

**ANTHROPOLOGICAL INFORMATION SYSTEM AT THE ARCHAEOLOGICAL
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The substance of the analysis of skeletal anthropological material is a characteristics of every individual on the basis of descriptive and metric traits (the data of primary evaluation of skeletons), as well as according to various mathematical and statistical quantities. Therefore, after installation and vivification of a computer at the Archaeological Institute of the S. A. S., its use at anthropological analyses became the most important task in the section of anthropology. Some unsuccessful experiments to acquire the program for computer processing of the data of primary analysis of skeletons from some anthropological working-places in Czechoslovakia resulted in decision to set up our own program. While performing the plan of scientific and research works, in the course of 1988, we set up and brought to agree the program for preparation and correction of the data of primary evaluation of skeletons, for making anthropological expertise's and creation of data bases for anthropological data bank. The specific of anthropological information system (ANTRIS) lies in the conception of coding information system and structure of the system. Its attribute is openness, i.e. anytime it can be completed by new evaluating criteria. ANTRIS is drawn up in the frame of the project of the anthropological information system which will consist of the systems for other branches, too (zoological, geographical and etc.; tab. 1). Originally, it was set up in DOS RV BASIC language for SMEP computers. At present it is transcribed into FORTRAN 77 language.

In computer praxis quantitative data are most easily processable. Therefore we decided for coding the data of evaluation of quantitative traits in ordinal scale. Quantitative (metric) traits were evidenced in non-code form.

The data set (in disc) contains identification data about the set (finding place, position, district, kind of locality, code for chronological determination, year of research, head of research, author and date of analysis), the data of primary evaluation of skeletons and calculated characteristics for every individual (DS, cranium capacity, indices and stature).

An entry of a skeleton consists of the so-called identification data and primary data of evaluation. The identification data include the number of grave and code for age (at under age individuals it is completed by numerical entry of the year of death). The primary evaluation data contain numerical codes of 46 descriptive (qualitative, resp. morphological) traits and 75 value of metric traits. For cranium characteristics there are evaluated 29 descriptive traits and 23 absolute measurements. To evaluate postcranium skeleton there are used 17 descriptive traits and 52 absolute measurements. Besides morphological traits necessary for basic characteristics of a skeleton, also traits determined by sex were included in analysis (for calculation of DS values). The list of applied descriptive traits (1—46 positions) is showed in the table 3b, c. The metric traits are evidenced on 47—141 positions. It deals with the values of the measurements necessary for calculation of cranium capacity, basic indices of facial flatness, stature and various indices of cranium and the bones of postcranial skeleton.

Both descriptive and metric traits were evaluated according to *Martin and Sailer (1957)*. Where there is possible to use various methods of evaluation of a certain qualitative traits, the authors are given in the brackets. The cranium capacity was calculated according to the method Welcker I and its division into categories was made according to Sarasin. The stature was calculated and divided into categories according to Manouvrier. The measurements for calculation of the basic indices of facial flatness were added, or the skulls were divided into size categories on the basis of absolute measurements in accordance with *Alexejev and Debec (1964)*.

The basic printed output of ANTRIS is represented by the text of anthropological expertise at present. We chose two versions. The first one, besides the introductory page with determined identification data about the set, gives a characteristics of each individual on the basis of actual descriptive (qualitative) and metric (quantitative) traits, as well as in accordance with calculated parameters (cranium capacity, indices and stature; tab. 2a-e.) The sex of adult individuals and the individuals of the age of juvenis is determined by the value of the so-called degree of sexualization (DS) in accordance with modified Acsadi and Nemeskeri's method (*Ferenbach- Schwidetzky- Stloukal, 1979*). The determination of sex was made dependent also by another condition. It lies in that, without regard to the DS value, the determination of the sex is unambiguous if

at least one of the most important traits determined by sex is created in the form typical for a certain sex. The DS value was not calculated for individuals of the age of infants, their skulls were not categorized in accordance with the values of absolute measurements neither the cranium capacity and stature were calculated. The second version of the expertise was completed with a total characteristics of the set (tab. 3a-e). It consists of information of the number of analyzed skeletons, average value of DS for adults and masculinity index. Another part of the summary characteristics includes the total indices in 7 tables and the global characteristics of male, resp. female skeletons on the basis of the most numerous categories of morphological traits and arithmetic averages of metric traits. In the tables there are summarized some information of the division of individuals in the analyzed set according to the sex and age (tab. 3a), of the frequency of morphological traits in absolute and percentage numerousness for man (tab. 3b, c), for women and total of adults, the basic statistical indices (n , X , X_{\min} , $-X_{\max}$, V_k , S , M_s) again for men (tab. 3d), women and adults together as well as characteristics of male (tab. 3e) and female parts of the set on the basis of the most numerous categories of descriptive traits and arithmetical means of metric traits.

The printed output of the expertise does not contain the data about evidenced anomalies and pathological modifications. In future it will be increased by these information. The evidence of traits for determination of the age of individuals, as well as the mortality tables, resp. graphic illustration of mortality will complete the demographic analysis of the analyzed set.

The data base represents the basic source of the data for other analyses. It enables to study the relations between analyzed sets (resp. individuals) in arbitrary order. The application of statistical methods of higher level (similarity, resp. dissimilarity tests, coefficients, functions, factor analysis, as well as correlation, regressive and cluster analyses, etc.) will offer the base for more detailed and integrate research of somatic trends in the evolution of populations.

The given system of coding enables the classification of sets (on the basis of chronological division) and individuals (according to the sex and age) from various actual aspects. In near future we are considering to set up the program for classification of sets from geographical aspect on the basis of co-ordinal system. So ANTRIS will contribute to more complex conclusion of archaeology about interethnic relations in our territory in prehistory, as well as in the early historical period.

Translated by *D. Halasova*

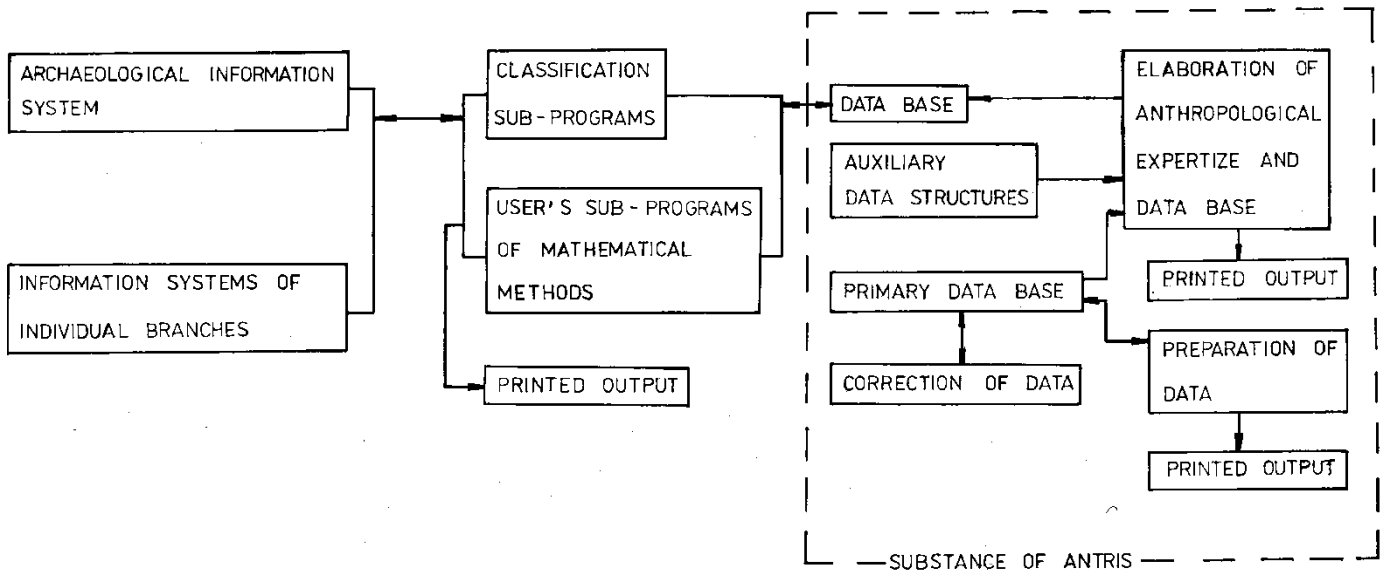
Comments by Assoc Prof. RNDr. *M. Pospisil*, DrSc. References

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Tab. 1. The scheme of Anthropological Information System



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