The Significance of Physiological Studies in Anthropology

Hans W. Jürgens

President of the German Society of Physiological Anthropology

"Anthropology is the science of man." This traditional definition, wide and therefore also vague, is mainly predominant today in the Anglo-Saxon world. In continental Europe and in Asia, anthropology is viewed more specifically as a natural science. Yet with this delimited definition, a range of fields is also covered : the kind of anthropology which is concerned with individuals is standing in opposition to a today more prominent concept of studying populations or gene pools. A further delimitation occurs when anthropology is reduced to human biology, restricting its scope to a "zoology of man".

In the last decades, traditional physical anthropology was mainly concerned with populations and morphology of man. There were two main reasons for this : Evolution and the fossil history of man had been for many decades and still is a central topic of research, depending on fossil remains and therefore restricted to morphological studies. A second reason for the importance of morphological aspects (pigmentation is also included here) is the concreteness of these features making them predominant for laymen and experts. For these reasons, physical anthropology has focussed on and reached a high standard of anthropometry in the course of time. This has also lead to grotesque extremes as the record-breaking number of measurements taken on a single Ainu skull by the Hungarian anthropologist Aurel von Török amounting to 5000 (Török, 1890).

These extremes were a turning point for the fields of physiological anthropology. New tasks originated from the increasing trend to industrialization. The traditional craftsman had known his customers personally. In tailoring, for instance, he could take measurements directly off the body and produce an individual piece of clothing. The same was valid for the production of other consumer goods in preindustrial time. Industrial mass production, however, works for an anonymous customer. The designers and producers of consumer goods do not know those who will buy and use their products. Here a new field originated : the physical anthropologist works as a mediator between the consumers on the one hand and the producers on the other. Not only collecting data of a population, his more important task is to structure it in order to define sizes, types or ranges of adjustment. The results form the basis of precise production.

In the beginning, this new field consisted of a mixture of anatomical knowledge and traditional craftsmanship, later incorporating occupational physiology and ergonomy. In recent years, Applied Physical Anthropology or Industrial Anthropology, as it may also be called, has gained independence being the only science dealing with the biostatistics of population feature distribution and with the comparison of different populations using large-scale studies. In contrast, classical physiology and ergonomy are primarily centered on the detection of principles, not on variation.

In this new role, research in Applied Physical Anthropology could no longer be restricted to morphology and anthropometry, since man is not solely characterized through these fields of study. His physiological features and his varying reactions to different human-made environments were found to be of equal importance, and therefore the field of Physiological Anthropology came into being. The same approach differentiating traditional physical anthropologists from anatomists also differentiates the physiological anthropologist from the traditional physiologist : the main question is not the detection of principles but the distribution of features. With the description of feature distribution among different age groups, sexes and populations, the degree to which these features are to be considered in the design of human environments and consumer goods can be determined. Although there were some preliminary studies concerned with certain questions of anthropological physiology in the first decades of this century, the formation of the real field of physiological anthropology started only two decades ago in Japan, where today we find the highest scientific activity in this field worldwide.

At the beginning of this century, physical anthropology had already separated from the field of social and cultural anthropology. Both branches have developed more or less independently since then. But through the new approach of the Applied Physical Anthropology, a new developmental stage has been reached again uniting the two branches : the existing differentiation of mankind into social and ethnical groups leads to distinctly different behavior patterns and preferences and consequently to different requirements for environmental design. In this way, the traditional separation of physical and cultural anthropology disappears and a new cooper-

ation of both branches results with the common aim to improve human living conditions.

Kraniometrie. Enke Verlag, Stuttgart

Reference

Correspondence to: Hans W. Jürgens, Anthropological Institute, University of Kiel, 24098 Kiel, Germany

Török A (1890) Grundzüge einer systematischen