

**RACE DIFFERENCES IN INTELLIGENCE:
A MICROEVOLUTIONARY AND
ECOLOGICAL PERSPECTIVE**

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The paper on "Race Differences in Intelligence: A Global Perspective" by Richard Lynn yields us an extensive outline of the research in human intelligence. The first question should concern the nature of human intelligence, its meaning in evolutionary perspective and the contemporary concept of human race and its use in recent anthropology.

In my opinion, the intelligence is one part of human cultural adaptive complex. Its original meaning is to secure the optimal reaction of an individual to certain environmental factors in the framework of cultural adaptive reactions; it naturally includes tool use, tool making and artificial modifications of the environment (Blumenberg 1983, Geist 1978, Vancata and Privratsky 1983 a, b, Vancata et al 1981, 1986). However, the reaction norm depends not only on the parameters of an individual but there is also a strong dependance on the experiences of the individual and his group or population. The cultural traditions of a group, the social structure, social status and "adaptive level" or technological level of the group, etc. as well as physiological parameters of a given population are of a great importance for the formation of cultural adaptive mechanisms. The last point is closely connected with the concept of race in recent physical anthropology and human biology and genetics (cf. Benes 1979, Korn 1978, Vogel and Motulsky 1979, Wolpoff 1980).

The static concept of race that is used by Lynn has been seriously challenged by both physical anthropologists and human geneticists many years ago because of continuous morphological variability between major races, gene flow, migrations and isolation of various populations and many other factors (Benes 1979, Geist 1979, Santangelo 1989, Vogel and Motulsky 1979). It is almost impossible to establish precisely whether the degree of intelligence in individual human groups has been influenced by the genetic parameters specific for the major races or by the non-specific genetic factors and up to which degree. These two facts make it difficult to accept the author's concept as really comprehensive. There is no doubt

about the differences between human populations in morphological, physiological, biosocial and cultural (Benes 1979, Korn 1978, Vogel and Motulsky 1979) even if such rough and unprecise taxonomic and classification criteria are used to dividing global *Homo sapiens* population into Caucasoid, Negroid, and Mongoloid groups. The results on intelligence tests presented by Lynn confirm that there are also some differences in individual reactions that were tested by IQ tests.

The meaning of IQ test data and the interpretation that they show race differences in IQ's have been challenged many times, especially by physical anthropologists, physiologists and psychologists (Korn 1978). The racial differences in intelligence could be due to various factors including physiology of reaction, brain laterality, learning abilities, ontogenetic patterns etc. (Corballis 1989, Sinha 1387) that are very different in individual populations, and dependant on their adaptive complexes. Also motivation to pass the tests could differ in different cultural traditions.

But how to interpret these facts? The strict genetic interpretation and basic rejection of environmental influences and factors presented by Lynn is at least one-sided and doubtful to some degree. The relations of genetic and environmental factors have been shown by numerous scientists (Benes 1979, Blumenberg 1983, Geist 1978, Omodeo 1987 Vogel and Motulsky 1979, Zahavi 1987). Similarly, there is no doubt about the close relations of biological and cultural factors as well as the importance of ontogenetic development and parameters of behavioral and cultural adaptations (Santagelo 1989, Sinha 1987, Vogel and Motulsky 1979, Zahavi 1987). Furthermore, every human population has its microevolutionary history and population and cultural dynamics (Piontek and Marciniak 1930). Yet this does not mean that a simplified "environmentalist" interpretation gives us a more comprehensive explanation. The attempt to explain the racial differences solely on the basis of social and economic differences is even less precise than the genetic theory.

The social and economic factors and differences cannot be identified with environmental or ecological factors for several reasons: 1) they are only part of "human ecology" together with many abiotic, biological and other socio-cultural factors (Geist 1978, Vancata and Privratsky 1983b), 2) these factors cannot be limited on one racial group of the society but they depend on the social stratification of a given population (Benes 1979, Korn 1978, Santagelo 1989 Vogel and Motulsky 1979), 3) the ecological factors are more general and more differentiated (Geist 1978 Vogel and Motulsky 1979); there are remarkable differences between "poor" black people in the U.S. and e.g., Africa, and not only genetic ones (Korn 1978). Consequently, the IQ tests should be primarily interpreted within

individual microevolutionary lines and the ecological history of individual lines should be taken into account much more consistently.

The interpretation of individual results of IQ tests and their comparison is not easy and I have many doubts about it. The tests were conducted by many methods in individual populations and racial groups. The results of IQ tests can hardly be strictly compared from the point of view of their age, number, sex ratio and social determination, etc. With the exception of means, there are no more precise statistical parameters e.g. standard deviations and there is no statistical comparative analysis. Sex differences and specific features typical for males and females should also be studied. Perhaps such "sexually differentiated" information could help us to define more precisely the differences or similarities between the populations. The ontogenetic development of intelligence should also be taken into account because ontogeny has been shown as a very important factor in the formation of behavioral reactions (cf. Sinha 1987).

While the black African populations seem to be really different from the other populations the differences between European and American white populations (Caucasoids) and those from eastern Asia (Mongoloids) are very probably not significant. It is also very problematic to interpret black Americans as "Negroid-Caucasoid Hybrids." Furthermore, this interpretation would mean strict genetic determination of intelligence which has never been proved.

If my arguments are correct the hypothesis on racial genetic determination of intelligence cannot be proved. There are no real differences between Caucasoids and Mongoloids and the genetic "hybridization" of intelligence per se is doubtful. I do not intend to argue that there are no differences between human populations and the results of IQ test have no meaning. In this sense, the study by Lynn presents a lot of data in a new comparative perspective. However, the data should be examined in a more general framework which should respect more precisely microevolutionary trends and ecology of human populations.

Lynn's second paper presents a very general hypothesis on the role of intelligence in human evolution. However, the paper seems to be based on a too general evolutionary hypothesis to be really related to the intelligence problem in human evolution. Some of the presented facts and data seem to be incorrect or misleading.

First, there is no significant correlation between brain size and intelligence (see Henneberg 1987 a,b, 1988). Even the correlation coefficient .35 in university students (which cannot be taken as a representative sample) is very low for claiming that "Brain size is positively correlated with intelligence...."

Quite the opposite, the cranial volume does not change significantly in *Homo sapiens* or, according to Henneberg (1988), there has even been a slight decrease in cranial capacity. The evolutionary history of man shows a probable increase of intelligence since the Palaeolithic period which could be reflected to some degree by the differences in IQ tests between some human populations (e.g. Australian aborigines and the white Australian population). Such differences should be primarily related to the cultural adaptive mechanisms, type of tool behavior and technology.

I disagree with the oversimplified hypothesis on selection for more intelligent individuals. This is doubtful for several reasons: 1) Intelligence as such could hardly be selected, because there is no direct definable genetic basis of human intelligence and its nature is very complex (Benes 1979, Santangelo 1989, Vogel and Motulsky 1979), 2) Natural selection operates on various levels not only that of individuals but also on the group and population levels (Omodeo 1987, Vogel and Motulsky 1979) (kin selection, group selection or sexual selection), 3) There is no evidence that the intelligence increase (i.e. stable permanent one) is an advantageous adaptive mechanism (Zahavi 1987) in connection with the differentiation of "races", especially in pre-technological stages of human evolution. 4) Intelligence cannot be understood as an isolated outstanding human feature and the brain is not the result of intelligence evolution (Blumenberg 1983, Korn 1978, Santangelo 1989). Intelligence is only one part of cultural and biosocial adaptive mechanisms and it is closely connected with tool behavior, learning abilities and cognitive abilities (Vancata et al 1981, 1986).

The evolutionary scenario is not very comprehensive. We cannot say that there is no relevant difference between the polycentric or monocentric theories (the multi-origin or single origin theories) (cf. Brauer 1984, Frayer 1985, Henke 1988, Wolpoff 1980) particularly from the point of view of evolution of human society, culture and intelligence. Knowledge of the period in which the major human races originated, i.e. whether the Caucasoids/Mongoloid divergence was at the stage of *Homo erectus* or early *Homo sapiens* (or even early Neanderthals), or at the time of Upper Paleolithic *Homo sapiens*, is extremely important for constructing any scenario of human evolution, because of the evolutionary and cultural differences between early *Homo sapiens*, *Homo erectus* and Upper Palaeolithic Man (Brauer 1984, Henke 1988 etc). Furthermore, the dating as well as the structure of the evolutionary scenario is based on rather shaky data or one-sided hypotheses (e.g. Stringer and Andrews) not acceptable for most palaeoanthropologists.

The ecological interpretation of human evolution seems to me rather

superficial which is probably partly due to the oversimplified understanding of hominid ecology and evolution by Geist (1978) quoted by Lynn several times. The climate in Africa and Eurasia changed many times and numerous migration and changes in adaptive strategies should be supposed (cf. Brauer 1984, Frayer and Wolpoff 1985, Henke 1988, Larsen 1987, Vancata 1988, Wolpoff 1980, etc).

My impression is that the problem of evolution of human intelligence and its racial differentiation should be closely related to the evolution of the hominid brain and tool behavior (cf. Blumenberg 1983, Hennberg 1987b, Vancata 1983, Vancata et al 1981, 1986) as well as to the problem of behavioral and cultural adaptation (Benes 1979, Piontek and Marciniak 1990, Santangelo 1989). Naturally, it is not quite clear whether the racial variability is random or correlated with some physiological parameters and whether the physiological differences that originated as climatic and ecological adaptations could also influence the results of IQ tests.

If there is really some adaptive meaning of intelligence with respect to the evolution of human tool culture, social organization and behavior as basic factors of hominid evolution (Geist 1979) its highest selective value had to be before the Upper Palaeolithic period (Corballis 1989, Vancata et al 1986), i.e. prior to the racial differentiation. The Upper Palaeolithic, Mesolithic and Neolithic stage of evolution was not very different in individual major races (Benes 1979, Jelinek 1972, Korn 1978, Santangelo 1989). Perhaps some cultural retardation during the Neolithic period in Europe and northern latitudes of Asia in comparison to Africa and south east and southern Asia can be found. However, IQ coefficients of recent African and south Asian populations seems to be rather low which is contradictory to Lynn's hypothesis.

It is also probable that the adaptive meaning of intelligence as a part of cultural adaptation has been different in individual evolutionary lines and they were compensated by other features of cultural adaptation. The development of individual human microevolutionary lines and racial populations should be understood as a very dynamic process with different mode and rate in human evolution. Therefore the results of research on the IQs of recent populations, does not necessarily reflect the real evolutionary pattern.

It is extremely difficult to reconstruct the evolution of behavior and culture which naturally concerns also the evolution of human intelligence and its racial differentiation. Nevertheless, the paper by Lynn presents a new approach to human evolution which should provoke qualitatively new and more detailed discussions on human evolution integrating biological and cultural aspects of the hominization process.

Intelligence and National Achievement

Editor

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CONTENTS INCLUDE

INTRODUCTION: THE CONTEMPORARY AWAKENING
Raymond B. Cattell

THE ROLE OF PSYCHOLOGICAL TESTING
Raymond B. Cattell

TEST SCORES AS MEASURES OF HUMAN CAPITAL
Barbara Lerner

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A SPECULATIVE ESSAY ON JAPAN AND THE WEST
Daniel R. Vining, Jr.

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Raymond B. Cattell and Jerry M. Brennan

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PANDORA'S BOX AND THE ESKIMO'S NOSE

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Racial differences in IQ-type test scores have been of interest to psychologists for many decades. For those involved in this area of research the main aim has been to find an explanation for the differences. The first paper by Lynn takes a rather novel line to support a genetic explanation. It purports to present evidence to indicate that black-white IQ test score differences might in part be due to group differences in the speed or efficiency of elementary cognitive abilities. It is suggested that these abilities reflect neuronal efficiency, i.e. that they offer an insight into the 'biological' bases of the test score variance. Since this is the corner of intelligence research with which I am familiar I will concentrate on this aspect of the paper.

Early on in his first paper Lynn states that, "...recent work has shown that reaction times are a measure of intelligence and appear to represent differences in the neurological efficiency of brain processes." A perusal of more up-to-date research than is cited to support these claims (e.g. Longstreth, 1984; Jensen and Vernon, 1986; Welford, 1986; Lawson and Saccuzzo, 1986; Kranzler, Whang and Jensen, 1988; Widaman and Carlson, 1989; Neubauer, 1990) would reveal that the strongest comment which it is reasonable to make is that measures of choice reaction time (often using the Hick procedure) are replicable but weak correlates of IQ scores. The correlations are usually in the region of 0.2. To state that RT indices are a measure of intelligence implies that they have similar validity characteristics to IQ test scores, a claim which is unsustainable. The most one should claim is that RT indices share a very modest amount of variance with IQ test scores. Nevertheless, this fact is interesting enough to warrant further research because it raises the possibility that the two measures share cognitive processes. In fact, Lynn does put forward the view that some processes contributing to RT variance underlie IQ test score variance. This is certainly a reasonable hypothesis, but one should acknowledge that there is an alternative view which envisages RT differences as a consequence rather than a cause of IQ scores, a possibility which, if correct, would substantially reduce their importance in the