On Nominalizations in Paiwan[*]

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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

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   [?apedang-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.[1]

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.'

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[1] 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.[2]

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.[3]

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[2] More discussion of the morphology, syntax, and semantics of *kina-* will be given later in this section.
[3] 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.[4] 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.[5] That is, predicate stems are required:

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[4] 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.'
[5] 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'.[6]

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[6] 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,[7] 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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[7] 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)[8]
         KA-tall-AN
    c. *'-in-aca(-an)
         IN-tall-AN
    d. *'aca-an
         tall-AN

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[8] 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. K*a-* 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.[9] These two contrasts, thus, seem to suggest that the *-in-* under consideration may act as nominalizer in Paiwan.[10] 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*].[11] If this line of thought is on the right track, then *-in-*…*-an* should not be treated as circumfix.[12] Instead, they are two kinds of nominalizer, and affixation of *-in-* needs

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[9] 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'.

[10] 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

[11] 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-'-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.

[12] 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. baytunux   (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).[13]

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

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    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.

[13] For the [– vision] type of result nominal, the two nominalizers in question both seem to be the suffix -*an*, as sentences (i) and (iib)-(iiib) 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.[14] 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.

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[14] 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   patongkuonɨ.
    AV-Rea   high-AV   Nom   Mt.-Jade
    'Mt. Jade is high.'

   b. m-o   4000 meter   'o   [[hia-taini/ta   bangkake]   ta   patongkuonɨ].
    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   cohɨmɨ   'e   suika.
    AV-Rea   sweet-AV   Nom   watermelon
    'The watermelon is sweet.'

   b. m-o   auseoselɨ   'e   [[hia-si   cohɨmɨ]   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   auseoselɨ   'e   [[hia-si   cohɨmɨ]   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   [[cohɨmɨ-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   ['ateLiteliv-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[15]
       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:[16]

(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):

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[15] 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.'

[16] 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).[17] 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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[17] 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,[18] it seems that simplified noun phrase structures like (57) and (58) are needed for Paiwan direction nouns and non-direction nouns respectively:[19]

(57)

```
                        PP
                     /      \
                   P          NP          (or DP)
                   |          /
                   |        N'
                   |       /    \
                   |      N       NP       (or DP)
                   |      |       /\
                   i    vavau   tua  kavates
                   on    top    Acc  basket
```

'on top of the basket'

(58)

```
                        PP
                     /      \
                   P          NP          (or DP)
                   |         /   \
                   |       N'      NP      (or DP)
                   |      /        /\
                   |    N         /  \
                   i  tua siubay ni   kai
                   in  Acc store Gen  Kai
```

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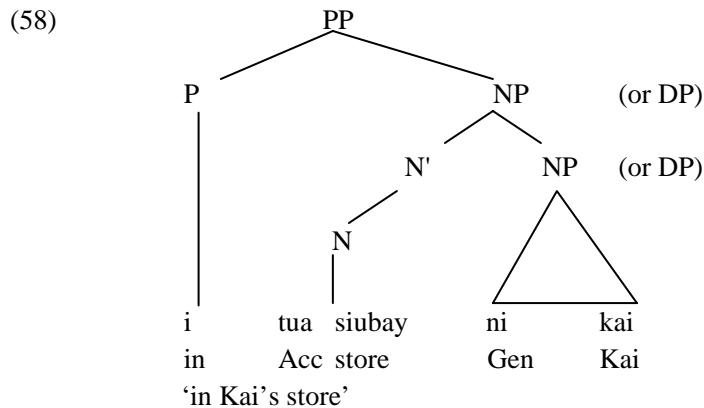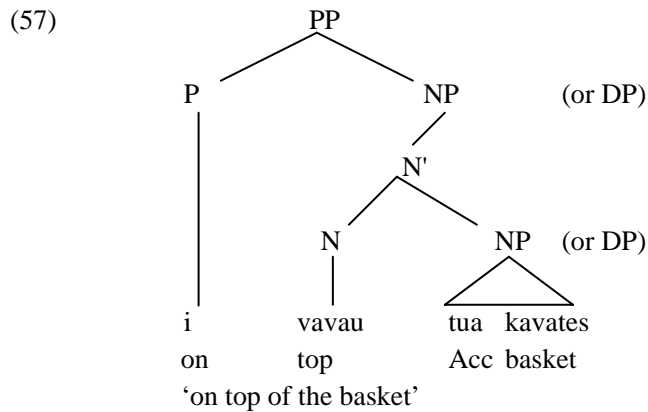
Assuming with Tang et al. (1998) that in Paiwan, as in other languages, genitive case may be assigned in the Spec of NP/DP, it then follows that in (58) *kai* 'Kai' will be marked genitive but not accusative. In (57), however, there appears to be no overt preposition before the complement noun phrase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

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[18] 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).

[19] 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
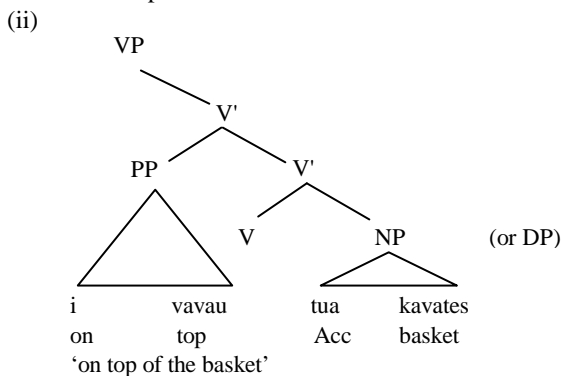
operation of reduplication yields the meaning of 'a bit X', while in nominalized (37b) it expresses 'the X part'. Also, the added meaning of 'part' is denoted by the AF marker in (41b), not (41a). Syntactically, in non-nominalized (37a) and (41a) the reduplicated form takes a nominative subject whereas 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'.[20]
    Acc   house
    '(lit) Kui planted betel nuts in the back (*last year) of the house.'

---

[20] 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
         'Kui planted betel nuts in the back of the house.'
(ii)

```
            VP
             \
              V'
             /  \
           PP    V'
          / \   /  \
         /   \  V   NP      (or DP)
        /     \ |   / \
       i    vavau tua kavates
       on    top  Acc basket
    'on top of the basket'
```

(68) na-v-en-eLi   ti   kai   tua   kava   (*katiaw)   ni   kui.
    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).[21]

(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.[22] 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

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[21] For a detailed discussion of the distribution of temporal expressions in Paiwan, see Tang (1999).

[22] 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.

cannot be located between the nominal and the associated noun phrase, as shown in (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 saltness (*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.[23]
     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.'

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[23] 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.[24]

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[24] 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.[25]

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[25] 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-tiav-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/yesyerday   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].[26]
      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):

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[26] 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-tiav-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. [27] 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.[28]

(107) pacengceng   a   ['apedang-an (*katiaw)   nua   siaw].
       AF-appropriate   Nom   salty-AN   yesterday   Gen   soup
       '(lit) The saltness (*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

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[27] For a discussion of various kinds of relative clause in Paiwan, see Tang et al. (1998).

[28] 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.[29] Neither of them should be analyzed as involving headless relativization.[30] 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   yʉcʉ'ʉhi   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   yʉcʉ'ʉhi   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   aʉmtʉ   ʉmnʉ   'o   [[(*m-i-ta)   hia
      AV-Rea-3SA real (AV) good (AV) Nom   AV-Rea-3SA HIA
      cocʉv-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

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

[30] 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 ɨmnɨ   'o   [(m-i-ta)   hia   cocɨv-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].[31] 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'.

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[31] 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.[32] 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.[33] In other words, some kind of complex predicate seems to be involved. We will leave this issue for further research.[34]

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.'

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[32] 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.

[33] 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 existance of the Gen/Acc asymmetry, the accusative case in question does not seem to act as inherent case in Paiwan.

[34] 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-banky 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.[35]

2.5 'X-er/X-ee'

In Paiwan predicates like *vuLung* 'old' may denote 'X-er' in the form of C*a*-…-*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 C*a*-…-*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'

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[35] 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 C*a*-…-*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 C*a*-…-*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 C*a-*…-*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[36]
      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'

---

[36] 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，有證據顯示可分爲在「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」，在句法行爲和語意行爲上，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」，可能是因爲這類的「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