# Deverbal Instruments in Navajo: Argument Structure and Modal Semantics

Navajo is an Athabaskan language spoken on the Navajo Nation in the American Southwest. The Athabaskan languages share a polysynthetic prefixal verbal morphology, where the stem is the final syllable, barring enclitics. The lexicon is heavily verbal. Verbs are complete propositions–argument structure, pronominal inflection, and properties of an event are expressed in the verb. Nouns are in a small closed class, and most new nouns are verbal. Some work has focused on polysynthetic nominalization: Ershova (2020) for West Circassian, Willie (1991) for Navajo, and Tamura (2019) for Yup'ik. However, much of this work is focused on the syntax of nominalization, and comparison of different types of nominalizations. Conversely, little work outside of Indo-European (e.g. Ferret & Villoing, 2015, for French) assigns a semantics to lexicalized nominalizations. This project seeks to shed light on polysynthetic nominalization, to contribute to our understanding of the semantics of instruments. It also presents an analysis of the morphology and semantics of previously-unanalyzed instrumental constructions in Navajo. This analysis is based on a dataset of 115 instrumental nominalizations from Young and Morgan (1987), which all use *bee* ('with it'). These constructions have a common template: *with it, something is VERB-ed*, or similar. The following are the Navajo words for *kettle, space heater,* and *gun*:[1][2]

(1) bee 'a- ∅- bézh -í
BEE 3.UNSP ∅ boil NMZ
'kettle, cauldron,' 'with it, something is boiled' (Young and Morgan 1987, d158).

(2) bee ho- n- eez- ∅- doo -í
BEE 3.UNSP.AREA THM STAT get.warm NMZ
'space heater,' 'with it, an area is warm' (Ibid., d161)

(3) bee 'e- l- dǫǫh
BEE 3.UNSP L explode
'gun,' 'with it, an explosion/boom is made' (Ibid., d162)

These *bee*-nominalizations have particular valency marking and argument realization: arity is set to one, and that single argument is realized by an unspecified third-person pronoun. I argue that these properties follow from a modal semantics for instruments, in which they are defined not by the actual events they partake in, but their potential to take part in events.

In Figure 1 is the traditional slot-and-filler template for Athabaskan. There are three domains–*disjunct, conjunct,* and *stem*. We are concerned with positions 4/5 ("direct object"/"deictic subject") and 9 ("classifier," valency marker).

There are four possible classifiers, and they associate with certain argument structures. The null (∅) classifier appears in verbs translated as intransitives or adjectivals. The ł-classifier patterns with active transitives. Meanwhile, the d-classifier often is used in constructions like passives and middles. Critically, *none* of the nominalized verbs in the dataset take the ł-classifier, only ∅, l, and d. This suggests that the verb forms that are nominalized are intransitive or detransitivized.

Navajo has several unspecified third-person markers, and several are attested in the dataset. *'a-* (the 'something' in 'something is boiled') is common, for a target of the event the instrument takes part in. In instruments that operate over an area, the unspecified third person spatial *ho-* is used (as

[1] Glossing conventions: UNSP 'unspecified,' THM 'thematic' (lexical meaning), STAT 'stative,' NMZ 'nominalizer'
[2] Examples marked "d" are from the dictionary, ones marked "g" are from the grammar.

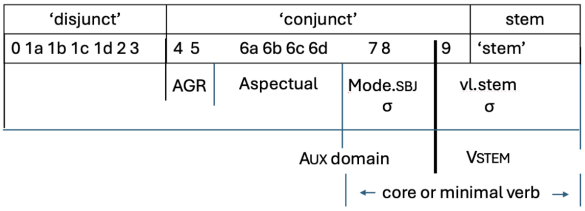


Figure 1: The template, adapted from Young and Morgan (1987) and McDonough (2000)

in 'heater,' pt. II p. 161). Some grooming instruments use *'adi-*, the third-person reflexive prefix (as in 'towel', Young and Morgan 1987, d157).

I use machinery from Grimm and Levin (2017)'s semantics to account for these two facts. Their account was built to explain plurality-denoting mass nouns in English (e.g. *furniture*, *ammunition*), defining them by their ability to participate in some event: furnishing a room for *furniture*, causing injury for *ammunition*, and so on. They package this intuition into the operator ABLE, which has the meaning *is able, in some possible world, to take part in some event*.

The semantics of *bee* in the deverbal instrumentals is derived via ABLE. *Bee* allows ABLE to take scope over the event described by the base verb (e.g. one-place events of boiling, with the ∅-classifier). To be a kettle is to be able to participate in some possible event of boiling as an instrument. The unspecified third-person prefix leave's the event's argument underspecified, reflecting how the boiling event could occur in any possible world.

Another use of *bee*, after a noun. introduces an instrument into a sentence (e.g. *beesh* 'knife,' *beesh bee* '**with** a knife,' Young and Morgan 1987: d157). I argue that this usage introduces an instrument and a subevent of instrument-usage into an event structure. A CAUSE operator, a la Dowty (1979), is conjoined to the event structure, and states that the instrument caused the core event via the usage-subevent. Because the mechanisms at play for both uses of *bee* are distinct, they can combine, as in *bee 'ádít'oodí bee*: "with a towel [i.e. that with which one wipes himself]" (Young and Morgan 1987: d791). The semantics of ABLE allows for the pronominal marking in the nominalized verb to remain in the unspecified third-person, even when the participants are specified in the sentence: the event denoted by a *bee*-nominalization is only sensitive to some possible world, not the speaker's. This also can account for non-lexicalized *bee* nominalizations in the optative mode. A deverbal instrument with the optative marker (for expressing wishes) can be inflected with a first-person pronominal prefix (not just an unspecified third-person one), in contrast to the items in the dataset. An example is *bee náoshkadí*, 'that with which **I** might sew it [i.e. my torn jacket]' (Young and Morgan 1987: g163). In cases like this, the first-person subject and the event of instrument-usage *are* in the same world, the world that is being wished for.

This account can be extended to other languages–related and unrelated, polysynthetic and isolating. First, the strategy attested in Navajo is also attested in other Athabaskan languages (Kibrik, 2019; Charlette, 2022). Second, as evidenced by translations in Inuktitut (Eskimo-Aleut) and Cree (Algonquin), other polysynthetic language families use third-person marking on nominalized verbs, and non-transitive/passive forms (Harnum, 1989; Charlette, 2022). Third, even English agent/instrument nominalizations (*writ-er*, *light-er*) can be said to have similar properties, in the sense that the base verb has little to no marking for its event structure. This project identifies that languages across genealogical and typological boundaries prioritize the same things in turning verbs into nouns, further supporting a modal semantics for these phenomena.

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