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THE STUDY OF HUMAN VARIATION

*ABSTRACT: This paper further develops an approach to the study of human biological variation which eliminates the race concept while preserving classificatory process. It is based on the assumption that infraspecific classification of the species *Homo sapiens* is possible only if it is made as a matter of convenience and defined by the aims of a particular study.*

KEY WORDS: Homo sapiens – "Race" – Infraspecific classification – Artificial classification

At a symposium devoted to the concept of race, during a meeting of the American Association for the Advancement of Science in 1966, Theodosius Dobzhansky commented on the then current debate on race in biological anthropology: "Let's be optimists. Let's be optimists and believe that conflicting opinions will help to bring forth truth" (Dobzhansky 1968: 165). Dobzhansky's optimistic prediction, however, has not as yet been fulfilled. In spite of recent enlightening contributions, especially from the field of genetics (e.g., Templeton 1998, Brown, Armelagos 2001, Rosenberg *et al.* 2002, Bamshad *et al.* 2003), the concept of race has remained controversial. Furthermore, this controversy has transcended the disciplinary boundaries of biological anthropology, entering other fields such as biomedical sciences (e.g., Cooper *et al.* 2003, Burchard *et al.* 2003, Feldman *et al.* 2003). In the light of Dobzhansky's suggestion, this paper proposes an approach that utilises "conflicting opinions" on the study of human variation in order to establish a new framework which would allow anthropologists to construct infraspecific classifications of *Homo sapiens* while at the same time abandoning the concept of race.

The study of human biological variation has a long and controversial history (e.g., Stocking 1968, Stepan 1982, Barkan 1992, Shipman 1994, Marks 1995, Wolpoff, Caspari 1997, Hull 1998, Štrkalj 2000a, 2000b, Lieberman 2001, Biondi, Rickards 2002, Caspari 2003). Early representations of different physical varieties of humans are

to be seen in the Egyptian reliefs of the Royal Tombs of the Nineteenth Dynasty, and the first attempts to explain these differences can be found in the works of classical Greek authors (Casson 1939). In modern times, research on the topic may be traced back to early treatises on classifications of different human groups in the seventeenth century. Linnaeus, the founder of modern taxonomy, provided foundations for these classifications in the following century. The race concept, unknown in the pre-modern era (Montagu 1974, Fredrickson 2001), soon occupied a central position in the study of human variation.

Allowing for some historical simplification, it may be stated that research on race was, for a long time, conducted by implementing a typological approach. Typology gained momentum at the beginning of the nineteenth century and dominated the study of human variation up to the second half of the twentieth century. It was founded on essentialist philosophy, emphasising average tendencies and neglecting variation within a group. The main aim of the typological research programme was to classify humankind into races, according to "ideal types". Whether an individual belonged to a particular race was established according to its similarities to the "type".

As research progressed, however, the situation became more and more complicated. As a method of describing and explaining human variation, the pigeonholing involved in the classification based on ideal types proved to be unwieldy and complicated. With the samples getting bigger,

it became almost impossible to incorporate the majority of living individuals or skeletal remains into any of the racial types. This did not result in the collapse of the typological programme, but led to attempts to refine it, most often by creating more types. In effect, the majority of anthropologists sub-divided major races into smaller units (sub-types).

In the period between the world wars, however, many anthropologists became dissatisfied with racial typology but were unable to find an alternative approach (Brace 1982). This happened only in the second half of the twentieth century when two opposing groups of scientists proposed different alternatives for the typological approach to the study of human variation. On one side were those who argued for the demise of the concept of race, claiming that no classification of the species *Homo sapiens* is possible. Instead they opted for the study of a particular morphological or genetic trait and its distribution (clinal approach) and/or claimed that a breeding population is the only plausible unit of classification among humans (Livingston 1962, Brace 1964, Montagu 1964). On the other side were those who thought that the concept of race should not be abandoned but redefined in terms of population thinking (Dobzhansky 1962, Garn 1962, Newman 1963). A lengthy and intense polemic between representatives of the two approaches produced no agreement on the matter. Furthermore, a number of anthropologists continued to utilise the typological approach and remnants of it are to be found even in contemporary research in biological anthropology and related disciplines (Kohn 1995).

There are a number of studies that try to assess the attitude of working biological anthropologists towards the concept of race (Littlefield *et al.* 1982, Lieberman *et al.* 1989, Lieberman, Reynolds 1996, Cartmill 1998, Štrkalj 2000c, Kaszycka, Štrkalj 2002, Wang *et al.* 2002, 2003, Cartmill, Brown 2003, Kaszycka, Strzałko 2003, Lieberman *et al.* 2003). One of the general conclusions seems to be that there is still no consensus on the concept of race, although in some countries there is a significant majority in favour of it (in China, for instance) or against the concept (in the USA). External factors play an important role in this, and particularly in national differences towards the concept of race. However, it might be that there are also difficulties of a scientific nature concerning the race problem, which are resolved in different ways by different anthropologists. Mayr (2002: 262) recently observed that "The major reason for the existence of a race problem is that so many people have a faulty understanding of race" and that faulty understanding relies on the typological approach.

It is possible that there are other problems. Probably the major one is the seemingly insoluble tension within the contemporary study of human variation which comes from numerous scientific problems associated with the concept of race, on the one hand, and the need to classify, on the other. The race concept seems to be burdened with difficulties when applied to the species *Homo sapiens*.

Some of the main reasons are: the lack of any agreement on the number of human races, clinal distribution of many traits, discordance of distribution of a great number of traits, and the level of variation within races which exceeds the level of variation between groups designated as races.

However, there seems to be a need for classification that would enable scientists to work with a wide range of relevant data. *Homo sapiens* is a species with global distribution, which consists of a great number of individuals and populations inhabiting many different environments. One must therefore subdivide it into smaller units, simply to be able to process a large amount of potentially relevant information. A clinal approach, which is sometimes used as an alternative to a racial approach, does not seem to provide a conceptual framework for the study of human variation if used alone. The concept of a population or a breeding population is thus often used in conjunction with it. As Molnar (1998: 278) noted "The clinal approach has its strength, but only when used in conjunction with the actual basis for trait distribution through time and space – the population."

Population, therefore, not race, becomes the basic unit of classification. Lieberman and Jackson (1995: 34) observed that "Nothing is gained by the use of race that the term population cannot serve equally well." However, many of the problems associated with the concept of race can also be associated with the concept of population. Relethford (1994: 51), for instance, in his textbook on biological anthropology, defines a breeding population as "a group of organisms that tend to choose mates from within the group." He then adds that, "this definition is a bit tricky because it is not clear what proportion of mating within a group defines a breeding population." Similarly, arbitrary delimitation of the borders of particular races is often used as an argument against the race concept. This is to be expected, as both "race" and "population" are open genetic systems with arbitrarily defined boundaries. So, one may rephrase Lieberman and Jackson and say that many difficulties with the concept of race apply to the population concept equally well.

The other way to deal with classification without using race is to use ethnic or geographic labels. These, however, are of very limited value, mainly because of the extraordinary mobility of humans, especially in the last few centuries. If one uses a term which refers to a region inhabited by a multi-ethnic group such as "American" it becomes highly ambivalent. To deal with this, various adjectives are added, introducing terms such as "African-American" or "European-American". This, however, seems to be nothing but a return to the old-fashioned division into several major races, as there is no difference between the terms "Black" and "African-American", and no difference between "White" and "European-American". There is, of course, an important difference in connotation but it is of no importance in the present context.

A possible solution to the problem of infraspecific classification of the human species was suggested almost

half a century ago by several geneticists and genetically oriented anthropologists, most forcefully by Theodosius Dobzhansky (Božić, Štrkalj 2002). These scientists recognized that any classification of the human species would inevitably be arbitrary. This seemed acceptable to them, as they understood it only as a matter of convenience, a device that would help researchers to organize their data. Intraspecific classification is, therefore, only an expedient research tool. As Dobzhansky (1962: 266) noted, "Race differences are objectively ascertainable facts. The number of races we choose to recognize is a matter of convenience." In other words, there are quantifiable biological differences between diverse human populations. Human groups can therefore be classified, but only relatively, as the classification changes with a change of trait or set of traits used in that particular classification. There are, therefore, no fixed races that can be identified. How one divides humans on biological grounds depends on which set of data one utilizes, and this is defined by the objective of each particular research. Race, as Kohn (1995) observed, with such an approach became more fluid.

This is, of course, an artificial type of biological classification, defined by Mayr and Ashlock (1991: 409) as "Classification based on convenient and conspicuous diagnostic characters, without attention to characters indicating relationship; often a classification based on a single arbitrarily chosen character instead of an evaluation of the totality of characters." Any classification of the human species other than an artificial one seems to be impossible. It would appear that much confusion and misunderstanding stems from the fact that numerous racial classifications in the history of anthropology have been presented as "natural" divisions of humankind when they were, in fact, purely artificial.

There is nothing intrinsically wrong with classification, just as there is nothing intrinsically wrong with classification of our own species, scientifically or socially. The problem lies in the way classification is carried out. Probably the best examples of this are the two great classifiers of the 1960s, Carlton Stevens Coon (1963) and Theodosius Dobzhansky (1962). While the work of the former is now abandoned by the majority of anthropologists, due to its scientific deficiencies and potentially negative social implications (Marks 2000, Jackson 2001), the work of the latter is still quoted and widely acclaimed.

The approach outlined above enables anthropologists from various sub-disciplines to make different classifications according to the requirements of their research. Each classification would therefore be defined and applicable only within the context of a particular research programme.

Finally, bearing in mind that classification is artificial, it would be appropriate to use new neutral term to name the groups into which humans are classified. "Form", defined as "a neutral term for a single individual, phenon, or taxon" (Mayr, Ashlock 1991: 416), is one possible term (Štrkalj 2000d, 2000e). In this way, confusion with old systems of racial classification would be avoided. "Race" would then

cease to exist in biological anthropology as a term and as a concept.

Traditional division into races alone is, as recently observed, "both too broad and too narrow" (Feldman *et al.* 2003: 374). However, a fuzzier approach and application of different systems of infraspecific classifications might be of use in research on human variation precisely because biological reality is fuzzy and resists simple compartmentalisation.

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REFERENCES

- BAMSHAD M. J., WOODING S., WATKINS W. S., OSTLER C. T., BATZER M. A., JORDE L. B., 2003: Human population genetic structure and inference of group membership. *Amer. J. of Human Genetics* 72: 578–589.
- BARKAN E., 1992: *The Retreat of Scientific Racism: Changing Concepts of Race in Britain and the United States between the World Wars*. Cambridge University Press, Cambridge. 381 pp.
- BIONDI G., RICKARDS O., 2002: The scientific fallacy of the human biological concept of race. *Mankind Quarterly* 42: 355–88.
- BOŽIĆ J., ŠTRKALJ G., 2002: Conceptual clustering and the study of human variation. *Collegium Antropologicum* 26, Supplement: 30.
- BRACE C. L., 1964: On the race concept. *Curr. Anthropol.* 5: 513–520.
- BRACE C. L., 1982: Comment. *Curr. Anthropol.* 23: 648–649.
- BROWN R. A., ARMELAGOS, G. J., 2001: Apportionment of racial diversity: A review. *Evol. Anthropol.* 10: 34–40.
- BURCHARD E. G., ZIV E., COYLE N., GOMEZ S. L., TANG H., KARTER A. J., MOUNTAIN J. L., PÉREZ-STABLE E. J., SHEPPARD D., RISCH N., 2003: The importance of race and ethnic background in biomedical research and clinical practice. *New England J. of Medicine* 348: 1170–1175.
- CARTMILL M., 1998: The status of the race concept in physical anthropology. *Amer. Anthropol.* 100: 651–660.
- CARTMILL M., BROWN K., 2003: Surveying the race concept: A reply to Lieberman, Kirk and Littlefield. *Amer. Anthropol.* 105: 114–115.
- CASSON S., 1939: *The Discovery of Man: The Story of the Inquiry into Human Origins*. Harper, New York. 339 pp.
- CASPARI R., 2003: From types to populations: A century of race, physical anthropology, and the American Anthropological Association. *Amer. Anthropol.* 105: 65–76.
- COON C. S., 1962: *The Origin of Races*. Alfred M. Knopf, New York. 724 pp.
- COOPER R. S., KAUFMAN J. S., WARD R., 2003: Race and genomics. *New England J. of Medicine* 348: 1166–1170.
- DOBZHANSKY T., 1962: *Mankind Evolving*. Yale University Press, New Haven and London. 381 pp.
- DOBZHANSKY T., 1968: Discussion. In: M. Mead, T. Dobzhansky, E. Tolbach, R. E. Light (Eds.): *Science and the Concept of Race*.

- Pp. 165–166. Columbia University Press, New York.
- GARN S., 1962: *Human Races*. 2nd edition. C. C. Thomas, Springfield. 137 pp.
- FELDMAN M. W., LEWONTIN R. C., KING M. C., 2003: A genetic melting-pot. *Nature* 424: 374.
- FREDRICKSON G. M., 2001: *Racism: A Short History*. Princeton University Press, Princeton and Oxford. 207 pp.
- HULL D., 1998: Species, subspecies and races. *Social Research* 65, 351–367.
- JACKSON J. P. 2001: "In ways unacademical": The reception of Carleton S. Coon's "*The Origin of Races*". *J. of the History of Biology* 34: 247–285.
- KASZYCKA K., ŠTRKALJ G., 2002: Anthropologist's attitudes towards the concept of race: The Polish sample. *Curr. Anthropol.* 43: 329–335.
- KASZYCKA K., STRZAŁKO J., 2003: "Race" – Still an issue for physical anthropology? Results of Polish studies seen in the light of U. S. findings. *Amer. Anthropol.* 105: 114–122.
- KOHN M., 1995: *The Race Gallery: The Return of Racial Science*. Jonathan Cape, London. 322 pp.
- LIEBERMAN L., 2001: How "Caucasoids" got such big crania and why they shrank. *Curr. Anthropol.* 42: 69–95.
- LIEBERMAN L., KIRK R. C., LITTLEFIELD A., 2003: Perishing paradigm: Race – 1931–1999. *Amer. Anthropol.* 105: 110–113.
- LIEBERMAN L., JACKSON F. L. C., 1995: Race and three models of human origin. *Amer. Anthropol.* 97: 231–242.
- LIEBERMAN L., REYNOLDS L. T., 1996: Race: The deconstruction of a scientific concept. In: L. T. Reynolds, L. Lieberman (Eds.): *Race and Other Misadventures: Essays in Honor of Ashley Montagu in His Ninetieth Year*. Pp. 142–173. General Hall Publishers, Dix Hills.
- LIEBERMAN L., STEVENSON B. W., REYNOLDS L. T., 1989: Race and anthropology: A core concept without consensus. *Anthropology and Education Quarterly* 20: 67–73.
- LITTLEFIELD A., LIEBERMAN L., REYNOLDS L. T., 1982: Redefining race: The potential demise of a concept in physical anthropology. *Curr. Anthropol.* 23: 641–655.
- LIVINGSTONE F. B., 1962: On the non-existence of human races. *Curr. Anthropol.* 3: 279–281.
- MARKS J., 1995: *Human Biodiversity: Genes, Race, and History*. Aldine de Gruyter, New York. 321 pp.
- MARKS J., 2000: Human biodiversity as a central theme of biological anthropology: then and now. *Kroeber Anthropological Society Papers* 84: 1–10.
- MOLNAR S., 1998: *Human Variation: Races, Types, and Ethnic Groups*. Prentice-Hall, Upper Saddle River. 396 pp.
- MAYR E., 2002: *What Evolution Is*. Weidenfeld and Nicolson, London. 318 pp.
- MAYR E., AND ASHLOCK P. D., 1991: *Principles of Systematic Zoology*. 2nd edition. McGraw-Hill, New York. 428 pp.
- MONTAGU A., HIERNAUX J., LIVINGSTONE F. B., ANDERSON R. T., HOGBEN L., BRACE C. L., EHRLICH P. R., HOLM R. W., BARNICOT N. A., WASHBURN S. L., 1964: *The Concept of Race*. Free Press of Glencoe, New York. 270 pp.
- MONTAGU A., 1974: *Man's Most Dangerous Myth: The Fallacy of Race*. Columbia University Press, New York. 542 pp.
- NEWMAN M. T., 1963: Geographic and microgeographic races. *Curr. Anthropol.* 5: 189–207.
- RELETFORD J. H., 1994: *Fundamentals of Biological Anthropology*. Mayfield Publishing Company, Mountain View. 338 pp.
- ROSENBERG N. A., PRITHCARD J. K., WEBER J. L., CANN H. M., KIDD K. K., ZHIVOTOVSKY L. A., FELDMAN M. W., 2002: Genetic structure of human populations. *Science* 298: 2381–2385.
- SHIPMAN P., 1994: *The Evolution of Racism: Human Differences and the Use and Abuse of Science*. Simon and Schuster, New York. 318 pp.
- STEPAN N., 1982: *The Idea of Race in Science: Great Britain 1800–1960*. Archon Press, Hamden. 230 pp.
- STOCKING G. W. Jr., 1968: *Race, Culture, and Evolution: Essays in the History of Anthropology*. Free Press, New York. 380 pp.
- ŠTRKALJ G., 2000a: Inventing races: Robert Broom's research on the Khoisan. *Annals of the Transvaal Museum* 37: 113–24.
- ŠTRKALJ G., 2000b: The conflict of pre-paradigm schools in modern human origins research. *Acta Biotheoretica* 48: 65–71.
- ŠTRKALJ G., 2000c: Still no consensus on race? *International Association of Human Biologists Newsletter* 30: 28–32.
- ŠTRKALJ G., 2000d: Form and race: Terminological suggestions for the study of human variation. *Mankind Quarterly* 41: 109–118.
- ŠTRKALJ G., 2000e: Form: A terminological suggestion for the study of human variation. *Evolutionary Theory* 12, 3: 89.
- TEMPLETON A. R.: 1998: Human races: A genetic and evolutionary perspective. *Amer. Anthropol.* 100: 632–50.
- WANG Q., ŠTRKALJ G., SUN L., 2002: The concept of race in Chinese biological anthropology. *Anthropologie* XL, 1: 95–98.
- WANG Q., ŠTRKALJ G., SUN L., 2003: On the concept of race in Chinese biological anthropology: Alive and well. *Curr. Anthropol.* 44: 403.
- WOLPOFF M. H., CASPARI R., 1997: *Race and Human Evolution: A Fatal Attraction*. Simon and Schuster, New York. 528 pp.

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