

Semantics of the Seriative Prefix in Navajo

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The Navajo seriative prefix can be added to verbs to denote a series of actions.<sup>1</sup>

- (1)    haa-sh-jiid  
      up-I-lug.Impf
- ‘I carry it up on my back (once).’ (NLA 2001<sup>2</sup>)

- (2)    ha-ha-sh-jiid  
      up-seriative-I-lug.Impf
- ‘I carry a series of things up on my back.’ (NLA 2001)

The seriative prefix sometimes has a secondary effect of causing arguments in the sentence to be interpreted as plural, as in (2) above. In other sentences, the seriative does not cause plural interpretations:

- (3)    ch'i-hi-ni-sh-ghaal  
      out-ser-terminative-I-move.undulating
- ‘I wriggle out on my belly.’ (YM 1980: d284).

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<sup>1</sup> Leonard Faltz points out that the prefix does not have a seriative meaning when used as part of certain verb themes that do not denote motion, such as the word for ‘buy’ (Faltz 340). In such cases prefix has the same form as the seriative, but the meaning is not predictable. Young and Morgan refer to this second version of the prefix as *hi-2*, while the seriative as used with motion verbs is called *hi-1*. This paper is primarily concerned with the prefix’s seriative meaning, and so for this paper “the seriative” should be taken to mean *hi-1*.

<sup>2</sup> Throughout this paper, the abbreviation “NLA 2001” will be used to reference data collected at the Navajo Language Academy summer workshop in Rehoboth, New Mexico.

Plural interpretations arising from the seriative prefix have been mentioned by both Young and Morgan (1987) and Leonard Faltz (1998). Both recognize that the seriative prefix sometimes results in plural interpretations and sometimes does not. The questions raised by this phenomenon include:

- (a) In what types of verb-sentences do plural interpretations result from the seriative prefix?
- (b) In cases where plural interpretations occur, which participant(s) in the event have a plural interpretation?

This paper will pose and consider three hypotheses as answers to these questions: the Pragmatic Hypothesis, the Theme Hypothesis, and the Change of State or Location Hypothesis. The first hypothesis is that there are no specific rules about when the seriative prefix causes plurals, but rather that people interpret arguments as plural or not based on their knowledge of the world and the context of the sentence. The second two hypotheses are based on theories of semantic roles. The Theme Hypothesis is that themes, and only themes, are pluralized by the seriative. The Change of State or Location Hypothesis is based on Dowty's (77) theory that semantic roles can be decomposed into specific characteristics and that verbs can assign roles that mix the characteristics of proto-patient and proto-agent roles. This last hypothesis isolates certain characteristics of the thematic role of pluralized participants and proposes that these characteristics, changes in state or location, correlate with seriative plurals.

Section 1 of this paper presents background information related to the thesis. It begins with a brief description of the template model of the Navajo verb. Next it presents an overview of the seriative prefix, including morphology, position within the verb, and

basic semantic characteristics, according to Leonard Faltz (1998) and Young and Morgan (1987). Finally, it provides an overview of plurality in Navajo; its morphology and semantics.

Section 2 presents data showing how the seriative affects plurality in Navajo. It shows that some verbs result in plural interpretations and other verbs do not, and that this distinction usually, but not always, coincides with Young and Morgan's semantic categories of the successive seriative and the inherent seriative. The sentences with seriative plurals lead us to generalize that objects and intransitive subjects may be pluralized by the seriative prefix, but not transitive subjects.

Section 3 presents the Pragmatic Hypothesis and examines its predictions in light of the data. The section concludes that the Pragmatic Hypothesis can sometimes predict which objects will be pluralized. However, the fact that transitive subjects are never pluralized, the fact that some seriative verbs never have plurals at all, and the problems posed by events with multiple participants lead to the conclusion that the Pragmatic Hypothesis cannot account for all of the data.

Section 4 discusses presents the Theme Hypothesis. This hypothesis is built on the generalization that the seriative pluralizes only objects and intransitive subjects. It successfully accounts for seriative sentences in which the syntactic positions of semantic roles are reversed. However, it cannot account for the sentences in which themes are interpreted as singular, or sentences in which agents are interpreted as plural.

Section 5 presents a basic theory of semantic roles from Dowty (1991). Next it introduces the Change of State or Location Hypothesis, based on certain attributes of the proto-agent and proto-patient roles. Unlike the Theme Hypothesis, this hypothesis does

account for sentences in which no argument is plural. It also accounts for sentences with plural agents. The successive serialives are problematic for this hypothesis but it appears that it can be made to account for them as well.

Section 6 concludes that although there are some exceptions, the Change of State or Location Hypothesis is the most successful at explaining the effects of the serialive on plurality.

### Section 1. Background

Navajo verbs have their stems at the end of the verb word. For (1) repeated below, the stem is *-jiid*.

(1)    haa-sh-jiid

adverbial.prefix-pronominal.prefix-stem

up-I-lug.heavy.object.Impf

'I carry it up on my back (once).' (NLA 2001)

The verb stem usually expresses the basic type of action which is occurring. In the case of classificatory verbs such as (1), the verb stem expresses the type of object which is being moved; in this case, a heavy load. The verb stem also shows the tense (present and mode (imperfective)). The mode of a verb defines its viewpoint aspect, which will not be an issue for most of this discussion. Throughout this paper the examples are in the imperfective mode unless otherwise noted.

The prefixes in Navajo include pronominals, nominals, adverbials, mode and aspect markers, the classifier, and thematic prefixes. This last group is no relation to thematic roles. The thematic prefixes together with the verb stem form the verb theme, which gives about the same level of information as an English verb infinitive. Thematic prefixes are recognizable by the fact that they usually only occur with a particular root (Faltz 1998: 402). Young and Morgan (1987, 1992) model the Navajo verb as a template with 10 positions that can be filled. Other models have been proposed to generate the morpheme order through morphosyntactic rules so that the order is less arbitrary.

However, the template model is the most widely used. In the template model, positions I through IX are the prefixes, and position X is the stem. Positions I through III are known as the disjunct sector, and the rest of the prefixes, with numbers higher than III, are known as the conjunct sector. Below is a representation of all of the positions in the template. I mark the disjunct/conjunct boundary with a series of hyphens.

|     |         |      |          |      |                       |           |           |        |      |
|-----|---------|------|----------|------|-----------------------|-----------|-----------|--------|------|
| (4) | I       | II   | III----- | IV   | V                     | VI        | VII, VIII | IX     | X    |
|     | preverb | adv. | dist.    | obj. | 4 <sup>th</sup> -subj | qualifier | Mode/Subj | class. | stem |

Usually, a verb does not have prefixes in all of the positions. In example (1), *haa-* (underlyingly *ha-*) is in position Ib, which holds adverbial or thematic prefixes (Young 2000:20). The prefix *sh-*, meaning 'I' or 'me', is in position VIII for subject pronouns, so that it is glossed as '1'. The classifier in position IX, *t*, is deleted through a phonological rule. Finally, the stem *-jiiid* is in position X, the stem position. Many verbs also have null prefixes to represent 3<sup>rd</sup>-person subjects and objects, and there is also a null classifier.

The seriative prefix appears in Young and Morgan's position VIa, which holds thematic and adverbial elements different from those that appear in position Ib (Young 2000: 23). Young and Morgan express its underlying form as *hi-*. There are no conjunct prefixes in this example.

(5) *hi-s-máás*

Via-VIII-X

ser.-I-roll

'I roll them into it one after another.'<sup>3</sup> (Faltz 1998: 344)

Like Young and Morgan, Leonard Faltz takes the *h*-form rather than the *y*-form of the seriative as the basic form of the prefix. He uses *h-* instead of *hi-* because the *i* [ɪ] is inserted whenever a consonant in the conjunct is followed by another consonant. Without referring to position numbers, Faltz describes the seriative as an inner (conjunct) prefix located before the other inner prefixes and after any object prefixes. When the prefix is in its *h*-form, it undergoes pre-stem vowel harmony, so that in example (2) repeated below, it changes from *hi-* to *ha-* to match the vowel in the position Ib *ha*-prefix.

(2) *ha -ha-sh-jiid*

Ib----VIa-VIII-X

up-serialive-I-lug.Impf

'I carry a series of things up on my back.' (NLA 2001)

According to Young and Morgan (1987) the prefix changes to its alternate form *i* or *yi*, position VIc, “when preceded immediately by a prefix of Position IV-V or by dzi-Ńji-VIa” (YM 171). Faltz expresses this by saying that if a conjunct prefix (which in this case is an object prefix, position IV) immediately precedes the serialive, then the serialive changes to the *y*-form (Faltz 1998: 341). There are no disjunct prefixes in example (6).

(6) yi -yii-t-máás

IV----V-VIII-X

3<sup>rd</sup>person obj.-ser.-classifier-roll.perf.

'He/she/it rolled them into it one after another' (Faltz 1998:344)

In this case there is a third-person subject and object; the object prefix appears but the subject does not. The classifier is not deleted in this case because it is preceded by a vowel.

The serialive can contract with a following subject prefix. According to Faltz, the serialive changes its position if it is directly preceded by an object prefix. If it is preceded by an object prefix other than the 4<sup>th</sup> person prefix *j-*, it moves rightwards.

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<sup>3</sup> The object pronoun is null because the object is in the third person and the subject is not. The meaning

(7) y - h - d - oo - t - mas (underlying)  
 obj ser Fut. nonpl.subj cl stem

(8) y - d - h - oo - t - mas (surface)  
 obj Fut ser nonpl.subj cl stem

To make the final form (9), the default vowel *i* is added where necessary and the *h*-changes to a *y*- because it is preceded by a conjunct prefix (Faltz 1998: 347). There are no disjunct prefixes in this example.

(9) yidiyoolmas

If it is preceded by the 4<sup>th</sup> person prefix *j*-, then the seriative switches places with the object prefix. (Faltz 1998: 342). Faltz illustrates the process in examples (10)-(12):

(10) j - h? - d - oo - t - mas (underlying, “?” in original)  
 4obj ser Fut. nonpl.subj cl stem

(11) h - j - d - oo - t - mas (surface)  
 ser 4obj Fut nonpl.subj cl stem

To make the final form, *i*’s are added and consonant harmony changes the form of the 4<sup>th</sup>-person prefix to *zh*-:

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<sup>4</sup> ‘in’ comes from the use of this stem-classifier combination with no lexical prefixes (Faltz 1998:223)

(12) hizhdooomas (Faltz 1998: 348).

For most of this paper, the seriative prefix will appear in its *h*-form without position changes.

The seriative prefix in Navajo is combined with verbs in order to express meanings involving actions that occur in a series. Leonard Faltz (1998) describes this meaning as ‘one-at-a-time-in-a-series motion’ (Faltz 1998:340). In Young and Morgan 1987 motion-verb bases using the seriative (*hi-l*) prefix are divided into two broad categories of meaning: “successive” action and “inherently segmented” action. The first category encompasses verb bases whose seriative forms include a meaning often translated as ‘over and over again’ or ‘one after another.’ An example of this type of seriative is sentence (2), and more examples such as (13) are shown throughout the paper.

(13) ne-he-l-dl66sh

cessative-seriative-cl.-moving-on-four-legs.Impf

‘They’re coming to a point, one at a time (on 4 legs).’ (NLA 2001)

The second category includes verbs that denote actions that always have a quality of sequential motion. Examples of such meanings are ‘wiggle,’ ‘skip,’ and ‘hobble.’

This includes (3) repeated below, as well as (14) and (15):

(3) hee-sh-téél

ser.-I-slide.Progressive

‘I drag it along end by end.’ (YMM 1992:439)

(14) hi-sh-cheéh

ser-I-hobble.Impf

'I hop, hobble.' (YMM 1992: 72)

(15) hee-sh-t'eel

ser -I-hop.Prog

'I am hopping along.' (YM 1980:439)

The distinction makes sense intuitively, in that the successive seriative seems to be a repetition of an event that could stand on its own, while in the inherent seriative repetition seems to be a more integral part of the event. For some inherent seriatives, this is exhibited in the morphology: the root *cha'-I* used in (14) has two verb themes, one of which uses the seriative prefix and has the meaning 'hobble,' and one of which uses an 'a-thematic and has meanings related to 'sexual arousal' (YM 1987: 71) Without the seriative the verb for 'hobble' would have a completely different meaning. For many inherent seriatives the seriative is an intergral part of the verb theme, and the verb would mean something else, or nothing at all, without it. However, there are inherent seriatives for which the seriative is not a part of the verb theme, but simply adds its meaning compositionally to the original verb.

Plurality in Navajo is defined as three or more, rather than two or more.

Morphemes that cause plural interpretations, such as the *da-* distributive, plural stems, and the seriative, entail interpretations of a group of three or more. The roots of some

verbs have stems interpreted as referring to a group of exactly two, which is known as a dual or duoplural interpretation (YMM 1992: 663). Pronominal prefixes in the first and second person distinguish only between singular and dual, and an additional prefix is necessary to express a three-or-more plural (Faltz 1998: 22).

Plurality is unmarked on most Navajo nouns, and “nominals and nominal prefixes allow a mass or count interpretation” (Smith 1991:412). With nouns that do have plural forms, changing them to the plural form and using them with a non-plural verb stem will cause a dual interpretation, even when the stem is not explicitly dual.

(16) 'Ashkii naa-l-nish.

boy(sg) continuative-class.-work.Impf

'The boy is working.'

(17) 'Ashiiké naa-l-nish

boy(nonsg) continuative-class.-work

'The boys (dual) are working.' (Yazzie et. al. 2000: 142)

To cause a plural interpretation a speaker can use the *da*-distributive (position III) prefix, so called because it sometimes creates a distributive interpretation. Usually, the *da*-distributive functions like a simple plural marking:

(18) 'Ashiiké n-daa-l-nish

boy(nonsg) continuative-dist-cl.-work

‘The boys (plural) are working.’ (Yazzie et. al. 2000: 142)

Distributive readings in any language require that every individual member of the plural participate in the same event, either as individuals or through identification with the group (Landman 1996: 430). In other words, if a true sentence describes a distributive plural subject performing an action, then for each individual that makes up part of the plural subject, a true sentence can be written in which that subject performs the action singularly. The *da*-distributive in Navajo sometimes takes this requirement further, causing interpretations in which the participants are separated in space, or in which each individual subject interacts with a different individual object.

(19) Nídlshchíí' yíyaadi daneeztí

pine-tree under-it dist.-lay-down (sg)

‘They (two) (each) lie down under a (separate) pine tree’ (Yazzie 2000: 143)

(20) Nídlshchíí' yíyaadi daneezhjéé'

pine-tree under-it *da*-lay-down (pl)

‘They (pl) lie down under a pine tree (pine trees)’ (Yazzie 2000: 142)

In examples (19) and (20) above, *da*- is usually interpreted in a distributive sense, meaning that there is no more than one person under any tree. However, in sentences such as (18) it does not entail a distributive meaning, only a plural.

Another important way to create plurals in Navajo is to use plural stems. For example, *-jéé'* is a classificatory root referring to plural sticklike or animate objects. In the example below, the stem is what causes the plural interpretation.

(21) *ni-i-jeeh*

terminal-(null cl.)-handle.plural.objects.impf

'They lie down, recline.' (YM 1992:262)

These plural stems can be used in conjunction with the seriative and the *da*-distributive.

The plural stems differ from the *da*-distributive and the seriative in that they do not cause distributive interpretations.

## Section 2. The seriative prefix and plurality

The seriative is another way of creating plurals in Navajo. In (22), the seriative is what causes a distributive plural interpretation of the object:

(22) *ha-ha-sh-tijh*

out-ser-I-handle-sg.sticklike.obj

'I pull them out (of something) one after another' (YM 1992:475)

The seriative is often found in the same verb with either *da*- or the plural stems. In the example below, all three occur:

(23) *hooghan góne' yah 'a-da-haa-s-kai*

hogan    inside    into    away-dist-ser-perf-enter:pl

‘They entered the hogan one after another’ (Rice 2000 b :336)

Not all of the plural markers are necessary in order to make a plural sentence. In (24), *da-* is removed:

(24)    hooghan góne' yah 'a-haa-s-kai

hogan    inside    into    away-ser-enter:pl

‘They entered the hogan separately, or in a series of groups’ (Perkins 2002)

Both (23) and (24) show plurals, but in (24) there is no *da-* distributive, so the plural stem can be taken to denote groups instead of separate individuals participating in a series of events. The seriative acts as a distributive in that it separates individual participants into a series of events in time, but with the plural stem, these individual participants consist of groups. When there is no plural stem, the removal of *da-* from a seriative sentence makes no difference to the meaning:

(25) 'a-da-hii-teef

away-dist-ser.-slide

‘They slide away one after another’ (YM 1992: 500)

(26) 'a-hii-teef

away-ser-slide

They slide away one after another (Perkins 2001)

In the sentences above, the seriative and the distributive both cause a distributive plural interpretation over participants that consist of individuals. Only one of the morphemes is necessary to create the plural, so when the *-da* is removed, there is no effect on the meaning. The rest of the examples in this section are words without *da*, in order to make it clear that the seriative is the cause of the plural interpretations.

As in (26) above, the seriative in (13) repeated below produces a plural interpretation for the subject of the sentence:

(27) *nii-l-dl66sh*

cessative-cl.-moving-on-4-legs.Impf

‘(4-legged animal) is coming to a point, crawling’

(13) *ne-he-l-dl66sh*

cessative-seriative-cl.-moving-on-four-legs.Impf

‘They’re coming to a point, one at a time (on 4 legs).’ (NLA 2001)

Sentences (28) and (29) provide another example of the seriative pluralizing subjects:

(28) *naahnoodii haa-l-nood*

lizard up-cl.-dart.long.object.Impf (YMM 1992: 464)

‘A lizard darts up.’

- (29) naalnoodii ha-ha-l-nood  
 lizard up-ser-cl-dart.long obj.Impf  
 ‘Lizards come darting up one after another.’ (YM 1980: d390)

In (28) and (29), the subject is named by the noun that precedes the verb word. Because the noun does not inflect for number, we can see that it is the seriative prefix which is causing the plural interpretation. In (30) and (31), the noun *‘ashkii* does inflect for number:

- (30) ‘ashkii yah’ee’na  
 boy in-crawls.Impf  
 ‘The boy is crawling in’
- (31) ‘ashniké yah ‘ahees’na  
 boys in ser-crawls-Implf  
 ‘The boys crawled in one after another’ (NLA 2001)

Given the data that we have already seen, it would seem to make sense that it is the seriative prefix, not the form of the noun, that causes the plural interpretation. To test this idea, we can try another version of sentence (31) using the singular noun form.

- (32) \*'ashkii yah 'ahes'na'  
boy in ser-crawls.Impf

\*'The boy crawled in one after another.' (NLA 2001, Perkins 2002)

Example (32) shows that the singular noun form cannot force the expression to become singular. Likewise, if the plural noun form were used without the seriative prefix or another plural prefix, it would not result in a plural interpretation, but a dual interpretation as in example (17). Therefore, the plural noun form is not the root cause of the plural interpretation; it simply agrees in number with the interpretation caused by the use of the seriative or other parts of the verb.

The examples above show that the seriative can pluralize subjects. Transitive verbs used with the seriative also have plural interpretations for arguments:

- (33) haa-t-jiid  
up/out-cl.-lug.Impf  
'3<sup>rd</sup> person brings out a pack of something'

- (34) ha-yii-t-jiid  
up/out-ser.-cl.-lug.Impf  
'3<sup>rd</sup> sing. brings a series of things out' (Perkins 2001)

- (35) *hí-t-máás*  
 3<sup>rd</sup>person obj.-cl.-roll.perf.  
 ‘3<sup>rd</sup> person rolls it into it’

- (36) *yi-yii-t-máás*  
 3<sup>rd</sup>person obj.-ser.-cl.-roll.perf.  
 ‘3<sup>rd</sup> sing rolls it or them, e.g. ball(s) or marble(s)’ (Perkins 2001)

In (34) and (36), which use the seriative prefix, the object can be interpreted as plural. In the sentences (33) and (35), without the seriative prefix, the object is interpreted as singular. We can see from these examples that the seriative can pluralize objects of transitive verbs. However, the subjects of the verbs remain singular. In (37), the noun *kééchaq’í* and the pronominal *yi-* are not marked for number.

- (37) *kééchaq’í gah yi-* -ne -he -deef  
 dog rabbit 3obj-cessative-ser-ropelike-object.Impf  
 ‘(one) dog is catching rabbits, (one at a time)’ (NLA 2001)

In (37), the ‘dog’ remains singular. Once again, the seriative fails to pluralize the subject when an object is present. In example (38) below, the ‘boy’ remains singular as well, and in this example we can see that it is not plural by the singular form of the noun, *ashkii*. If

the seriative entailed a plural subject in the example below, the singular noun would render it ungrammatical as in (32) above.

(38) 'ashkii gah yi-ɬ-di-deef

Boy rabbit 3<sup>rd</sup>obj -ropelike-object.Impf

'The boy is catching the rabbit'

(39) 'ashkii gah yi-ɬ-ne-he-deef

boy rabbit 3<sup>rd</sup>obj-cessative-ser.-ropelike-object.Impf

'The boy is catching rabbits, one after the other' (NLA 2001)

In a sentence with multiple participants, the seriative also pluralizes the direct object:

(40) Hooghan góne' shina beeldéí bá yah 'ahetsooz

house inside my-mother blanket for into away-ser.-cl.-handle-flat-flexible-object

'I carried the blankets into the hogan for my mother one after another' (YM 1980: d63)

So far, it appears that the seriative causes the object to become plural and does not affect the plurality of the subject. I have not been able to find or elicit any sentences in which the seriative pluralizes the subject of a transitive verb. Therefore, I generalize that the seriative can pluralize objects and intransitive subjects, but not intransitive objects. This could also be stated as an ergative-absolutive distinction, where the seriative pluralizes only absolutes. Absolutes have already been shown to be a natural class in Navajo, since the classificatory verbs always describe the shape of the absolutive argument.

The generalization above applies to verbs with plural stems as well as verbs with singular stems. Plural stems tend to create collective readings, in which the plural objects act together in a single event. In general, the seriative prefix creates distributive plurals in which each of the various individual members of the plural participant must individually participate in a separate sub-event. When used with *da-*, with the seriative *hi-I*, or both, plural stems can take on a distributive reading (Yazzie 2000: 143).

Example (42) uses the seriative prefix and (41) does not:

- (41) *bi-zaa-s-síid*  
3<sup>rd</sup>obj.-mouth-I-handle-streaming.object  
'I pour O into P's mouth.' (YMM 1992: 749)

- (42) *yi-zah-yii-ziid*  
3<sup>rd</sup>obj.-mouth-ser-handle-streaming object  
'spoon liquid into (baby's) mouth one spoonful after another'  
(Perkins 2001)

In example (42), the liquid being poured into the baby's mouth is divided up into spoonfuls, and we might be able to interpret the object as plural if we consider these units, or spoonfuls, as plural. There is sometimes a fuzzy distinction between plurals of units of an intrinsically plural object, and plural actions. In the following case, the verb used with the seriative puts an emphasis on the plural nature of the action, not on the plural nature of the object.

- (43) *ch'i'l 'ahani-ní-ziid*  
weeds toward-each-other-terminative-move-streaming-object  
'He/she raked the weeds (together).'

- (44) *ch'i'l 'ahana-hii-ziid*  
weeds toward-each-other-ser.-move-streaming-object  
'He/she raked the weeds with lots of little strokes.' (NLA 2001)

The translation 'lots of little strokes' shows that there is more than one grouping of weeds, or a distributive interpretation. An example with a different stem behaves in a

similar way:

- (45) *haa-sh-jááh*  
out-I-handle.plural.objects.Impf  
'I take out plural objects' (YMM 1992: 257)
- (46) *ha-ha-sh-jááh*  
out-ser-I-handle.plural.objects.Impf  
'I take handfuls of plural objects out' (in succession) (NLA 2001)

- (47) *'a-yii-jááh*

out-ser-handle.plural.objects

‘S/he takes out handfuls in succession’ (NLA 2001)

The stem *-jááh* has a meaning related to moving many small objects, and so even without the seriative prefix, it refers to a plural theme. However, adding the seriative requires having a seriative plurality, in which members of the theme are participating in different sub-events. Because of this, the plural objects are divided into groups or units (handfuls) each of which participates in a different sub-event. In all of the examples (41) through (47) it is not the case that the seriative alone is creating an interpretation of plural objects. However, the seriative has an effect that is consistent with its semantics, causing the plural objects to be divided into a plurality of units. Sentence (24) is another example of this phenomenon.

The seriative does not always produce plurals. In cases that Young and Morgan would call the ‘inherent’ seriative, none of the arguments are pluralized.

(48) hi-sh-ghaat

ser-I-move.Impf

‘I am wiggling.’ (Smith 2000:216)

Sometimes an inherent seriative and a successive seriative can be produced from the same stem. In the examples below, the stem for ‘walk’ produces an inherent seriative.

(49) yi-sh-áat

I-walk.sing.Prog

'I am walking along' (YMM 1992: 674)

(50) hee-sh-áát

ser-I-walk.sing.Prog

'I shuffle along, step along' (YM 1980: 438)

The stem *-ya'* meaning 'walk' used in (49) and (50) is often used without the seriative prefix, but the meaning of (50) shows that it is an inherent seriative, where the prefix simply accents the segmented character of an activity. Compare a successive seriative with another verb using the same root, *-YÁ*:

(51) ch'í-da-hi-dááh

out-dist-ser.walk.sing.Impf

'They follow each other out' (YMM 1992: 665)

(52) ch'í-hi-dááh

out-dist.-ser-walk.sing.Impf

'They go out one by one.' (Perkins 2001)

The examples above show that inherent seriatives never have plural interpretations. However, seriative verbs without plural arguments are not limited to the inherent seriative. Young and Morgan present a third class of seriative verbs in which there are plural actions but not plural participants:

- (53) 'ashkii yázhí 'ólta'-d'éé yóó 'a-ná-ha-l-yeed  
 boy little school-from away-reversionary-ser-cl.-run  
 'The little boy keeps running away (back) from school' (YM 1980:171)

- (54) 'Ashdladigo ne-he-sh-níísh  
 five-o-clock terminative-ser-I-work  
 'I (usually) quit working at five o'clock.' (YMM 1992: 445)

Young and Morgan's example above is given below in the third person in order to show that it is not the 1<sup>st</sup>-person singular morpheme *sh-* which is causing the singular interpretation:

- (55) 'Ashdladigo na-haa-l-níísh  
 five-o-clock terminative-ser-cl.-work  
 '3<sup>rd</sup> person (customarily) quits working at five o'clock.' (Perkins 2002)

None of these examples have plurals in them, even though they are successive serialives.

To summarize, a successful hypothesis must account for several phenomena that arise in serialive sentences. First, intransitive subjects are never pluralized. Second, certain verbs do not allow plurals at all. Third, patterns of plurality do not coincide with the successive-inherent distinction. Appendix 1 summarizes the data that need to be accounted for.

### Section 3: The Pragmatic Hypothesis

The simplest hypothesis that could explain these phenomena is one based on pragmatic inference. The Pragmatic Hypothesis assumes that the seriative prefix has no semantic effect on the participants in an event. The semantic effect of the seriative is to cause actions to happen repetitively, and it applies only to actions, not participants. Plurality of participants arises only as a result of pluralizing the event. According to the Pragmatic Hypothesis, people who hear a seriative sentence infer plurality in order to make the sentence felicitous in context. The Pragmatic Hypothesis predicts that the seriative will cause some arguments to be interpreted as plural, and will let others not to be interpreted as plural. Since the pragmatic inferences are based on context, the same sentence uttered in two different contexts will be able to receive two different inferences about the plurality of the participants. The hypothesis also predicts that a listener should be able to interpret any argument as plural if such an interpretation is appropriate in context.

The hypothesis's prediction that some arguments will be pluralized while others are not turns out to be true. In example (37) the direct object is interpreted as plural. According to the pragmatic hypothesis, this is because they assume that a dog would not catch the same rabbit over and over again, so they infer that there are many rabbits. In example (55), there is no plural. Apparently, listeners can accommodate the idea that the person goes home from work every day, and so does not need to infer that multiple people are quitting work.

Because none of my data is taken from natural conversational contexts, I do not have examples of the same seriative sentence being uttered in different contexts. However, because there is a clear pattern showing that transitive subjects are not pluralized by the seriative, it seems that there is no context in which a transitive subject is pluralized. When speakers are asked if a transitive subject could be interpreted as plural, they consistently say 'no,' not 'maybe' or 'sometimes.' This seems to show that the singular interpretation is obligatory for the subjects of these sentences. Therefore, in order to use the Pragmatic Hypothesis, we would have to stipulate that transitive subjects cannot be pluralized by the seriative. This goes against both the prediction that interpretations can change according to context, and the prediction that any argument can be interpreted as plural.

While the transitive subjects can never be pluralized, there are some arguments that are obligatorily interpreted as plural. In the case of example (32), repeated below, the subject must be interpreted as plural.

- (32) \*'ashkii yah 'ahees'na'  
boy in ser-crawls.Impf

\*'The boy crawled in one after another.' (NLA 2001, Perkins 2002)

If the plurality caused by the seriative were optional or dependent on context, the sentence could be interpreted with a singular subject and therefore would not be seen as ungrammatical. This is another piece of evidence that contradicts the prediction that interpretations can change according to context.

In the case of an event with three participants, we can extend the prediction that any argument can be interpreted as plural. In such a case, the Pragmatic Hypothesis predicts that any one of the arguments, any two, all three, or none may be interpreted as plural, depending on the context. Adding the transitive subject stipulation would prevent the subject from being seriated, but there is still no way of determining which object will be seriated. Example (40) repeated below shows that only the direct object is plural.

(40) *Hooghan gone' shima beeldleí bá yah 'ahetsooz*

house inside my-mother blanket for into away-ser.-cl.-handle-flat-flexible-object

'I carried the blankets into the hogan for my mother one after another' (YM 1980: d63).

Plurality for the other arguments is not optional. Even with the stipulation on transitive subjects, we cannot account for the fact that the hogan is obligatorily singular. This example provides another argument against the Pragmatic Hypothesis. It appears that a more restrictive theory is needed to explain the fact that there is only one interpretation for the sentence.

The Pragmatic Hypothesis should also be able to explain the lack of plurals in the “inherent seriative” examples. Under the Pragmatic Hypothesis, listeners who hear a verb base that describes inherently seriative motion must consistently infer that the participant is singular, unless other plural morphemes are present. Carlota Smith (2000) proposes that the lexicon contains both verb bases with segmental meanings and verb bases with nonsegmental meanings. The segmental meanings are verbs for which any one repetition of the action is too small to constitute a full event, such as one “wiggle” or

one “hobble.” Nonsegmental meanings are ordinary verbs which express whole events, such as “walk out.” The segmental bases form inherent serialives, while the nonsegmental bases form successive serialives. When the serialive is applied to verbs with nonsegmental meanings, it serializes the entire event at once, including the sub-events of process and resultant state. When the serialive is applied to verbs with segmental meanings, it is not the entire event which is serialized, but the internal stages or sub-events. The process is serialized, but the resultant state is not (Smith 217). The Pragmatic Hypothesis can account for the lack of inherent serialive plurals if we assume that in no case it is infelicitous for a single subject to be performing an inherently serialive action. This is quite plausible. However, we must also assume that there is no case in which it is felicitous for a plural subject to be performing an inherently serialive action. This is less likely. Therefore, to make the Pragmatic Hypothesis account for these cases, it may be necessary to stipulate that speakers never infer plurality in the case of inherent serialives.

The Pragmatic Hypothesis can account for any one sentence in which the serialive prefix appears, because it is very inclusive. However, it cannot account for patterns of obligatory non-plurals, such as the subjects of transitive verbs and the subjects of intransitive inherent serialives. It cannot account for the obligatory plurals in some sentences, or predict which of a number of objects should be pluralized. Because of this, it is necessary to look for a more restrictive hypothesis.

#### Section 4: The Theme hypothesis

One of the main problems with the Pragmatic Hypothesis is that we must stipulate that listeners do not infer plurality for transitive subjects. Since it is intransitive subjects

and transitive objects that are usually pluralized by the seriative; a successful hypothesis should apply to participants represented by arguments in either position and exclude participants represented by transitive subjects. The Theme Hypothesis proposes the seriative prefix directly affects the plurality of participants based on their semantic role. Specifically, participants with the role of theme are interpreted as plural, while participants with other roles are not interpreted as plural. Unlike the Pragmatic Hypothesis, this hypothesis predicts that all participants in seriative events are either obligatorily plural or obligatorily singular. The hypothesis predicts that the plurality of a participant is not based on its syntactic position in the sentence, so that changing the syntax of a sentence should not affect the plurality of participants if the participants always have the same semantic role. Because there is only one theme in a sentence, this hypothesis would predict that the seriative cannot pluralize more than one argument in any given sentence.

The semantic role of theme is linked to most direct object positions and intransitive subject positions. It is not linked to transitive subject positions, or to oblique objects. If we assume that only themes are pluralized, we have no problem explaining the stipulation against pluralizing transitive subjects, because transitive subjects are not linked to themes. It is also easy to explain why there is only one hogan and one mother in example (40), repeated again below, because these are not direct objects and are not linked to the theme role.

(40) *Hooghan góné' shimá beeldléí bá yah 'ahéftsooz*

house inside my-mother blanket for into away-ser.-cl.-handle-flat-flexible-object

<sup>1</sup>I carried the blankets into the hogan for my mother one after another' (YM 1980: d63).

Because example (41) cannot be interpreted as including a plural hogan or plural mother, it appears that more than one object cannot be pluralized at once. I have not been able to find any seriative sentences in which the seriative pluralizes more than one argument, and I would be surprised to find one. When people wish to express ideas which involve more than one plural argument, they generally add *da-* or use a plural stem. Similarly, to express an idea involving a plural agent, markers other than the seriative can be used:

- (56) *dadiniilt'éego tsé 'a- da -haa -l -ghan*  
a-bunch-of-us rock away-dist.-ser.-cl.-move.forcefully.sg.

A bunch of us threw one stone (together)

- (57) *dadiniilt'éego tsé 'a- da -haa-l -thíid*  
a-bunch-of-us rock away-dist.-ser.-cl.-move.forcefully.pl.  
A bunch of us threw stones (Williams 2)

Without using additional plural morphemes as in the sentences above, one cannot generate more than one plural in a seriative sentence. This supports the Theme Hypothesis because it confirms the prediction that no more than one participant will have seriative plural.

The Theme Hypothesis makes a correct prediction about the effect of different syntactic constructions on seriative sentences. The following sentences show how the

inverse construction interacts with the use of the seriative. This construction is not a passive, but it does involve moving the argument linked to the theme to a different syntactic position.

(58) 'ashkii gah yit-di-deet

boy rabbit 3<sup>rd</sup> obj-handle-ropelike-object

'The boy is catching the rabbit'

(59) gah bi-t-'a-di-deet

rabbit inverse-handle-ropelike-object

'A rabbit is being caught'

(60) 'ashkii gah yi-t-ne-he-deet

boy rabbit ser.handle-ropelike-object

'The boy is catching rabbits, one after the other'

(61) gah bi-t-ne'-ii-deet

rabbit inverse-ser.handle-ropelike-object

'The rabbits are being caught, one after the other' (NLA 2001)

In all of the rabbit sentences, we could describe the rabbit(s) as the theme, because they are causally affected by another participant. Changing the sentence to an inverse construction does not change the fact that the rabbit is the participant which is being

pluralized. This supports the Theme Hypothesis by showing that syntactic position does not seem to change which of the arguments is pluralized by the seriative. This is the reason that the Theme Hypothesis, and not an absolutive hypothesis, is proposed.<sup>4</sup>

A passage from Young, Morgan, and Midgette (1992) on the seriative reinforces the stipulation against pluralizing transitive subjects and provides another perspective on which constituents are pluralized by the seriative prefix:

*Hi-I* is a seriative prefix, connoting segmentation of the action denoted by the verb stem, either in the sense of a succession of three or more times (one after another ), or a succession of three or more actors (intransitive verbs) or three or more objects (transitive verbs) (YMM 1992: 347)

The seriative prefix will pluralize “actors” when used with intransitive verbs and “objects” when used with transitive verbs. It is unclear whether the authors intended to make a statement about specific semantic or syntactic roles. Most likely, this is another way of expressing the idea that transitive objects and intransitive subjects are pluralized.

However, the choice of words suggests that semantic roles might play a part in the analysis, accounting for sentences such as the inverse constructions above. The use of the word “actor” instead of “subject” suggests a semantic role resembling “agent” although it is applied to the subjects of intransitive verbs. This brings up the problem that some intransitive subjects are not themes at all, but agents:

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<sup>4</sup> In an earlier version of this paper I explored a syntactic account for seriative plurals, based on two different syntactic models of the Navajo verb from Rice (2000b) and Hale (2001). Following Rice (2000) and May (1985), it was proposed that the scopal relations at logical form are based on the d-structure of the verb. The Syntactic Scope Hypothesis stated that the seriative has semantic scope over morphemes that appear below it on a syntactic tree. The hypothesis would have been successful if the pluralized arguments appeared in the seriative’s scope and the singular arguments appeared above it. However, this was not the case, and it was difficult even to know which morphemes should attach to which nodes. The syntactic

(62) *hooghan góne' yah 'a-haa-s-yá*

*hogan inside into away-ser-enter*

‘They entered the hogan one at a time, singularly’ (Perkins 2001)

(29) *naalnoodii ha-ha-l-nood*

*lizard up-ser-cl-dart.long obj.Impf*

‘Lizards come darting up one after another.’ (YM 1980: d390)

(55) *'Ashdladigo na-haa-l-níish*

*five-o-clock terminative-ser-cl.-work*

‘3<sup>rd</sup> person (customarily) quits working at five o'clock.’ (Perkins 2002)

The semantic roles of the subjects of these sentences is best described as agent, not theme, because they exhibit volition and motion. They conform to the stipulation that only ablatives should be pluralized, because they are intransitive subjects, not intransitive objects. However, they do not conform to the predictions of the Theme Hypothesis, because they are pluralized even though they are agents.

Another problem with the Theme Hypothesis is that some themes are not pluralized by the seriative. This is always the case with inherent seriatives, as we see in examples (63) - (65),

(63) *hee-sh-héél*

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analysis of Athabaskan verbs is extremely complicated and controversial. Until a clearer understanding of

ser.-I-handle.burden

'I am tugging it along, taking first one end and then another' (YM 1980: 438)

(64) ne-he-s-xâãs

across-ser.-I-scratch

'I scratch him repeatedly' (YM 1980:d621)

(65) ha-ha-sh-ne'

out-ser-I-toss,pound.solid.round.object

'I hammer it out with successive blows (metal)' (YM 1980: d393).

In these sentences, the themes are the direct object: the thing that is tugged, the thing that is scratched, and the thing that is hammered. None of these direct objects are represented by overt morphemes in the verbs. However, at least with (a) and (c) it is very clear that there are direct objects, because otherwise the classificatory verb stem would refer to the subject, causing the subject to be interpreted as a burden or a solid-round-object. The fact that these themes are not pluralized is very problematic for the Theme Hypothesis.

Non-plural themes also appear in successive serialive sentences, such as (66):

(66) chidi yi-hi-di-l-niish

car 3<sup>rd</sup>obj-ser-inceptive-cl.-work

'He repetitively starts work on the car (every morning)' (Perkins 2001)

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the verb emerges, it will be difficult even to test the syntactic scope hypothesis.

In this case, the theme is the car, which is represented by a 3<sup>rd</sup>-person object prefix. It seems to be the theme because it is undergoes the action made by another participant. This is not an inherent seriative because the actions described are not closely connected and dependent on each other, but rather each constitutes a separate event in itself. Still, the theme is not pluralized by the seriative. This shows that we cannot save the Theme Hypothesis by saying that it does not apply to the inherent seriatives; successive seriatives violate the Theme Hypothesis as well.

In sum, the Theme Hypothesis predicts seriative plurals more effectively than the Pragmatic Hypothesis. It successfully predicts the subjects of transitive verbs as singular without any special stipulations. It accounts for the fact that the seriative can pluralize only one participant in an event, and it accounts for the fact that using an inverse construction does not affect which participants are pluralized. However, the Theme Hypothesis is not successful, because some agents exhibit seriative plurals, while some themes do not.

#### Section 5: The Change of State or Location Hypothesis

The Change of State or Location Hypothesis is also based on theories of semantic roles. In order to address the problems of the Theme Hypothesis, this hypothesis attempts to isolate the semantic attributes that allow an argument to be pluralized by the seriative prefix. The hypothesis is based on the work of Dowty (1991). It states that whether or not an argument is linked to a theme role, it will be pluralized by the seriative prefix if in the event it undergoes a change of state or location.

Dowty (1991) proposes that semantic roles be defined only on the basis of the event rather than the perspective from which the event is seen. Thus he calls his semantic roles event-dependent, and rejects roles such as the figure-ground pair, in which an object whose position is described in relation to another object is called the “figure.” Dowty also rejects analyses in which one of the roles in such a situation is taken to be the “theme,” because he believes that semantic roles should not be defined based on syntax. He dispenses with roles such as “goal” and “instrument,” arguing that all semantic roles exhibit various attributes of two proto-roles. In this way Dowty accounts for diversity among thematic roles without creating so many individual roles that they approach being verb-specific.

Dowty’s list of attributes for the theme and agent proto-roles are summarized in his paper as follows. The parentheses around letters (e) show that these attributes are entailed by any one of the previous four in the section.

- (67) Contributing properties for the Agent Proto-Role
- a. volitional involvement in the event or state
  - b. sentience (and/or perception)
  - c. causing an event or change of state in another participant
  - d. movement (relative to the position of another participant)
  - (e. exists independently of the event named by the verb).
- (68) Contributing properties for the Patient Proto-Role.
- a. undergoes change of state

- b. incremental theme
- c. causally affected by another participant
- d. stationary relative to movement of another participant
- (e. does not exist independently of the event, or not at all)

(Dowty 1991:572)

Dowty proposes that if a semantic role has any one of the attributes, it can be considered an example of the relevant semantic proto-role. The proto-patient in a sentence can be determined by observing which of the arguments has the most proto-patient attributes. Some of these attributes have been suggested in the previous research on thematic roles.

Dowty's original contribution to the list is the "incremental theme" category. He describes this type of proto-patient as one which is involved in an event such that the progress of the event can be observed from the condition of the incremental theme.

Dowty gives the examples below to illustrate the incremental theme role:

(69) John sprayed this wall with paint in an hour.

(70) John sprayed paint onto this wall for an hour. (Dowty 1991: 591)

In both cases, the wall is the incremental theme, even though the sentences have different s-structure and different situation types.

Dowty's list of attributes can be used to isolate certain semantic characteristics of different roles regardless of what semantic role we determine them to be. To formulate the next hypothesis, we must modify Dowty's attribute (d) of the agent proto-role, "motion relative to another participant" to have it include any motion relative to a fixed point, in order to include sentences in which only one participant is described. Using this slightly revised attribute, we can propose a new hypothesis using attribute (d) of the agent

proto-role and attribute (a) of the patient proto-role. The Change of State or Location Hypothesis is that every constituent that exhibits a change of state or a change of location will be pluralized in a seriative sentence, no matter what its syntactic position or semantic role. It also predicts that semantic roles in seriative sentences that exhibit neither a change of state nor a change in location will not be pluralized by the seriative prefix (although they may be plural for other reasons).

According to this hypothesis, the subject of example (69) is pluralized because of the seriative's interaction with an event participant that experiences motion relative to a fixed point: in other words, a change of location.

(71) ha-ha-l-ts'írd

out-3sing.-cl.-free.movement.solid.round.object

'(solid round objects) fall out one after another' (YM 1980: d390)

The other characteristic which allows the seriative to create plurals is “change of state.”

This is exemplified by the verb in (70):

(72) ch'í-hw-ee-sh-'aah

out-3sing.obj.-ser-I-handle.small.obj/story

'I tell a series of stories' (YM 1980: d286)

The stories come into existence when they are told, which can be characterized as a change of state. In the case of these two examples, the Change of State or Location

Hypothesis correctly predicts that a constituent with either the attribute of motion or the attribute of change of state can be pluralized by the seriative.

Participants that show sentience and volition, and would probably be classified as agents, can also be pluralized by the seriative if they exhibit a change in state or location.

One example of this (52) repeated below, and others appear in the Appendix.

- (52) *ch'i-hii-dááh*  
*out-ser.-walk*

'They go out one by one' (Perkins 2001)

In sentences such as this, the participant that is pluralized appears to have more of the characteristics of a proto-agent than a proto-patient, including volition, movement with respect to a fixed point, and independent existence. Still, because it shows a change of location, it is pluralized by the seriative prefix.

Participants that would be classified as themes are not pluralized unless they show a change in state or location. Many of the transitive inherent seriatives have themes which do not undergo a change of state or location, including (65) repeated below:

- (65) *ha-ha-sh-ne'*  
*out-ser-I-toss;pound.solid.round.object*

'I hammer it out with successive blows (metal)' (YM 1980: d393).

Here, the hammered object is stationary relative to another participant and is casually affected. Therefore, it can be classified as a theme. Although the Theme Hypothesis would predict a plural for (d), the Change of State or Location Hypothesis correctly predicts a non-plural.

Most of the verbs in Appendix 1 that exhibit plurals have semantic roles that exhibit a change of location, while only a few exhibit a change of state. All of the examples that exhibit plurals have constituents that undergo either a change of state or a change of location. Therefore, we can say that the Change of State or Location Hypothesis is adequately inclusive; there are no plurals that are unaccounted for.

Possible problems with the Change of State or Location Hypothesis come from its not being restrictive enough, because it appears to predict plurals where they do not actually materialize. The words in Appendix 1 that do not exhibit plurals are mostly examples of the inherent seriative, with meanings like 'wiggle.'

(73) hi-sh-ghaat  
ser-I-move.Impf

'I am wiggling.' (Smith 2000:216)

These are verbs describing motion, but there is an important difference between them and the other verbs: the motion does not necessarily represent a change of location, a movement from one point to another. The arguments of these verbs tend to have other characteristics of the proto-agent role such as sentience, volition, and existence

independent of the event. However, it is not because they are agents that they are not pluralized, but because they do not entail a change of state or location.

Most of the inherent serialives that lack plurals can be explained by the fact that the movement described does not represent a change in location. However, some of these verbs clearly do describe a change in location.

(74) *yisdá-há-sh-cheéh*

safety-ser.-I-hobble

'I hobble to safety' (YM 1992: 72)

However, this change of location is incidental to the motion: the motion could go on without it. Each individual “hobble” does not cause a change of location; the change of location is a result of the entire series of hobbles. As in Smith (1991), we must stipulate that the change of state or location must happen as a result of one of the sub-events, not as a cumulative effect of all of the sub-events.

The most problematic piece of data for the Change of State or Location

Hypothesis is example (53), the boy running away from school. The boy does exhibit a change of location, but he does not become pluralized. This piece of data actually helps us to answer the question of why the serialive pluralizes constituents linked to roles that undergo a change of state or location. In what way do roles that undergo a change of state or location constitute a natural class? It appears that semantic roles with either of these attributes have something in common in that after the action takes place, they are in some way “used up.” By definition, once a constituent has gone through a change of

state or location, it is in a different state or a different location. This means that if the action is to take place again, the constituent must somehow return to its original state or location. Otherwise, the second action and further repetitions of the action cannot take place. Unlike other attributes of the proto-roles such as volition and being stationary, these change of state or location attributes have a time-element to them. Therefore, they interact in a special way with the seriative prefix because it situates events on a time line. For some reason, the semantics of the seriative do not allow for constituents to regress to their previous location or state between each of the sub-events in a seriative event. Instead, if a constituent is “used up” in the course of the action that is performed, the seriative prefix causes the plural interpretation, and new objects appear, ready to be “used up.”

According to this explanation of the Change in State or Location Hypothesis, the exception in (54) may be made possible by the fact that the reversionary prefix is used, meaning that the boy keeps running *back* away from school. This might have the effect of un-doing the change of location, so that the boy never actually gets home, but always ends up at school again. Another prefix which has a similar effect to the reversionary prefix is a prefix denoting circular motion:

- (75)    tóshjeeh 'ahéé-ní-l-máás  
barrel circular-terminative-cl.-roll

'I rolled the barrel around in a circle.' (YM 1987: 171)

(76) *tóshjeeh 'ahéé-hé-f-máás*

barrel      circular-ser-cl.-roll

'I roll the barrel around in a succession of circles.' (Smith 2000)

(77) *'ahéé-hé-l-dlóósh*

circular-ser-cl-go-4-feet

'It trots around and around in a circle' (YM 1987: 171)

These particular semantic characteristics of motion-in-a-circle keep these verbs from having seriative plurals, even though the barrel and the four-legged creature do in fact experience a change of location. Because the end result of travel in a circle is to end up at the original location, the change of location is undone during each of the successive events. These examples show that the root cause of the Change of State or Location Hypothesis is the fact that constituents which experience these changes are in some way used up. A change of location does not cause the seriative plurals to appear if the constituent ends up in the same place at the end of the event. If the seriative is taken as applying only to the sub-events which make up a series and not to the entire series of events, then it is evident why the inherent serialives never create plurals: one sub-event of any inherent seriative does not “use up” a participant, because the event itself is so small that it is hardly even an event, and usually needs the seriative in order to form a full

verb word. As we have seen, a constituent does not necessarily have to be linked to a theme role in order to be used up in the course of an event.<sup>5</sup>

## Section 6: Conclusion

Serialive plurals exhibit too strong and consistent a pattern to be explained by pragmatic inference, unless we had a number of stipulations. We have seen that the distribution of serialive plurals does not always pattern according to Young and Morgan's successive-inherent distinction. Themes are not always plural in serialive sentences and plurals are not always themes, and it is sometimes difficult even to determine whether an argument has a theme role or not. The Change of State or Location Hypothesis isolates semantic attributes of semantic roles and proposes that the serialive pluralizes arguments based on these attributes. Although the reversatives and inherent serialives are problematic for the Change of State or Location Hypothesis, it seems that these problems can be resolved if we look at the root cause of the Hypothesis: constituents are pluralized if they are “used up,” meaning that they cannot be easily acted upon in the same way twice. The Change of State or Location Hypothesis provides an account of why some serialive sentences have serialive plurals and others do not. For most of the data presented here, this hypothesis effectively predicts serialive plurals.

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<sup>5</sup> The idea of being “used up” has something in common with the idea of a telic event. In an earlier version of this paper I discussed a Telicity Hypothesis which predicted that the serialive would only pluralize constituents involved in telic eventualities. However, I believe that this hypothesis is inferior to the Change in State or Location Hypothesis. There is much controversy over the telic property in Navajo, and it is unclear whether we should evaluate telicity based on the Navajo verb stem, the verb theme, the verb base, or the entire verb word. Carlota Smith (1991) proposes that Navajo contains semelfactives which are [-durative] and [-telic], while Sally Midgette (1996) and Ted Fernald (p.c.) do not recognize the existence of such an event category. There are several counterexamples to the hypothesis, including the examples involving the inherent serialives (if we follow Midgette and Fernald) and circular motion. Even if there

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were no such counterexamples, the Telicity Hypothesis cannot stand alone as an explanation of seriative plurals because it does not predict which of the participants in a (telic) event will be interpreted as plural.

Appendix 1: All of these examples contain the seriative prefix

Sentences without plurals

- (3) heeshréél I drag it along end by end  
 (14) hishcheéh I hop, hobble  
 (15) heeshteel I am hopping along  
 (50) heesháát I shuffle along  
 (53) 'anáhalyeed 3<sup>rd</sup> sing. keeps running away (from school)  
 (54) neheshníísh I (usually) quit work (at 5:00)  
 (55) nahaahníísh 3<sup>rd</sup> person quits work (at 5:00)  
 (63) heeshhéél I am tugging it along  
 (64) nehessxáás I scratch him repeatedly  
 (65) hahashne' I hammer it out  
 (66) yihidilniish He repetitively starts work (on the car) (every morning)  
 (67) hishghaát I am wiggling  
 (74) yisdáháshcheéh I hobble to safety  
 (76) 'ahééhémaás 3<sup>rd</sup> person rolls it around in a succession of circles  
 (77) 'ahééhéldlóósh It trots around and around in a circle

not in text

- 'ahidishne' I'm chopping (it)  
 'ahishshíft I breathe multiple times  
 'ahééhéshne' I'm chopping around on it.  
 'ahéé'íishhóósh I sleep (and wake up) over and over again  
 hidisht'e I start to hop or skip along

Sentences with Plurals

- (2) hahashjiid I carry a series of things up on my back  
 (5) hismáás I roll them into it one after another  
 (6) yiyiitnáás 3<sup>rd</sup> sing. rolled them into it one after another.  
 (13) neheldlóósh They're coming to a point, one at a time (on four legs)  
 (22) hahashjih I pull them out of something one after another  
 (24) yah 'ahaaskai They entered in groups, consecutively  
 (26) 'ahitteet They slide away (out of sight) one after another  
 (29) hahalhood Lizards come darting up one after another  
 (31) yah 'ahees'na' They crawled in one after another.  
 (34) hayilljiid 3<sup>rd</sup> sing. carries a series of things up  
 (37) yitnehedeet 3<sup>rd</sup> sing. is catching ropelike objects one at a time.  
 (40) 'ahétsooz, I carried them away one after another

- (42) yizahyiiziid 3<sup>rd</sup> sing spoons liquid into (baby's) mouth one spoonful at a time  
 (44) 'ahanahiiziid 3<sup>rd</sup> sing. raked the weeds with lots of little strokes  
 (47) ayijjāāh 3<sup>rd</sup> sing takes out handfuls in succession  
 (52) ch 'ihidāāh They go out one by one  
 (61) bline'ideet Ropelike objects are caught one after another  
 (62) yah 'ahaasyā They entered one at a time.  
 (71) hahalts'íd (solid round objects) fall out one after another  
 (72) ch 'ihweesh' aah I tell a series of stories

not in text:

- hi' mās They roll one after another  
 yisdāhshjiid I brought them up to safety one at a time  
 jidiyooth 4<sup>th</sup> pers breaks off, snaps off (pl obj) one after another  
 neheshteeh I set them down one after another (animate objects)  
 'abeeltaat They (people or animals) dash away one after another

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