

### Dene-Yeniseian: a critical assessment

The paper gives a detailed critical assessment of the so-called “Dene-Yeniseian” hypothesis of genetic relationship between the Na-Dene language family of North America and the Yeniseian family in Siberia (represented today by the Ket language as its sole survivor). The hypothesis, recently promoted by Edward Vajda and supported by several prestigious scholars, has drawn much attention from the linguistic community, but, as the current paper indicates, still lacks a thorough critical evaluation that would focus exclusively around the quality of the comparative data. The paper attempts to present such an evaluation for at least some of the data, such as comparative verbal morphology, certain phonetic correspondences, and basic lexicon involved in Vajda’s comparison. It is concluded that only a part of these comparisons stands proper historical criticism, and that this part, by itself, is insufficient to prove a specifically “Dene-Yeniseian” link beyond reasonable doubt. However, it may be quite useful for the ongoing research on Na-Dene and Yeniseian languages as parts of a larger taxonomic unit (the “Dene-Caucasian” macrofamily), within which these two taxa may be related on a more distant basis than originally proposed.

*Keywords:* Dene-Yeniseian hypothesis, Dene-Caucasian hypothesis, Na-Dene languages, Yeniseian languages, linguistic macrofamilies, deep level language relationship, verbal morphology, typology of phonetic correspondences.

### Introduction

On February 26–28, 2008, the University of Alaska Fairbanks held a special Dene-Yeniseian Symposium, intended to spread information on and initiate a productive discussion around research recently carried out by Edward J. Vajda — research that has allegedly resulted (as has been claimed by a number of specialists) in establishing a strong, methodologically sound claim to a genetic relationship between the Na-Dene family in North America and the Yeniseian family in Siberia (today, exclusively represented by its sole survivor, Ket). Two years later, the results of the Symposium were officially published as a special volume in the *Anthropological Papers of the University of Alaska* periodical series, entitled *The Dene-Yeniseian Connection* (University of Alaska Fairbanks, 2010).

Since Vajda’s hypothesis has attracted significant press attention and has been endorsed by several experts in historical linguistics and linguistic typology, *The Dene-Yeniseian Connection* volume is not to be taken lightly; it is clearly a book that deserves a more detailed and thorough assessment than it has received in the few brief professional reviews of it that I have encountered so far (such as [Campbell 2011] and [Rice 2011]). I myself have already published a brief note on Vajda’s theory [G. Starostin 2010a], following up on a presentation made at the Athabaskan Conference (University of Berkeley, 2009); the published paper, however, only voiced the principal concerns without backing them with sufficient argumentation, and its

chief focus was on the idea that it is substantially incorrect to explore the possible genetic connection between Yeniseian and Na-Dene without an equally thorough look at other potential members of the same deep-level language family.

It is now high time to look in more detail at Vajda's evidence on its own merits, and attempt to answer the two most pressing questions: (a) is the presented evidence sufficient to establish a genetic link between Yeniseian and Na-Dene "beyond reasonable doubt"?; (b) are the methods and argumentation paths employed in presenting the evidence generally valid for establishing *any* kinds of intuitively non-obvious genetic links between language families?

First and foremost, one would think that detailed answers to these two questions, coming from a variety of experts specially assembled for the occasion, should be found in the pages of *The Dene-Yeniseian Connection* itself. While the centerpiece of the volume is undeniably Vajda's extensive, 60-page long paper ("A Siberian Link with Na-Dene Languages") that lays out the typological, grammatical, and lexical evidence for Dene-Yeniseian, the remaining 300 pages could certainly have incorporated at least several papers of comparable length — papers that would demonstrate that their authors have thoroughly studied the presented evidence and given it an objective evaluation based on a well-defined set of criteria.

However, the papers that may be qualified as actual assessments of Vajda's results comprise a surprisingly humble amount compared to works that only bear an indirect relation to the main subject at hand. In particular, nearly two hundred pages of the volume are allocated for a section called *The Interdisciplinary Context for Dene-Yeniseian*. This section contains at least one linguistic paper that is of significant importance to the issue: Jeff Leer's "The Palatal Series in Athabaskan-Eyak-Tlingit, with an Overview of the Basic Sound Correspondences" (pp. 168–193), which presents some of the author's important recent advances in the reconstruction of Proto-Na-Dene and upon which, consequently, Vajda's own research on Dene-Yeniseian depends significantly. But the rest are, indeed, interdisciplinary papers, carefully distributed between geneticists (G. Richard Scott and Denis O'Rourke), archaeologists (Ben A. Potter), specialists in comparative mythology and ethnography (Yuri Berezkin), etc., most of which basically follow the same scheme in answering the question: "*Supposing the Dene-Yeniseian hypothesis is correct, is there any direct or indirect evidence from branches of science other than linguistics to confirm it?*"

The papers in question contain all sorts of useful data and valuable insights, but, no matter how strong the temptation to put "Dene-Yeniseian" into an interdisciplinary context here and now may be, all of these insights are completely irrelevant when it comes to resolving the main issue. The fact that there *are*, or that there *aren't* any conjectural correlations between comparative linguistic and genetic / archaeological / cultural, etc. data has no direct bearing on this main issue: whether or not Na-Dene and Yeniseian languages share a lowest common linguistic ancestor. Predictably, most of these papers neither rule out the possibility of a prehistorical "Dene-Yeniseian" ethnos, nor confirm it; but even if a convincing set of genetic or archaeological isomorphisms were to be found, the linguistic data would still have to stand on their own, since extralinguistic evidence is well known to be inadmissible in demonstrations of genetic relationship.

Out of the seven papers included in the section entitled *Commentaries on the Dene-Yeniseian Hypothesis*, four (by Michael Fortescue, Willem J. de Reuse, John W. Ives, and Don Dumond) do not deal with Vajda's evidence at all, presenting instead a series of stimulating speculations on the prehistory of the hypothetical Dene-Yeniseian taxon, and only three contain opinions or analyses that actually quote the comparative data and present concrete assessments.

Of these three, Eric Hamp's "On the First Substantial Trans-Bering Language Comparison" (pp. 285–298) produces a strange impression. Although its first sentences are phrased

with remarkable boldness (“Yeniseian-Dene of Edward Vajda is correct. His demonstration, the truly important aspect of his scientific achievement, ranks among the great discoveries of this type of productive inferential reasoning, i. e. linguistic modern cladistics...”), the overall structuring of the paper, where offside excursions into Indo-European analogies are more frequent than remarks on Vajda’s hypothesis itself, make it rather hard to understand exactly *why* “Edward Vajda is correct”. As difficult as it is for me (although I fully acknowledge that this may be just a personal problem) to follow the author’s somewhat convoluted train of thought, it may at least be understood that he expresses sincere admiration for the elegant homologies between Yeniseian and Na-Dene prosodic features and verbal patterns established by Vajda. No attempt, however, is made to test any of these homologies; they seem to be accepted on sheer trust, which, unfortunately, reduces the overall usefulness of the paper.

Johanna Nichols (“Proving Dene-Yeniseian Genealogical Relatedness”, pp. 299–309) presents a far more robust argument in support of Vajda’s evidence. She has devised a somewhat crude, but reasonable and well-explained statistical test that is supposed to show whether the amount of similarities in form and meaning observed between binary pairs of compared languages exceeds what should be naturally expected by chance or does not pass the threshold. This test, it is asserted, works reasonably well on Vajda’s grammatical and lexical comparanda for Dene-Yeniseian, while at the same time failing to uncover statistically valid results for M. Ruhlen’s earlier set of Dene-Yeniseian comparanda, established through “mass comparison” [Ruhlen 1998].

Nichols’ statistical test is undoubtedly an interesting and thought-provoking idea, although I have doubts as to whether it incorporates a sufficiently well-detailed number of parameters to be able to serve as a universally applicable tool. However, regardless of whether the test itself is sufficiently robust or not, it goes without saying that *any* results of *any* formalized test may, at best, only be as good as the input data. In this particular case, the tested evidence rests on two assumptions that, as I will try to show below, are highly questionable: (a) the phonological and semantic correctness of Vajda’s Proto-Yeniseian reconstructions of a set of verbal grammatical morphemes; (b) the historical correctness of the system of phonetic correspondences established by Vajda between Proto-Yeniseian and Proto-Na-Dene. If these assumptions turn out to be wrong — even if they turn out to be *partially* wrong — the results of Nichols’ tests are essentially meaningless, and all the calculations will have to be redone, possibly on diminished evidence. Consequently, the paper suffers from the same flaw as Hamp’s: the critical assessment of Vajda’s evidence begins by missing the crucial first step — assessing the correctness of “first level” reconstructions and the credibility of the “second level” correspondences.

The third evaluative paper, by Andrej Kibrik (“Transitivity Indicators, Historical Scenarios, and Sundry Dene-Yeniseian Notes”, pp. 316–319), is very short and does not venture far beyond typological argumentation. It does make one extremely important critical point, to which I shall return below, but overall, the briefness of the paper and the author’s own admission (“...only someone who has done first-hand work in historical comparison and reconstruction can objectively assess the degree of rigor with which the comparison proposed by Vajda is implemented...”) clearly prevent it from playing a decisive role in the argument.

So why are the evaluative papers so short? And how has it become possible for a “mini-consensus” around Dene-Yeniseian to have formed so soon, when the majority of similar deep-level genetic relationship hypotheses, sometimes backed up with far more bulky collections of comparative data, still fail to gain approval from specialists in respective and adjacent fields? In my opinion, the reason behind this lies in a certain, intentionally chosen, *strategy of presentation*, which is as important for Vajda’s principal paper as the comparative data them-

selves, and to some readers, perhaps even more important. There should be nothing surprising about the fact itself: comparative-historical linguistics is still a long way from becoming a fully integrated branch of mechanistically rigorous “science”, and, as in any other branch of linguistics, its results often find acceptance or rejection based on a complex mesh of objective and subjective criteria. The strategy chosen by Vajda is undeniably much more *persuasive* than strategies usually chosen by “long-rangers” (below, I shall try to explain why), and this persuasiveness, from a certain point of view, is admirable. But in the long term, persuasiveness only works when it has been coupled with thorough objectivity; and I believe that it is every researcher’s duty to be able to look beyond such concepts as “elegance”, “originality”, and “expectation-matching” when we are dealing with such a complicated object as language — which, as we all know, may just as well be “inelegant”, “unoriginal”, or “defying expectations” when it comes to specific situations.

I do not necessarily share Andrej Kibrik’s humble opinion that only a practicing comparative linguist may be thoroughly qualified to assess a historical hypothesis of Vajda’s caliber. In fact, one does not even have to be a professional “Yeniseianist” or “Athabaskanist” to make such an assessment, *as long as* the argumentation in favor of the hypothesis has not been based on specially selected data. On the contrary: I believe that a careful, line-by-line analysis of Vajda’s paper will reveal quite a few weak spots even to those readers who have never had to deal with a single Yeniseian or Na-Dene language before, but are well aware of such things as historical phonetic typology, regularity of correspondences, and lexicostatistics. Unfortunately, it is quite likely that the majority of these readers will not want to perform such an analysis, concentrating on the conclusions more than on the gist of the argument.

My own position on Vajda’s “Dene-Yeniseian”, already voiced in the aforementioned short paper [G. Starostin 2010a], is clear enough: I am convinced that there exists significant evidence showing that both families may well be genetically related within the framework of a much larger macrofamily, provisionally called “Dene-Caucasian” (DC), and that this evidence may to some extent overlap with the comparanda amassed by Vajda for “Dene-Yeniseian” (DY). However, the same evidence does not, by any means, confirm that there is a specific “Dene-Yeniseian” node on the DC genealogical tree, i. e. that Na-Dene and Yeniseian languages share a “lowest common ancestor”. If *all* of Vajda’s comparanda were acceptable, “Dene-Yeniseian” could be perceived as a historical reality; the ratio of those that actually *are* acceptable strongly suggests that it cannot.

Within the scope of one paper it would be difficult to focus on both the “constructive” side of the argument (positive evidence for Dene-Caucasian) and the “critical” side (negative evidence for Dene-Yeniseian). Since the “constructive” side is currently being clarified in a joint paper by myself and John Bengtson, dealing with the current state and issues of the DC hypothesis [Bengtson & Starostin 2012]<sup>1</sup>, this paper will have to concentrate on the criticism. Namely, I will try to show that a large portion of Vajda’s evidence for DY rests on (a) internal Proto-Yeniseian reconstructions that are themselves based on improbable assumptions rather than factual evidence; (b) phonetic correspondences that are not only questionable from a typological perspective, but also not sufficiently recurrent to be fully credible. What remains of the evidence is hardly enough to serve as convincing demonstration of DY as a realistic taxon.

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<sup>1</sup> The current taxonomy of Dene-Caucasian, advocated for in this paper on the basis of lexicostatistical calculations and shared innovations, is as follows: A. “Western Dene-Caucasian”, consisting of two equidistant sub-branches: **A.1.** North Caucasian + Basque; **A.2.** Yeniseian + Burushaski; **B.** “Eastern Dene-Caucasian”: Sino-Tibetan + Na-Dene.

Not being an expert on issues of Athabaskan and Na-Dene comparative phonology, I will be evaluating the evidence primarily from the Yeniseian side; that said, thanks to the aforementioned detailed paper by Jeff Leer in the same volume, it is now much easier to distinguish between “stronger” and “weaker” Na-Dene reconstructions of phonemes, grammatical and lexical morphemes, and these issues will occasionally be addressed as well.

Before we proceed, however, I would like to specifically emphasize the fact that Vajda’s research consistently rests on a professional foundation and takes into account most, if not all, of the results of previous studies on the subject — in this I completely concur with all the “admirers” of his work, who point out that diligence and methodological accuracy of this level are rarely met in the field of long-range comparison. If this accuracy remains insufficient to achieve the stated goal, it is only, I believe, due to the fact that the methodological foundations for historical comparison of language families on a deep level still remain on a “preliminary” level. Few people engage in long-range comparison, and even fewer can bring themselves to agree on the right way to do it. This implies that the specific “data-based” critical remarks, offered below, will sometimes inevitably plunge into methodological discussion. Personally, I believe that this is a good thing.

### Verbal morphology evidence for “Dene-Yeniseian”

#### Typology.

Vajda notices significant typological isoglosses between the basic structures of complicated verbal templates in Yeniseian and Na-Dene, claiming that the homologies between the two are generally more striking than between Yeniseian and other prefixing languages of Eurasia, such as Burushaski, Sumerian, and Abkhaz (pp. 36–40). Shared “slots” include spatial prefixes, tense/aspect/mood (TAM) prefixes, subject agreement prefixes, and — possibly — semantically vague “classifiers”, which are partially fossilized (fused with the root) and partially shifted to express other functions in Yeniseian, but still retain morphological “vitality” in Na-Dene.

It must be emphasized, however, that there is no concrete attempt on Vajda’s part to reconstruct the basic structure of the DY verbal template: comparative tables that present such templates for attested and reconstructed languages alike only go as deep as “generalized Athabaskan” (table 8) and Vajda’s own reconstruction of the Proto-Yeniseian template (table 11). An expected question is — why not, if these templates are so similar? Andrej Kibrik, in his aforementioned reply, may have the answer. He reminds (p. 317) that the Yeniseian template contains nothing that could be transparently analyzed as “transitivity indicators” or “classifiers”, a crucial component in the typical Na-Dene form and, quite likely, one of the oldest sets of morphological markers in the paradigm, since it occupies the slot that is immediately adjacent to the root morpheme itself, and morphology is known to “grow in concentric circles”.

Although Vajda does make attempts to discover some traces of Na-Dene “classifiers”, they are universally weak (see below), which leads Kibrik to a logical assumption: “as long as the status of the immediately pre-root TIs is not clarified, morphological argument for the relationship largely fails” (p. 318). More precisely, it is not the “morphological argument” that fails, but the “morpho-typological argument”: this particular incongruence does not, per se, invalidate the specific grammatical morphemes that Vajda is comparing — it invalidates the idea of an elegant common origin of the *templates*.



Furthermore, even if we somehow prefer to close our eyes on the “classifier” issue, the origins of the template still remain confusing. Over and over again, the reader encounters reference to the idea that at least some of the compared morphemes may be derived from ancient “auxiliary verbs”, in particular, the reconstructed “telic/atelic” markers  $*x^y i$  and  $*Ga$  (see below). This idea, probably inherited from some of J. Leer’s work on internal reconstruction in Na-Dene, is never explored in sufficient depth, but adds an unpleasant element of vagueness to the discourse. If the original structure of DY veered more towards the analytic side, with auxiliary verbs bearing a large part of the grammatical information, does that imply that similar paths of grammaticalization took place independently in Na-Dene and Yeniseian already after the split? This would seem unlikely, not to mention that it seriously reduces the importance of morphological evidence as such. If, on the other hand, the system of cognates between morphological markers is projected by Vajda onto the original DY stage, why is it necessary in the first place to speculate on the possible origins of these markers, provided that such speculations are based not on comparative evidence, but on purely internal reconstruction within a highly hypothetical “macrofamily”?

That said, the typological argument on its own hardly means anything from the genetic point of view if the actual morphemes that occupy the morphological slots cannot be shown to share a common etymological origin in sound and meaning. Let us now take a brief look at some of that “fleshy” evidence, particularly the morphemes that play the most important part in J. Nichols’ statistical evaluation: TAM markers and spatial prefixes.

### TAM markers: the telic/atelic opposition.

For the earliest stage of DY, Vajda reconstructs a binary set of markers, supposedly originating from even earlier “auxiliary verbs” (?):

	DY	Yeniseian	Ket	Navajo	Eyak	Tlingit
“Telic” marker	$*x^y i$	$*si-$	<i>s, i, a, a</i>	<i>si-</i>	<i>s-</i>	<i>uɬi-</i>
“Atelic” marker	$*Ga$	$*Ga-$	<i>qo, o</i>	<i>yi-</i>	<i>Gə-</i>	<i>ga-</i>

Without questioning the Na-Dene side of the reconstruction (which, at least from the phonetic side, is not completely obvious), I have to say that the proposed Yeniseian reconstruction, explained on pp. 43–45 of Vajda’s paper, is completely untenable. In order to arrive at “visually elegant” matches between Na-Dene and Yeniseian, Vajda has to (a) find phonetically similar external Yeniseian correlations to the Na-Dene “sibilant marker” and “uvular marker” and (b) be able to explain away everything else in the same slot of the Yeniseian paradigm as secondary transformations of these two markers — otherwise, the Yeniseian system will not be a proper “two-member paradigm” (as it is defined by J. Nichols on p. 305), and the likeness of chance similarities between Na-Dene and Yeniseian in this particular slot will increase.

The only part of these conditions that is satisfied concerns the match between Na-Dene  $*x^y i \rightarrow$  Eyak-Athabaskan  $*si$  and Ket *s*. These morphemes are evidently similar and their consonantal constituent may be integrated into a regular system of correspondences. But even if we agree with Vajda’s treatment of Ket *s* as a former auxiliary, rather than a morpheme of pronominal origin (as it is argued in [Reshetnikov & Starostin 1995], and I am not ready to abandon that argument), nothing else checks out.

First, Vajda's attempts to derive nearly *all* of the so-called “conjugation markers” in modern Ket from a single original morpheme *\*si* are extremely forced. They were absent from the first draft version of his paper and represent an entirely new conception, which will probably be viewed as revolutionary by everyone with a background in Ket / Yeniseian verbal morphology studies. A detailed analysis of this conception will take a lot of space, so I will present just one brief point.

According to the analysis in [Reshetnikov & Starostin 1995], most of the verbal paradigms in Ket may be classified into two “conjugations”, one of which contains the basic conjugational marker *-i-* both in the present and past tenses, while the other one has *-a-* in the present and *-o-* in the past. The morphophonological properties of these markers differ depending on the context, especially for the marker *-i-* which frequently falls victim due to vowel reduction and is deleted from the form, but the basic opposition is undeniable, as well as the correlation between “present *-a-* : past *-o-*”, as in *d-a-j-śuk* ‘I wade across’ : *d-o-ń-śuk* ‘I waded across’, etc.

Now Vajda yields a complicated reanalysis of this situation, merging *-a-*, *-i-* (together with the morpheme *-s-*, which, according to most previous treatments, actually even occupies a different *slot* in the verbal form) as historical variants of one morpheme, and past tense marker *o* as a variant of *another* morpheme. In other words:

	Present tense	Past tense
“Verbal conjugation I”	<i>i &lt; *si</i>	<i>i &lt; *si</i>
“Verbal conjugation II”	<i>a &lt; *si (!)</i>	<i>o &lt; *ga</i>

The incongruence is not only obvious, but is also utterly unnecessary. It requires setting up complex, phonetically improbable transitions (“after a fricative, affricate, or aspirated stop, *\*x<sup>h</sup>i* yielded allomorph *a-*, regardless of what prefix followed...”) with lots of subsequent changes by analogy that still leave a lot of internal Yeniseian questions unanswered. Why has this been done? The only possible answer is — to make the system look more like the one established by J. Leer for Na-Dene.

Furthermore, even the past tense morpheme *o* does not look very much like Na-Dene *\*ga*, since it does not contain any traces of a back (let alone uvular) consonant. According to Vajda's correspondences, Na-Dene *\*g* should yield Yeniseian *\*q*, not zero. A possible solution comes through the discovery of an irregular Ket verb, ‘to kill’, which forms its past tense in a unique way, by adding the morpheme *qo* instead of the more productive affixes *l* or *n*: *t-qo-k-ej* ‘he killed you’, etc. This morpheme is presented as the most transparent and segmentally compatible correlation with Na-Dene *\*ga*; however, since one irregular grammatical marker in one irregular paradigm is fairly thin evidence when we are aiming for a definitive paradigmatic reconstruction, an ingenious solution is presented — *qo* is etymologically equated with the much more frequent marker *o*, in which, according to Vajda, the original consonant was deleted because of its frequently occupying a word-internal position.

In other words: *\*qo-ku-ej* (where *qo-* = original TAM marker, *ku* = 2nd person obj. marker, *ej* = root morpheme) ‘(he) killed you’ → *\*qo-k-ej* (the subject marker *t-* ‘he’ is a later morphological addition that did not influence the articulation of *qo-*), but, for instance, *\*d-uis-qo-l-bed* ‘I rowed’ (literally ‘I-rowing-made’) → *d-uis-o-l-bed*, with regular deletion of *\*q* after the final consonant of the first root morpheme.

This is a highly improbable, if not impossible, explanation. How could it apply to, for instance, numerous cases of paradigms such as *d-a-v-a* ‘I am braiding it’ vs. past tense *d-o-m-n-a* (← *\*d-o-v-n-a*), where *d-* ‘I’ is also a recently added subject prefix, so that the original paradigm

must have been *\*a-v-a* vs. *\*o-v-n-a*? Why did the uvular consonant disappear in *this* case? Through analogy with complex paradigms like the one for the verb ‘to row’? But if we bring analogy into the discussion, why have all the paradigms suffered the same analogical fate *except* for the verb ‘to kill’?

Furthermore, Vajda does not mention the *structural* difference between *\*qo* and *\*o*. In the verb ‘kill’, the marker *\*qo* occupies the same “floating” slot as the regular past tense markers *l* and *n*, which are regularly placed before the 1st and 2nd p. pronominal object markers, but *after* the 3rd, cf. (past tense markers are in bold, object markers are underlined):

<i>di-l-g<u>u</u>-s</i> ‘I dressed you’	<i>t-qo-k-<u>e</u>j</i> ‘I killed you’
<i>d-<u>o</u>-l-s</i> ‘I dressed him’	<i>d-<u>a</u>-q-<u>e</u>j</i> ‘I killed him’

This shift of position never affects the “conjugal marker” *o*.

To sum up, Vajda’s internal reconstruction of the Yeniseian opposition *\*si* : *\*ga* is beset with problems: it does not offer an economic solution, it leaves plenty of unanswered individual questions, it raises doubts of a phonetic-typological nature, and the overall impression is that it was heavily influenced by the corresponding reconstruction of the Na-Dene opposition. Before this reconstruction can be made use of in any DY comparison, it has to be presented in much more detail, and with far more convincing force, within a purely Yeniseian context. And even then, there can hardly be any question of using it as a serious argument in *establishing* a DY link. At best, the scenario extolled by Vajda can be presented as an answer to the question: “How could the TAM markers of Na-Dene and Yeniseian be brought together under a possible historical scenario, provided we have already demonstrated that the families are related?” Consequently, the very fact that these “reconstructions” occupy a prominent position in J. Nichols’ statistical argument in favor of DY weakens said argument quite significantly.

### TAM markers: past tense markers.

The second piece of evidence — the actual tense/aspect markers — is much stronger in general and may actually count as real, “non-forced” argumentation. Progressive tense marker *\*-l* in Eyak-Athabaskan is phonetically and semantically compatible with Yeniseian *\*l* (or *\*r<sub>1</sub>*, according to S. Starostin’s reconstruction<sup>2</sup>), whereas Athabaskan perfective *\*ñ* is a possible correspondence for Yeniseian *\*n*. Vajda’s analysis of the semantic peculiarities of the Yeniseian markers concurs with the conclusions independently arrived at by other Yeniseianists, and is compatible with Na-Dene semantics.

The problem concerning the different slots which these markers occupy in Yeniseian and Na-Dene is explained by Vajda as due to different strategies of grammaticalization: in Na-Dene, the strategy involved joining them as suffixes to the main lexical root, in Yeniseian — to the “auxiliary verbs” reconstructed as *\*si-* and *\*ga-*. Unfortunately, once again this reverts us to the issue of analytic vs. synthetic nature of DY. It is one thing to propose cognation between two pairs of cognate morphs within a homologous paradigm, and quite another one to propose independent grammaticalization, since this transforms our supposedly “paradigmatic” evidence into one that is decidedly *not* paradigmatic.

<sup>2</sup> Most of the phonetic and lexical reconstructions for Proto-Yeniseian are quoted according to the comparative phonology of Yeniseian [Starostin 1982] and the etymological dictionary of Yeniseian languages [Starostin 1995].



Nevertheless, the parallels between this binary contrast in Na-Dene and Yeniseian are undeniable and may be accepted as evidence for genetic relationship.

### Shape prefixes.

The bulk of this argument (pp. 53–55) revolves around the issue of cognation between the so-called “shape prefixes” *n-*, *d-*, and *h-* in Ket (which, following an alternate tradition, I will be calling “preverbs” for short), and their supposed equivalents in Proto-Athabaskan, reconstructible as *\*n-*, *\*d-*, and *\*qv-*. On the surface, the argument may look convincing: a quasi-paradigmatic homology is found between three prefixes that share comparable phonetics, similar semantics, and the same slot in the verbal paradigm. Thorough analysis, however, shows that on the Yeniseian side at least, the argument runs into the same problem as usual: a selective approach to evidence, allowing to draw generalized conclusions that are not supported by the total weight of the data.

Of the three morphemes discussed, Ket *n-* is the most unusual one. First, it is very rare; in his seminal monograph on the Ket verb [Krejnovich 1968], Ye. Krejnovich, at best, lists a tiny handful of verbs in which it is attested, and that number has not increased significantly since then. Second, it is never found in Kott, let alone met in a paradigm that can be historically associated with a Ket correspondence. Third, the consonant *\*n*, easily reconstructed for Proto-Yeniseian in the word-medial position, is *never* reconstructed word-initially.

These considerations alone would make any comparison with Na-Dene material highly dubious. But the main problem is centered around semantics: to reconstruct the meaning ‘round’ for this prefix is to beg the issue. The two examples quoted by Vajda, *n-a-b-hil* ‘cuts it around the edges’ and *n-a-b-do* ‘hews, chisels it (a round object)’ may convey the impression that such a reconstruction is obvious, but it is not. The form *n-a-b-hil*, where the root is *\*kil-*, is not part of a minimal verbal pair, so there is no certain way of knowing whether the meaning ‘round’ is really conveyed by *n-* or is contained in the root itself.

For the form *nabdo*, minimal pairs do exist, but the form itself is dubious: I have not encountered it in either Krejnovich’s, Dulzon’s, or my own materials, nor could I locate it in any of H. Werner’s three quite extensive vocabularies; neither is it found in [Vajda 2004], a grammatical description of Ket, where such a perfect form should have been adduced as evidence. According to Vajda (p.c.), the form *nabdo* comes from his own field records, and I have no reason to distrust this, but still, a proper reference would be in order here, considering that Ket has been rather extensively studied, with vast corpora of textual evidence, for the past fifty years.

Finally, there are other examples with the preverb *n-*, most of them not mentioned by Vajda, for which the suggested semantics is completely inapplicable. One particularly unsettling example is in the verb ‘to give’, cf.: *d-a-n-b-o* ‘I give it to him’. Vajda mentions this case in a footnote (№ 27, p. 54), but brushes it away, noting that “round-shape *n-* never follows the object marker and is probably a different morpheme”. However, *-a-* ‘(to) him’ in this particular case is not a direct object marker; it is an indirect object marker, belonging to a different series, as is clearly proven by such forms as *d-ba-n-b-o* ‘he gives it to me’, etc. The regular slot occupied by these markers is always before the preverb, not after, so the counterargument does not work, and there is no easy way to prove that *n* in *d-a-n-b-o* is not the same *n* as in *n-a-b-hil*. A handful of other examples may be found both in Krejnovich’s monograph and Werner’s dictionary that also do not suit the semantics of “roundness” at all. With such flimsy positive evidence, the reconstruction seems to me semantically untenable on internal Yeniseian grounds.

Ket *d-*, on the other hand, is a rather frequent prefix; however, again, there is about as much evidence to suggest the original meaning ‘long’ as there could be to suggest an original meaning ‘wide’ or ‘high’ or ‘narrow’ or ‘low’. The form *d-a-b-do* ‘hews, chisels it (a long object, such as a log)’, adduced by Vajda, generally means ‘cuts it out (as a boat)’, if dictionaries are to be believed. This is not a problem: a boat is a long object. But many other verbs with Ket *d-* have nothing to do with long objects: for instance, *d-a-v-tíl* ‘he warms it’ (said of a shaman’s tambourine, hardly “long” in shape).

Likewise, for the corresponding Kott marker *ǵ-* Vajda only quotes the form *ǵati* ‘subject hits with long object, such as a whip’, but what about such paradigms as *ǵ-ājaŋ* ‘to expel’, past tense *ǵ-ōnajaŋ*, or *ǵ-ašiaŋ* ‘to dress up’, past tense *ǵalašiaŋ*, etc.? How is it possible to boldly draw the proto-semantics of a clearly desemanticized morpheme, when the counterexamples for our hypothesis outnumber the examples?

The situation with Ket *h-* = Yugh, Kott *f-* is equally unsatisfactory. The equation of this prefix with the idea of ‘flat surface’ is highly subjective, and I cannot refrain from pointing out that in [Vajda 2004: 62], this exact morpheme was defined as follows: “probably derives from a classifier of straight or long objects” — whereas “superficial contact with a surface” was actually a meaning associated with an entirely different preverb *t-*! Clearly, this is a situation in which multiple interpretations are possible, but not a single one will be highly convincing.

Consequently, I insist that the “spatial prefixes” comparison should be abandoned in its entirety. The semantic treatment of Yeniseian preverbs is forced and seems to have been heavily influenced by the corresponding meanings of the compared prefixes in Na-Dene. This does not necessarily invalidate the homologies (as long as we are unable to precisely define the functions of Yeniseian preverbs, Vajda’s treatment of their semantics is as good as anybody’s), but it makes them irrelevant as first-order evidence for demonstrating the common origins of DY morphology.

One final point is necessary. The “spatial prefixes” *n-*, *\*ǵ-* (→ Ket *d-*), *\*p-* (→ Ket *h-*) = Athabaskan *\*n-*, *\*d-*, *\*qv-* play a significant part in J. Nichols’ statistical test, where, among other things, the following is mentioned: “I gather these exhaust their paradigm, i. e. there is no search among a larger set of forms” (p. 305). This is an incorrect assumption: not only are these three Yeniseian preverbs only a part of a much larger subset, which also involves such morphemes as *k-*, *t-*, and *q-* occupying the same slot, but at least two of them, *n-* and *\*p-*, happen to be very rare, compared to the ultra-frequent *k-* and *t-*, for which no cognates have been discovered in Na-Dene. Clearly, even if we accept Vajda’s highly dubious semantic reconstruction, this circumstance has to be reflected in the application of the statistic algorithm.

## Pronouns.

The pronominal evidence for Dene-Yeniseian, contrasted with pronominal evidence on a much larger, “Dene-Caucasian” scale, has already been discussed in brief in my previous publication on the subject [G. Starostin 2010a], where it was shown that the paradigmatic connections of Yeniseian 1st and 2nd p. pronouns and pronominal markers are much easier to establish with the “Western” area of this macrofamily (Burushaski and North Caucasian) than with its “Eastern” part (Sino-Tibetan and Na-Dene).

If we restrict ourselves to a narrow investigation of the Dene-Yeniseian connection and nothing else, the only plausible isomorphism between the pronominal systems that emerges “on its own” is the parallel between Yeniseian *\*ʔaw* ‘thou’ and Tlingit *wa-* in *waʔé* ‘thou’, but, remarkably, it is dismissed by Vajda as a “chance resemblance” (p. 50). What remains is a

long, complex, and not highly probable scenario based on a series of internal assumptions which I will not analyze in any details, since even Vajda himself is ultimately forced to admit that “Dene-Yeniseian differs from established families... in the relative inscrutability of its pronominal morphology... In fact, understanding Yeniseian pronoun morphology from a historical perspective may require perspectives gained from an already well-demonstrated external genetic connection, rather than pronominal forms helping to demonstrate the connection beforehand” (p. 53).

To which I would add that this is one of the more transparent areas where it really helps to view Yeniseian languages in a broader “Dene-Caucasian” context; in particular, some of the homologies that can be easily and without too much speculation be established between Yeniseian, Burushaski, and North Caucasian pronominal systems go directly against some of the hypotheses suggested by Vajda in the “pronominal” section of his paper (see [G. Starostin 2010a] for more details).

## Conclusion.

For space reasons, I omit specific comments on two other subsections of Vajda’s paper that deal with verbal morphology (“Classifiers” and “Action nominal derivation”). The parallels discussed on those pages are not dealt with by J. Nichols in her statistical tests, have no “paradigmatic” value on their own, and suffer from the same problem: inconclusiveness of the evidence, which usually has to go through the filter of internal reconstruction, based on subjective assumptions.

All said, I find it impossible to believe that the basic structure of the verbal form in Yeniseian and Na-Dene could have been inherited from a common ancestor. Two of the most important counterarguments are (a) the fate of Na-Dene “transitivity indicators”, brought up by A. Kibrik and (b) the puzzling difference in the relative position of the perfective/progressive markers — essentially the *only* piece of verbal evidence that can boast immediate credibility, but only on a “segmental” level, never on a morphosyntactic one. This “migration” of the compared morphemes within the form is never explained by Vajda, and I do not think it can be explained through any reasonable historical scenario.

If a “Dene-Yeniseian” ever existed, there is no need to insist that it must have been morphologically simple. Complex morphological patterns do not generally tend to be stable over periods of several millennia, and it is possible that either the Yeniseian system, or the Na-Dene system, or both, could have undergone the process of erosion of the original patterns and rebuilding of new ones in the meantime. (Even such closely related languages as Ket and Kott show significantly different patterns of affixation that turn the reconstruction of the original verbal morphology into a serious chore). This could, in particular, explain the typological similarities between the families.

However, attempts to use the evidence from verbal morphology as “first-order” evidence, i. e. the principal argument in favor of Dene-Yeniseian as a historic reality, cannot be called successful. Since evidence provided by morphological paradigms is frequently (but not universally) regarded as “definitive proof” of genetic relationship, I can understand Vajda’s thoroughness in presenting his argument. But let us not forget that, whatever be the case, we are at best dealing with a “macro-level” relationship here, with Dene-Yeniseian going much deeper than Indo-European (I will return to the dating issue later). Common verbal morphology of such tremendous complexity at such a deep level goes beyond “amazing”: it is, as far as my entire experience suggests, impossible. Those few isomorphisms that can be salvaged from

Vajda's verbal morphology evidence, such as the tense markers, should rather be regarded as relics of old auxiliary verbs or adverbs that have undergone independent grammaticalization in both families. The rest should be shelved until further progress is made in other areas.

### Lexical and phonological evidence for “Dene-Yeniseian”

The entire second half of Vajda's paper is dedicated to the issue of regular phonetic correspondences between Proto-Yeniseian and Proto-Na-Dene, which are established on the basis of around one hundred common etymologies — a number that J. Nichols considers sufficient for exceeding chance expectations when the compared lexical corpora on both sides do not exceed 1000 units.

A detailed analysis of each of these etymologies would take up an enormous amount of space, and would probably be superfluous for our current purposes. Vajda strongly emphasizes the fact that, in order to be convincing, lexical parallels between the compared families must fit inside the patterns of regular phonetic correspondences, rather than simply display different degrees of phonetic similarity, as well as share semantically identical or close meanings. The first of these “filters”, in particular, makes his work more methodologically sound than the parallels assembled in [Ruhlen 1998].

That said, although I find the lexical part of his argument far more efficient for the purposes of demonstrating a genetic link, there are some serious problems with it as well — problems that, at worst, could make Dene-Yeniseian lose credibility *in toto*, or, at best, shatter the idea of a “lowest common ancestor” for these language families (i. e. force us to turn our attention away from “Dene-Yeniseian” and look for much closer relatives to Yeniseian within Eurasia). These are as follows:

1. A suspiciously low count of reliable direct lexical matches in the basic lexicon. Extensive testing has clearly shown that no hypothesis of genetic relationship between two languages, historically attested or reconstructed, can pretend to historic reality without a statistically significant proportion of direct matches on the Swadesh list, and there are serious doubts as to whether Vajda's lexical evidence, especially when it is subjected to careful scrutiny, satisfies that demand.
2. Some of the presented correspondences strongly disagree with the usual typology of phonetic change, ranging from typologically rare to typologically unique, and it is not clear that the supporting evidence is robust enough to justify setting up such “odd” phonetic developments from “Dene-Yeniseian” to the daughter languages.

For our critical analysis, it will be sufficient to concentrate on these two issues, because the scarcity of lexicostatistical matches by itself suggests that at least a certain share of semantically and distributionally weaker etymologies may really be chance resemblances; and the unusual oddness of certain correspondences strongly indicates that some of them could have been set up only to justify one “impressive” look-alike. These statements will be further clarified below.

### Evaluating Dene-Yeniseian lexicostatistical matches.

The question of how many direct lexicostatistical matches (i. e. words with the exact same “Swadesh meaning” going back to a common ancestral word and linked through regular pho-

netic correspondences) one should discover between two languages or reconstructed proto-languages in order to confirm their genetic relationship beyond reasonable doubt, remains open. If we tentatively set the age of the hypothesized “Dene-Yeniseian” at around the same time period as Indo-European, a reasonable number would be something like 25–30% exact matches (cf. a comparable number between Hittite and Old Indian, whose relative dates of attestation are not far removed from the glottochronological and “intuitive” datings of the reconstructed Proto-Yeniseian and Proto-Athabaskan, although Proto-Na-Dene itself seems to be much older). This number is unattainable in Vajda’s lexical evidence even if all of it is accepted unequivocally: not a problem if the real age of “Dene-Yeniseian” is much older than, say, six thousand years, but one must also keep in mind that, the older the age of the genetic connection, the more difficult it becomes to distinguish between data that are statistically relevant and those that can hardly be distinguished from chance. Something like a figure of “5% matches” would be useless.

Below, one by one, I shall consider all of Vajda’s etymologies that satisfy the following conditions: (a) follow the proposed system of correspondences on both the Yeniseian and the Na-Dene sides; (b) are reconstructible with the semantics of a “Swadesh meaning” on the Proto-Yeniseian level; (c) are reconstructible with the semantics of a “Swadesh meaning” on the Proto-Na-Dene level, *or* on the Proto-Athabaskan level, *or* at least have this meaning in either Eyak or Tlingit (keeping in mind that the overall number of reliable Tlingit-Eyak-Athabaskan cognates is not very large, and that meticulous semantic reconstruction on the Proto-Na-Dene level is only possible in exceptional cases).

If the word is only reconstructible in a “Swadesh meaning” on one side of the equation (Yeniseian or Tlingit/Eyak/Athabaskan), the comparison does not constitute a proper lexicostatistical match, being weakened by semantic inexactness. However, if the difference in semantics is “trivial”, that is, follows a typologically common, well-attested semantic development (e. g. ‘see’ → ‘eye’, ‘black’ → ‘night’, etc.), I will include the comparison in a separate group.

Finally, although the evaluation focuses first and foremost on the validity of “Dene-Yeniseian”, I find it useful to occasionally list potential external cognates to Yeniseian or Na-Dene etyma in other branches of the larger “Dene-Caucasian” macrofamily (most importantly, Burushaski and Sino-Tibetan), particularly in those cases where they seem less “forced” than Vajda’s DY etymologies.

### 1. ‘liver’: PY \**seŋ* (Ket *sēŋ*) — PEA \**=sənt*’ (p. 66).

*Acceptable.* This example illustrates Vajda’s rule of nasal coda simplification in Yeniseian and also agrees with his main prosodic correlation: glottalic coda in ND = high level tone in Yeniseian. It should, however, be noted that the particular correspondence “PY \**-ŋ* : PEA \**-nt*” is unique, and Vajda avoids setting up a DY reconstruction — should it be \**sVŋt*’, with assimilative fronting of the nasal in EA, or something else?

This does not invalidate the comparison, but it is still a question waiting to be answered. In the meantime, both words are also comparable to Sino-Tibetan \**sin* ‘liver’<sup>3</sup>, where the quality of the nasal is closer to the EA equivalent — a hint that, if all three families are ultimately related, it is perhaps the ST and ND forms that share a “lowest common ancestor”, not the ND and Yeniseian ones. (Vajda mentions the comparison on p. 114, but does not draw attention to the nasal consonants).

<sup>3</sup> All Sino-Tibetan reconstructions are drawn from [Peiros & Starostin 1996].



2. ‘head’: PY  $*cʲɨG-$  (S. Starostin) ~  $*čʲɨG-$  (Vajda) — ND  $*kʲeŋ$  ~  $*kʲiŋ$  (PA  $*=tsi$ ) (pp. 66, 83).

*Dubious.* This is a complicated case that raises several problems at once. First, I must voice a general concern about the phonetic reconstruction on the Na-Dene side of things. Vajda devotedly sticks to J. Leer’s reconstruction of a set of *five* back consonantal series for Proto-ND: palatal  $*kʲ$ , velar  $*k$ , uvular  $*q$ , labialized velar  $*kʷ$ , labialized uvular  $*qʷ$  (see the table of correspondences on p. 170 in Leer’s paper). The principal “novelty” in this system is the palatal series, based on such correspondences as:

Na-Dene	PAE	PA	Eyak	Tlingit
$*kʲ$	$*ts$	$*ts$	$ts$	$k$ (or $sh$ )
$*gʲ$	$*dz$	$*dz$	$dz$	$g$

i. e. the phonemes in question shift to plain velar articulation in Tlingit, but become front affricates in PAE through palatalization.

The reconstructed system does not seem too realistic from a typological point of view: languages that show a strict phonological opposition between  $kʲ$ ,  $k$ , and  $q$  are extremely scarce. It may be more productive, after all, to regard this special “palatal” series as having more in common with the affricate / sibilant series than the “back” series, i. e. reconstruct  $*tsʲ$ ,  $*tsʲʷ$ ,  $*dzʲ$ ,  $*sʲ$  with subsequent velarization in Tlingit than  $*kʲ$ ,  $kʲʷ$ ,  $*gʲ$ ,  $*xʲ$  with subsequent affricativization in PAE.

Although this is essentially just a question of phonetic interpretation and it need not have any direct bearing on the proposed system of correspondences, in this particular situation, re-interpretation of ND  $*kʲeŋ$  ~  $*kʲiŋ$  as  $*tsʲeŋ$  ~  $*tsʲiŋ$  would actually help the comparison, bringing the Yeniseian and ND forms phonetically closer to each other without the non-economic necessity of postulating independent affricativization on both sides of the Bering Strait.

There are, however, additional, more serious problems with the comparison. Reconstruction of the final nasal in ND is far from certain, since it is extracted only from certain morphophonological variants (Eyak  $tsĩ-de$  ‘neck’, etc.); but evidence for a former nasal in the Yeniseian form is utterly lacking. Vajda’s attempt, following H. Werner, to postulate a common etymological background for  $*cʲɨG-$  ( $*čʲɨG-$ ) ‘head’ and  $*cəŋe$  ‘hair’, deriving the latter from  $*cəŋ-$  + ‘fur’ (a morpheme that is actually reconstructible as  $*χäʔ$  [Starostin 1995: 300] and does not mean ‘fur’ as much as it means ‘overcoat’, which, admittedly, is mostly made of fur in a Siberian background), runs into too many problems at once to be qualified as anything other than a folk etymology.

If the ND word is truly to be reconstructed as  $*tsʲeŋ$  ‘head’, I would rather be inclined to compare it with such a ST parallel as  $*tsʰa:ŋ$  ‘high’ → Jingpo  $n=saŋ$  ‘great, noble, exalted’, Lushai  $sa:ŋ$  ‘high, lofty’, Garo  $tsa:ŋ$  ‘high’, Rawang  $tsʰa:ŋ$  ‘up’ [Starostin & Peiros 1996: IV, 19–20], and the same word may have independently shifted to the meaning ‘head’ in Konyak:  $saŋ$  ~  $šaŋ$ .

Still, for objectivity’s sake, we should tentatively keep the comparison for now, as there is a remote possibility that both codas could eventually stem from another cluster, i. e. the DY reconstruction could look something like  $*tsʲeŋG$  with cluster simplification in both branches.

3. ‘earth’: PY  $*baŋ$  — PA  $*ñân$  (p. 71).

*Implausible.* This etymology is mentioned only “in passing”, with the following note: “plausibly cognate if from earlier  $*m-yân$ ”. The nature of the hyphen is unclear (is  $m-$  a pre-

fix?), and in any case, the initial correspondence is not corroborated by additional examples (in Vajda's version, Yeniseian *\*b-* is supposed to correspond to ND *\*G-*).

4. **'stone'**: PY *\*čiʔ-s* — ND *\*kʲay* (PA *\*tse:*) (p. 72).

*Acceptable*. This is probably the strongest etymology in the whole bunch, since it does not violate any consonantal correspondences, is fairly well reconstructible on deep levels in both families, and belongs to a generally stable lexical layer. The ND reconstruction should, perhaps, be amended to *\*tsʲay* (see notes on 'head' above); *\*-s* in PY is most likely a fossilized singular marker (cf. the plural form *\*čəʔ-ŋ*).

It should be noted that a very close semantic match can also be found in Burushaski: Yasin *tsʲiʃ*, Hunza, Nagar *tsʲhiʃ* 'mountain' (with the same fossilized marker as in Yeniseian?).

5. **'foot'**: PY *\*giʔs* — PAE *\*qe'* (p. 72).

*Rejected* first and foremost because this is not a proper lexicostatistical match: the proper PY word for 'foot' must have been *\*bul*, which has this meaning in Ket, Yugh, Kott, and Arin, whereas *\*giʔs* is primarily a Ket/Yugh isogloss with the meaning 'leg'. This does not exclude an etymological connection, but there is an additional phonetic problem: this time, PY *-s* is clearly part of the root rather than a fossilized suffix — cf. the paradigm in Ket: sg. *kiʔs*, pl. *kis-en* — yet there are no traces of a sibilant in PAE, which does not correlate with any recurrent pattern in Vajda's system.

6. **'stand'**: PY *\*ʔipin* (Ket *i:n*, Yugh *ifin*) — PA *\*he:n* (p. 76).

*Implausible*, because the correspondence "PY *\*p* : PA *\*h*" is clearly irregular: on p. 89, it is stated that "comparison with Yeniseian strongly suggests that *\*b* and *\*p* merged with labialized velars and uvulars in Pre-Proto-Na-Dene", and *\*h* is clearly not a labialized velar or uvular. On p. 74, it seems to be suggested that *\*p* in the Yeniseian verb is a fossilized "thematic prefix", but such segmentation is quite arbitrary (one could just as well claim, instead, that *-n* is a fossilized suffix, and reconstruct the original root as *\*ʔip-*).

7. **'belly'**: PY *\*pəj* (Ket *hi:j*) — PA *\*wəʔt'* (p. 76).

*Dubious*, because the consonantal codas do not constitute a regular match and are quite distant phonetically. Coronal consonants in Yeniseian do not "lenite" that easy, so, unless it can be demonstrated somehow that *\*-t'* in PA is a fossilized suffixal extension, the entire comparison rests upon the word-initial consonants. In that case, one might just as well drag Sino-Tibetan *\*puk* 'belly' into the comparison.

8. **'many'**: PY *\*ʔo:n* (Ket *ʔn*) — PA *\*=la:ñ* (p. 76).

*Acceptable*, although the note that "*l* is fused classifier" in PA needs clarification: it is not evident on what basis the segmentation is performed (all of the Athabaskan reflexes feature an initial lateral consonant in this root). S. Starostin's comparison of the Yeniseian form with Burushaski *=jə:n* 'all', although it does not constitute a lexicostatistical match (but features a trivial semantic shift), seems more plausible on phonetic grounds.

9. **'blood'**: Ket *del* — PAE *\*dəʔ* (p. 80).

*Rejected* as a statistical match, since Ket *del* is by no means the basic Yeniseian word for 'blood' (which is reconstructed as *\*sur* and attested in all major languages); the analysis of the compound expression *del-es* as 'blood-sky', the "malevolent God of the West" is not based on any explicit philological argumentation and seems arbitrary. Theoretically, an etymological connection could be possible, but the parallel may not be used as "first-order" evidence.

10. **‘water’**: Ket *tu* ~ *to* ‘water, moisture’ (in cpds.) — PA *\*tu*: (p. 81).

*Rejected* as a statistical match, since the main Yeniseian word for water is *\*xur* (Ket *u:l*); Vajda actually lists three different Yeniseian morphemes as potential cognates, with no clear preference. Etymologically, the comparison is possible, but it should be noted that PA *\*tu*: finds a near-perfect correlate in Sino-Tibetan *\*tuj(H)* ‘water’ (as a direct lexicostatistical match, since distribution in daughter languages shows that *\*tuj(H)* is the best candidate for the basic meaning ‘water’ in PST).

11. **‘lie’**: PY *\*te-(n)* — PAE *\*te*: (p. 81).

*Acceptable*; a straightforward match without any phonetic, semantic, or distributional problems.

12. **‘dry’**: PY *\*qV[G]i-* — PND *\*kʷo()**x* (p. 84).

13. **‘ashes’**: Ket *qolan* — PND *\*kʷi()**tʰ* (p. 84).

These two examples are tackled together because they share a common problem: namely, I hold the gravest doubts about the correctness of the word-initial correspondence. If the Na-Dene reconstructions are reinterpreted as containing palatal affricates (i. e. *\*tsʷo()**x*, *\*tsʷi()**tʰ*), the discrepancy becomes all the more obvious: but even if they *were* actual “palatals”, a shift to uvular rather than simple velar articulation in Proto-Yeniseian, even “before back vowels”, as Vajda’s rule stipulates, is highly unlikely.

Furthermore, the relative antiquity of uvular articulation at least in the Yeniseian form for ‘dry’ is confirmed by an impressive match in Burushaski: *qaq-* ‘dry’, also ‘hungry’ (note that in Yeniseian, the word for ‘hunger’ is derived from the same root as well: it is reconstructed by S. Starostin as *\*qaq-ante*).

Out of three other examples supposed to confirm this correspondence, only PY *\*tiχ* ‘snow’ vs. PND *\*tʰikʷ* (*\*tʰitsʷ*?) ‘ice’ is sufficiently impressive. Perhaps this etymology can somehow be salvaged by suggesting a dissimilative or assimilative process in the coda either in PY or in PND; in any case, the phonetic context here is entirely different from the one in examples 12 and 13 (word-final after a front vowel).

Considering also that Ket *qolan* ‘ashes’ is not easily reconstructible for PY, both of these examples are, at best, highly dubious, and, at worst, implausible.

14. **‘sun’**: PY *\*xiga* — PND *\*xʷa*: (PA *\*ša*:) (p. 87).

*Implausible*. There are simply too many phonetic problems with this comparison. First, within Na-Dene the word is attested only in Athabaskan, so there is no knowing if *\*ša*: really goes back to an earlier *\*xʷa*: or not (diagnostic Eyak and Tlingit parallels that should have retained velar articulation are not attested). Second, the special rule “DY *\*xʷi-* → PY *\*xi-*” is set up on the sole basis of this example (in other cases, DY *\*xʷ-* → PY *\*s-*). Third, the word-medial back consonant, well preserved in Kott *e:ga* and Ket. pl. *iya-n*, is left unaccounted for in PND (Vajda transcribes the Kott form as *e-ga*, possibly implying morphological segmentation into *\*xi-ga*, but this is impossible — *-ga* is not a productive suffix, and, furthermore, the word *\*xiga* is clearly a morphological extension of PY *\*xiG* ‘day’, so the segmentation should really be *\*xiG-a*). The comparison is clearly forced.

15. **‘name’**: PY *\*ʔig* (Ket *i*, Kott *ix*) — PND *\*u:=sxe(w)* (PA *\*u:=že*:) (p. 88).

*Implausible*. Even if the word-initial correspondence were correct (which is impossible to prove, since it seems to be unique), Vajda once again leaves open the issue of the root-final back consonant that has no parallels in ND. At the same time, the Yeniseian word has a fan-

tastic parallel in Burushaski, with even the grammatical paradigms matching: cf. Kott *ix*, pl. *ik-ŋ* vs. Hunza, Nagar *=ik*, pl. *=itś-iŋ* (palatalized from earlier *\*=ik-iŋ*). In the light of this connection, the ND comparison looks even weaker than it already is.

16. ‘dog’: PY *\*čip* — PA *\*təñ ~ \*t̥i:ñ-kʷe*: (p. 92).

*Implausible.* Even if the word-initial consonant correspondence is correct (which is dubious, since the discussed set concerns PND *\*t̥* rather than *\*t̥*), the word-final consonants clearly do not match. Vajda notes that “cognate status of this set hinges on the possibility that final PY *\*b* is homologous with the unstable guttural in Athabaskan”, but even if the unstable guttural was originally part of the root (which is not obvious), there is no explicit evidence for it ever having been a *labialized* guttural. Overall, there are too many phonetic problems with the “consonantal skeleton” of this word for the etymology to be credible.

Additionally, Vajda implies that the unclear “extra” syllable *al- ~ il-*, found in this word in certain southern Yeniseian languages (Kott *al-šip*, Arin *il-čap*, etc.), also reflects the presence of a former lateral affricate, i. e. that word-initial sequences *ilt- ~ alt- ~ ilč- ~ als-* have all developed from original *\*t̥l-*. The idea is elegant but, unfortunately, quite untenable, since the “pre-syllable” *al- ~ il-* may just as well be found before back consonants in these languages — the most famous example being the word for ‘star’: Ket *qɔʔ ~ qɔɤ*, Yugh *xɔxx*, but Kott *al-aga*, Arin *il-koj* ← PY *\*qɔ:qa*. This and similar cases clearly show that *al- / il-* is a specifically Kott/Arin morphological element, a prefix of unclear origin, and any attempts to trace it back to an original lateral affricate are futile.

17. ‘fish’: PY *\*cik* ‘fish / snake’ — PA *\*tuqʷe*: ‘fish / salmon’ (p. 93).

*Dubious.* First of all, Vajda’s equation of Ket *tuy* ‘tugun, a species of fish’ with Kott *te:g* ‘fish’ is not as convincing as S. Starostin’s earlier comparison of Kott *te:g* with Ket *tiy* ‘snake’ because the vocalic correspondence “Ket *u* : Kott *e*” does not exist (“Ket *i* : Kott *e*” is also not entirely regular, but there are at least a couple other examples, and in any case, the phonetic distance between *i* and *e* is much shorter). The need to demolish the earlier etymology is triggered by Vajda’s desire to compare Ket *tiy* instead with Tlingit *\*t̥ʷikʷx* ‘worm’ and get two Dene-Yeniseian cognate pairs instead of one.

Of course, this can still be done by comparing PA *\*tuqʷe*: ‘fish’ with Ket *tuy* ‘tugun’, and Tlingit *\*t̥ʷikʷx* ‘worm’ with Proto-Yeniseian *\*cik* ‘fish, snake, worm’. From a phonetic point of view, this is probably the best solution; however, it destroys the lexicostatistical matching.

NB: concerning Vajda’s hypothesis that “both Yeniseian and Na-Dene words for ‘snake’ and ‘fish’” may be “ultimately related to a root *\*tVl* referring generically to animals that crawl, slither, or move from side to side” (ibid.), I think that the situation requires a more thorough investigation in order to formulate a precise scenario, but, to add to the general picture, I cannot help but mention the Burushaski word for ‘snake’ — Yasin *tul*, Hunza/Nagar *tol*, which also fits perfectly in this paradigm (in Yeniseian, the most phonetically direct parallel would be Ket *tuln* ‘lizard’).

Altogether, there are between 7 and 9 matches on the Swadesh list that are not definitively rejected for various reasons (i. e. in the “acceptable” and “dubious” categories). To these we may, perhaps, add two more matches for the 1st and 2nd p. pronouns (‘I’, ‘thou’), but *only* on the conditions that: [a] the ND 1st p. pronoun is to be reconstructed with a sibilant (phonetically close to PA *\*ši*, which would bring it closer to PY *\*ʔaʒ*), [b] PY *\*ʔaw* ‘thou’ is actually cognate with Tlingit *waʔé*, although this is viewed by Vajda himself as a chance resemblance. As I already mentioned above, the pronominal links between Yeniseian, Burushaski and North Caucasian seem much more robust than between this family and Na-Dene.

At best, this gives us 11 matches, 4 of them viewed as acceptable ('liver', 'stone', 'many', 'lie') and 7 — as dubious to various degrees ('belly', 'head', 'dry', 'ashes', 'fish', 'I', 'thou'). Furthermore, it must be stressed that the criteria of "acceptance" were relatively lenient: for instance, I agree that detailed vowel correspondences, at this level of research, are an unaffordable "luxury", and that certain assumptions on internal segmentation of the morphemes may be made without direct proof (e. g. 'belly'). It is also not yet obviously evident that all the 11 comparanda on the ND side are optimal candidates for the "Swadesh meaning" on the Proto-ND level.

A figure of 11% matches on the Swadesh list between two reconstructed proto-lists is, to put it mildly, not very encouraging. Put together with what I regard as a general failure to demonstrate the common origin of the basic verbal morphology of these languages, it should lay to rest any idea of a "Dene-Yeniseian" family comparable in time depth to Indo-European, because not even any two *modern* Indo-European languages, let alone ancient ones or the reconstructed Proto-Germanic, Proto-Celtic, etc., fall as low as 11% common matches.

I am not able to say if this number, in this particular context, exceeds or does not go beyond what should be expected by random chance. Normally, random phonetic similarities on Swadesh lists that have been transcriptionally unified and automatically analyzed within the framework of the "Global Lexicostatistical Project" database cluster around a figure of 5–8%, so that 11% may be statistically relevant, after all. Granted, these particular matches at least claim to be rooted in regular phonetic correspondences, some evidence for the regularity of which is presented in Vajda's paper.

One thing, however, that presents an additional serious bother is that, of the 4 fully acceptable matches, only 'stone' belongs to the most stable 50-item half of the Swadesh list, and the total ratio is "6 items from the first half ('stone', 'head', 'dry', 'ashes', 'I', 'thou') : 5 items from the second half ('liver', 'many', 'lie', 'belly', 'fish')" — not a very credible proportion, since non-stable elements are usually expected to drop out at higher rates than stable ones (see [G. Starostin 2010b] for details of this gradation). For comparison, the number of phonetically convincing and semantically exact matches on the 50-item "stable" half of the Swadesh word-list alone between Proto-Yeniseian and Burushaski amounts to 9 units ('I', 'thou', 'dry', 'eat', 'egg', 'eye', 'hand', 'leaf', 'name'; thorough calculations for the second half of the list have not been performed as of yet).

At best, the presented figures may be interpreted as reflecting an impressive chronological gap between DY and its immediate daughters (Proto-Na-Dene and Proto-Yeniseian, not modern languages) — a gap that could easily exceed 6–8 millennia, which could throw DY as far back as the tenth or twelfth millennium B.C. To a hardened skepticist, this would be the end of the hypothesis; to those who are more benevolently inclined towards research on "macrofamilies", this would simply confirm that "Dene-Yeniseian", in all likelihood, is a historical non-reality, and that one needs to focus on finding *closer* relatives to both families (such as Sino-Tibetan for Na-Dene and Burushaski for Yeniseian) in order to confirm the fact of their ultimately being related on a higher level.

### Some notes on the typology of proposed phonetic changes.

One last concern needs to be voiced in conjunction with the regular phonetic correspondences that Vajda claims to have been able to establish between ND and Yeniseian. It is regrettable that the paper, despite its overall length, allocates no space to a concise, summarizing table,



despite the fact that almost all of the well-represented and reliably reconstructible consonantal segments of Proto-Na-Dene and Proto-Yeniseian are ultimately aligned with each other, one way or another.

Some of the elegant solutions presented along the way — such as the suggested explanation of Yeniseian tonogenesis from the influence of formerly glottalic or simple consonantal codas — are indeed worthy of attention, and have justifiedly impressed specialists. However, they have also taken attention *away* from certain areas where the correspondences are far more speculative, and sometimes violate typological standards without sufficient justification.

One major problem, in particular, concerns the Yeniseian correspondences for the ND “palatal” series (\*gʷ, \*kʷ, \*kʷʰ, \*xʷ, which, as I already stated earlier, could perhaps better be regarded as an affricate/sibilant series \*dzʷ, \*tsʷ, \*tsʷʰ, \*sʷ). These are presented as follows (pp. 83–84):

Na-Dene	Proto-Yeniseian
*gʷ	*ʒ
*kʷ, *kʷʰ	*č (before original front vowels) *q (before original back vowels)
*xʷ	*s

This series contains a significant violation of the principle of *systematicity*: standard typology of phonetic change dictates that the most common type of change is “feature-change”, not “phoneme-change”, and the expected change for an obstruent consonantal series sharing a single feature usually consists of a mutation of that feature (e. g. “voiced stops” → “voiceless stops”, “aspirated stops” → “fricatives”, “velarized stops / fricatives” → “palatal stops / fricatives”, etc.). Three out of four proposed correspondences follow a single, typologically plausible pattern, namely, a process of fronting and affricativization of the palatal series, in which two of the developments are almost predictable if we know a third one (if \*gʷ → \*ʒ, it is highly likely that \*kʷ → \*č and \*xʷ → \*š; since Proto-Yeniseian lacks a separate \*š, an additional merger of \*š with \*s is not out of the question). As a matter of fact, they also indirectly support the re-interpretation of Na-Dene \*gʷ, \*kʷ, \*kʷʰ, \*xʷ as \*dzʷ, \*tsʷ, \*tsʷʰ, \*sʷ (such a solution would be more economic).

However, the fourth correspondence — a completely unforeseen and hard to explain split of \*kʷ depending on vowel quality — is utterly confusing. If, *before* losing its “back” qualities, original \*kʷ actually underwent back vowel influence and switched to the uvular series (apparently, “skipping” simple velar articulation), why did not its voiced stop and fricative counterparts, \*gʷ and \*xʷ, undergo the same procedure, and develop into \*G and \*χ accordingly in the same contexts?

I find no explanation for this mystery whatsoever, other than the desire to accommodate a few comparanda that look impressive on paper (see above for notes on ‘dry’, ‘ashes’, and ‘snow’), but are hardly robust and numerous enough to warrant such a jarring typological inconsistency. Of course, exceptions from “typologically common” situations do happen, and sometimes the abundance of comparative data easily forces us to admit them. But the data presented to support the \*kʷ → \*q shift could hardly be called “abundant”, and I would think twice before admitting this correspondence as positive evidence.

Even worse is the situation with Yeniseian counterparts to the Na-Dene labialized velar series:

Na-Dene	Proto-Yeniseian
* <i>g<sup>w</sup></i>	* <i>ʒ</i> (before front vowels) * <i>g</i> (before back vowels)
* <i>k<sup>w</sup></i>	* <i>t</i> (before original voiceless fricative auslaut) * <i>d</i> (elsewhere)
* <i>x<sup>w</sup></i>	* <i>χ</i> (before *-i-) * <i>s</i> (elsewhere)

This looks seriously messy. Again, we see conditioned split of reflexation, which is good; what is *not* good is that the conditions are different for each of the three members of the same series, and, furthermore, the outcomes of the splitting are even *more* different — the voiced phoneme either retains its velar or quality or undergoes affricativization, while the voiceless phoneme, for no clear reason, becomes dental. How did this happen?

The most probable answer is that it happened in order to accommodate two strikingly delicious look-alikes: Tlingit *\*tš'á:t'* ‘willow’ (= PA *\*tš'ʔat'* ‘shrub, plant’, a correspondence that points to original *\*k<sup>w</sup>*) = Ket *d̄ɬl* ‘willow’ (← PY *\*dāli*), and PA *\*tš'ɪ:xʷ* ‘canoe’ = Ket *tɪ*, Pum-pokol *tig* id. The second comparison in particular produces a “grand” impression on people (cf. article titles such as “*Words for ‘Canoe’ point to long-lost family ties*”, reprinted by several Canadian media sources in 2010). Since J. Leer traces the word-initial phonemes in both words to *\*k<sup>w</sup>*, it becomes necessary to explain why they “correspond” to different segments in Yeniseian, and the current explanation is assimilative influence of a voiceless fricative.

This is already uncomfortable, but the ultimate irony of the situation is in that both Yeniseian forms actually have rather transparent internal etymologies. PY *\*dāli* ‘willow’, as Vajda mentions himself, may be explained as a borrowing from Turkic (cf. Proto-Turkic *\*dal* ‘willow’); Vajda himself (p.c.) considers the borrowing hypothesis inconclusive, but there definitely *are* examples of Turkic borrowings into Proto-Yeniseian, and the forms bear a far more striking resemblance to each other than to the ND counterpart — at the very least, this is not an item that could serve as “first-order evidence” for the correspondence in question (a side issue is whether the semantics of Tlingit ‘willow’ and PA ‘shrub’ are close enough to merit being joined in a single etymology, but this is ultimately irrelevant to the DY connection).

As for the (in)famous ‘canoe’, there are multiple signs in Yeniseian suggesting that the meaning ‘boat’ for this word is secondary. In Pumpokol, the form *tig* is glossed as both ‘boat’ and ‘vessel’. In Kott and Arin we also see the compound formation *ul-tej* (Kott), *kul-tej* (Arin) ‘vessel’, reflecting an original *\*xur-tVχV* ‘water + vessel’. It is hard to imagine the word ‘water’ added to the original word for ‘boat’ and modifying it to ‘vessel’ (!). Much more probable is the scenario, according to which the original meaning of the word was simply ‘vessel’, later broadened to include ‘boat (= delved vessel)’, after which the word ‘water’ was added in some dialects to the original word for ‘vessel’ in order to distinguish between the two meanings. Finally, there is little reason to doubt that the same root is found in Ket/Yugh *tij* ‘to scoop water’, which, again, fits in much better with ‘vessel’ than ‘boat’.

Thus, even if the Yeniseian and ND roots do belong together from an etymological perspective, it can hardly be supposed that their modern semantics reflects a common DY idea of a ‘boat’. At best, the word could have meant ‘vessel’ (‘birchbark vessel?’) in the proto-language, with the semantics of ‘boat, canoe’ a later independent development in both daughter branches. But the non-systemic character of the observed “correspondence” makes me suspect that the word is really just a look-alike (and not even a particularly striking look-alike at that).

## Conclusion

The examples presented in the previous section are meant to illustrate a major, if perhaps somewhat controversial, point: Vajda's "regular correspondences" are not, or, at least, not *yet* properly "regular" in the classic comparative-historical sense of the word. Most of them seem to be based around one "psychologically impressive" example, which is then backed up by 1–2 supporting comparanda that are usually weaker from either the semantic, or the phonetic, or the distributional points of view, but still manage to produce an aura of "regularity". The same could be extended to his treatment of the verbal morphology, where a tiny handful of intriguing isomorphisms are surrounded by an impenetrable sea of assumptions and highly controversial internal reconstructions that create an illusion of systemic reconstruction where there really is none.

Yet none of this should be blamed exclusively on Vajda, whose sincere dedication to the issue of clarifying the historical relations of Yeniseian languages cannot be doubted. To a large extent, he is simply attempting to strictly follow the "rules of the game" that have been set out for proving "long range relationship" by mainstream specialists in comparative linguistics who hold everything and everyone to the "Indo-European standard". According to these criteria, no theory of genetic relationship will ever gain acceptance unless it is supported by paradigmatic morphological evidence (hence the verve applied to the reconstruction of the "Dene-Yeniseian verbal template") and a corpus of lexical parallels where all the segments are mechanistically correlated with each other in full accordance with the ideal Neogrammarian model (cf. the idea of *total accountability*, raised in Eric Hamp's paper).

In its ardent attempt to satisfy everyone and everything, "A Siberian Link with Na-Dene Languages" may have "officially" succeeded in the short run, but, I am afraid, will eventually prove to be a disappointment in many respects for those who have prematurely embraced all of its conclusions. The most troublesome aspect of it is that the prehistorical picture that it paints is not realistic. It presents "Dene-Yeniseian" as a language whose descendants on both sides of the Pacific have, for several millennia, carefully preserved its complex morphological features, with Proto-Yeniseian at least losing or reshuffling most of them only recently, on the verge of disintegrating into further descendants; as a language whose descendants have undergone typologically rare, sometimes even unique, phonetic shifts; as a language where technical, cultural terms like 'canoes', 'belts', and 'sled-runners' were carefully nurtured and preserved, whereas basic terms like personal pronouns were consistently either dropped or at least "mutilated" beyond easy recognition. None of this readily agrees with what we have learned so far about language change all over Eurasia, and even beyond. And much of the blame lies on the Procrustean "requirements" traditionally imposed on the "long-ranger", who is often held to a more rigorous standard than the "short-ranger", and made to concentrate his attention on finding isomorphisms among the less stable layers of language than among the more stable ones (e. g. paradigmatic verbal morphology instead of basic lexicon).

That said, I am a firm believer in the art of separating wheat from chaff. There is nothing in Vajda's paper on its own that would make me join Prof. Hamp in a chorus of "Yeniseian-Dene of Edward Vajda is correct"; and, because of all the flaws described above, I definitely cannot view it as a giant leap in quality over all the previous work performed on the issue, e. g. by H. Werner and M. Ruhlen. But it *is*, by all means, a step forward. The few acceptable comparisons between grammatical markers may eventually point the way towards research on grammaticalization paths in Yeniseian and ND. The prosodic hypothesis offers a scheme of tonogenesis in Yeniseian that is worth exploring, even though it may not necessarily turn out

to be true<sup>4</sup>. The small handful of etymologies that puts together Yeniseian labial consonants and ND labiovelars looks promising. If this is not yet “proof”, by any means, of a “Dene-Yeniseian” relationship (much as I dislike the use of the word “proof” in demonstrations of such relationships), it does offer some clues as to how we could eventually obtain one — clues that, I hope very much, will be used in conjunction with those offered by other potential members of the same macrofamily.

It is also pleasant to notice that Edward Vajda is not rigidly conservative in his research, and is always willing to abandon or modify certain hypotheses when they turn out to contradict facts or more realistic solutions. For instance, the first draft of his paper that was available on-line for some time after the Symposium, almost completely ignored Proto-Yeniseian reconstructions (the comparison was essentially between ND and Ket/Yugh) and contained a much higher percentage of unacceptable etymologies and typological inconsistencies. The final draft has corrected many of these problems; although the verbal morphology section, I am afraid to say, has remained as unconvincing as it used to be, the phonetic / lexical section has become far more robust and difficult to criticize. I can only hope that this new round of constructive criticism will benefit the theory some more.

Finally, the “negative” aspects of Vajda’s work are, in and out of themselves, “positive” in that consistent poking at its soft spots ends up pointing the ways in which we should proceed from here and those that should probably be abandoned. “Typologically suspicious” correspondences turn out to have been established for etymologies that fall apart for other reasons as well, whereas typologically healthier correspondences work on lexical comparisons that hold up much better. Verbal morphology is a dead end unless we stop talking in terms of synthetic paradigms and begin talking in terms of grammaticalization (being very careful in the process and trying not to use such talk as “first-order evidence”). And the very fact that “something” remains of the hypothesis even after the harshest critique — “something” that does not seem right to abandon, but is not enough on its own to constitute a complete historic scenario — shows that “Dene-Yeniseian” should, by all means, be put back from where it was taken: the much larger context of “Dene-Caucasian”, which might produce quite a few answers where “Dene-Yeniseian” cannot.

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<sup>4</sup> It is interesting to note that a somewhat similar, yet substantially different scheme of correspondences was spotted by S. Starostin between Yeniseian tones and the feature of “tense / lax articulation”, reconstructed for Proto-North Caucasian, where NC lexical items with “tense” phonation of the first root obstruent seem to regularly correspond to words with a glottal stop in Yeniseian, and vice versa [Starostin 2005].

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### *The Dene-Yeniseian connection: a reply to G. Starostin*

This reply elaborates on the many useful observations in George Starostin’s critique. A traditional “rebuttal” is unwarranted for three reasons. First, his Yeniseian

data are, in my estimation, completely accurate. This is no trifle, since these are languages few linguists have studied in depth and fewer have worked with in