

Summary 12: A Green and Pleasant Land

The domestication of animals and the development of agriculture and pottery are generally taken to be the three criteria for the Neolithic. Farming was introduced into Europe from the Levant. A primitive type of wheat, "emmer" (*Triticum turgidum ssp dicocoides*) was being farmed in the Balkans by ~7.5 – 7 KYA and on the Atlantic coast, including the British Isles, by ~6 KYA. Although it is not known when cattle were domesticated in Europe, researchers testing aDNA have found that unlike people in the Levant and North Africa, northern Europeans were not lactose tolerant 5,000 years ago. They concluded that after the advent of dairying, the gene spread very rapidly because of positive selection. Apart from the Venus figurines of Dolní Věstonice about 29-25 KYA, ceramics were not used in Europe before the Neolithic.

Although the moister, warmer climate and the inventions of the Neolithic allowed populations to explode, there can be no doubt that people — especially women — had to work a lot harder and for longer hours than they did as nomadic foragers. While men continued to hunt, women probably were responsible for the agriculture; they had more babies; and they became the potters. Pottery is said to have come to Europe in the style known as *Linienbandkeramik*, or LBK ware. This culture flourished from about 5,500 to 4,500 BC, especially along the middle Danube and the upper and middle Elbe and Rhine. Of the three variants of this style, the most wide-spread was the *Western Linear Pottery Culture* which originated on the Danube but spread down the Rhine, Elbe, Oder and Vistula Rivers.

Did they borrow or were they conquered? In his book *The Seven Daughters of Eve*, Bryan Sykes says that agriculture was brought to Europe by the descendents of the seventh daughter, Jasmin. Other geneticists more properly label this mtHaplogroup simply "J". This was the received wisdom since Ammerman and Cavalli-Sforza proposed their **demic-diffusion model** in 1984 and postulated that extensive migrations of Near Eastern farmers during the Neolithic brought agricultural techniques to the European continent. This would imply that a large proportion of the present-day European gene pool should be derived from the Neolithic migrants. In contrast, others have proposed a **cultural-diffusion model** (Dennell 1983) in which the transfer of agricultural technology occurred without significant population movement. Under this model, the majority of the genetic diversity within Europe would have its roots in the Paleolithic.

Studies of tooth enamel and bones from ancient cemeteries indicate that although there was some settlement by Neolithic people in Mesolithic areas, the indigenous inhabitants rapidly adopted the new neighbours' ways. Of course it is also possible that the indigenous people had been evolving herding and farming techniques and so readily recognised the improved ways of the Neolithic immigrants. There is no evidence of massive invasions or anything but peaceful cultural diffusion so that it seems fair to conclude that the spread of agriculture was a substantially indigenous development accompanied by only a relatively small number of Middle Eastern agricultural role models and maybe mentors.

An interesting feature of the LBK was that it did not extend onto the coastal areas of north-west Europe — there is no evidence of it in Denmark or the seaboard of Poland and Germany. At the other extreme of its spread, there was no LBK on the coast of the Black Sea in Romania. These all remained Mesolithic for much longer, in the north-west particularly seeming to prefer to exploit the Atlantic salmon runs and there as elsewhere, to enjoy the advantages of the beachcombing life.

Two routes, not just one: Scientists now believe that the Neolithic revolution came to Europe via two, not just a single route. One such route originated near the Carpathian Mountains, entering Europe up the valleys of the major rivers, including the Danube. These people brought with them the LBK pottery style we have already examined. Genetically they were characterised by the Haplogroup N1a which these days is 150 times less frequent than it was in Neolithic times indicating that the Neolithic immigrants did not have a significant genetic effect upon the population. The **second, southern route** was around the shores of the Mediterranean Sea by people of mtHaplogroup J. They too can be traced by a style of pottery known as **Impressed Cardial Ware** from the characteristic decoration made by pressing the wavy edge of a particular shell into the clay while it is still wet. The men who accompanied the women who probably made the Cardial Ware belonged to two y-Haplogroups, E and J, the latter named by its discoverer after the comparable mtHaplogroup. Both are complicated and subject to rapid change in nomenclature as research uncovers more SNPs to refine the para-haplogroups.

y-Haplogroups E and J: Haplogroup E3a is the most common lineage among African Americans. **E3b** clusters are seen today in Western Europe, the Balkans, the Near East, and both Northeast and Northwest Africa. A sub-clade, **E3b1a2** includes most European E3b ranging from Iberia to Turkey. Thought to be a fellow traveller with Hg E in the spread of the Neolithic into Europe was **y-Haplogroup J** (not to be confused with the mtHaplogroup J or "Jasmin"). In general, the J's are more common in Europe as one looks farther south and east, with the maximum concentrations near the Mediterranean coast. Almost all European Js are Hg J2 which expanded out from the northern part of the Fertile Crescent about 7000-9000 years ago. It has been suggested that men carried Hgs E and J into Europe as far as the central Mediterranean coast and as far north as the Balkans and the Danube, but that it was carried further north and as far west as Iberia by later Greek or Phoenician traders.

A **haplotype** of J is the "**Cohen Modal Haplotype**". This clearly distinguishes a long lineage of Jewish religious leaders who claim to be descended from Aaron, the brother of Moses. Although not all modern-day Kohanim possess this haplotype, a significant proportion do.

Zvelebil's analysis of methods of cultural transmission:

1. **folk migration**, the traditional migrationist explanation: the directional movement of a whole population from one region to another, leading to genetic replacement;
2. **demic diffusion** by means of a wave of advance;
3. **elite dominance**, in which a social elite penetrates an area and imposes a new culture on the local population;
4. **infiltration** of a community by small numbers of specialists fulfilling a particular need, such as livestock farmers;
5. **leapfrog colonization** by small groups targeting optimal areas to form an enclave surrounded by indigenous inhabitants;
6. **frontier mobility**, or exchange between farmers and foragers at agricultural frontier zones;
7. **regional contact**, involving trade and exchange of ideas.

Eventually we will see the same mechanisms argued when we consider the so-called "invasions" of Britain by the Celts and later, by the Vikings. As for the Neolithic in Europe, it is clear that with the exception of a relatively small number of Neolithic immigrants, Europe was populated by people whose ancestors arrived during the Pleistocene, either before the LGM or in the warm period between the LGM and the Younger Dryas. Although many genes and cultural skills originated in the east, the genetic diversity of modern Europe is largely home-grown and the skills of the people learned and adapted, sometimes invented, for themselves.