

Old Europe Meets the Indo-Europeans

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Indo-European Languages

Spoken today from Europe to India.

Examples: Latin, Greek, German, English, Celtic, Armenian, Russian, Sanskrit

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Shared Indo-European (IE) Words

Inherited from Proto-Indo-European (PIE). These shared words tell us something about the PIE homeland.

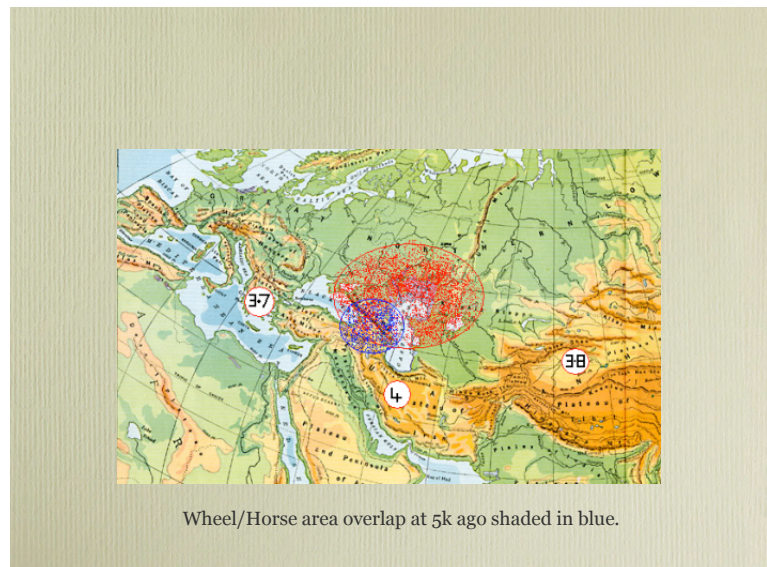
- ▶ Numbers
- ▶ Body parts: heart, hand, foot
- ▶ Oak, beech, wolf, bear, salmon
- ▶ Snow
- ▶ Relatives

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Proto-Indo-European (PIE) Characteristics

- ▶ Milk words
- ▶ Horses, sheep, cattle, pigs, goats, grain
- ▶ Copper, maybe bronze, not iron
- ▶ Carts, wheel, weaving, mead
- ▶ Patrilineal clans, raiding, war, revenge
- ▶ Young male warriors, wolf totem

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Wheel/Horse area overlap at 5k ago shaded in blue.

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PIE Characteristics, continued

- ▶ Three classes: warriors, clergy, farmers
- ▶ Epic poetry: Rig Veda, Iliad
 - ▶ "driving cattle," "undying fame," "immortal gods"
 - ▶ slay a dragon

Gods

- ▶ Deus, Zeus, Jupiter (Zeu Pater), Duanz Pita, Indra
- ▶ Jove, Sius, Deva
- ▶ Thor, Perjanya
- ▶ Hestia, Vesta
- ▶ Aphrodite, Venus, Freya, Lakshmi
- ▶ Various twins

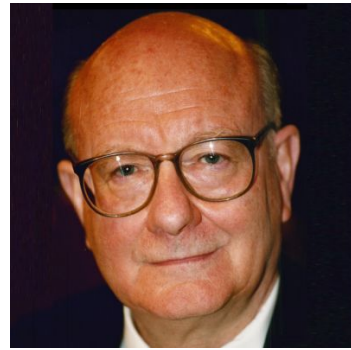
PIE were not technologically advanced

Sumerians had

- ▶ writing
- ▶ arithmetic
- ▶ cities
- ▶ irrigation

PIE had wheeled carts and domestic animals.

Anatolian Hypothesis: Colin Renfrew



IndoEuropean originated in Anatolia (Turkey).
 Spread north with the early Neolithic, 7 kya

Kurgan Hypothesis: Marija Gimbutas



IndoEuropean originated in Pontic Steppes (Ukraine)
 Spread West, East, and South in Bronze Age, 5 kya
 It now seems clear that Gimbutas was right; Renfrew wrong.

Old Europe: 6500–2800 BC



Old Europe



Farming
 Gold, copper
 Dispersed settlements => little warfare.



Varna Cemetery, Bulgaria
 4900-4400 BC
 Lots of gold
 Stratified society

Meanwhile, to the East



The Yamnaya (or Yamna) culture
 Cattle herders
 Probably spoke Proto-Indo-European (PIE).

The Yamnaya Probably spoke PIE

Linguistic evidence: PIE-speakers had cattle, horse, and wagons; lived in a cold climate.
 Archeology: so did the Yamnaya.



1 shepherd with dog can herd 200 sheep; with horse, 500 sheep
 Horseback riding ↗ productivity of steppe.

Bronze-age wagon wheels from Georgia



Could carry water: no longer tied to river valleys.
 Wagons ↗ productivity of steppe.

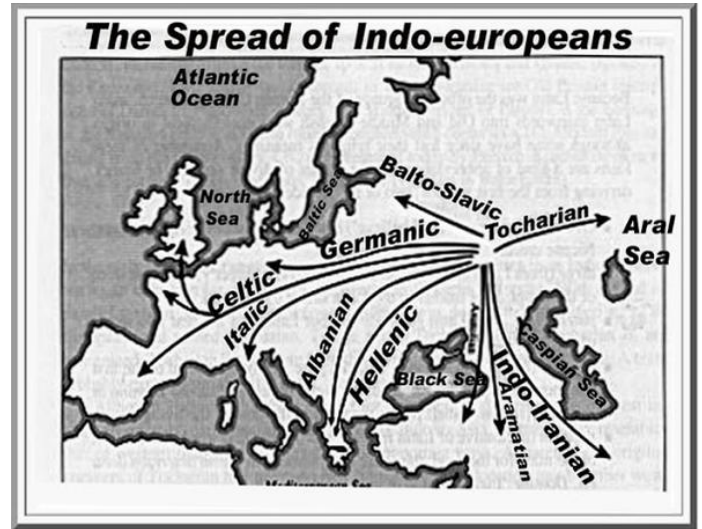


Disruptive technologies

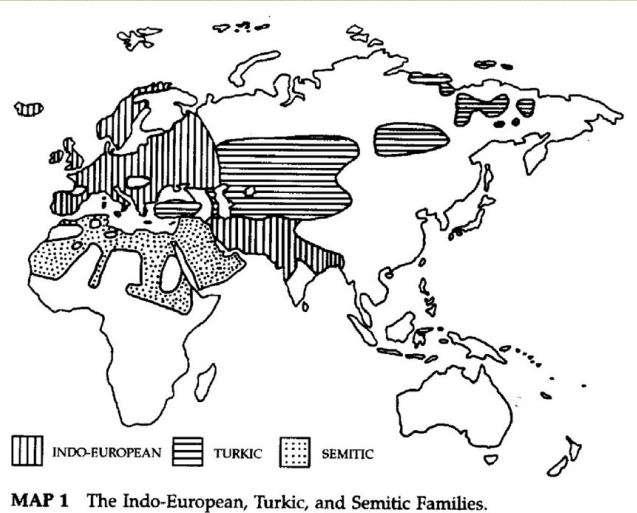
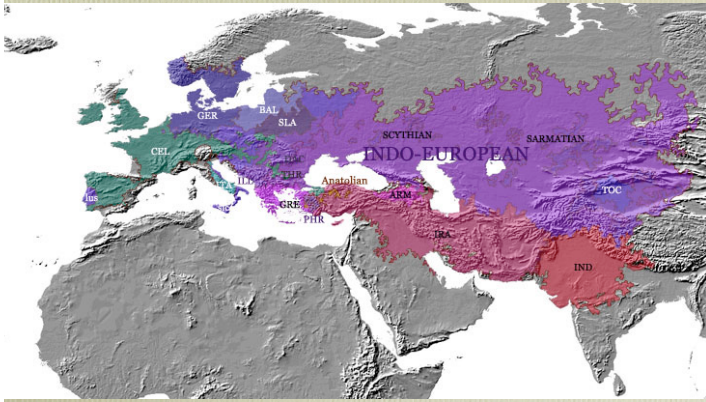
Sheep, horses, and wagons → productivity and mobility.

Mobile pastoralists are warlike.

5000 years ago, the Yamnaya expanded in all directions.



Indo-European 500 BCE



MAP 1 The Indo-European, Turkic, and Semitic Families.



Tocharian Monks

9th century BC. Tarim Basin, China.

Their modern descendants are the Uighurs, of western China.



www.ughurlanguage.com 01/01/2008



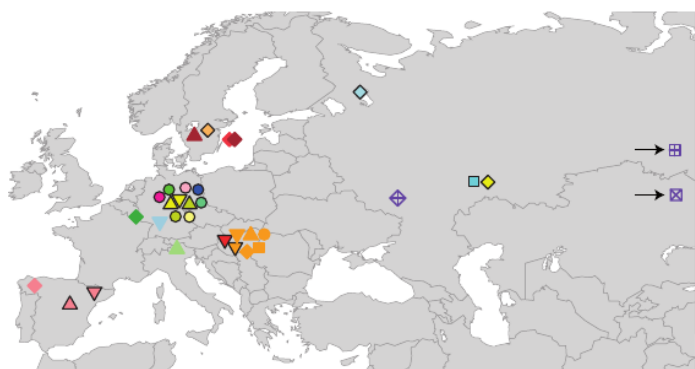
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Haak et al (2015)

Studied dozens of ancient genomes from Europe, Russia, and the Ukraine.

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Geographic distribution of aDNA samples



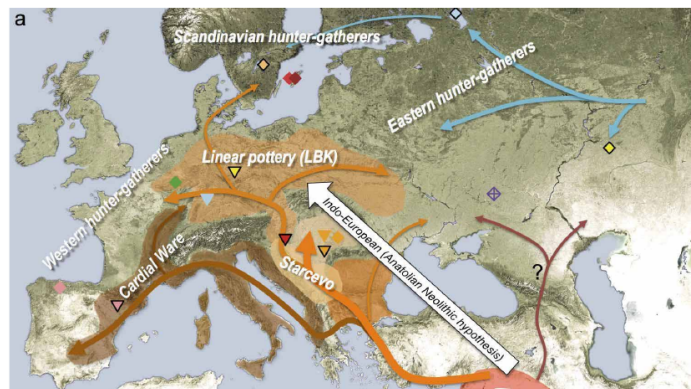
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Dates of aDNA samples

Time (ky bc)	Group	West	Central	East
0.9	Iron Age			● Hungary IA (1)
1.1	Late Bronze Age		● Halberstadt (1)	● Hungary BA (2)
2.2-1.6	Early Bronze Age		○ Unetice (8)	
2.5-2.2	Late Neolithic		● Alberstedt (1) ● Benzigerode-Heimbürg (3) ● Bell Beaker (6) ● Karsdorf (1) ● Corded Ware (4)	
3.3-2.7	Late Copper Age (steppe)			● Hungary CA (1) □ Yamnaya (9) ● Sweden NHG (3)
4-3	Mid Neolithic	▲ La Mina (4)	▲ Iceman (1) ▲ Esperstedt (1) ▲ Baalberge (3)	▲ Sweden MN (1)
6-5.5	Early Neolithic	▼ Els Trocs (5)	▼ Stuttgart (1) ▼ LBK (12)	▼ LBKT (1) ▼ Hungary EN (8) ▼ Starcevo (1)
6-4.6	Holocene hunter-gatherer	◆ Loschbour (1) ◆ La Brana1 (1)	◆ Hungary HG (1)	◆ Sweden MHG (1) ◆ Karelia (1) ◆ Motala (7) ◆ Samara (1)
43-22	Pleistocene hunter-gatherer			□ MA1 (1) ◆ Kostenki14 (1) □ Ust Ishim (1)

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Early Neolithic invasion: 7-9 kya

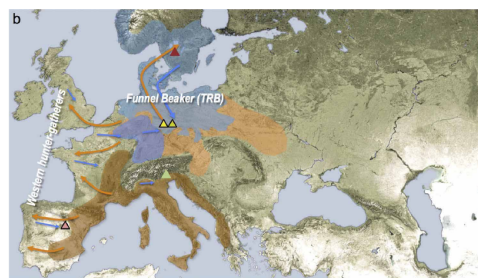


Genetically similar farmers appear in Hungary, Germany, and Spain.

Russia was inhabited by foragers.

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Middle Neolithic (5-7 kya): foragers return



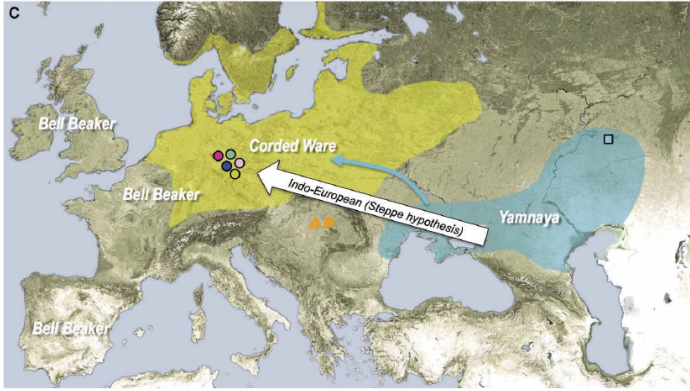
DNA of foragers seeps into farming populations.

On the Russian steppes, the Yamnaya descend both from local foragers and from the Near East.

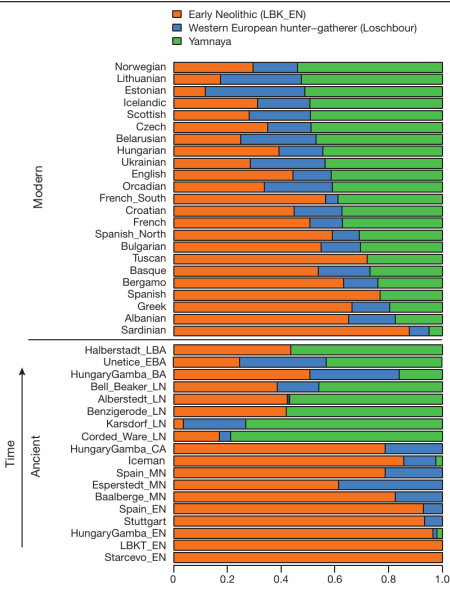
Forager DNA like that of 24 kya Mal'ta specimen from Siberia.

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Indo-European invasion: 4.5 kya



Autosomal DNA of Corded-ware culture is 3/4 Yamnaya. Yamnaya DNA is ubiquitous in modern Europeans.



Corded ware: 3/4 Yamnaya in autosomal DNA

Yamnaya fraction even larger for yDNA

Most mtDNA came from the Middle East.

Yamnaya fraction declines over time as invaders interbreed.

Haak et al (2015)