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Statistical Dating of Uralic Proto-Languages through Comparative Linguistics with added Sound Change Law analyses

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Abstract

The planned and currently ongoing research by the author at the Stockholm University related to modern and ancient Finnish language history as well as Uralic and comparative linguistics - focusing on lexicon, sound changes, dating, language contact situations, archaeology and genetics - is briefly summarized and presented.

Keywords: Uralic, Finnic, proto-language, dating, sound changes

1. Introduction

While Uralic linguistics has reached a relatively advanced state, there still remain major unanswered questions. In this short report the planned research (Diarienumber: SU 617-2267-10) relating to such questions, with special focus on Finnish, within the framework of the author's long research project,[1] will be outlined. The main questions and line of research will be presented, as well as further queries of interest and preliminary results.[2]

2. On the Importance of Minority Language Studies

The importance of languages, from the perspective of the law, politics, sociology, anthropology and linguistics, can be seen as usually consisting of six areas:[3]

1. A language is a medium of communication, mirrors one's identity and is an integral part of culture.

2. A language is a means of expression and allows a person to participate in community activities.

3. Languages are valuable as collective human accomplishments and on-going manifestations of human creativity and originality.

4. Languages can be the source of power, social mobility and opportunities.

[1] The research project started in August of 2011 and will be ongoing for at least four years.
[2] Merlijn De Smit and Jarmo Lainio are gratefully acknowledged for their valuable input on the manuscript during preparation.
[3] This summary is partly based on memorized discussions on the topic held in an old, now defunct language forum.

5. Linguistic loss is sometimes seen as symbol of a more general crisis of biodiversity, especially indigenous languages that are seen as containing within them a wealth of ecological information that will be lost as the languages are lost (see for example: Sampat, P. 2001).

6. Language has served both as a reason for brutal conflict, and as a touchstone of tolerance, and serves in all spheres of social life, to bring people together or to divide them.

Even as revival movements for moribund languages are relatively commonplace and legislation in various countries to protect minority languages exists, the fact is that in the coming decennia most of the world's languages are expected to disappear. This is due to increased globalization and participation in economic activities and urbanization, resulting in each city dwelling generation learning their parents' minority language less and less completely, eventually switching completely to the major language of prestige, culture, economy and society. It has been estimated that one complete language ceases to exist in spoken form every two weeks. Assuming a continued trend, of the around 6 000 languages (6700 by some estimates, although this depends on where the line between language and dialect is drawn) existing today possibly only 500 or so large and reasonably large are still expected to be spoken by native speakers in approximately a thousand years (McWhorter, J.H., 2001).[4]

Since the study of language is essentially the study of man, his history and his heritage, the study of moribund languages is an increasingly urgent matter since most languages do not yet have their lexicon and grammar documented. The study of genetic language relationships, the cultures of the speakers and their histories will thus also increase in relevance. The study of the genetic relationships between minor Uralic languages is thus relevant for the understanding of the process of language death, and vice versa. Comparative linguistics is a powerful tool for understanding the status, origin and perhaps future of Finnish and the other major Uralic languages, as well as minor, emergent Uralic languages such as Meänkieli, as compared to the moribund languages.

3. Language History

The Uralic languages – spoken in total by some 25 million over a very large geographical area - are all believed by a majority of linguists to originate from a Proto-Uralic language from somewhere around the Ural mountain area[5] and spread around by waves of migration while

[4] Naturally large languages, such as, for example, English and Mandarin Chinese, are expected to be among those still spoken in a thousand years, but also minor languages such as Swedish and Finnish seemingly fulfill the criteria to remain spoken.

[5] In fact, there are six major propositions about the location of the *Uralic Urheimat* (Campbell, L., 2004:405), although these areas are all geographically quite close to each other.

slowly developing into new languages. The Uralic languages and their genetic relationships is a thoroughly studied field. However, these languages have not been quite as extensively studied as the Indo-European languages. According to the linear language development model, which is the basis of a language family tree, changes to a language should be traceable to a given pre-language and then be further traceable in the later languages. At the same time the picture is complicated by, for example, lexical and morphological borrowings and internal language inventions, which may lead to false language relationship conclusions.

Through years of thorough research the Uralic language family has been established, but the tree model is not without problems (and consequently with many different, proposed datings of the various proto-languages; see for example the summary in: Kallio, P. 2006). For example, according to traditional view, an early protolanguage separated into the Mari language (and the Mordvinic languages) in ancient times, after which first proto-Saami branched off and then eventually proto-Finnish came into being. A problem with this model is, for example that certain words are altogether different in Northern Saami (Saamic) than in the later Finnish (Finnic) and the earlier Meadow Mari (Volgaic). Saami, being more closely related to Finnish than Mari, should exhibit the "inherited" words which are also found in Mari. Thus, from a chronologic viewpoint, the lexicon for some basic words doesn't quite fit.[6] For example:

Proto-Uralic *ωete 'water'

Finnic: Finnish *vesi*/*vete*- 'water'

Volgaic: Meadow Mari *vyd* 'water', but:

Saamic: Northern Saami *čáhci* 'water'

Likewise, the external locatives in Saami are different than those in both Finnish and Mari.[7] Furthermore, the time of language branching is often only very tentative and requires much more research. Such factors pose some problems with the Uralic language family tree model as a whole (as summarized in, for example: Salminen, T. 2002) and further research is needed to clarify the picture, perhaps instead requiring a language family bush, rake or comb model. Genetic data between populations speaking related languages do not give a clear development

[6] An explanation for the Saamic oddity exemplified here could, of course, be that individual branches of languages may, and do, exchange word items by innovation or borrowing, even if certain word classes are more resistant towards borrowing than others. See Preliminary Results for some suggestions to this particular problem.
[7] cmp. Mari inessive *–ste*/*sto*, illative *–ske*/*sko*/*ys*, lative *–es* & dative *–yn* and Finnish inessive *–ssa*, illative *–Vn*, elative *–sta* (also external locatives) to North Saami illative *–tnje*/*dnuide*/*djiide* and locative *–s*/*dnos* (no other locative-like cases).

model either – or rather, the full genetic picture has remained rather unclear until modern times. Frankly, there is no reason to believe that languages always follow migration patterns (Dixon, R.M.W. 1997) – which also involves intercultural exchange and cultural transference - but undoubtedly there are quite a few cases where exactly this correlation between genetically related populations and languages exist (forthcoming unpublished works).

The Uralic languages traditionally consist of the Finno-Ugric branch and the Samoyed branch. Recently, the Yukaghiric languages have also been linked to the Uralic ones (with the Yukaghiric languages being Para-Uralic languages), but the picture remains to be completed. Further tentative genetic relationships to other language groups, such as Chukcho-Kamchatkan, have also been suggested.

The Baltic Finns is a historical group of peoples – although not always genetically – that speak Baltic-Finnic languages, including Finnish. The genetic relationships between the languages and their internal sound changes are relatively well known. For example, it has been shown that Meänkieli contains elements of both grammar and lexicon from Karelian and the Finnish dialect of Tavastia; however, there is little data about the dating of said development. Though it is possible to say some things on the basis of generally known history of settlement, etc. (Winsa, B. 1991). Outside of the Baltic-Finnic languages there have been relatively few lexical comparisons.

In attempting to clarify the picture, this author has recently done lexical comparisons between Finnish and the Estonian, Northern Saami and Moksha languages, and is currently comparing to Komi-Zyrian and Udmurt. In this, glottochronology, a statistical analysis method for lexical comparison, was employed while complementing the analysis by tracing word development through sound changes. This gave rather interesting language development dates, fully comparable to archaeological results and migratory pathways and as indicated by genetics. Genetics suggests that Saami speakers, as well as Uralic language speakers east of the Ural mountains, are genetically quite different from Finnish speakers (see for example: Guglielmino, C.R. *et al.*, 1990, Sajantila, A. *et al.* 1995 & Pimenoff, V.N. *et al.* 2008), perhaps implying unusual language origins, language contacts, and migration patterns for the various Uralic languages.

4. A Few Additional Questions of Note to Ponder

The apparently multiple origin of Meänkieli is in contrast to the common monogenesis theory of language birth, which is that each language only has one language of origin. How do the emergency of Kven/Kainu, Meänkieli and Võro-Seto fit in with the branching theory of language development? How have lexical renewal and substitution worked to create these languages? A lexicostatistical comparison, for example, of Meänkieli to the Western Finnish dialects and to Karelian, respectively, should provide a more clarifying and revealing picture. Should the somewhat controversial Finno-Volgaic branch of the Uralic language family tree be exchanged with separate Finno-Mordvinic and Mari branches instead? Why do certain Uralic languages display more archaic features than others? What is the true relationship between Finnish and the proposed genetically related Yukaghir languages? What can loanwords into various proto-languages tell us about the migration patterns and language contacts of ancient speakers? How far can the cross-disciplinary aspects of genetics, archaeology and linguistics take the understanding of genetic language relationships and language contact situations?

5. Language Contacts and the Local Situations

The group of Uralic languages represents a relatively small global speaker community; most of the group's languages will probably cease to be used in favor of, for example, Russian, and only leave speaker communities of the relatively large ones, such as Hungarian, Finnish and Estonian, and perhaps also Mordvinic, Mari and Udmurt intact. This all depends on sociolinguistic trends, the speaker's attitude regarding the language, size of speaker communities, cultural strength and literary traditions as well as prominence of language teaching. Thus, the study of Finnish and its relationship to other minor and major Uralic language is of interest and importance while time still allows it.

In Sweden Meänkieli, Finnish and some Saami languages have the status of official minority languages. In Norway Kven/Kainu and some Saami languages are minority languages. In Finland some Saami languages are official minority languages; there are also old, very small Karelian and Estonian minorities. In the neighboring Baltic countries and European Russia Estonian, Võro, Ingrian, Karelian, Lude, Olonetsian, Livonian, Veps, Votic and some Saami languages are spoken. The remaining Uralic languages are spoken throughout greater Russia.

This all leans relevance to local studies on Uralic languages.

6. Planned project with Comments

The specific aims of the planned research – which have concretized since the initial planned project and which will be ongoing over several years - are to examine, study and conclude a more detailed language tree model for the Uralic languages, including the exact relationship of Finnish to the other Baltic-Finnic languages, as well as to more distant relatives. Regarding ”newer” Baltic-Finnic languages, such as Meänkieli, Kven/Kainu (likely Para-Finnic entities) and Võro-Seto, it is of interest to determine the date and origin of these languages in greater detail.

The more recent research of Baltic-Finnic languages makes for an excellent starting point for comparative linguistics. The results from lexical comparisons between these languages could be complemented with morphological comparison results.

Furthermore, glottochronology complemented by careful sound change analysis would seem to be a possibly useful tool for dating the development of these languages in great detail, and to get results more acceptable in the mainstream linguistic community. A logical approach will be taken where languages from greater and greater time depths are compared to Finnish (namely in the order of: Finno-Baltic, Finno-Saamic, Finno-Volgaic, Finno-Permic, Finno-Ugric and Uralic).

To clarify, Finnish will be compared to Para-Finnic languages (such as Meänkieli and Kven), closely related languages (such as Karelian, Estonian, Northern Saami, Livonian, Veps, Voro and Votic), intermediate languages (such as Mari and Moksha) and more distant languages (such as Komi, Udmurt, Hungarian and the Samoyed languages: Nenets, Enets, Selkup, Kamass & Nganasan). Eventually, truly ancient tentative, and proposed relationships, such as between Finnish and Yukaghir and possibly even Chukcho-Kamchatkan languages, will be studied and evaluated.

Furthermore, given the wealth of research on Finno-Baltic languages, these languages, including, for example, Karelian and Veps, should also be directly compared to Finnish in the same manner to obtain a more accurate development and relationship model. The languages should be similar enough to facilitate careful comparison with few sources of error.

In summary, all this should give a more detailed Uralic language development model at least for certain groups of languages, and more specifically for Finnish. The end results will also be used to either verify the correctness of the language tree model, or exchange it with a

language bush, linear comb or rake model instead. Perhaps this can also answer the question of why the Uralic protolanguage and Finnish appear to be so similar.[8]

7. Preliminary Results and Conclusions

7.1 Dating results obtained at this point

In the present study Finnish has been traced back to Later Proto-Finnic, Earlier Proto-Finnic, Proto-Finno-Volgaic (Piispanen, P.S. 2012) and tentatively to Proto-Finno-Permic (Piispanen, P.S. 2013). By comparing basic words on the Swadesh-200 word list,[9] to Estonian, Northern Saami, Moksha, Komi-Zyrian and Udmurt, respectively, and carefully determining any and all cognates between the languages by employing known *sound change laws*, the cognacy rates have been determined. Dating of each proto-language has then been carried out by employing glottochronologic principles on these results. The first, tentative results are summarized in short below, in Table 1, (thus still subject to change) and will be presented in great detail in articles in the future:

Compared Languages	Cognacy rate (Swadesh-200)	Point of divergence	Proto-language[10]
Komi-Zyrian - Udmurt	78.0 %	822 BP	PP ~ 1188 AD
Finnish-Estonian	72.2 %	1080 BP	LPF ~ 930 AD
Khanty-Mansi	45 %	2647 BP	POUg ~ 637 BC
Finnish-Northern Saami	36.6 - 39.0 %	3119-3333 BP	EPF ~ 1109 - 1323 BC[11]
Finnish-Moksha	35.8 %	3407 BP	PFM (or PFV?) ~ 1397 BC
Finnish –	31.2 %	3859 BP	PFP

[8] Although it has indeed been mentioned many times that Finnish is a peripheral, archaic branch of the Uralic languages.

[9] This longer list actually comprises 207 items in total, but since two of these are generally represented by locative cases in Uralic languages, a total of 205 items have been compared.

[10] The traditional estimates for the various proto-languages, for example as found in Abondolo, D. 1998, Anttila, R. 1989:301, Kallio, P. 2006 & Janhunen, J. 2009, are as follows: 9th-13th century AD (PP), 1-1000 AD (LPF), before 500 AD (POUg), 1250 BC-1 AD (EPF), ~1500 BC (PFM/PFV), 1000-3000 BC (PFP) and ~2000 BC (PUg).

[11] This would surprisingly suggest the existence of a Finnic dialect continuum starting with Early Proto-Finnic to change over two thousand years through a tentative Middle Proto-Finnic into Late Proto-Finnic, from which sprung a multitude of languages closely related to modern Finnish. I conjecture that the possible existence of Middle Proto-Finnic could be perhaps be evaluated through studies of the more archaic and different Finnic languages, such as Livonian and Veps – such a study will hopefully be carried out in the future.

Komi-Zyrian			~ 1849 BC
Finnish – Udmurt	29.8 %	4018 BP	PFP ~ 2008 BC
Hungarian -Khanty	28 %	4220 BP	PUg ~ 2210 BC

Table 1. Dating of Uralic proto-languages

These results are in quite good agreement with most previous dating estimates, and also seem reasonable from archaeological and genetic viewpoints. Since these results are encouraging, later, Finnish will be compared to the other, very closely related Finnic languages, as well as to Finno-Ugric and Samoyed languages.

7.2 Regarding Saamic loanword strata

I suggest that the words in Saami, which are lacking both in earlier and later related languages, are either later borrowings from the Samoyed languages[12] or intra-language inventions. The borrowings, apparently, could stem from three sources:

a) Germanic or Baltic languages
b) Unidentified, extinct Northern languages
c) Other older branches of Uralic

There are known Pre- and Paleo-Germanic loanwords in Saami which entered Proto-Finno-Saamic in about 1700 BC and onwards, as well as Proto-Indo-European, Proto-Indo-Iranian and Proto-Balto-Slavic[13] (around 1000 BC) loanwords (Kallio, P. 2009), some of which are lacking in Finnish. This suggests Finno-Saamic linguistic uniformity, but areal divergence at that time.

There are also around 550 words in the Saamic languages which completely lack etymology[14] (Sammallahti, P., 1998:125) – here it must be mentioned that a layer of words without known etymology exists in Finnish[15] and Germanic[16] as well – and may originate either from invented words or borrowings from perhaps several layers of non-genetically related, now extinct languages (Aikio, A. 2006). Words of this category must have entered fairly early on, but after the breakup of Proto-Finno-Saamic, in order to be present in all or most of the Saamic languages, which would place them in the period of 1000 B.C. – 700 A.D. More

[12] Alternatively such lexicon is a *Sprachbund* feature of archaic Peripheral (Lateral) Uralic languages, such as Baltic Finnic, Lapp and Samoyedic, as suggested by Helimski (Helimski, E. 2003:162). Another feature is the octosyllabic versification as found in Kalevala verse and Northern Samoyedic shamanistic verse.

[13] For example: Proto-Indo-European *ḱu̯ōn > Proto-Balto-Slavic *š(u/v)ōn 'dog' -> Early Proto-Saamic *śa/ōvonji > Proto-Saamic *śuovunjë > Northern Saami *šūvon* 'well-trained dog'.

[14] For example: Northern Saami *čáhppat* 'black' and *heavdni* 'spider'.

[15] For example: *niemi* 'peninsula' and *saari* 'island'

[16] Example: *Volk* 'people'.

precisely, Proto-Saamic is believed to have disintegrated into a very diverse dialect by the middle of the first millennium A.D. while less than perhaps a millennium earlier Proto-Saamic had been a dialect of Proto-Finno-Saamic (Kallio, P. 2009:38).

Further, to discuss the problem with an etymology for the Saamic word for water as mentioned above, there are some findings, as indicated by lexical comparisons found in this project (The Uralic Etymology Database has often been used, which collects data from many scientific sources), that Saamic speakers may, in fact, have been influenced by the much older Uralic branches of Ob-Ugric or Samoyed languages, likely through language contact. As just mentioned, an alternative interpretation is that certain lexicon dates back to Uralic times and is still present only in the peripheral languages. In the case of lexical exchange, the Saamic languages may have exchanged certain original Uralic items quite late in their development, although in some cases not even hints of the exchange can be found, for example, in related compound words in the languages. In fact, Northern Saami *čáhci* 'water' seems to originate from Proto-Finno-Ugric *śäčä 'water'. Since this word is apparently lacking from the, to Saamic, closer branches, it seems possible that it's a borrowed word from either early Khanty or Selkup (or another Samoyed language), both much older Uralic branches, and both of which still retain the word in a few forms (Khanty *seč* 'overflowing' & Selkup *čāsị* 'sea').

Other than that, possible contacts with early Samoyed speakers, specifically, seem to be implied by at least three other very tentative loanwords (linked as cognates at the UED) as seen in Table 2, (the letters within brackets note diatopic, i.e. areal, differences):

Language	***word***	**Meaning**
Northern Saami	*gođđalak*	snowfall
Nganasan[17]	*kotara ʔa*	Es ist schneegestöber
Ter Saami	*mokse-*	über ein Wasser fahren
Nenets	*madā-*	über das Wasser gehen
Northern Saami	*vuoi'gŋâ*	spirit, breath

[17]Also found in the other Samoyed languages as: Nenets (Yurak): *χād* (O), *kāt* (Nj.) 'Schneefall', Enets (Yen): *karu* (Ch.), *kadu* (B) 'Schneegestöber', Nganasan (Tawgi): *kóduŋ* 'Schneegestöber', Selkup: *koču*, *ḳodš* (N), and Kamassian: *kadáŋ* 'frischgefallener Schnee (im Herbst)'.

Nganasan[18]	*baiću ʔ*	Soul

Table 2. Possible Samoyed loanwords or features of archaic lexicon in Saami

The apparent semantic shifts for some of these potential loanwords, most of which involve weather or water, indicate a somewhat high time depth for borrowing. The historical phonology of the sound changes involved seems quite acceptable for borrowings, although the non-existence of these items in the other Uralic branches and languages would need to be verified if any borrowing hypothesis is to be entertained; these words may alternatively and merely be considered forms of inherited rare (in the sense that they are lacking elsewhere in the Uralic languages), archaic Proto-Uralic vocabulary that are still independently found in these peripheral Uralic languages.

However, genetic data can correlate the genes of both the Samoyed and Saamic populations only to a very limited degree (Tambets, K. et al. 2004), and more recent research has made it clear the Saamic and Samoyed populations are, in fact, not genetically related to each other; while historical lexical borrowing is still a possibility, this would be in stark contrast to several language contact phenomena which can be directly correlated to genetic admixture of populations as shown by genetic research (forthcoming manuscripts). Most of such loanwords into Saamic would also have been acquired relatively early on, after the breakup of Proto-Finno-Saamic, but before the complete breakup of Proto-Saamic, even if some areal, linguistic diffusion is to be considered from that point on, and, which is why it would very likely have happened during the first millennium B.C (Sammallahti, P. 1998:122). The distribution of such words, and the present location of the speakers of respective language, suggests, at least to this author, a geographic area of language contact - where the donor language would have been a proto-form of Nenets - at the Kola Peninsula, or on the other side of the White Sea on the Murman coast (perhaps in the Kemi or Poventsa counties), or even some ways south-east since Saami historically used to have a larger geographic spread (Kurs, O., 1994).

Still, while the status as Samoyed borrowings could explain the existence of several such ancient items found (seemingly) uniquely in the Saamic languages, such a hypothesis must at

[18] Also found in the other Samoyed languages as: Nenets (Yurak): *jīntʔ* (O) 'Atem, Luft', (Klapr.) *wind* 'Seele, Hauch', Enets (Yen): *beddu ʔ* (Ch. B), *bedu ʔ* (Ch.) 'Seele', *bedduo* 'Dampf', Nganasan (Tawgi): *baiću̯ ʔa* 'Dampf, Dunst', Selkup: *kwe̯j* (TaU), *kwej* (KeM TyM) 'Seele, Atem', and Kamassian: *mājе*, *mājə* 'Seele, Dunst, Atem'. However, the word may also be a cognate of Finnish *vainaja* 'deceased person', which makes a possible Samoyed origin of this particular word very dubious.

present be considered inadequately studied and non-proven. Bearing this hypothesis in mind, it is, in fact, easier to understand why some earlier linguists considered the Saamic languages to originate from some Samoyed language speakers who had shifted their language to something Finnic instead.[19]

Abbreviations

POUg = Proto-Ob-Ugric, PFP = Proto-Finno-Permic, PP = Proto-Permic, PFM = Proto-Finno-Mordvinic, PFV = Proto-Finno-Volgaic, EPF = Early Proto-Finnic, LPF = Late Proto-Finnic

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[19] Nowadays, however, quite conclusively, the Saamic languages are considered early branches of the Early Finnic Proto-language, placing it after the various Volgaic languages (for example: Korhonen, M. 1981:23).

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The Uralic Etymology Database (UED): http://starling.rinet.ru

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