)-(iiib), the co-occurrence of the infix *-in-* with the suffix *-an* has also been found with nominals.

- 
- (i) a. mt-ciriq  
AF-battle  
'battle'
  - b. p-in-triq-an  
P-IN-battle-AN  
'battlefield'
  - (ii) a. m-sbka  
AF-crack  
'crack'
  - b. p-in-sbk-an  
P-IN-crack-AN  
'origin'
  - (iii) a. yaqih  
AF-ugly  
'ugly'
  - b. k-in-qih-an  
K-IN-ugly-AN  
'sin'

Four things are worth mentioning here. First, like Paiwan, Taoshan Atayal seems to exhibit class markers like *p-* and *k-*. Second, unlike Paiwan, Taoshan Atayal seems to require a further phonological change of the predicate stem (such as the deletion of an initial syllable and/or an alternation of consonants in (un)stressed syllables), in addition to the deletion of focus markers. Third, like Paiwan, in Taoshan Atayal *-in-* seems to be affixed after *p-* or *k-*. Fourth, like Paiwan, in Taoshan Atayal both *-in-* and *-an* seem to function as nominalizers. Cases like (iv) also illustrate these four points:

- (iv) a. baytnux (Pawang Nayban, personal communication, 1999)  
AF-beautiful  
'beautiful'
- b. k-in-baytnux-an  
K-IN-beautiful-AN  
'beauty'

Note also that in Taoshan Atayal the class marker *k-* and the infix *-in-* may appear without the suffix *-an*, nominalized or non-nominalized, a fact that seems to indicate that, like Paiwan, in Taoshan Atayal nominalization constructions, affixation of *-in-* occurs before that of *-an*.

- (v) a. k-in-gwagiq (Yayut Isaw, personal communication, 2000)  
K-IN-tall  
'height/very tall'
- b. k-in-krahu  
K-IN-big  
'bigness/very big'
- c. k-in-qruyux  
K-IN-long  
'length/very long'

to take place earlier than that of *-an* (cf. Tang 2000).<sup>13</sup>

### 2.1.3 Summary

In Paiwan, result nominals may be marked with *k-in-a...-an* or *-an* in accord with the [+/- vision] property of the predicate stems. In the case of *k-in-a...-an*, the prefix *ka-* acts as (noun-)class marker, whereas the infix *-in-* and the suffix *-an* are two distinct nominalizers, the former expressing ‘X-ness’ and the latter ‘the degree of X-ness’, ‘the smell of X’, ‘the shape of X’, etc. The morphological structure of affixation is [[*-in-* [*ka-* [X]]] *-an*]. In the case of *-an*, it denotes both meanings. While in other constructions affixes like *ka-*, *-in-*, and *-an* may be used as verb-class/conjunction marker, perfectivity/PF marker, and LF marker respectively, they exhibit rather distinct

- 
- d. k-in-khmay  
K-IN-thick  
‘thickness/very thick’
  - e. k-in-tumaw (Yayut Isaw, personal communication, 2000)  
K-IN-round  
‘roundness/very round’
  - f. k-in-baytnux  
K-IN-beautiful  
‘beauty/very beautiful’

Further, in cases like (ivb), with *-in...-an*, the denoted meaning is ‘X-ness’, whereas in those like nominalized (v), with *-in-* only, it is ‘the degree of X-ness’.

However, according to Chang and Lee (2000), in languages like Kavalan, *-en...-an* may function as circumfix marking nominalization.

<sup>13</sup> For the [– vision] type of result nominal, the two nominalizers in question both seem to be the suffix *-an*, as sentences (i) and (iib)-(iibb) show.

- (i) sa 'apedeng-an nua siaw.  
SA salty-AN Gen soup  
‘The soup is so salty.’
- (ii) a. ma-sengseng ti kai.  
AF-work Nom Kai  
‘Kai works.’  
b. vaLisaked ti kai tua [sengseng-an ni-madu].  
AF-worry Nom Kai Acc work-AN her  
‘Kai worries about her work.’
- (iii) a. ma-sia' ti kui.  
AF-shy Nom Kui  
‘Kui is shy.’  
b. k-em-elang ti kui tua sia'-an.  
know-AF Nom Kui Acc shy-AN  
‘Kui has shame.’



syntactic and semantic behaviors in nominal expressions.<sup>14</sup> And in section 2.2 it will be suggested that the considered nominalization by affixation of *k-in-a-...-an* or *-an* should take place at the morphological level.

<sup>14</sup> As discussed in Chang (2000), in languages like Tsou, nominals meaning ‘the degree of X-ness’ exhibit markers like *hia-*, which are not used as focus markers:

Tfuya

- (i) a. m-o        bangkake    'o       patongkuonũ.  
       AV-Rea    high-AV        Nom    Mt.-Jade  
       ‘Mt. Jade is high.’  
       b. m-o        4000 meter    'o       [[hia-taini/ta    bangkake]    ta    patongkuonũ].  
       AV-Rea 4000 meter    Nom        HIA-its/3SA    high-AV        obl    Mt.-Jade  
       ‘The height of Mt. Jade is 4000 meters.’  
       (ii) a. m-o        cohũmu        'e       suika.  
       AV-Rea    sweet-AV    Nom    watermelon  
       ‘The watermelon is sweet.’  
       b. m-o        auseoselũ    'e       [[hia-si        cohũmu]    to    suika].  
       AV-Rea proper-AV    Nom        HIA-its/3SA    sweet-AV    obl    watermelon  
       ‘The sweetness of the watermelon is appropriate.’

Note further that in Tfuya different nominalizers will result in different meanings, as given in (iii)-(v) from Chang (2000):

- (iii) a. m-o        auseoselũ    'e       [[hia-si        cohũmu]    to    suika].  
       AV-Rea proper-AV    Nom        HIA-its/3SA    sweet-AV    obl    watermelon  
       ‘The sweetness of the watermelon is appropriate.’  
       b. m-o        notaico        'e       [[cohũmu-si]    to    suika].  
       AV-Rea central-AV    Nom        sweet-AV-its    obl    watermelon  
       ‘The sweet part of the watermelon is the center.’  
       (iv) a. mac'i  
       sour  
       ‘sour’  
       b. hia-si        mac'i  
       HIA-SI    sour  
       ‘the degree of sourness’  
       c. mac'i-si  
       sour-SI  
       ‘yeast’  
       (v) a. mafe  
       delicious  
       ‘delicious’  
       b. hia-si        mafe  
       HIA-SI    delicious  
       ‘the degree of deliciousness’  
       c. mafe-si  
       delicious-SI  
       ‘deliciousness’

## 2.2 ‘The X part’

### 2.2.1 Syntactic nominalization vs. lexical nominalization

In English-type (34a) and Chinese-type (34b) languages the meaning of ‘the X part’ does not involve nominalization:

- (34) a. the sour part  
 b. suan-de bufen  
     sour-DE part  
     ‘the sour part’

In Paiwan (35b)-(36b), by contrast, it does:

- (35) a. 'ateLiv a 'udis.  
         AF-sour Nom peach  
         ‘The peach is sour.’  
 b. i tua vecekadan a ['ateLiteLiv \*a/\*nua/tua 'udis].  
     in Acc center Nom AF-sour-Red Nom/Gen/Acc peach  
     ‘The sour part of the peach is the center.’  
 (36) a. 'aLem'em a panguDal.  
         AF-sweet Nom pineapple  
         ‘The pineapple is sweet.’  
 b. i tua 'apuLu a ['aLem'em'em \*a/\*nua/tua panguDal].  
     in Acc root Nom AF-sweet-Red Nom/Gen/Acc pineapple  
     ‘The sweet part of the pineapple is the root.’

Sentences like (35b)-(36b), meaning ‘the X part’, bring up two important points. The first is that in Paiwan the ‘the-X-part’ kind of nominalization may be formed by means of reduplication. Hence, the grammaticality contrast in the obligatoriness of reduplication between nominalized (37b) and non-nominalized (37a) below.

- (37) a. 'ateLiv/'ateLiteLiv a 'udis.  
         AF-sour/AF-sour-Red Nom peach  
         ‘The peach is sour./The peach is a bit sour.’  
 b. i tua vecekadan a ['\*ateLiv/'ateLiteliv tua 'udis].  
     in Acc center Nom AF-sour/AF-sour-Red Acc peach  
     ‘The sour part of the peach is the center.’

The second point is that in non-nominalized (35a)-(36a) the noun phrases 'udis ‘peach’ and panguDal ‘pineapple’, both of which act as subject, are marked nominative,

whereas in nominalized (35b)-(36b) they are accusative. Replacement of *a* by *nua* or *tua* in (35a)-(36a) and of *tua* by *a* or *nua* in (35b)-(36b) will result in ill-formedness.

Three questions then arise regarding these two observations. 1) Why is the genitive disallowed? 2) How is the accusative assigned? 3) Does the required reduplication take place at the morphological or syntactic level?

As pointed out in section 1, the lexicalist approach lists result nominals as nouns in the lexicon. This claim, coupled with the assumptions that nouns are not case assigners and that Paiwan has no overt counterpart to the English dummy preposition *of*, will predict a nominalized case like (38) is well-formed, in which '*udis* 'peach' is marked genitive. However, as already shown in (35b)-(36b), this prediction is not borne out.

- (38) \*i    tua    vecekadan   a    ['ateLiteLiv   nua   panguDal].  
          in    Acc    center       Nom    AF-sour-Red   Gen   pineapple

Notice further that, as opposed to (35b)-(36b) with the meaning 'the X part', in (39)-(40) with the meaning 'the degree of X-ness', the predicates cannot undergo reduplication, nor can they co-occur with the accusative noun phrase in question:

- (39) a. 'aLem'em-an   nua   vasa  
               sweet-AN       Gen   taro  
               'the sweetness of the taro'  
       b. \*'aLem'em'em-an   nua   vasa  
               sweet-Red-AN       Gen   taro  
       c. \*'aLem'em-an   tua   vasa  
               sweet-AN       Acc   taro  
 (40) a. k-in-a-'aca-an   nua   kasiv  
               K-IN-A-tall-AN   Gen   tree  
               'the height of the tree'  
       b. \*k-in-a-'aca'aca-an   nua   kasiv  
               K-IN-A-tall-Red-AN   Gen   tree  
       c. \*k-in-a-'aca-an   tua   kasiv  
               K-IN-A-tall-AN   Acc   tree

In addition to cases like reduplicated (35b)-(36b), Paiwan has other ways of expressing 'the X part', one of which is illustrated in sentences like non-reduplicated (41b)-(42b), to be compared with reduplicated (41c)-(42c):

- (41) a. na-ma-lekuya   a       'utubay.  
               Perf-AF-break   Nom   motorcycle  
               'The motorcycle was broken.'

- b. a [na-ma-lekuya \*nua/tua 'utubay] i tua tukutuku.  
 Nom Perf-AF-break Gen/Acc motorcycle in Acc tire  
 'The broken part of the motorcycle is the tire.'
- c. a [ma-lekuyakuya tua 'utubay] i tua tukutuku.  
 Nom AF-break-Red Acc motorcycle in Acc tire  
 'The broken part of the motorcycle is the tire.'
- (42) a. na-sa'etu ti kai.  
 Perf-AF-sore Nom Kai  
 'Kai is sore.'
- b. a [na-sa'etu \*ni/tai kai] i tua Lima.  
 Nom Perf-AF-sore Gen/Acc Kai in Acc hand  
 'The sore part of Kai's body is the hand.'
- c. a [sa'etu'etu tai kai] i tua Lima.  
 Nom AF-sore-Red Acc Kai in Acc hand  
 'The sore part of Kai's body is the hand.'

In (41b)-(42b), *ma-lekuya* 'break' and *sa'etu* 'sore' respectively need not undergo reduplication and may be prefixed by the perfective marker *na-*, though, like (35b)-(36b) and (41c)-(42c), *'utubay* 'motorcycle' and *kai* 'Kai' are marked accusative. In contrast, for [+ stative] individual-level predicates as in (35b)-(36b), affixes like *-anga*, but not *na-*, can be attached to the reduplicated forms:

- (43) i tua vecekadan a ['ateLitelv-anga tua 'udis].  
 in Acc center Nom AF-sour-Red-ANGA Acc peach  
 'The sour part of the peach is the center.'

Our discussion so far seems to suggest that in Paiwan two of the markers expressing 'the X part' are reduplication as in (35b)-(36b), (41c)-(42c) and a zero-morpheme as in (41b)-(42b). For either, however, the noun phrase associated with the nominal needs to be marked accusative. In addition to this sort of nominal, the accusative noun phrases in question have also been found with Paiwan non-derived nouns in the meaning of 'direction', as in (44):

- (44) izua kizing i vavau \*a/\*nua/tua kavates.  
 have spoon on top Nom/Gen/Acc basket  
 'There are spoons on top of the basket.'

Note that in Paiwan non-derived nouns without a directional meaning cannot take the accusative noun phrase in the *i*-marked PP. Compare, for instance, (45) with (44) and (46) with (43).

- (45) izua    kizing    i    tua    siubay    ni/\*tai    kai.  
       have    spoon    in    Acc    store    Gen/Acc    Kai  
       ‘There are spoons in Kai’s store.’
- (46) a        [sunat    ni/\*tai    kai]    i    vavau    tua    kavates.  
       Nom    book    Gen/Acc    Kai    on    top    Acc    basket  
       ‘Kai’s book is on top of the basket.’

Note also that, unlike direction nouns, kinship nouns do not license the discussed accusative phrase:

- (47) kina        ni/\*tai        kai<sup>15</sup>  
       mother    Gen/Acc    Kai  
       ‘Kai’s mother’

Cross-linguistically, the so-called possessive noun phrase exhibits distinct morphological and syntactic behavior. E.g., Abney (1987) states that in languages like Hungarian the possessor may be marked either nominative or dative:<sup>16</sup>

- (48) a. az        en        vendeg-e-m  
       the    I-nom    guest-possd-1s  
       ‘my guest’
- b. Peter-nek    a        kalapja  
       Peter-Dat    the    hat  
       ‘Peter’s hat’

This option, nevertheless, does not hold for English-type languages:

- (49) my guest/\*me guest

As shown in (49), English possessive noun phrases are in the genitive, though in English noun phrases marked genitive need not indicate a ‘possessor’, ‘agent’ or ‘theme’, as in (50a):

<sup>15</sup> The observed Accusative/Genitive contrast should not be attributed to an animacy condition, as shown in (i) below:

(i) na-ma-lekuya    a        tukutuku    nua/\*tua    'utubay.  
       perf-AF-break    Nom    tire        Gen/Acc    motorcycle  
       ‘The tire of the motorcycle was broken.’

<sup>16</sup> See Szabolcsi (1984), for instance, for a discussion of this contrast.

- (50) a. yesterday's newspaper  
b. \*the newspaper of yesterday's  
c. the newspaper of yesterday

By contrast, noun phrases associated with English direction nouns receive case governed by the preposition *of*, hence not genitive. Compare (51a, c)-(52a, c) with (50a, c), on the one hand, (53a, c), on the other:

- (51) a. ?\*on (the) desk's top  
b. \*on (the) top of the desk's  
c. on (the) top of the desk  
(52) a. ?\*in (the) car's front  
b. \*in (the) front of the car's  
c. in (the) front of the car  
(53) a. the baby's toy  
b. that toy of the baby's  
c. \*that toy of the baby

Unlike English, Chinese uses the same marker *-de* for sentences like (49)-(51).<sup>17</sup> In other words, no distinction is observed with respect to the aforementioned contrasts of possessor/non-possessor or of direction/non-direction.

- (54) wo-de      keren  
I-DE      guest  
'my guest'  
(55) zuotian-de      baozhi  
yesterday-DE      newspaper  
'yesterday's newspaper'  
(56) zai      [zhuozi-de      shangmian]  
on      desk-DE      top-face  
'on top of the desk'

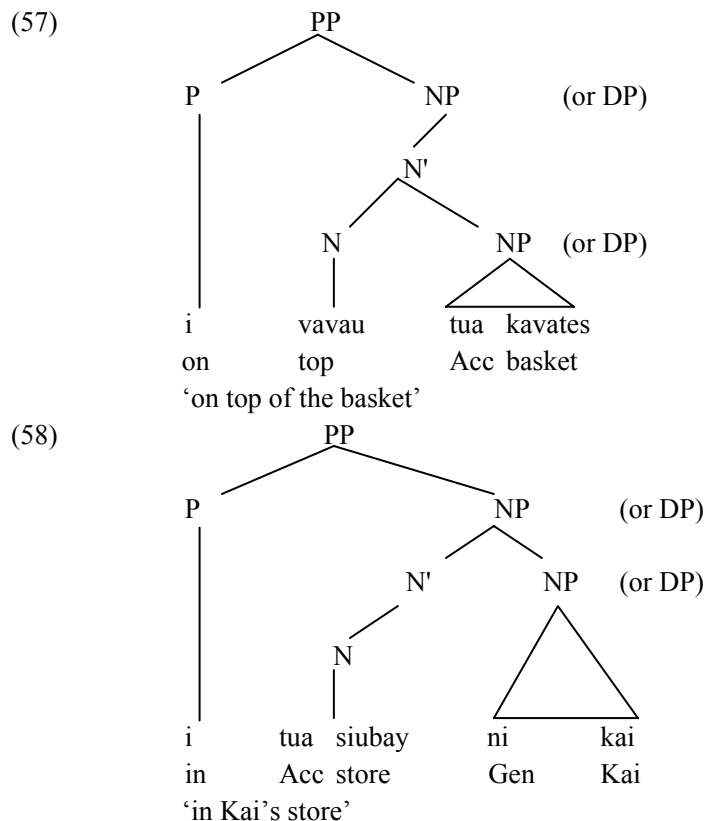
In light of English examples (51c)-(52c) and of Chinese (56), it seems that with respect to non-derived nouns the direction noun and the associated noun phrase may be in a head-complement relation, as in English (51c)-(52c), or in a modifier-modifiee relation, as in Chinese (56). Paiwan (44) seems to pattern with English-type languages rather than Chinese. By contrast, in cases like English (49, 53a), Chinese (54), and

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<sup>17</sup> See Tang (1990, 1993) for arguments against analyzing *-de* in examples like (54)-(56) as genitive marker.

Paiwan (45)–(47), the non-direction noun and the possessive noun are in a modifier-modifiee relation.

While it remains a question why there appears such a head-complement/modifier-modifiee opposition,<sup>18</sup> it seems that simplified noun phrase structures like (57) and (58) are needed for Paiwan direction nouns and non-direction nouns respectively.<sup>19</sup>



Assuming with Tang et al. (1998) that in Paiwan, as in other languages, genitive case may be assigned in the Spec of NP/DP, it then follows that in (58) *kai* 'Kai' will be marked genitive but not accusative. In (57), however, there appears to be no overt preposition before the complement noun phrase *kavates* 'basket' which would act as

<sup>18</sup> In addition to the semantics of distinct noun types, one might attribute these contrasts to the syntactic and semantic properties of the so-called genitive marker on the one hand, and to the directionality constraint of the head on the other. Cf. English (50a, c) and Chinese (55).

<sup>19</sup> Whether noun phrases in Paiwan should be projected as DP and/or NP we shall leave to future research.

case-assigner. One might thus posit that *kavates* is case-assigned by a covert preposition, or that it is inherently case-marked by noun. We shall leave this issue for further study.

Now let us discuss result nominals meaning ‘the X part’. The syntactic relation between this kind of nominal and the associated noun phrase seems to be that Paiwan sentences like (35b)-(36b) and (41b)-(42b) also pattern like English (59c)-(61c), but not like Chinese (62)-(64). That is, the associated noun phrase needs to be marked accusative rather than genitive.

- (59) a. ?\*the peach’s sour part  
       b. \*the sour part of the peach’s  
       c. the sour part of the peach
- (60) a. ?\*the pineapple’s sweet part  
       b. \*the sweet part of the pineapple’s  
       c. the sweet part of the pineapple
- (61) a. ?\*the motorcycle’s broken part  
       b. \*the broken part of the motorcycle’s  
       c. the broken part of the motorcycle
- (62) taozi-de      suan-de      buwei  
       peach-DE    sour-DE      part  
       ‘the sour part of the peach’
- (63) fongli-de      tian-de      buwei  
       pineapple-DE    sweet-DE    part  
       ‘the sweet part of the pineapple’
- (64) motuoche-de    huaidiao-de    buwei  
       motorcycle-DE    break-DE      part  
       ‘the broken part of the motorcycle’

Does it then follow from this condition of accusative marking that in Paiwan the ‘the-X-part’ kind of nominal has the same NP/DP structure as that in non-nominalized example (57)? In other words, should these derived nominals be listed as nouns in the lexicon, with the associated accusative noun phrases analyzed as receiving their case inherently or from a covert P? The answer seems to be negative, based on the four following observations. First, in the aforementioned non-derived cases with direction nouns, there appears a preposition *i* ‘in’. In nominalized cases like (35b)-(36b) and (41b)-(42b), predicate properties like reduplication, AF markers, and perfectivity markers are found.

Second, the semantics and syntax of reduplication and AF markers are different for the nominalized examples (35b)-(36b), (41b)-(42b) and the non-nominalized (35a)-(36a), (41a)-(42a). Semantically, for instance, in non-nominalized (37a) the



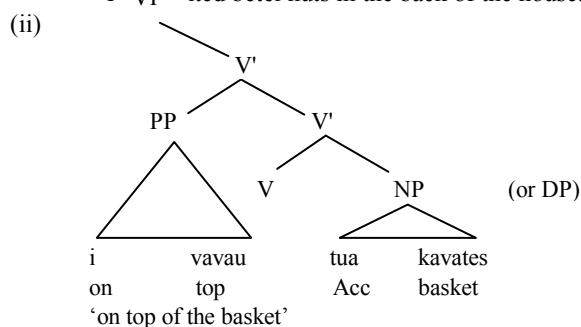
operation of reduplication yields the meaning of ‘a bit X’, while in nominalized (37b) it expresses ‘the X part’. Also, the added meaning of ‘part’ is denoted by the AF marker in (41b), not (41a). Syntactically, in non-nominalized (37a) and (41a) the reduplicated form takes a nominative subject whereas in nominalized (37b) and (41b) it licenses an accusative object.

Third, for nominalized sentences like (37b) and (41b), adjunct expressions like *kaicavil* ‘last year’ and *katiaw* ‘yesterday’ may occur between the nominalized predicate and the associated noun phrase, but in non-derived nouns like (57)-(58) they cannot. Compare, for example, (65)-(66) with (67)-(68).

- (65) i tua vecekadan a [ateLiteliv (kaicavil) tua 'udis].  
 in Acc center Nom AF-sour-Red last-year Acc peach  
 ‘(lit) The sour part (last year) of the peach was the center.’
- (66) a [na-ma-lekuya (katiaw) tua 'utubay] i tua tukutuku.  
 Nom Perf-AF-break yesterday Acc motorcycle in Acc tire  
 ‘(lit) The broken part (yesterday) of the motorcycle was the tire.’
- (67) na-t-em-aLem ti kui tua saviki i ta i-Likuz (\*kaicavil)  
 Perf-plant-AF Nom Kui Acc betel-nut in Acc I-back last-year  
 tua uma'.<sup>20</sup>  
 Acc house  
 ‘(lit) Kui planted betel nuts in the back (\*last year) of the house.’
- (68) na-v-en-eLi ti kai tua kava (\*katiaw) ni kui.

<sup>20</sup> Observations like (67) and (i) below seem to argue against a predication-kind of structure as in (ii) for direction nouns in Paiwan.

- (i) a. \*na-t-em-aLem ti kui i ta i-Likuz tua saviki tua uma'.  
 Perf-plant-AF Nom Kui in Acc I-back Acc betel-nut Acc house  
 b. na-t-em-aLem ti kui i ta i-Likuz tua uma' tua saviki.  
 Perf-plant-AF Nom Kui in Acc I-back Acc house Acc betel-nut  
 ‘I VP ted betel nuts in the back of the house.’



Perf-buy-AF Nom Kai Acc clothes yesterday Gen Kui  
 ‘(lit) Kai bought Kui’s (\*yesterday) clothes.’

Fourth, as pointed out in Tang (1999), sentences with non-nominalized predicates exhibit a similar distribution of adjuncts to that in nominalized (65)-(66).<sup>21</sup>

- (69) a. na-v-en-eLi ti kai (katiaw) tua kava.  
 Perf-buy-AF Nom Kai yesterday Acc clothes  
 ‘(lit) Kai bought (yesterday) clothes.’  
 b. v-in-eLi (katiaw) ni kai a kava.  
 buy-PF yesterday Gen Kai Nom clothes  
 ‘(lit) Kai bought (yesterday) the clothes.’

In view of these four facts, it seems that the result nominals formed by reduplication or a zero-morpheme behave externally like nouns and internally like predicates.<sup>22</sup> However, it should be noted here that in Paiwan not all nominals with the meaning of ‘the X part’ may have this mixed property. To give an example, Paiwan has a third way of denoting ‘the X part’, in which affixation of *-an* or *-in-...-an* takes place, as (70)-(71) illustrate:

- (70) i tua vecekadan a [ateLiv-an nua/\*tua 'udis].  
 in Acc center Nom sour-AN Gen/Acc peach  
 ‘The sour part of the peach is the center.’  
 (71) i tua tukutuku a [k-in-a-lekuya-an nua/\*tua 'utubay].  
 in Acc tire Nom K-IN-A-break-AN Gen/Acc motorcycle  
 ‘The broken part of the motorcycle is the tire.’

Sentences like (35b)-(36b) and (41b)-(42b) differ from those like (70)-(71) in two important ways: the word formation of nominalization and the case marking of the associated noun phrase. The former type results from the operation of reduplication or affixation of a zero-morpheme, whereas the latter is derived by affixation of *-an* or *-in-...-an*. In the former, the associated noun phrase is marked accusative, genitive in the latter. In addition, unlike (65)-(66), in cases like (70)-(71) temporal expressions cannot be located between the nominal and the associated noun phrase, as shown in

<sup>21</sup> For a detailed discussion of the distribution of temporal expressions in Paiwan, see Tang (1999).

<sup>22</sup> As discussed in Tang et al. (1998) and Tang (1999), Paiwan and most of the other Formosan languages do not have adjectives and adverbs as in English. That is, in Paiwan the so-called adjectives and adverbs act as predicates rather than adjuncts. We thus use temporal expressions to examine the predicate property in question.

(72)-(73) below:

- (72) i tua vecekadan a [ateLiv-an (\*kaicavil) nua 'udis].  
 in Acc center Nom sour-AN last-year Gen peach  
 ‘(lit) The sour part (\*last year) of the peach was the center.’
- (73) i tua tukutuku a [k-in-a-lekuya-an (\*katiaw) nua 'utubay].  
 in Acc tire Nom K-IN-A-break-AN yesterday Gen motorcycle  
 ‘(lit) The broken part (\*yesterday) of the motorcycle was the tire.’

Thus, as opposed to (35b)-(36b) and (41b)-(42b), sentences like (70)-(73) indicate that they pattern with nouns externally and internally. In other words, the third type of Paiwan nominal meaning ‘the X part’ should be analyzed as noun in the lexicon.

As pointed out in section 2.1, affixation of *-an* and *-in...-an* may also express meanings such as ‘the degree of X-ness’. In addition to the previous observation that such nominals cannot take the perfectivity marker *na-*, the fact of the distribution of temporals illustrated in sentences (74)-(75) below also seems to suggest that this kind of result nominal is lexically derived.

- (74) pacengceng a [apedang-an (\*katiaw) nua siaw].  
 AF-appropriate Nom salty-AN yesterday Gen soup  
 ‘(lit) The saltiness (\*yesterday) of the soup was right.’
- (75) pacengceng a [k-in-a-meLava-an (\*tucu) nua makaLilaw].  
 AF-appropriate Nom K-IN-A-wide-AN today Gen cloth  
 ‘(lit) The width (\*today) of this piece of cloth is right.’

Note, nevertheless, that in Paiwan the presence of *-an* does not always rule out the possibility of an accusative-associated noun phrase. Compare, for example, the genitives in (76)-(78) with the accusative in (79):

- (76) a [hanahana'-an nua/\*tua garasu] i tua vecekadan.<sup>23</sup>  
 Nom flower-Red-AN Gen/Acc glass in Acc center  
 ‘The part of the glass that is with the flower is the center.’
- (77) a [kate-vu'uL-an nua/\*tua kamaya] i tua vecekadan.  
 Nom with-seed-AN Gen/Acc mango in Acc center  
 ‘The part of the mango that is with the seed is the center.’

<sup>23</sup> According to our informants, the operation of reduplication is optional in (77) and obligatory in (76) and (78). The occurrence of *kate-* ‘with’, however, is optional.

- (78) a [kate-'uva'uval-an nua/\*tua 'aceng ni kai] i tua Lima.  
 Nom with-hair-Red-AN Gen/Acc mole Gen Kai in Acc hand  
 'Kai's hand has a mole with hair.'
- (79) a [tala-ma-culuculu-an \*nua/tua uma] i tua 'aliv.  
 Nom most-AF-hot-Red-AN Gen/Acc house in Acc roof  
 'The hottest part of the house is the roof.'

The genitive/accusative contrast in (76)-(78) and (79) illustrated above may be attributed to a difference in stem category. As shown in (80b-c) and (81b-c) respectively, the stems in (76)-(78) are nouns, while that in (79) is not:

- (80) a. (kate-)'uva'uval\*(-an) a ['aceng ni kai].  
 with-hair-Red-AN Nom mole Gen Kai  
 'Kai's mole is hairy.'
- b. 'uval ni kai  
 hair Gen Kai  
 'Kai's hair'
- c. \*'uva'uval a ['aceng ni kai].  
 hair-Red Nom mole Gen Kai
- (81) a. tala-ma-culuculu\*(-an) a [uma ni kai].  
 TALA-AF-hot-Red-AN Nom house Gen Kai  
 'Kai's house is the hottest.'
- b. \*ma-culu ni kai  
 AF-hot Gen Kai
- c. ma-culuculu(\*-an) a [uma ni kai].  
 AF-hot-Red-AN Nom house Gen Kai  
 'Kai's house is hot.'

In other words, while both types might use a zero-morpheme to express 'the X part', in (76)-(78) the affixation seems to take place at the morphological level, and in (79) it does not. This line of reasoning is supported by the fact that the occurrence of temporals between *-an* and the associated noun phrase is permitted in (83) only:

- (82) a [hanahana'-an (\*kaicavil) nua garasu] i tua vecekadan.  
 Nom flower-Red-AN last-year Gen glass in Acc center  
 '(lit) The part of the glass (\*last year) that was with the flower was the center.'
- (83) a [tala-ma-culuculu-an (kaicavil) tua uma] i tua 'aliv.  
 Nom most-AF-hot-Red-AN last-year Acc house in Acc roof  
 '(lit) The hottest part (last year) of the house was the roof.'

With the postulation that in Paiwan certain nominalizations by means of affixation of *-an* or *-in-...-an* take place in the lexicon, let us now return to discussion of ‘the-X-part’ nominalized sentences with reduplication or zero-morpheme affixation. It has already been pointed out that this kind of nominal exhibits mixed properties, as summarized in (84)-(85):

- (84) a. Like nouns, they may be preceded by case markers.
- b. Unlike nouns, they may allow temporal adjuncts to occur between them and their accusative-marked associated noun phrases.
- (85) a. Like predicates, they may allow reduplication, AF markers, perfectivity markers, and the occurrence of temporal adjuncts between them and the noun phrases following them.
- b. Unlike predicates, their reduplication and AF markers may denote the meaning of ‘part’.
- c. Unlike predicates, they mark their subjects accusative rather than nominative.

We therefore conclude that such nominalization takes place at the syntactic level.

### 2.2.2 Nominalization vs. relativization

Two other types of construction to be taken into consideration here are relative clauses and the so-called equational or pseudo-cleft constructions in Paiwan. As discussed in Tang et al. (1998), Paiwan has three kinds of relative clause.<sup>24</sup>

<sup>24</sup> As stated in Tang et al. (1998), pro-drop in subject or object position is permitted in Paiwan in appropriate contexts. However, the empty subject in a relative clause cannot be replaced by a pronoun.

- (i) a. \**na-pacun ti kui tua [azua a vavayan a [na-v-en-eLi tua kun*  
       Perf-AF-see Nom Kui Acc that A girl A Perf-buy-AF Acc skirt  
       *ti madu]*.  
       Nom she
- b. \**na-pacun ti kui tua [azua a [na-v-en-eLi tua kun ti madu]*  
       Perf-AF-see Nom Kui Acc that A Perf-buy-AF Acc skirt Nom she  
       *a vavayan]*.  
       A girl

This seems to suggest that the empty subject of the relative clause is a trace, not pro.

- (86) na-v-en-eLi ti kai tua [kun a k-in-a-sengseng ni kui].  
 Perf-buy-AF Nom Kai Acc skirt A KA-PF-make Gen Kui  
 ‘Kai bought the skirt that Kui made.’
- (87) na-v-en-eLi ti kai tua [k-in-a-sengseng ni kui a kun].  
 perf-buy-AF Nom Kai Acc KA-PF-make Gen Kui A skirt  
 ‘Kai bought the skirt that Kui made.’
- (88) na-v-en-eLi ti kai tua [k-in-a-sengseng ni kui].  
 perf-buy-AF Nom Kai Acc KA-PF-make Gen Kui  
 ‘Kai bought what was made by Kui.’

Sentence (87) may also be analyzed as including an internally headed relative, and (88) a headless relative. Note that, as illustrated in (89b) below, a headless relative may occur in an equational construction:

- (89) a. (\*a) k-in-a-sengseng ni kai a kun.  
 A KA-PF-make Gen Kai Nom skirt  
 ‘Kai made the skirt.’
- b. (\*a) kun a [k-in-a-sengseng ni kai].  
 A skirt Nom KA-PF-make Gen Kai  
 ‘The thing that Kai made is a skirt.’

Sentence (12) from section 2.1 is here repeated as (90a). Before it was pointed out that in Paiwan the suffix *-an* may act as LF marker, which requires a place noun to be the subject of the LF-marked predicate:

- (90) a. t-in-aLem-an ni kai tua vasa a gadu.  
 plant-Perf-LF Gen Kai Acc taro Nom mountain  
 ‘Kai planted taros in the mountain.’
- b. gadu a t-in-aLem-an ni kai tua vasa.  
 mountain Nom plant-Perf-LF Gen Kai Acc taro  
 ‘The place that Kai planted taros is the mountain.’

Sentences like (91) indicate further that in Paiwan *-an* may also be used as a marker denoting ‘the time of X’:

- (91) si-tiav-an a [d-in-ukul-an ni kai tai kui].  
 yesterday Nom IN-hit-AN Gen Kai Acc Kui  
 ‘The time that Kai hit Kui is yesterday.’

Note, however, that, as opposed to the grammatical examples (89a) and (90a), the

well-formedness contrast between (91) and (92) suggests that not all equational constructions may have their non-equational counterparts.

- (92) \*d-in-ukul-an    ni    kai    tai    kui    a    si-tiaw-an.  
                          hit-IN-AN    Gen   Kai   Acc   Kui   Nom   yesterday

In view of sentences like (86)-(92), two questions arise. Why can (91) not have a non-equational counterpart? What are the semantic and syntactic properties of *-in...-an* in (91)? To begin with, in Paiwan a place noun may appear as argument, as in (90a), or as adjunct, as in (93a-b).

- (93) a. na-t-em-aLem    ti    kai    tua    vasa    i    tua    gadu.  
                  Perf-plant-AF   Nom   Kai   Acc   taro   in   Acc   mountain  
                  ‘Kai planted taros in the mountain.’  
       b. t-in-aLem    ni    kai    a    vasa    i    tua    gadu.  
                  plant-PF    Gen   Kai   Nom   taro   in   Acc   mountain  
                  ‘Kai planted the taros in the mountain.’

As opposed to (90a), in which the predicate *taLem* ‘plant’ is marked with the LF marker *-an* and the place noun *gadu* ‘mountain’ with the nominative marker *a*, in (93a) and (93b) respectively, *taLem* is marked with the AF marker *-em-* and the PF marker *-in-*. And in both sentences *gadu* is marked with the accusative case *tua* by the preposition *i* ‘in’. Only in (90a), where *gadu* agrees with *taLem*, can it act as predicate in the equational construction. Hence, the ungrammaticality of (94a-b), to be compared with (90b):

- (94) a. \*gadu    a    [na-t-em-aLem    ti    kai    tua    vasa].  
                  mountain   Nom   Perf-plant-AF   Nom   Kai   Acc   taro  
       b. \*gadu    a    [t-in-aLem    ni    kai    a    vasa].  
                  mountain   Nom   plant-PF    Gen   Kai   Nom   taro

Likewise, as pointed out in Chiu and Tang (1998), the English temporal expression *yesterday* has two counterparts in Paiwan: *katiaw* and *si-tiaw-an*. *Katiaw* can only serve as adjunct and *si-tiaw-an* predicate.<sup>25</sup>

<sup>25</sup> Recall that, as illustrated in the discussion of examples (65)-(68), temporals like *katiaw* cannot be used to modify non-derived nouns or lexically derived nouns. In contrast, the same restriction does not hold for temporals like *si-tiaw-an*.

(i) na-v-en-eLi    ti    kai    tua    [\*katiaw/si-tiaw-an    a    vutul].  
                  Perf-buy-AF   Nom   Kai   Acc   yesterday/yesterday   A   meat  
                  ‘Kai bought yesterday’s meat.’

- (95) a. na-t-em-aLem ti kai tua vasa i tua gadu  
 Perf-plant-AF Nom Kai Acc taro in Acc mountain  
 katiaw/\*si-tiav-an.  
 yesterday/yesterday  
 ‘Kai planted taros in the mountain yesterday.’
- b. t-in-aLem ni kai a vasa i tua gadu  
 plant-PF Gen Kai Nom taro in Acc mountain  
 katiaw/\*si-tiav-an.  
 yesterday/yesterday  
 ‘Kai planted the taros in the mountain yesterday.’
- c. t-in-aLem-an ni kai tua vasa a gadu  
 plant-Perf-LF Gen Kai Acc taro Nom mountain  
 katiaw/\*si-tiav-an.  
 yesterday/yesterday  
 ‘Kai planted taros in the mountain yesterday.’
- (96) a. \*katiaw/\*si-tiav-an a [na-t-em-aLem ti kai tua  
 yesterday/yesterday Nom Perf-plant-AF Nom Kai Acc  
 vasa i tua gadu].  
 taro in Acc mountain
- b. \*katiaw/\*si-tiav-an a [t-in-aLem ni kai a  
 yesterday/yesterday Nom plant-PF Gen Kai Nom  
 vasa i tua gadu].  
 taro in Acc mountain
- c. \*katiaw/si-tiav-an a [d-in-ukuL-an ni kai tai kui].<sup>26</sup>  
 yesterday/yesterday Nom hit-IN-AN Gen Kai Acc Kui  
 ‘The time that Kai hit Kui is yesterday.’

It thus follows from this adjunct/predicate asymmetry that in (91) *si-tiav-an* seems to bear some relation to *d-in-ukul-an* ‘hit’. But if indeed (91) involves the so-called headless relative clause, why is it that its non-equational counterpart (92) is ill-formed?

With respect to non-lexically derived result nominals, like (35b) and (41b), repeated below as (97a-b), one might posit that, like (90b), they might involve headless relatives, given sentences like (98):

<sup>26</sup> Note that, as pointed out in Chiu and Tang (1998), in Paiwan there are at least three kinds of *when*-expression: irrealis *nu-ngida* as well as realis *ka-ngida* and *si-ngida-an*. *nu-ngida* and *ka-ngida* respectively exhibit the same distribution as *nutiaw* ‘tomorrow’ and *katiaw* whereas *si-ngida-an* patterns like *si-tiaw-an*.



- (97) a. i tua vecekadan a ['ateLiteLiv \*a/\*nua/tua 'udis].  
 in Acc center Nom AF-sour-Red Nom/Gen/Acc peach  
 'The sour part of the peach is the center.'  
 b. a [na-ma-lekuya \*a/\*nua/tua 'utubay] i tua tukutuku.  
 Nom Perf-AF-break Nom/Gen/Acc motorcycle in Acc tire  
 'The broken part of the motorcycle is the tire.'
- (98) a. vecekadan a ['ateLiteLiv \*a/\*nua/tua 'udis].  
 center Nom AF-sour-Red Nom/Gen/Acc peach  
 'The sour part of the peach is the center.'  
 b. tukutuku a [na-ma-lekuya \*a/\*nua/tua 'utubay].  
 Tire Nom Perf-AF-break Nom/Gen/Acc motorcycle  
 'The broken part of the motorcycle is the tire.'

There are, however, several problems. First, why is it that, unlike the non-nominalized, the non-equational counterparts of the 'the-X-part' sentences in question are all ungrammatical?

- (99) a. \*'ateLiteLiv tua 'udis i tua vecekadan.  
 AF-sour-Red Acc peach in Acc center  
 b. \*'ateLiteLiv tua 'udis a vecekadan.  
 AF-sour-Red Acc peach Nom center
- (100) a. \*na-ma-lekuya tua 'utubay i tua tukutuku.  
 Perf-AF-break Acc motorcycle in Acc tire  
 b. \*na-ma-lekuya tua 'utubay a tukutuku.  
 Perf-AF-break Acc motorcycle Nom tire

Second, if the 'the-X-part' sentences like (97a) with reduplication, and (97b) with the affixation of a zero-morpheme, may involve headless relatives rather than nominalization, how can they be distinguished from non-nominalized ones like (101b)-(102b), to be compared with (98a-b)?

- (101) a. 'ateLiteLiv a 'udis.  
 AF-sour-Red Nom peach  
 'The peach is very sour.'  
 b. 'udis a ['ateLiteLiv].  
 peach Nom AF-sour-Red  
 'The thing that is very sour is the peach.'

- (102) a. na-ma-lekuya a [tukutuku nua 'utubay].  
 Perf-AF-break Nom tire Gen motorcycle  
 'The tire of the motorcycle was broken.'  
 b. [tukutuku nua 'utubay] a [na-ma-lekuya].  
 tire Gen motorcycle Nom Perf-AF-break  
 'The thing that was broken was the tire of the motorcycle.'

Third, as pointed out in footnote 24, pro-drop in subject or object position is permitted in Paiwan. Then why is it that while non-nominalized sentences like (103a-c) are well-formed, nominalized ones like (104a-b) are not, with reduplication and affixation of a zero-morpheme?

- (103) a. na-t-em-aLem pro tua vasa i tua gadu.  
 Perf-plant-AF pro Acc taro in Acc mountain  
 '(lit) (Someone) planted taros in the mountain.'  
 b. t-in-aLem ni kai pro i tua gadu.  
 plant-PF Gen Kai pro in Acc mountain  
 '(lit) Kai planted (something) in the mountain.'  
 c. t-in-aLem-an ni kai tua vasa pro.  
 plant-Perf-LF Gen Kai Acc taro pro  
 'Kai planted the taros (somewhere).'  
 (104) a. \*'ateLiteLiv tua 'udis pro.  
 AF-sour-Red Acc peach pro  
 b. \*na-ma-lekuya tua 'utubay pro.  
 Perf-AF-break Acc motorcycle pro

Fourth, if both non-nominalized cases like (105a-b) and nominalized ones like (106a-b) may be attributed to headless relativization, why is it that there should appear a Gen/Acc asymmetry between them?

- (105) a. na-ma-lekuya a [tukutuku nua/\*tua 'utubay].  
 Perf-MA-break Nom tire Gen/Acc motorcycle  
 'The tire of the motorcycle is broken.'  
 b. 'ateLiteLiv a [vecekadan nua/\*tua 'udis].  
 AF-sour-Red Nom center Gen/Acc peach  
 'The center of the peach is sour.'

- (106) a. a [na-ma-lekuya \*nua/tua 'utubay] i tua tukutuku.  
 Nom Perf-MA-break Gen/Acc motorcycle in Acc tire  
 'The broken part of the motorcycle is the tire.'
- b. a ['ateLiteLiv \*nua/tua 'udis] i tua vecekadan.  
 Nom AF-sour-Red Gen/Acc peach in Acc center  
 'The sour part of the peach is the center.'

These four problems, in fact, all point out an important distinction between headless relatives and 'the-X-part' nominals formed by reduplication or affixation of a zero-morpheme. That is, while the verbal predicates of the headless relatives do not exhibit any nominal property, those in the 'the-X-part' sentences do, for they behave like nouns externally and like verbs internally.<sup>27</sup> Similarly, lexically derived nominalization cases like (74) and (75), repeated below as (107)-(108), cannot be analyzed as deriving from headless relatives either, given the fact that, unlike headless relatives as in (109b), temporals cannot appear between the nominalized predicates and the genitive-marked noun phrases.<sup>28</sup>

- (107) pacengceng a ['apedang-an (\*katiaw) nua siaw].  
 AF-appropriate Nom salty-AN yesterday Gen soup  
 '(lit) The saltiness (\*yesterday) of the soup was right.'
- (108) pacengceng a [k-in-a-meLava-an (\*tucu) nua makaLilaw].  
 AF-appropriate Nom K-IN-A-wide-AN today Gen cloth  
 '(lit) The width (\*today) of this piece of cloth is right.'
- (109) a. na-v-en-eLi ti kai tua [k-in-a-sengseng katiaw  
 perf-buy-AF Nom Kai Acc KA-PF-make yesterday  
 ni kui a kun].  
 Gen Kui A skirt  
 'Kai bought the skirt that Kui made yesterday.'
- b. na-v-en-eLi ti kai tua [k-in-a-sengseng katiaw ni kui].  
 perf-buy-AF Nom Kai Acc KA-PF-make yesterday Gen Kui  
 'Kai bought what was made by Kui yesterday.'

### 2.2.3 Summary

On the basis of the various facts about the 'the-X-part' sentences in Paiwan, we

<sup>27</sup> For a discussion of various kinds of relative clause in Paiwan, see Tang et al. (1998).

<sup>28</sup> In this line of thought, cases like (91), meaning 'the time of X', will be attributed to nominalization rather than relativization.

have shown that there appear two kinds of nominalization: one that takes place at the morphological level and another that applies at the syntactic level.<sup>29</sup> Neither of them should be analyzed as involving headless relativization.<sup>30</sup> Note that if our analysis is on the right track, it then seems to indicate that result nominals may also be syntactically derived. In her study of nominalization in Tsou, Chang (2000, 2001) also points out that, as exemplified in (110) without *hia*, and (111)-(112) with *hia*, two types of nominalization can be observed:

- (110) te yucu'uhi ta phingi 'o [(na'n-o) bangkake-su(\*-cu)].  
 Irr. grow Obl door Nom very-AV high-your-Perf  
 'Your height will reach the height of the door.'
- (111) te yucu'uhi ta phingi 'o [hia-su(-cu) (na'n-o) bangkake].  
 Irr. grow Obl door Nom HIA-your-Perf very-AV high  
 'The degree of your being very tall will reach that of the door.'
- (112) m-o aumtu umnu 'o [(m-i-ta) hia  
 AV-Rea-3SA real (AV) good (AV) Nom AV-Rea-3SA HIA  
 cocuv-o] ta pasuya].  
 laugh-AV Gen Pasuya  
 'The manner of Pasuya's smiling is really good.'

According to Chang, cases like (110) involve lexical nominalization, in which aspect markers like *-cu* 'perfectivity' and degree adverbials like *na'n-o* 'very' cannot occur. By

<sup>29</sup> Engelhardt (2000) also points out that the nominal system may manifest a perfective/imperfective opposition.

<sup>30</sup> Notice in the Chinese examples below that the so-called headless relatives are not without restrictions:

- (i) a. [mai dongxi] de (ren) lai-le.  
 buy thing DE man come-LE  
 'The man who bought things came.'
- b. wo taoyan [ta mai] de (dongxi).  
 I dislike he buy DE thing  
 'I dislike what he bought.'
- c. [ni dui ta bu hao] de \*(ren) lai-le.  
 you to he not good DE man come-LE.  
 'The man to whom you are not nice came.'
- d. [ta mai dongxi] de \*(shijian)/\*(didian)/\*(fangshi) bu hao.  
 he buy thing DE time place manner not good  
 'The time/place/manner that he bought things is not good.'

In Chinese headless relatives seem not to be licensed in cases with resumptive pronouns or adjunct heads.

contrast, those like (111)-(112) are syntactically derived, in which aspect markers and degree adverbials may appear. Furthermore, Tsou has a second type of *hia*-construction as in (113), analyzed by Chang as having an internally headed relative, and she thus observes no nominalization:

- (113) m-o                      o'ha umnu   'o   [(m-i-ta)        hia    cocuv-o    to  
          AV-Rea not        good (AV)   Nom   AV-Rea-3S   HIA   laugh-AV   Obl  
          yangui        'e        pasuya].  
          Yangui        Nom   Pasuya  
          'The manner in which Pasuya smiles at Yangui is not good.'

Sentence (113) differs from (111)-(112) by the presence of tense and nominative marking.

## 2.2.4 Intransitive vs. transitive predicates

The Paiwan nominalized predicates examined so far are all marked [+stative] and [–transitive].<sup>31</sup> In the case of lexical nominalization, predicate stems are affixed by *k-in-a...-an* or *-an*; in the case of syntactic nominalization, together with the AF and perfectivity markers, the predicate stems may undergo reduplication or affixation of a zero-morpheme. According to our informants, for predicates that carry the features [–stative] and [+transitive], lexical nominalization by means of affixation of *k-in-a...-an* or *-an* is not available. Nor can they become nominals via syntactic reduplication, although the non-nominalized verbs, transitive or intransitive, may undergo reduplication to express the aspectual meaning of 'progressiveness'.

<sup>31</sup> In Paiwan predicates marked with AF marker *ma-* may, in fact, exhibit either intransitivity or transitivity:

- (i) a. na-ma-lekuya    a        'utubay.  
          Perf-AF-break   Nom   motorcycle  
          'The motorcycle was broken.'  
      b. na-ma-lekuya    tai    kai    a        'utubay.  
          Perf-AF-break   Acc   Kai   Nom   motorcycle  
          'Kai broke the motorcycle.'  
      c. na-l-em-ekuya    ti        kai    tua   'utubay.  
          Perf-AF-break   Nom   Kai   Acc   motorcycle  
          'Kai broke a motorcycle.'  
      d. l-in-ekuya        ni        kai    a        'utubay.  
          break-PF        Gen   Kai   Nom   motorcycle  
          'Kai broke the motorcycle.'

The transitivity of (ic), however, is stronger than that of (ib).

As shown in (114a), to denote ‘the X part’ the nominalized transitive predicate needs to be in the form of *-in-...-an* or *-in-*, but not with the AF marker *-em-*. In addition, temporals like *katiaw* ‘yesterday’ may appear between the nominalized predicate and the genitive noun phrase, a fact that suggests that the nominalization in question does not take place at the morphological level.

- (114) a. a      [\*d-em-ukuL/d-in-ukuL-an/d-in-ukuL    (katiaw)    ni  
           Nom    beat-EM/beat-IN-AN/beat-IN                    yesterday    Gen  
           kai    tai    kui] i    tua    'uLu.  
           Kai    Acc    Kui    in    Acc    head  
           ‘(lit) The part that Kui was beaten by Kai (yesterday) is the head.’

And, as exemplified in the ill-formedness of (114b), the suffix *-an* alone cannot be used to mark the nominalization under consideration:

- (114) b. \*a      [dukuL-an    (katiaw)    ni    kai    tai    kui] i    tua    'uLu.  
           Nom    beat-AN                    yesterday    Gen    Kai    Acc    Kui    in    Acc    head

Notice further that while in (114a) the internal verbal properties of predicates like *dukuL* ‘beat’ may be exhibited by the possibility of temporals between the predicate and the genitive noun phrase and the presence of accusative marking, their non-equational counterparts are ungrammatical, a fact that indicates their external nominal property. Compare, for example, (115a) with (115b) and (116a-b):

- (115) a. \*d-in-ukuL-an/\*d-in-ukuL    ni    kai    tai    kui    a    'uLu.  
           beat-IN-AN/beat-IN                    Gen    Kai    Acc    Kui    Nom    head  
       b. 'uLu    a      [d-in-ukuL-an/d-in-ukuL    ni    kai    tai    kui].  
           head    Nom    beat-IN-AN/beat-IN                    Gen    Kai    Acc    Kui  
           ‘The part that Kai beat Kui is the head.’  
       (116) a. d-in-ukuL-an    ni    kai    tua    ['uLu    ni    kui]    a    siubay.  
           beat-Perf-LF    Gen    Kai    Acc    head    Gen    Kui    Nom    store  
           ‘Kai beat Kui’s head in the store.’  
           b. d-in-ukuL    ni    kai    a    ['uLu    ni    kui].  
           beat-PF    Gen    Kai    Nom    head    Gen    Kui  
           ‘Kai beat Kui’s head.’

In view of the grammaticality contrast between (114a) and (114b) in the presence of the infix *-in-*, one might posit that the nominalizer seems to be the infix *-in-*, which in

turn requires an LF- or PF-marked predicate.<sup>32</sup> And a phonological rule in Paiwan will reduce two occurrences of *-in-* to one.

Before turning to the discussion of nominals in the meaning ‘the sound of X’, let us consider again the Gen/Acc asymmetry between lexically versus syntactically derived ‘X-part’ nominals. With respect to lexical nominalization, we have suggested that such nominals are listed as nouns in the lexicon and the associated noun phrases in question are generated in the Spec of NP/DP, hence the genitive marking. Recall that in the previous discussion of non-derived direction nouns, cross-linguistically there appears to be a modifier/complement asymmetry for the generation of their associated noun phrases. Therefore, with respect to the syntactic nominalization, it is posited that for languages like Paiwan, to express the meaning of ‘the X part’ syntactically, the associated noun phrases need to be projected as internal arguments of the predicates, hence the presence of accusative marking.<sup>33</sup> In other words, some kind of complex predicate seems to be involved. We will leave this issue for further research.<sup>34</sup>

## 2.3 ‘The sound of X’

As shown in (117b)-(118b) below, in Paiwan a predicate stem is required to co-occur with *si-...-an* to express the meaning ‘the sound of X’:

- (117) a. v-en-a'esin ti kai.  
sneeze-AF Nom Kai  
‘Kai sneezed.’  
b. na-L-em-angda ti kui tua [si-va'esin-an ni/\*tua kai].  
Perf-hear-AF Nom Kui Acc SI-sneeze-AN Gen/Acc Kai  
‘Kui heard the sound of Kai’s sneezing.’

<sup>32</sup> Our findings so far seem to suggest that in Paiwan there appear certain co-occurrence restrictions between predicate types and nominalizers, lexical or syntactic. Nominalizers might be diachronically related to focus markers and the semantics of focus markers might still be related to that of nominals. We will leave these and other related issues for further research.

<sup>33</sup> Siloni (1997) argues that the accusative case found with Hebrew event nominals should be analyzed as inherent case. Given all the discussed facts about the presence of the perfectivity marker *na-*, the distribution of temporals like *katiaw* ‘yesterday’ and the existence of the Gen/Acc asymmetry, the accusative case in question does not seem to act as inherent case in Paiwan.

<sup>34</sup> With respect to the phrase structure of the syntactic nominalization in Paiwan, the relevant projections seem to be at least NP/DP-NominalizerP-AspP-FocusP/VoiceP-VP/AdjP. We will leave this for future study.

- (118) a. pa-tezu ti kai.  
 hiccup Nom Kai  
 ‘Kai hiccuped.’  
 b. na-L-em-angda ti kui tua [si-tezu-an ni/\*tua kai].  
 Perf-hear-AF Nom Kui Acc SI-hiccup-AN Gen/Acc Kai  
 ‘Kui heard the sound of Kai’s hiccuping.’

In section 2.1 we pointed out that the Paiwan suffix *-an* may be used as LF marker. In contrast, the prefix *si-* may mark RF predicates in Paiwan and such predicates need to take the instrument or the beneficiary noun phrase as their subject. Sentences like (119a-b) are of this kind:

- (119) a. si-talem ni kai tua saviki a tatukun.  
 RF-plant Gen Kai Acc betel-nut Nom hoe  
 ‘Kai uses the hoe to plant betel nuts.’  
 b. si-senay ni kui tua laisu ti kai.  
 RF-sing Gen Kui Acc song Nom Kai  
 ‘Kui sings a song for Kai.’

In cases like (117b) and (118b), nevertheless, affixes like *-an* and *si-* no longer denote meanings like ‘location’, ‘instrument’ or ‘beneficiary’. Nor do they mark the external category of verb or the nominative case. In addition, the meaning ‘the sound of X’ must be expressed by the co-occurrence of *si-* and *-an*. In light of these observations, the question arises as to whether in Paiwan *si...-an* may act as circumfix to mark nominalization. Given sentences like (121a-b) below, in which the perfectivity marker *-in-* is permitted and must be inserted within the prefix *si-*, it seems that the nominalizer in question is the suffix *-an*, which in turn needs to be attached to an RF-marked element. In other words, the order of the affixation is [(-in-) [si-X]] -an].

Note that sentences like (120) below indicate further that accusative-marked noun phrases may still appear with such nominals:

- (120) a. c-em-ugecug ti kai tua paling.  
 knock-AF Nom Kai Acc door  
 ‘Kai knocked a door.’  
 b. ku'aku'at/pasi-'aca a [si-cugecug-an ni kai tua paling].  
 unpleasant/loud Nom SI-knock-AN Gen Kai Acc door  
 ‘The sound of Kai’s knocking on the door is unpleasant/loud.’



The accusative case in question, however, should not be analyzed as inherent case for two reasons (see also footnote 33): First, like other syntactically derived nominals, in (117b)-(118b) and (120b), for instance, temporals may be located between the nominalized predicate and the genitive noun phrase, in addition to the possible occurrence of the perfectivity marker *-in-*.

- (121) a. na-L-em-angda ti kui tua [s-in-i-tezu-an tucu ni kai].  
 Perf-hear-AF Nom Kui Acc SI-Perf-hiccup-AN today Gen Kai  
 'Kui heard the sound of Kai's hiccuping today.'  
 b. ku'aku'at/pasi-'aca a [s-in-i-cugecug-an katiaw  
 unpleasant/loud Nom SI-Perf-knock-AN yesterday  
 ni kai tua paling].  
 Gen Kai Acc door  
 'The sound of Kai's knocking on the door yesterday was unpleasant/loud.'

Second, Siloni (1997) argues for a lexical analysis of process nouns by claiming that the accusative case found with Hebrew event nominals should be analyzed as inherent case. According to Siloni, in Hebrew one distinction between the accusative case of transitive verbs and that appearing in nominal contexts is concerned with the order of constituents. VPs permit either accusative-dative or dative-accusative word order, as in (122a-b). By comparison, in noun phrases the accusative complement must precede its dative counterpart, as in (123a-b):

- (122) a. ha-bank hexzir 'et ha-kesef le-sula.  
 the-bank refunded Acc the-money to-Shula  
 'The bank refunded the money to Shula.'  
 b. ha-bank hexzir le-sula 'et ha-kesef.  
 the-bank refunded to-Shula Acc the-money  
 'The bank refunded the money to Shula.'  
 (123) a. haxzarat ha-bank 'et ha-kesef le-sula.  
 refund the-bank Acc the-money to-Shula  
 'the bank's refund of the money to Shula'  
 b. \*haxzarat ha-bank le-sula 'et ha-kesef.  
 refund the-bank to-Shula Acc the-mone

This kind of word order constraint, however, does not seem to hold in Paiwan. Compare (124a-b) with (125a-b):

- (124) a. c-em-ugecug ti kai tua paling.  
 knock-AF Nom Kai Acc door  
 ‘Kai knocked a door.’  
 b. c-em-ugecug tua paling ti kai.  
 knock-AF Acc door Nom Kai  
 ‘Kai knocked a door.’
- (125) a. ku'aku'at/pasi-'aca a [si-cugecug-an ni kai tua paling].  
 unpleasant/loud Nom SI-knock-AN Gen Kai Acc door  
 ‘The sound of Kai’s knocking on the door is unpleasant/loud.’  
 b. ku'aku'at/pasi-'aca a [si-cugecug-an tua paling ni kai].  
 unpleasant/loud Nom SI-knock-AN Acc door Gen Kai  
 ‘The sound of Kai’s knocking on the door is unpleasant/loud.’

Considering these two facts, we suggest that the nominalization under consideration takes place at the syntactic level.

## 2.4 ‘The manner of X’

Sentences like (126)-(127) below indicate that, in addition to the meaning of ‘the sound of X’ in (117b)-(118b) and (120b), *si-...-an* may also appear with the predicate stem to express the meaning ‘the manner of X’:

- (126) a. d-em-avac ti kai.  
 walk-AF Nom Kai  
 ‘Kai walks.’  
 b. ini-ka nguangua' a [si-davac-an ni/\*tai kai].  
 no-KA pretty-Red Nom SI-walk-AN Gen/Acc Kai  
 ‘Kai’s way of walking is ugly.’
- (127) a. pe-deLi ti kai.  
 PE-laugh Nom Kai  
 ‘Kai laughs.’  
 b. na-pacuaL ti kui tua [si-deLi-an ni/\*tai kai].  
 Perf-imitate-AF Nom Kui Acc SI-laugh-AN Gen/Acc Kai  
 ‘Kui imitated Kai’s way of laughing.’

Like (120b), accusative noun phrases are also observed with this kind of nominal:

- (128) a. na-d-em-ukuL ti kai tai kui.  
 Perf-beat-AF Nom Kai Acc Kui  
 ‘Kai beat Kui.’
- b. ini-ka nguangua’ a [si-dukuL-an ni kai tai kui].  
 no-KA pretty-Red Nom SI-beat-AN Gen Kai Acc Kui  
 ‘The manner of Kai’s beating Kui is ugly.’

The same may also be said about the possible occurrence of the perfectivity marker *-in-* and temporals.

Therefore, like the Acc-type of the ‘the-X-part’ nominal and ‘the-sound-of-X’ nominal, the ‘the-manner-of-X’ nominal is also claimed to be syntactically derived.<sup>35</sup>

## 2.5 ‘X-er/X-ee’

In Paiwan predicates like *vuLung* ‘old’ may denote ‘X-er’ in the form of *Ca-...-an*, the prefix of which results from reduplication of the first consonant of the predicate stem and addition of an *a*-vowel to the reduplicated consonant.

- (129) a. vuLuvuLung ti kai.  
 old-Red Nom Kai  
 ‘Kai is a bit old.’
- b. va-vuLung-an  
 VA-old-AN  
 ‘man that is old’

It has been pointed out in section 2.1 that *-an* may act as LF marker, the subject of which needs to be a place noun or an affected theme. It is not then surprising that it may also serve as nominalizer expressing ‘X-er’.

(130b-c) are further examples of this kind, in which *Ca-...-an* denotes ‘X-ee’:

- (130) a. s-em-ekaul ti kui tai kai.  
 enslave-AF Nom Kui Acc Kai  
 ‘Kui enslaves Kai.’
- b. sa-sekaul-an  
 SA-enslave-AN  
 ‘servant’

<sup>35</sup> In Paiwan all three of these posited derived nominals are quite productive.

- c. na-pacun ti kui tua [azua a sa-sekaul-an].  
 Perf-see-AF Nom Kui Acc that A SA-enslave-AN  
 ‘Kui saw that servant.’

Based on facts about (131a-b) below that nominals in the form *Ca-...-an* may act as nominal predicate or be modified by numerals or demonstratives, it is postulated that this kind of nominalization takes place at the lexical level.

- (131) a. va-vuLung-an/sa-sekaul-an ti kai.  
 VA-old-AN/SA-enslave-AN Nom Kai  
 ‘Kai is an old man./Kai is a servant.’  
 b. azua/ma-telu a va-vuLung-an/sa-sekaul-an  
 that/MA-three A VA-old-AN/SA-enslave-AN  
 ‘that old man/servant, three old men/servants’

Furthermore, given the observation that expressions like (132a-b) are ungrammatical, we analyze *Ca-...-an* as circumfix:

- (132) a. \*vuLung-an  
 old-AN  
 b. \*va-vuLung  
 VA-old

Note also that for [+ transitive] predicates like *sekaul* ‘enslave’ *sa-sekaul-an* may also serve as LF predicate, as in (133):

- (133) sa-sekaul-an ni kui ti kai.  
 SA-enslave-AN Gen Kui Nom Kai  
 ‘Kui enslaved Kai.’

Cases like (134) are, thus, ambiguous in structure. That is, they may be viewed as noun phrases or clauses:

- (134) sa-sekaul-an ni kui a causcaus  
 SA-enslave-LF Gen Kai A person  
 ‘man that is enslaved by Kui/Kui enslaved the man.’

As pointed out in the previous discussion, Paiwan has the so-called internally headed relatives. Sentences like (135), for instance, are of this sort:

- (135) a. na-pacun ti kui tua [na-v-en-eLi tua kun a vavayan]  
 Perf-see-AF Nom Kui Acc Perf-buy-AF Acc skirt A girl  
 ‘Kui saw the girl that bought a skirt.’  
 b. na-pacun ti kui tua [(azua a) pu-'ulu a ti-kai]  
 Perf-see-AF Nom Kui Acc that A smart A P-Kai  
 ‘Kui saw that Kai who is smart.’

Such relative clauses are also found with predicates like *sa-sekaul-an*, as in (136), to be compared with (133):

- (136) a. na-pacun ti palang tua [azua a sa-sekaul-an  
 Perf-see-AF Nom Palang Acc that A SA-enslave-AN  
 ni kui a causcaus].  
 Gen kui A person  
 ‘Palang saw that man who is enslaved by Kui.’  
 b. na-pacun ti palang tua [azua a sa-sekaul-an  
 Perf-see-AF Nom Palang Acc that A SA-enslave-AN  
 ni kui \*(a) ti-kai].  
 Gen kui A P-Kai  
 ‘Palang saw that Kai who is enslaved by Kui.’

Unlike the ambiguity of (134), (133) is unambiguous in that, as opposed to a *ti-kai* in (136b), *ti kai* in (133) cannot be interpreted as a common noun modified by a relative (see also Tang et al. 1998).

## 2.6 ‘The place of X’

In addition to meaning ‘X-er/ee’, lexical nominalization by the circumfix *Ca-...-an* may also denote ‘the place particularly for X’, as in (137c) and (138):

- (137) a. na-k-em-an ti kai tua vasa.  
 Perf-eat-AF Nom Kai Acc taro  
 ‘Kai ate a taro.’  
 b. k-in-an ni kai a vasa.  
 eat-PF Gen Kai Nom taro  
 ‘Kai ate the taro.’  
 c. ka-kan-an  
 KA-eat-AN  
 ‘place particularly for eating’

- (138) k-em-esa → ka-kesa-n<sup>36</sup>  
 cook-AF KA-cook-N  
 ‘cook’ ‘kitchen’

As in the case of predicates like *sa-sekaul-an* ‘enslave’, those like *ka-kan-an* may also function as LF predicates, as shown in (139a):

- (139) a. ka-kan-an ni kai tua vasa a gadu.  
 KA-eat-LF Gen Kai Acc taro Nom mountain  
 b. k-in-an-an ni kai tua vasa a gadu.  
 eat-Perf-LF Gen Kai Acc taro Nom mountain  
 ‘Kai ate taros in the mountain.’  
 c. uri kan-an ni kai tua vasa a gadu.  
 will eat-LF Gen Kai Acc taro Nom mountain  
 ‘Kai will eat taros in the mountain.’

Suffixation of *-an* alone to a predicate stem may also result in similar nominalized instances with other related meanings, as in (140)-(142):

- (140) 'em-ereng → 'ereng-an  
 lie-AF lie-AN  
 ‘lie’ ‘bed’  
 (141) s-em-uap → suap-an  
 sweep-AF sweep-AN  
 ‘sweep’ ‘broom’  
 (142) 'em-emu → 'emu-an  
 mill-AF mill-AN  
 ‘mill’ ‘mill’

<sup>36</sup> Sentences like (i) below, to be compared with (137c) and (138), seem to suggest that the meaning of ‘place’ is mainly denoted by the suffix *-an*:

- (i) a. vasa  
 ‘taro’  
 b. pu-vasa ti kui.  
 PU-taro Nom Kui  
 ‘Kui has plenty of taros.’  
 c. pu-vasa-n  
 PU-taro-AN  
 ‘place of planting taros’  
 d. \*vasa-n  
 taro-AN

### 3. Gerunds

It has been pointed out in Tang (1999), among others, that Paiwan predicates like *pasaLiv* ‘wrong’ may take a sentential argument, as illustrated in (143b):

- (143) a. *na*-'em-ayam      *ti*      *vuvu*      *tua*      *sipaukuz*.  
          Perf-examine-AF   Nom old-man   Acc   present  
          ‘The old man examined presents.’  
       b. *pasaLiv*   *a*      ['em-ayam      *ti*      *vuvu*      *tua*      *sipaukuz*].  
          wrong    Nom   examine-AF    Nom old-man   Acc   present  
          ‘That the old man examines presents is wrong.’

Sentences like (143b) can be further changed to those like (144):

- (144) *pasaLiv*    *a*      ['em-ayam      *ni*      *vuvu*      *tua*      *sipaukuz*].  
          wrong    Nom   examine-AF    Gen old-man   Acc   present  
          ‘(lit) The old man’s examining presents is wrong.’

Sentence (143b) differs from (144) only in the case marking of *kai*: in (143b) it is marked nominative and in (144) genitive. In either sentence, however, *sipaukuz* ‘present’ is marked accusative and the embedded predicate is affixed with AF marker.

Note that temporals like *tucu* ‘today’ can appear between the embedded predicate and the agent noun phrase in both (143b) and (144).

- (145) a. *pasaLiv*   *a*      ['em-ayam      *tucu*   *ti*      *vuvu*      *tua*      *sipaukuz*].  
          wrong    Nom   examine-AF   today Nom old-man   Acc present  
          ‘That the old man examines presents today is wrong.’  
       b. *pasaLiv*   *a*      ['em-ayam      *tucu*   *ni*      *vuvu*      *tua*      *sipaukuz*].  
          wrong    Nom   examine-AF   today Gen old-man   Acc present  
          ‘The old man’s examining presents today is wrong.’

Based on all these observations, it seems that the embedded predicate in cases like (144) may be analyzed as verbal gerund, the nominalization of which may apply at the syntactic level.

#### 4. Conclusion

The preliminary study presented in this paper begins long-term research on Paiwan nominalizations. An optimal analysis of the examples considered so far will require the collection of more data, the investigation of more constructions, and the study of more Formosan languages. We, nevertheless, hope to have established some important empirical and theoretical issues for further research. In addition, if our approach is on the right track, findings about Paiwan will provide a basis for the contrastive study of Paiwan and other Formosan (and non-Formosan) languages.

For example, why is it that, apropos of result nominals, languages like Paiwan and Tsou observe both lexical and syntactic nominalization, but languages like English have only lexical nominalization? Could this cross-linguistic variation be attributed to a distinction between these two types of language in the presence of focus/voice markers in nominalization? I.e., as focus/voice markers are required to co-occur with predicate stems to form certain kinds of nominalization, and the attachment of such affixes to the predicates do not take place in the lexicon, the operation of the relevant nominalization, therefore, must apply syntactically. Such being the case, as opposed to Chomsky's (1995) claim, attachment of affixes to predicates may still take place at the S-Structure. These and other related issues we shall leave to future study.

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## 排灣語的名物化

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本篇文章主要是探討排灣語的「名物化」。就「結果名詞」的產生而言，有證據顯示可分為在「詞彙層次」衍生和在「句法層次」衍生兩種不同的名物化。這兩種「結果名詞」，在句法行為和語意行為上，都與「無中心語關係子句」和「內附中心語關係子句」有所不同。排灣語類的語言之所以有「句法層次」的「名物化」，可能是因為這類的「名物化」對「詞幹」和「焦點標記」有共存限制的要求。這樣的語料和分析，將對 Chomsky (1995) 所提出的“不允許「詞綴」在「句法層次」依附”的主張造成問題。

關鍵詞：名物化，結果名詞，動名詞，關係子句，排灣語，台灣南島語