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The origin of the Na-Dene

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ABSTRACT **Linguistic evidence indicates that the Yeniseian family of languages, spoken in central Siberia, is most closely related to the Na-Dene family of languages spoken, for the most part, in northwestern North America. This hypothesis locates the source of one of the three migrations responsible for the peopling of the Americas.**

The Yeniseian family of languages today consists of a single language, Ket, spoken by around 550 people (out of a total population of 1,100) along the Yenisei River in central Siberia. Five other related languages are known from historical sources, but all became extinct in the nineteenth century (1). The Na-Dene family has four branches, three of which are single languages spoken along the coastline of western Canada and southern Alaska (Haida, Tlingit, Eyak). The fourth branch is the Athabaskan family, spread over interior Alaska and western Canada, with outliers along the Pacific coast of Oregon and California and in the American Southwest (Navajo, Apache). Both the Yeniseian and the Na-Dene families have traditionally been considered isolates, that is, families with no known relatives (2, 3), and many linguists maintain that "there is no trace of genetic connections between New World and Old World stocks" (4). The present paper presents evidence that the Yeniseian and Na-Dene families are most closely related to one another within the world's languages. If this hypothesis is correct, it would locate the source of one of the three migrations to the Americas posited by Greenberg, Turner, and Zegura (5).

To my knowledge, no one has ever directly compared the Yeniseian and Na-Dene families, and the reason is not hard to find. Because both have traditionally been considered isolates, that is, language families with no known relatives, the Yeniseian family has been compared with other Eurasian languages and families (6), while Na-Dene has been compared, for the most part, with other New World families (7), in both cases because related languages are more likely to be found in the same geographical area rather than on different continents. Moreover, very few linguists have concerned themselves with both Old World and New World languages. Na-Dene has previously been compared with two Old World families, Sino-Tibetan and Caucasian. Around 1920 Sapir became convinced that Na-Dene was more closely related to Sino-Tibetan than to other American families. Although he wrote about this hypothesis in personal letters, and kept comparative notebooks on the two families, he never published any evidence on this connection. Recently Bengtson (8) has reviewed Sapir's evidence, adding additional evidence of his own. Nikolaev (9) compared Na-Dene with Caucasian. Although I do not question that Na-Dene is related to both Sino-Tibetan and Caucasian (within the larger Dene-Caucasian family), as posited by Sapir and Nikolaev, the evidence presented below indicates that Na-Dene is more closely related to Yeniseian than to either of these other two families.

The linguistic evidence presented at the end of this paper consists of 36 etymologies, that is, 36 sets of cognate words that appear to be shared by Yeniseian and Na-Dene, but not (for the most part) by other language families. It is significant that these shared words include basic vocabulary (boil/burn, children, dry, he, hunger, name, night, nit/louse, old, summer, word/speak), body parts (breast, cheek, elbow, foot, guts/stomach, head, shoulder), flora and natural phenomena (birch bark, cedar, clay, fir, lake, river, snow [on ground], snow [falling], stone), fauna (deer, owl, rabbit, skin [animal], squirrel), and cultural artifacts (boat, bow/arrow, dish/plate/basket, rope). It is difficult to imagine that similarities of this nature could exist between language families that do not share a common origin. The other possible explanations for linguistic similarities can, in this case, easily be ruled out. Borrowing is excluded because there is no evidence that people speaking the Yeniseian and Na-Dene languages have ever been in contact; onomatopoeia is ruled out because the terms are clearly not sound symbolic; and chance is ruled out by simple probability. Two language families might share one or two accidental resemblances, but they would not share 36, so the only plausible explanation for these resemblances is common origin. These 36 etymologies represent what seem to me the most secure evidence for the genetic connection of these two families. Other etymologies, of a more problematical nature, also exist.

One of the most compelling pieces of evidence for the Yeniseian–Na-Dene connection is the word for "birch bark." The Ket word for "birch bark" is *qɨʔy*, and this is distinct from the Ket word for "birch tree" (*ūśə*). The Ket word for "birch bark" is almost identical to the word reconstructed for "birch tree" in Proto-Athabaskan: **q'əy*. These two forms differ in only two respects. First, the glottalization in the Proto-Athabaskan form (symbolized as ') has shifted after the vowel in Ket, where it is symbolized as the glottal stop *ʔ*. Second, the Yeniseian form means exclusively "birch bark," while the Proto-Athabaskan form has been reconstructed as meaning "birch tree." Both of these apparent differences can, however, be reconciled.

With regard to the difference in meaning, we need note only that the meaning of this word in the two most conservative Athabaskan languages (Ahtna and Tanaina) is "birch bark." Elsewhere in Athabaskan, the meaning has apparently shifted to "birch tree" in general, leading Athabaskanists to reconstruct "birch tree" as the original meaning. However, the presence of the meaning "birch bark" in the two most conservative Athabaskan languages, and in the nearest outgroup (Yeniseian), indicates that the meaning of the Proto-Athabaskan term was originally "birch bark," and it was only after the fission of these two languages from the rest of Athabaskan that the meaning was generalized to "birch tree."

The difference in phonetic form also has a simple explanation because the different location of the glottal stop in Yeniseian and Na-Dene is not an idiosyncratic feature of the particular word "birch bark," but is rather a recurrent sound correspondence connecting these two families. It affects not just the word for "birch bark," but also the words for "stone," "utensil," "bow," and "foot."

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On the basis of the evidence presented in this paper, it would seem that Na-Dene and Yeniseian must have once formed a single population in Eurasia. Part of this population migrated to the New World, giving rise to the Na-Dene languages, while the portion of the population that remained in Asia gave rise to the Yeniseian languages. The implication of this proposal for prehistory is that the Na-Dene represent a distinct migration from Asia to the Americas, in all likelihood intermediate between the first migration of Amerinds around 11,000 years ago and the third migration of the Eskimo-Aleut around 3,000 years ago. The origin of the Yeniseian–Na-Dene population can plausibly be traced to West Asia, where the more distantly related Caucasian and Burushaski languages are found. Genetics and archaeology may shed further light on these relationships, as will no doubt a more extensive study of the linguistic evidence.

Linguistic Evidence Connecting Yeniseian and Na-Dene

Each of the following etymologies consists of a semantic gloss, indicating the general meaning in both families, followed by the relevant Yeniseian and Na-Dene evidence separated by an equals sign (=). The meaning of each form is identical with the general gloss unless specified otherwise. For Yeniseian, Starostin's reconstructions (1) and a few representative examples are given. These reconstructions require a comment. Starostin reconstructs affricates and fricatives that develop into stops in some words in some languages, but remain as affricates and fricatives in others. For example, Starostin reconstructs Proto-Yeniseian *χɨʔw "birch bark" to account for Ket qɨʔy and Yug xɨʔy. This analysis is suspect on two grounds. First, on internal grounds it is highly unusual for affricates and fricatives to develop into stops, while the reverse development—from stops to affricates and fricatives—is common in linguistic evolution. Second, the external evidence provided by Na-Dene indicates that the stops were the primitive state. It is also difficult to understand why Starostin has reconstructed word-final -w for this word, when all the Yeniseian and Athabaskan forms show word-final -y.

For Na-Dene, forms from individual languages are given because there is at present no Na-Dene—or even Athabaskan—comparative dictionary. Where they are known, Proto-Athabaskan reconstructions are cited, followed by a few examples from individual languages. For the most part, however, the Na-Dene evidence has been taken directly from Haida, Tlingit, Eyak, or one of the Athabaskan languages. Several of the etymologies connecting Na-Dene with Yeniseian were first proposed by Bengtson (10) in the context of the larger Dene-Caucasian family (though not exactly in the form given here): dry, foot, guts, head, name, old, (animal) skin, snow (falling), squirrel. Although tone appears in both Yeniseian and Na-Dene, it has not been taken into account here because Starostin did not reconstruct tones for Proto-Yeniseian. Tone is generally thought to have developed independently within both Yeniseian and Na-Dene, but this aspect of the relationship warrants further investigation. The following abbreviations are used: PY, Proto-Yeniseian; PND, Proto-Na-Dene; PEA, Proto-Eyak-Athabaskan; PA, Proto-Athabaskan; PPA, Pre-Proto-Athabaskan.

BIRCH BARK PY *χɨʔw-, Ket qɨʔy, Yug xɨʔy = PA *q'əy "birch," Ahtna q'ey "birch bark," Tanaina q'əy "birch bark," Koyukon q'əx "birch tree," Chipewyan k'ï "birch."

BOAT PY *qä(ʔ)p, Yug xa(ʔ)p, Kott xep = Eyak -qe "go by boat," PA *-qeˈ- "go by boat."

BOIL (v.) PY *ʔəqan, Ket ʌ̄n, Yug ʌxan = Tlingit χ'ān "dry meat, fish," Eyak -q'a "burn," PA *-q'ān "burn," Ahtna q'ān "burn," Koyukon -q'unʔ "burn," Kato k'an "burn," Navajo -k'āāh "burn."

BOW (n.) PY *qɨʔǰ, Ket qɨʔt, Yug qɨʔtˈ = PA (Krauss/Leer) *q'ā'-zə's "quiver" (lit. "arrow-skin"), Tanaina q'ada-tˡ'es "blunt arrow" (tˡ'es "blunt arrow"), q'aditin "spear," q'adiluy "bone spearhead," PA *-q'aʔ "arrow," Koyukon q'oʔ "arrow," Chipewyan k'a "arrow," Hupa -q'aʔ "arrow," Mattole k'aʔ "arrow," Navajo k'āʔ "arrow."

BREAST PY *təga, Ket tʌga, Yug tʌga = Tlingit teiχ' "heart," PA *-t'əq'ʷ "suckle," Ahtna t'ūʔ, Koyukon -t'ugaʔ, Kutchin t'agu, Slave -t'oʔ.

CEDAR PY *päʔy, Ket haʔy, Yug faʔy, Kott fei, Assan pey = Tlingit χáy "yellow cedar."

CHEEK PY *χol-, Ket qɔʌet, Yug xɔlat, Kott hol = Haida qul "forehead," Eyak -quhɬ "cheek."

CHILDREN PY *gəʔt, Ket kʌʔt, kitey "young" = Haida gyīt' "child," Tlingit git'a "child," Eyak qētˢ' "child."

CLAY PY *təq-, Ket tagar, tuɣit "smear with clay," Yug təx = Tlingit s'é ~ s'á "clay," Eyak tˢ'aʔ "mud," Ahtna tˢ'ǣq' "clay, glacial mud."

DEER PY *sēr$_1$e, Ket śɛʌə, Yug sɛʰr, Kott šeli ~ šele = ?Haida salī "tracks, trace, imprint," Galice silii ~ selii "doe."

DRY PY *qɔr$_1$-, Ket qol-ins, Kott šī-gal = Haida k'a ~ ɢ'a, PA *-ɢɑŋ, Ahtna -ɢan, Ingalik -ɢəŋ, Navajo -gan.

ELBOW PY *gid, Ket uʌ-git = Eyak ɢuhd "knee," PA *-ɢʊtˈ "knee," Ahtna -ɢotˈ "knee," Tanaina -ɢətˈ "knee, joint," Koyukon -ɢut "knee," Sarsi -gūd "knee, elbow," Carrier -gʷət "knee," Hupa -gotˈ "knee," Kato -qōtˈ "knee," Navajo -god "knee."

FIR PY *dɨñe, Ket dɨñ, Yug dɨn, Kott tīni, Arin tin, Pumpokol dɨñe = Eyak tˢ'ɪ̄tˢih "fir," PA *čən-čəŋ "Douglas fir," Chilcotin tˢintˢən "fir."

FOOT PY *kiʔs, Ket kiʔś, Yug kiʔs = Tlingit k'os ~ q'os "foot, leg," Eyak -k'ahš-.

GUTS PY *pɨʔɨʌ, Ket pīʌ, Yug fīʌ = Eyak wutˈ "belly," PA (Krauss/Leer) *-wətˈ "belly," Ahtna -betˈ "belly," Tanaina -vetˈ "belly," Slave -beʔ "belly," Carrier -but "stomach," Sarsi -miʔ "belly," Mattole -biʔɬ "belly," Kato -butˈ "belly," Navajo -bid "stomach."

HE PY *dʌ, Ket da- ~ di- = Haida dei "just that way," Tlingit de "now," Ahtna dī, Slave ti "this," Navajo dī "this."

HEAD PY *tˢɨʔɢ-, Ket tɨʔ, Yug čɨʔ = Eyak -tˢiʔ "neck," PA *-tˢiʔ "head," Ahtna -tˢeʔ, Tanaina tˢi, Koyukon -tˡīʔ, Beaver tˢiiʔ, Sarsi tˢiʔ, Galice -siiʔ, Mattole -tˢiʔ, Navajo -tˢiiʔ.

HUNGER PY *qɔqante, Ket qōt, Yug xɔxat = Haida q'ut "hungry."

LAKE PY *deʔɢ, Ket dɛʔ, Yug dɛʔ = Slave deh "river," Chipewyan de "river flowing out of lake."

NAME PY *ʔiɢ, Ket ī, Yug i, Kott ix = ?Haida kiʔī, Tlingit ʔix' "call out, announce, invite," Eyak ʔe "call, name," Chipewyan -yeʔ ~ -yiʔ "to be named."

NIGHT (SPEND THE –) PY *saɢar$_1$, Ket sāl, Yug sāʰr, Kott šagal "spending the night" = Haida ɢālga "dark," ɢālqwā "last night," Eyak χətˡ' "night," PEA *-ɣeʔtˡ' "get dark," Ahtna ɣǣtˡ' ~ ɣǣɬ "dark, quiet," Sarsi -ɣal "dark," Kato kaɬʰ "night passes."

NIT PY *yok, Ket (ʌɣin-)ɔk, Yug (etiŋ-)ʌ̄k, Kott dˈoga = PA (Krauss/Leer) *yaʔ "louse," Tanaina eyu "human lice," Koyukon yoʔ "lice," Galice yaʔ "louse," Navajo yāʔ "louse."

OLD PY *siń, Ket śiń, Yug sin = Tlingit šān "old age," šàn "old person," ?Ahtna sen "last year," Tlatskanai sen "old man," Navajo sání "old (person or thing)."

OWL PY *kʌg-, Kott hikei-še, Arin kak "hawk," Pumpokol xagam-kolka = Haida k'akw, Tlingit q'ukw.

RABBIT PY *ʔax, Yug ak "jumping hare" = PND (Pinnow) *ɢaχ, Tlingit ɢaχ, Eyak ɢəχ, PA (Krauss/Leer) *ɢɑχ, Ahtna ɢaχ, Tanaina ɢəχ, Tsetsaut qax, Slave gah, Navajo gah.

RIVER PY *ses, Ket śēś, Yug ses = Haida sīskw "ocean, salt water," Tlingit iš "still deep water," Eyak šī "creek, stream."

ROPE PY **tiʔ,* Ket *tiʔ* = Tlingit *t'ix'* "rope," PA **t^{s}'eˈχ* "sinew," Ahtna *t^{s}'ɛ̄χ* "sinew, thread, string," ?Tanaina *t^{s}'ik'-tɬ'iɬ* "bowstring" (*-tɬ'iɬ* "string").

SHOULDER PY **ken-,* Ket *kɛn-tə-buʌ* "shoulder joint," Arin *qíŋaŋ* "shoulder, arm" = PA **-gānəʔ* "arm," Ahtna *-gānʔ* "arm," Tanana *-gàn-* "arm," Slave *-gon* "arm," Kato *-kwane* "shoulder, arm," Navajo *-gaan* "arm."

(ANIMAL) SKIN PY **sā̄s,* Ket *śāśi,* Yug *sāʰs* = Tlingit *s'isaˈ* "cloth," Eyak *-sit^{s}* "skin (of fish)," PA (Krauss/Leer) **-zə's* "skin" [< PPA (Krauss/Leer) **-sət^{s}*], Hupa *sit^{s}* "bark, skin," Tututni *səs* "skin," Galice *-saas* "skin."

SNOW (ON GROUND) PY **tiχ,* Ket *tīk,* Yug *tik,* Pumpokol *tɨg* = Tlingit *t'iˈχ'* "snow, ice."

SNOW (FALLING) PY **beʔč* "snow," Ket *bɛʔt,* Yug *bɛʔtˈ,* Pumpokol *beč* = Eyak *wehs* "soft snow," PA (Krauss/Leer) **yəχs,* Tanaina *yes* "falling snow," Slave *yah,* Carrier *yuS̲,* Galice *yas,* Hupa *yahs* "white frost (on trees)," Navajo *yas.*

SQUIRREL PY **saʔqa,* Ket *saʔq,* Yug *saʔx* = Haida *gałt^{s}'aak^{w},* Tlingit *t^{s}ʌɬk,* Eyak *t^{s}əɬk',* PA **t^{s}ələx,* Ahtna *t^{s}eles* "arctic ground squirrel," Tanaina *t^{s}'əlga* "red squirrel, flying squirrel" (different dialects), Koyukon *tʰilix* "ground squirrel," Carrier *t^{s}alək.*

STONE PY **čɨʔs,* Ket *tɨʔś,* Yug *čɨʔs,* Kott *šīš* = Haida *t'īs* "piece of rock sticking out of water or sand," PA **t^{s}'es* "rock," Ahtna *t^{s}'es* "rock, stone," Tanaina *t^{s}'es* "rock."

SUMMER PY **sir$_1$-,* Ket *śīʌ́i,* Yug *sīr,* Arin *šil* = PA **šēn,* Ahtna *sǣn,* Tanaina *šan,* Carrier *šin,* Navajo *šī.*

UTENSIL PY **sɨʔk* "trough for dough," Ket *śɨʔk,* Yug *sɨʔk* = PND (Nikolaev) **t^{s}'àg(w)* "basket, bowl, dish," Tlingit *s'ix'* "dish," Eyak *t^{s}'āg* "dipper," PA (Krauss and Leer) **t^{s}'aˈk'* "plate, dish," Ahtna *t^{s}'āk'* "plate, dish, bowl," Tanaina *t^{s}'uk'* "dish, plate," Beaver *t^{s}'aʔ* "dish," Navajo *-t^{s}'āʔ* "shallow basket."

WORD PY **qäʔɢ,* Ket *qaʔ,* Yug *xā,* Kott *xēg* ~ *kʰēg* = Haida *qāgwā* "to talk," Tlingit *qa* "say," Eyak *-χa* "say," PA **qa-nə-(h)ē-x* "speak."

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