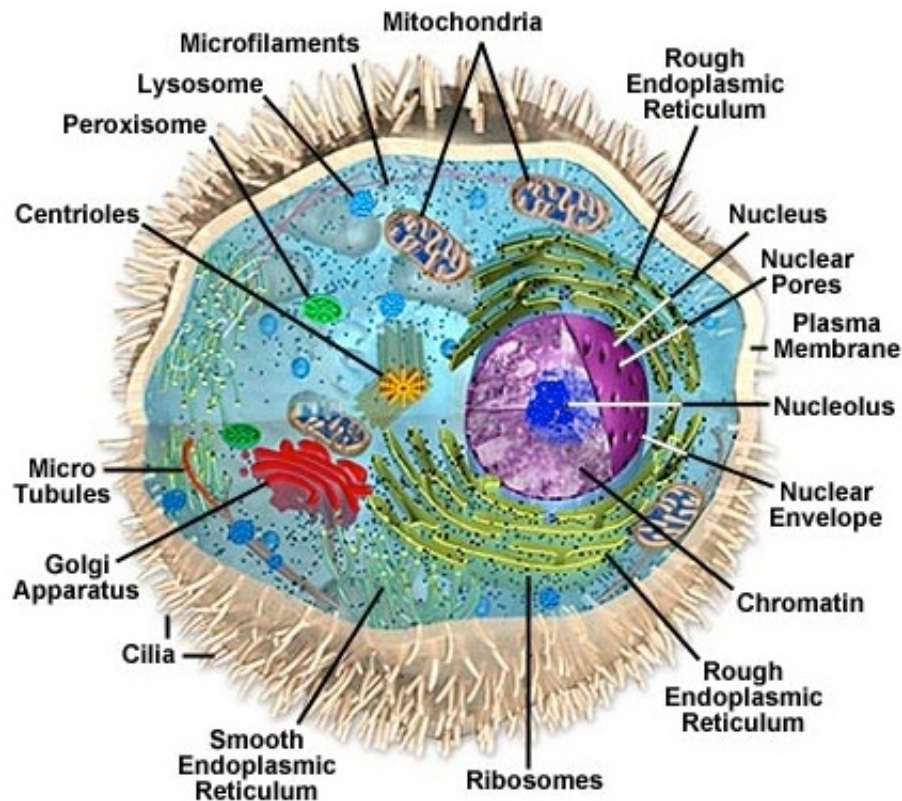


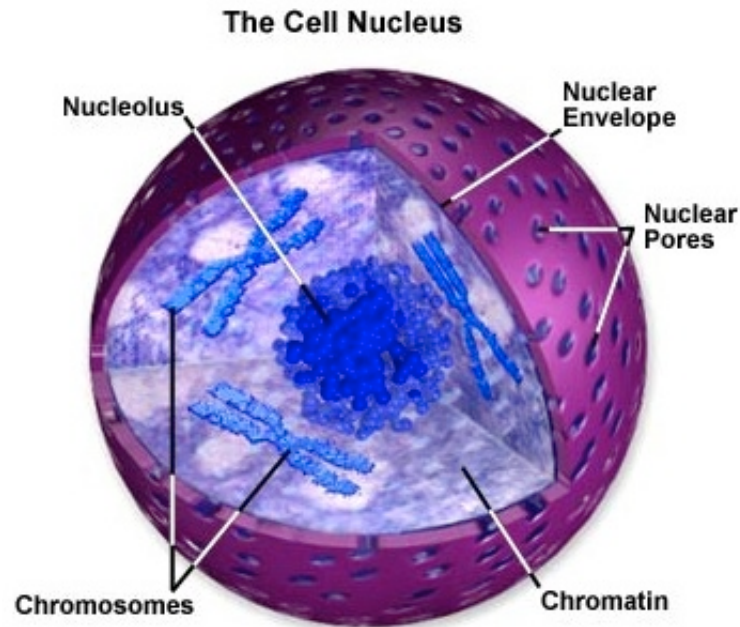
Eves and Adam - CoEvolution of mtDNA and Y-Chromosome DNA

According to a www.cartage.org.lb web page (see also micro.magnet.fsu.edu): "... Animal cells are ... eukaryotic ...



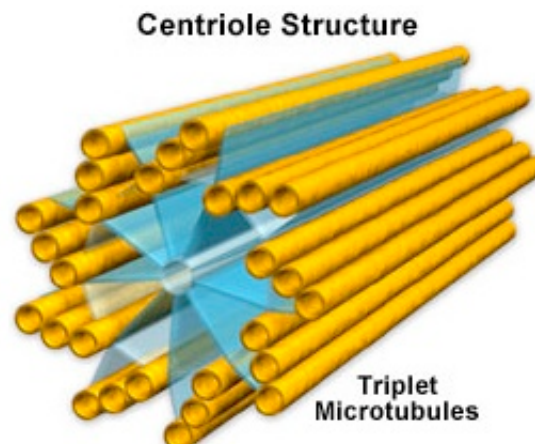
... **Mitochondria** ... are the power generators of the cell, converting oxygen and nutrients into ATP (adenosine triphosphate). ATP is the chemical ... that poweres the cell's metabolic activities. This process is called aerobic respiration and is the reason animals breathe oxygen. The mitochondrion ... has its own DNA ...[which]... is circular, as in the prokaryotes ... and reproductive methods (binary fission) are more like those of the prokaryotes ... mitochondria are inherited through the maternal lineage. A sperm carries mitochondria in its tail ... When it attaches to the egg during fertilization, the tail falls off ... mitochondrial DNA ... suggests that modern humans descended from a small group of hominids in Africa around 200,000 years ago ...

inside the nucleus ...

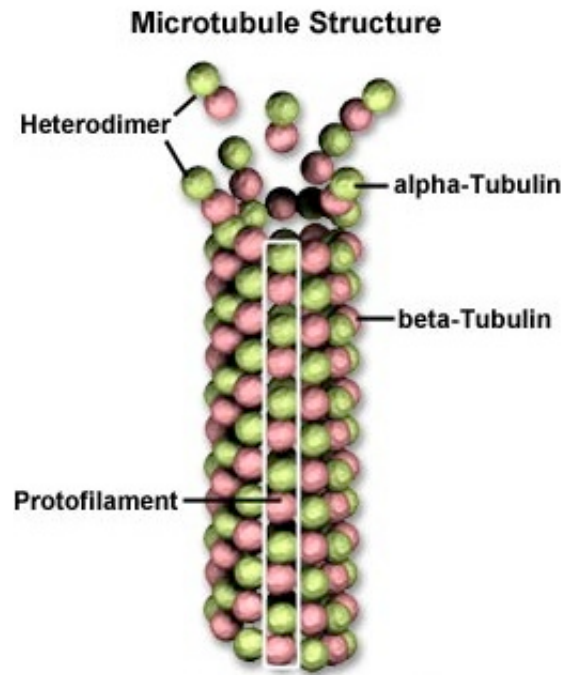


... of every human cell is nearly 6 feet of DNA, which is divided into 46 individual molecules, one for each **chromosome** and each about 1.5 inches long ... Each DNA strand wraps around groups of small protein molecules called histones, forming a series of bead-like structures, called nucleosomes, connected by the DNA strand ... uncondensed chromatin has a "beads on a string" appearance. The string of nucleosomes, already compacted by a factor of six, is then coiled into an even denser structure, compacting the DNA by a factor of 40 ... Euchromatin is the genetically active portion and is involved in transcribing RNA to produce proteins used in cell function and growth ... During interphase, when the cell is carrying out its normal functions, the chromatin is dispersed throughout the nucleus in what appears to be a tangle of fibers. This exposes the euchromatin and makes it available for the transcription process. When the cell enters metaphase and prepares to divide ... all the chromatin strands make copies of themselves through ... DNA replication. Then they are compressed 10,000-fold ... into ... chromosomes. As the cell divides to become two cells, the chromosomes separate, giving each cell a complete copy of the genetic information contained in the chromatin ...

Centrioles ...



... are ... paired organelles .. found together near the nucleus, located at right angles to each other. Each centriole is made of nine bundles of **microtubules**



(three per bundle) arranged in a ring. ... they organize the microtubules in the mitotic spindles during mitosis and meiosis ... Centrioles ... are self-replicating and make copies of themselves just before cell division begins. As the cell prepares to divide, the centrioles separate and move toward opposite poles of the cell. As they're moving apart, they radiate microtubules in a spindle-shaped formation that spans the cell from pole to pole. The spindle fibers act as guides for the alignment of the chromosomes as they separate. ... ".

There are three levels at which the structure of human cells operate - Energy, Physiology, and Consciousness:

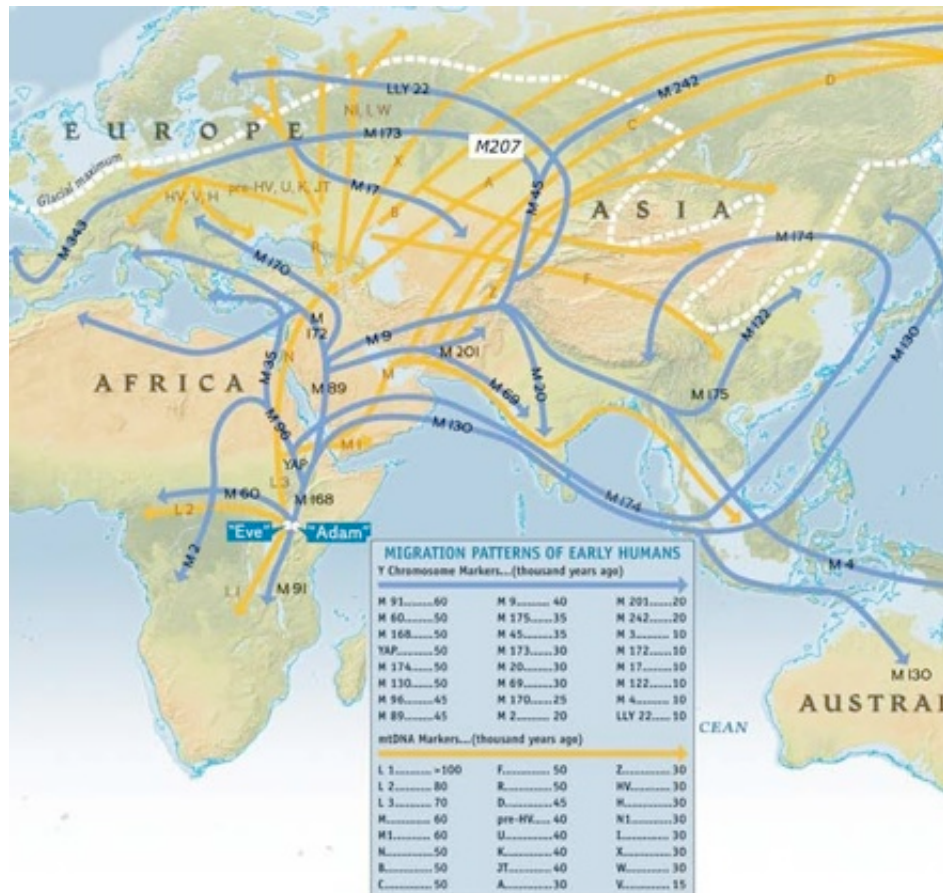
1 - **Energy** production is the most basic necessity on which the other two are built. It is carried out by the **mitochondria**, whose DNA is inherited maternally, so that **maternal mtDNA** describes the evolution of the basic energy structure on which human physiology and consciousness is based. Energy production is centered at the level of the **individual cell**.

2 - Human **physiology** is the intermediate level necessity on which the third is built. It is carried out by the **nuclear DNA chromosomes**. The **Y-chromosome DNA** is inherited paternally, so that Y-chromosome DNA describes the evolution of the basic physiology structure on which human consciousness is based. Human physiology is centered at the level of the **individual human being**.

3 - Human **consciousness** is the highest level necessity for human civilization. It is carried out by **Quantum Resonance in the MicroTubules of the Centrioles**, similar to the processes described by Penrose and Hameroff. The evolution of human civilization is studied, not so much by DNA analysis, as by consideration of human history, philosophy, and religion. Human consciousness is centered at the level of

the **society of various human and spiritual beings** with whom any human being may be connected.

The following images and quotations, from the National Geographic Genographic project unless otherwise indicated, describe some details of the Co-Evolution of mtDNA and Y-Chromosome DNA using maps in which mtDNA population movements are indicated by gold lines and Y-Chromosome DNA population movements are indicated by purple lines:



About **200,000** years ago



mitochondrial mtDNA indicated that the **basic energy structure** existed in populations throughout **Africa**.

By about **55,000** years ago



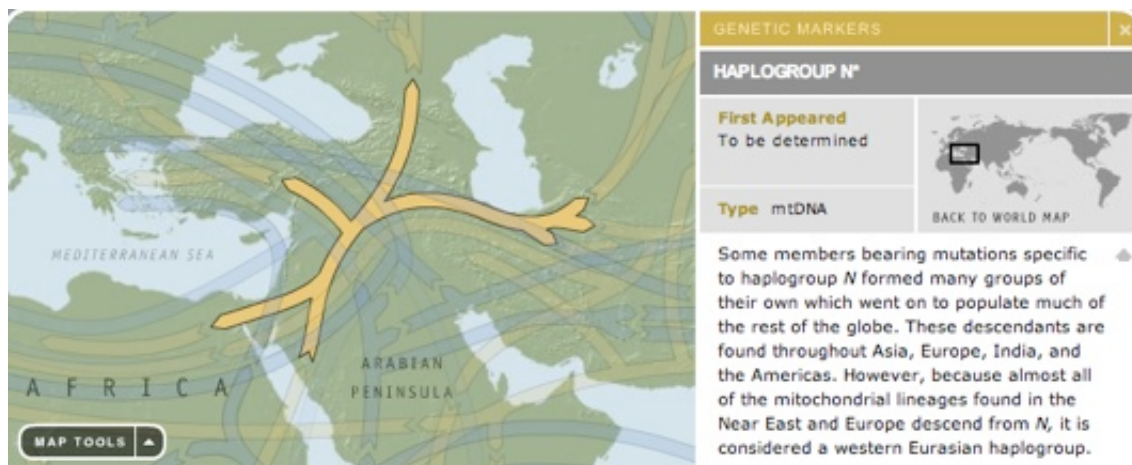
mtDNA populations with the **basic energy structure** had spread throughout the Indian Ocean area and functioned as a substrate on which populations with basic human physiology (determined by nuclear DNA chromosomes including the Y-Chromosome) might emerge.

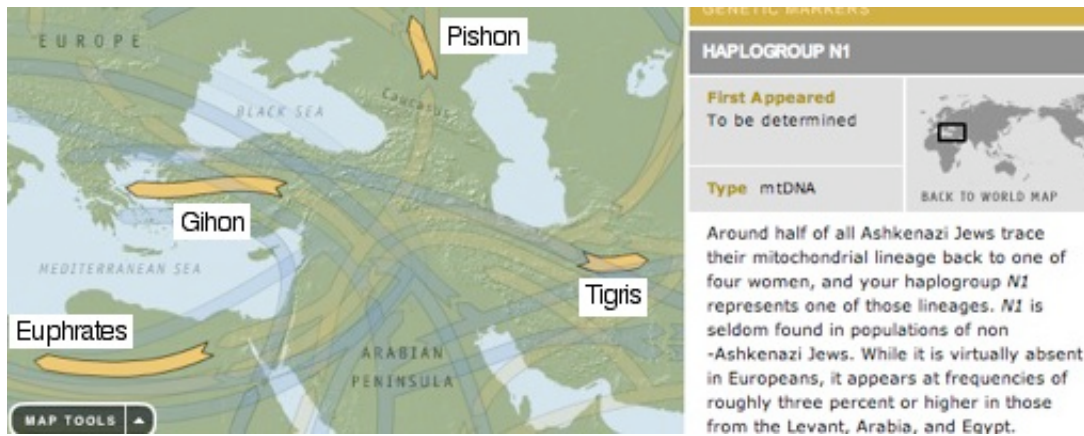
By about **50,000** years ago



Y-chromosome DNA indicated that basic human physiology had emerged in Africa, with M168 migrating North to Arabia, and with M130 following the mtDNA populations to the Indian Ocean and East Pacific areas

and **mtDNA population** with the basic energy structure had spread **North to Finland/Scandinavia (by haplogroup U5)** and across the Pacific Ocean and further had established **a cross-roads population center near the Mediterranean, Black, and Caspian Seas at Eden (by haplogroup N)**:





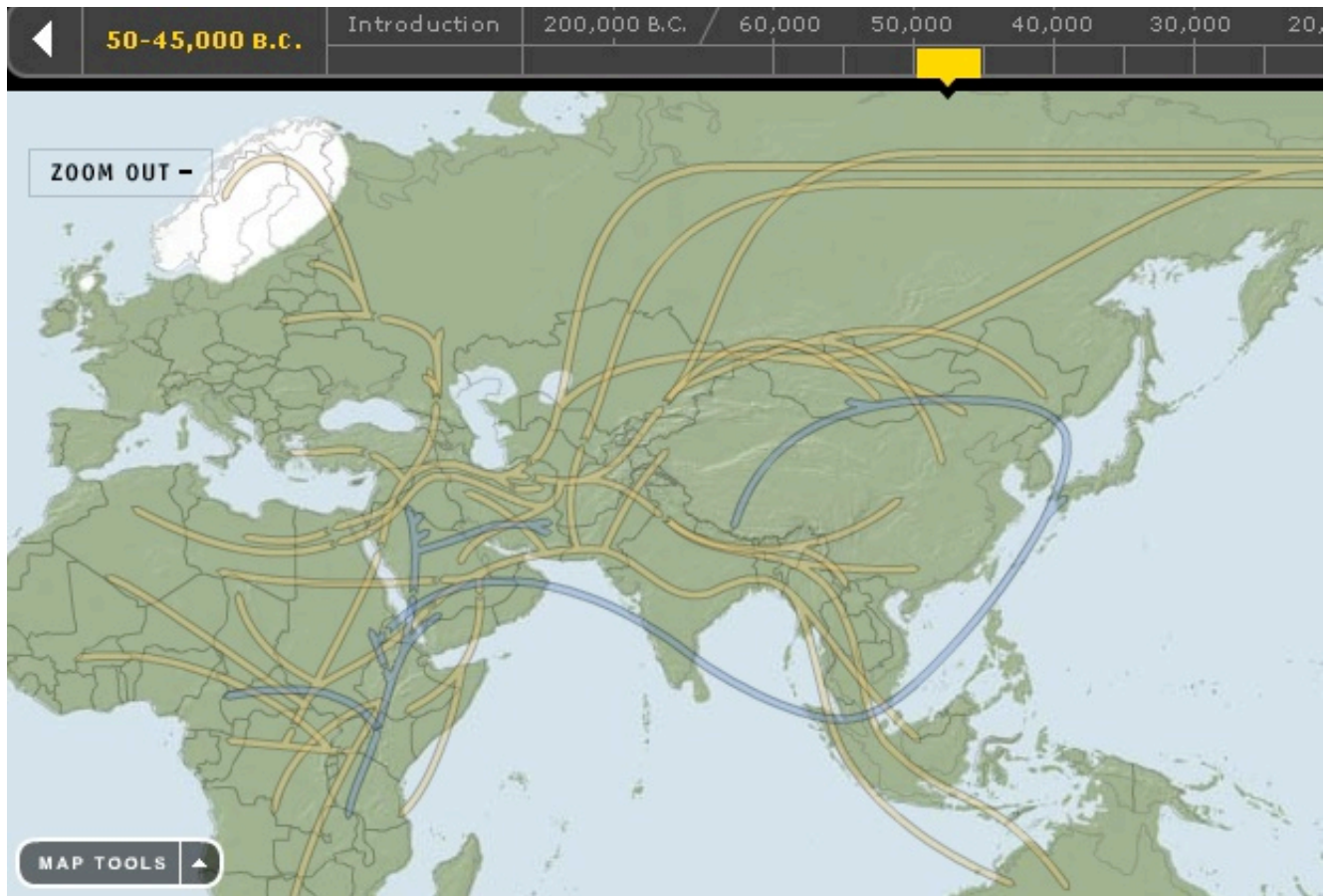
As this map (adapted from from Urartu Dyly ve Kulturu web page)



indicates, the **Four Branches leading the Ashkenazi N1 mtDNA population out of Eden** are:

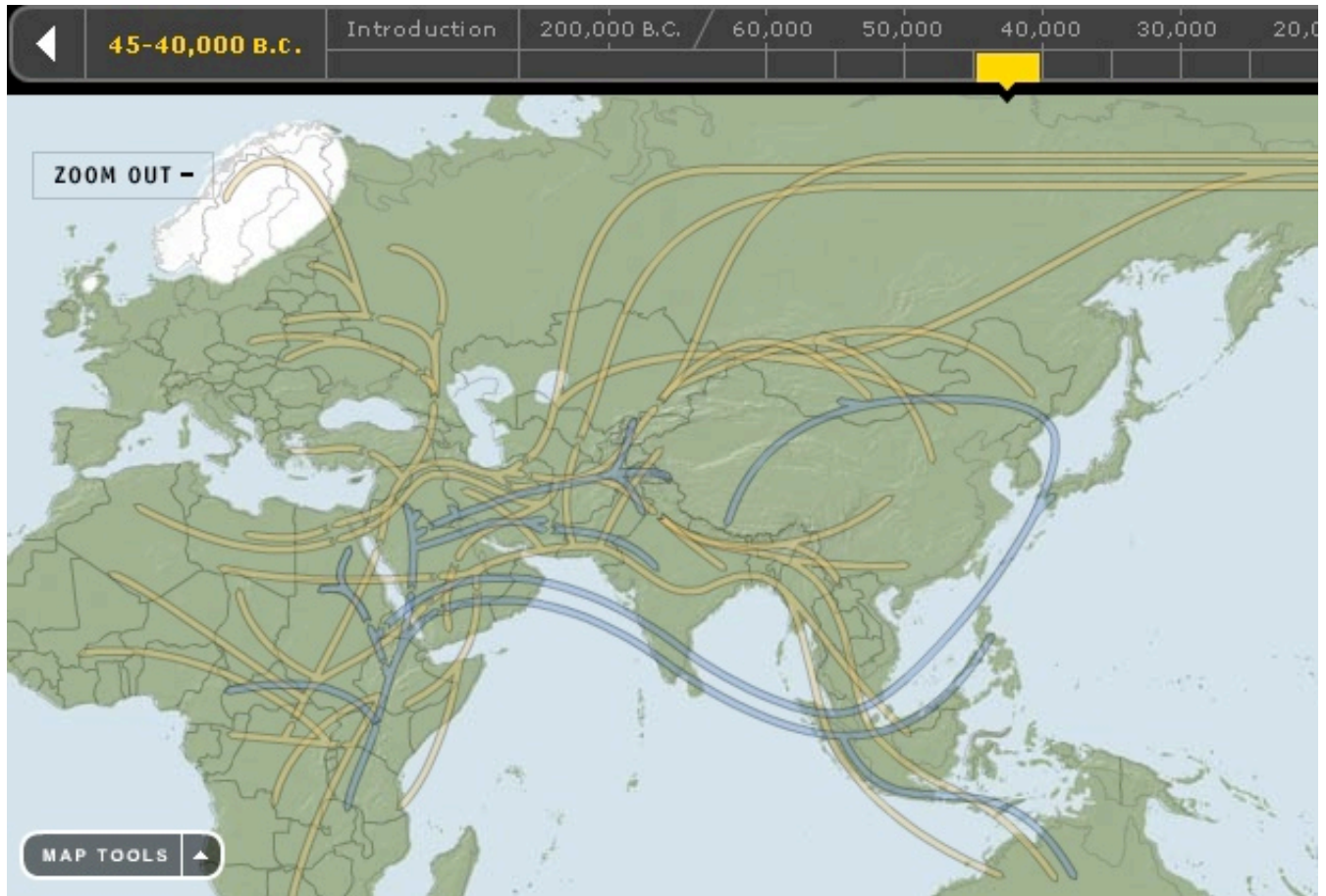
- **Gihon** to Turkey, Greece, Italy, the Nile and Africa along the Gihon = Ceyhan + Mediterranean + Nile
- **Euphrates** to Arabia and Northern Africa
- **Tigris** to the Pamir Knot and on to India, China, the Pacific and the Americas
- **Pishon** to Russia, Europe and Siberia along the Pishon = Aras + Caspian + Volga

By about **45,000 years ago**



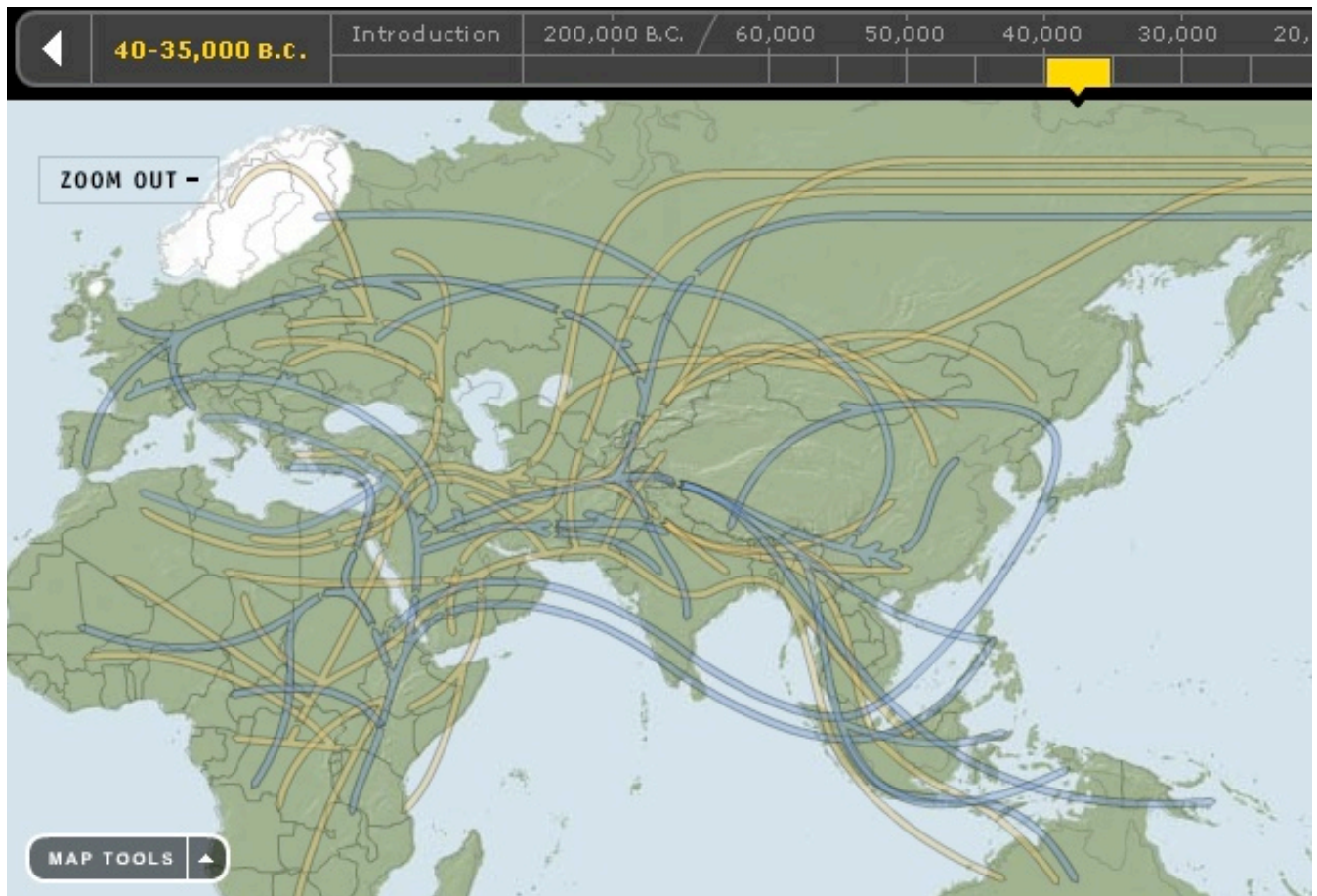
Y-chromosome DNA populations expanded further into Africa; the M89 - M69 populations went West toward India; and the **M89 population was attracted to migrate to Eden.**

By about **40,000 years ago**



Y-chromosome DNA populations M89 had branched by M9 on to the Pamir Knot intersection of the major Central Asian Mountain Ranges, including the Altai in the North and the Himalaya in the South and **YAP and M96 had branched from M168 into the Nile River Valley.**

By about **35,000 years ago**



Y-chromosome DNA populations branched from M96, including

- **M35** that was attracted to bypass Eden and go directly North from the Nile across the Mediterranean to the Gihon Ashkenazi N1 mtDNA population that went out of Eden to Turkey, Greece, and Italy and
- **M2** that migrated South to Southern Africa



in the land of the **ancient Mozambique-related L0 mtDNA population**



whereupon the M2 Y-chromosome population bred with the L0 mtDNA population

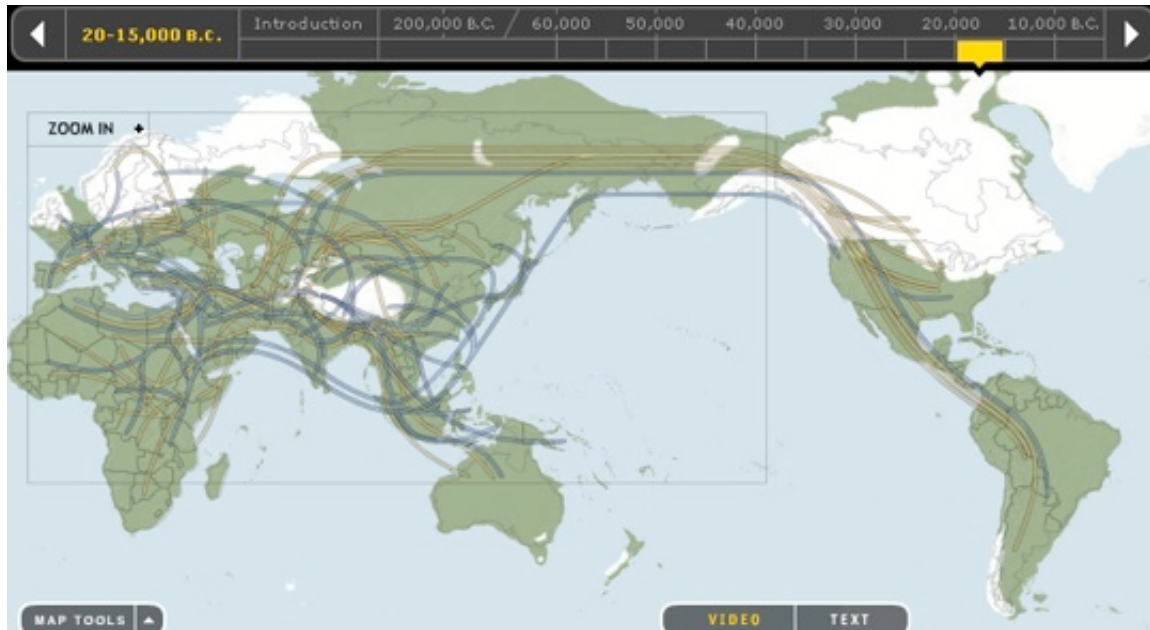


to produce, around 30,000 years ago, the large-brained Boskop population.

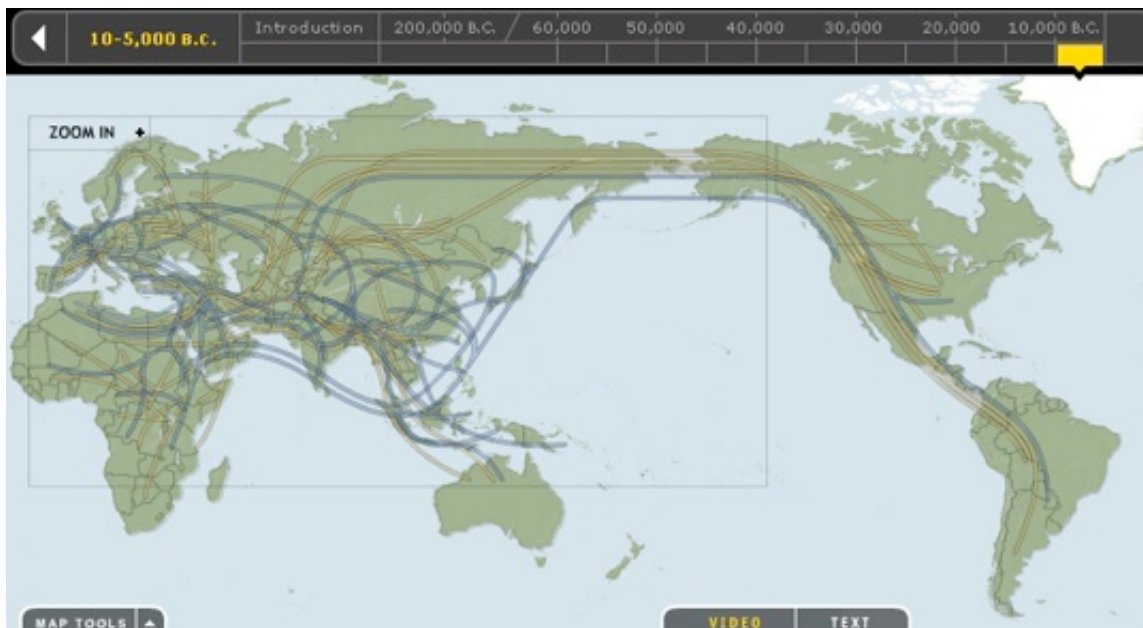
M9 at the Pamir Knot branched into M45 to the North and then West by **M207** and then further West by **M173** and, by **M343**, all the way to the Atlantic- according to the National Geographic Genographic web site, **M207** is "the ancestor of most western European men alive today" and "the number of descendants of ... **M173** remains very high in western Europe. It is particularly concentrated in northern France and the British Isles where it was carried by ancestors who had weathered the Ice Age in Spain" and "**M343 ... dominated the human expansion into Europe**".

Other branches of M89 (that is, M172 and M170) went into the Mediterranean and Southern Europe.

As late as around 15,000 years ago, glaciation was still at a high level



After around 10,000 years ago, most of the glaciers had melted



producing a much higher sea level that flooded much productive land.

The loss of so much productive land led to conflict over limited resources, producing a strong evolutionary advantage for organized military with highest war technology, and a strong evolutionary disadvantage for contemplative high-level spirituality. From this time on, **the large-brained Boskop were extinct** and, according to a 23 March 2008 entry in John Hawks' weblog, "... there has been a reduction in the average brain size in South Africa **during the last 10,000 years**, and there have been parallel reductions in Europe and China -- pretty much everywhere we have decent samples of skeletons, it looks like **brains have been shrinking ...**".

Since (as anyone who has been through basic training knows) military discipline requires a high level of

blind obedience and technical skill and also a low level of creative independent contemplative thought, it is not hard to understand why the Boskop might have been easy to kill off and why human brain size has been declining,

especially in light of facts stated on the above-mentioned 23 March 2008 entry in john hawks weblog: "...

- brains are expensive ...[in]... energetic efficiency ...
- brains take a long time to mature ... and ...
- brains require high protein and fat consumption ...".

[Click here to see more about Human Consciousness and the Future of Human Civilization.](#)

Frank D. (Tony) Smith, Jr. - 2010