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Archaeology and Languages in Prehistoric Northern Eurasia

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The distribution of frequencies of radiocarbon-dated Palaeolithic sites in northern Eurasia shows peaks culminating at 40-30 thousand, 24-18 thousand, and 17-11 thousand years before the present. These peaks are viewed as reflecting the waves in the colonization of that area by Anatomically Modern Humans, originally stemming from Africa and Western Asia. The waves of colonization were triggered by environmental stress that became particularly acute in western Eurasia during the Last Glaciation maximum. The expansion of the mating networks aimed at the avoidance of inbreeding was the primary mechanism of migration. The population of AMH spreading in the eastern direction included "softened" Mongoloid elements. The "dialectal continuum" consisting of Proto-Uralic, Proto-Altaic and Palaeo-Siberian-related languages formed the principal communication media of Early Modern Humans in northern Eurasia.

Keywords: NORTHERN EURASIA, ANATOMICALLY MODERN HUMANS, RADIOCARBON, UPPER PALAEOLITHIC, MONGOLOIDS, ALTAIC LANGUAGES

INITIAL DISPERSAL

Recently available evidence sheds new light on the vital problem of the initial settlement of northwestern Eurasia, including Japan, by anatomically modern humans and their possible racial and linguistic affiliations. Geneticists (Kivistid et al. 1999), basing their judgments on the variations of mitochondrial DNA (mtDNA), firmly suggest that the spread of early anatomically modern humans (AMHs) into Eurasia proceeded from a large area encompassing India, Caucasus and the Levant. AMH became established ca 100,000-70,000 years ago (ka BP, thousands of years before the present) following migrations from Africa (Fig. 1). They also suggest that the "radiations" of mtDNA lineages from that area started approximately 50 ka BP. This theory is in broad agreement with archaeological evidence. Reliable radiometric measurements show the presence of *Homo sapiens sapiens* in western Asia 120,000-100,000 ka (Valladas et al. 1998). Early

Upper Palaeolithic (UP) industries identifiable with AMHs, appeared in Europe at least 42-40 thousand years ago. UP sites of that age are known in Bulgaria (Bachokirian, > 43 ka or 38-37 ka, Hedges et al. 1994), southern Germany (40.2 ka, Bolus and Conrad 2001) and Spain (El Castillo and La Arbelna, 40 ka, Rink et al. 1997).

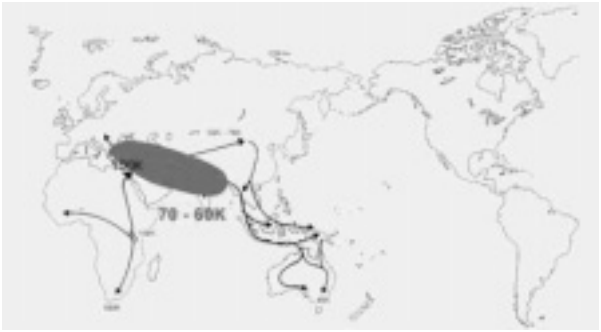

Fig. 1: Northern Eurasia, 70-60 ka BP.

Early UP sites on East European Plain have the radiometric age of 39-36 thousand years. These sites are acknowledgeable across the entire Plain, including the regions north of the Polar Circle. The sites with the age of 45,000-30,000 BP are identifiable in the Altai Mountains, in southern Siberia. The radiometric age on the order of 39-33 thousand years was obtained for the sites in the Lake Baikal area in southern Siberia, and further to the east, on the Aldan River, and in the Maritime Region of the Russian Far East.

Following the finds at St. Césaire and Arcy-sur-Cure where Neandertal skeletal remains where found in the Châtelperronian context, the "archaic" UP industries in Europe (Châtelperronian in France, Uluzzo in Italy, Szeletian and Buhunician in central Europe and Streletsian in Russia) are often viewed as either a product of "acculturation" of the Neandertals under the impact of AMH (Mellars 1999), or an "independent Neandertal invention" (Errico et al. 1998). The Denisova and Okladnikov Caves in the Altai Mountains yielded human dental remains, which had been considered as belonging to the Neandertals. Yet Alexeev (1998, 330) firmly stated that all these fragments except one tooth "show no deviations from the morphology of modern humans." Further east, the inventory of the Salawusu site on the Ordos Plateau in Inner Mongolia, dated to 50-37 ka, contains pebble cores reduced by a "direct percussion" as well as flake tools (Jia and Huang 1985). The same level reportedly yielded the remains of *Homo sapiens* (Wu and Wang 1985). The femur and tibia of a child at the site of Yamashita-cho on Okinawa, with the radiometric age of >32 ka, are considered as belonging to AMH (Trinkaus and Ruff 1996). Since in no case, either on East European Plain, or in Siberia or China, have archaic-looking industries ever been found in a clear association with the remains of Neandertals or other pre-*sapiens* humans, one may reasonably suggest that all these industries were manufactured by anatomically modern humans. Their advancement proceeded from the west to the east, covering the entire East European Plain and further spreading into southern Siberia, Mongolia, northern and central China and the Russian Far East. As the land bridges linked the Siberian mainland with Sakhalin Island and Hokkaido, one may infer an occasional penetration of early AMH to Japanese

Archipelago at that stage.

The next stage in the settlement of northern Eurasia by early modern humans occurred during the time-span of 32-18 thousand years ago. This was the coldest period of the Last Ice Age that included the Last Glacial Maximum (LGM). Remarkably this episode coincided with the quasi-total depopulation of western and central Europe with all Palaeolithic sites virtually disappearing in that area (Housley et al. 1997). Significantly, during the same period the AMH population density rose on East European Plain, the frequency of Palaeolithic sites markedly increasing at 29-26 ka BP and forming a clear maximum at 24-18 ka BP. One notes a significant increase in frequencies of sites in southern Siberia, forming two maxima at 32 and 22 thousand years. The sites of that age also appeared in Yakutia and the Russian Far East.

Fig. 2: Northern Eurasia, 40-20 ka BP.
Key: 1= "Periglacial" area.
2= "Mediterranean" area

This suggests a large-scale eastbound migration of groups of modern humans during the coldest episode of the Last Ice (Fig. 2). This movement stemmed from central and eastern Europe, encompassed southern Siberia, and reached Yakutia and the Far East. With the fall in the sea level by at least 130 m, the Japanese Archipelago became available via land bridges both in the north (Hokkaido-Sakhalin) and in the south (Kyushu-Tsushima-Korea). This may account for the proliferation in Japan of sites with the component of blade technique (Oda and Keally 1979).

Fig. 3: Northern Eurasia, 17-11 ka BP.

The final stage in the colonization of northern Eurasia by modern humans falls into the time-span of 17-10 ka BP (Fig. 3). One remarks a strong growth in the frequencies of Palaeolithic sites in European Russia which by their topography and cultural characteristics were distinct from the previous ones. At that stage the frequencies of sites in Siberia formed an all-time maximum. Networks of Palaeolithic sites arose in the river system of the extreme north-east, including Yakutia and

Kamchatka, and also in the Lower Amur River and Maritime Province in the Russian Far East.

The latter area and, particularly, the lower Amur river basin, starting with 13-11 ka BP, saw the development of a network of sedentary or seasonal settlements with the evidence of pottery-making. The subsistence of these sites was solidly based on the exploitation of the riverine and estuarine resources with the prominence of the procurement of spawning salmon (Kononenko 1998). By their stylistic and technological characteristics, the ceramic ware of the Lower Amur River sites finds analogies in certain varieties of early Jōmon pottery in Japan (Kajiwara 1998). Hence one may suggest the occurrence of a social network based on riverine-maritime adaptation that encompassed the entire circum-Japanese (and possibly Okhotsk) Sea area. With the gradual rise of the sea level, the "northern route" became the only viable way by which Japan remained connected to the Asian landmass. A marked increase in the frequencies of sites belonging to "Micro-Blade" and "Incipient Jōmon" traditions may have been largely due to the population influx from the continent via this corridor.

During the same period, human groups stemming from northeastern Siberia spread over to America. Existing evidence suggests that this was a predominantly coastal migration: along the southern margin of the Bering Land Bridge and further south, along the Pacific Coast of the Americas (Dixon 2000).

CAUSAL MECHANISM

Discussing the causal mechanism of large-scale human displacements, two related factors may be mentioned as prime movers: environmental stress and the avoidance of inbreeding. Observations of baboons in their natural habitats (Lee 1983) show that the individual distances and the group dispersal became considerably extended in the periods of low availability of food. This phenomenon is acknowledgeable among the communities of hunter-gatherers. Shternberg (1933) basing on his field observations of the Nivkh (Gilyak) hunter-gatherers in the late nineteenth century, reported numerous occasions when, in conditions of environmental or social stress, certain individuals, families and even clans changed their usual habitats. The writer quoted the case of the "Nila-wo" clan, which moved from the South Sakhalin Island, first to the north-western coast, then having crossed the Tatar Strait, settled on the middle stretches of the Amur River, eventually losing their language and identity.

According to reliable reconstructions (Frenzel et al. 1992; Tarasov et al. 1999), the climate in northern Eurasia during the LGM was generally colder and drier than now. Yet the negative anomalies of both winter and summer temperatures were higher in the west than in the east. Precipitation in European Russia remained sufficiently high (ca 400-500 mm/year) to produce a thick snow cover. The climate in Siberia was much drier; only a thin snow cover could have formed there during the winter. Hence, the condi-

tions for winter pastures in the east were more favorable: large herds of herbivores were better provided with the fodder easily available beneath the thin snow cover.

It has been observed (Cheney 1983) that among Old World monkeys, males tend to migrate to neighboring groups, while females prefer to remain in their native units through their lives. Population geneticists (Cavalli-Sforza and Bodmer 1971) noted that in this case, the inbreeding depression is significantly reduced. Exogamy is usually viewed as the most viable mechanism of inbreeding avoidance in the societies of hunter-gatherers. Observations of modern hunter-gatherers show (Shternberg 1933; Godelier 1986) the respective societies of both the Far Eastern Nivkh and New Guinea Baruya to be only partially exogamous, since marriages with distant patrilineal cousins were permissive in both cases. Shternberg cites numerous cases, when Nivkh individuals escaping persecution and failure, quit their paternal tribe seeking refuge in neighboring alien groups. They became adopted, and, having married usually a widowed woman acquired the language and habits of the adoptive tribe. Their offspring either formed a new lineage or became incorporated into an existing one. Shternberg noted that according to his records, the majority of the Nivkh lineages claimed their ancestry in alien clans. Godelier (1986, 4) equally notes that eight out of fifteen Baruyu clans descended from the "Menyemya refugees."

GENETIC AFFILIATIONS

Debetz (1936), and Alexeev and Gokhman (1987) identified a so-called Cro-Magnon variety among the Bronze and Iron Age skeletal materials of European Russia and southern Siberia. This variety that combined the cranial robustness with a broad face, had its roots in the local Upper Palaeolithic. Discussing the origin of the Mongoloid race, Alexeev (1974, 140) argued that its sources lie in the early Upper Palaeolithic, stressing that originally the Mongoloid features were much less pronounced, being similar to those of the present-day Amerinds.

Debetz (1946) identified the remains of "nothern Asian Mongoloids" at the site of Afontova Gora 2; they included a fragment of the frontal bone. Mongoloid features had been originally acknowledged in the skeletal remains of a child found at the site of Malta. Alexeev (1998, 323) in his later publication was more cautious, stating that this area was "inhabited by a population of Mongoloid appearance." Discussing the skeletal remains from the Zhoukoudian Upper Cave (the "Old Man"), Kamminga (1992) argues that this specimen being distinct from the "modern Mongoloid morphology" lies relatively close to that of the Ainu. Skeletal remains of AMH at Minatogawa on Okinawa Island, radiocarbon dated to 18.6 and 16.0 ka, are considered morphologically as direct ancestors of "Jōmon people" (Suzuki 1982; Baba et al. 1998). With certain reservations and taking into account the geographical variability, these characteristics may be extended to the entire Ice Age population of Northern Eurasia.

This view has recently found support in molecular genetic evidence. Based on the analysis of HLA genes and haplotypes, Bannai et al. (2000) argue that the Ainu-related groups formed the original population of Japan and that they had migrated from East Asia during the Upper Palaeolithic. According to their data, the Ainu were genetically closely related to both East Asian and Native American groups. Baba (2000), using different genetic criteria, argues for the "Jōmon people," who were genetically and morphologically identical to historically attested Ainu, to be genetically close to "North-Eastern Asians."

Regarding the population history of the Japanese, the majority of scholars now accepts the "dual structure model" which assumes that the Jômon groups were the first occupants of the Japanese archipelago (Hanihara 2000). In view of the evidence discussed above, one may suggest a scenario of a large-scale human displacement at the final stage of the Last Ice Age. Mostly oriented along the coastal areas and inner waterways, this migration resulted in the spread of genetically and physically homogenous population cover throughout the huge landmass, encompassing Siberia, Northern China, Japan and America.

LANGUAGES

It has long been suggested that groups of Ice Age modern humans while spreading over the vast territories of northern Eurasia were in possession of mutually comprehensible languages, or *lingua franca*. One may suggest that these communication media in the Upper Palaeolithic "periglacial" Europe were related to Uralic languages (Dolukhanov 1994).

This suggestion was later substantiated by several linguists (Wiik 1997, Kunnap 1997a) who were able to identify the Uralic substratum in the Slavic, Baltic and Germanic languages. According to the traditional view, the Uralic languages, currently spoken by more than twenty-one million people in Central, North-eastern Europe and North-western Asia, form a family consisting of the Finno-Ugric and Samoyedic branches. This view was contested by Angela Marcantonio (2002) who questions the very existence of the Uralic family. According to her, one may speak of several "language groupings" such as Balto-Finnic, (Finno-) Permian, Ob-Ugric, Hungarian, Samoyed and Lapp, that form a "dialectal continuum." If our theory is correct, during the Ice Age, this "dialectal continuum" was extended over a considerable part of northern Eurasia.

Relationships of Uralic languages to the Altaic family form yet another debated issue. The latter family includes the Turkic, Mongolian and Manchu-Tungus branches with more than fifty languages and the total of 135 million speakers. These languages show similarities in morphology, syntax, vocabulary and particularly phonological correspondences, which enable scholars to reconstruct a hypothetical Altaic proto-language (Poppe 1965). Certain typological similarity is acknowledged between the Uralic and Altaic fam-

ilies. Fortescue (1998, 52) writes about the "Ural-Siberian" being "remotely related" to the Altaic family, the affinities being particularly acknowledged in several elements of Proto-Mongolian language.

Significant similarities between the Uralic (particularly Samoyed) and several Palaeo-Siberian languages (including the Eskimo and Chukotkan) have been attested by several scholars (Pusztay 1995; Künnap 1997b). Both Marcantonio (2002) and Pusztay (1997) argue that the Uralic, Altaic and Palaeo-Siberian languages form together an extensive typologically uniform area, in which linguistic categories are formed structurally and materially in much the same way.

Fortescue (1998) has even suggested that Uralic languages were related to the languages located further east, in Siberia and across the Bering Strait. Present-day descendants of the "Uralic-Siberian" protolanguage form four language families: the Uralic, Yukagir, Eskimo-Aleut and Chukotkan-Kamchatkan.

Relationships of the Japanese and Korean languages to the Altaic family remain a subject of discussions. According to Miller's (1971) scheme, the Proto-Altaic initially split up into the Proto-Western and Proto-Eastern branches, the former developing into the Old Turkish, Proto-Bulgarian and other languages, the latter further branching into the Proto-Mongol and Proto Northern/Peninsular Altaic. At a later stage, this gave rise to the Proto-Peninsular and Pelagic unities, subsequently developed into the Korean, Japanese and Ryukyu.

Any attempts to directly identify currently existing languages with archaeological and/or anthropological entities are futile. Language is a system of communication; its evolution was controlled by the interaction and/or isolation of human groups and their internal structures. It is very likely that the observed linguistic affinities discussed above reflect the processes that occurred at a comparatively recent stage, long after the first groups of modern humans had become established in that area. Yet it also probable that these affinities are the evidence of a much older substratum, a *lingua franca*, that served a communication medium for loose groups of hunter-gatherers who colonised northern Eurasia during the course of the Ice Age.

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要旨

北ユーラシアにおける先史人類の移住拡散

パーベル・ドルカーノフ

北ユーラシアに分布する後期旧石器遺跡について、その時代的分布を遺跡の形成時期が放射性炭素年代測定値によって確定できるもの

によって集計してみると、遺跡密度が特に高かった時期が、4－3万年前、2万4000－1万8000年前、1万7000－1万1000年前であったことがわかる。それはアフリカそして西アジアに由来する新人の北ユーラシアへの移住そして定着が、断続的に、過去に三回にわたって繰り返されたことを反映しているとみられる。この三回の移住波はちょうど最終氷期の極寒期にあたっており、猛烈な冷涼化と乾燥化に基づく環境ストレスが移住者の原郷の地、西方で特に深刻化したことによって起こったのである。この状況のもとで、近親・近縁間の婚姻を回避するために婚姻ネットワークを拡張・拡大することが、この移住拡散の原因であった。新人のこの第二波、第三波の東方への移住拡散には同時にアジアのいわゆるモンゴロイド集団の移住もあった。このような北ユーラシアに住み着いたさまざまな初期人類の間の主たる通信手段となったのはウラル祖語およびアルタイ祖語関連の言葉であったと考えられる。