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The development of the IEclusters *obstruent* + *t/s*(d^h)

[habilitation thesis – summary]

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1 On IE obstruents, examined clusters and used methods

The introductory chapter deals with the used methodology (structural analysis both of productive and "etymological" clusters), with the set of reconstructed IE obstruent plosives (including the question of the *satəm*- and *centum*-languages; the number of modal classes and the reconstructed value of such classes);[1] the distinction between the central series (dental/alveolar and palatovelar for the *satəm*-languages) and the peripheral series (plain velar, labiovelar, labial); with the definition of a trajectory as a set of partial transformations and main evaluated literature.

2 The development of the two-obstruent clusters from Indo-European into Indo-Iranian

The chapter analyses Old Indo-Aryan, Avestan, Old Persian and Nūristānī data, including the spirantization model of Bartholomae's law. For the development of the peripheral series within the Iranian branch, we model the spirantization; the Indic branch is the conservative.[2] The development of the palatovelar series is assumed to contain the spirantization stage (*çt*, *çš*, jd^h) instead of Lipp's affrication stage; this model better explains why clusters with voiced aspirates are realized as they realized are. Similarly, we assume that the development of the dental series was not through the traditional affricative stage (t^st, t^ss, d^zd^h), as assumed since Kräuter and Brugmann[3]. However we prefer Bartholomae's (and Cocchia's and de Saussure's)[4] spirantization model (ϑt, ϑs, δd^h), at least as the following stage to the affrication stage, again the development of the clusters with voiced aspirates is better explained within the spirantization model. The spirantization model even better explains why **ss* and **šs* clusters are realized as OIA *ts* and *kṣ* (since following **ss* > *ϑs* > *ts*; **šs* > *xš* > *kṣ* trajectories) and Iranian *0s* and *0š* (**ss* > *ϑs* > *ss* > *0s*; **šs* > *xš* > *šš* > *0š*).

3 The development of the two-obstruent clusters from Indo-European into Baltic

The Baltic development is conservative for the peripheral series and sibilants (though the question of the application of the *ruki*-rule is given). The development of both central series we present in two possible variants for each one: first, as the affricativization, second as the spirantization trajectory, for a reason similar to those given above.

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[1] Discussing even various theories (glottalic, ejective etc.).

[2] The Nūristānī is also analyzed, and two models of its development are proposed.

[3] This model is generally accepted and used.

[4] Bartholomae proposed the spirantization model for the Indo-Iranian development, independently this model was proposed for Italic by Cocchia and de Saussure.

4 The development of the two-obstruent clusters from Indo-European into Slavic

In the strong contrast to the Baltic development, the Slavic is the progressive one. For the development of the peripheral series, the gemination is usually assumed, but the spirantization/lenition trajectory fits data better.[5] Again, for the development of the central series two possible variants are given for each, both the affricativization and as the spirantization trajectory.

5 The development of the two-obstruent clusters from Indo-European into Armenian

Armenian development is reconstructed on a few etymological examples. The peripheral series were subjected first to spirantization, later to lenition and deletion of the first plosive, followed by the final aspiration of the final **t-*. The central series developed earlier; the only plausible trajectory is the spirantization (and sibilantization for the palatovelar clusters, lenition and elision for the dental clusters).

6 The development of the two-obstruent clusters from Indo-European into Albanian

Also, Albanian development is hard to reconstruct. However, we assume, again, the spirantization and lenition of the peripheral series, as was the palatovelar series spirantized and lenited even probably earlier, for the dental series we have to prefer the traditional affricativization trajectory of Kräuter–Brugmann.

7 The development of the two-obstruent clusters from Indo-European into Greek

The Greek development (both Classic and Mycenaean are examined) is highly conservative; the special attention is given to the development of the labiovelars (subjected to the old levelling) and to the development of the dental series (again with two possible trajectories).

8 The development of the two-obstruent clusters from Indo-European into Italic languages

The development of the Italic clusters is surprisingly different in Latin and Sabellic – Latin is the highly conservative language (in general features similar to the Greek developments), Sabellic is, on the contrary, highly progressive. Again, we model the spirantization/lenition for the peripheral series and two possible models for the dental series (the spirantization trajectory for both Italic branches of the IE **tt* is: > *ϑt* > *ϑϑ* > *ss*; for IE **ts* > *ϑs* > *ss*).

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[5] This chapter was published in its earlier form in *Zeitschrift für Slawistik*.

9 The development of the two-obstruent clusters from Indo-European into Celtic

The Celtic development is in many aspects similar to that of Sabellic, the special attention is given to the question of the "tau gallicum", for which we assume the value of the voiceless spirant, the trajectory for IE **tt* and **ts* is the same as in Italic; for the IE **st* as: **st* > *sϑ* > *ϑϑ* > *ss*).

10 The development of the two-obstruent clusters from Indo-European into Germanic

The Germanic (usually demonstrated on Gothic) clusters share the main features of their development with Celtic and Sabellic. For the peripheral series, we assume the spirantization/lenition. Again, the spirantization we prefer to the affricativization for the dental series). We assume that the spirantization before *t/s-* was the necessary condition for the later Germanic consonantal shift: the typical neutralization position before an obstruent replaced by a spirantization caused the revaluation of the markedness of the plosives, causing the transition of all voiceless plosives (if not after a fricative!) to voiceless spirants, subsequently followed by the devoicing of the voiced non-aspirated plosives and later by the deaspiration of the IE voiced aspirates (a similar process we assume for the Armenian development as well).

11 The development of the two-obstruent clusters from Indo-European into Anatolian

The Anatolian (here limited to Hittite) development is the conservative one for the peripheral or sibilant series, for the development of the dental series the affricativization model is the single possible solution. For the development of the labiovelars, however, we assume the partial levelling.

12 The development of the two-obstruent clusters from Indo-European into Tocharian

For the Tocharian development, in general, we assume similar lines to those of Hittite, with the affricatization of the dental clusters, otherwise conservative (in contrast to otherwise progressive developments of the Tocharian phonemic system).

13 The development of the two-obstruent clusters in the Indo-European languages: the summary and conclusions

The oldest is the development of clusters *dental* + *t/s*(/d^h)-, which affects the whole IE area (Indic outcomes *tt* and *ts* are results of a reverse process, as documented in chapter 2). The Anatolian, Tocharian and Albanian have the Kräuter–Brugmann's trajectory outcomes with

affricates for IE **tt* and the cluster **ts* is usually preserved as such (the exception being Albanian) since the affricatization either did not appear before a sibilant or the cluster *affricate* + *s* was simplified by the loss of a sibilant. In contrast, for Indo-Iranian, Balto-Slavic, Armenian, Italic, Celtic, Germanic and Greek we have to assume that the development was on the Cocchia–de Saussure–Bartholomae trajectory of the spirantization, usually resulting in a sibilant (but Armenian lenited the plosive directly), the process of spirantization is valid also for **ts* clusters and explains why the plosive was here finally lost (generally: **ts* > *ϑs* > (*s*)*s*), the parallel development we assume even for the Bartholomae's clusters (**d^h + *t/s/*d^h-). The affricatization and spirantization could be either two parallel processes (both could be summed as the fricativization), or the spirantization is the second phase after the initial affricativization.

In the *satəm*-languages is attested a younger process with palatovelars, which mirrors the development of the dental series. Again, there are two possible models: the affricate (recently extensively and in details proposed by Lipp) and the spirantization model. The second model is preferred because it is easier to explain the transition of **ḱs* > OIA *kṣ*, other languages *0š/0s* by the trajectory: **ḱs* > *çš/xš* > *šš* > *0š* (resp. *çš* > *ϑs* > *0s*), since the loss of the plosive segment of the palatal affricate is improbable.

The development of the peripheral series falls either under the conservative trajectory (no changes) or the spirantization/lenition trajectory. Remarkable is that even languages of the same branch often differ; cf. Indic vs Iranian; Baltic vs Slavic; Latin vs Sabellian. From this, it is clear that the spirantization/lenition trajectory of the peripheral series is the later development in each of the branches/languages.

The development of the cluster *s*+*t/s*(/d^h)- cluster is generally conservative, remarkable is the Celtic development, connected to the Cocchia–de Saussure spirantization model of dentals, the Indic re-plosivation of the IE **ss* and **šs* clusters.

Literature

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