On the realization of external arguments in nominalizations

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Abstract   In this paper, I will address the distribution of external arguments in nominalizations and particularly unergative nominalizations in Kaqchikel (Mayan). In Imanishi (2014, 2020a,b) among others, I have proposed, developing Alexiadou's (2001) analysis of various Indo-European languages, that nominalization in Kaqchikel as well as other Mayan languages is subject to a restriction on the realization of an external argument, stated as the *Restriction on Nominalization* (henceforth RON). According to the RON, nominalized verbs must lack a syntactically projected external argument. In response to Burukina's (2021) recent observation that unergative nominalizations in Kaqchikel can contain an external argument in certain cases, I will show that the counterexamples presented by Burukina are only apparent in (at least) the dialect/idiolect of Kaqchikel under investigation. As will be demonstrated, the unergative nominalization that appears to occur with an external argument undergoes causativization/transitivization: what appears to be an external argument is actually the internal argument of a causativized/transitivized verb, thereby providing further support for the RON.

Keywords   : nominalization, argument realization, causativization, complement types, Kaqchikel (Mayan)

1. Introduction

Nominalization has been one of the central issues concerning the architecture of grammar since Chomsky (1970). Based on the contrast between derived nominals and gerunds in English as shown in (1), Chomsky proposed that the former type of nominalizations is derived in the lexicon (= the lexicalist hypothesis), whereas the latter type is formed in the syntax.

(1) a. John's refusal of the offer   *derived nominals*

  b. John's refusing the offer   *gerunds*

There are still ongoing discussions about where nominalization takes place: see, for example, Newmeyer (2009) for arguments for the lexicalist hypothesis and Bruening (2018) for those against it. One of the syntactic approaches to nominalization and in particular event (or process) nominals is that nominal functional projections dominate verbal projections containing arguments (Borsley & Kornfilt 2000; Alexiadou 2001; Fu et al. 2001; Coon 2010, 2013; Kornfilt & Whitman 2011:*inter alia*). This mixed projection approach receives support

from the cross-linguistic fact that some types of nominalized verbs maintain verbal properties alongside nominal properties: i.e., mixed categories of nouns and verbs (Chomsky 1970; Abney 1987; Grimshaw 1990; Borsley & Kornfilt 2000; Alexiadou 2001; Carnie 2011:etc.). These include English gerunds. As has been pointed out in the literature, gerunds can cooccur with adverbs, unlike derived nominals (see Abney 1987; Alexiadou 2001; Alexiadou et al. 2007:among many others, for detailed discussion on verbal/nominal properties of English gerunds).

In Imanishi (2014, 2020a,b) among others, I have shown that nominalizations in Kaqchikel, which exhibits rich verbal morphology, provide further evidence for the mixed projection approach to event nominals. In addition, I have proposed, developing Alexiadou's (2001) analysis of various Indo-European languages, that nominalization in Kaqchikel as well as other Mayan languages is subject to a restriction on the realization of an external argument, stated as the *Restriction on Nominalization* (henceforth RON), according to which nominalized verbs must lack a syntactically projected external argument. The presence of restrictions like the RON further supports the syntactic approach to event nominals by suggesting that (a subset of) nominalizations are constrained by the restriction specific to the argument realization in event nominals.

Burukina (2021) has recently presented a set of counterexamples from Kaqchikel to the RON. Burukina demonstrates that (at least in some cases) nominalizations in Kaqchikel may have an external argument. In particular, nominalizations of unergative verbs occur with an external argument in certain contexts, as she shows. In this paper, I will address these counterexamples and suggest that those cases in which an external argument occurs undergo causativization, and hence the argument in question is an internal argument, thereby providing further support for the RON.

The paper is organized as follows. Section 2 overviews complement types in Kaqchikel and discusses a restriction on argument realization found in non-finite infinitives formed with nominalization. Section 3 addresses counterexamples to the restriction and presents an analysis of them, followed by the conclusion given in Section 4.

2. Argument realization in nominalizations of Kaqchikel
2.1. Complement types in Kaqchikel

Kaqchikel is a member of the K'ichean branch of Mayan languages, spoken in the central highlands of Guatemala by about half a million people (England 2003; Maxwell & Hill 2006). Unless otherwise noted, the data of Kaqchikel in the paper come from my fieldwork on the Patzún dialect spoken in the Chimaltenango department of Guatemala (see Brown et al. 2006 and García Matzar & Rodríguez Guaján 1997, for example, for detailed grammatical descriptions of Kaqchikel).

Like other Mayan languages, Kaqchikel is a head-marking ergative language in the sense of Nichols (1986). Grammatical relations are cross-referenced, with ergative alignment, by agreement morphemes that appear on the predicate. The ergative and absolutive morphemes are called *set A* and *set B* markers, respectively, in Mayan linguistics. Ergative and genitive are homophonous across Mayan languages. Set A markers cross-reference transitive subjects and possessors, whereas set B markers cross-reference intransitive subjects and tran-

sitive objects. All pronominal arguments in Mayan languages, including subjects, objects and possessors, may be pro-dropped. In what follows, I will use set A markers for ergative and genitive morphemes, and set B markers for absolutive morphemes. The examples in (2) show basic transitive and intransitive sentences of Kaqchikel.[1]

(2) a. yïn x-**e**-**in**-tz'ët   rje'.
         I   PFV-B3PL-A1SG-see they
         'I saw them.'

     b. rje' x-**e**-wär.
         they PFV-B3PL-sleep
         'They slept.'

There are two classes of complement clauses in Mayan: *finite* and *non-finite* (Aissen 2017). The following discussion is based on Aissen's (2017) classifications. The verbs of finite clauses inflect for aspect as well as the person and number features (= ϕ features) of the subject (and object), while those of non-finite clauses do not: the inflection for ϕ features found in non-finite clauses is somewhat restricted, as will be shown below. Finite complement clauses can be further divided into two types, depending on whether they are headed by a complementizer: COMP+finite and *simple finite*. Non-finite complement clauses also come in two types: *aspectless* and *inifinitival*. The inflectional properties of these complement types are summarized in Table 1.

	Aspect	Features of subject	Features of object
COMP+finite and simple finite	✓	✓	✓
non-finite (aspectless)		✓	✓
non-finite (infinitive)			(✓)

Table 1. Inflectional properties of complement types in Mayan (Aissen 2017: *slightly modified*)

Kaqchilel displays three complement types among those listed above: COMP+finite, simple finite, non-finite infinitive. Examples in (3) and (4) represent COMP+finite and simple finite clauses, respectively. The subordinate clause in (3) is headed by the complementizer *chin*. As seen in (4), the verb *b'ij* "say" takes a complement clause that is not introduced by a complementizer.

(3) yïn n-ø-in-nimaj   [chin x-e-n-b'än   k'iy ch'akät].
     I   IPFV-B3SG-A1SG-believe COMP PFV-B3PL-A1SG-make many chair
     'I believe that I made many chairs.'

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[1] The following abbreviations will be used, based on the Leipzig glossing rules (some glosses are added): 1 = first person; 2 = second person; 3 = third person; A = set A (ergative/genitive) marker; ANTIP = antipassive morpheme; B = set B (absolutive) marker; CL = proper name clitic; COMP = complementizer; DET = determiner; IPFV = imperfective aspect; NMLZ = nominalizing suffix; PASS = passive (morpheme); PL = plural (suffix); PREP = preposition; PROG = progressive aspect; PFV = perfective aspect; SG = singular.

(4) yïn n-ø-in-b'ij　　　　　[ri　a　Juan　x-e-r-chaqirisaj　　　k'iy　wäy].
　　I　Ipfv-B3Sg-A1Sg-say　Det　Cl　Juan　Pfv-B3Pl-A3Sg-dry　many　tortilla
　　'I say Juan cooked many torrillas.'

When the complement clause is headed by a complementizer, *b'ij* means 'believe'. More work is necessary on the distinction between Comp+finite and simple finite clauses in Kaqchikel. In other Mayan languages such as Tsotsil, simple finite clauses are selected by desideratives, modals and verbs of direct perception (Aissen 2017). As will be shown in section 3, desideratives in Kaqchikel select Comp+finite clauses as well as non-finite infinitives.

　　Non-finite infinitives in Kaqchikel are shown in (5) - (7). These infinitives appear with the aspectual predicate *ajin* (= progressive marker) and embedding verbs such as *chäp* 'begin'. The infinitives undergo nominalization (= event nominals), suffixed by nominalizers such as *-ïk* and *-oj*.

(5) y-in-ajin　　　　che　[ki-k'ul-ïk　　　ak'wal-a'].
　　Ipfv-B1Sg-Prog　Prep　A3Pl-meet-Nmlz　child-Pl
　　'I am meeting children.'

(6) röj　y-oj-ajin　　　che　[choy-oj　che'].
　　we　Ipfv-B1Pl-Prog　Prep　cut-Nmlz　tree
　　'We are cutting trees.'

(7) röj　x-ø-qa-chäp　　　[ki-k'ul-ïk　　　rje'].
　　we　Pfv-B3Sg-A1Pl-begin　A3Pl-meet-Nmlz　they
　　'We began to meet them.'

While I abstract away from the discussion of the differences between *ïk* nominalizations and *oj* nominalizations (see Imanishi 2014 and Imanishi 2020b for details), what concerns us here is that the non-finite infinitives bracketed in (5) - (7) do not inflect for aspect and only show ϕ agreement in a limited way. In particular, *ïk* nominalizations such as the ones found in (5) and (7) carry a set A marker cross-referencing the object, whereas *oj* nominalizations as in (6) do not have a set A marker: in fact, *oj* nominalizations cannot bear a set A marker, as shown in Imanishi (2020b). In the aforementioned works, I have shown that non-finite infinitives in Kaqchikel display both verbal and nominal properties and that *ïk* nominalizations undergo passivization. We will return to nominalizations of Kaqchikel in section 2.2.

　　Other Mayan languages such as Chol and Q'anjob'al have non-finite aspectless clauses in which both the subject and the object are cross-referenced by agreement morphemes. As shown by the example of Chol in (8), the bracketed phrase is a non-finite aspectless clause: it is also nominalized (see Coon 2013 for discussion).

(8) Choñkol-ø   [i̠-jats'-o̠ñ].
    PROG-B3SG   A3SG-hit-B1SG
    'She's hitting me.'

(Coon 2013)

Unlike in Kaqchikel, the infinitive in (8) carries both set A and set B markers, each of which cross-references the subject and the object, respectively.

2.2. The restriction on external arguments in event nominals

Of particular interest about the non-finite infinitives in Kaqchikel as shown in 2.1 is that they display ϕ agreement in a very limited way. In this subsection, I will demonstrate, based on Imanishi (2014, 2020b), that those infinitives are subject to a restriction on the realization of arguments, and particularly external arguments.

As we saw in 2.1, *ïk* nominalizations such as the ones shown in (5) and (7) only bear a set A marker cross-referencing the object. This indicates that there is only an internal argument within a nominalized clause in Kaqchikel. Kaqchikel displays a set of properties that can be taken as suggesting that *ïk* nominalizations ban the occurrence of an external argument. As shown in (9), the nominalization of a transitive verb excludes the external argument (= *Juan*) and only contains the internal argument (= *ri tinamït*). The external argument of the nominalized verb needs to be introduced as part of the relative clause modifying the nominalized infinitive.

(9) ri   ru-k'at-ïk   ri   tinamït [ri   x-ø-u-b'än   ri   a   Juan]
    DET A3SG-burn-NMLZ DET city   DET PFV-B3SG-A3SG-do DET CL Juan
    x-ø-xib'i-n.
    PFV-B3SG-scare-ANTIP
    'The burning of the city that Juan did was scary.'

(Imanishi 2020b: *slightly modified*)

Example (10) further shows that an external argument cannot be introduced by the counterpart of a *by*-phrase in Kaqchikel, namely *-oma* 'because-of'.

(10) ?*ri   ru-k'at-ïk   ri   tinamït r-oma   ri   a   Juan
        DET A3SG-burn-NMLZ DET city   A3SG-because.of DET CL Juan
     x-ø-xib'i-n.
     PFV-B3SG-scare-ANTIP
     ' (intended) the burning of the city by Juan was scary.'

(Imanishi 2020b)

As shown in (11), furthermore, the only argument inside the non-finite infinitive must be

interpreted as an internal argument.

(11) ru-k'at-ïk   ri   a Juan x-ø-xib'i-n.
      A3SG-burn-NMLZ DET CL Juan PFV-B3SG-scare-ANTIP
      'Juan's burning was scary.' = 'That Juan was burned was scary.' (*'That Juan burned something was scary.')

<div align="right">(Imanishi 2020b)</div>

To explain the restricted distribution of arguments in the non-finite infinitives of Kaqchikel, I have proposed in my previous works that a syntactically projected external argument must be absent in nominalized verbs in Kaqchikel, as stated as the *Restriction on Nominalization* (RON).

(12) THE RESTRICTION ON NOMINALIZATION (RON)
      Nominalized verbs must lack a syntactically projected external argument.

<div align="right">(Imanishi 2020b)</div>

The RON is modeled after a similar restriction for nominalizations in various Indo-European languages proposed by Alexiadou (2001). Alexiadou argues that event nominals in these languages generally have an unaccusative structure, and thus lack an external argument altogether. I have further suggested that the RON is subject to parametric variation. In particular, I have argued that the RON holds for Kaqchikel, but not for Chol and Q'anjob'al. It then follows that as we saw earlier in (8), Chol's nominalizations may have an external argument. The presence or absence of the RON can therefore capture the difference between non-finite aspectless clauses and non-finite infinitives (see Imanishi 2020a,b for detailed discussion on parametric differences regarding the RON).

The RON can correctly predict that Kaqchikel's *ik* nominalizations exhibit an asymmetry between unaccusative and unergative nominalizations. To be precise, unergative nominalizations are not expected to contain an argument since it is an external argument. This is indeed the case, as shown in (13). Not all intransitive verbs can be suffixed by the nominalizer -*ik*: it appears that only a subgroup of intransitive verbs in certain dialects can be suffixed by it (Brown et al. 2006). (see Imanishi & Mateo Pedro 2013 for relevant discussion). The nominalized forms in (13) become acceptable, though somewhat degraded, when the external arguments do not appear.

(13) a. *nu-b'iyïn-ïk
          A1SG-walk-NMLZ
          '(intended) my walking'

      b. ?*ru-tzopin-ïk   ri   xta Maria
          A3SG-jump-NMLZ DET CL Maria
          '(intended) Maria's jumping'

<div align="right">(Imanishi 2020b)</div>

By contrast, unaccusative nominalizations can have an argument since it is an internal argument, as seen in (14).

(14) ri   ru-tzaq-ïk   ri   a   Juan ütz.
      DET A3SG-fall-NMLZ DET CL Juan good
      'Juan's falling is good.'

<div align="right">(Imanishi 2020b)</div>

These facts provide further support that the RON is operative in the grammar of Kaqchikel, thereby strongly suggesting that (at least) a subset of nominalizations are syntactic.

3. Addressing unergative nominalizations
3.1. External arguments in unergative nominalizations

It was shown in 2.2 that nominalizations (= non-finite infinitives) in Kaqchikel must lack an external argument due to the RON. In particular, Kaqchikel nominalizations show the unergative vs. unaccusative contrast regarding the projection of an argument. This subsection discusses a set of counterexamples to the RON presented by Burukina (2021).

Burukina (2021) points out that most of the examples in my works involve verbs such as *ajin* (= progressive marker) and *chäp* 'begin'. When these verbs embed *ik* nominalizations, the coreference between the matrix subject and the the agent of a nominalized verb is forced, as shown by the examples in (5) and (7). In those cases, the set A marker carried by a nominalized verb cross-references the internal argument of its base. However, as Burukina shows, when other verbs that do not require such a coreference such as *ajo'* 'want, like' embed *ik* nominalizations, a set A marker cross-referencing the external argument of a base of a nominalized verb appears. This is shown in (15).[2]

(15) a. n-ø-inw-ajo'   (ri) k-atin-ik   ri   ak'wala' aninäq.
          IPFV-B3SG-A1SG-want DET A3PL-bathe-NMLZ DET children quickly
          'I want the children to bathe quickly. '

      b. n-ø-aw-ajo'   (ri) nu-b'iyin-ik   aninäq.
          IPFV-B3SG-A2SG-want DET A1SG-walk.VB-NMLZ quickly
          'You want me to walk quickly. '

      c. n-ø-inw-ajo'   (ri) ru-tzopin-ik   ri   xta Maria aninäq.
          IPFV-B3SG-A2SG-want DET A3SG-jump.VB-NMLZ DET CL Maria quickly
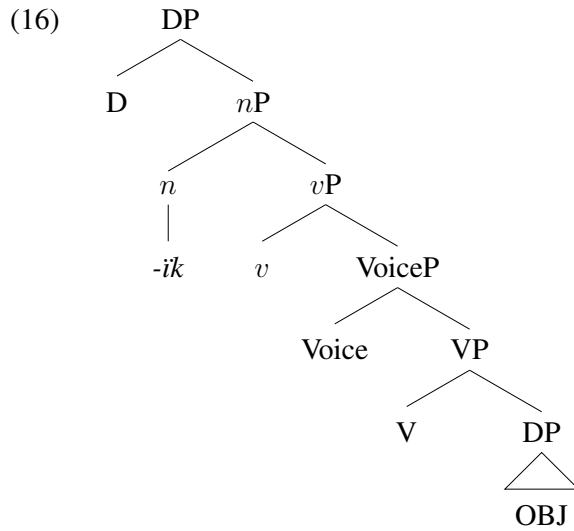   'I want Maria to jump quickly.'

<div align="right">(Burukina 2021)</div>

The bases of the *ik* nominalizations in (15) are unergative verbs: *atin* 'bathe', *b'iyin* 'walk', *tzopin* 'jump'. Crucially, these nominalizations contain the external arguments of their bases,

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[2] The glosses in the original examples are slightly modified for the purpose of consistency.

as indicated by the set A markers. While Burukina does not address other instances of unergative nominalizations banning the appearance of an external argument such as (13), the examples in (15) appear to challenge the RON.

I have suggested in my previous works that nominalizations (or non-finite infinitives) in Kaqchikel have the structure as seen in (16). The structure in (16) illustrates transitive nominalizations. Following the spirit of a mixed projection approach (Borsley & Kornfilt 2000; Alexiadou 2001; Fu et al. 2001; Coon 2010, 2013; Kornfilt & Whitman 2011:*inter alia*), I have proposed that the nominal projections DP and *n*P (headed by the nominalizer *ïk*) dominate the verbal projections *v*P, VoiceP and VP (Imanishi 2014, 2020b). D assigns genitive Case to the DP (or internal argument) inside a nominalized clause. The genitive Case is realized as a set A marker: recall that ergative and genitive are homophonous across Mayan languages.

(16)

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              DP
             /  \
            D    nP
                /  \
               n    vP
               |   /  \
             -ïk  v   VoiceP
                     /   \
                 Voice    VP
                         /  \
                        V    DP
                             /\
                            /__\
                            OBJ
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In order to derive correct surface morpheme ordering, I assume that a verb undergoes successive-cyclic head movement to *n*: V → Voice → *v* → *n*. Furthermore, the external argument is not projected inside the nominalized clause due to the RON.

On the other hand, Burukina (2021) proposes that a PRO variable instead of a lexical DP appears inside a verbal layer and that a lexical DP is merged in Spec,*n*P as a higher possessor and controls the PRO, adopting the analysis of Coon (2010, 2013) for Chol.[3] To explain the fact that external arguments appear in unergative nominalizations as seen in (15), Burukina argues that PRO is merged in Spec,*v*P and undergoes internal merge (see Burukina 2021 for details). To summarize, the RON poses undergeneration problems under Burukina's analysis,

3.2. Addressing the counterexamples to the RON

In this subsection, I will demonstrate that the counterexamples posed by Burukina to the RON are only apparent in (at least) the dialect/idiolect of Kaqchikel that I have studied,

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[3] Burukina (2021) proposes a slightly different structure than the one shown in (16): VoiceP dominates *v*P in Burukina's analysis.

thereby suggesting that the RON can correctly predict the distribution of arguments inside nominalizations.

According to the data drawn from my fieldwork on the Patzún dialect of Kaqchikel, the examples presented by Burukina (2021) such as the ones in (15) are ungrammatical: Burukina's data also come from the Patzún dialect. However, according to one of my consultants, the example in (15a), repeated below as (17), is grammatical when it denotes *I want someone to bathe the children quickly*: (17) is shown with its (un)available interpretations based on the dialect/idiolect of Kaqchikel I have investigated.

(17) n-ø-inw-ajo'   (ri) k-atin-ïk   ri   ak'wala' aninäq.
      IPFV-B3SG-A1SG-want DET A3PL-bathe-NMLZ DET children quickly

      *'I want the children to bathe quickly. '
      'I want someone to bathe the children quickly.'

Under this interpretation, the argument of *atin* (= *ri ak'wala'*) is not an external argument. It is rather an internal argument with unexpressed *someone* being an external argument: in this case, the verb is causativized and acts as a transitive verb.[4]

The desiderative verb *ajo'* embeds not only a non-finite infinitive formed with a nominalized verb as in (17) but also a COMP+finite clause, as shown in (18).

(18) yïn n-ø-inw-ajo'   [chin ri   ak'wal-a' y-e-atin   aninäq].
      I   IPFV-B3SG-A1SG-want COMP DET child-PL IPFV-B3PL-bathe quickly

      'I want the children to bathe quickly.'

In (18), the embedded clause does not have a causative/transitive interpretation, unlike in (17): *ri ak'wal-a'* 'the children' is an agent (= external argument) of the unergative verb. Support for the causative/transitive analysis of (17) comes from the example in (19). It shows that the unergative nominalization with a set A marker cannot occur with *-yon* 'by oneself', which enforces an agent interpretation of the argument *ri ak'wal-a'* 'the children'.

(19) *yïn n-ø-inw-ajo'   (ri) k-atin-ïk   ri   ak'wal-a' ki-yon.
       I   IPFV-B3SG-A3SG-want DET A3PL-bathe-NMLZ DET child-PL A3PL-alone

      'I want the children to bathe by themselves.'

The ungrammaticality of (19) strongly suggests that examples such as (17) involve causativization of the unergative verb, and hence the argument *ri ak'wal-a'* serves as an internal argument: the unexpressed agent such as *someone* is not compatible with *ki-yon* 'by themselves'. Example (20) further shows that the verb *atin* can occur with *-yon* when the former appears in a COMP+finite clause.

(20) yïn n-ø-inw-ajo'   [chin ri   ak'wal-a' y-e-atin   ki-yon].
      I   IPFV-B3SG-A1SG-want COMP DET child-PL IPFV-B3PL-bathe A3PL-alone

      'I want the children to bathe by themselves.'

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[4] Imanishi (2020b) indeed mentions the possibility that a set A marker appearing in an unergative nominalization could be the result of the causativization of its base.

Furthermore, the example in (21) further shows that *-yon* can appear within a nominalized clause when there is a lexical agent compatible with it; the ungrammaticality of (19) has nothing to do with the finiteness of a clause in which *-yon* appears.

(21) x-ø-in-chäp   ki-q'ete-x-ïk   ri   ak'wal-a' ni-yon.
      PFV-B3SG-A1SG-begin A3PL-hug-PASS-NMLZ DET child-PL   A1SG-alone
      'I began to hug the children by myself.'

It has been shown that the apparent counterexamples to the RON such as the ones in (17) can be analyzed as an instance undergoing causativization/transitivization. If this is the case, the set A marker found in (17) is an internal argument of the transitivized verb. This is consistent with what the RON predicts.

There are still several questions to address, however. First, it is not clear why the other examples in (15), namely (15b) and (15c), are still ungrammatical with a causative/transitive interpretation of the unergative verbs in the dialect/idiolect under investigation: the subordinate clauses need to be introduced as COMP+finite. In addition, it is unclear how the nominalized verb in (17) obtains a causative/transitive interpretation without any overt causative affix, though *atin* can be independently transitivized when it is suffixed by the causative suffix *-saj*: *atin-saj* 'bathe someone'. Furtheremore, it remains to be seen how the dialectal or idiolectal variation regarding the availability of unergative nominalizations with a set A marker arises. I leave these issues for further research.

4. Conclusion

I have demonstrated that Burukina's counterexamples to the RON are only apparent in (at least) the dialect/idiolect of Kaqchikel under investigation : they can be analyzed as involving the causativization/transitivization of an unergative verb. Therefore, the argument present in unergative nominalizations is actually an internal argument of the causativized/transitivized verb. Therefore, the RON still has the potential to correctly explain the distribution of arguments in nominalizations within Mayan languages and beyond.

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