

SYMPOSIUM

Observations on anthropological research concerning the period of Hungarian conquest and the Arpadian age

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ABSTRACT The present paper is aimed at providing a summary of the contributions of anthropological research into the Carpathian Basin history of the 10th-13th century ancient Hungarians relying on the strength of anatomical, demographical and sociological database. Special attention is paid to the moments in population development which proved to have diverged during the pagan era (10th century) and the early Christian era (11th-13th century).
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Pagan Hungarian conquerors settled down in the Carpathian Basin from 895 or 896 on. According to the details recorded by Konstantinos Porphyrogenitos between 948 and 952, this population was constituted by seven Hungarian tribes and three tribes of the Kavars. The Hungarians quit the Khazar Empire after 800 (Berta 1990; Kristó 1996; Róna-Tas 1996). As Gyula László (1970) has it this population led by prince Árpád came on its far relatives in the Carpathian Basin. This hypothesis is founded on several facts, one of which is that, after Kuvrat's death, a population wave of Onogundur-Bulgarian migration reached the Carpathian Basin. Therefore polemics on the so-called "double Hungarian conquest" may be carried on the evidence of a certain people related to the Hungarians.

The Christian Hungarian state was established by king St. Stephen 1000 onwards. Therefore, 10th century cemeteries can be regarded as the remnants of the pagan era whereas 11th-13th century cemeteries preserved the relics of the early Christian epoch known under the designation of Arpadian age because the end of this historic period was marked by the year of 1301, in which the male line of Árpád's descendants died off (Dienes 1972; Fodor 1996).

Hereinafter I shall attempt to sum up the historiographic contributions to the anthropological profile of the period which were of great importance as regards scientific approach and methodology.

In the Carpathian Basin the first Hungarian grave dating back to the time of the Hungarian conquest was dug up in 1830 in the fields of Ladánybene on the bank of the River Danube. The archaeological finds collected by shepherds were published by Jankovich (1832-1834). It was 40 years later that the skull put forth in the appendix of the first

anatomical book on craniology edited in Hungarian (Lenhossék 1875) became known to scientific researchers. This publication was followed by the anatomical description of further cranial finds (Lenhossék 1882).

Most skulls unearthed later in the first decades of the 20th century were described by Lajos Bartucz (1913-14, 1931, 1935, 1938, 1939). In two publications, he also offered a comprehensive survey of his results (Bartucz 1926, 1938). The procedure he followed in his examinations can be characterized as visual disjunction. His distinguished sense for anatomy can be verified better by nothing else than his publications served as standard works, even in the 1970s, for Hungarian scholars adopting similar methodology.

According to Bartucz's judgement, ancient Hungarians developed on the contact line of Europid and Mongolid great race. Sixty-70 percent of the 10th century population could be characterized by two principal craniological components: rounded contour, which was a feature of the East-Baltic component, and square outlines, which were peculiar to the Turanid component, a less Mongolid variant of which was named "Alföld"-type by Bartucz. The 11th-13th centuries were characterized by Europeanization. He assigned Mongolid characteristic features noticed in the population of Arpadian age either to the survivors of the autochthonous population of the Avar period or to immigrant Pechenegs and Cumanians (cf. Allodiatoris 1937). This influence, in Bartucz's opinion, might have counteracted the process of Europeanization mainly kept up by the spontaneous settlements of Slavs, even after the Tartar invasion of Hungary in 1241-1242.

In the 1940s Mihály Malán and János Nemeskéri also analysed early Hungarian cranial finds. Malán (1941) considered the upper layer of the population to have been of Turanid or East Baltic characteristic, and almost homogeneous.

In Nemeskéri (1943)'s summary the conquering Hungarians were composed of three principal types: East Baltic,

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Turanid and Taurid. This ethnic composition, however, was slightly coloured by Mediterranean, Dinaric, Ryäsan, Nordic and Mongoloid (Tungid, Palaeomongolid) components. He revealed the ancient anthropological characteristic features of the Hungarians to have been developed by combined Turkic and Finno-Ugric effects.

In the 1950s a younger generation of scientific researchers (Gyula Dezső, Gyula Farkas, Pál Lipták, Andor Thoma, Tibor Tóth) joined the paleoanthropological investigation of the Hungarian people. It was the first time that a 11th century cemetery had been excavated in its entirety, in Fiad-Kérszta (Nemeskéri et al. 1953). Aiming at completeness, these analyses applying univariate examinations made it possible for anthropologists to reconsider the method of visual taxonomy pursued in earlier years (Farkas and Dezső 1955; Bartucz and Farkas 1956; Thoma 1956a, 1956b).

The novelty of Lipták's taxonomical studies (Lipták 1951, 1955, 1957) and his comprehensive work (Lipták 1970, 1983) arose, on one hand, from his taxonomical system which he had developed in practice (Lipták 1962). His publications written either alone or jointly with his colleagues (Gyula Farkas, Edit Lotterhof and Antónia Marcsik) raised the claim to present metric identification in addition to qualitative taxonomical estimation. These methodological directions were summed up by Farkas (1972).

Another new aspect in his investigations was implied in providing an anthropological analysis of the conquering Hungarians according to three layers of society (Lipták 1983). According to his observations, the "overlords" were characterized by Turanid, Uralian and Pamir race elements and also by certain long-headed components. The "middle layer" or "warriors' layer", however, showed an anthropological profile distinctly different from that of the overlords. It was essentially constituted by Mediterraneans, Nordoids (who might also have been tall robust Mediterraneans) and Pamir component while the absence of Turanid and Uralian race characteristics was remarkable. As regards the third layer, the so-called "common folk", they were dominated, just as the middle layer was, by Mediterranean and Nordoid elements but, in addition, the Cromagnoid ones were also significant. The primary field of research for Lipták and his co-workers was the population of the Hungarian Great Plain, whereas Nemeskéri and his colleagues (György Acsádi, Kinga Éry, László Harsányi and Alán Kralovánszky) mostly worked on the analyses of skeletal finds excavated in Transdanubia. Their most prominent studies included the comparative analyses of skeletal finds dug up in the surroundings of the royal seat (Székesfehérvár) and the town of the queens (Veszprém) (Acsádi and Nemeskéri 1957a, 1959a, 1960; Éry and Kralovánszky 1963; Nemeskéri and Kralovánszky 1967). The results of their examinations made it evident that the populations in the environs of both towns had been insulated from all the rest of Transdanubia. They manifested

similarities to the populations of the eastern regions instead.

The work of Tibor Tóth extended the range of investigations (Tóth 1958, 1965, 1973). In his opinion the conquering Hungarians came to a relatively similar morphological environment in the central Danubian Basin. Later on their Mongolid character faded. Their ethnogenesis had already taken place in the North-Caspian region. In 1992, he reworded his earlier observations. As opposed to former opinions, he thought that the elements of the Mongolid great-race had been as completely insignificant in the ethnic composition of the conquering Hungarians as in that of the Avar Khaganat, and also in other, "historic populations of the 2nd millennium AD". He interpreted the Hungarian conquest as the last migration wave of the Europid Pontic race proceeding from the North Caspian region into the Central Danubian region. He attempted to disclose the process of formation of the Proto-Hungarians' anthropological character and revealed a so-called Presauromata etap (12th-17th century B. C.) and a Sauromato - Middle Sarmatian etap (6th-1st century B. C.) as the earliest periods of this process (Tóth 1992).

The 1960s and 1970s denoted a peculiar period in the study of early Hungarians knowing that this subject attracted almost all researchers of historical anthropology, including even those who had been engaged in other historical epochs before (Bottyán 1968, 1972; Wenger 1971).

The foundations of modern and complex anthropological research with a biological attitude were laid by Nemeskéri and his colleagues in the early 1960s (Nemeskéri 1962). At the time, as the results of team work, monographs were edited, the complexity of which set an example even today (Nemeskéri et al. 1961; Nemeskéri 1963). No doubt, these monographs made their impact on further publications (e.g. Éry 1967-68, 1970a, 1977, 1992; Bakay and Kiszely 1972; Pap 1978-79, 1980-81; Pap and Susa 1986; Farkas 1998; Szathmáry and Guba 1999). They developed a common approach which provided firm methodological ground for investigations (Éry et al. 1963; Nemeskéri 1970).

A comprehensive study on the population of the Arpadian age was written by Lotterhof (1974). In her opinion, the most characteristic feature in the composition of the population was that Transdanubia was dominated by Mediterraneans and Cromagnoids while in the territory of the Great Plain the preponderant component was Nordoid. In the Transdanubian region the ratio of brachycran individuals was definitely increasing following the 11th century (Lotterhof 1975).

The use of cemeteries and the archaeological dating of cemeteries may, of course, influence the osteological structure. The diversity of chronopopulations dug up in cemeteries which were used for a long time (through 4 to 6 generations) and in those which were used for a shorter time (through 1 to 3 generations) might be different (Szathmáry 1976, 1977). This observation was, twenty years later, successfully verified (Szathmáry et al. 1996, 1997a, 1997b; Guba 1999)

and is worth being taken into consideration not only when evaluations quoted above but also when the early multivariate analyses (Éry 1970b, 1982, 1983; Jusst and Finnegan 1977; Rösing and Schwidetzky 1981) or the analyses of the qualitative traits are discussed.

The results of Kinga Éry's series clusterings showed that the original inhabitants in the Carpathian Basin might primarily have been characterized as Europids and, by far the greatest number, marked by narrow and long skulls. The conquering Hungarians widened this range of traits with two more types. One was an Europid and Europo-Mongolid component with a wide facial case which sprang from the steppe region east of the River Don. The other type implied an Europid component with a narrow skull which came from the open woodland west of the Don.

The general works adherent to traditional taxonomy (Kiszely 1979a, 1979b, 1992) hardly meant refreshment compared to the accomplishments attained by the 1970s. As a result, this type of visual and univariate methodology, which had been flourishing in the early 20th century, gradually faded away.

In the 1980s and 1990s researchers of Debrecen University applied the progressive methods of anatomical comparisons. The team (László Almási, Zsuzsanna Guba, Lajos Hüse, Károly Nyilas and László Szűcs) coordinated by László Szathmáry examined a number of anatomical characteristics of early Hungarian populations by employing the method of clustering based on principle component analysis and discriminant analysis, primarily. By way of various collective applications this work was joined by anthropologists of numerous institutions: Antónia Marcsik and Sándor Oláh (JATE, Szeged), Ildikó Pap (Anthropological Department of Natural History Museum, Budapest); and also by the archaeologists István Fodor (Hungarian National Museum, Budapest), Eszter Istvánovits and Péter Németh (Jósa András Museum, Nyíregyháza), László Kovács (Archaeological Institute, Hungarian Academy of Sciences, Budapest) and Ibolya Nepper (Déri Museum, Debrecen).

We had only known scattered facts of regional differences of the early Hungarians (Bartucz 1938; Lotterhof 1974; Marcsik 1974; Szathmáry 1982) until Éry's results were published (Éry 1978, 1994). According to Éry's publications, five population groups could be distinguished based on craniological measurements and indices. Four of these groups (Upper-Tisza region, the southeast of the Great Plain, Galánta region and the territory between the Danube and the Tisza) were in connection with the centurms of research separated both historically and geographically, therefore their ethnogenetic assessment was of no consequence. The connection between the Transdanubian region and the northern periphery of the Great Plain, on the other hand, proved to be a surprising conclusion.

Further on, Szathmáry examined the 10th century regional

pattern on the territory of present-day Hungary through assessing craniological diversity by applying discriminant analysis and clustering combined with PC analysis (Szathmáry 1996a, 1997). On one hand, the regional distribution of five cranial variants could be surveyed on the basis of the examinations carried out by gamma and beta approach of measuring diversity (Cody 1986). On the other hand, the geographical regions could be compared on the strength of cranial variability. As the results showed, the populations in the southeastern region of the Great Plain and in the northern periphery had been characterized by a slight degree of diversity, *i. e.* they might have been relatively homogeneous craniologically. The population of the southeastern region must have been in close connection with that of the territory between the Danube and the Tisza although their northeastern associations must also have been significant. However, their relationship with either Transdanubia or the northern periphery might have been negligible. The population presumed to have been characteristic of the northern periphery might have been developed by background events independent of southern connections. Their craniological profile, as concluded from the craniological diversity, might have developed in the way of alloying the qualities of the northeastern and the Transdanubian groups.

In the assessment of these questions, the estimation of missing anatomical dimensions played an important part. After various methodological devices had been analysed (Guba et al. 1997), the application of the principal component method (Dear 1959) as performed by Chan and Dunn (1972) was given preference to. A similar method was tried by Kustár (1996) when analysing the 10th century finds from Bodrogek.

Recently, Guba and Szathmáry (1999) and Guba (1999) presented the craniological regionality of 10th century population in the Carpathian Basin by describing the average principal component values (cf. Menozzi et al. 1978; Piazza et al. 1981) of the chronopopulation. In the study, which was also aimed at forming a notion of human adaptation, they concluded that the middle reach of the Danube had separated 10th century populations whereas the middle reach of the Tisza had set up a connection between populations. The craniology of the population buried in the centre of the Great Plain in the 10th century differed from that of the peripheries. The regionality of face dimensions surprisingly coincided with recent faunal zonality, namely, it showed concentric transformation towards the peripheries. This phenomenon might refer to the successful adaptation of the population of the time (Fig. 1 and 2).

According to the research workers discussed presently, the population in the Great Plain seems to have undergone a noteworthy transformation after the turn of the 10th and 11th century, under the rule of St. Stephen (1000-1038). Historical sources do not reveal any moments referring to this phe-



Figure 1. Regional pattern of the face factor of 10th century males (Guba and Szathmáry 1999).

nomenon. Previously, the survival of the autochthonous populations was made responsible for the anatomical similarity between the populations of the late Avar age and the Arpadian age. There were premonitions, though. We knew, for example, that, except the west of Transdanubia, we had scarcely any 9th century archaeological or anthropological finds available. As a consequence, remarkable autochthonous populations might only be supposed to have lived in the lowlands peripheries at most (cf. Kiss 1968; Lipták et al. 1972; Szathmáry 1978, 1996a). Now, an intensive resettlement policy in the early 11th century is considered to give answer to the question. This opinion is supported by the argument that the 10th century craniological analogies with the populations of Arpadian age can generally be recognized in the other regions (Szűcs et al. 1996, 1997; Szathmáry et al. 1997b). On the other hand, a major break in the craniology of cemeteries continuously used in the 10th and 11th centuries can be noted (Szathmáry et al. 1996, 1997a, 1997b; Guba 1999). Moreover, in the population dug up in Ibrány it could also be observed that 11th century new anatomical components might have had no antecedents either in the 10th century segment of the population or in the 8th-9th century local populations known. That is the reason why we can presume relocations, which may have covered northeastern Slavic population as well because, as we know, they buried themselves pursuant to cremation rite in the 10th century. The transfer of population in the 10th-11th century could not have been all-inclusive. At least, it is referred to by the 10th-11th century finds from Püspökladány-Eperjesvölgy, where population history cannot have been broken (Hüse et al. 1996; Hüse and Szathmáry 1997a, 1997b; Guba 1999).

The influences exerted by foreign peoples cannot be assessed exactly for lack of sufficient adequate original records. Undoubted anthropological evidence is only available from the west of Transdanubia. In this region the Slavic and the Frankish populations may have made their impact on conquering Hungarians and their descendants (Wenger 1970;



Figure 2. Concentric zonation bioclimatic regions in the Carpathian Basin (Varga 1995).

Éry 1992). In the eastern region it is only the earthwork of Szabolcs in the territory of early settling from where anthropological finds referring to the presence of Bulgarians (or perhaps Alans) are known of (Szathmáry 1981).

As regards the examination of the postcranial skeleton, it was, for a long time, concentrated on long bones because they were only made use of for reconstructing the stature. The comparable data of body height were counted by using the same method. In Bartucz's opinion (1938) taller individuals were buried along with more and richer grave furniture. Further on it became known that the average body height of the 10th century population had exceeded the average body height of the populations which lived in either the preceding or the subsequent centuries (Szathmáry 1978). Twenty years later Éry (1998) also came to a similar conclusion. Moreover, she could likewise observe a bimodal-like distribution of statures characteristic of the 10th century (Szathmáry 1982; Éry 1996). Both of these observations together with the differentiated system of constitutional proportions (Guba et al. 1996) led to the conclusion that 10th century population could be characterized by explicit heterogeneity. 11th-12th century population, on the contrary, revealed a lot more equi-poised population structure (Szathmáry 1978; Guba 1999).

The changes in population structure between the 10th and 11th century were also reflected in both demographical and sociological evidence. In Hungary, paleodemographical research has been of particular importance by means of the work of János Nemeskéri (Nemeskéri et al. 1960; Acsádi and Nemeskéri 1957b, 1970; Sjøvold 1975). This field of research included the estimation of the number of conquering

Hungarians and the number of inhabitants in medieval Hungary (Éry 1971; Kovács 1971). Other investigations concerned concrete historical populations (Acsádi and Nemeskéri 1957a, 1959b, 1960; Nemeskéri and Kralovánszky 1967; Éry 1967-68; Kralovánszky 1968; Oláh 1991; Hüse et al. 1996; Hüse 1997; Hüse and Szathmáry 1997a, 1997b).

The demographical manifestation of the population structure change in the 10th and 11th century primarily evidenced the diverging frequency of 0-year-old infants (Éry et al. 1997). According to Szathmáry's argumentation (1990), the respect of the deceased showed the "male - female - infant" order of importance in the 10th century pagan era whereas in the 11th century early Christian epoch the relevance ranking was inverted. However, populations with a genetically continuous ethnohistory appeared to be exceptions to this tendency such as the chronopopulation of Püskladány-Eperjesvölgy (cf. Hüse and Szathmáry 1997a).

Paleoserological results, which also served for the exploration of family relations, contributed to the evaluation of the diversity of early Hungarians, as well (Lengyel 1975).

In the Carpathian Basin the frequent occurrence of skulls with either surgical or symbolical trephination must have been linked with the appearance of conquering Hungarians (Nemeskéri et al. 1960, 1965; Bartucz 1966; Grynaeus 1996; Józsa 1996). These treatments might be considered as the relics of medicine in the pagan era, which must have had an animistic background. What is more, the individuals with trephined skulls might have belonged to a distinguished layer of society in the Upper Tisza region since, craniologically, they could definitely be separated (Szathmáry 1996b).

A claim to compare our medieval ancestors to present-day populations has always been present in the work of scholars who researched the history of the Hungarians (Lenhossék 1875; Bartucz 1938; Bartucz and Balogh 1940; Nemeskéri 1943; Tóth 1992; Kiszely 1979b; Thoma 1998; Henkey 1998; Thoma and Henkey 1998). To sum up, it may be established that a rather mixed anatomical profile is characteristic of present-day Hungarians due to population movements in the Middle Ages. The typical craniological constitutions of the Hungarians differ from those of the surrounding peoples and from those of present-day Finno-Ugrians, mainly by the high dimensions of the head (owing especially to the wide face and the big interorbital breadth).

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