

**Proto-Indo-European speakers of the Late Tripolye culture
as the inventors of wheeled vehicles:
Linguistic and archaeological considerations**

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It has long been generally agreed that PIE speakers possessed wheeled vehicles: * $\text{u}\text{o}\text{g}^{\text{h}}$ -o- / * $\text{u}\text{e}\text{g}^{\text{h}}$ -os / * $\text{u}\text{e}\text{g}^{\text{h}}$ -no- / * $\text{u}\text{o}\text{g}^{\text{h}}$ -no- ‘wagon’ < * $\text{u}\text{e}\text{g}^{\text{h}}$ - ‘to bring, convey in a vehicle’. Terms denoting various parts of the wheeled vehicle can also be reconstructed to the proto-language: * $\text{k}^{\text{u}}\text{e}\text{k}^{\text{u}}\text{l}\text{o}$ - ‘wheel’, * $\text{h}_3\text{neb}^{\text{h}}$ - ‘nave’, * $\text{h}_2\text{e}\text{k}\text{s}$ - ‘axle’, * iugo - ‘yoke’. (1)

This vocabulary has provided a vital clue for the PIE homeland search by giving a fixed temporal point of departure, since remains or representations of wheeled vehicles appear in the archaeological record only from about 3500 BC onwards.

During the second half of the fourth millennium BC, two major cultural complexes, both possessing wheeled vehicles, spread over wide areas: the Corded Ware cultures in NW Europe, and the Pit Grave cultures in SE Europe. With others genetically related to them, these cultures cover most areas where the various IE branches emerge. Their common roots have been traced back to the Copper Age cultures of SE European steppes between the Dnieper and the Urals: Srednij Stog (or Skelya) (4500-3300 BC), Dnieper-Donets (5400-4200 BC) and the Khvalynsk (5000-4500 BC). A PIE homeland in the Pontic steppes agrees well with other clues provided by linguistic palaeontology and with the numerous early IE loanwords in Finno-Ugric languages. (2)

It was long generally accepted that the wheeled vehicles were invented in Mesopotamia (Childe 1951). Stuart Piggott (1983) still considered rapid diffusion of the invention from Mesopotamia as the preferred alternative. It is one of Gamkrelidze and Ivanov’s (1995: 639f.) major arguments for their Anatolian homeland thesis. During the past decades, however, early vehicle finds have multiplied, some of the earliest testimonia now coming from western and central Europe. In a comprehensive recent book (Fansa & Burmeister eds. 2004), numerous archaeologists discuss the present situation, some defending the traditional point of view, others offering new solutions.

I do not know what David Anthony says in his forthcoming book (2007), but in 1995 (p. 558 n. 1) he explicitly declared:

“I have not proposed that the wheeled vehicle technology originated in the PIE homeland, a position that has been attributed to me by Häusler (1994: 223). I have proposed only that most of the IE *vocabulary* for wheeled vehicles originated in PIE.”

Mallory (1989: 163), on the other hand, goes a long way towards the here proposed solution with the following observations:

“Tomas Gamkrelidze and Vyach[e]slav Ivanov... have noted that ... Proto-Indo-European *k^wek^wlo- bears striking similarity to the words for vehicles in Sumerian *gigir*, Semitic *galgal-, and Kartvelian *grgar. With the putative origin of wheeled vehicles set variously to Pontic-Caspian, Transcasucasia or to Sumer, we may be witnessing the original word for a wheeled vehicle in four different language families. Furthermore, as the Proto-Indo-European form is built on an Indo-European verbal root *k^wel- ‘to turn, to twist’, it is unlikely that the Indo-Europeans borrowed their word from one of the other languages. This need not, of course, indicate that the Indo-Europeans invented wheeled vehicles, but it might suggest that they were in some form of contact relation with these Near Eastern languages in the fourth millennium BC.”

It is usual for the terminology to be adopted along with new inventions. While most PIE vehicle terms clearly are native words derived from PIE roots, for instance Finno-Ugric terminology connected with wheeled vehicles is predominantly borrowed from IE languages (this was pointed out already by Schrader 1907: II, 299).

The very earliest presently known evidence for wheeled vehicles comes (in the form of wheeled animal-shaped cups and house models) from the Tripolye culture (phases B2 & early C1) (Gusev 1998; Burmeister 2004: 14f.). The slide-car pulled by oxen is widely assumed to have been the predecessor of wheeled vehicles, and it too is documented from the Tripolye culture (C1 and earlier, cf. Burmeister 2004: 21f.). The Tripolye culture is located in the middle of the earliest vehicle finds, in the forest-steppe with big trees needed for solid wheels yet with plains more trafficable than the forested central and NW Europe or the marshy Sumer, where slide-cars remained long in use.

During the initial Tripolye A phase (5500-4500 BC) the Cucuteni-Tripolye culture extended from Rumania to Ukraine. During Tripolye B (4700-3750 BC), it became the largest and most advanced agricultural community of Copper Age Europe, with many village

settlements, some of gigantic size (200-400 hectares). It is assumed to have possessed the plough drawn by a pair of castrated oxen, these yoked draught-animals being a precondition for wheeled wagons. Valentin Dergachev (2002, 2007) has recently suggested that during Tripolye B1, the pastoralists of the Pontic steppes attacked Tripolye settlements on a vast scale. The number of arrowheads found in Tripolye settlements rises phenomenally, and previously unprotected settlements become fortified. Philip L. Kohl (2004, 2007: 23-54) calls attention to the subsequent transformation of the Tripolye people from settled farmers to more mobile pastoralists (Kohl 2004, 2007: 23-54). I suggest that the linguistic Indo-Europeanization of non-Indo-European speaking Europe started with Tripolye, the farming culture closest to the steppe pastoralists, who had long received their metal from Tripolye and been under its cultural influence. Once the PIE speakers would have taken over leading positions in the Tripolye culture, the linguistic change could have been as speedy as in Mesopotamia, where the language of the Sumerians died out some 500 after the Akkadians had infiltrated their culture .

Inclusion of the late Tripolye culture in the late PIE homeland helps to understand the difference in the agricultural and botanical terminology between the western and eastern IE languages which more than a century ago induced Otto Schrader to propose a North Pontic homeland. The archaeological evidence for the Indo-Europeanization of Europe can also be reconsidered from this point of view.

Notes

(1) This is a minimal list. Cf. i.a. Schrader 1907: II, 298f.; Feist 1913: 220-3; Buck 1949: 722-6; Pokorny 1959: 6; 508-10; 639f.; 866; 1118-20; Gamkrelidze & Ivanov 1995: 621-641; Beekes 1995: 37; LIV 1998: 280; 459; 602f; LIV Add 2001: 84; 127; 167; Schmitt 2000; Raulwing 2000: 109-111; Fortson 2004: 36; Mallory & Adams 2006: 247-9.

(2) See especially Mallory 1989; Anthony 1995; 2007; Carpelan & Parpola 2001; and Dergachev 2002; 2007. The PIE homeland was located in SE Europe already by Schrader (1907) and Childe (1926), but more substantial foundations for the hypothesis were laid by Marija Gimbutas (1997). This reconstruction is now accepted as the most likely one in current textbooks on IE linguistics (Beekes 1995: 44-52; Fortson 2004: 35-45). It is most unlikely, however, that the

Copper Age PIE speakers rode horses -- horse-riding became wide-spread only some two millennia or more later, while the wheeled vehicles spread almost immediately after their invention (cf. e.g. Kohl 2007: 133f.). The approximate dates given in this paper are calibrated radiocarbon dates based on Chernykh 2007; Chernykh & Orlovskaya 2004; Kohl 2007: 261-267. For the Finno-Ugric loanwords see Koivulehto 2001 (with further references) and for their archaeological explanation Carpelan & Parpola 2001.

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The Journal of Indo-European Studies Proto-Indo-Europeans: The Prologue 297 conservative than the other or horizontal transfer had taken place. The null hypothesis would be rejected if the side connecting IE with a "southern" family was significantly shorter than that connecting this family with Uralic (significance was assessed by comparing the variation between and within the families; see Kozintsev 2018, for details). Indeed, as the lexicostatistical modeling suggests, in the case of Semites the borrowings comprised not only culture items but basic vocabulary as well. The direction of supposed borrowing cannot be assessed on the basis of these data.

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