Vestigial possessive morphology in Na-Dene and Yeniseian[1]

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1 Introduction

External comparison with possessive constructions in the Yeniseian languages of Siberia suggests a diachronic explanation for morphological idiosyncrasies associated with Na-Dene possessed nouns, postpositions, directionals, and demonstrative prefixes. Section 2 discusses the nasal-class prefix that appears before certain inalienably possessed nouns in Athabaskan (Dene) languages. Section 3 introduces comparative Yeniseian morphology to propose that this element is a remnant of a generic possessive affix once regularly present between possessor and possessum in both families but surviving today in Athabaskan mostly before high frequency nouns. Section 4 considers Eyak, where, as is known, the l-qualifier is sometimes cognate with the Athabaskan nasal-class prefix (Krauss, in prep.). The comparison with Yeniseian suggests that some instances of the Eyak d- and l-qualifiers may derive from fossilized possessive affixes, though most other qualifiers derive from anatomical nouns. Section 5 compares postpositional constructions in both families, which also show evidence of once having contained possessive connectors. Section 6 considers directionals, defined by Leer (1989: 576) as "words that specify direction with regard to a frame of reference, such as a body of water". Directionals in the two families have striking semantic and morphological parallels, including vestiges of possessive connectors. Section 7 examines evidence showing that Yeniseian and Na-Dene demonstrative prefixes were originally connected to the following stem by a possessive affix. Finally, section 8 considers non-canonical onset correspondences between Tlingit and Athabaskan-Eyak body-part nouns that may have arisen when the noun in Pre-Tlingit absorbed a prefix cognate to the nasal/lateral elements attested in Athabaskan-Eyak and Yeniseian possessive constructions. Section 9 summarizes these findings and considers a few unanswered questions brought to light by the discussion.

2 Nasal-class nouns in Athabaskan

Possessive prefixes before certain inalienably possessed nouns in Dene (Athabaskan) languages involve a nasal element not present in conjunction with other nouns. Rice (1989: 211) provides the following

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forms, where the inalienably possessed noun –*lá* 'hand' requires nasal-class forms of possessive prefixes:

(1) Slave noun with nasal-class prefix

sįlá	'my hand'
nįlá	'your (sg.) hand'
bįlá ~ mįlá	'his/her hand'

As is customary in Athabaskan linguistics, the hook below *į* in the forms listed in (1) indicates nasalization of the vowel. Non-nasalized allomorphs of Slave possessive prefixes – *se-* 'my', *ne-* 'your (sg.)', *be- ~ me-* 'his/her' – appear before other possessed nouns, often with an accompanying possessive suffix in the form of -*é* for alienable possession, or -´ (high tone) for inalienably possessed nouns (Rice 1989: 215). Slave nouns that take the nasal-class prefix, like –*lá* 'hand', lack the possessive suffix. The examples of Slave alienably possessed nouns in (2) are cited from Rice (1989: 207), with the unpossessed noun provided in parentheses:

(2) Slave possessive constructions with non-nasal-class prefixes

se-mbeh-é	'my knife'	(*mbeh* 'knife')
ne-tl'ul-é	'your (sg.) rope'	(*tl'uh* 'rope')
me-lį-é	'his/her dog'	(*lį* 'dog')

Body part nouns incorporated thematically into finite verb forms are not preceded by the nasal element, as in Slave *k'etthíechu* 's/he turns his/her head' (Rice 1989: 647), where -*tthí-* 'head' is not preceded by a possessive prefix and therefore lacks the nasal element as well.

Homologous idiosyncrasies can be found elsewhere in Athabaskan in connection with possessive morphology and inalienably possessed nouns. Witsuwit'en, though lacking nasal vowels, contains several inalienably possessed nouns with an unexplained nasal-initial segment: –*ntaq* 'forehead', –*nɣen* 'head', –*ntsəs* 'nose', –*ntl'at* 'temple', –*ntsən* 'arm, foreleg, sleeve', –*ntsətl* 'back of head'[2]. In Navajo, a high tone appears in possessive prefixes before some of the same inalienably possessed nouns that require nasal-class prefixes in Slave. The homologous nature of these elements can be illustrated by comparing the Navajo high-toned prefix in *ší-la'* 'my hand' with the Slave nasal-class prefix in *sįlá* 'my hand', as contrasted with the regular prefixed Navajo *ši-bééž* 'my knife' and Slave *se-mbeh-é* 'my knife'.

Hoijer (1969: 157) reconstructed **ni-* as the historical form of the Navajo high-tone element in possessive prefixes based on internal reconstruction and comparison with cognate constructions meaning '(someone's) hand/finger' in other Athabaskan languages, including Gwich'in –*ni-li'*, Beaver –*n-la'*, and Tłįchǫ (Dogrib) –*n-la*. Leer (1996, 2012: 1) reconstructs the Proto-Athabaskan nasal-class prefix as **n-* rather than Hoijer's **ni-*.

The survival of this element before cognate vocabulary in different geographic areas of the Athabaskan world suggests an ancient, inherited pattern. The presence in Eyak of a cognate prefix with allomorphs -:*n-* ~ -*la-* also supports the archaic provenance of this feature of possessive constructions. The following examples, taken from Krauss's discussion of Eyak nouns and qualifiers (Krauss, in prep.), show that the nasal allomorph predictably appears before coronals, while *la-* appears elsewhere: -:*n-da:'* 'face',

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2. I thank Sharon Hargus for pointing out these forms. For more on Witsuwit'en possessive morphology, see Hargus (2007: 229–232, 618-620).

-:*n-dalah* 'antler, horn', -:*n-ch'it'* 'forehead', -*la-ɢa:nš* 'part of face below nose', -*la-qah* 'head', -*la-quhł* 'cheek', -*la-χu* 'facial hair', -*la-wahsq'* 'temple. In these particular examples, the alternating qualifier forms -:*n-* ~ -*la-* apparently reflect the Proto-Na-Dene nominal root **-ñan'*, meaning 'face' (Leer 2012: 1). In other cases, such as *tsa:-la-q'aχ* 'jellyfish' (< *tsa:* 'rock' + *q'aχ* 'fat') and *tsa:-la-χał* 'gravel on beach' (< *tsa:* 'rock' + *χał* 'granular substance?'), the Eyak l-qualifier cannot be etymologized as deriving from an anatomical noun. The next section introduces Yeniseian comparanda to argue that the Athabaskan nasal-class prefix and some (but not all) instances of the Eyak l-qualifier are vestiges of an ancient generic possessive affix.

3 Yeniseian possessive morphology

Yeniseian is a family of several languages once spoken across much of central and southern Siberia, but now represented solely by Ket, which has fewer than fifty elderly speakers. The family once contained at least two primary branches – Ket and Kott – and has been hypothesized to be genealogically related to Na-Dene on the basis of shared core vocabulary and morphology (Vajda 2010). Like Na-Dene languages, Yeniseian uses preposed pronominal markers to express possession. However, there appears to be no trace of any possessive suffix following the possessed noun. Nor is there a distinction between inalienable and alienable possession. Body part nouns and kinship terms in the three Modern Ket dialects (Northern, Southern, and Central Ket) may be uttered either with or without a possessor indicated. Examples of Ket nouns in possessive constructions appear in (3):

(3) Northern Ket possessed nouns[3]

b-ki's	'my leg'
k-tɨ'	'your (sg.) head'
d-go'd	'her/its rump'
da-qā·re	'his fur'[4]
na-qo'n	'our/your/their conifer needles'

The possessive markers in Modern Ket are actually special clitics. In fast speech, they normally attach to any available preceding word. When pronounced sentence initially or preceded by a pause they procliticize to the following possessum noun. The example in (4) is adapted from the discussion of Southern Ket possessive constructions in Vajda (2008: 188-190):

(4) *sul-d*   *ètl*
    blood-3INAN.POSS   color
    'the color of blood'

The variable phonological behavior of Ket possessive morphemes has been attributed to a typological shift in favor of root-initial phonological words, which developed under the influence of the surrounding suffixing languages (Vajda 2009: 486-488). The so-called "genitive case" of Ket nouns and pronouns is, in fact, simply the possessive morpheme encliticized to the preceding possessor noun in fast speech.

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3. Ket phonemic prosody is transcribed as: v̄· for high-even tone on a half-long vowel; v' for abrupt rising tone ending in creaky voice or full glottal closure; v: (or vv) for rising-falling tone on a geminate vowel, and v̀ for falling tone. The symbol /ə/ represents a back rather than central unrounded vowel, which is allophonically realized as mid-high [ɣ] under high-even tone and as mid-low [ʌ] elsewhere. The symbol /ɨ/ transcribes the high-back unrounded vowel [ɯ].

4. The d-element found in Ket 3sg possessive prefixes is probably cognate with Tlingit *du-* 'his/her' as well as Athabaskan reflexive **d(ə)-*. See section 8 below.

Ket "genitive suffixes" of nouns and pronouns can be used only directly before a following possessum noun or postposition: *ob-da qu's* 'father's tent', *bu-da qu's* 'his tent'.

Three oblique case forms in Ket are built on a possessive base. The dative, adessive, and ablative forms of nouns and pronouns require the same pronominal possessive morphemes shown in (3), followed by *-ŋa* in dative case forms, *-ŋal* in ablative, and *-ŋten ~ -ŋta ~ -ŋt* in adessive:

(5) *tis-di-ŋten*   *tis-di-ŋal*   *tis-di-ŋa*
    stone-3INAN.POSS-ADESS   stone-3INAN.POSS-ABL   stone-3INAN.POSS-DAT
    'at the stone'   'from the stone'   'to the stone'

In (5) the velar nasal ŋ is segmented and glossed as part of the case ending. However, this sound is otherwise found only in codas, so that its presence in the onset of these three case endings is enigmatic. The present article will argue that it derives from a generic possessive affix that survives in Modern Ket only in dative, ablative and adessive forms, and that the actual case suffixes are dative *-a*, ablative *-al*, and adessive *-ten ~ -ta ~ -t*. It will further be argued that the nasal element *-ŋ-* appearing in these Yeniseian case forms is cognate with the Athabaskan nasal-class prefix.

More evidence that the enigmatic *-ŋ-* in Ket possessive augmented case endings once served as a generic marker of possession can be found by examining Kott, an extinct language that belongs to another primary branch of Yeniseian. In Ket noun paradigms, while the case forms that require a preceding possessive affix regularly contain *-ŋ-*, the bare possessive (genitive-case) form does not. In (6) the forms in the left column are the bare possessives with no nasal element, while the dative forms in the right column contain the nasal connector:

(6) a. Ket case forms made from the singular noun *ō·p* 'father'
    ob-d-a   *ob-d-a-ŋ-a*
    father-3-MASC.POSS   father-3-MASC-POSS-DAT
    'the father's'   'to the father'

   b. Ket case forms made from the plural noun *obaŋ* 'fathers'
    ob-aŋ-na   *ob-aŋ-na-ŋ-a*
    father-PL-ANIM.PL.POSS   father-PL-ANIM.PL-POSS-DAT
    'the fathers''   'to the fathers'

The Kott case forms, by contrast, lack the 3rd person singular consonant *d-* and animate plural *n-* found in Ket possessive prefixes: *op* 'father', *op-â* 'father's', *op-â-'a* 'to father'. Possessive *-ŋ* does however show up in the Kott animate-plural forms, including the bare possessive *opan-a-ŋ* 'the fathers'', where it is lacking in Ket (*ob-aŋ-na* 'the fathers''). The Kott forms in (7) are taken from Castrén (1858: 37):

(7) a. Kott case forms of the singular noun *op* 'father'[5]
    op-â   *op-â-'-a*
    father-3MASC.POSS   father-3MASC-POSS-DAT
    'the father's'   'to the father'

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5. The circumfix in the Kott examples was used by Castrén (1858) in his transcription. It is unclear what it represented, though available Ket cognates suggest it transcribes either vowel half length or glottalization or both.

   b. Kott case forms of the plural noun *obaŋ* 'fathers'

   op-an-a-ŋ   *op-an-a-ŋ-a*
   father-PL-ANIM.PL-POSS   father-PL-ANIM.PL-POSS-DAT
   'the fathers''   'to the fathers'

The fact that generic possessive ŋ appears in the Kott animate plural forms but not in the singular or inanimate plural forms suggests the original nasal of the preceding animate-plural marker *-na-*, later reduced to -a- in Kott, conditioned its preservation. The Ket and Kott forms from tables (6) and (7) are reproduced again in (8) alongside the Proto-Yeniseian reconstructions they support:

(8)

Ket	Kott	Proto-Yeniseian	meaning
ō·p	*op*	**ō·b*	'father'
ob-da	*op-â*	**ob-da-ŋʷ* (> **ob-dʷa-ŋʷ*)	'of the father'
ovaŋ-na	*opan-a-ŋ*	**obaŋ-na-ŋʷ*	'of the fathers'
ob-da-ŋ-a	*op-â-'a*	**ob-da-ŋʷa* (> **ob-dʷa-ŋʷa*)	'to the father'
ovaŋ-na-ŋ-a	*opan-a-ŋ-a*	**obaŋ-na-ŋʷ-a*	'to the fathers'

Proto-Yeniseian **ŋʷ* (possibly retroflex **-nʳ-*) lost its nasal quality in Kott except following another nasal, where it is realized as regular velar ŋ. By contrast, Proto-Yeniseian non-labialized **ŋ* regularly yielded ŋ in both Ket and Kott (e.g., Ket *ba'ŋ* – Kott *paŋ* 'earth'). Proto-Yeniseian **ob-da-ŋʷ* must have undergone regressive assimilation in Pre-Proto-Yeniseian, becoming **ob-dʷa-ŋʷ* 'of the father' and **ob-dʷa-ŋʷa* 'to the father'. Labial **dʷ* (or possibly retroflex **dʳ*) elided or became *j* or *dʲ* in the Kott dialects (cf. Ket *dɨ·l* 'child' vs. Kott *jali* ~ *dʲali* 'child'). Alveolar PY **d* before back vowels otherwise yielded Ket *d* and Kott *t* (Ket *do'n* – Kott *ton* 'knife'); before front vowels, PY **d* yielded Ket *d* and Kott *č* (Ket *de'ŋ* – Kott *čeaŋ* 'people'). In forms where 3sg. pronominal **d-* is not followed by the possessive marker **ŋʷ*, no assimilation of the preceding **d* occurred, so that it appears in Kott as *-t*, showing the regular correspondence with Ket *d*, as in the predicative agreement suffixes of Ket *bɨd-du* – Kott *bik-tu* 'he is strong'.

   Aside from the Kott genitive and the Ket and Kott dative, adessive, and ablative case forms, traces of the generic nasal possessive prefix do not appear to have regularly survived in Yeniseian noun paradigms. Unlike Athabaskan, there is no immediately obvious remnant of it between possessive prefixes and possessed nouns, though certain features of Yeniseian body-part words may turn out to be vestiges of it (see section 8 below). However, the velar nasal is present in the first- and second-person singular Yeniseian forms in the same distribution as found in nouns. In the pronominal paradigms showing in (9), the nasal possessive connector is marked in bold:

(9)

Ket	Kott	Proto-Yeniseian	meaning
ā·d	*ai*	~**axʷ* (~**ajʳ*)	'I'
ā·b ~ b	*aiŋ*	~**axʷ-ŋʷ*	'my'
ab-əŋ-a	*aiŋ-â*	~**axʷ-ŋʷ-a*	'to me'
ət-n	*aj-oŋ*[6]	**əd-n*	'we'
ət-n-na	*aj-oŋ-**oŋ***	**əd-n-na-ŋʷ*	'our'
ət-n-na-ŋ-a	*aj-oŋ-**oŋ**-â*	**əd-n-na-ŋʷ-a*	'to us'

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6. The Kott 1 and 2 plural pronoun stems appear to have arisen through analogical spread of the corresponding 1 and 2 singular stems.

ū·	*au*	**aw*	'you (sg.)'
ū·k ~ k	*au*	**aw-ŋʷ*	'your (sg.)'
*uk-**u**ŋ-a*	*au-a*	**aw-ŋʷ-a*	'to you (sg.)'
ək-ŋ	*au-oŋ*[5]	**ək-n*	'you (pl.)'
ək-ŋ-na	*au-oŋ ~ au-oŋ-**oŋ***	**ək-n-na-ŋʷ*	'your (pl.)'
ək-ŋ-na	*au-oŋ-a*[7]	**ək-n-na-ŋʷ-a*	'to you (pl.)'

The Proto-Yeniseian reconstruction of 1sg. pronominal **xʷ* (possibly alternating allophonically with retroflex **jʳ*) in (9) is speculative, but would explain the retention of nasal ŋ in the Kott possessive form 'my', since this nasal is retained after original labials. It would also help explain the appearance of labial *b* in the Ket 1sg. possessive forms. The coda correspondence Ket *d* – Kott *j* is found in other Yeniseian words, such as Central Ket *qā·de* 'fur, hair', Southern Ket *qā·r* 'fur, hair', and Kott *qaj* 'fur'[8]. If Na-Dene and Yeniseian are indeed genealogically related, the original 1sg. marker was probably a velar or uvular fricative of some sort (most likely **xʷ*). The 2sg. marker may have been **w*, probably preserved uniquely in the onset of Tlingit 2sg. pronoun *wa'é*, as suggested by G.Starostin (2012: 133), though this form is isolated in Na-Dene. The non-congruence of Na-Dene 1sg. and 2sg. pronouns with pronouns in Yeniseian (or other branches of the proposed 'Sino-Dene' or 'Dene-Caucasian' family) might be due to the morphophonemic interaction of a nasal possessive marker with the preceding pronominal forms. This would have caused the odd alternation between Ket 1sg. *d-* and *b-* and also triggered the reanalysis of the generic nasal possessive ŋ- itself as the 1sg. possessive prefix before Kott possessed nouns (cf. Kott ŋ-op 'my father'). The nasal form of Na-Dene 2sg. pronouns could conceivably have arisen through an similar amalgamation, though this remains highly speculative at this point, since the nasal 2sg. marker forms in Athabaskan also appear as subject prefixes in finite verbs, where no possessive connector would have followed them.

4   Eyak d- and l-qualifiers

Eyak verb structure is distinguished by a zone of lexical prefixes known as qualifiers (Krauss 1965: 173)[9]. Many Eyak qualifiers, such as *-gu-* 'rump', *-qi-* 'foot', and *-ləχə-* 'eye' transparently derive from incorporated anatomical nouns. The Eyak anatomical qualifier *-gu-*, which is etymologically related to the Eyak noun *–gʷədə* 'rump', which in turn is cognate with Proto-Yeniseian **go'd* 'rump' (Vajda 2010: 86) builds noun such as: *-gu-da:n* 'back, hips', *-gu-tl'idj* 'rump, hindquarter, tailbone', *-gu-tl'ah* 'tail of animal', *-gu-tl'a'* 'stern of boat'. The origins of the two most common qualifier shapes, *-da- ~ -d-* and *-: n- ~ -la- ~ -l-*, however, are harder to identify. Krauss (in prep.) lists nine semantic categories of Eyak l-qualifiers and 15 categories of *d*-qualifiers, along with a residue that defy inclusion into any of the other groups. Combinations of two or three qualifiers often occur, usually involving either the d- or l-qualifier, or both. In such combinations, *-d-* and *-la-* concatenate as *-dla:-*. One example is the Eyak *tsa:-dla:-təwi:s* 'stone axe' (Krauss 1970, vol. 2, p. 171), which derives from a combination of *tsa:* 'stone' and *təwi:s* 'axe'. In such words, the qualifier *-dla:-* appears to serve as a sort of connector. Krauss (in prep.) lists five semantic groupings of combinations of the d- and l-qualifiers (nearly always found in that order), along with a

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7. Given the 1pl. form *aj-oŋ-**oŋ**-â* 'to us', the Kott 2pl. form appears to be a reduction of an earlier **au-oŋ-**oŋ**-â*. The existence of alternate forms of the Kott possessive *au-oŋ ~ au-oŋ-**oŋ*** 'your' also support this.

8. Here the Na-Dene cognates in the form of Eyak *–qa'* 'fur' and Interior Tlingit *– χ àwú* 'fur' (Leer, Hitch & Ritter 2001: E74) are not decisive in determining the original coda consonant, since the Na-Dene coda probably interacted morphologically with an earlier possessive suffix.

9. I thank Mike Krauss for generously sharing his Eyak data with me. The analysis here is my own, as are any errors of interpretation.

residue of words that do not fit into any of the other groups. The association of the Eyak d- and l-qual-
ifiers with so many possible meanings suggests that the original function of these elements may have
been grammatical rather than lexical. Qualifiers also appear in many postpositional constructions, such
as *tsa:dla:t'aχd* '(sheltered) under a rock' or *tsa:dla:χa'* for a rock', further suggesting that the elements in
question originated as grammatical connectors and are not derived from lexical roots.

   The discussion in section 2 proposed that Proto-Yeniseian possessive morphology involved 3rd per-
son pronominal **d-* followed by generic possessive **-ŋʷ-*. The Eyak data suggest that some of the quali-
fiers may be cognate with these morphemes. The Eyak d-qualifier may have developed on the basis of
an earlier 3rd person pronominal marker, and some instances of the *l*-qualifier appear to be vestiges of a
shared Dene-Yeniseian generic possessive marker. Such an interpretation would explain concatenations
of multiple qualifiers, the relative order of d- followed by l-qualifier, and also the difficulty of etymolo-
gizing many d- and l-qualifier usages as deriving from any particular noun.

   On this analysis, the form *-dla:-* in combinations like Eyak *tsa:-dla:-təwi:s* 'stone axe' and *tsa:dla:t'aχd*
'(sheltered) under a rock' represents a lexicalized remnant of ancient possessive morphology. Compare
the homologous concatenation of morphemes in the following Ket and Eyak postpositional construc-
tions:

   (10) a. Ket postpositional construction 'to a rock'
            tɨs-d-i-ŋ-a
            rock-3-INAN-POSS-toward

        b. Eyak postpositional construction 'for a rock'
            tsa: -dla: -χa'
            rock-QUALIFIER-for

Ket 3rd person *-d-* and generic possessive *-ŋ-* appear to be homologous with the *-d-* and *-l-* components
of the compound Eyak qualifier *-dla:-*. If this is the case, however, the use of these qualifiers in Eyak
complex words later underwent analogical extension, so that their ultimate distribution reflects much
innovation, unlike the nasal-class prefix in Athabaskan. This is evident from the presence of the quali-
fier *-dla:-* in the neologism *tsa:-dla:-χe'* 'kerosene', literally 'rock grease' < *tsa*: 'rock' + *χe'* 'grease' (Krauss
1970, vol. 2, p. 191). This word obviously could not have been inherited from the proto-language and
must have been formed by productive analogy. Also, the Eyak d-qualifier is paradigmatically present
after first- or second-person possessors, as well as third-person. If originally a third person possessive
marker, its presence would be expected in Eyak *'u-dla:-tsa*: 'his testicles' (literally 'his rocks'; cf. Ket *bu-
da-tɨ's* 'his rock', which cannot be used metaphorically as an anatomical noun), whereas its appearance
in first-person Eyak *si-dla:-tsa*: 'my testicles' (Krauss 1970, vol. 2, p. 191), must have spread by analogy.
The hypothesis put forward here regarding the Eyak qualifiers therefore only accounts for their ancient
origin, not their synchronic distribution, which seems to show much analogical extension and leveling,
if not also semantic reanalysis.

   Finally, the analysis of the l-qualifier as deriving from a generic possessive connector would explain
why it never begins an unpossessed noun in Eyak. The d-qualifier morpheme, however, can begin a
noun as a thematic prefix in Na-Dene, as well as in Ket, since it derives from a 3rd person pronominal
prefix. Examples of Ket nouns derived using thematic *d-* were discussed in Vajda (2004: 15): *ī·t* 'to smell',
'smelling' – *dī·t* 'the smell (of something)', also *ū·l* 'pole' - *dū·l* '(something's) handle, stalk'.[10]

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10. Vajda (2010: 86) identified the Ket pronominal *d-* as cognate with the indefinite prefix of Proto-Athabaskan **tšʳ-* and Eyak *k'u-*
as, since the labializing/rhotacizing effect of the following generic possessive **-ŋʷ-* was not considered at that time. The origin of

It bears repeating that the overall question of Athabaskan and especially Eyak qualifier origins is extremely complicated, and only a subset of the qualifiers could have possibly arisen through a functional reinterpretation of archaic possessive morphology. A number of Eyak qualifier prefixes clearly derive instead from lexical roots with anatomical meanings, while others arose within the templatic verb complex from reanalysis of incorporated noun codas (Leer 2009). Some instances of the Eyak -*l*-qualifier derive from Proto-Na-Dene ~*–ñan* 'face'[11], as Leer (2012: 1) convincingly argued, and not from bygone possessive markers. But since the Proto-Athabaskan inalienably possessed noun *–n-ñ̵ən* 'face' (Leer, 2012: 1), like many other body-part nouns, itself required the nasal-class prefix in possessive constructions, this prefix, like the semantically opaque concatenations of Eyak *d-* and *l*-qualifiers, is more convincingly explained as a vestige of ancient possessive morphology. The interaction of anatomical nouns with bygone possessive morphology gives the Eyak qualifier system much of its distinctive functional and morphological elaboration.

5   Postpositional constructions

Both Na-Dene and Yeniseian make extensive use of postpositions. Many Yeniseian postpositions are etymologically connected with anatomical nouns, so it is unsurprising that pronominal possessive connectors are used to link them to their preceding noun or pronoun object:

(10)   Ket postpositional construction '(motion) under a rock'
       tis-d-in-a
       rock-3INAN.POSS-bottom-DAT

Ket postpositional constructions regularly contain generic 3rd person pronominal *d-*, but they lack the velar nasal present before possessive affixes in the dative, ablative and adessive case forms.

Athabaskan postpositional constructions do not regularly contain either 3rd person *d-* or the nasal-class prefix. However, occasional remnants of both morphemes may have survived. The Ket postposition *-in* 'bottom' in (10) is cognate with Kott *hân-* in *hâna* '(motion) below', and ultimately with Proto-Athabaskan **ka·n* 'base, belly'. Using the same root, Koyukon builds the combinations *–neekene'* 'rump (of animal)' and *–deekene* 'base (of a slope)' (Jetté & Jones 2000: 293-294), where the final *-e'* ~ *-e* is a possessive suffix, and *–nee-* and *–dee-* may have originated from earlier possessive morphology. Finally, in Koyukon *hunbede* 'open flat area on a hillside' and *huntone* 'on the side of a hill' (Jetté & Jones 2000: 1078)[12], the initial *hu-* is the areal prefix and the final *-e* is a possessive suffix, while the nasal segment after *hu-* is probably homologous with the Athabaskan nasal-class prefix found with inalienably possessed nouns.

6. Yeniseian and Na-Dene directionals

Both Yeniseian (Krejnovic 1968: 171-184) and Na-Dene (Leer 1989; Fortescue 2010: 44-53) possess well developed morphological systems that specify direction with regard to a fixed location such as a body of water. Describing Na-Dene, Leer (1989: 576) used the term 'directionals' to refer to these morphemes, which can serve as the object of postpositions, function as possessed nouns, or appear as preverbs with finite verb forms. Directionals in Yeniseian have roughly the same functional range. The examples in (11) show Ket directionals preceded by possessive prefixes and followed by a case suffix, while (12) shows the same directionals incorporated into verbs of motion.

the Athabaskan-Eyak indefinite prefix is unclear.
11. The mark ~ indicates that the reconstructed form is tentative, pending further evidence.
12. I thank Jim Kari for pointing out these examples to me.

(11)   <u>Ket directional stems</u>
       d-igda-bes
       3MASC.POSS-downland-passing
       'passing downland from it' / 'passing by it downhill along the riverbank'

       d-aged-bes
       3MASC.POSS-upland-passing
       'passing behind it' / 'passing upland from it'

(12)   <u>Ket finite verbs with incorporated directionals</u>
       d-igd-on-d-daq
       1SJB-downland-PST-1SG.SBJ-walk
       'I went down to the river (to spend the summer)'

       d-ət-on-d-daq (ət < *aged*)
       1SJB-upland-PST-1SG.SBJ-walk
       'I left the riverside and went up into the forest (to spend the winter)'

The Ket antonyms *-igd-* 'downhill', 'downland', 'down from forest to river' and *-aged-* ~ *-aɣa-* ~ *-ət-* 'up-hill', 'upland', 'up from river to forest' have close semantic and formal parallels with Na-Dene directionals. Leer (1989: 622) lists the following Na-Dene cognate sets:

(13) <u>Pre-Proto-Athabaskan</u>   <u>Eyak</u>   <u>Tlingit</u>
       *yəχ   **yəχ*   ʔíˑɢ
       'down'   'down'   'downland'

       *dəq   **dəɢ*   dáˑɢ
       'up'   'up, upland, upstream'   'upland'

The riverine directional systems of both families share an unusual type of semantic conflation, whereby the directional meaning 'down to the water' and 'out into open space' also means 'onto the fire'. Similarly, the antonym 'up from the water to the forest' and 'back away from open space' also means 'away from the fire', 'up off of the fire'. Pevnev & Urmanchieva (2010) describe how the Yeniseian fire/water conflation apparently spread by analogy from Ket to the neighboring Uralic languages Selkup and Khanty, while Fortescue (2010: 105) notes that the corresponding Na-Dene system seems to have spread to the neighboring Northern Wakashan languages as well as to Thompson, a Salishan language spoken also south of Tlingit on the Pacific Northwest Coast.

   It is likely that some of the Yeniseian and Na-Dene directionals meaning 'up', 'upland' and 'down', 'downland' will be verified as cognates when sound correspondences and morphological processes shared by the two families are better understood. Other Na-Dene directionals seem to have onsets that derived from fossilized possessive prefixes. The Eyak preverb *dəɢ* 'upland' is etymologically associated with the Eyak postpositional form *ləɢ* 'upland', the latter possibly having acquired its lateral onset from a fossilized possessive prefix. An understanding of ancient morphological processes as well as regular sound correspondences will be needed to determine which similarities in Na-Dene and Yeniseian directional are genuine homologies and which are typological or phonological coincidences.

7. Vestigial possessive morphology with demonstrative prefixes

Demonstratives in Yeniseian and Na-Dene are preposed relational morphemes denoting relative proximity or distance in relation to the speaker or other point of reference. Both families show evidence that demonstrative prefixes were once followed by possessive connectors. The Ket/Yugh demonstratives *ki-d* 'this', *ki-n* 'these' and *tu-d* 'that', *tu-n* 'these' retain traces of this connector when appearing as the object of certain postpositions, such as *-tan* 'in the direction of', which derives from a noun meaning 'path', 'trajectory' and appears to be cognate with Proto-Athabaskan **təñeˑ* 'path' (Vajda 2010: 81).

(14)   Ket distal and proximal demonstratives used to denote direction
        tu-n-tan   *ki-n-tan*
        that-POSS-path   this-POSS-path
        'in that direction, (to) there, thither'   'in this direction', (to) here, hither'

Following the interrogative base *bi-* (< Proto-Yeniseian **wi-*) the nasal connector **ŋʷ* (or **nʳ* ?) dissimilated to lateral /l/:

(15)   Yeniseian interrogative demonstratives
        Ket   Kott   Proto-Yeniseian
        bi-l-tan   *bi-l-tʰuŋ *wi-l-təñ*
        INTERR-POSS-path   INTERR-POSS-path   INTERR-POSS-path
        'in which direction?'   '(to) where?'   'in which direction?'

In Yeniseian, the nasal to liquid alternation, is unique to these interrogative forms, and is reminiscent of the n/l alternation found in Eyak (cf. section 4 above). Although there is no corresponding Yugh cognate to the Ket and Kott forms in (15), other Yugh interrogatives contain /r/ after *bi-*: *bi-r-eˑʰs* 'to where', *bi-r-ir* 'from where', suggesting that the original affix may have been a retroflex nasal ~**wi-nʳ-təñ* that denasalized to **wi-r-təñ*.

There appears to be evidence that Na-Dene demonstrative prefixes were originally followed by an affix cognate to Yeniseian n/l/r, which survives as the nasal element in the demonstratives of many Athabaskan languages. Leer (1989: 593) reconstructs **ŋə-* as the Proto-Athabaskan neutral distance demonstrative prefix, but notes that it sometimes requires a peg prefix **he-*, yielding forms with unexplained morphophonemic alternations such as Hare *hį- ~ he-*. Nasal elements in Athabaskan demonstratives often pattern like nasal-class prefixes in possessed nouns. For example, the Navaho neutral demonstrative prefix *ɣó- ~ xó-* shows the same high tone found in possessive prefixes before certain inalienably possessed nouns. Dene-Sųłiné has a nasal vowel in its neutral demonstrative prefix *yų-*. Witsuwit'en demonstratives (Hargus 2007: 309) contain nasal elements as well, such as *n-dəq* 'uphill', *n-yəq* 'downhill'. The Athabaskan /n/, Eyak /l/, and Tlingit /ÿ/ onsets in certain directional roots may derive from a possessive connector that was not originally part of the directional root itself. For example, Proto-Athabaskan **ñəs-d* 'ahead', 'out on open water', and Eyak *lahʒ* 'forward' may contain a cognate to the Yeniseian root **es* 'open space' found in the Ket *bi-l-es* and Yugh *bi-r-eˑʰs* '(to) where?' as well as in finite verb forms, where the incorporate *es-* denotes 'into open space', 'out in the open'. Hargus (1989: 618-619) notes that the Witsuwit'en neutral demonstrative *n-* does not appear before nasal-initial directionals such as *nəq* 'uphill' or *nəs* 'ahead', though she attributes this pattern to degemination of original **n-nəq* 'uphill' and **n-ñəs* 'ahead'. It is also possible that the onset in *nəq* 'uphill' and *nəs* 'ahead' represents the nasal prefix itself.

Interestingly, when compared to the interrogative Ket *biles*, Yugh *bireˑʰs* '(to) where?', the Modern

Ket directional adverbs *kiseŋ* '(to) here', *tuseŋ* '(to) there (nearby)', and *qasoŋ* '(to) there (far away)' seem to have arisen through methathesis of original **ki-ŋʷ-es* 'this-ᴘᴏss-open.space', **tu-ŋʷ-es* 'that.nearby-ᴘᴏss-open.space', and **qa-ŋʷ-es* 'that.far.away-ᴘᴏss-open.space'. The interrogative Ket *biles*, Yugh *bireːʰs* '(to) where?' (< **bi-ŋʷ-es*) preserves the original order of elements, while Ket *kiseŋ* '(to) here', *tuseŋ* '(to) there', and *qasoŋ* '(to) there (far away)' preserve the original nasality of the possessive connector, which has metathesized ahead of the directional root and appears at the end of the word.

It is not yet possible to reconstruct an original set of demonstrative prefixes in either Proto-Yeniseian or Proto-Na-Dene. No Proto-Yeniseian demonstrative prefix meaning 'far away' is reconstructable from Ket *qa-*, Yugh *ka-* and Kott *un-* 'that one far away'. Leer (1989: 593) reconstructs a variety of demonstrative prefixes for Athabaskan, but it is unclear how many of them were actually present in Proto-Athabaskan, or which of them actually descend from Proto-Na-Dene. Nevertheless, the morphological patterning of demonstratives is similar across the two families, with structural parallels to postpositional constructions, directionals, and possessed nouns – three other word types where the possessive connector left the same type of morphonological traces.

8. Tlingit

Tlingit contains a generic third person possessive *du-* 'his/her/its', which is likely cognate with the Ket generic 3ʳᵈ person *-d-*. The cognate d-element in the Athabaskan and Eyak pronominal systems may conceivably have survived as the 3sg reflexive nominal prefix **d(ə)-*. There is no obvious sign of any Tlingit cognate to the Athabaskan-Eyak nasal/lateral class prefix. However, a number of inalienably possessed Tlingit nouns show unexplained non-canonical onset correspondences with Athabaskan-Eyak. One example is Proto-Athabaskan **–ts'əɢ* 'finger' vs. Tlingit *–tɬʼìɢ* 'finger' (instead of the expected Tlingit onset /ts'/). A similar case is Proto-Athabaskan **–ts'uˑ* 'breast' vs. Tlingit *–ɬʼà* 'breast' (again instead of the expected Tlingit onset /ts'/). It is possible that the Dene-Yeniseian possessive connector *~*ŋʷ* (**nʳ*), which shows up as a nasal in Athabaskan and as either a nasal or lateral in Eyak, merged with the original Pre-Tlingit onset **ts'*, changing its fricative component to the lateral articulation seen in Modern Tlingit. Proto-Yeniseian cognates in the form of **tə'q* 'finger, toe' and **tuga* 'chest, breast' further suggest that the Tlingit lateral onset is innovative, since Proto-Yeniseian **t* corresponds to Proto-Na-Dene **ts'* and not **tl* (Vajda 2010: 79,82).

Similarly, Interior Tlingit *–yuwá* 'surface of belly', *–yuwadà* 'abdominal area' (Leer, Hitch & Ritter 2001: E1) would not normally be recognized as cognate with Proto-Athabaskan-Eyak *–wət'* 'stomach, belly' on phonological grounds. However, if the first syllable of the Tlingit form originated from an ancient possessive connector, then the possibility that Tlingit words meaning 'front of abdomen' are cognate with Athabaskan and Eyak words for 'belly' becomes more likely. Once again, there is a Yeniseian cognate in Ket *hɨ̄j* 'belly' and *hɨta* '(motion) below' (the final *-a* in the latter word is the dative suffix), suggesting the root was inherited into Proto-Na-Dene.

Leer (2010: 179) remarks that the onset of the Tlingit inalienably possessed noun *–šá* 'head' is unexplained, as /k/ would be the expected Tlingit onset reflex of Proto-Na-Dene **kʸe/iːŋ* 'head' and in fact does appear in the etymologically related Tlingit directional *kíː ~ kín-* in combinations meaning 'up above', 'upwards'. The absorption of a morpheme cognate with the Athabaskan nasal-class prefix could conceivably explain the non-canonical onset shibilant in Tlingit *–šá* 'head'.

It is possible that the onsets of some Yeniseian body part nouns will turn out to retain a morphophonological effect of the possessive connector that originally preceded them. Likewise, Yeniseian compound nouns deriving from possessive constructions may preserve vestiges of the nasal connector. One possible example is the Ket word for 'hand' *laŋad*, where *-ad* is a body-part suffix deriving from *a'd* 'bone' and the syllable *la* is plausibly cognate with Proto-Athabaskan *–la'* meaning 'point, end'.

This morpheme is etymologically connected with Ket *lā·* 'barb at end of fish hook' and is also found in both families in words meaning 'hand' (Vajda 2010: 92), so that the velar nasal Ket in *laŋad* 'hand' could conceivably be the possessive nasal surviving after an open coda root. In any event, other Ket nouns with the suffix *-ad* do not show any evidence of a nasal connector (*kilad* 'thigh', *qobad* 'back', etc.), and this analysis must remain speculative unless more examples of vestigial possessive *-ŋ-* in Ket compound nouns can be found.[13]

The phonological effects of possessive suffixes in the daughter branches of Na-Dene are not fully understood. Nor is it clear whether Yeniseian possessed nouns and postpositions descend from forms that originally contained a cognate suffix. If these questions can be answered, then vocabulary with non-canonical coda correspondences between Na-Dene and Yeniseian might likewise be identified as cognate, a possibility first discussed in Vajda (2012: 145-146).

Given that a language's basic vocabulary can be affected significantly by morphophonemic changes, ancient word-building patterns such as the absorption of possessive affixes into the roots of body-part nouns or directionals proposed here should be considered already in the initial stages of assessing lexical cognates and investigating regular sound sound correspondences. Rather than seeking 'magic' lexemes unusually resistant to change, more emphasis should be placed on detecting the effects of bygone morphological patterns in the basic vocabulary of families suspected of being distantly related.

9. Summary and unanswered questions

External comparison with Yeniseian sheds light on the origin of a range of seemingly unrelated morphological idiosyncrasies in Tlingit, Eyak, and Athabaskan. Likewise, the structure of Proto-Yeniseian possessive and postpositional constructions, as well as word forms constructed using directionals or demonstrative prefixes, becomes clearer when compared to homologous forms in Na-Dene. The nasal-class prefix in Athabaskan, as well as certain instances of the Eyak d- and l-qualifiers on nouns or postpositions, appear to derive from archaic possessive morphology. The origin of the nasal element in the Ket dative, ablative and adessive case forms can be explained in the same way. It remains unexplained, however, why these ancient possessive markers survived in some combinations but not in others. It is unclear why only certain Ket case endings require possessive connectors, while others do not. None of the Ket case suffixes appear to be derivable from body-part nouns, which might otherwise have suggested a logical reason for the presence of possessive connectors. Nor is it clear why pronominal possessive prefixes before Ket postpositions, which often do transparently derive from spatial or anatomical nouns, lack the ŋ connector that is found in the dative, ablative, and adessive case forms. Also unexplained is why some Athabaskan inalienably possessed nouns inherited the nasal-class prefix, while others did not, or why the d- and l-qualifiers in Eyak survived in connection with certain nouns and anatomical qualifiers, but not others. The position argued for in the present article that these Yeniseian and Na-Dene elements are cognate remnants of possessive morphology would be strengthened if their surviving distribution could be given a convincing diachronic phonological explanation.

The recognition that an ancient possessive connector interacted with the preceding pronominal or demonstrative prefix or fused with the following possessum noun, directional, case suffix or postposition appears capable of explaining a number of phonological mismatches across the branches of Na-Dene as well as between Na-Dene and Yeniseian.

Finally, it should be clarified that the discussion here has focused on explaining the origins of

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13. George Starostin (p.c.) treats the nasal coda as part of the Ket root meaning 'hand', and has suggested instead that the form is cognate with Burushaski *reŋ* 'hand'.

enigmatic morphological features rather than on arguing for any particular genealogical classification of the languages involved. The proposed homologies in Yeniseian and Na-Dene possessive morphology examined in connection with nouns, postpositions, directionals and demonstrative prefixes, even if valid, do not automatically support a "Dene-Yeniseian" language family. It is not yet clear whether the proposed homologies represent innovations that arose uniquely in a "Dene-Yeniseian" family or instead are shared retentions that have survived within a larger, more ancient family. The same patterns may turn out to be present in members of a broader family that might include Sino-Tibetan and other Old World families. My suspicion is that the nasal possessive marker, at least, is more widely distributed and not an innovation characteristic of Na-Dene and Yeniseian alone.[14] While external morphological comparisons between Na-Dene and Yeniseian are obviously useful for understanding the historical development of each family and also add more evidence that the two families are somehow related, the kind of binary comparison undertaken here is not sufficient to demonstrate them as a valid taxon without the type of broader investigation urged by George Starostin (2012) in his critique of the Dene-Yeniseian Hypothesis.

In any event, achieving a clearer understanding of the internal morphological development of Na-Dene and Yeniseian — which has been the primary goal of the present article — is valuable in its own right and can only prove of use to purposes of linguistic taxonomy in the future. Language relatedness, after all, is only one of many interesting facts in the history of languages.

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14. For example, the Proto-Tibeto-Burman m-prefix reconstructed before some body part nouns, such as *m-sin* 'liver', could conceivably be cognate with the Na-Dene and Yeniseian possessive nasal connector (see Benedict 1972: 117-121; Matisoff 2003: 117-119).

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