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NON-METRIC TRAIT AND BIOLOGICAL DISTANCE STUDIES IN HUNGARY: A BRIEF OVERVIEW

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Abstract: ***Minor or non-metric skeletal variations have captured researcher's attention for decades. During the progression of the study of non-metric traits different developmental stages can be distinguished. This paper presents a brief summary of these developmental stages highlighting the investigations carried out on samples which represents early human populations which lived in the territory of Hungary. The usefullness of non-metric skeletal analysis in population studies is also discussed.***

Keywords: ***Non-metric analysis; Cranial traits; Population samples; Hungary.***

Introduction

During the last three decades, a number of Hungarian and American researchers have utilized non-metric cranial traits as an analytical tool in the study of human skeletal remains of earlier Hungarian populations. This report includes a brief history of non-metric skeletal analysis, its usefulness in population studies, and a summary of Hungarian skeletal samples which have been reported or are under elaboration.

The development of non-metric trait studies

While various non-metric or discrete traits have been known since the 1500s (foramen of Vesalius, for example), it was not until Laughlin and Jorgensen (1956) used a modified Penrose statistic in their analysis of Greenlandic Eskimo crania that non-metric traits were brought to the attention of skeletal researchers. This analysis offered an expression of biological distance between population samples and suggested probable migration routes for the populating of Greenland from the Cape York peninsula of Northeastern Canada.

Within a few years, Brothwell (1959) showed how some few non-metric traits could be used in delineating the differences among populations separated by a greater geographic distance. However, it was not until the research of Berry and Berry (1967), in which the Grewal-Smith statistic was first used in studies of earlier human populations and thereby providing the necessary resource for a robust distance analysis of cranial remains, that non-metric skeletal analysis came of age. Following their seminal study, non-metric traits became an immediate interest in skeletal research. This was seen in the rapid increase of presented and published papers and unpublished dissertations dealing with trait selection, use of unilateral or bilateral expression, analysis of age and sex dependency, etc. (Figure 1). While this report deals only with cranial non-metric studies, a study of infracranial non-metric traits has also been accomplished (Finnegan 1978).

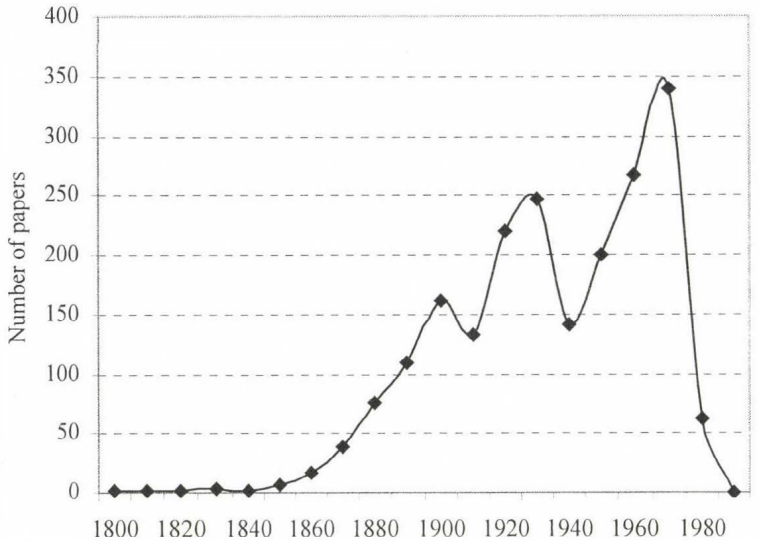

Fig. 1. Interest in non-metric trait studies as indicated by frequency of publications, presented papers and dissertations, by decade. Based on data by Finnegan and Faust (1974).

The use of non-metric traits

The use of non-metric traits is supported by researchers as 1) the traits appear to be highly genetic in nature; 2) populations vary in frequencies between even closely related populations; 3) some consistency is seen without regard to environmental variation; 4) the traits do not vary significantly with age (after puberty); 5) they show little sex dimorphism; 6) they show little correlation between the traits used; and 7) they are easily defined and large samples can be studied in a short period of time. In any event, side and sex dimorphism and age dependency can usually be tested on known study samples or on archaeological specimens where sufficient material (often infracranial remains) for ascertainment of sex and age are present.

It is of some interest that non-metric traits have been used in a number of ways for the analysis of earlier human populations. These include descriptive analyses of population samples (Finnegan and Marcsik 1979), population distance studies using numerical taxonometric methods (Finnegan and Marcsik 1989a), and studies suggesting possible migration patterns (Finnegan 1972). Humans are not the only subject of non-metric studies at the population level, as non-human animal populations are also studied (Berry 1973, McLellan and Finnegan 1990, Hartman 1980, and Sjøvold 1977). A large number of presented and published papers and unpublished dissertations report the analysis of skeletal remains found in North America. However, an increasing number of descriptive analyses or population distance studies on various skeletal series have been published, or are currently under elaboration, concerning skeletal samples from Central Europe. These represent a number of samples varying in time and space, and most were excavated from various regions of Hungary (Table 1).

Table 1. A listing of the skeletal samples where non metric trait analysis is either reported or under elaboration. Most of the original source materials are found in the cited literature of Lipták (1983) and Finnegan et al. (1993).

	Group	Place Date	Sample size	Age century	Major reference
1.	Kunszállás-Fülöpjakab	(Sg 77)	62	8th	Lipták & Varga (1974)
2.	Mélykút-Sáncdűlő	(Sg 77)	68	6–7th	Marcsik (1971)
3.	Debrecen-Árkus-Homokbánya	(Sg 77)	44	8th	(not elaborated)
4.	Madaras-Téglavető	(Sg 77)	98	8th	Lipták & Marcsik (1976)
5.	Szeged-Fehértó-A	(Sg 77)	200	8th	Lipták &Vámos (1969)
6.	Szeged-Kundomb	(Sg 77)	162	8th	Lipták & Marcsik (1966)
7.	Szeged-Makkoserdő	(Sg 79)	160	8th	Vámos (1973)
8.	Sükösd-Ságod	(Sg 79)	140	7–8th	Kőhegyi & Marcsik (1971), Jancsó (1996)
9.	Kiszombor-B (Gepida)	(Sg 79)	88	5th	Bartucz (1936)
10.	Szőreg-Téglagyár	(Sg 79)	72	5th	(not elaborated)
11.	Szabadkígyós-Tangazdaság	(Sg 79)	170	10–11th	Lotterhof (1971)
12.	Kiskörös-Város alatt	(Sg 84)	178	8th	Lipták (1967, 1983)
13.	Szarvas-Kákapuszta Kettőshalom	(Sg 84)	34	9–10th	Lipták & Marcsik (1970)
14.	Szentes-Kaján	(Sg 84)	82	8th	Wenger (1955)
15.	Szentes-Borbástanya	(Sg 84)	18	10th	Lipták (1983)
16.	Kiszombor-B (Magyar)	(Sg 84)	48	10–11th	Bartucz (1936)
20.	Székesfehérvár Basilica	(Bm 97)	180		(under elaboration)
21.	Üllő-Ilona utca	(Bj 97)	108	10th	
22.	Tengelic	(Bj 97)	56	10–11th	
23.	Kál	(Bj 97)	52	10th	
24.	Collection of graves	(Bj 97)	156	10th	
25.	Somogyszil	(Bj 97)	74	Roman	
26.	Karos-Eperjesszög I, II & III.	(Bj 97)	92	10th	
36.	Székkutas-Kossuth Tsz.	(Sg 88)	190		(not elaborated)
38.	Sándorfalva-Eperjes	(Sg 88)	56	10th	(under elaboration)
39.	Szatymaz-Vasútállomás	(Sg 88)	296	10–12th	Lipták & Farkas (1967b)
40.	Békés-Povádzug	(Sg 88)	160	11th	Lipták & Farkas (1967a)
41.	Csólyospálos-Felsőpálos	(Sg 88)	156		(not elaborated) ?
42.	Csongrád-Felgyő	(Sg 88)	140	Avar	(not elaborated) ?
50.	Bélmegyer-Csömöki domb	(Sg 90)	252	8th	(under elaboration)
51.	Sárrétudvari-Hízóföld	(Sg 90)	292	10th	(under elaboration) S
52.	Szegvár-Oromdűlő	(Sg 90)	268	Avar	(under elaboration) A
53.	Pécs-István tér	(Ps 90)	58	3–4th	Éry (1973)
54.	Pécs-Székesfehérvár u.	(Ps 90)	68	3–4th	(under elaboration)
55.	Ellend	(Ps 90)	148	8–9th	Tóth (1963, 1967)
56.	Nagypall	(Ps 90)	58	Avar	
57.	Kékesd	(Ps 90)	64	Avar	Wenger (1968)
58.	Majs	(Ps 90)	220	10–11th	
59.	Zengővárkony	(Ps 90)	62	Neolithic	Tóth (1989)
60.	Fészerlakpuszta	(Bj 90)	188	8th	Fóthi (1988)
61.	Tiszafüred-Nagykenderföldek Homf.	(Bj 90)	92	10th	Pap (1986)
62.	Homokmégy-Halom	(Bj 90)	102	8–9th	Lipták (1957b)
63.	Környe	(Bj 90)	68	6–7th	Tóth (1968, 1971)
64.	Alattyán-Tulát	(Bj 90)	140	7–8th	Wenger (1952,1957)
65.	Üllő I.	(Bj 90)	120	8th	Lipták (1955)
66.	Üllő II.	(Bj 90)	100	8th	Lipták (1955)
67.	Tiszavasvári-Petőfi u.	(Bj 90)	86	7th	Wenger (1972)
68.	Tiszavasvári-Béke Tsz.	(Bj 90)	18	7th	
69.	Tiszavasvári-Zöldmező	(Bj 90)	14	7th	

Table 1 cont'd.

	Group	Place Date	Sample size	Age century	Major reference
67.	Tiszavasvári-Petőfi u.	(Bj 90)	86	7th	Wenger (1972)
68.	Tiszavasvári-Béke Tsz.	(Bj 90)	18	7th	
69.	Tiszavasvári-Zöldmező	(Bj 90)	14	7th	
70.	Tiszavasvári-Koldusdomb	(Bj 90)	8	7th	
71.	Toponár	(Bj 90)	78	Avar	Wenger (1974)
72.	Solymár	(Bj 90)	64	7–8th	Ferencz (1983)
73.	Tác	(Sk 90)	118	Roman	Bocquet & Éry (1983)
74.	Dunaújváros-Csetény	(Sk 90)	96	11–13th	
75.	Rácalmás	(Sk 90)	124	10th	??????Éry
76.	Sárbogárd	(Sk 90)	102	10th	Éry (1968)
77.	Csákvár	(Sk 90)	110	4–5th	
78.	Dunaújváros-Tabarkerület I.	(Sk 90)	104	4–5th	
79.	Barandpuszta	(Kz 96)	192	9th	
80.	Tiszafüred-Majoros	(Bj 96)	160	Bronz age	
81.	Szegvár-Oromdűlő	(Sg 92)	16	Avar	Farkas et al. (2000)
81.	Szegvár-Oromdűlő	(Sg 97)	176	Avar	Farkas et al. (2000)
82.	Szegvár-Oromdűlő	(Sg 92)	218	11–12th	Farkas et al. (2000)
83.	Pécs-Kertváros	(Ps 92)	96	6–7th	
84.	Székesfehérvár-Basilica Bl	(Bh 92)	220		
85.	Székesfehérvár-Basilica Pi	(Bh 92)	134		
86.	Székesfehérvár Gr	(Bh 92)	32		
88.	Székesfehérvár-Basilica pi	(Bh 94)	220		
89.	Székesfehérvár-Basilica ot	(Bh 94)	134		
90.	Bácsalmás-Homokbánya	(Sg 94)	108	17th	
91.	Goldine Stiege / Modling	(Wn 97)	362	late Avar	
92.	Biharkeresztes-Kisfarkasdomb	(Sg 97)	44		Csiszár (1998)
93.	Biharkeresztes-Nagyfarkasdomb	(Sg 97)	16		Csiszár (1998)
94.	Nyíregyháza-Manda	(Ny 97)	66	9th	
95.	Tiszalök-Kövestelek	(Ny 97)	38	Avar	
97.	Tiszalök-Kövestelek	(Ny 97)	62	Árpád–age	
98.	Tiszalök-Kövestelek	(Ny 97)	10	Unk Árpád	
99.	Mözs-Icsei dűlő	(Bm 97)	104	5th	
101.	Győr-Pósdomb	(Bm 00)	122	early 11th	
102.	Balatonmagyaród-Felső Koloni dűlő	(Bm 00)	70	10–11th	
103.	Vecsés	(Bm 00)	16	10th	
104.	Nagykőrös-Száraz dűlő	(Bl 00)	44	Avar7–8th	
105.	Nagykőrös-Száraz dűlő	(Bl 00)	10	Conqest Per.	
	Csongrád-Felgyő	(Sg 96)	58	10–11th	Bartucz & Farkas (1956), Bolla (1971)
	Cegléd-Borzahegy	(Sg 96)	74	11–13th	Lipták (1957b)
	Cegléd-Madarászhalom	(Sg 96)	188	11–13th	(not elaborated)
	Csátalja-Vágotthegy	(Sg 96)	86	11–13th	Lipták (1983)
	Hódmezővásárhely-Kardoskút	(Sg 96)	246	11–12th	Marcsik (1970)
	Jászdózsa-Kápolnahalom	(Sg 96)	82	11–14th	Lipták, (1957b)
	Orosháza-Rákóczitelep	(Sg 96)	314	10–12th	Lipták & Farkas (1962)
	Tápé-Széntéglaégető	(Sg 92)	908	late Bronz age	Horváth & Oláh (1993)
	Ópusztaszer-Monostor	(Sg 97)	216	11–18th	Farkas (ed) (1998)
	Hetényegyháza-Mária út	(Sg 99)	284	Avar	Bódi (1996)
	Pitvaros-Víztározó	(Sg 99)	308	Avar	(under elaboration)

Location and date of collection : Sg = Szeged, Department of Anthropology, University of Szeged; Sk = Székesfehérvár, István király Museum; Bj = Budapest, Hungarian Natural History Museum, Bajza utca; Bh = Budapest, Hungarian Natural History Museum, Kálvin tér; Bm = Budapest, Institute of Archaeology; Bl = Budapest, Hungarian Natural History Museum, Ludovika tér; Kz = Keszthely, Balaton Museum;Ny = Nyíregyháza, Jósa András Museum; Ps = Pécs, Janus Pannonius Museum; Wn = Wien, Natural History Museum

A broader interest in the use of non-metric traits was seen in the early 1970s. A number of researchers (Sjøvold 1975, Finnegan 1975, Finnegan and Rubison 1980a,b) were interested in developing a statistic where non-metric traits could be used in accurately classifying one individual to its correct parent group or population. If this could be realized, non-metric trait analysis could be used in a forensic context, suggesting the ancestry (possibly at the level of an ethnic group) of an individual with an unknown identity. It could also be used in an archaeological context where commingled skeletons from different time periods or ancestry (or even ethnicity or families?) could be separated or assigned to their correct population (Finnegan and Rubison 1984).

Non-metric trait studies in Hungary

To our knowledge, the earliest use of non-metric skeletal research in Hungary was accomplished by Finnegan and Marcsik (1979). The first study was mostly descriptive: but biological distances (Mean Measure of Divergence or MMD) were generated using the Grewal-Smith statistic for a number of Avar population samples. Interest in the Avar period, and later Hungarian Conquest periods, continued and population samples from other time periods were also investigated (Finnegan and Marcsik, in preparation and Finnegan, Guba, Marcsik and Szathmary, in preparation). As well, specific studies of population distance have been accomplished by Finnegan and Marcsik 1979, 1989a,b), Finnegan et al. (1993), Finnegan and Szalai (1993) and Finnegan and Éry (2000). Non-metric traits has been the analysis of choice in a number of recent theses: taxonomic analysis of the Ópusztaszer-Monostor cemetery (Sarusi 1998) and of the Avar age specimens excavated at Sükösd-Ságod from 1979 to1981 and Heténye gyháza-Mária út (Paska 2000). Descriptive analysis of a number of more-or-less unique populations are currently underway or in preparation: materials excavated from Székesfehérvár, materials housed at the Jósa András Museum in Nyíregyháza and the István-király Museum in Székesfehérvár and a number of other selected population samples (Finnegan and Mende 1998). The number of population samples reported in either descriptive studies or biological distance analyses is now considerable (Table 1). Finally, there is a continuous check on the use and characterization of the traits themselves (Oláh 1988, Just et al. 1992, Just and Finnegan 1997, Finnegan and Mende 1998).

The cited literature shows general and specific information on non-metric traits. As well, the citations also show how non-metric traits have been used in the studying of the earlier peoples of Hungary.

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After word

I (MF) first met Dr. Antónia Marcsik (Anikó) in 1975. She had received my name as a researcher interested in paleopathology and had invited me to meet with her in Szeged after my participation in an archaeological field season as part of the Expedition to the Dead Sea Valley, Jordan. I arrived in Szeged in July for a one week visit and was immediately impressed with Anikó, the faculty, friends and staff, and the skeletal collections housed in the Department of Anthropology, University of Szeged (then, Attila József University). At that time Anikó and I discussed the possibility of collaborating on various studies including paleopathology, anomalies and non-metric studies. Since 1977 we have collaborated on over a dozen studies, and through Anikó, I have met and worked with an additional ten Hungarian colleagues who were also interested in the study and analysis of various skeletal populations represented by cemeteries in Hungary and other nearby regions. Aniko was and remains an excellent role model as an organizer, teacher, administrator, collaborator and colleague with continuous dialogue about the archaeology and analysis of numerous skeletal samples. And, I am not the only one; she routinely inspires students and professionals alike in a wide array of studies, places and things. In mentioning Anikó in discussions with friends and/or colleagues, I have heard them exclaim "How very fortunate you are to have worked (or be working) with Anikó". Indeed, we have all profited greatly by having had the opportunity to work with, learn from and have as a colleague, Dr. Antónia Marcsik.

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