Project Gallery

New tools for studying Finnish archaeology and Uralic languages

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Between 2018 and 2020 the Kipot ja kielet [Beakers and Speakers] project (KiKi) collected a typological database of archaeological artefacts in Finland and a typological linguistic database of Uralic languages. Both datasets will be accessible through a public online interface (URHIA) from 2021. The data will help integrate Finnish- and Uralic-speaking areas into global perspectives on human history.

Introduction

The origins of Uralic speakers in Fennoscandia have for a long time intrigued both linguists and archaeologists (e.g. Fogelberg 1999; Lang 2018), and also geneticists in recent decades (e.g. Saag *et al.* 2017; Lamnidis *et al.* 2018; Tambets *et al.* 2018). To create a common basis for multidisciplinary work, the Department of Biology at the University of Turku launched the two-year archaeological and linguistic data-collection project, Kipot ja kielet (KiKi), as a part of a strategic data-collection call.

Archaeological data collection

KiKi's archaeological data collection continued the work of the Argeopop project (funded by the Finnish Academy 2009–2013), in which a Stone Age (*c.* 8900–1600 BC) artefact database was created at the Finnish Heritage Agency. While the Argeopop database was never made publicly accessible, the collected data were used in several papers applying spatiotemporal modelling of Stone Age settlement in Finland (e.g. Tallavaara *et al.* 2010; Sundell *et al.* 2014).

To widen the archaeological perspective and scale, KiKi not only increased the documentation of Stone Age artefacts, but also digitised the typologically discernible Bronze Age (*c.* 1600–500 BC) and Iron Age (*c.* 500 BC–AD 1200/1300) finds.
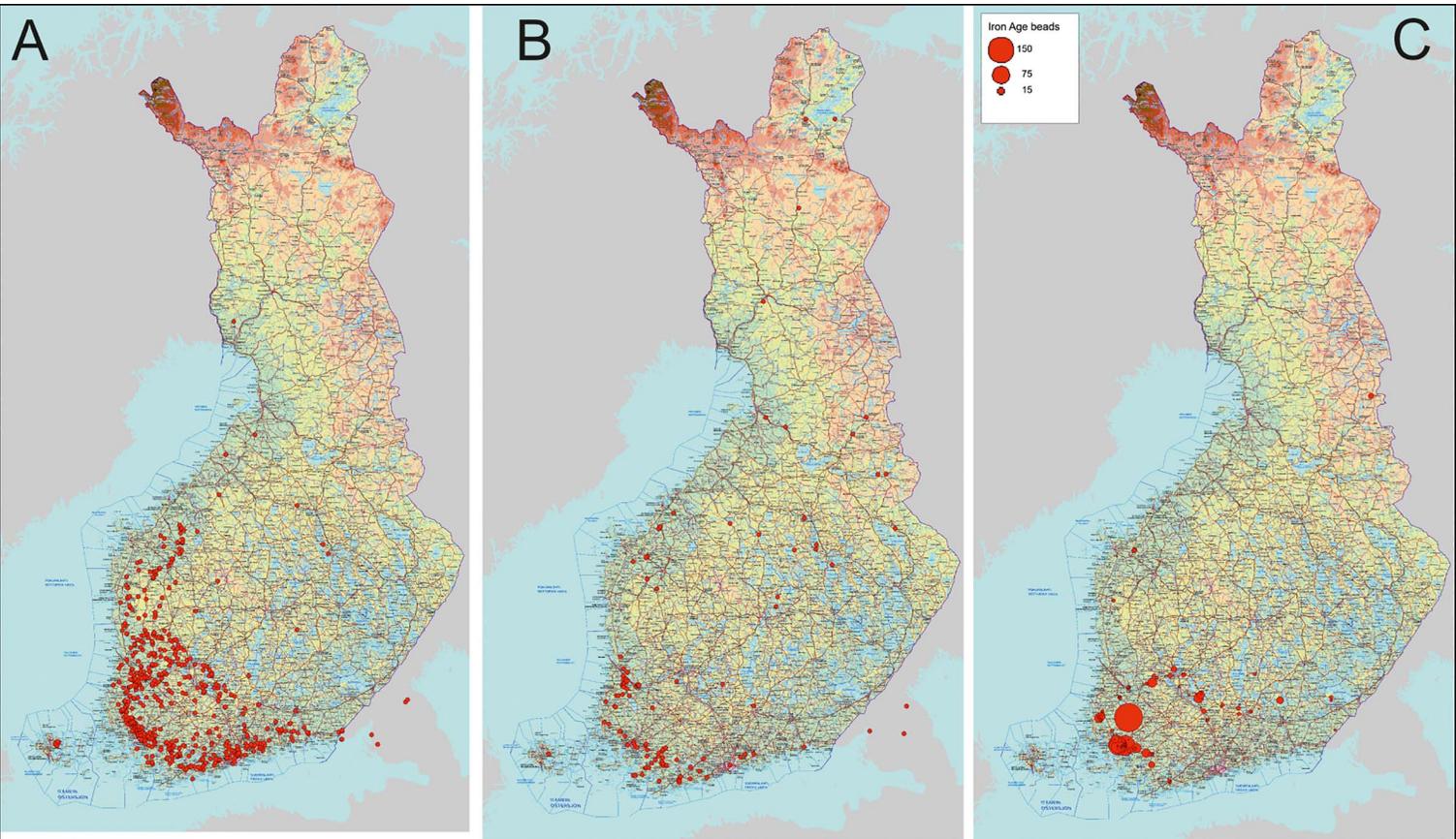
Figure 1. Examples of map data retrieved from the archaeological database to be published in the URHIA user interface: a) Stone Age battle axes (n = 698); b) Bronze Age bronze artefacts (n = 162); c) Iron Age beads (n = 1001) (maps by Petro Pesonen).

Figure 2. Examples of recorded artefacts from different periods: A) Neolithic stone gouge from Virrat, from the collections of the National Museum of Finland (NM 9614); B) Bronze Age stone axe found in eastern Finland in 1935, from the collections of Kuopio Museum (KHMESIE 3478). The axe combines characteristics of Eastern Baltic and Scandinavian types, while the material suggests an origin in south-west Finland (cf. Salo 1981: 285–96); B) Migration-period (c. AD 400–600) clasp button with Salin's style I animal art from the collections of the Archaeology Department, University of Turku (TYA 246: 125) (scales in centimetres) (photographs by Petro Pesonen (A), Jarkko Saipio (B) and Ulla Moilanen (C)).

make use of archaeological big data at any comparable scale in Finland. The archaeological database not only offers tools for comprehensive typologies (cf. Whittaker *et al.* 1998) and accurate distribution maps, but also provides new possibilities to establish connections between ostensibly separate archaeological phenomena. It has already been possible to observe connecting local variants between 'East-Karelian' and 'Bothnic' Stone Age tool types (cf. Lehtosalo-Hilander 1988). The origin and development of Bronze Age stone axe types in Finland also now appear more complicated than traditionally thought (Figure 2). The database even facilitates museological studies by offering the possibility of analysing how the criteria for curating certain finds have changed over time, and how these selections shape our understanding of archaeological periods, sites and related finds.

The linguistic database is the first of its kind to include large-scale data on all branches of the Uralic languages. It will offer a useful tool for studying and teaching linguistic variation of Uralic languages and structural (dis)similarities between Uralic and other language families, and may help trace the lineage of the Uralic family. The acquired information on linguistic events, contacts and divergences will complement the interdisciplinary studies on the human past.

Once published it will still be possible to add to and develop the two databases so that new data on, for example, Iron Age artefacts and language variants, such as dialects, can be incorporated. The open-access data will also be a useful tool for public outreach, increasing the impact and the value of the databases.

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Saami
South (1a) Ume (1b) Pite (1c) Lule (1d) North (1e)
Inari (1f) Skolt(1g) Akkala (1h) Kildin (1i) Ter (1j)
Finnic
Finnish (2a) Karelian (2b) Ludic (2c) Veps (2d)
Ingrian/Votic (2e) Estonian (2f) South Estonian (2g)
Livonian (2h)
Mordvin
Moksha (3a) Erzya (3b)

Mari
Mari (4)
Permic
Komi (5a) Komi-Permyak (5b) Udmurt (5c)
Ugric
Mansi (6a) Khanty (6b) Hungarian (6c)
Samoyed
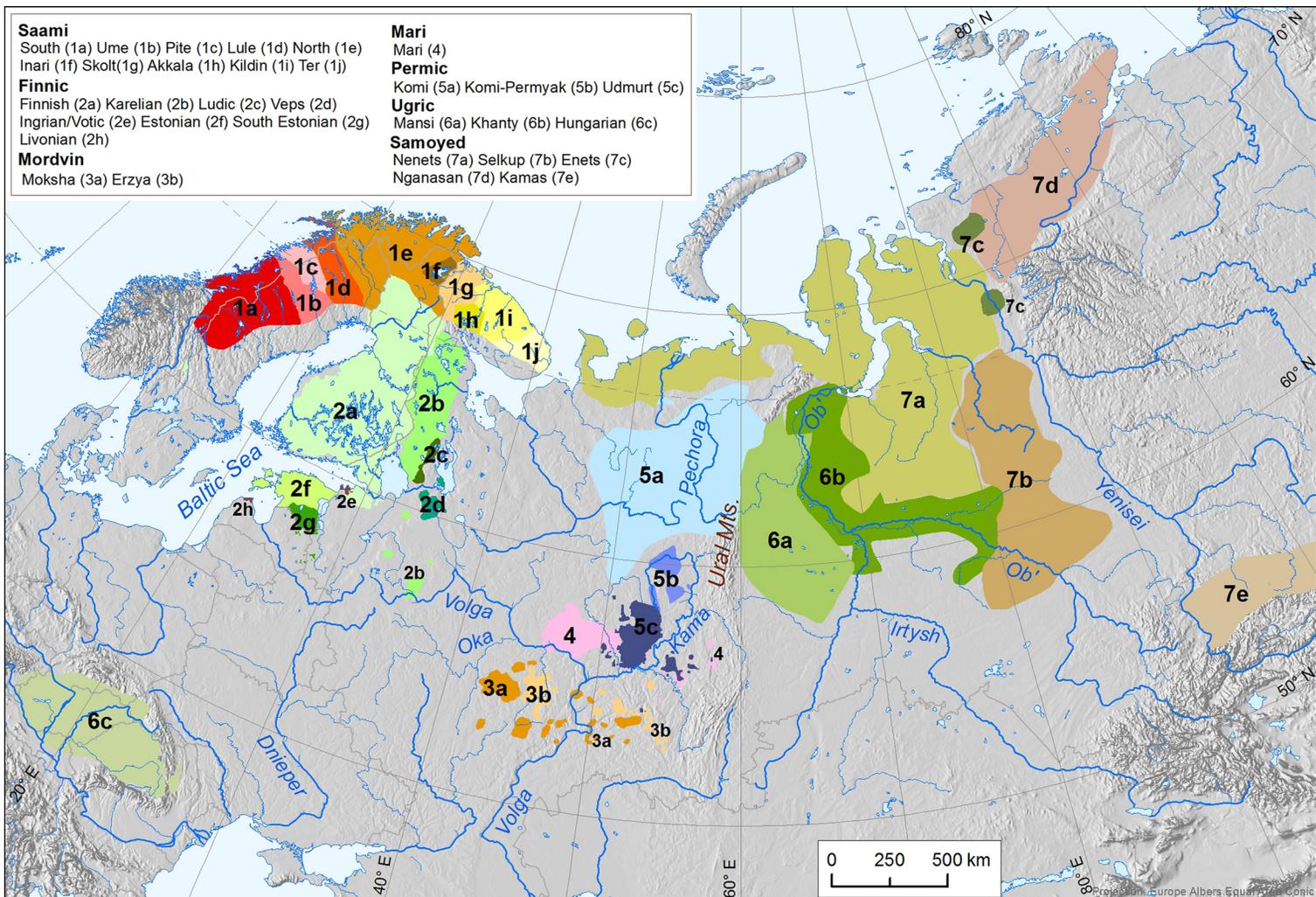Nenets (7a) Selkup (7b) Enets (7c)
Nganasan (7d) Kamas (7e)

Figure 3. Uralic-speaking areas as digitised for the Geographical Database of Uralic Languages (for publication in the URHIA user interface) (map by Timo Rantanen).

ID	Feature	Surgut Khanty	Hungarian	Komi-Zyrian	Meadow Mari	Pite Saami	Estonian
UT023	Can tense be expressed overtly on the negative marker?	0	0	1	1	1	0
UT078	Are there case categories only found in pronouns?	1	0	0	0	0	0
UT079	Does the numeral modification of a noun have an effect on its case selection?	0	0	0	0	0	1
UT080	Is the singular form of the noun also used with numerals bigger than 1?	1	1	1	1	0	1
UT105	Can 3Sg possessive suffix be used to mark definiteness?	0	0	1	1	0	0

Figure 4. The linguistic datasets consist mainly of binary responses to questions asking for a presence (1 'yes') or absence (0 'no') of a given language feature (figure by Miina Norvik).

Acknowledgements

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