# ‘Pseudo-nominalization’ in Distributed Morphology and Nanosyntax

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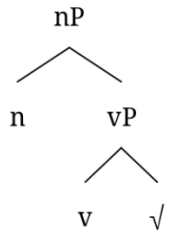
## 1 The issue

- A popular idea in contemporary syntactic theory is that nominalization and other category-changing operations are syntactic processes: something is a nominal when it is merged with a nominal category-defining head. This is a central claim of Distributed Morphology (DM; e.g. Marantz 1997, Harley and Noyer 1999).
- Many languages have nominalized verbs that contain not only a root but also a verbalizing projection (vP) and possibly more verbal structure; for instance, projections that license arguments or host adverbs. The basic structure of such event nominals is shown in (1). How much verbal structure is present varies from language to language (Harley 2009, Kornfilt & Whitman 2011).

(1)




- According to DM, morphemes correspond to syntactic terminals (notwithstanding post-syntactic morphological operations); nominalizing affixes are realizations of $n^0$.
- As such, **the presence of a nominalizing affix implies nominal syntactic properties**; that is, a morphologically nominal verb is expected to have the internal and external syntax of a nominal. I.e. they should:
    - Have the ability to take nominal modifiers, like adjectives.
    - Occur in argument positions, be marked for case, etc.
- **The problem:** in some languages, such as Iraqw and Scottish Gaelic, morphologically nominalized verbs can occur in positions where regular nominals cannot. In these positions, they cannot be modified by nominal modifiers. Essentially, they have nominal morphology, but not the corresponding nominal syntax; hence, they are ‘pseudo-nominalized’.
- **The proposal**: these observations constitute a serious problem for DM and the general notion of morphemes as realizing syntactic terminals. The spellout model of Nanosyntax is better able to account for pseudo-nominalized verbs, specifically through Phrasal Spellout and the Superset Principle.

## 2 The data

- Languages in which pseudo-nominalized verbs are found include Iraqw, a Cushitic language spoken in Tanzania, and Scottish Gaelic, a Celtic language spoken in Scotland. Unless otherwise noted, Iraqw data were gathered by me during fieldwork in Tanzania in 2022.

### 2.1 Iraqw

- In Iraqw, event nominalizations (or 'verbal nouns', Mous 1993) are derived from verbs using a variety of different suffixes. Some of these are shown in (2):

(2) a. *doosl* 'dig' > *doosla* 'digging' (F)
b. *fiis* 'steal' > *fiisoo* 'stealing' (F)
c. *daa'* 'sing' > *daa'aangw* 'singing' (M)
d. *goo'* 'write' > *goo'i* 'writing' (F)
e. *huuriim* 'cook' > *huuriingw* 'cooking' (M)
f. *slakaat* 'hunt' > *slakat* 'hunting' (M)

- Iraqw verbal nouns occur as arguments, and can be followed by nominal modifiers:

(3) *an=a* ***dooslár*** *inslaahh* *slaá'*
1SG=S1/2 dig:NMLZ.F:CON easy:F want:1SG
'I want easy cultivation.'

(4) ***huuríngw*** *fa/a* *i* *sla'atamís*
cook:NMLZ:M:CON porridge:F O.1SG want:DUR:CAUS:3M
'Cooking porridge (lit. 'the cooking of porridge') pleases me.'

- However, they may occur in certain contexts where regular nominals cannot occur. Specifically, verbal nouns may precede verbs like *aw* 'go' and *slaa'* 'want', in which case the theme of the verbal noun occurs as the object of the main clause, as in (5).

(5) *balaangw* *u* ***dooslár*** *áw*
grains:M O.M dig:NMLZ.F:CON go:1SG
'I am going to cultivate grains'

➢ Since the theme of the verbal noun (*balaangw* 'grains') is the object of the main clause, it seems that the verbal noun *doosla* is not licensed (or 'does not have Case'). Iraqw does not have ditransitive verbs with two objects in this configuration (Groen 2023).

- Furthermore, verbal nouns in this position cannot be modified by adjectives, as illustrated in (6). An adjective can modify a verbal noun that is the object of the verb 'go', as illustrated in (6a), but as soon as another object (in this case a cognate object) is added, adjectival modification is impossible, as shown in (6b).

(6) a. *i* ***daa'ángw*** ***hhoó'*** *eér*
S3 sing:NMLZ.M:CON good:M go:3F
'She is going to sing beautifully'

b. * *daa'aangw* *g-u* ***daa'ángw*** ***hhoó'*** *eér*
song:M 3>3-O.M sing:NMLZ.M:CON good:M go:3F
'She is going to sing a song beautifully'

- As shown by these observations, the morphologically nominalized verbs in (5) and (6) do not behave like nouns, but simply like non-finite verbs.

### 2.2 Scottish Gaelic

- A very similar phenomenon occurs in Scottish Gaelic. Event nominalizations (also referred to as 'verbal nouns') may occur in contexts where regular nominals do not, as oberved by Adger (2022).
- Verbal nouns in Gaelic are derived from verbs using suffixes; most verbs take the suffix *-(e)adh* (7a), but some verbs are nominalized with a different suffix (7b-c), stem alternation (7d), or suppletion (7e-f).

(7) a. *sguab* 'sweep' > *sguabadh*
b. *creid* 'believe' > *creidsinn*
c. *feith* 'wait' > *feitheamh*
d. *cuir* 'put' > *cur*
e. *abair* 'say' > *ràdh*
f. *rach* 'go' > *dol*
(Adger 2022: 3-4)

- Verbal nouns occur in argument positions, have gender, are marked for case, and can take nominal modifiers (Adger 2022: 4). See (8):

(8) *Bha* ***sgrìosadh*** ***iomlan*** *a'* *bhaile* *uamhasach*
be.PST destroy.VN complete the.M.SG.GEN town terrible
'The complete destruction of the town was terrible.' (Adger 2022: 6)

- However, verbal nouns are also used in aspectual constructions following auxiliaries. In this case, they cannot be modified by adjectives (Adger 2022: 6), as illustrated in (9). Like with the Iraqw examples, this implies that the verbal nouns in these constructions are not syntactically nominal.

(9) a. *Bha* *na* *saighdearan* *a'* ***sgrìosadh*** *a'* *bhaile*
be.PST the.M.PL.DIR soldiers PROG destroy.VN the.M.SG.GEN town
'The soldiers were destroying the town.' (Adger 2022: 5)

b. * *Bha* *na* *saighdearan* *a'* ***sgrìosadh*** ***iomlan*** *a'*
be.PST the.M.PL.DIR soldiers PROG destroy.VN complete the.M.SG.GEN
*bhaile*
town
for: 'The soldiers were completely destroying the town.' (Adger 2022: 6)

# 3 Possible DM solutions

## 3.1 Are these really nominalizing suffixes?

- A natural question: if these suffixes occur on verb forms that are not nominalized, are they actually nominalizers, or rather something else (e.g. infinitive markers)?
- There are several arguments to analyze these suffixes as nominal.

I. In both Gaelic and Iraqw, the gender of the nominalized verb depends on the suffix used. Gender is a characteristically nominal property, the locus of which is $n^0$ (Kramer 2015, 2016), which implies that the suffixes are realizations of $n^0$.

II. In Iraqw, most (underived) nouns have a nominal suffix. There are many nominal suffixes, each one associated with a specific gender (masculine, feminine or neuter). Most of the nominalizing suffixes that are found on verbs also occur with underived nouns. This is illustrated in Table 1 (examples from Mous et al. 2002).

Table 1: Nominalizing suffixes and their analogues in underived nouns.

| Suffix | Example verbal noun | Example noun |
|---|---|---|
| *-a* (F) | *doosl-a* 'digging' | *asl-a* 'fire'<br>(pl. *asl-oo*) |
| *-oo* (F) | *fiis-oo* 'stealing' | *deel-oo* 'day'<br>(pl. *deel-du*) |
| *-i* (F) | *goo'-i* 'writing' | *ba/-i* 'mud'<br>(pl. *ba/-u*) |
| *-aangw* (M) | *daa'-aangw* 'singing' | *dir-aangw* 'lion'<br>(pl. *dir-eeri*) |

Some the suffixes that form nominalized verbs are also found in other types of nominalizations, for example de-adjectival nominalization:

(10) *boo/* 'black' (ADJ) > *boo/a* 'blackness' (F) (Mous 1993: 77)

III. In Iraqw, (verbal) nouns have additional 'construct state' morphology in certain syntactic environments, including when preceding the finite verb (Mous 1993). The construct state morphology tends to be fused with the nominal suffix, and depends on gender.[1] The basic forms are shown in Table 2.

Table 2: Construct state forms in Iraqw (Mous 1993)

| | Form of construct state |
|---|---|
| Masculine | *-ú, -kú* |
| Feminine | *-ə́r, -tá* |
| Neuter | *-á* |

[1] The nature of construct state morphology is not entirely clear. For the closely related language Gorwaa, Harvey (2018) considers the construct state to be a sandhi phenomenon, occurring on nouns that are not at the end of a prosodic phrase. Following this, I consider the construct state forms to be phonologically conditioned allophones of the nominal suffixes, as in Groen (2023; unpublished MA thesis).

➢ This evidence strongly implies that the suffixes found on nominalized verbs are indeed realizations of a nominal head.

### 3.2 A post-syntactic solution?

- Adger (2022) identifies this problem in Scottish Gaelic. The framework he employs is not DM but instead mostly based on Borer's exoskeletal model (specifically 'parallel morphology', Borer 1988). Since his framework also considers categorization to be a syntactic process, he runs into the same problem.
- However, Adger's proposed solution is DM-like in the sense that it employs the notion of post-syntactic morphological operations. In Adger's proposal, the nominalizing suffix ("$\mu$[N]") normally spells out the nominal categorizing head, but can also be added post-syntactically, according to the following spellout rule:

(11) **Spellout rule for Scottish Gaelic** (Adger 2022: 15)
If a root is morphologically unsuffixed, suffix $\mu$[N].

- In DM terms: a "dissociated morpheme" (Embick 1997, Embick & Noyer 2007)
- This rule is formulated to satisfy a morphological constraint: roots in Gaelic must be followed by a suffix. For example, number suffixes for nouns, tense suffixes for verbs, comparative suffixes for adjectives, etc.

(12) **Constraint on Gaelic roots** (Adger 2022: 17)
A root in Gaelic must be morphologically combined with a suffix.

- However, there are several problems with adopting something a solution like this in a DM framework.
- This cannot be a phonological constraint, as there are many cases where roots do not have an overt suffix. For example: past tense verbs, imperatives, positive adjectives, singular nouns, etc. (Adger 2022: 15-17).
    - Adger proposes a phonologically null suffix in these cases, since these forms are part of suffixal paradigms. Still, this raises the question of how learnable a constraint like this would be.
- Adger's solution does not explain why specifically a nominal suffix needs to be added. Even if there is a constraint like (12), the rule in (11) does not follow automatically.
- Adger's solution is contingent on the morphological peculiarities of Scottish Gaelic, but there are more languages that have pseudo-nominalized verbs, like Iraqw.

➢ If we try to explain unexpected facts by postulating *ad hoc* post-syntactic operations, that weakens the predictive power of the model.

## 4 A nanosyntactic approach

- The existence of pseudo-nominalized verbs poses a serious problem for DM and similar frameworks. I propose that the model of nanosyntax (Starke 2009, Caha 2009) provides a better account of this phenomenon.

### 4.1 The model

- Nanosyntax is known for its richly articulated structures, composed of units smaller than morphemes. In our case, we are not particularly interested in that, but rather **the model of spellout** that nanosyntax proposes.
- A crucial difference compared to DM is the principle of **phrasal spellout**. While in DM, lexical ('vocabulary') items are inserted into terminals, in nanosyntax they lexicalize phrases, which may contain multiple heads. Each lexical item is associated with a tree structure, an L-tree (Starke 2009; Baunaz & Lander 2018: 19).
- How phrases are lexicalized is governed by the following principles (according to Baunaz & Lander 2018):

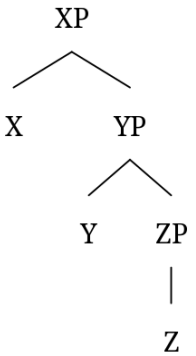
(13) a. **Superset Principle** (Caha 2009 as cited in Baunaz & Lander 2018: 27)
A lexical tree L can match a syntactic tree S if L is a superset (proper or not) of S. L matches S if L contains a node that is identical to a node in S and all the nodes below are also identical.

b. **Elsewhere Principle** (Baunaz & Lander 2018: 30).
If more than one L-tree can lexicalize the same S-tree (by the Superset Principle), then the L-tree with the least amount of superfluous material is chosen.

c. **Cyclic Override** (Baunaz & Lander 2018: 32).
Previous lexicalizations are overridden or canceled out by later lexicalizations.

- To illustrate the Superset Principle: the L-tree in (14) can lexicalize any tree that is a subtree of it, including [XP [YP [ZP]]], [YP [ZP]] or [ZP].

(14)



- Whenever a head F is merged, the grammar will attempt to lexicalize the structure up to that point. This is attempted three times according to the following algorithm (Starke 2011, Baunaz & Lander 2018):

    1. STAY. Check for a lexical entry that can lexicalize the whole structure.
    2. CYCLIC. Move the leftmost daughter of the sister of F to the left of F, then check for a lexical entry that can lexicalize the remaining constituent.
    3. SNOWBALL. Undo the CYCLIC movement and move the sister of F to the left of F, then check for a lexical entry that can lexicalize the remaining constituent.

    (Baunaz & Lander 2018: 37)

➢ This model, especially the Superset Principle, will allow us to account for pseudo-nominalized verbs.

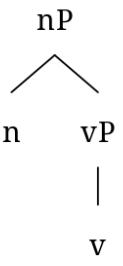
### 4.2 The proposal

- I will use examples from Iraqw to illustrate the proposal. For the sake of simplicity, I will use nP for the nominalizing projection, and vP for the highest verbal projection in nominalized and pseudo-nominalized verbs.

#### 4.2.1 The default nominalizer *-a*

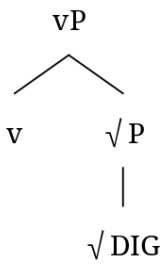
- The most common and productive nominalizing suffix for verbs in Iraqw is *-a* (Mous 1993: 76). Taking it to be the default nominalizer, its L-tree is given in (15):

(15) *-a* ⇔




- Consider the derivation of the pseudo-nominalized verb *doosla* 'digging' in a sentence like (5), shown in (16):

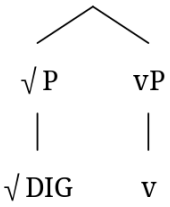
(16)



- When $v^0$ is merged, the algorithm will attempt to lexicalize vP.

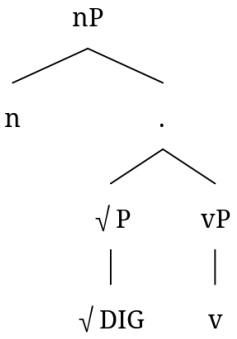
    1. STAY: check lexicon for an entry that can lexicalize (16)
       Fail; no appropriate lexical entry
    2. CYCLIC: evacuate leftmost daughter of the sister of v, then check again
       Fail; not applicable
    3. SNOWBALL: evacuate sister of v, then check again
       Success: the L-tree in (15) can lexicalize the remaining vP, since [vP [v]] is a subtree of (15). The result is shown in (17), with √P DIG ⇨ *doosl*, vP ⇨ *-a*.

(17)




- For true nominalized verbs, (17) is then merged with $n^0$, as in (18):

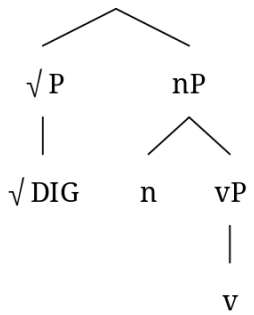
(18)




Attempting to lexicalize this structure yields the following:

1. STAY: check lexicon for an entry that can lexicalize (18)
   Fail: no appropriate lexical entry.
2. CYCLIC: evacuate leftmost daughter of the sister of v, then check again
   Succes: L-tree (15) matches [nP [n] [vP [v] ]]. See (19):

(19)




[nP [n] [vP [v]]] is succesfully lexicalized as *-a*. The original lexicalization of vP is overridden.

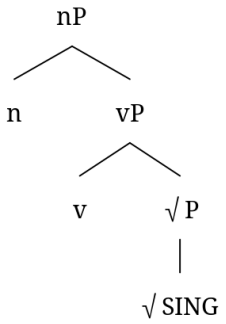
### 4.2.2 Lexically conditioned allomorphs

- Recall that in both Iraqw and Gaelic, the nominalizing suffix has a large number of allomorphs, depending on the root. In some cases, nominalization involves stem alternations or suppletion.
- In DM, stem changes and suppletion are accounted for with post-syntactic morphological operations. Lexically or grammatically conditioned allomorphy can be captured with rules that specify in which contexts certain lexical items can be inserted (Embick and Noyer 2007). Example (20) illustrates how this would look for nominalizing suffixes in Iraqw:

(20) *-aangw* ⇔ [n] / {√SING, …} _ (*daa'aangw* 'singing')
*-i* ⇔ [n] / {√WRITE, …} _ (*goo'i* 'writing')
*-oo* ⇔ [n] / {√STEAL, …} _ (*fiisoo* 'stealing')

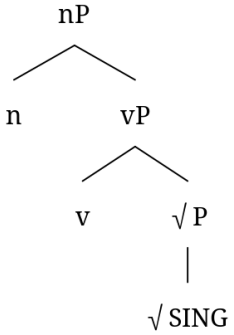
- Nanosyntax does not assume such lexical conditioning, nor any kind of post-syntactic morphology (Baunaz & Lander 2018: 14). Thus, allomorphy, stem changes and suppletion instead have to be accounted for in terms of different lexical entries with different L-trees.
- Proposal: the lexically conditioned allomorphs of the nominalizing suffix have structures like (21):

(21) *daa'aangw* ⇔

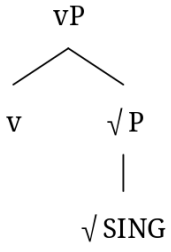



- The L-tree in (21) can lexicalize both (22a) and (22b), respectively nominalized and pseudo-nominalized. The lexicalization succeeds at the first step (STAY), which rules out the alternative option of lexicalization by *-a* as in (15).

(22) a.




b.



### 4.2.3 Why no nominalizing morphology in finite verbs?

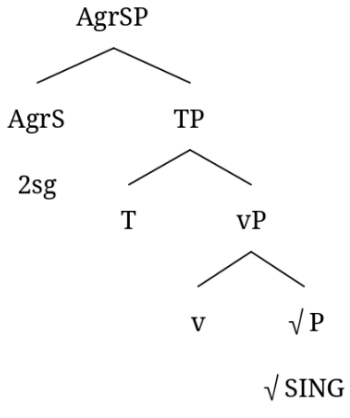
- Question: if vP can be lexicalized by a nominalizing suffix, why do we not see these nominalizing suffixes in finite verbs?
- One possibility: the highest verbal projection has some feature that finite verbs do not have (e.g. non-finite T)
- However: due to cyclic override, the nominalizing suffix would get overridden anyway. Verbal inflection in Iraqw is highly irregular and fusional, involving several inflection classes as well as non-concatenative morphology, including changes in tone, vowel length and quality, and consonant alternations. An overview of present tense verb forms is shown in Table 3:

Table 3: Conjugation classes in Iraqw (Mous 1993: 156-157)

| | I | IIa | IIb | IIIa | IIIb | IIIc | IIId | IIIe |
|---|---|---|---|---|---|---|---|---|
| 1SG | *koóm* | *máw* | *xwaylúw* | *óh* | *eehár* | *laáw* | */aáy* | *doósl* |
| 2SG | *koón* | *meér* | *xwayluúr* | *ót* | *eehát* | *láb* | */ág* | *dósl* |
| 3M | *kón* | *máy* | *xwaylúy* | *oh* | *eehar* | *laaw* | */aay* | *doosl* |
| 3F | *koón* | *meér* | *xwayluúr* | *ót* | *eehát* | *láb* | */ág* | *dósl* |
| 1PL | *koomaán* | *mawaán* | *xwayluwaán* | *ohaán* | *eeharaán* | *laawaán* | */aayaán* | *dooslaán* |
| 2PL | *koondá'* | *meerá'* | *xwayluurá'* | *otá'* | *eehatá'* | *labá'* | */agá'* | *doslá'* |
| 3PL (3N) | *koná'* | *mayá'* | *xwayluyá'* | *ohiyá'* | *eehariyá'* | *laawiyá'* | */aayiyá'* | *doosliyá'* |
| | | | | *ohír* | *eeharír* | *laawír* | */aayír* | *dooslír* |
| | 'have' | 'leave' | 'give birth' | 'seize' | 'follow' | 'go to cultivate' | 'eat' | 'dig' |

- For example, the second person singular present form *dá'* 'you sing' would have a lexical entry like in (23). When higher heads (e.g. for tense or subject agreement) get merged, the previous lexicalization *daa'aangw* is overridden.

(23) *dá'* ⇔



## 5 Diachronic and typological perspectives

- The advantage of a nanosyntactic approach is that it can account for pseudo-nominalized verbs without needing to postulate any language-specific rules. In fact, it allows us to naturally account for their existence as the result a common diachronic development.
- There is no reason to assume that Iraqw and Gaelic are special for having pseudo-nominalized verbs. It is common for infinitives to develop from nominalized verbs, as established in the typological literature (e.g. Haspelmath 1989).
- In Iraqw and Scottish Gaelic, this development seems to be ongoing. A plausible diachronic scenario is as follows:
    1. At first, nominalized verbs are used as objects of verbs like 'go' or 'want'.
    2. In these contexts, the nominalized verb is reanalyzed as a non-finite verb, with the same verbal structure but without the nominal structure. The finite verbs are semantically bleached and become auxiliaries or modals.
    3. This syntactic change is not accompanied by change in the lexicon (or in a post-syntactic morphological component); the same morphemes that lexicalize the nominalizing suffix still occur in the new infinitives, due to the superset principle.
- Thus, according to this model, the development of nominalized verbs into infinitives is seen as a syntactic change which is not (immediately) accompanied by a change in the lexicon.

## 6 Summary and conclusion

- Some languages, including Iraqw and Scottish Gaelic, have 'pseudo-nominalized' verbs, which have nominalizing morphology but lack the syntactic properties of nouns. Frameworks like Distributed Morphology, which assume that nominalizing morphology is the realization of a nominalizing head, struggle to account for this.
- The spellout principles of the model of nanosyntax, specifically Phrasal Spellout and the Superset Principle, provide a better account of this phenomenon. Within this model, pseudo-nominalized verbs can be understood as the result of a diachronic development, where nominalized verbs in certain contexts are reanalyzed as infinitives, but due to the Superset Principle these are still lexicalized in the same way as the original nominalized verbs.

➢ Further research could provide a more thorough nanosyntactic analysis, by mapping of the functional sequence that is present in verbs in these languages, and investigating how nominalizing morphology interacts with verbal morphology.

➢ Another question is whether there are other syntax-morphology mismatches that can be accounted for in this way.

## Abbreviations

| | |
|---|---|
| 1, 2, 3 | first, second, third person |
| CAUS | causative |
| CON | construct state |
| DIR | direct case |
| DUR | durative |
| F | feminine |
| GEN | genitive |
| M | masculine |
| N | neuter |
| NMLZ | nominalizer |
| O | object |
| PL | plural |
| PROG | progressive |
| PST | past tense |
| S | subject |
| SG | singular |
| VN | verbal noun |

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