

MIT Working Papers in Linguistics, 2000. Volume dedicated to  
Ken Hale.

### **The Navajo Prolongative and Lexical Structure\***

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Looking at verb structure across a spectrum of languages, one wonders anew how languages can be so different and yet so much the same. Ken Hale's work suggests some answers to this classic question in linguistics; the discussion that follows is intended as a contribution in the same direction.

I will argue that, to understand verb semantics, we must recognize two levels of event structure. Verbs convey information about general event and state categories, and also about event particulars, or 'qualia'. Argument structure is relevant as well. To make these explicit I propose a tripartite format which represents the three kinds of information conveyed by a verb or verb complex.

In this study I investigate event structure in Navajo through a verbal prefix known as the Prolongative (*dini-*). I focus on the semantic contribution of the Prolongative to the Navajo verb base and its interaction with other prefixes. Using the semantic categories of event structure, I arrive at a principled account of the meaning of this and other prefixes.

The article consists of the following sections: §1 presents the data, namely, Navajo verb bases with the Prolongative in different combinations. §2 discusses event structure and the contribution of the Prolongative. §3 outlines the tripartite approach to lexical representation and how to represent the Prolongative in that format. §4 considers the interaction of the Prolongative with a class of related prefixes, looking at syntactic and semantic scopal issues. §5 offers a modest proposal concerning classifiers in the

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\* I would like to thank the audience at the Tucson meeting where this paper was given, and colloquium audiences at Arizona State University and the University of Rochester, for their questions and comments. I thank Leonard Faltz and Joyce McDonough for helpful discussions of issues in this paper, and Leonard Faltz for detailed comments on the manuscript.

tripartite framework. §6 concludes with some comments on event structure in Navajo.

The Prolongative prefix is realized by the form *dini-* and its variants (Young & Morgan 1987). Very generally, the prefix indicates a situation that is in effect for a prolonged period of time. This is close to the general meaning given by Young & Morgan: "The prolongative is the produce of arrested inception or of arrested termination of the action denoted by the verb theme" (1987: 876). I shall make this meaning more precise and relate it to the structure of events. Most of my examples and translations are drawn from Young & Morgan 1987 (YM), or from Young, Morgan, and Midgette 1993 (YMM).

## 1. The PROLONGATIVE

### 1.1. Preliminaries

Navajo has no direct counterpart to the simple surface verbs of languages like English. The verb complex consists of an abstract verb root, one or more verbal prefixes, and pronominal and conjugational prefixes. The linear order of the prefixes does not correspond to their hierarchical order. I assume that the verb complex is derived by adding affixes in hierarchical order (Speas 1990).

(1) represents the hierarchical syntactic structure of the Navajo verb complex.

(1) Navajo verb complex:

Verb Theme: Theme[classifier [root/stem]]

VerbBase: Base [lexical prefixes Theme[classifier+root/stem]]

Verb Complex: VComp[pronom & conjug prefixes [base]]

The verb base is an abstraction, consisting of the verb theme and lexical prefixes; it is the Navajo unit closest semantically to a simple verb. The theme consists of the verb root and a classifier; the root is realized as one of a set of stem shapes. There are dependencies between certain lexical and conjugational prefixes.<sup>1</sup>

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<sup>1</sup> The stem shapes vary according to a set of morphological categories. I use the term 'verb lexeme categories' for them; they are called 'aspectual' in YM, YMM, and 'stem-aspect' in Faltz 1998. The question of whether they consistently code aspectual notions is under debate (Smith 1991, 1996).

I will be concerned here with the verb base. The lexical prefixes that appear in verb bases include derivational prefixes and thematic prefixes, the latter idiosyncratic with a given verb theme. The Prolongative is one of six prefixes known as 'Sub-aspectual' (YM, YMM). The meanings of these prefixes pertain to the internal structure of events; more than one can appear in a single verb base.

## 1.2. Basic Data

The prolongative is conveyed by the prefix *dini-*; it requires the *d* classifier and in some cases particular conjugational prefixes. Classifiers are discussed in §3 and §4.

The simplest cases of the prolongative have only the verb theme and prolongative prefix, together with obligatory pronoun and conjugational prefixes. (2) and (3) are of this type. To see the semantic contribution of the prolongative, compare the a and b sentences. The form of interest in these sentences is the rightmost word, the verb complex. For simplicity I indicate the relevant prefixes and verb theme only. The prefixes are notated as follows: perf = perfective, impf = imperfective; subj = subject; the verb theme and classifier appear here as one unit, e.g. the form *-wod* in (2a-b).

- (2) a    chidí hashtł'ish yiih yilwod  
           car    mud into-it    perf-subj-run  
           The car ran into the mud
- b.    chidí hashtł'ish yiih dinoolwod  
           car    mud into-it    prol-perf-it-run
- (3) a    yadiizíní biih deeshtáál  
           tin can into-it    step-perf-subj-kick  
           I stepped into a tin can
- b    yadiizíní biih dineeshtáál  
           tin can into-it step-prol-perf-subj-kick  
           I stepped into a tin can and stayed (my foot stuck)

The events presented in (2) and (3) are telic: they have a natural endpoint, or change of state. The information conveyed by the postposition (*yiih*, into it) is essential to the telic interpretation, though the postposition is outside the verb base. I return to this point later. The b sentences convey that the final state associated with the event continues. In the rough translations I separate inference from literal meaning; inferences are in parentheses.

The next example has the derivational adverbial prefix "a- (away, out of sight), in addition to the verb theme. Here too the event is telic.

- (4) a. yah 'íiyá  
into-enclosed-space away-perf-subj-go  
He went inside
- b. yah 'adinidááh  
into-enclosed-space away-prol-perf-subj-go  
He went inside and stayed  
(preferred to remain; couldn't leave)

The prolongative *dini-* appears with the prefix: *ni-*, the Terminative. The Terminative prefix "marks the end or termination of a verbal action" (YMM: 875); it contributes to the telicity of the verb base. The verb base in (5a) has Terminative *ni-* (noted 'term'); (5b) has both *ni-* and *dini-*.

- (5) a. kintahdi niníyá  
town-to term-perf-subj-go  
I went as far as town
- b. kintahdi ndinisdzá  
town-to term-prol-perf-subj-go  
I went as far as town and stayed  
(liked it; got stranded there)

Again, the event is telic; the form *dini-* conveys that the final state of the event continues, and the parenthesized material suggests plausible inferences. The prolongative precedes the terminative in surface structure.

The prolongative also appears with inceptive prefixes, which focus on the beginning or coming about of an event. Their explicit English counterparts are the verbs *start*, *begin*. There are several inceptives in Navajo; three are illustrated below.

- (6) a. 'awéé' háácha  
baby incpt-perf-subj-cry  
The baby started to cry

- b. 'awéé' hadínéeshcha  
 baby incpt-prol-perf-subj-cry  
 The baby started to cry (and continued: cried and cried)
- (7) a. bi'niishchóósh  
 obj-incpt-impf-subj-eat leafy matter  
 I'm starting to eat it, leafy matter (e.g.salad)
- b. ndínishchóósh  
 incpt-obj-prol-impf-subj-eat leafy matter  
 I'm eating and eating on it, leafy matter  
 (eating too much, enjoying it too much to stop, out of control)
- (8) a. ndiishbeeh  
 incpt-impf-subj-swim  
 I'm starting to swim
- b. ndiníishbeeh  
 incpt-prol-impf-subj-swim  
 I was getting a good start swimming (...when something happened)

The central meaning in these examples is that the event began and continues. In other words, there is a beginning event which results in an ongoing event. The inferences licensed by the Prolongative vary. They often have a negative flavor, as in (2b) and (3b). But not all inferences are negative, as the translation of (7b) shows (it was provided by Ellavina Perkins and Mary Ann Willie).<sup>2</sup>

The consistent meaning in all these examples is that something, an event or state, continues; this is captured informally by Y&M's label 'prolongative'. There is some variation, in that Prolongative applies to states and events in different ways. Terminative and Inceptive prefixes are both, like the Prolongative, of the sub-aspectual class.

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<sup>2</sup> The following illustrates variation in the YMM translations for the inceptive prolongative *hadíni*:

- hadínischééh - cry and cry, keep on crying (YMM p 70)  
 hadínisht'aah - to carry O too far (YMM p 19)  
 hadí'niishchaad - to just get a good start carding when (YMM p 74)  
 hadínishdáásh - unable to jerk to a stop (YMM p 119)

Prolongative morphology: The Prolongative appears with verb bases of two aspectual or verb lexeme classes, Momentaneous and Transitional (notated as Mom and Trans below). The Prolongative requires the *d* classifier, which triggers a process known as classifier shift in some cases; see §3.1, §4. The prefix takes several forms that differ in stem set, perfective conjugation, and class of verbs. The main patterns are listed below; they were worked out by L. Faltz and me, based on information in YM, YMM. The conjugation system here is that of YMM; see Faltz 1998 for another approach.

(9) Morphological patterns of the prolongative

Case 1: *dini-* Mom verb base; motion verbs (examples 2-5)

Case 2: *hadíni-* Mom verb base; *s* perfective (example 6)

Case 3: *nádíni-* Mom verb base; *s* perfective; eating verbs (example 7)

Case 4: *ńdíni-* Trans verb base; motion verbs; *y* perfective (example 8)

Case 5: *nikidíni-* Trans verb base; handling verbs; *y* perfective<sup>3</sup>

The first pattern holds for simple prolongatives and prolongatives with other prefixes, e.g. the terminative *ni-* and adverbial prefixes such as *"a* which require the *y* or *n* perfective. The other patterns appear to depend straightforwardly on the inceptive prefixes and the Transitional morpheme *yi-* and do not affect the semantic contribution of the prolongative. YMM mention another pattern, also with an inceptive, but it seems to be idiosyncratic.<sup>4</sup>

<sup>3</sup> Example of Case 5: *nikidi!ni!il shaiŋ 4s* drive and continue

<sup>4</sup> YMM also note prolongative verb bases with the prefix form *dini-*, e.g. *dini!i!sh 4s* fix my gaze on it)

However, there are only a few of these: the pattern is apparently not a general one (L Faltz, p.c.)

## 2. Event Structure

### 2.1 Basic Event Structure

Event structure characterizes situations - events and states - according to the internal temporal properties of dynamism, telicity, and duration. The classification is an aspectual one. There are several such classifications, e.g. Vendler 1957, Dowty 1979, Smith 1991, and Pustejovsky 1991. Three two-valued semantic features distinguish types of situation: static vs. dynamic, telic vs. atelic, durative vs instantaneous. I abstract away from duration here. However, the feature of duration is required in a full account of the because it has syntactic reflexes in the Navajo verb base, cf. Smith 1991, 1996.

The distinction between events and states is due to the property of dynamism. Events are dynamic, with successive stages which take time; states are static and homogenous (Smith 1999). Events are sub-classified according to the properties of telicity and duration. Telic events, or Transitions, involve a change of state, goal, or outcome. Such events have a natural final endpoint, which occurs when the goal is reached (Vendler's Achievements and Accomplishments). Atelic events are Processes (Vendler's Activities). They consist simply of successive stages with no result or outcome: they can end at any time. Events of both types may be durative or instantaneous. (10) gives examples of these situation types.

- (10)           Types of Situation (ignoring duration):  
State: know the answer, be tall  
Process event (atelic): push a cart, sing songs, stroll in the park  
Transition event (telic): arrive, break a glass, build a house

The internal structure of situations can be modeled with the temporal features of dynamism and telicity. States consist simply of an undifferentiated state of affairs. Processes are more complex, involving successive stages in time. Transitions are still more complex: they consist of a process and a new final state, the result of the process. The schemas below model the internal structure of these situation types.

- (11)   State                    Process                    Transition  
      S                        P                        T  
      |                        /                        /                        \  
      e                        e<sub>1</sub>, e<sub>2</sub>.....e<sub>n</sub>                        P                        S  
  
      Mary is tall.                    John walked around. Mary closed the door.

I make the simplifying assumption that an event is preceded and followed by a situation of rest. This abstracts away from the complexity of actual situations in the world. Transition events involve a change from a situation of rest into the process stage of the event; and a second change into a new state which constitutes another situation of rest. I contrast this below with some derived Transition events.

In what follows I will use the more compact notation of (11a) to represent the internal structure of the situation type; I use the symbol E for all types.

- (12) E = S: e<sub>1</sub> = State  
E = P: e<sub>1</sub> = Process  
E = T: e<sub>1</sub> = Process  
e<sub>2</sub> = State

In languages like English the situation types are realized at the level of the clause by a verb together with its arguments, a verb constellation (Smith 1991). In English many verbs may denote either a Process or a Transition, depending on the arguments with which they appear. *Run* is such a verb: the verb constellation *Mary ran in the park* denotes a Process, while the constellation *Mary ran to school* denotes a Transition. The internal structure of the arguments is another factor: boundedness, or specificity, contributes to telicity. *Mary ate an apple* is a Transition event, whereas *Mary ate apples* is a Process event. These examples show that the NPs and PPs associated with the verb partly determine the situation type of a clause or sentence. There is some question as to the range of material required to interpret the situation types in Navajo.

The Prolongative prefix appears with an Inceptive prefix in many verb bases. In order to understand the contribution of each prefix, we must consider the event structure of Inceptives. They are a distinct class of derived telic events.

## 2.2 Derived Event Structure: The Inceptive



Inceptive sentences in a language focus on the initial endpoint of a situation, presenting it as an event in its own right. All languages have forms that allow speakers to talk about situations in more than one way. Speakers may take the broad view, talking about a situation as a complete whole. Or they may choose a narrower focus, a verb constellation which denotes the beginning, ending, or the middle of a situation. I have suggested elsewhere (Smith 1993/5) that the broad view of a situation represents the basic, unmarked choice. Narrow views are conveyed by situation types at a second, derived level: they focus only on part of a situation.<sup>5</sup> Derived situation types involve an additional morpheme or other information in the context.

The essential function of an inceptive is to narrow the focus of a verb base to part of the situation. I refer to morphemes like the inceptive as 'super-lexical' because their only semantic contribution is to narrow the view; they have also been called 'aspectual' and 'procedural' in the literature (Forsyth 1970). Inceptive prefixes focus on the beginning of a situation. Beginnings are Transition events: the natural final endpoint is a change of state from the process associated with beginning into an ongoing event. Thus Navajo verb bases with Inceptive morphemes denote Transition events.

What distinguishes the Inceptive from a basic-level transition event is its final state: an Inceptive results in an ongoing event rather than a state of rest, as with basic-level transitions. The two structures are shown schematically in (12):

(12)Basic-level Transition			Inceptive Transition		
(a)	(b)	(c)	(a)	(b)	(c)
rest	T	rest:new state	rest	T	ongoing event

This analysis of inceptives shows that they differ from basic-level Transitions, while sharing essential properties. It will allow a general statement about the semantic contribution of the Prolongative prefix.

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<sup>5</sup> The basic level reflects the natural way that people cognize and categorize situations in the world; and the way they associate verb constellations with idealizations. There is also a derived level. Both are rule-governed in the grammar. The notion of basic-level and shifted situation types is borrowed from psychology. Psychologists recognize a basic level of categorization, which is standard, unmarked (Rosch 1978). There may be differences in the basic-level situation types for different languages; this is a topic for future research.

All the examples of prolongatives given above involve telic events: (2)-(5) are basic-level Transitions, (6)-(8) Inceptive Transitions. Putting this information together, we can give a general characterization of the Prolongative in terms of event structure: the Prolongative affects the final state of a telic event, conveying that the final state of a telic event continues. Note that this account predicts that prolongatives appear only in verb bases that denote telic events. I have found no counter-examples to this prediction.

### **3. Lexical Representation**

#### 3.1 Tripartite Lexical Representations

Navajo verb bases, like verbs generally, encode semantic information of different kinds. I distinguish two levels of event structure. At the global level are the categories of events and states discussed briefly above. In addition I define a level of event particulars, or qualia. Qualia are the set of primitives that underlie situations, including Figure, Motion, Ground, Path, Final State. The argument structure associated with the verb complex is also relevant.

I propose a tripartite lexical format to represent the three kinds of information conveyed by a verb or verb base, each in a separate tier. Event structure articulates the internal structure of the situation denoted by a verb base; Qualia structure gives the particulars of that situation; Argument structure identifies the participants in the situation. The representation for a given verb will give this information in such a way as to bring out the relations between the tiers.<sup>6</sup>

The lexical representation of a verb unpacks information that may be expressed by one or more morphemes as in English, French, Chinese, etc; or by several morphemes as in Russian and Navajo. All Navajo verb bases contain more than one morpheme, since even the simplest verb bases have a root and classifier and belong to a given stem set. Classifiers convey whether a verb base is intransitive, transitive, or passive, and other information (see §5). Stem sets are associated with verb lexeme categories; some of these categories convey semantic information, others have little semantic content (Smith 1996).

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<sup>6</sup> My proposal is set out for English and Navajo in Smith 2000. The tripartite lexical representations are partly related to the work of Croft (1987), Jackendoff (1990) and Pustejovsky (1995), though they differ from all of these, especially at the level of Qualia structure.

The representation should make clear how the prefixes and other morphemes contribute to the verb base. Most prefixes convey information in a predictable way, though there are some idiosyncratic cases; the latter are called 'thematic' in YM, YMM. Often a decomposition analysis of the Navajo verb root is appropriate, for instance, it is necessary for a class known as 'handling' verbs, which encode information about both Figure and Action (Talmy 1985, YMM).

Event Structure characterizes situations according to the internal temporal properties of dynamism, telicity, and duration already mentioned. I will use the situation types indicated above.

Qualia structure represents the event particulars that identify a given situation. To state them we need a set of primitives that can pertain to the full range of situations. I will use the set of primitives listed in (13), following Talmy (1985).

(13) Figure, Motion, Ground, Path, Cause, Manner, State

I have added an additional primitive to the list, that of final or resultant State. The resultant State is a particular of telic events. Talmy 1985 identifies several patterns of information in verbs across languages, including Navajo.

These primitives organize situations in terms of spatial location and motion. They are intended to apply to both events and states. All events involve literal or metaphorical motion; telic events have literal or metaphorical changes of location/state. States, too, have literal or metaphorical locations: they are maintained rather than changed. The approach is due to the localist theory of Gruber (1965) and others. As Jackendoff puts it, "the basic insight...is that the formalism for encoding concepts of spatial location and motion, suitably abstracted, can be generalized to many other semantic fields" (1990:25).

In every situation we can identify a principal object, or Figure. Events involve motion or change of state, literal or metaphorical, and it is always the Figure that moves or changes. Statives ascribe a property to the Figure. The Figure is also central, according to Talmy 1985, in that the other components of the situation pertain to it in some way. The Figure may traverse a path toward a Goal, or from a Source; it may move in a certain Manner. If Ground is specified, it indicates how the Figure is oriented to its surroundings; Path gives the direction of motion traveled; Cause, the agent that brings about the motion or change of state.

Verbs or verb bases may use some or all of the set of primitives. Cause or agent is specified by many transitive verbs, but unspecified in many intransitives and passives. For instance, the English verb *run* specifies manner of motion; the verb *go* does not. The English verb *swim* implies a certain type of ground. The Qualia Structure representation for a given verb base contains only the primitives it specifies.

Argument Structure: the verb or verb base gives information about participants in a given situation through transitivity and other information. The arguments of the verb denote the participants in the situation denoted by the verb. Participants are involved with different stages of an event, making contributions of different kinds. This can be modeled by associating an argument with the appropriate primitive in Qualia structure. In a Transition event with an agent, for instance, the agent is associated with the process that brings about a change of state, but not necessarily with the change itself. Again, the entity undergoing change may be a simple theme, as with the direct objects of *open* and *put*; the entity which undergoes the change may also be the agent, as with path verbs such as *walk* or *run*; the change in such cases is one of location. Thematic roles and event structure are discussed in Croft 1985, Dowty 1991, Smith 1991.

The three tiers of lexical representation encode several kinds of information, which complement each other. Global Event Structure is related to Argument Structure, but neither is entirely dependent on the other. The thematic role of an argument is partly determined by Event Structure: States do not have agents, for instance. More generally, Event Structure provides necessary but not sufficient conditions for the expression of thematic roles associated with a given situation. Transitions must involve a change of state; but the agent is not always expressed, as in unaccusatives (*The glass broke*). The number of arguments - whether a verb is transitive, passive, etc. - is not determined by Event Structure (Smith 1991). The arguments of a verb are thus related to the situation which it denotes in different ways. This treatment enables us to dispense with the independent labeling of argument roles.

Qualia Structure is partially determined by the other two tiers, since it makes explicit the particulars of a situation. But some elements are unique: the Qualia tier gives information about the particulars of a situation that is not encoded elsewhere, and provides a locus for the contribution of participants to a situation. As we shall see, it is the locus for the information conveyed by the Navajo Prolongative. Qualia Structure is the place where different kinds of information come together.

The three-tiered format for lexical representation enables us to set out the different kinds of information encoded by a verb, whether morphologically simple or complex. I give an example of the English transitive verb *close* as in *Mary closed the door*. The Figure in this sentence is 'the door' since it is the entity that undergoes a change of state.

(14) Lexical representation for the English transitive verb 'close'

EVENT = T: e<sub>1</sub> = Process      ARG: Arg<sub>1</sub> : [1]  
           e<sub>2</sub> = State              Arg<sub>2</sub> : [2]

QUALIA: Cause [1]  
           Figure      [2]  
           Motion      (e<sub>1</sub>)  
           State (e<sub>2</sub>) closed

The Event Structure for *close* indicates that the event denoted is a Transition, with two sub-events, e<sub>1</sub> and e<sub>2</sub>; the Argument Structure indicates two arguments [1] and [2]. The representation links this information to Qualia Structure. In Qualia Structure, both sub-events and arguments are associated with particular primitives. Motion and final State realize the sub-events; arguments realize Cause and Figure. Recall the convention that only primitives relevant to a given verb form appear in the lexical representation for that form. Manner does not appear in (14), since the verb *close* gives no information about it. The linguistic forms leading to the interpretation of transitive *close* as telic include the entire verb constellation, the verb and its arguments.

Using this format for the Navajo verb base, we can represent the information conveyed by each morpheme. The lexical representation will parcel out the meanings of prefixes and verb stem, including decomposition of single morphemes as appropriate. (15) gives an example of a Navajo verb base with one prefix. The event is a Transition, with a single argument. The prefix specifies Path and resultant State. Information from the Event and Argument tiers also appears in the Qualia tier; if an entry has no notation, as for 'Path' in the Qualia tier of (15), it is part of the meaning of the verb base as a whole and is not conveyed by a particular morpheme.

(15) 'iilk'oot -a wave, ripple rolls away out of sight (prefix 'a)

EVENT = T: e<sub>1</sub> = Process      ARG: Arg<sub>1</sub>: [1] wave  
           e<sub>2</sub> = State

QUALIA: Figure [1]  
           Motion rolls, ripples (e<sub>1</sub>)  
           Path  
           State (e<sub>2</sub>); " a(away out of sight)

The prefix contributes to the Qualia structure of the verb base; it does not affect Event Structure or Argument Structure. (Without the prefix, the verb base would be *yí!lk*, which denotes a different event, roughly 'a wave arrives'.) The verb stem, which consists of the classifier and verb root, is treated here as a single unit. Later I will suggest how to integrate the classifier into the representation.

The single argument of (15) is associated with the inner verb complex; the final state is conveyed by an outer prefix ("a out of sight). In other bases an argument is conveyed by a postposition (Goal in (2) and (3)), or a prepounded adverbial ((16) below). Adverbials and postpositions are distinct from the verb complex, although there are clear dependencies between them.

### 3.2 Lexical representation of the Prolongative

I can now show where the contribution of the Prolongative should be represented in lexical structure. The Prolongative does not affect Event Structure because it does not change the internal temporal structure of the situation. Nor does it affect the participants of a situation, its argument structure. Rather, the Prolongative affects Qualia structure, where the final state of a situation is represented as a primitive of a Transition event.

The Prolongative specifies one particular of the resultant state of a Transition, namely that the state continues. (16) illustrates, giving a verb base with and without the Prolongative (a,b). The verb base has the prefix "a as well as *dini*-:

- (16) a. yah 'íyá  
 into-enclosed-space away-perf-subj-go  
 He went inside
- b. yah 'adinoodzá  
 into-enclosed-space away-prol-perf-subj-go  
 He went inside and stayed
- c Lexical representation for the verb base of 16b  
 EVENT = T: e1 = Process ARG: Arg1: [1] 3rd p  
 e2 = State
- QUALIA: Figure [1]  
 Motion go (e1)  
 Path "a(away)  
 State (e2); dini (continues)

The three-tiered format allows us to represent the semantic contribution of the Prolongative to a verb base. Semantically the derivational adverbial prefix "a does not interact directly with the prolongative *dini-*, although the resultant state is due to the particular path that it conveys.

#### 4. The Prolongative and Sub-Aspectual Prefixes

The Prolongative is one of a group of prefixes known as Sub-Aspectual. Their meanings all affect the internal temporal structure of an event. There are six in all: Inceptive, Prolongative, Reversionary, Semeliterative, Seriative, and Terminative. I will consider the relation between these prefixes when they appear together in a verb base, asking whether their respective positions reflect their semantic relations. I first give some morphological information about the sub-Aspectual prefixes.

##### 4.1. Position, Classifiers, Stem Sets

Position: Traditionally a template model has been used to describe the verb complex of Navajo. In the template, each prefix is associated with a position relative to the verb stem. The template model recognizes 'conjunct' and 'disjunct' prefixes. Conjunct prefixes appear to the right of the distributive plural prefix; the class consists of the classifier, Qualifier, Mode, and subject and object prefixes. Disjunct prefixes are the distributive, and adverbial and thematic; they appear to the left of the verb complex. I will use the terms 'inner' and 'outer' for conjunct and disjunct prefixes; these terms are adapted from Faltz 1998.<sup>7</sup>

In recent work McDonough (1996), to some extent following the lead of Kari (1989), rejects the template approach in favor of a more structured analysis. McDonough argues on phonological grounds for a bipartite model of the verb consisting of two constituents, 'Inflection' and 'Verb.' Each constituent has a stem and prefixes. The bipartite model does not include the disjunct prefixes, which are considered to be proclitics. Hale (1998) proposes a semantic derivational account of the Navajo verb that is based on the bipartite model, dealing with the inner verb complex. I find McDonough's approach quite convincing. For descriptive simplicity I will continue to use the 'inner' and 'outer' terms of the template model.

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<sup>7</sup> My use of these terms differs slightly from Faltz's: for Faltz, conjunct prefixes include the inner and object prefixes; disjunct prefixes are the outer and distributive plural prefix (1998:12). I use the terms inner and outer more generally. The prefixes are discussed extensively in YM, YMM, Kari (1989). Kari proposes the term Qualifier for the multifunctional group of prefixes to the left of the mode prefix; YM refers to this group as adverbial-thematic.

The class of Sub-aspectual prefixes cuts across the inner-outer prefix classes.<sup>8</sup> The Reversionary, the Semeliterative, and some Inceptives are outer prefixes. The Prolongative, the Terminative, the Seriative and some Inceptives are inner prefixes. In addition to their positional status the positions of prefixes are fixed relative to each other.

Classifiers: There are dependencies between several of the sub-aspectual prefixes and the classifier of the verb base. The Prolongative, Semeliterative, and Reversionary require the *d* or *l* classifier. If the classifier of the verb theme is not *d* or *l*, it shifts in the presence of these prefixes.

Stem sets: There are dependencies between some Sub-Aspectual prefixes and particular verb lexeme categories. Inceptives, Terminatives, and Prolongatives require a 'Momentaneous' or a 'Transitional' verb base. These bases have the same stem shape; the Transitional also has the prefix *yi-* and a distinct conjugation pattern. The Seriative, Reversionary, and Semeliterative prefixes are not associated with a particular verb lexeme category, but take on the category of the base.

#### 4.2 Sub-aspectual Prefixes and their Combinations

The Prolongative appears with all the other sub-aspectual prefixes. The discussion will be limited to sentences with two, although more complex verb bases are possible. Recall that the Prolongative *dini-* is an inner prefix positionally. I have established that *dini-* affects the Qualia Structure of a Transition event verb base, conveying that the final state of the Transition event continues.

Consider first the Reversionary prefix *ná-*. The Reversionary pertains to the final state of a telic event: it conveys that the event constitutes a return to a previous state. The prefix provides information about the final state of a Transition verb base. Thus it affects Qualia Structure rather than Event Structure or Argument Structure, like the Prolongative. The Reversionary is illustrated below; compare the a and b sentences of (17):

- (17) Reversionary: return to previous state; prefix *ná*  
1a *hatin* (area freezes)  
1b *nahatin* (area freezes again)  
  
2a *k'iséđođ* (I straighten it, as, a nail)  
2b *k'ésefđođ* (I restraighten it)

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<sup>8</sup> The Sub-Aspects are given a special status in the work of YN, YMM precisely because their distribution is unlike other verbal prefix categories, in particular the verb lexeme categories; YM p 165, YMM p 874.





The Semeliterative contributes to Qualia Structure, since it does not determine the type of event nor its participants. The Semeliterative has scope over all the particulars of an event and is stated at the global level of Qualia Structure represented by 'E' as in (21):

(21) Qualia: E = náá (single repetition)

The following example illustrates a verb base with both the Semeliterative and the Prolongative. The Semeliterative is an outer prefix: *náá-* appears to the left of *dini-*.

(22) chidí hashtʔish yih náádinoowod  
 car mud into-it semel-prol-perf-it-run  
 Again a car runs into the mud and stays (stuck)<sup>10</sup>

Semantically the Semeliterative has wider scope than the Prolongative, as the example indicates. The order of the prefixes reflects their semantic scope. No representations are provided for these examples; they follow directly from the information given.

The Seriative *hi-* is another sub-aspectual prefix. *Hi-* conveys that an event involves "successive or segmented action" (YMM: 877). I consider only the successive Seriative here. Successive seriative events are multiple events which consist of a series of sub-events; they may be Processes or Transitions. The nature of the sub-events is given by the verb base without the Seriative. (23) illustrates:

(23) a. tóshjeeh 'ahéénítmááz  
 barrel in a circle-it-perf-I-roll  
 I rolled the barrel around in a circle

b. tóshjeeh 'ahééhétmááz  
 barrel in a circle-ser-it-perf-I-roll  
 I roll the barrel around in a succession of circles

Seriative events are conceptualized as multiple events. The notion of a multiple event is one of Event Structure, so that in lexical representation the Seriative morpheme appears at the level of Event Structure; for detailed discussion of the Seriative, see Smith 2000.

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<sup>10</sup> Another possible meaning of this example and (20) is that another item (wave, car, etc.) is involved.

The Seriative appears with other sub-aspectual prefixes, including the Prolongative. (24) presents a verb base with the Seriative *hi-* and the Prolongative *dini-*. Both are inner prefixes; the Seriative is to the left of the Prolongative.

(24) ) chidí hashtʃ'ish yiih dahidineeeshjée  
 car mud into-it ser-prol-perf-it-3+run

One after another the cars ran into the mud (and stayed: got stuck)

Semantically the Seriative has wider scope than the Prolongative. Here scope relations are reflected by prefix order, perhaps accidentally since, as Leonard Faltz and Keren Rice point out (p.c.), inner prefix order is determined at least partly by phonological factors.

The Terminative *ni-* is also a sub-aspectual prefix; it was presented above in connection with (5), repeated here as (25). The prefix appears with verb bases that denote telic motion events. *Ni-* indicates the final endpoint and often co-occurs with a postpositional phrase which specifies the endpoint, as in (25a). (25b) has both the Terminative and Prolongative prefixes.

(25) a. kintahdí niniyá  
 town-to term-perf-subj-go  
 I went as far as town

b. kintahdí ndininisdzá  
 town-to term-prol-perf-subj-go  
 I went as far as town and stayed (liked it; got stranded there)

*Ni-* is an outer prefix; it appears to the left of *dini-*. Semantically the prolongative has wider scope, since it affects the endpoint indicated by the terminative. In this case the surface prefix order does not reflect the semantic relation between the prefixes.

Finally, consider the Inceptive prefixes. Recall that the Inceptive triggers a derived situation type structure. We saw examples of sentences with both the Inceptive and Prolongative prefixes above (repeated in (26). Here I discuss the interaction between the prefixes. There are outer and inner Inceptive prefixes, e.g. *ha-* and *di-* respectively; both appear to the left of the Prolongative, as illustrated in (26):<sup>11</sup>

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<sup>11</sup> *ha-* in (a) is an outer prefix; the composite *n!dihɛm(b)* consists of an outer prefix *ná-* and the inner inceptive prefix *dii-*, perhaps itself a composite (YMM, p 875).

- (26) a. 'awéé' hadíneeshcha  
 baby incpt-prol-perf-subj-cry  
 the baby started to cry (and continued: cried and cried)
- b. nííniishbééh  
 up-incpt-prol-impf-subj-swim  
 I was just getting a good start swimming (when...)

The combination of prefixes produces the semantic meaning of an Inceptive with a prolonged final state. The Prolongative is primary: what continues is the situation at the final endpoint of the inceptive, which happens to be an ongoing event. I will call this meaning the 'prolongative inceptive', suggested by the translations of (26a-b). I relied on this interpretation to arrive at the unified meaning proposed above for the Prolongative.<sup>12</sup>

However, there is another possibility: bases with both prefixes might denote the inception of an event that has a Prolongative. On this interpretation (26a) would mean "The baby started on a prolonged crying bout", as Peggy Speas noted in the discussion at Tucson. This would be an 'inceptive prolongative' interpretation. Although plausible, this meaning is not conveyed by the combination of Inceptive and Prolongative in Navajo.<sup>12</sup>

There is morphological evidence which supports the 'prolongative inceptive' interpretation. It concerns the classifier characteristic of verb bases with Prolongative *dini*. The Prolongative prefix always appears with a *d* or *l* classifier. For simplicity I have omitted classifiers from the examples so far. The verb bases of (26) have the *d* classifier, as the notated versions in (27) make clear:

- (27) a. hadíneeshcha  
 incpt-prol-perf-subj-d cl-stem
- b. nííniishbééh  
 incpt-prol-impf-subj -d cl- stem

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<sup>12</sup> The inceptive prolongative meaning is conveyed by a different form, e.g. the repetitive: hanádi'nilzhish (start on a prolonged dance). I am grateful to Mary Ann Willie for providing this example.

The verb themes in (27) have shifted classifiers: they take the zero classifier in bases without the Prolongative.<sup>13</sup> The presence of the *d* classifier suggests that the Prolongative is primary in these bases. It supports the interpretation given: if the Inceptive were primary we would not expect this classifier. I will assume that the prolongative-inceptive interpretation is correct.

The relation between Prolongative and Inceptive prefixes is not a scopal one. The two prefixes affect the event meaning in different ways, so that neither is within the scope of the other. Rather, the relation is one of enablement: the inceptive creates the environment for the prolongative, which applies only to telic events.

This relation is represented nicely in the tripartite lexical model where the Inceptive and Prolongative affect different tiers of lexical structure. The Inceptive affects Event Structure, whereas the Prolongative affects Qualia Structure. (28) illustrates with a representation for (3b), repeated here; I use the notation E2 to indicate that the Inceptive involves two events.

(3b) a yadiizíní biih dineeshtáál  
 tin can into-it step-prol-perf-subj-kick  
 I stepped into a tin can and stayed (my foot stuck)

(28) Lexical representation for Prolongative+ Inceptive

EVENT = E1 = inceptive T  
           T: e1 = Process  
                   e2 = ongoing E2

QUALIA:Figure [1]   ARG: Arg1 : = [1] person  
           Motion (e1)  
           Path  
           State (e2; ongoing E2 (dini))

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<sup>13</sup> The classifier is evident in the perfective mode subject prefixes, though not the stem here (Faltz 1998).

The prefix order does not reflect semantic order, since the inceptive morpheme precedes the prolongative *dini-*. Order can indicate scope, but not other relations. What this suggests is that the complexity of the tripartite representation is needed to model the semantic relation between the prefixes.

Summarizing, I have discussed the surface position and the semantics of the sub-aspectual prefixes. The prefixes appear in different positions in the verb base. The outer prefixes are the Reversionary, the Semeliterative, and Inceptives *niki-*, *ha-*, *ch<sup>h</sup>ʔi-*. The inner prefixes are the Prolongative, the Terminative, the Seriative, and Inceptive *dii-*. Semantically these prefixes affect Qualia Structure or Event Structure.

It is striking that semantics and position are independent for the sub-aspectual class of prefixes. One inner prefix affects Qualia Structure (Prolongative); three affect Event Structure (Inceptive, Seriative, Terminative). Two outer prefixes affect Qualia Structure (Reversionary, Semeliterative) and one affects Event Structure (Inceptive). When there are scopal semantic relations between the prolongative and other sub-aspectual prefixes, prefix order sometimes does, and sometimes does not reflect semantic scopal order. The relations between the sub-aspectual prefixes are not all scopal. The Inceptive and Terminative produce telic events, to which the Prolongative may apply.

## 5. A Short Excursus on Classifiers

The classifiers of Navajo and other Athabaskan languages appear in several patterns, some clearer than others. I will show that the tripartite lexical model clarifies some otherwise puzzling facts about classifiers.

Classifiers form the verb theme together with the root/stem. The classifiers can be seen as voice-valency markers which increase or decrease the arguments associated with a verb (McDonough 1989). Thus the † classifier, which is argument-increasing, appears in causatives. On another view, the classifiers indicate shifts of transitivity and perhaps other things, with no single meaning (Kibrik 1996). However there is evidence that certain meanings are consistently associated with particular classifiers although there are also idiosyncratic forms (Rice, in press).

I am interested here in the *d* and *l* classifiers, which fall into two patterns, which I will call the (a) and (b) patterns, as shown:

(29) *d* and *l* classifier patterns: verb bases in which they appear

(30)

- a. Passive, Mediopassive, Reflexive, Reciprocal
- b. Semeliterative, Reversionary, Prolongative

The alternation of classifiers that occurs with different valences and prefixes is known as classifier shift. The shifts noted above are associated with the *d* element. If the original classifier of the verb theme is  $\emptyset$  or  $\ddagger$ , it appears as *d* or *l* respectively; more precisely, when *d* combines with  $\ddagger$ , the form *l* results (Rice, in press). Certain prefixes trigger classifier shift. With the Prolongative, for instance, if the classifier of the simple verb theme is  $\emptyset$  or  $\ddagger$ , it shifts in the presence of *dini-* to *d* or *l*.

The *d*-element is associated by many scholars with the semantic notion of a middle voice. The actual meaning of the middle has been much discussed. Arce-Arenales et al offer an account for several languages, following Kemmer (1993). They claim that the middle involves affectness of an argument: "the middle diathesis is characterized by affectedness of an active subject or, in the absence of a grammatical subject, the single argument... the middle restricts or centers the action, spatially or temporally, around the subject" (1994:9-10). Thompson has another view, arguing that the middle involves a "suppressed target" and "suppressed goal" (1996: 374). Kemmer also suggests, more generally, that the middle involves an event that is "elaborated" in some way.

The semantic accounts of classifier shift as middle are strongest when they relate the middle voice to what I have characterized above as the (a) pattern, e.g. the Passive, Mediopassive, Reflexive, and Reciprocal. Attempts to explain the (b) pattern as falling under the notion of middle are unconvincing, however. The pattern includes the Prolongative, Reversionary, and Semeliterative. Recall that the first two pertain to the final state of an event, and the third to the event as a whole. These do not accord very well with either Arce-Arenales et al or Thompson's notion of the middle. None of them has a suppressed target or goal, nor is the agent subject clearly affected. One might claim that the Prolongative, Reversionary, and Semeliterative are elaborated events, but this is too general to be explanatory: almost any prefix denotes an event that is more elaborated than a verb base without that prefix.

The tripartite approach to lexical meaning may illuminate the situation. Assume three tiers of lexical representation for the verb complex, as outlined above: Event Structure, Argument Structure, and Qualia Structure. With this format we find that the (a) and (b) patterns of *d* classifier should be associated with different tiers of event structure. The (a) pattern involves Argument structure: Passive and Mediopassive affect the valence of a verb, reducing it to one argument. With the Reflexive and Reciprocal one might say that something happens to the arguments of the verb and that the *d*-element accompanies or reflects that something (cf Kibrik 1996).

The (b) cases are aspectual: they pertain to a change in the internal temporal properties of the situation denoted by the verb.<sup>14</sup> All three affect the verb meaning at the level of Qualia Structure. The Prolongative and the Reversionary involve the final state of a situation; the Semeliterative involves the entire event. Perhaps in these cases, something has happened to the Qualia structure of the verb and classifier shift accompanies or reflects that something. Thus a complete lexical representation of a verb base with the prolongative would include the classifier contribution.

Why then does classifier shift not accompany the other sub-aspects? It is tempting to find the reason in the kind of change affected by the prefixes. The other three prefixes - the Seriative, the Inceptives, and the Terminative - affect lexical structure in a different way, at the tier of Event Structure.

I suggest, then, that the classifier shift associated with the *d*-element signals two different ways in which verb structure is affected. The (a) cases involve an operation on Argument structure. The (b) cases involve Qualia structure. Apparently operations on Event structure are not indicated in this way, at least in Navajo. Whether this generalization holds for other Athabaskan languages is an interesting question.

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<sup>14</sup> Arce-Arenales, M. Axelrod, B. Fox, 1994. also note the aspectual connections with the *d* classifier in Athabaskan; they are concerned with iterative and the errative in Koyukan. It is difficult to connect the errative directly with Navajo.



## 6. Conclusion

I have presented a unified semantic account of the Prolongative *dini-*. The prefix applies to Transitions: it provides that the final state of the event continues. This is information about Qualia, the particulars of a situation. The meaning of the Prolongative and other morphemes is represented in a tripartite format for the meaning of the verb complex which provides tiers for Event Structure, Argument Structure, and Qualia Structure. The format allows one to represent the contribution of this prefix and more generally that of each morpheme to the meaning of the verb base.

The tripartite lexical format was used for investigation of other prefixes. The Prolongative is one of a group of Sub-aspectual prefixes. They appear in both inner and outer positions in the verb base; some affect Qualia Structure, others Event Structure. Neither inner nor outer positions can be associated with a particular type of semantic information. Thus, position and semantics are independent for these prefixes. When two Sub-aspectual prefixes occur in a single verb base, the surface position of the prefixes does not always reflect their semantic relations. These findings may be problematic for an account of prefix position that is based directly on semantics.

Study of the Prolongative gives some insight into the expression of event structure in Navajo. Recall that the prefix pertains only to telic events. Information that an event is telic may be conveyed by the verb base, or by information outside the inner verb complex. Examples were presented involving a postpositional phrase and a prefix in an outer position. These cases show that neither the inner verb complex nor the full verb base suffice to determine event structure in Navajo. Postpositions and outer prefixes give information that is essential for interpreting an event as a Transition. It would be interesting to see if this is true only for telic events.<sup>15</sup> This is a question for research.

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<sup>15</sup> I have argued that in Navajo telic events cannot be distinguished as a linguistic category of the same generality as the other situation types (Smith 1991, 1996). I did not find general distributional characteristics that hold only for telic events. Perhaps at the level of verb prefixes and postpositional phrases it would be possible to distinguish telic events as a situation type of Navajo.

Finally, I propose a new organization of the facts about classifier shift in Navajo, based on the three types of information recognized in the tripartite lexical format. Classifier shift occurs for disparate phenomena. The Prolongative triggers classifier shift, as do two other sub-aspectual prefixes; changes in argument structure also trigger shifts. Rather than trying to analyze them as the same, I suggest that they be distinguished according to the way they affect the semantics of a verb base. Within the tripartite framework, the following generalization emerges: classifier shift is associated with operations on Qualia Structure and Argument Structure, but not on Event Structure.

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