

G10: Reversing the Diaspora

Human migrations during the LGM

WC 2898

If the gentlemen archaeologists of the early 19th Century thought only of Before– and After– Noah's Flood, modern geneticists seem to consider the world Before– and After– the LGM. All things considered, the Ice turned out to be a very big punctuation point in human history, but it did not bring the world to a stop. Life went on, even when the Ice was at its worst — we have already seen that human beings in the refugia in southwestern Europe even found time to paint some of the great masterworks of human history.

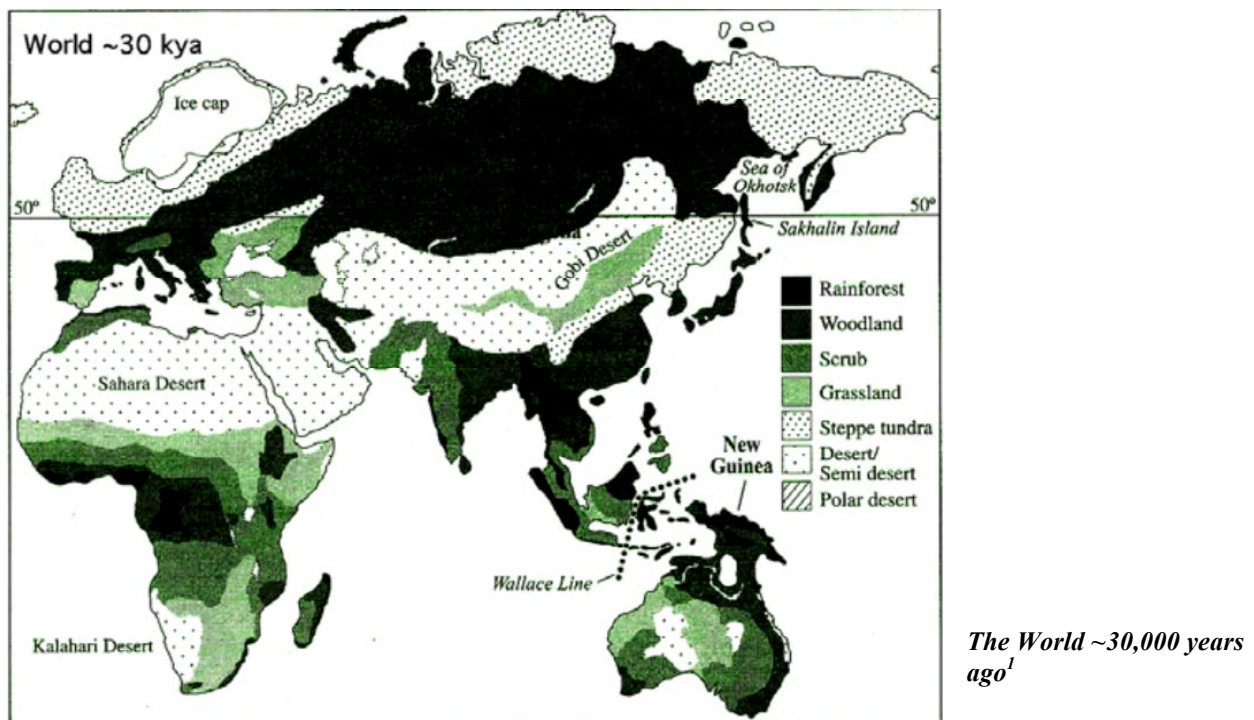
In the good times — the interstadials — human beings had expanded their territories either by migrating along beaches or by following rivers upstream, going where the game or other food resources took them. During the bad times — the stadials — they sometimes retreated to more clement areas or simply hunkered down and adapted their ways to life in the freezer. Some paleoanthropologists argue that it was at these times the greatest cultural advances were made.

However, when the Ice came upon them during the LGM, most human beings had no alternative but to seek warmer climes or to perish. Those who were able to relocate, did so by reversing the pattern their ancestors had always adopted and simply back-tracked downstream in the river valleys or, in the case of those who beach combed for a living, by following the long beach road until they found somewhere to live in at least minimal comfort. That is not to say that people moved *en masse* in an organized and purposeful way like Mao Zedong's *Long March* or as the pioneers of the Wild West did in their covered wagons: although we know that climates can change rapidly, it is probable that as the temperatures fell, animals found less and less food so they moved to greener pastures and people followed them. If they followed the river valleys or beaches to warmer climes it was not because they remembered that their ancestors had travelled in the reverse direction generations before... it would have been because there was more food in that direction. However, chances were that to do this meant advancing into some other peoples' territories. Fortunately perhaps populations were not large and there might have been other options but I would expect that our remote ancestors would have taken several generations to re-locate to refugia and their journey must have been at times violent and dangerous.

I have already mentioned the reverse migrations down the Dnieper, Don and Garonne/Dordogne river systems to the best-known of the European refugia. It is the re-expansion out of these three refugia which will occupy us for most of the rest of this course. However, we should first take a look at life elsewhere and some of the major changes to the dispersal of modern humans caused by the LGM.

First, and briefly, in Europe humans sought refuge in the Ukraine, the northern Balkans and in Northern Spain/Southern France. A lesser-known refuge during the LGM was in Italy, but this was different from the others in that people had always been there, the area was less affected by the Ice than elsewhere in Europe, and so the people just went on living, if not as they had always done, then with fewer changes to their lifestyle than to their north.

What I have not mentioned until now was that after the exodus from Africa, some of the people appear to have migrated to the west as distinct from those others whom we know went northwest into Central Asia or east to India, southeast Asia and Sahul. Those who went west were all descendants of those women who belonged to mtHaplogroup N (remember, only M and N came out of Africa). Through a series of mutations, mtHg J eventually evolved and their descendents peopled parts of the Levant, southern Europe and north Africa. We will come back to those when we consider the Neolithic and the spread of agriculture into Europe because these people, mtHg J — or *Jasmin* as Sykes calls this "daughter of Eve" — were importantly among those who brought wheat and the cultivation of other crops to Europe.

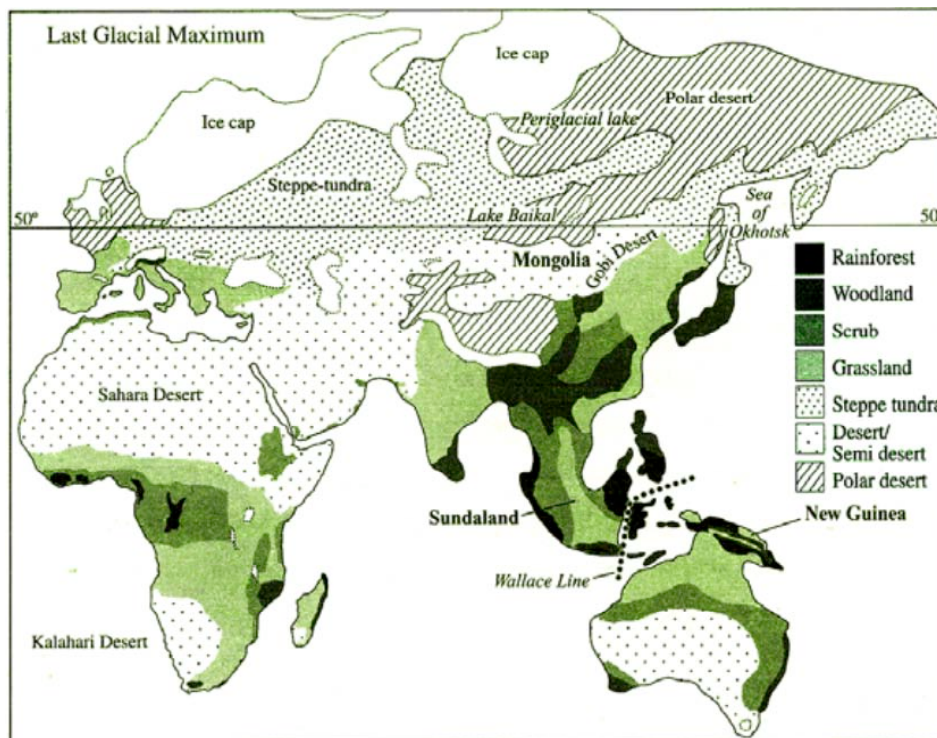


Let's for a moment look back at what the world used to be like, say ~30 KYA, by which time the basis for human distributions across the planet had been laid.

¹ Map from Oppenheimer, S: *Out of Eden – The Peopling of the World*, Robinson, London, 2003; p. 246 (Colorizing is mine - BH.)

Among the barriers to human habitation we can see in this map the rather small ice cap over Scandinavia, the Kalahari desert in southern Africa, the Sahara desert in Africa which stretches across Arabia and joins up with the Great Gobi desert in Asia, and a couple of patches of desert in Australia. The most noticeable of the regions conducive to human habitation on the other hand, is the huge "Mammoth Steppe", the greatest woodland the world has ever seen, stretching from Portugal to the shores of the Sea of Okhotsk north of Japan.

Compare this with the picture of the world during the LGM:



The World during the LGM²

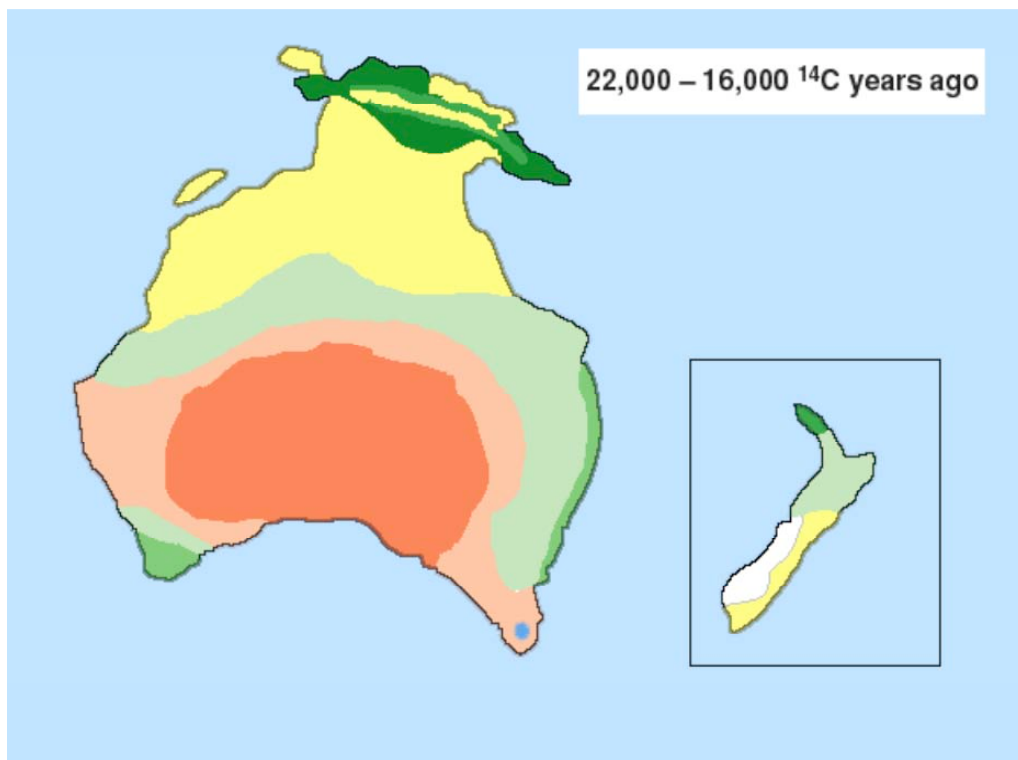
The change is startling: deserts have grown larger, the ice caps and adjoining polar deserts have greatly enlarged, rainforest and woodlands have shrunk, replaced in many places with grassland or scrub. Although there had been alternating stadials and interstadials in the previous 20,000 or more years to which humans had had to adjust, now the alternation stopped and the world grew steadily colder. More and more of the world's water was permanently frozen into ice so that sea levels dropped while the ice caps grew. In some parts, the ice was up to 5 km (3 miles) thick. The huge mass of the ice in some places caused the land beneath it to sink while in reaction, areas of the seabed rose. Sea level was anything up to 120 meters (400 feet) lower than it is today....

Northwestern Europe fared rather worse than most places on earth and much of it, including most of Britain and adjoining Doggerland, became uninhabitable.

² Oppenheimer, op.cit.

Eastern Europe was a little better off while only the south remained worth living in! Asia was better off during the LGM: most of North and Central Asia were ice-free except for the Tamyra Peninsula and west to the Urals where a smaller ice cap developed. The Himalayas and Tibetan Plateau, as we might have expected, turned to ice or at best, polar desert although surprisingly, there is some evidence of human occupation even during that time, suggesting that conditions might not have been as bad as in northern Europe. Another factor which has to be taken into account is not only ice, but wind: because humidity was very low, the cold winds, which blew almost continuously, were also very dry which in turn made life on or near the ice even less endurable.

As we can see from the map, the southern hemisphere was not as affected by the LGM as the northern hemisphere: in sub-Saharan Africa the Kalahari Desert expanded while in Australia the great central desert expanded to include up to 85% of the continent.



Sahul and New Zealand in the LGM.³

The arid conditions produced extreme desert conditions with drifting sand dunes in Central Australia (coloured orange in the map above); the temperate forests of the southeast were replaced by light scrub (light green) woodland (darker green) and semi-desert (light red). The land-bridge between Australia and New Guinea was covered with open grassland (yellow) while some rainforest was retained in New Guinea (dark green). Winds here would have been an important factor also. To

³ Adapted from [http://www.esd.ornl.gov/projects/qen/aust\(22.gif](http://www.esd.ornl.gov/projects/qen/aust(22.gif)

our east, the two islands of New Zealand were fused into one and there was an ice cap on the Alps while most of the land was covered by scrub and grassland.⁴

North America

Much like northwestern Europe, North America suffered badly at the hands of the LGM. Two-thirds of the continent was covered by not one, but two huge ice-caps. The largest of these, to the east, occupied what we know as Hudson's Bay and reached eastwards where it connected with the Greenland Ice Sheet. This, known as the Laurentide Ice Sheet, depressed the land under its huge mass to the extent that when the ice melted, a bay (Hudson's Bay) which is almost an inland sea, was formed. To the west was the smaller Cordilleran Ice Sheet above the Canadian Rockies. Alaska to the north was virtually ice-free and was, at that time, connected to Siberia by a land-bridge known as Beringia which, like Doggerland, has since sunk beneath the waves as the weight of the ice sheets was lifted.



Between the Laurentide and Cordilleran Ice Sheets was an ice-free corridor down which — so theory has it — the first people to enter the Americas travelled after crossing from Siberia into Beringia. Although this would have been a relatively inhospitable corridor, mostly polar desert and frozen tundra with at least one frozen lake *en route*, it is possible people did travel this way.

I have mentioned before that I do not intend dealing with the peopling of the Americas in this course. This is mostly for the reason that, apart from knowing something about the sculptures and pre-Colombian

ceramics of the region, I am not as interested in the Americas as I am in Eurasia and Australia and so have done much less reading on that region than elsewhere.

However, I will mention that Haplogroups A,C and D which are represented in the Americas have been all estimated to be very old, ranging from 41 to 20 KYA,

⁴ Adams, J: Australasia During The Last 150,000 Years, Environmental Sciences Division, Oak Ridge National Laboratory, Oak Ridge, TN 37831, USA: <http://www.esd.ornl.gov/projects/qen/nercAUSTRALASIA.html>

suggesting that the Americas were populated before the LGM, during one of the previous glaciations which opened the Beringia land bridge. In fact, the most recent research indicates that Beringia itself had become a refuge during past stadials but was later cut off from Asia. There was hence no further infusion of mtDNA from Asia into this now lost Atlantis but during its time above the icy waves, Beringia had served as the homeland of the genetic groups which moved either through the corridor between the Ice Sheets or down the coast into North America and not only spread out from there but have also mutated to form their own characteristic sub-clades.

Group B, alone of these groups, was both younger and absent from Siberia. There was also the "mysterious" mtHg X which poses a problem for geneticists. It is found these days only in the Americas and in Europe and is absent in Siberia. This suggests that maybe 30 KYA mtHg X ranged across far northern Eurasia in a wide belt but that the people between Europe and America were wiped out by the rigors of the LGM.

Asia during the LGM

Before the LGM, people had found their way into the hinterland by following the great waterways, including the Mekong, Yangtzi and Yellow Rivers and probably, by doing so discovered the great grasslands of Central Asia. However, as the LGM deepened, the line of permafrost advanced southwards to about the 50th parallel and much of the terrain turned to desert. Not everyone left, some even clinging on in the permafrost zone where the pickings apparently were still considerable.

Also, as the map of the world during the LGM shows, parts of Japan (then a peninsula) and the coastal regions opposite on what is now mainland East Asia retained forest cover. It is important to remember there, as well as in the south, the drop in sea level exposed large areas of land for people to colonise.

Perhaps more importantly than the advancing permafrost, much of the previously fertile land in a band around the 40th parallel, turned to desert. This would have reduced populations considerably and produced genetic bottlenecks. These deserts then became barriers separating South and Southeast Asia from Central and Northern Eurasia and isolating local populations from one another.

- At lower altitudes and further to the west, people might have looked more like Europeans.
- As the glaciers advanced, the hunters on the high steppe were severely stressed, those in the more southerly regions were driven off the Tibetan Plateau and down the great rivers into Southern China and Indo-China. Those in the more northerly parts — above 40° N — were forced to follow the Yellow River into Northern China. People who had been living even further north, now displaced by the Taklamakan and Great Gobi Deserts, were driven northwards into Siberia.
- From Siberia, many of those who had taken that path could only go further east, leading them eventually into the more temperate wooded regions on the coast of the Sea of Okhotsk from whence in all probability, the migrations to Beringia and thence to the Americas began.
- Refugees from Central Asia, retreating down the rivers, colonised the much-expanded coastal areas, probably forming patchworks of settlements with the existing inhabitants before eventually inter-breeding to produce the Mongoloid physical type known today.
- This happened earlier — around 18 KYA — than alternative theories would indicate. Others, including the Australian Peter Bellwood, consider the expanding population of Mongoloids were Neolithic rice-farmers moving southwards.
- Finally, Oppenheimer contends that there was not just two groups but three, the southern Semang-type peoples of Southeast Asia whose ancestors had beach combed their way from Africa; there were the Northern Mongoloids coming down from the North; and there were the Southern Mongoloids who



had been living on the Pacific coast since their ancestors chose to remain there when others extended up the great rivers to the Central Asian steppe.

Semang man and woman of Malaysia

- This last group, the Southern Mongoloids, probably looked much like modern-day Aboriginal Malays and had features in common with the modern Malay-type people. Often referred to as "Sundadont" peoples, it is probable some of their distant relatives pushed off in canoes and

headed east to become the modern Polynesians and other residents of the Pacific Rim.

The end in view

Back in Europe, about 12 KYA our remote ancestors would have noticed their windy, dry and cold environment was growing a little more comfortable, that the streams flowed faster, birds they had not seen before appeared more frequently and if they were lucky, that spring flowers were blooming earlier... Eventually the babbling brooks grew into raging torrents as the ice caps visibly grew smaller and the days warmed up: after 10,000 years, the LGM had come to an end....

As the Ice retreated, what had been permafrost began to thaw, tundra gave way to grassland, cold hardy trees replaced scrubby bushes... And of course, where grass grew, the herbivores followed and where the game went, humans followed in their path. The great post-LGM expansions out of the refugia had begun as our remote ancestors began once more to fan out across Europe. But this expansion of the dying days of the Pleistocene was not to last. After a holiday from the Ice which lasted for about 1,500 years, a new but smaller Ice Age descended upon the world. Known as the *Younger Dryas*, this new glacial snap would once more drive most of our ancestors back into the refugia or, for hardier types who chose to remain, force them to adapt once again to Arctic living.
