

# 14: Back-tracking from Babel

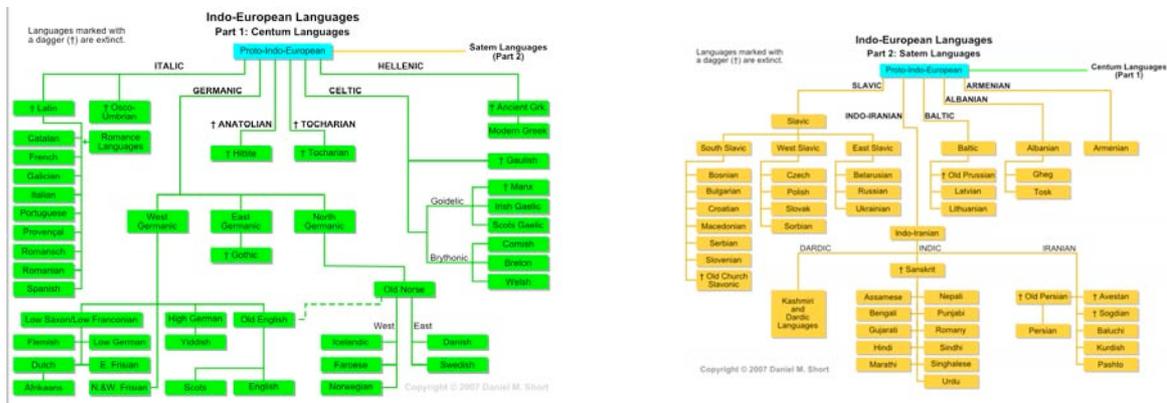
## Genetics and the Indo-European Languages

WC 3201

If you are old enough to remember *The Hitch-hiker's Guide to the Universe*, you will recall that the answer to the meaning of life, the universe and everything is 42. Of course this is the correct answer sometimes — it is, for example, the number of my house. However, it seems to leave unanswered several basic questions in life, one of which is *Why do we need two presenters for the evening news?* Thankfully, the answer here is not "42"!

Another of the great unanswered questions, at least in my universe, is *Why are there so many languages?*

Starting with the curious tale of the Tower of Babel, there have been many attempts to explain, if not *why* then *where did they come from?* Half a century ago when I last did linguistics, the academic gospel truth was that some time after ~2,000 BC, the original Indo-European language was brought to us by a horde of Bronze Age warriors galloping on horseback from the steppes of Central Asia. Once in Europe — and also in the Indus Valley, because they seem to have gone in several directions at once — they overwhelmed the simple cultures they found there and replaced the local languages with their own.



*Indo-European Languages are divided into two groups, Centum and Satem*

Now, with more recent archaeological research and the translation of ancient languages unreadable in the previous century to show the way, the invasion by Asian hordes theory has been mostly abandoned. For example, the earliest Indo-European languages such as Mycenaean Greek, Hittite and Sanskrit were already mutually unintelligible by 2,000 BC so, if they were to have a common ancestor, it must have been long before that, probably in the Neolithic at least.

One of the best-known archaeologists to suggest an alternative was Lithuanian-born Marija Gimbutas<sup>1</sup> who became widely-known and acclaimed among feminists for her work on the so-called "Goddess". Gimbutas proposed that the Indo-Europeans originated in the Russian steppes (Although Gimbutas' hypothesis was later rather ignored, as we will see shortly, this area is once again under serious consideration). A later suggestion in 1985 by Georgian linguists Gamkrelidze and Ivanov<sup>2</sup> was that the origin of the Indo-Europeans was somewhere on the Armenian plateau.

Then, also in 1985, and after an extensive survey of both the linguistic and archaeological evidence, Russian linguist and historian Igor M. D'iakonov published his seminal paper on the subject, *On the Original Home of the Speakers of Indo-European*, in which he proposed that the original speakers of the earliest forms of Indo-European were to be found in the Balkan Peninsula where they enjoyed a mixed economy based on farming and animal husbandry.<sup>3</sup>

In 1988, Colin Renfrew published his seemingly heretical book, *Archaeology and Language: The Puzzle of Indo-European Origins*. In this milestone work, he proposed that the Indo-European languages were brought to Europe by the people who brought us agriculture from Anatolia. Although attracting a lot of attention, Renfrew's proposal was never fully accepted, partly because genetic studies of the time rather undermined his notion by suggesting that the farmers who moved into Europe during the Neolithic contributed only a minority of the DNA we have inherited from the Palaeolithic.



More recently Emeritus Professor Kalevi Wiik<sup>4</sup> at Tuku University in Finland has also proposed an origin in Southeast Europe but aroused considerable controversy when he also suggested the Finno-Ugrian family<sup>5</sup> might have been northern Europe's oldest languages.

*Map 1: Wiik's suggested language distribution 23,000 to 8,000 BC*

<sup>1</sup> Gimbutas, M: "The Beginning of the Bronze Age in Europe and the Indo-Europeans: 3500-2500 B.C." *Journal of Indo-European Studies*, Volume 1, 1973, p. 163

<sup>2</sup> Gamkrelidze, T. V. and Ivanov, V. V.: "The Migrations of Tribes Speaking Indo-European Dialects from their Original Homeland in the Near East to their Historical Habitations in Eurasia." *Journal of Indo-European Studies*, Volume 13, 1985, p. 49.

<sup>3</sup> D'iakonov, I. M: "On the Original Home of the Speakers of Indo-European." *Journal of Indo-European Studies*. Volume 13, 1985, p. 92

<sup>4</sup> Wiik, K: Europe's Oldest Language, dated 3/99 and available at <http://www.lib.helsinki.fi/bff/399/wiik.html>. This was the only article I was able to find by Wiik in English, the rest are in Finnish.

<sup>5</sup> About 3% of Europe's population speak a Finno-Ugrian language - ie, Hungarian, Finnish and Estonian.

Using genetic as well as archaeological and anthropological data to support his theory, Wiik argued that from ~23 KYA to 8KYA, Europe was divided into three main regions: those marked on his map as Ba and U were populated by hunters of large animals, abundant then but many of which are now extinct. These people, he says, spoke languages related to Basque and Finno-Ugic respectively. Wiik's Region X on the other hand, was inhabited by hunters of small animals and was fragmented into areas where smaller unknown languages which have since disappeared.

Then, Wiik claims, by 5,500 BC the extinction or reduction in the numbers of large animals in the Ba and U regions meant that the inhabitants had to change to hunting smaller animals while the inhabitants of Region X survived by developing agriculture and the other blessings of the Neolithic. It was here, in the Balkans, he hypothesised, that the Indo-European languages were born, serving there as a *lingua-franca* and gradually diffusing outwards to include the other regions. However, on the fringes of Europe, in Iberia and Northwest Europe, former hunters apparently adopted farming without the Indo-European languages which went with it, with the result that Basque and the Finns are the only descendants of the Ice Age hunters who do not speak an Indo-European language.

In 2003, Gray and Atkinson<sup>6</sup> set out to test the two theories of the origin of IE, the '*Kurgan expansion*' and the '*Anatolian farming*' hypotheses. They based their study on the generally accepted view that languages derived from a common, early source tend to have many words in common but that, as time goes by, their vocabularies increasingly diverge. Their results strongly supported the Neolithic dispersal theory by showing the Indo-European languages diverged from the earlier Anatolian ones in what was almost certainly a Balkan homeland.

### **The Palaeolithic Continuity Theory**

Another theory, this time proposed by **Mario Alinei**<sup>7</sup> is the **Palaeolithic Continuity Theory**. This argues that Indo-European was essentially the very long-term evolution of the indigenous culture or cultures of the Palaeolithic. It contends this is demonstrated by a substratum of words and grammatical structures which reflect *the awakening and developing of human conscience and cultural activities of an already separated and independent language phylum*. Words such as those for *dying*, which have the base form [\*-mer], exist throughout the region while words for *burying* exist in different forms, suggesting that by *...the time ritual burying began, in Upper Paleolithic, IE groups were already differentiated*.

---

<sup>6</sup> Gray, RD and Atkinson, QD: "Language-tree divergence times support the Anatolian theory of Indo-European origin," *Nature* 426, 435-439

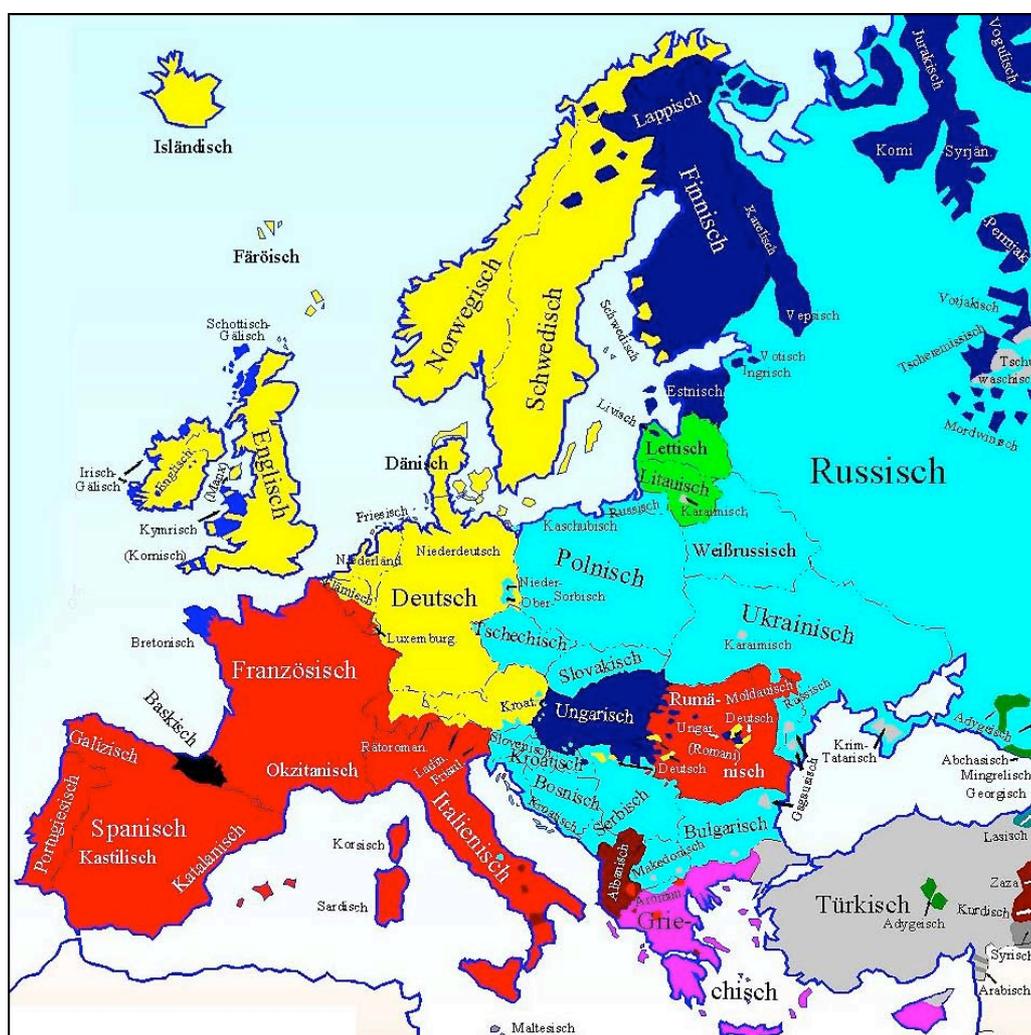
<sup>7</sup> The Paleolithic Continuity Theory on Indo-European Origins: An Introduction, at <http://www.continuitas.com/intro.html>

Also, among other examples, he adds that

*.....words for typical Mesolithic inventions, such 'bow', 'tar', fishing tools, carpentry and many others, are different in each IE group, proving that by Mesolithic time IE languages were already differentiate.*

## The Linguistic Quagmire

After reviewing some of these, the more important theories about the origins of the Indo-European languages, I must admit I for one remain confused and feel bogged-down in a quagmire of theories and techniques, all of which are argued passionately by linguists themselves. Looking back however, it seems fair to say that there are broadly speaking two schools of thought:



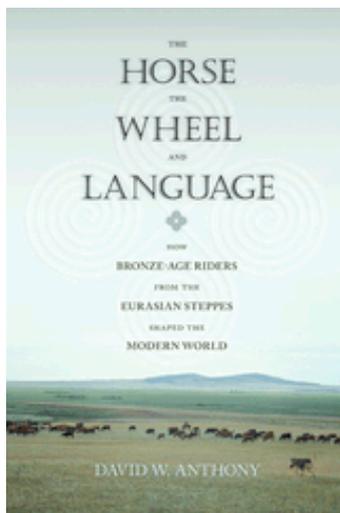
*Language Groups of Europe*

**1. Palaeolithic Continuation:** in this group are those who see IE as an evolution of whatever languages were spoken by the people who lived in Europe before and during the LGM. The problem with these theories is that they assume there were sufficient people left in Europe after the LGM and the Younger Dryas to generate the populations required if — as then argued —

about 80% of the genes in modern Europe are of Palaeolithic origin. It is of course difficult to estimate actual populations for say, Mesolithic Europe although — as Cunliffe<sup>8</sup> suggests — population densities probably ranged between 0.50 and 0.005 persons per square kilometre. This would have left large areas unpopulated, especially in heavily forested areas in which hunting is more difficult than in grassland and open woodland. It also had implications for population expansion:

*For much of Europe during the Upper Palaeolithic and Mesolithic periods the sparseness of the population was a potential threat to survival. A group had to sustain a breeding population to reproduce and since marriage is most likely to have been exogamous — that is, mates, usually female, coming from an outside group — it was necessary for the mating network to be large enough to allow members reaching maturity to find breeding partners. In areas where the human density fell below a certain level, because the environment could not sustain a sufficient number of bands in close enough proximity to maintain a viable exogamous mating network, total depopulation would quickly have followed.<sup>9</sup>*

**2. Neolithic Introduction:** The second group of theories, broadly speaking, offer two places of origin for the people who introduced IE languages into Europe during the Neolithic. One is in the **Balkan/Anatolia** region, the other in what has been called the **Pontic Steppe**. This is the region between the Caspian and Black Seas, now in Southern Russia.



The big question in Linguistics is not so much where the people came from but where the earliest versions of IE originated. This is usually referred to by the German word, *Urheimat* and the Proto-Indo-European language as *PIE*.

A recent book by David W. Anthony called *The Horse, The Wheel, And Language — How Bronze-Age Riders From The Eurasian Steppes Shaped The Modern World*<sup>10</sup> has re-focused attention on the Pontic Steppe as the most likely source of PIE and ultimately, the IE incursion into Europe.

One of the problems holding up the advancement of our knowledge of pre-history is the refusal by archaeologists and linguists to talk to each other and until

<sup>8</sup> Cunliffe, B. (Ed) *The Oxford Illustrated Prehistory of Europe*, Oxford University Press, 1994, p. 119.

<sup>9</sup> Cunliffe, B: *Europe between the Oceans – Theme and Variations: 9000 BC – AD 1000*, Yale University Press, 2008, pp 81-82

<sup>10</sup> David W. Anthony: *The Horse, The Wheel, And Language — How Bronze-Age Riders From The Eurasian Steppes Shaped The Modern World*, Princeton University Press 2007.

recently, for either to acknowledge genetics. So, Anthony is a rare bird, an archaeologist who has also turned his attention to Linguistics and applied his extensive knowledge of the archaeology of Southern Russia and the Ukraine to the question of the PIE *Urheimat*. He makes a meticulously documented argument that PIE originated in the Steppes, an area his reviewer Christine Kenneally<sup>11</sup> described as *a landscape consisting mainly of endless grasslands and “huge, dramatic” sky*. She also commented that *Anthony is not the first scholar to make the case that Proto-Indo-European came from this region, but given the immense array of evidence he presents, he may be the last one who has to*.



Kenneally explained that English like nearly all other modern European languages, belongs to the Indo-European language family which was itself descended from an ancient tongue,

---

<sup>11</sup> “Giddyap - NYT Review Anthony, New York Times Sunday Book Review” by Christine Kenneally, March 2, 2008: <http://www.nytimes.com/2008/03/02/books/review/Kenneally-t.html>. Christine Kenneally is herself a noted linguist and the author of “The First Word: The Search for the Origins of Language.”



Figure 5.1 The Proto-Indo-European homeland between about 3500–3000 BCE.

*The PIE Homeland 3500-3000 BC (From Anthony 2007<sup>12</sup>)*

*....known as Proto-Indo-European, and it was spoken around 3500 B.C. Thanks to a careful comparison of the daughter languages (as linguists call them), thousands of Proto-Indo-European words have been reconstructed, including those for otter, wolf, lynx, bee, honey, cattle, sheep and horse. The way some words group together in Proto-Indo-European shows that its speakers believed in a male sky god, respected chiefs and appointed official warriors. One word for wheel sounded something like “roteh.” The word for axle? “Aks.” .....*

*..... Perhaps the most important moment came with the domestication of horses, first accomplished around 4,800 years ago, at least 2,000 years after cattle, sheep, pigs and goats had been domesticated in other parts of the world. Initially, horses were most likely tamed to serve as an easy source of meat, particularly in winter; it wasn't until centuries later that they were ridden, and then eventually used to pull carts with solid wheels, turning the Proto-Indo-European speakers into mobile herders and the steppes into a conduit for themselves and their language. Later, they became skilled warriors whose spoked-wheel chariots sped them to battle and spread their language even farther.....*

*....The impact of horses on the reach of language is particularly important to Anthony, and he conveys his excitement at working out whether ancient horses wore bits (and were therefore ridden by Proto-Indo-Europeans) by comparing their teeth to those of modern domesticated and wild horses.... Anthony also describes a world in which spoken poetry was the only medium, one that helped spread Proto-Indo-European through what he calls “elite recruitment.” It wasn't enough for the newcomers to assume a dominant position: in order for their language to be picked up, they also had to offer the local population attractive opportunities to participate in their language culture — a process that continues today, incidentally, with the spread of English as a prestige language.*

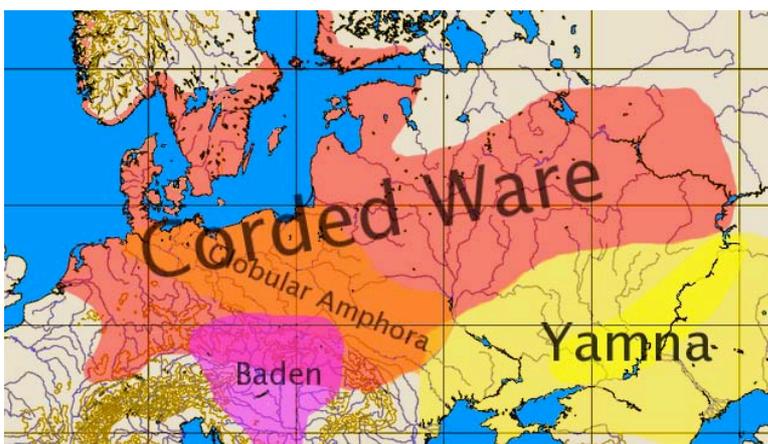
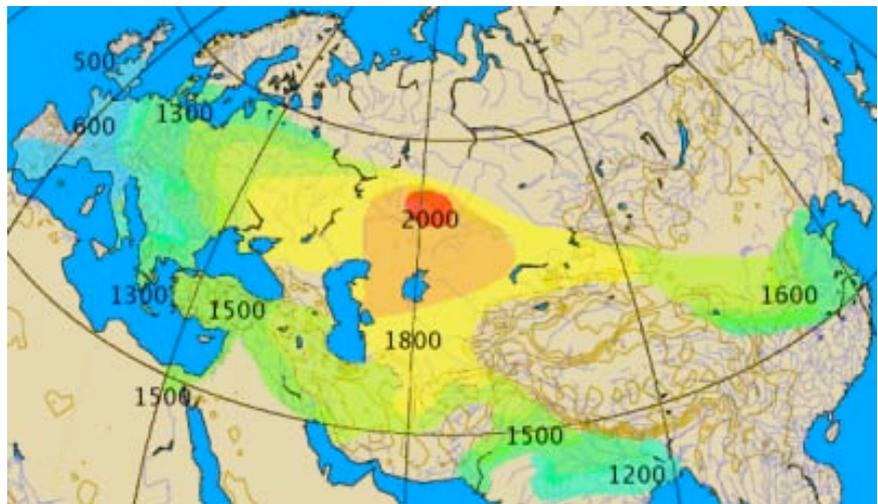
<sup>12</sup> David W. Anthony: *The Horse, The Wheel, And Language — How Bronze-Age Riders From The Eurasian Steppes Shaped The Modern World*, Princeton University Press 2007, p.84.



Taking what Anthony and others have said, it would seem that PIE was percolating in this part of the Asian Steppe from about the 5<sup>th</sup> Millenium BC but would not have come to Europe until sometime after 3500 BC. This was an era in which some pre-historians<sup>13</sup> have called the ``*Secondary Products Revolution*'' because it was during these centuries that products such as cheese, beer and leather were invented, along with the wheeled wagon which made it possible for people to travel longer distances and to haul heavier loads.

*The spread of the chariot (Wikipedia Commons, GNU Licence).*

Horses were first domesticated in the Sredny Stog culture, north of the Sea of Asov in present-day Ukraine. The earliest chariot so far found was at Krivoye Lake, not far from the Kazakhstani border. The skeleton and horse skull buried with the chariot have been dated to 2026 BC.



*European cultures after the decline of LBK*

Europe at this time (4<sup>th</sup>-2<sup>nd</sup> Millenium BC) had seen the end of the LBK and its replacement by a profusion of smaller local cultures, including the TRB (aka Funnel Beaker), Rössen, Yamna and Tripolye folk, but eventually by the huge wide-spread **Corded Ware** culture. This is also known by other names, including Battle Axe Culture and Single Grave Culture. It had its origins in the Neolithic but reached its peak during the Copper age before declining during the Bronze Age.

<sup>13</sup> See Indo-European Origin at <http://james.fabpedigree.com/lmindoe.htm>

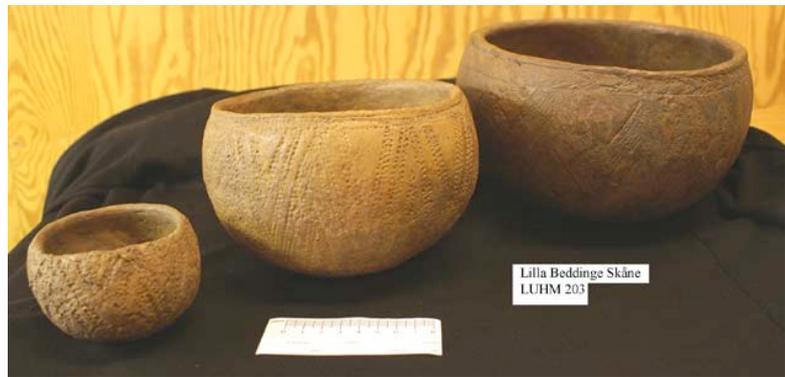
Although its chronology varies with location, overall the Corded Ware Culture ranges from about 3,200 BC to 1,800 BC and is clearly associated with the introduction to Europe of metal technologies. It is also the cultural phase in Europe most probably associated with the coming of the Indo-European languages.



*Yamna pot (Wikipedia commons, GNU).*

In other parts of Europe, this was also the time of the Megalith builders, the people who erected sometimes huge structures of stone, the most famous of which is of course Stonehenge in England.

*Battle-Axe Pots, Lilla Bedinge Sweden  
(Public domain)*



But did IE come to Europe from the kurgan-cultures (eg, Sredny Stog ) of the Pontic Steppe? Opponents of the theory argue that the advances of the kurgan culture were not big enough and were too late to allow the spread of languages found in Europe. Countering this, those in favour argue that language replacement is common: indigenous languages have all but disappeared in modern Mexico for example, replaced by Spanish and you never hear Pictish spoken today although it was a dominant language in Roman Britain .

The other objection was that the kurgan domestication of the horse, horse-back riding and the wheeled wagon, were not cultural advances large enough to power change on the scale Europe experienced after the introduction of Indo-European language. This however seems to underestimate the implication of these advances: while a handy larder of horse meat might have been useful, more significant was the invention of horse-back riding and the invention of the bridle and bit. This allowed men to travel further and faster which meant in turn, they could herd larger numbers of cattle further afield on the one hand and on the other, raid neighbours' herds and rustle their cattle... "Raiding" was to become an important feature of the Celtic culture while Celtic cavalry were rightly famous throughout later, Roman times. Wagons — and there is evidence that bronze wheels were cast even during kurgan times — also led to the invention of the battle chariot as well as providing a means by which larger loads could be carried further and faster, not only for trade purposes but also during human migrations.

## **The “Invasion” theory and by what route?**

It seems unlikely that IE came to Europe by means of large-scale military invasion or by evolving from the diverse languages spoken there by Palaeolithic hunter-gatherers as earlier theories had proposed. More probably IE languages came to Europe in the Neolithic and language change followed a gradual process of what Anthony called “elite recruitment” — that is, local people adopting the language of the new élite because it gave them access to cultural and perhaps social or political advantages which otherwise they would find denied them.

However, this presupposes that there was a new social “Élite” to copy. How many horse-people from the east came into Europe and whether they came peacefully or won their place through conquest is not known. One can only assume there would have been some conflict between the indigenous people and the newcomers. One would have to assume also that the new-comers came in sufficient numbers to defend their communities even if the locals were bought off by the wonders they brought with them.

Earlier in this course (in *A Green and Pleasant Land - Europe in the Neolithic*) I reported a finding by Wolfgang Haak et al.<sup>14</sup> that the aDNA of the LBK skeletons he studied was largely mtHaplogroup N1a<sup>15</sup> but that haplogroup N1a is found these days in European populations at very low frequency — only about 0.2% — suggesting that the number of immigrant farmers was relatively small compared to the majority Mesolithic populations of the time. On the other hand, Sampietro et al.<sup>16</sup> studying the aDNA of skeletons from the Cardial or Impressed Ware culture of the Mediterranean found no similar discontinuity. They hypothesised that during the European Neolithic

*.... the dispersal of agriculture involved both demographic and cultural diffusion, depending on the region where it took place. Whereas the dispersal of the agricultural in Central Europe could follow a cultural diffusion model, in the Mediterranean our results suggest a demic diffusion model.*

---

<sup>14</sup> This is the study reported earlier by Wahl (op. cit - see above) in which aDNA was analysed from skeletal remains in German cemeteries. See Haak, W. et al: "Ancient DNA from the First European Farmers in 7500-Year-Old Neolithic Sites". *Science*, 310:1016-1018. 2005.

<sup>15</sup> Ricaut, F-X et al., Genetic Analysis of a Scytho-Siberian Skeleton and Its Implications for Ancient Central Asian Migrations, *Human Biology* 76.1 (2004) 109-125

<sup>16</sup> M. L. Sampietro, et al: Palaeogenetic evidence supports a dual model of Neolithic spreading into Europe, *Proc. R. Soc. B*; doi:10.1098/rspb.2007.0465

