Noun Compounds in Dene[1]

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Recent work on Athapaskan languages, including Dene, has focussed mainly on the verb (e.g. Kari 1973, Kari 1979, Rice 1976). While this is not surprising, due to the complex nature of the verb structure and the morphophonemics involved in the verb, other categories in Dene are of interest also. In this paper, I will explore properties of compound nouns in Dene. I will show that semantic, phonological, and morphological properties of compounds converge to define two distinct types of compounding in Dene.

In part 1 of the paper, compound nouns are exemplified. Part 2 is a discussion of basic word formation and phonological processes in Dene. In part 3, the two types of compound nouns found in Dene are described along with their defining characteristics.

1. Compound Nouns - Some Examples

Compound nouns are nouns consisting of two (or more) stems.[2] While there are several different stem categories that can enter into compounds, only two will be of concern here. The first of the stems in a compound can be nominal and the second can be nominal or verbal/adjectival. Some examples of noun-noun compounds are shown in (1).

(1) a. teht'ǫ́ 'water lily'
(teh 'water' + -t'ǫ́ 'leaf, flower')

b. tsádhéh 'fur'
(tsá 'beaver' + -dhéh 'skin')

c. ʔenákeeʔée 'parka'
(ʔenákee 'Inuit' + ʔee 'clothing' + ´possessive)

d. sadzeé 'watch, clock'
(sa 'sun' + -dze 'heart' + -é possessive)

e. satsónéʔehdzoo 'steel trap'
(satsóné 'metal' + ʔehdzoo 'trap')

f. dechįłuh 'wooden spoon'
(dechį 'wood' + łuh 'spoon')

Some examples of noun-verb stem compounds are given in (2). These obviously differ from the noun-noun compounds in some ways, and they will not be dealt with in this paper.

(2) a. tlįcho 'horse'
(tlį 'dog' + cho 'big'[3])

b. tl'otsę 'onion'
(tl'o 'grass' + tsę 'smell')

c. kwíts'í 'comb'
(kwí 'head' + ts'í 'comb')

2. Some Basics

Before examining the structure of Dene compound nouns, it will be helpful to explore certain aspects of the phonology and morphology of nouns in Dene.

2.1 Noun Morphology

Each noun is entered in the lexicon in its most basic, or root, form. While the root is the basic lexical entry in Dene, roots do not themselves occur independently as words. In order to form a noun word, a root must undergo a word formation process that changes it into a stem. The minimal noun word in Dene is thus a stem.

In many, if not most, cases, the noun root and stem are identical to each other, with the stem formed from the root by the addition of a phonologically null suffix. Some examples of stems that are identical to roots are shown in (3).

(3) tu 'water'

sah 'bear'

tsá 'beaver'

kǫ́ 'fire'

Noun stems and noun roots are not necessarily identical. In some cases, a stem is formed from a root by the addition of a consonantal suffix /-ɬ/. That this /-ɬ/ is a suffix and not part of the root is evident from the fact that there are related noun/verb pairs where the verb stem has no final consonant and the noun stem does. In (4), the noun stem is shown on the first line of each set and the related verb stem on the second line. The alternations in form of the noun stem initials and finals are discussed in sections 2.2.1 and 2.2.2 below.[4]

(4)	a.	xéh	-ghélé	n.	'pack, load, freight'
		-xéh, -xį		v.	'pack' (imperfective, perfective)
	b.	tl'uh	-tl'ulé	n.	'rope, string'
		-tl'uh, -tl'ǫ		v.	'tie' (imperfective, perfective)

That the root shared by the noun and the verb stems is unsuffixed is shown by the fact that in the perfective form, the nasal suffix, indicating perfective, is present. With consonant final roots, this nasal suffix does not appear. These noun stems are thus formed from roots by suffixation of /-ɬ/.

Stems can also be formed from roots by the addition of a volcalic suffix /-e/ to the root. In the examples below, the root is consonant final, but the stem requires a suffix. This suffix seems to have no independent meaning; it is simply a stem formative.[5]

(5)	a.	t'eere	'girl'
		(cf. Navajo	ʔat'ééd 'girl' (root: -t'ééd))
	b.	tene	'pot'
	c.	ts'ale	'frog'
		(cf. - ts'ah	'squeak, chatter')
	d.	fole	'merganser'
		(cf. -fo	'yellow')
	e.	bele	'wolf'

The fact that the final vowel in these forms is a suffix rather than part of the root is evident in several ways. First, in the cases where there is a related verb form, the verb stem does not have this vowel. If the vowel were part of the root, one would expect it to be present in all forms of the word including the verb.

Second, the range of consonants that can occur preceding the suffix is limited: only those that can occur in root final position are found. If these were bisyllabic roots, one might expect a greater range of consonants to occur. The fact that these consonants are limited to just the consonants known independently to occur as root finals suggests that these too are root final rather than root medial.

Finally, as will become apparent below, when these forms are possessed, this particular stem formative is not present but is 'replaced' by the possessive suffix -é. No vowels that are clearly root vowels are ever treated in such a way. If these final -e's are suffix rather than root vowels, they do not constitute an exception to this generalization.

The basic lexical entry for a noun thus consists of a root. Independent noun stems are formed by suffixation of Ø, /-ɨ/ or /-e/.

Most nouns in Dene can be inflected for possession. In general, possessive inflection involves two processes. A possessive prefix or noun must precede the noun. In addition, most nouns also take a suffix, usually called the possessive suffix, /-é/, alienable possession, or high tone, inalienable possession, in the possessed form. It is the suffix -é that is of concern here. It is illustrated in the forms in (6).

(6)	a.	ʔah	-ʔahé	'snowshoe'
	b.	tlı̨	-lı̨é	'dog'
	c.	tu	-tué	'water'
	d.	tl'uh	-tl'ulé	'rope, string'
	e.	t'eere	-t'eeré	'girl'
	f.	tene	-tené	'pot'
	g.	turi	-turé	'duck'

The forms in (6a) through (6c) have identical roots and stems. In (6d), the consonant that is [h] in the independent form and [l] in the possessed form is the stem formative /-ɬ/. In (6e) through (6g), the possessive suffix is added directly to the root to form a dependent stem.

Having examined the basic word formation processes of independent stem formation and possession, I will now turn to a number of phonological processes that will be important in identifying compound types.

2.2 Phonological Processes

Three phonological processes will be of concern here: voicing alternations of stem initial continuants, an obstruentization process that changes /n/ to [d] and /m/ to [b] in Bearlake and Hare, and a tone shift rule found in Fort Nelson Dene. Each of these is discussed briefly below.

2.2.1 Voicing Alternations

In stems, initial continuants are voiceless when word initial and voiced when preceded by a syllable, as the following examples show.

(7)	shį	-yiné	'song'
	sa	-zaá	'month, sun'
	xaye	-ghayé	'year, winter'
	ɬue	-lué	'fish'
	whe	-wé	'belt'

These alternations are best accounted for by treating the initial continuants in the stems as underlying voiceless and deriving the voiced counterpart by a rule of voicing that changes the voiceless continuant to a voiced one.

2.2.2 Stem Final Consonants

As some of the examples given above illustrate, many independent noun stems end phonetically in [h], but in the suffixed form some other consonant occurs. Some examples are shown in (8).

(8)	mɬ́h	-mɬ́lé	'net'
	ts'ah	-ts'adé	'hat'
	kǫ́	-kǫ́né	'fire'
	téh	-tédhé	'cane'
	ʔah	-ʔahé	'snowshoe'
	dzéeh	-dzéegé	'gum' (Hare)
	tleh	-tlezé	'lard' (Fort Nelson)
	xay	-ghayé	'year'

These forms are best analyzed as having roots with final consonants /ɬ, d, n, th, h, g, s, y/ respectively. The non-sonorants are voiced when syllable initial (perhaps by the same voicing rule as discussed above) and neutralized to [h] when syllable final. The sonorants remain, with /n/ causing nasalization syllable finally.

2.2.3 Obstruentization

In the Hare and Bearlake dialects, there are alternations between [n] and [d] and [m] and [b] stem initially, as shown in (9).

(9)	a.	-dee	'win' (imperfective)
		-nǫ	'win' (perfective)
	b.	-bee	'swim' (imperfective)
		-mɬ	'swim' (perfective)

The nasal stop occurs if a nasal follows, the oral stop otherwise. These alternations can be accounted for by introducing a rule of obstruentization that changes /n/ and /m/ to their non-nasal counterparts when they are stem initial.

2.2.4 Tone Shift - Fort Nelson Dene

In the Fort Nelson dialect, high tones that are lexically associated with stems occur phonetically one syllable to the left of the vowel they are lexically associated with. This can be seen in the data in (10), where Fort Nelson and Fort Simpson words are contrasted.

(10)	Fort Simpson	Fort Nelson	
	setthí	sétthi	'my head'
	sɨlá	sɨ́la	'my hand'
	libó	líbo	'cup'
	sedzié	sedzíe	'my ear'
	sedhádi	sédhadi	'my tongue'
	ʔehtále	ʔéhtale	'grouse'
	segóné	ségóne	'my arm'

In all these examples, the high tone in the Fort Nelson forms is shifted one syllable to the left from where it occurs in the Fort Simpson forms.

3. Compound Nouns

Having reviewed basic noun morphology and phonology, we are now ready to look at the formation of noun compounds in Dene. We will see that there are two different compound types in Dene that differ in the following ways.

(12)	Type 1 Compounds	Type 2 Compounds
a.	semantics - wide range of meanings; meaning often opaque	a. semantics - 'N2 made of N1'
b.	morphology - root + stem	b. morphology - stem + stem
c.	phonology - stem undergoes voicing, obstruentization, tone shift; root does not	c. phonology - first stem affected by voicing; second unaffected; obstruentization, tone shift in both stems

In the following sections, these properties of the different compound types are explored.

3.1 Semantics

Type 1 compounds exhibit a wide range of meanings. In the examples below, a number of these different meanings are presented.

The meaning relationship between the parts in type 1 compounds can be one of possession: 'N1's N2', 'N2 of or belonging to N1', 'N2 associated with N1'.

(13) a. dlǫbéré 'cheese'
(dlǫ 'mouse' + bér 'food' + -é possessive)

b. k'áleemíhé 'spider's web'
(k'alee 'spider' + míh 'net' + -é possessive)

c. ʔidikóné 'lightning'
(ʔidi 'thunder' + kón 'fire' + -é possessive)

d. ʔerákeekée 'mukluks'
(ʔerákee 'Inuit' + kee 'shoe' + -é possessive)

In all such cases, the second noun of the compound occurs in dependent or possessed form, as is consistent with the possessive range of meaning.

There can also be the meaning relationship N2 associated with or having the property N1 in type 1 compounds. The second noun is in the dependent form.

(14) ɬets'egǫdené 'soldier'
(ɬets'egǫ 'war' + den 'person' + -é possessive)

Type 1 compounds can also have the meaning 'N2 used for or by N1'. When the relationship between N1 and N2 is one of inalienable possession N2 is in the dependent form, as in (15), while it is in the independent form if the relationship is alienable, as in (16).

(15) a. ʔahtl'ulé 'babiche on snowshoe'
(ʔah 'snowshoe' + tl'ul 'string' + -é possessive)

b. keeshįtl'ulé 'lace on shoe'
(keeshį 'ankle wrap + tl'ul 'string'+-é possessive)
on shoe'

(16) a. ʔahtl'uh 'babiche used for snowshoe'
(ʔah 'snowshoe' + tl'uh 'string')

b. dzahtl'uh 'garter, elastic for holding up socks'
(dzah 'calf' + tl'uh 'string')

c. tl'áʔe 'pants'
(tl'á 'rump' + ʔe 'clothing')

d. tlįdetthah 'dog whip'
(tlį 'dog' + detthah 'whip')

One other pair that nicely illustrates this alienability distinction is shown in (17).

(17) a. fígha 'hair (as in pile on floor)'
(fí 'head + gha 'hair')

b. -fígha 'hair (on head)'
(fí 'head' + gha 'hair' + ´possessive)

One other meaning that type 1 compounds can have is 'N2 consisting of or made with N1'.

(18) a. ʔehts'oikee 'beaded slippers'
(ʔehts'oi 'bead' + kee 'shoe')

kǫ́túé 'alcohol, brew'
(kǫ́ 'fire' + tu 'water' + -é possessive)

Finally, many type 1 compounds are opaque in meaning: the meaning of the whole is not determinable from the meanings of the parts. Some examples are shown in (19).

(19) a. tehk'ái 'muskrat'
(teh 'water' + k'á ? + i relativizer)

b. sǫ́ba 'money'
(sǫ́ ? + ba ?)

c. xahfí 'stovepipe elbow'
(xah ? + fí 'head')

d. dahghoo 'gooseberries'
(dah 'up (?)' + ghoo ?)

While type 1 compounds have a wide range of meanings, type 2 compounds are restricted in meaning to 'N2 made from or out of N1'. Several examples are shown in (20).

(20) a. kweegohkwį 'stone axe'
(kwee 'stone' + gohkwį 'axe')

b. satsóné?ehdzoo 'steel trap'
(satsóné 'metal' +?ehdzoo 'trap')

c. nayats'ah 'toque'
(naya 'wool' + ts'ah 'hat')

d. xatene 'basket'
(xa 'root' + tene 'pot')

e. dechįłuh 'wooden spoon'
(dechį 'wood' + łuh 'spoon')

f. ttheshíh 'rock mountain'
(tthe 'rock' + shíh 'mountain')

g. ʔedhéhthe 'hide belt'
(ʔedhéh 'hide' + the 'belt')

3.2 Phonology and Morphology

As well as meaning differences between type 1 and type 2 compounds, there are differences in phonology and morphology. In type 1 compounds, the first noun is not affected by voicing or obstruentization, while it is in type 2 compounds. The second noun of type 2 compounds is never affected by voicing, while in type 1 compounds it always is. Tone shift affects the compound types differently. In general, type 2 compounds pattern as if they were a single monomorphemic stem. These differences are outlined below.

3.2.1 Voicing

In type 1 compounds, an initial continuant of the second noun is always voiced, as illustrated in (21). For ease of identification, the voiced consonant is noted with double underlining.

(21) a. lidí<u>l</u>uzah 'teaspoon'
(lidí 'tea' + luz 'spoon' + ah diminutive)

b. sah<u>dh</u>éh 'bearskin'
(sah 'bear' + dhéh 'hide')

c. ts'é<u>e</u>wu<u>dh</u>edhé 'woman's pants'
(ts'é<u>e</u>wu 'woman' + dheh 'pants' + -é possessive)

d. fí<u>gh</u>a 'hair'
(fí 'head' + gha 'hair')

In type 2 compounds, an initial continuant in the second noun is always voiceless. This is shown in (22), where the voiceless consonant is marked by a double line for ease of identification.

(22) a. satsóné<u>x</u>óye 'metal snare'
(satsóné 'metal' + xóye 'snare')

b. dechi<u>ɬ</u>uh 'wooden spoon'
(dechi 'wood' + ɬuh 'spoon')

c. tthesh́ih 'rock mountain'
(tthe 'rock' + sh́ih 'mountain')

d. ʔedhéhthe 'hide belt'
(ʔedhéh 'hide' + the 'belt')

e. tth'ahtheh 'moss bag'
(tth'ah 'moss' + theh 'hide')

Even when the compound is possessed, this consonant is voiceless.

(23) a. -satsónéxóyé 'metal snare'

b. -dechi̥ɬuzé 'wooden spoon'

c. -tthesh́idhé 'rock mountain'

d. -ʔedhéhthé 'hide belt'

e. -tth'ahthedhé 'moss bag'

When type 1 compound nouns are possessed, initial continuants in the first noun remain voiceless, contrary to expectation.

(24) a. -sadzeé 'watch'
(sa 'sun' + dze 'heart' + -é possessive)
cf. -zaá 'month, sun'

b. -ɬéht'éhé 'bread'
(ɬéh 'flour' + t'éh 'burnt' + -é possessive)
cf. -lézé 'flour'

c. -sahdhéh 'bearskin'
(sah 'bear' + dhéh 'hide')
cf. -zahé 'bear'

d. -tli̥tl'ulé 'dog harness'[7]
(tli̥ 'dog' + tl'ul 'string' + é possessive)
cf. -li̥é 'dog'

In type 2 compounds, an initial continuant is voiced when the word is possessed.

(25) -ghatené 'basket'
(xa 'root' + ten 'pot' + é possessive)

Type 1 and type 2 compounds thus differ with respect to the voicing of initial continuants, as summarized in (26).

(26)

Type 1		Type 2	
-N1	N2	-N1	N2
voiceless	voiced	voiced	voiceless

3.2.2 Obstruentization

As discussed earlier, there are alternations between [n] and [d] and [m] and [b] stem initially, with the nasals underlying, in Hare and Bearlake. Type 1 and type 2 compounds differ with respect to this rule.

In type 1 compounds, the initial consonant of the second noun is affected by obstruentization (27), while the initial consonant of the first noun is not (28).

(27) satsónéda 'glasses'
(satsóné 'metal' + da 'eye')
cf. -daá 'eye'

(28) a. natu 'tears'
(na 'eye + tu 'water' + ´possessive)

b. réhdǫ 'food bag on grouse[8]
(méh 'stomach' + dǫ 'storage area')
cf. bé 'stomach'

No type 2 compounds with a nasal initial first noun are available; however, one would predict based on the analysis presented below that the initial consonant would be phonetically an obstruent.

3.2.3 Tone Shift - Fort Nelson Dene

In the Fort Nelson dialect, types 1 and 2 compounds differ with respect to the rule of tone shift. As discussed previously, tone shift moves a stem high tone one syllable to its left. This rule applies in the first noun of type 2 compounds, as shown in (29).

(29) Fort Simpson Fort Nelson

ʔedhéhthe ʔédhéhthe 'hide belt'[9]

In type 1 compounds, tones do not shift off the first noun.

(30) a. sesáma 'my money'
*sésama, *sésáma

b. setsánǫ 'my beaver mother'
*sétsanǫ, *sétsánǫ

3.2.4 Summary - Phonology

The first noun of a type 1 compound is unusual in three ways: initial fricatives do not voice, initial nasals fail to obstruentize, and tones do not shift off these nouns. In type 2 compounds, initial fricatives of the first noun voice in the appropriate environment, initial nasals of the first noun undergo obstruentization, and tones shift off the first noun. These compounds are unusual in that fricative initial second nouns are not affected by voicing.

3.2.5 Morphology

Type 1 and type 2 compounds have been shown to differ in terms of both phonology and semantics. One way to account for these two differences in compound types is to posit different morphological structures for the different compound types.

Consider first the second noun of both compound types. This noun is a stem: is is inflected as a stem by word formation rules and it is affected by the phonological rules that apply to stems.

Now consider the first noun in type 2 compounds. This noun too has stem inflection and is affected by the phonological rules that apply to stems. These facts can be accounted for if type 2 compounds have the structure stem-stem.

In type 1 compounds, it is often difficult to judge whether the first noun is or is not inflected. However, it clearly does not undergo rules that stems undergo: initial fricatives unexpectedly

remain voiceless, obstruentization fails to apply, and tone shift does not occur. It patterns as a prefix rather than as a stem. If the initial noun in these compounds is treated as a root rather than a stem, then these properties follow. The three phonological rules in question apply to stems but do not apply to roots. Type 1 compounds thus have the structure root-stem.

4. Conclusion

Compound nouns in Slave can be assigned one of two structures: either root-stem or stem-stem. By positing this difference in morphological structure between type 1 and type 2 compounds, the phonological and semantic differences between them become explicable. Certain phonological rules can affect only stems and not roots, accounting for the differences in the first nouns of the compounds.

The description above does nothing more than summarize properties associated with the Dene compound types. While it offers the beginnings of an account of these structures in proposing different morphology, it does not offer a good account of the phonological properties of the two compound types; most noticeably it fails to account for the fact that in type 2 compounds an initial fricative of the second noun is voiceless despite the fact that this fricative is stem initial. To offer an account of these compounds that goes beyond classification and description is not within the scope of this paper.[10]

Recognizing that a problem of truly accounting for the phonological facts described above still remains, we have nevertheless arrived at an interesting classification of compound types. Through an appeal to internal morphological structure, the other differences between the compound types follow. Thus we can see that compounds do not pose exceptions to phonological rules, but that these rules are systematic and operate predictably.

It is apparent that categories other than the verb have interesting morphology and are worthy of study in the Athapaskan languages. Similar investigation of other Athapaskan languages may well reveal that more than one type of compounding is found throughout the language family.

FOOTNOTES

[1]This research was funded by the Northern Social Research Division of the Department of Indian and Northern Affairs, Ottawa and the British Columbia Provincial Museum. The term Dene is used here to encompass what is usually known as Southern Slavey, Mountain, Bearlake and Hare. Examples are drawn from all dialects, as they do not differ with respect to the questions discussed here except where specifically noted.

The orthography used is that accepted by the Department of Education, Government of the Northwest Territories, Yellowknife (with one exception as discussed in the next paragraph). Thus ´ over a vowel represents marked high tone, ˛ under a vowel represents nasalization, and ' represents a glottalized consonant. The digraph ch is used to represent the alveopalatal affricate [č]. The symbols th and dh represent interdental continuants, sh and zh alveo-palatal continuants, x and gh velar continuants, ɬ and l, lateral continuants, and wh and w labiovelar continuants. The first symbol represents the voiceless, and the second, the voiced member of the pair.

There is one ambiguity in this transcription when used cross-dialectally. The symbol ee is used for both a long vowel [ɛɛ] and a mid front tense vowel [e] or [i̯e]. I will use ee for the long vowel and <u>ee</u> for the tense vowel.

One other note on orthography is needed. The sound /f/, found in the Hare dialect, patterns as a stop rather than as a fricative and it is not to be regarded as a fricative with respect to the rules discussed here.

I would like to offer thanks to the very many Dene people who have worked with me over the past several years. I deeply appreciate all the time they gave and all the patience they offered. My thanks also to Gillian Story for many helpful comments.

[2]This statement will be modified in later discussion.

[3]While <u>cho</u> is usually translated as 'big', it actually specifies a related (and larger) species than the noun that it is added to. Some other examples are shown below.

ʔah	'snowshoe'	ʔahcho	'hunting snowshoe'
deh	'river'	dehcho	'Mackenzie River'

[4]These examples should be read as following the first form on the upper line is the unprefixed noun. The second form with the hypen is the form of the noun when it is possessed. -é is a suffix that indicates genitive case. The forms on the lower line are the imperfective and perfective verb stems.

[5]Historically, this suffix is a relativizer 'the one who'. See Sapir (1923) for discussion. Synchronically, this meaning is not present.

[6]Most recent discussions of voicing alternations treat these fricatives as underlying voiced with a devoicing rule. See Kari (1973), Rice (1976). In Rice (1983b ms.), I argue that this treatment yields wrong predictions and that these fricatives must be underlying voiceless.

[7]In the word 'dog' tl̨i, -l̨é, the expected non-possessed form is ɬi, but tl̨i with an affricate occurs instead. This word is affected by an irregular affrication process so that underlying /ɬin/ is phonetically [tl̨i]. While this affrication is uncommon in Dene it does occur frequently in other Athapaskan languages.

[8]This is a Hare form. In Hare both /n/ and /m/ become [r] when non-stem initial and followed by an oral vowel.

[9]In Fort Nelson Dene, the tone shift rule places a high tone lexically associated with a stem vowel one syllable to the left of the stem vowel. If there are no tones to the right of this tone, the high tone is also attached to the stem vowel with which it is lexically associated. When phrase final, this high tone becomes low.

[10]See Rice (1983a ms.) for discussion.

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