

On the Divergence of a Proto-Indo-European Velar Syllabic Nasal in Indo-European Languages

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Introduction. The proposed article critically examines the explanation of the origin of nasal vowels in Slavic languages by incorporating an open syllable law. It is shown that the convergence of many closed syllables, ending with nasal consonants, into two kinds of open syllables with nasal vowels contradicts a number of facts of evolution in the opposite direction, e. g., evolution of nasal vowels towards combinations "a vowel – a nasal consonant" in Balkan Slavic languages (Bulg. пент "five", вѣнзел "knot"), as well as to the observed interpretation of Slavic nasal vowels in acts of borrowing by languages without nasal vowels, e. g. OCS дѣбрава "oak forest" > Rom. dumbrăvă.

Methodology and sources. The proposed model results from generalization of the data of instrumental phonetical research, which show that the articulation of palatal consonants is unstable leading to their divergent evolution, i. e. transformation to sounds with more definite zones of articulation, e. g. palatal lateral approximant *[ʎ] split into palatalized lateral liquid [ʎ'] and fricative [ʃ].

In the proposed model Proto-Indo-European (PIE) syllable velar nasal consonant *ŋ in the process of its phonetic evolution in Indo-European (IE) languages split into a variety of nasal vowels with different articulations, which further on irregularly transformed into vowels without nasalization or into combinations of vowels with nasal consonants (e. g. OInd. paṅktis, OIsl. fimt, Lith. penki, OCS пѣть, OHG finf, fimf, funf "пять", etc., from the common PIE prototype with syllable nasal *ŋ).

Results and discussion. Examples of PIE prototypes of lexemes meaning "water bird", "tooth, sharp edge", "five", as well as lexemes, related to Russ. нутро, ядро, неясить, уж, угорь, ногой, нога, ноготь are presented. All prototypes contain a nasal syllabic, which is split producing four types of reflexes in IE languages. Newly discovered etymological links, such as the connection between Russ. Lexemes meaning "leg" and "corner", are discussed.

Conclusion. The proposed model permits to uniformly explain the facts of synchronous existence of related Rus. недро "insides" and ядро "nucleos", related нутро и утроба "belly", related OCS ꙗты, Lith. ántis and AGr. Att. νῆττα "duck", related Rus. неясить "a kind of owl; pelican" and ненасытный "insatiable", etc., using the notion of divergent evolution of the PIE syllable velar nasal *ŋ.

Keywords: velar syllabic nasal, nasal vowels, divergence, diphthong-like combinations, articulation.

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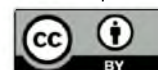
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О дивергенции праиндоевропейского велярного слогового носового согласного в индоевропейских языках

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Введение. В предлагаемой статье критически рассматривается объяснение происхождения носовых гласных в славянских языках с помощью включения закона открытого слога. Показано, что происходящая при этом конвергенция множества закрытых слогов, заканчивающихся на носовые согласные, в два вида открытых слогов с носовыми гласными противоречит ряду фактов эволюции в обратном направлении, например, эволюции носовых гласных в сочетаниях "гласный – носовой согласный" в балкано-славянских языках (болг. пент "пять", въззел "узел"), а также наблюдаемой передаче носовых гласных при заимствовании славянских слов с носовыми гласными в языки, в которых носовые гласные отсутствовали, например, ст.-слав. джбрава "дубовый лес" > рум. dumbrăvă.

Методология и источники. Предлагается модель, построенная на основе обобщения результатов инструментальных исследований, показавших, что палатальные звуки характеризуются неустойчивостью артикуляции. Это приводит к их дивергентному развитию, преобразованию в звуки с различными устойчивыми зонами артикуляции, например, известно расщепление палатального бокового аппроксиманта *[ʎ] на палатализованный боковой плавный [ʎ'] и фрикативный [ʎ]. В предлагаемой модели праиндоевропейский (ПИЕ) слоговый велярный носовой согласный *ŋ в процессе фонетической эволюции в индоевропейских (ИЕ) языках расщеплялся на варианты носовых гласных с различной артикуляцией, которые при дальнейшем развитии нерегулярно переходили в гласные без назализации или в сочетания гласных с носовыми согласными (напр. др.-инд. paŋktís, др.-исл. fimt, лит. penki, ст.-слав. пѣть, д.-в.-н. finf, fimf, funf "пять" и др. из общего ПИЕ прототипа с носовым слоговым *ŋ).

Результаты и обсуждение. Приведены примеры ПИЕ прототипов лексем со значениями "водная птица", "зуб, острая кромка", "пять", а также лексем, родственных рус. нутро, ядро, неясить, уж, угорь, нагой, нога, ноготь. Все прототипы содержат носовой слоговый *ŋ, который расщеплялся с образованием четырёх видов рефлексов в ИЕ языках. Обсуждаются вновь обнаруженные этимологические связи, например, связи между рус. лексемами со значениями "нога" и "угол".

Заключение. С помощью механизма дивергентного развития слогового велярного носового *ŋ единообразно объясняются факты одновременного существования родственных рус. недро и ядро, родственных нутро и утроба, родственных ст.-слав. жты, лит. ántis и др.-греч. атт. νῆττα "утка", родственных рус. неясить "вид совы; пеликан" и ненасытный, и т. д.

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Introduction. It is widely accepted that Proto-Slavic diphthong-like combinations of vowels and nasal consonants, i. e. combinations VN succeeded by a consonant (not nasal), where V is a vowel, N is a nasal consonant, should have turned into monophthongs due to the Open Syllables Law. This general formula implies multiple convergent transformations:

– reduction of the nasal consonant and its articulation merge with the preceding vowel had taken place in combinations **on*, **om*, **an*, **am* (and in some cases, **un* > **ьn*, **um* > **ьm*) in the position before consonants (but nasals), and thus the nasal vowel **o* emerged;

– reduction of the nasal consonant and its articulation merge with the preceding vowel had taken place in combinations **en*, **em*, **in* > **ьn*, **im* > **ьm* in the position before consonants (but nasals), and thus the nasal vowel **e* emerged.

The phenomenon of convergence of **on*, **an* to **o* is being explained by shortening of the vowels in the syllables [1, p. 204].

The existing model of the genesis of nasal vowels in Slavic languages seemingly does not match the trend toward divergent evolution to more certain sounds: in the accepted model more definite PIE combinations of vowels and nasal consonants *temporarily* evolved into a small number of nasal vowels with unclear articulation.

Methodology and sources. The goal of the present article is to demonstrate that the thesis about divergent evolution of uncertain ancient sounds is applicable to the evolution of nasals and combinations including nasals. IE lexemes, further used as examples, have been cross-checked using different web dictionaries [2–9].

Instrumental phonetical research shows that the articulation of palatal consonants is unstable and can be described as palatal, palato-alveolar, postalveolar etc. [10, p. 22]. For example, the instability of the place of articulation makes the palatal consonant [ʎ] to change its articulation area to a more stable location: either to alveoli thus producing [j], or backwards thus producing fricative [j].

The suggested solution results from generalization of this phenomenon.

In previous articles we have shown that the uncertainty of articulation (a wide range of possible articulations) led eventually to their almost irregular divergent evolution, producing more definite variants of pronunciation, e. g.:

– palatal lateral approximant **[ʎ]* split into [j], [ʎ] и [j] (ORuss. *бояринъ*, Serb. *бољарин*, OCS *болѣаринъ*) [11];

– voiced velarized lateral approximant **[ɮ]* split into [0], [w], [ɮ] и [l] (Goth. *sumō*, Tokh. *swāñc-*, Pol. *śłońce*, OCS *слъньце*) [12];

– syllable liquid [r/l] between consonants or before a consonant split into [r/l], [Vr/Vl], [rV/IV], [VrV/VIV] (OInd. *ṛśya-*, Lat. *alcēs*, ORuss. *лось*, OHG *elaho*) [13].

It is worth mentioning that the articulation of nasal vowels is said to be rather uncertain as well [1, p. 241], [14, p. 42–44], [15, p. 49], [16, p. 237, 238].

The above-mentioned instability of articulation of nasal vowels led to their transformation into pure vowels with more determined articulation in the majority of Slavic languages. And sometimes they surprisingly turned into combinations of vowels with nasal consonants which are believed to be the source IE combinations: Bulg. *пент* [pent] "five", *вънзел* [vənzɛl] "knot" [17, p. 72].

Slavic nasal vowels had been changed the same way when being borrowed into languages having no nasal vowels at the time of borrowing. They were interpreted as simplified combinations "pure vowel – nasal consonant", e. g.:

– OCS *дѣбрава* "oak forest" > Rom. *dumbrăvă* (caută: dumbravă [6]);

– OCS *сѣдѣ* "court" > Est. *sund*;

– OCS *сѣди* "judge" > Fin. *suntio* "church attendant";

– OCS *кѣдѣль* "tow" > *kuontalo*;

– OCS *ꙗѡа* "fishing rod" > эст. *und*.

The same way Slavic names with nasal vowels had been interpreted: Constantine Porphyrogenitus referred to Slavic names *Свѣтославъ* and **Мртимиръ* as *Σφενδοσθλάβος* and *Μουντιμῆρος*, respectively [18, p. 56, 154].

The direction of nasal vowel transformations clearly followed the principle of raising of the certainty of articulation while borrowing. It is natural to expect that the evolution of the primordial nasal vowels should have followed the same principle, i.e. that they tended to transform into combinations of vowels with nasal consonants. This gives the reason to suggest prototypes with nasal vowels for such combinations, when they are followed by consonants, not vice versa.

According to A. Meillet, these combinations resulted from PIE syllable nasals directly:

ŋ > Lith. *in, un*, Lat. *na*, Goth. *un*;

ŋ > Lith. *im, um*, Lat. *ma*, Goth. *um* [19, c. 94].

This suggestion does not explain oscillations [n] ~ [m] in closely related languages, in that number, e.g. OInd. *nagnás* ~ Avest. *maŋna-* "naked".

Syllable velar nasal *[ŋ] looks more preferable as a PIE prototype. On the one hand, this consonant demands less articulatory effort than other nasal consonants, hence the sound looks more suitable for ancient speakers. On the other hand, uncertainty of its articulation lets it be split into more clear forms during phonetic evolution, which could explain the later oscillations [n] ~ [m], in particular.

Co-existence of the articulatory delay of nasality in Polish nasal vowels and the absence of such delay in the articulation of French nasal vowels also witness the splitting of some nasal sound – their common source.

Combinations of vowels with nasal consonants succeeded by consonants are similar to combinations of vowels with liquid consonants in the same position (*VrT, rVT*, etc.) [13]. This analogy and the priority of nasal vowels in relation to combinations of vowels with nasal consonants prompt that the various *VN* combinations could have resulted also almost irregularly from vowels with delayed nasality, which, in their turn, had resulted from splitting of PIE syllable nasal *[ŋ].

Generalizing this suggestion, we come to the conclusion that the reflexes of PIE syllable *[ŋ] in IE languages, at first approximation, are as follows:

a) "pure" nasal vowels, as in French;

b) evolving vowels with delayed nasality *[V^ŋ] > [VN];

c) evolving vowels with preceding nasality *[^(V)ŋV] > [(V)NV];

d) vowels without nasality (most probable, this reflex is the result of evolution of the above-mentioned reflexes, therefore we will not consider this reflex in detail).

Results and discussion. Examples of PIE prototypes with syllable nasal *[ŋ] and their reflexes:

- **ŋt-* "water bird" (replacing the prototypes suggested in [4]: **anət-*, **nāt-*):

a) **ŋt-* > *o^ŋt-* > OCS *ꙗм-ѡи*, Sloven. *ŋt-va* "duck", further on to the reflex *d*): ORuss. *ꙗм-ѡи*, Russ. *ꙗм-уньи*, etc.;

b) **a^ŋt-* > Lith. *ánt-is* "duck"; further on b) > *d*): OInd. *āt-ís* "water bird";

c) **^(V)ŋVt-* > AGr. Att. *vŋt-τα*, AGr. *vŋσ-σα*, AGr. Beot. *vāσ-σα*; Lat. *anas*, gen. *anat-is*, *anat-īnus* "duck's", OHG *amut* "duck";

- **ŋb^h-* "tooth, sharp edge":

a) *zǝb-/*zǝb- > OCS зѣбъ, Pol. *zǝb*, gen. *zǝb-u*; OCS зѣбъ-ж "I'm cold", Pol. *zięb-nąć*, further on to the reflex *d*): ORuss. зубъ, Russ. зяб-ну, Bulg. зѣб-на и т. п.;

b) *yV^hb^h- > AGr. γόμφος "колышек"; Lith. *žamb-as* "sharp edge", with alteration of vowels – Lith. *žėmb-ti* "to slit", further on to the reflex *d*): Lett. *zòb-s*;

c) *z^Vb- > Russ. зноб-ить, probably, зно-й "heat", зне-(я)ть "to smolder" (without formant -b- from PIE -bhos, which makes the second stem in the PIE lexeme for "tooth", according to O. Trubachyov, see his commentary to the article "зуб" in [5]);

- *p^hk^h- "five" ([m] – voiceless bilabial approximant):

a) *pǝt-/*pǝt- > OCS нѣтъ, Sloven. *pět* "five", Polab. *pqt*, further on to ORuss. нятъ, etc.;

b): *p^Vk^h- > AGr. πέντε, AGr. Aeol. πέμπε; OInd. *pāñca*; Lith. *penki*, further on b) > d): Lett. *pieci*; dial. OHG *fimf*, *finf*, *funf* "five" (Meaning: five [4]) – these are the results of different attempts of approximation of the original combination *V^h, namely, *en*, *em*, *im*, *in* and *un*, further on to the reflex *d*): O. Sax. *fif*, etc.

c) *p^(V)ŋ^Vk^h- – this reflex had not been realized in lexemes with the meaning "five" (but *p^(V)ŋ^V- can be numerously seen in lexemes related to OCS нѣтати "pull" (e. g. in OCS *опона*, Gr. *πένομαι*) which is related to OCS нѣтъ "five").

Lexemes including the reflex *c*) usually have vague etymologies, hence we think that consideration of some more of its examples might be useful.

Lexemes related to Russ. ядро.

For example, in order to explain the simultaneous existence of etymologically related forms *недро* and *ядро* in Russian, a combination of several assumptions was needed (articles "недро" and "ядро" in [5]):

- one could assume the reconstruction *ǝdra, which would evolve to Proto-Slavic *jadra;

- Proto-Slavic *nǝdro could come from *внǝdrǝxъ*, pl. locat., *внǝdra*, pl. acc. as a result of reinterpretation of *вн+ǝdr-* as *вн+ǝdr-*.

As in the previously considered examples, we suggest for this case the typical evolution of the original *[ǝ]:

a) *[ǝ] > *[jǝ]/*[jǝ] – OCS ѣдро, ѣдра, Pol. *jadro*, *jędrny* (with iotization of nasal vowels in initial position), further on to ORuss. ядро "fruit";

b) *[ǝ] > [VN] – Skr. *añḍám*, OInd. *añḍás* "egg", *añḍám* "testicle";

c) *[ǝ] > [NV] – AGr. *νηδύς* "stomach, womb"; Serb. *њѣдра*, OCS *нѣдра*.

Lexemes related to Russ. нутро.

Relations between Russ. *нутроба* и *нутро* are explained similarly: **вн-ǝtrъ* "into", was interpreted as **вн-ǝtrъ* (article "нутро" in [5]). We, contrary to Vasmer again (and to Baudouin de Courtenay), suggest divergent evolution of PIE preposition / prefix *(w/j)ǝ- > *(w/j)ǝ-/*(w/j)ǝ- [20]:

a) *ǝt^Vr- > *(w)ǝtr- > OCS *нѣтроба*, Pol. *wątroba* "liver" (with labialization of the nasal vowel in initial position), further on to ORuss. *нѣтроба*, etc.; and (with iotization of nasal vowels in initial position and alteration of nasals, *ǝtr-/*ǝtr-: Russ. Ch. Slav. *нѣтро* "liver" (article "ятра" in [5]), Pol. *jątrznica*, Polab. *jǝtra* "liver", *jǝtreněica* "liver sausage", further on to Russ. *ятра* "insides", *ятро* "liver", etc.;

b) *ǝt^Vr- > *(w)ǝNt^Vr- > OInd. *antrám* "insides", *ántaras*, Avest. *antara-*, Lat. *interior* "inner", *venter* "belly" (with irregular labialization), AGr. *ἐντερον* "insides, womb";

c) *ǝt^Vr- > *(V)Nt^Vr- > ORuss. *нутръ* "insides", OIr. *inathar* "insides".

Lexemes related to Russ. *неясыть*.

The origin of related forms *неясыть* "a kind of owl" (from ORuss. *неясыть* "a fabulous insatiable bird; a kind of owl; pelican" [21] and *ненасытный* "insatiable" results from splitting of the same PIE preposition / prefix $*(w/j)h_2-$ > {*na-*; *ja-*} – the reflexes *c*) and *d*).

Lexemes related to Russ. *уж*, *ужорь*, *нагой*:

a) $*[h_2]$ > $*[(w)ɔ]/*[(w)ɛ]$: $*(w)ɔh_2-/*(w)ɛh_2-$ > Pol. *wąz*, gen. *węża* "water snake"; OCS *жгорницъ*, Pol. *węgorz* "eel"; further on to ORuss. *ужь*, Serb. *ужор*, etc.;

b) $*[h_2]$ > $*[VN]$: $*VNh_2-$ > Lat. *anguis* "snake", OPruss. *angis* "snake", Lith. *angis* "snake, water snake"; AGr. *ἔγγελος* "eel", OPruss. *angurgis*, Lith. *ungurys*, OHG *unc* "water snake", OIr. *escung* "eel" (literally, *esc-ung* "water snake", article "уж" in [5]);

c) $*[h_2]$ > $*[(V)NV]$: $*NVh_2-$ > OInd. *nāgas*, OE *snaca*, OInd. *nagnās*, Avest. *mauna-*, OIr. *nocht*, OE *nacod* "naked", OCS *нагъ* "naked" (article "нагой" in [5]);

d) $*[h_2]$ > $*[V]$: $*Vh_2-$ > Lett. *ūodzs*, *uōdze* "viper" (article "уж" in [5]); some dictionaries add Avest. *azīš*, Skr. *āhis*, AGr. *ἄρις*, *ἔχιδς*, East Arm. *ōj* [8].

Lexemes related to Russ. *нога*, *ноготь*:

b) $*[h_2]$ > $[VN]$: $*V^ngh_2-$ > OInd. *ānghri-* "foot", Lat. *unguis*, OIr. *ingen* "fingernail";

c) $*[h_2]$ > $[(V)NV]$: $*[(V)h_2]$ > Tokh. A *maku*, B *mekwa* (Russian meaning: ноготь [4]), OInd. *nakhā-*, N. Pers. *nāxun* "finger/toe nail, claw", OHG *nagal* "fingernail", OCS *нога* "leg", *ноготь* "fingernail", OPruss. *nage* "foot", Lith. *nāgas* "fingernail", *nagà* "hoof", Lett. *nagas* "limbs", AGr. *ὄνυξ* "fingernail", Arm. *մագիլ* [magil];

d) $*[h_2]$ > $[V]$: $*h_2gh-$ > OCymr. *eguin*.

Initial [m] in Tokharian and Armenian lexemes results from splitting $*[h_2]$ > {*n*, *m*}, as well as [m] in the above mentioned Avest. *mauna-* "naked" and OHG dial. *fimf* "five".

One could ask if there are examples with the reflex *a*), i. e. with an initial nasal vowel. We could not find any with meanings "leg" or "fingernail". But the prototype $*V^ngh_2-$ extended by *-l-* could be the source for OCS *жгълъ* "angle".

Sorbian lexemes with the meaning "angle" to some extent confirm this suggestion having initial [nu] instead of expected [u], [wu] or [hu], the latter being registered, e. g., in Lower Sorbian *hušica* "duck": Upper Sorbian *muhl*, Lower Sorbian *nugel* (compare Upper Sorbian *noha*, Lower Sorbian *noga*, both meaning "leg"). This can shed light on the semantics of the notion of angle: an angle is a figure similar to the shape of a bent leg or a figure formed by legs making a step.

Conclusion. *VNT* combinations proved to be the most certain, observable in the majority of IE languages. Being widely spread, *VNT* combinations lead to the belief that they coincide with PIE prototypes.

A comparative analysis of IE lexemes, containing combinations $*VNT$ of nasal consonants with vowels before a consonant, has revealed some regularities in the evolution of such combinations common for IE languages.

Evolution of combinations of vowels and nasal consonants succeeded by consonants, most probably, had begun from $*h_2T$, where the syllable velar nasal consonant gradually evolved to nasal vowels and further on to combinations of vowels and nasal consonants: *VN* или $(V)NV$.

Divergence of the PIE velar nasal was a live process in IE languages even after their separation from each other, consider related OInd. *ānghri-* "foot" and *nakhā-* "fingernail", *āhis* and *nāgas* "snake" and related Lith. lexemes.

The offered choice of PIE syllable velar nasal consonant *[ŋ] instead of traditional *[ŋ̥] and *[m̥] permits:

- to suggest new PIE prototypes: **ŋt-* "duck", **ŋb^h-* "sharp edge / tooth", **ŋk^ʷ-* "five", **ŋd^(br)-*/**ŋt^{br}-* "insides", **ŋgh-* "leg", **ŋgh^l-* "angle", **ŋy-* "snake, water snake";
- to explain [n] ~ [m] oscillations in related IE lexemes;
- to clarify the historical relations between **VNT* and **oT*/**eT* combinations;
- to clear out some new etymological relations, e.g. between Lat. *nutrire* and Russ. *нупро*, both being lexemes with a prefix **nu-* < *(*w*)*ŋ-* (the reflex *c*) [22].

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