

PALAEODEMOGRAPHICAL ANALYSIS OF CREMATION CEMETERIES

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Research into cremation graves continues to occupy a special place in the work of anthropologists. Individual opinions as to its reliability vary from virtual scepticism to extreme optimism. The latter group consider the validity of this kind of analysis to be almost the same as it is in the case of skeletal graves. The research in question offers valuable demographical data. Furthermore, we can also obtain information relating to burial rites taking us almost to the limits of archaeological knowledge. It is, therefore, paradoxical that the analyses of cremation bones, belonging apparently to the sphere of physical anthropology, should at the same time yield evidence not at all typical of that branch of science.

The research of cremation graves not only strikes one as important in itself, it is also most stimulating for any scholar dealing with these problems. In this paper I should like to outline briefly several ideas which occurred to me in particular when examining cremation graves from the cemetery at Moravičany (Moravia), where an extensive cremation cemetery with more than 1200 graves has been uncovered. The Moravičany cemetery consists of two parts; the older dating from the Late Bronze Age (Lusatian Culture) and covering the years from ca. 1200 to 1000 B.C., the more recent one belonging to the developed Hallstatt period (Platěnice Culture, 700 to 450 B.C.). Between these two phases there is a gap of about 300 years. On the basis of the discovered archaeological material two phases in the development of one and the same culture can be discerned. When comparing these two phases, some peculiarities appear concerning especially the number of inhabitants, the age of the unearthened skeletons, the determination of their sex and particular features of the burial rite.

The aspect mentioned first is of considerable importance in itself. Anthropological analysis is necessary in order to ascertain how many of the uncovered graves contain remains of two, or even more individuals. This question seems to be of particular value at Moravičany. The two phases are of almost similar duration; still the number of graves belonging to the earlier phase is nearly three times greater than that of the later one (707 : 246). A greater number of burials containing remains of two or more individuals in the younger part of the cemetery might have compensated for this disproportion; however, anthropological examinations have demonstrated that this type of burials was more frequent in the older phase. The final numbers of individuals buried are 963 and 316, respectively. This suggests that during the period available for study the number of inhabitants was reduced to approximately one third, i.e. from more than one hundred to about thirty. Only because the cemetery in question

was thoroughly investigated by the archaeological excavation conducted by J. Nekvasil, have I ventured to estimate the number of inhabitants.

When dealing with cremation graves, the task of estimating the number of buried individuals is by no means as simple as it might appear. A successful recognition of graves containing two or more burials is entirely dependent on their state of preservation. In this context it is important to stress the correct nomenclature; in other words, to distinguish between „double-burials“ and „double-graves“. By the term „double-grave“ we understand separately buried remains of two individuals in one grave which belongs to one and the same archaeological object. „Double-burial“ denotes the placing of these remains in a single vessel. Double-graves are fairly frequent in modern burial places, however, neither cremation nor skeletal double-burials occur in our country nowadays. In the later part of the cemetery at Moravičany burials of two individuals at the most were discovered (that is: apart from the burials of one individual). In most cases it was an adult with a child, whereas in the earlier phase burials of more than two individuals could be identified. It is relatively easy to distinguish a joint burial of an adult with a child; to classify burials of two adults is, however, frequently a matter of guess-work.

Numerous discoveries of teeth in childrens burials enable us to determine almost the exact age of the deceased child. This problem is more complicated with adults where we have to deal with a more extensive age-spread. Let us take for example the problem of ascertaining the average life span: the difficulties are manifold. It would seem that the average age (arithmetical average) of individuals buried in the older part of cemetery at Moravičany slightly exceeds twenty years, whereas it may be presumed that in the later part the age was about 30 years. The ten years' difference in the average length of human life during such a relatively short span warns us to be cautious in accepting such statements. No argument as to the improved living and hygienic conditions can be proved in this connection. Moreover, in my opinion every estimation of the average length of human life surpassing 25 years, either in prehistoric cremation or inhumation cemeteries, is wrong. Let us examine the demographical data valid in Central Europe during the last century. The average length of a human life was about 30 years, this at a time when medicine

Table 1

Life table of the Lusatian phase population in Moravičany; the more exact by determined burials only

1. táblázat. A moravičanyi lusatian-kori népesség halálozási táblája; a pontosabban meghatározott hamvasztásos sírok anyaga

Age Életkor	D_x	d_x	l_x	q_x	L_x	T_x	e_x
0	49	12.2	100.0	12.2	93.9	2345.1	23.5
1—4	36	8.9	87.8	10.1	83.3	2251.2	25.6
5—9	57	14.2	78.9	18.0	71.8	1918.0	24.3
10—14	12	3.0	64.7	4.6	63.2	1559.0	24.1
15—19	6	1.5	61.7	2.4	61.0	1243.0	20.1
20—39	175	43.5	60.2	72.2	38.5	938.0	15.6
40—59	67	16.7	16.7	100.0	8.4	168.0	10.0
	402						

Table 2

Life table of the Lusatian phase population in Moravičany; the whole series
2. táblázat. A moravičányi lusatian-kori népesség halálzási táblája; teljes sorozat

Age Életkor	D_x	d_x	l_x	q_x	L_x	T_x	e_x
0	96	13.0	100.0	13.0	93.5	2216.2	22.2
1—4	62	8.4	87.0	9.7	82.8	2122.7	24.4
5—9	98	13.2	78.6	16.8	72.0	1791.5	22.8
10—14	50	6.8	65.4	10.4	62.0	1431.5	21.9
15—19	35	4.7	58.6	8.0	56.3	1121.5	19.1
20—39	288	38.9	53.9	72.2	34.5	840.0	15.6
40—59	111	15.0	15.0	100.0	7.5	150.0	10.0
	740						

Table 3

Life table of the younger phase of the Moravičany cemetery (Platěnice culture)
3. táblázat. A moravičányi temető fiatalabb korszakának halálzási táblája (Platěnice kultúra)

Age Életkor	D_x	d_x	l_x	q_x	L_x	T_x	e_x
0	7	3.1	100.0	3.1	98.5	3129.7	31.3
1—4	12	5.3	96.9	5.5	94.3	3031.2	31.3
5—9	11	4.8	91.6	5.2	89.2	2654.0	29.0
10—14	8	3.5	86.8	4.0	85.1	2208.0	25.4
15—19	9	4.0	83.3	4.8	81.3	1782.5	21.4
20—39	114	50.2	79.3	63.3	54.2	1376.0	17.4
40—59	66	29.1	29.1	100.0	14.6	292.0	10.0
	227						

was already highly advanced. The average does not depend on adults surviving five years more, but on the high mortality of children and infants. The improved average length of human life at present is therefore mainly a result of the developments in gynaecology and pediatrics during the last few decades. An average age of thirty for the individuals buried in the more recent part of the cemetery at Moravičany is clearly incorrect.

Dissatisfaction with these results leads one to attempt to use the demographical data from the older Lusatian phase of the cemetery in Moravičany and construct life tables. First, only the graves where a more exact estimation of the age of the deceased was possible were used for this calculation. The total number of cases was reduced to 402, i.e. to little more than a half (see Table 1). The value for life expectancy e_x^0 is 23.5 in this Table. Then a second procedure was adopted in which the other burials whose age could not be exactly determined were divided according to the percentage in Table 1 and added to the values in this Table. The results are shown in Table 2 (with 740 cases) where life expectancy e_x^0 sank to 22.2. In Table 3 the data collection from the more recent phase (Platěnice Culture) of the graveyard in Moravičany is dealt with in the way as in Table 2.

The author has also had the opportunity to study material from three cremation cemeteries in Slovakia dating from the period of the Roman Empire; these are in the areas of Abrahám (with 184 graves), Kostolná (with 55), and Sládkovičovo (with 54 burials). All these cemeteries have been archaeologically investigated by *T. Kolník*. Table 4 summarizes the abridged life tables for these three Roman era cemeteries. Consequently, we can observe a general in-

Table 4

Life table of the Roman Empire period localities in Slovakia
4. táblázat. A római császárkor időszakának halálzási táblája; szlovákiai lelőhelyek

Age <i>Életkor</i>	D_x	d_x	l_x	q_x	L_x	T_x	e_x
0	5	1.7	100.0	1.7	99.2	3369.7	33.7
1—4	11	3.7	98.3	3.8	96.5	3270.5	33.3
5—9	7	2.4	94.6	2.5	93.4	2884.5	30.5
10—14	21	7.2	92.2	7.8	88.6	2417.5	26.2
15—19	17	5.8	85.0	6.8	82.1	1974.5	23.2
20—39	119	40.6	79.2	51.3	58.9	1564.0	19.7
40—59	113	38.6	38.6	100.0	19.3	386.0	10.0
	293						

crease of the value of e_x^0 from 22.2 to 31.3 in the Platěnice phase in Moravičany, and to 33.7 in the Roman period in Slovakia. The great difference between the two phases in Moravičany continues to exist.

If one compares these results with the figures in the life tables published by GY. ACSÁDI and J. NEMESKÉRI (1970) in their "History of Human Life Span and Mortality" for the Bronze Age population in Mezőcsát (28.97), for the Iron Age population in the same locality (44.03) and the Intercisa and Brigetio Roman era populations (27.75) as well as for the Keszthely—Dobogó population of the late Roman age (35.19) — one immediately observes a significant divergence.

In order to explain these differences we might, on the one hand, regard the data from the cremation burials as unreliable for this type of analysis. On the other hand, it is certain that the analysis of cremation graves enables the age of a greater number of infant burials to be estimated, and the results are no doubt highly influenced by this. We should not forget that in palaeodemographical analysis a certain number of child graves are missing from skeletal cemeteries.

The determination of sex based on charred bones found in cremation graves is much more complicated. When working with skeletal material we judge by the morphological features of the skull but we always try to confirm this by reference to other phenomena, especially to the shape of the pelvis. Such confirmation is practically out of question in dealing with cremation graves. Moreover, we have no other evidence the importance of which may escape researchers concerned exclusively with skeletons who never dealt with cremation graves. It is the picture of the skull as a whole which is missing; although by relying on individual features we can try to reconstruct it. Experience has taught us at the same time to consider even details which cannot be

identified precisely. On the other hand we also, quite instinctively but justifiably suppress the features which contradict our general impression. If we decide that a skull was that of a man then we do not hesitate to ignore, for instance, the size of its processus mastoideus. Cremation burials only contain small details, and we cannot exclude the possibility that this most atypical small mastoideus has been preserved. Therefore, our hypotheses are for the most part only tentative.

I should like to draw attention to the fact that (apart from a certain number of burials which we are unable to classify at all), in the cremation cemeteries a greater number of female than male burials were discovered. This may possibly reveal the actual demographical structure, however, palaeodemographic information should never be accepted unquestioningly. No matter how much stress is laid on the necessity strictly to follow morphological features when determining sex, in my opinion everyone of us is more or less influenced by the overall robustness of the burnt bones. We are always tempted, though sub-consciously, to identify slender fragments as female. Nevertheless, we are very well aware that this rule is valid only in extreme cases, and before starting work we should know the robustness of the investigated population as a whole.

First of all the question whether the cremation process really results in a certain shrinkage of the bones should be answered. The experiments of DOKLÁDAL (1971) have clearly shown that this shrinkage does occur, and that is why it is not only more risky to base sex determination on the robusticity of bone but also (bearing in mind what was said above) in many cases sex determination in general.

One further aspect should be mentioned: it is usually more difficult to identify male skeletons than female ones. It seldom happens that a female grave is taken for a male one, the converse is much more frequent. Considering all this, one can perhaps appreciate why no attempt is made to construct life tables separately for males and females relying on cremation cemetery data.

Apart from these demographical data derived from the analysis of cremation burials, there are some other phenomena which are also worth mentioning; for instance, the general state of preservation of the burials examined, which can be assessed from the quantity and size of the preserved fragments. These data support the explanation why one sometimes fails in properly identifying the material. However, the state of preservation may in a certain sense be said to characterize the whole cemetery. A larger size and a greater number of burnt fragments occurred in individual burials in the older part of the cemetery at Moravičany. A similar situation prevails in a small cemetery at Tišnov, where distinct chronological sequence was involved as well. In the more recent burials there remained smaller quantities of ash preserved in fine fragments and in considerably smaller vessels. Possibly, owing to the smaller urns the burnt fragments were additionally crushed. Or else, at times the bones could also have been less carefully collected on the cremation site. It is also quite possible that a modification in the burial rite which treated the deposition of burnt bones in the urn rather as a symbolic act did not necessitate large cinerary urns at all.

In connection with both cemeteries mentioned above we have clearly to distinguish between the older and more recent burials. However, the dating of the three Slovak cemeteries is identical, and there are differences as well.

In this case one presumes, one can not speak of any differences due to evolution but of some other distinctions, maybe social or tribal. Such differences are, in my opinion, worth considering even when interpreting historical continuity, as well as the following interesting observations I should like to mention here:

When confronting the archaeological with the anthropological data in the older part of the cemetery at Moravičany, we have mentioned a special prevailing arrangement of double-burials. Two small vessels were placed on the burnt bones deposited in a large urn. Only a little detail, one might object, but the explanation of this arrangement was only possible with the aid of anthropological research. And on reviewing all the graves with two small vessels above the cremated bones, they were recognized as double-burials.

Maybe, I quite unnecessarily overemphasize the errors and mistakes which occur during the research of cremation graves. But reliable results can be obtained only when constantly bearing in mind our possibilities and limitations. A critical examination of cremation graves is necessary. Nevertheless, I believe that the final results in the branch of palaeodemography could be of great importance.

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HAMVASZTÁSOS URNATEMETŐK PALEODEMOGRÁFIAI ANALÍZISE

Írta: *Stloukal, Milan*

(Összefoglalás)

A hamvasztásos sírok antropológiai vizsgálatának megbízhatóságára vonatkozó nézetek a teljes elutasítás és a túlzásba vitt optimizmus között hullámszanak. Jelen tanulmány ezekből a hamvasztásos sírhelyekből nyert demográfiai adatokat mérlegeli és használja fel. A lelőhelyek a következők: Moravičany (70 hamvasztásos sír a lausitzi kultúrából és 246 sír a Platěnice-kultúrából), Abrahám (184 sír), Kostolná (55 sír) és Sládkovičovo (54 hamvasztásos sír) a három utóbbi a római korból.

A hamvasztásos sírok analízisének viszonylag legkönnyebb feladata az eltemetettek számának megállapítása. Moravičany hamvasztásos temetőjét a régészeti kutatás teljes egészében feltárta és éppen ezért rendkívül érdekes, hogy a temetések mindkét fázisának csaknem azonos időtartama mellett az idősebb fázisban 963, a fiatalabb fázisban pedig csak 316 egyént mutattak ki. A fiatalabb fázisban az egyes sírokon kívül felnőttek és gyermekek kettős temetkezését is feltárták, ugyanakkor az idősebb fázisban is több személy kettős temetkezését lehetett észlelni. Arra kell gondolni, hogy rossz megtartási állapot mellett két felnőtt személy kettős temetkezése gyakran csak a véletlen műve. Felnőttek közelebbi kormeghatározása mindig nehéz feladat, gyermekeknél ezzel szemben a fogak gyakran pontos meghatározást tesznek lehetővé.

Szerző kísérletet tett arra, hogy ebből az anyagból a halálzási táblákat rekonstruálja. Először e célból csak azokat a sírokat használta fel, ahol a közelebbi kormeghatározás lehet-

séges volt (1. táblázat), azután a többi sírokat is százalékos arányban besorolta a halálozási táblákba (2. táblázat). Ily módon azután a Moravičanyban talált fiatal fázis és a római kori temetők részére felállította a táblákat (3. és 4. táblázat). Feltűnő különbségek láthatók a csontvázak temetkezési helyek halálozási tábláinak és a felirattal ellátott sírok alapján felállított táblák értékei között; ezeknek a különbségeknek a magyarázata azonban nem egyértelmű. A nemi diagnózis a hamvasztásos sírok esetében mindig kérdéses, annyira, hogy a férfiak és a nők elkülönített halálozási tábláiról le kellett mondani.

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