Notes on the Physical Anthropology of Lawrence Oschinsky

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RÉSUMÉ

Pour rendre hommage à feu le professeur Lawrence Oschinsky, un groupe de ses anciens étudiants présente un résumé des principes théoriques et de la méthodologie qui ont guidé sa recherche et qui auraient servi à l'élaboration d'un ouvrage d'envergure qu'il s'apprêtait à écrire.

1. EVOLUTIONARY THEORY

Dr. Oschinsky required his students to have a general grounding in evolutionary theory since it was his basic theoretical frame of reference. Special attention was given to different *kinds of selection* and types of *variation*. Dr. Oschinsky's thoughts on these matters were in only an early stage of development, however, and the distinctions presented here would no doubt have undergone considerable refinement within a few years' time. The kinds of selection distinguished were as follows:

(a) *natural selection,* which Dr. Oschinsky wanted to delimit more rigorously than is done in common usage where it is used almost synonymously with selection in general. He felt that the natural environment is more tolerant of variation than is commonly thought, thus providing a certain allowance of free play or room within which other kinds of selection could operate.

(b) *sexual selection,* an especially important kind which has been neglected, although it was the central subject of Charles Darwin's "other book", *The Descent of Man and Selection in Relation to Sex* (1871).

(c) *artificial selection,* operating in the domestication of animals and plants, and also in hominids as "self-domestication".

(d) *societal selection,* the influence of societal factors.

The basically unconscious and unintentional nature in evolutionary terms of the latter three kinds of selection is to be noted, as it has been by Darwin (1936:900, 916 ff). Conscious selection may be considered a special form of artificial selection. The kinds of selection distinguished overlap considerably in operation within the evolutionary process, particularly in hominid evolution.

Four types of variation were distinguished by Dr. Oschinsky. A fundamental distinction was made between "variation" and "variability" as indicated under the first type.

(a) *Variation I* is the type usually meant in discussions of "variability", i.e., genetic variation, or what might be called Mendelian variation. "Variability" is variation on the genotypic level of reality, and though it may be considered the immediate cause of all variation, it is *not* the determinant of the form of the other types of variation (cf. Oschinsky 1962:351-352). Dr. Oschinsky stressed the need for keeping different "levels of reality" clearly separate in discussions on evolution.

(b) *Variation II* is the creation of new variation through selection. It is on the phenotypic level of reality. Here Dr. Oschinsky seemed to be concerned with the process of change in physical type, as in his course on hybridization where he was considering the Burmese and asking, in effect, "What are the reasons for their variation? How is physical type modified by such factors as climate, diet, altitude, use and disuse? How plastic is the phenotype?" A critical examination of functionalism was to be a major part of this hybridization course which was just initiated in Dr. Oschinsky's final year.

(c) *Variation III* is the pattern of variation in a wild species. Again, this is variation on the phenotypic level. The question posed was, "What sort of variation occurs in wild species, and how does that compare with the variation in semi- and fully-domesticated species?" A basis was sought for the evaluation of the relative importance of the different kinds of selection, especially with regard to *Homo sapiens*. One feature noted was that *clines* occur in wild species and in modern *Homo sapiens* but not in fully-domesticated species[1].

[1] Noted by Kettel.

(d) *Variation IV* is the pattern of variation in terms of taxonomic groupings, especially specific and subspecific. Here, on the taxonomic level, the questions were, "How do we perceive and conceptualize the process of change that is variation? How do we slice up the pie of reality in terms of concordances of characters? How are species and subspecies grouped; how do we put them together?"

Rates of evolution (cf. Simpson 1944; 1953) and the *duration of mammalian species* (cf. Kurten 1959) also received special attention from Dr. Oschinsky during his last year, but were not yet fully incorporated into his thinking on hominid evolution. He noted that *Homo sapiens* is of short duration compared to the mean species duration in mammals of 300,000 years or to a long enduring species like the hippopotamus estimated to have lasted 600,000 years by Kurten (1959). Kurten, however, was criticized in class discussion. Dr. Oschinsky suspected that Kurten ignored total morphological pattern. Mr. Gaherty said that Kurten was picking and comparing, at random, non-comparable individual characters such as dentition and brain size, and also was ignoring mosaic evolution. Rates are presented by Kurten without all the supporting evidence that must have been worked out. And, as Mr. MacDonald noted, the measures are too far apart in time to detect any rapid rates of change; the samples are separated by time gaps which are too great.

There are involved here, of course, two ways of studying evolutionary rates; Kurten measuring rates of change in retained morphological features and Simpson examining rates of evolutionary divergence, the proliferation of species over a period of time. Though certainly aware of the more taxonomic approach exemplified by Simpson, Dr. Oschinsky, concerned primarily with hominid evolution where there has not been much species proliferation, gave greater attention to the more morphological approach in studying evolutionary rates. For instance, Dr. Oschinsky noted that in *Homo sapiens* the cranium is changing very rapidly, becoming smaller in modern times, particularly in the face, than in the Upper Palaeolithic (wide face) or Mesolithic (wide and long face). Morphological features have generally become more gracile. There is especially rapid change going on in the lower

face; only seven thousand years or so ago all groups had good occlusions but since the onset of the Near East Bronze Age, about five thousand years ago, various occlusary troubles have arisen from a rapid shrinking in the alveolar regions of the mandible and maxilla. Furthermore, the rate of this change has been accelerating within the past four centuries. The different races show different rates of change, however, the shrinkage occurring mainly in Mongoloids and Causasoids. In an earlier work, Dr. Oschinsky (1961:93, our italics) has said that anterior tooth crowding in Eskimo "... is probably connected with the *phylogenetic reduction of alveolar prognathism* characteristic of the Eskimo."

On *hypertely,* as exemplified by the Irish elk with its "oversized" antlers and the "over-curled" coiled oysters, *Gryphaea,* wherein it has sometimes been hypothesized that the momentum of an evolutionary trend carries a species past the point of adaptation, Dr. Oschinsky thought that sexual selection might have been the important factor explaining the phenomenon. Simpson (1951:44-51) has suggested that extreme developments like those mentioned above were trends concurrent with adaptive increases in size due to a relative growth factor and were thus parts of adaptive trends, indeed, were "strictly adaptive" (p. 48) while they continued.

2. TAXONOMY

Dr. Oschinsky stressed the necessity for a basic familiarity with zoological taxonomy, its principles and procedures. A listing of references which he recommended may help to indicate his acceptance of general scientific thought on the subject. The main works[2] recommended to students were the following:

G. G. Simpson, *Principles of Animal Taxonomy.*

E. Mayr, *Animal Species and Evolution.*

A. J. Cain, *Animal Species and Their Evolution.*

W. E. Le Gros Clark, *The Fossil Evidence for Human Evolution* (revised edition).

[2] Full bibliographic details are given at the end of the article.

Simpson and Le Gros Clark (first chapter) were "must" readings, especially the latter because he stresses the application of taxonomic principles to physical anthropology. Simpson provides the best systematic treatment of taxonomic theory available at present.

Other works recommended from time to time by Dr. Oschinsky as having relevance for taxonomy, as well as for evolutionary theory in general, included the following:

W. Howells, ed. *Ideas on Human Evolution.*

S. L. Washburn, ed. *Classification and Human Evolution.*

G. G. Simpson, *The Meaning of Evolution.*

G. G. Simpson, *The Major Features of Evolution.*

T. Dobzhansky, *Genetics and the Origin of the Species.*

Charles Darwin's two major works of 1859 and 1871, *On the Origin of the Species* and *The Descent of Man.*

More strictly physical anthropological works in which Dr. Oschinsky found many points relevant to hominid taxonomy were E. A. Hooton's *Up From the Ape* and F. Weidenreich's *Apes Giants, and Man.* Of the latter book, Dr. Oschinsky often said that he would like to publish an up-to-date equivalent; clearly written and abundantly illustrated, it would cut through the dense clouds of confusion and noise surrounding hominid evolution and taxonomy today. He thought a good title for this general book might be *The History of Homo Sapiens,* reflecting his special interest in later sapiens development from the Upper Palaeolithic to the present. The book is unwritten, of course, unfortunately.

Parallelism as an evolutionary feature affecting taxonomy received much attention from Dr. Oschinsky. To be mentioned here are his two papers on the subject, "The Problem of Parallelism in Relation to the Subspecific Taxonomy of *Homo Sapiens.*" (1963) and, emerging from a graduate course of 1963-64, the jointly authored "Parallelism, Homology and Homoplasy in Relation to Hominid Taxonomy and the Origin of Homo Sapiens." (Oschinsky *et al.* 1964). He drew a major distinction between parallelism and convergence, and in this regard was critical of

Le Gros Clark who seems to equate the two as a single phenomenon, using the terms interchangeably (Le Gros Clark 1964:17-19). Simpson (1961:77 ff) does distinguish between parallelism as the separate development of similar characters in separate lines of common ancestry and convergence as the separate development of similar characters in lines without common ancestry, but puts both together in the same category of homoplasy, "resemblance not due to inheritance from a common ancestor". This inclusion of parallelism under homoplasy is criticized in the 1964 paper on parallelism, and presented there is a revised set of categories which in turn contains certain difficulties of its own, e.g., "archaeoid convergence" (p. 108). A copy was sent to Simpson but, disappointingly, he did not reply. The problem requires further clarification, and it is hoped that one of Dr. Oschinsky's former students will prepare a critique of both Simpson's and Oschinsky's schemes.

For Dr. Oschinsky, parallelism was "similarity *due to* less immediate common ancestry" and hence belongs under homology, "similarities *due to* common ancestry" (Oschinsky *et al.* 1964: 107, our italics). Common ancestry is taken to be the causative factor for the similarity in both homology and parallelism. Now, for Simpson (1961: 78, our italics) common ancestry seems to be causative in homology, "resemblance *due to* inheritance from a common ancestry." But in the case of Simpson's parallelism, "the development of similar features separately in two or more lineages of common ancestry and *on the basis of, or channeled by,* characteristics of that ancestry" (Simpson 1961: our italics). The italicized phrases, perhaps, are not intended to imply causation in common by common ancestry. What Simpson emphasizes is the separateness of the development of similar features, and as a consequence the main consideration may be that separate developments have separate causes. Oschinsky seems to stress the degree of immediacy of common causation in parallelism, "similarities due to *less immediate* common ancestry," as contrasted with isomorphism, "similarities due to *immediate* common ancestry" (Oschinsky *et al.* 1964:107). Causality is a complex problem in this instance as in others. Involved in the whole issue of homology vs. homoplasy, of the distinction between parallelism and convergence, is the problem of interpreting identities of

observed characters in terms of genetic identities or non-identities; hence the stress on the presence or absence, causative relevance or irrelevance of common ancestry. The second parallelism paper notes at its outset "the quasi-arbitrary aspect of all taxonomic procedures" (Oschinsky *et al.* 1964:105). The homology-homoplasy schemes of Simpson and Oschinsky may be regarded as two different quasi-arbitrary ways of conceptualizing the evolutionary phenomena of similar characters, both valid and both with certain merits and certain limitations.

Grades and *clades* as developed by Huxley (1958) and Simpson (1961:125-9) were considered very useful concepts for hominid taxonomy. Also considered important by Dr. Oschinsky was classification by two kinds of relationships, *vertical* and *horizontal* (Simpson 1961:129-132). Within the genus *Homo*, Dr. Oschinsky distinguished three grades — Erectus, Neanderthal and Sapiens — on the basis of cranial morphology. These grade distinctions were made by three major evaluations: the size and shape of the neurocranium, the positional relationship of the splanchnocranium to the neurocranium, and the degree and nature of facial flatness.

In the Erectus grade, the neurocranium is small (relative to Neanderthal and Sapiens) with a capacity of about 1,000 c.c. (cf. Le Gros Clark 1964:62), and is long, low-vaulted and flat-sided. The splanchnocranium, or facial skeleton, is anterior to the neurocranium. The upper face is flat transversely, but the lower face has alveolar prognathism.

In the Neanderthal grade, the neurocranium "balloons" (cf. Weidenreich 1946:35) to a size half as large again as in the Erectus grade with a capacity of 1,300 - 1,600 c.c. (cf. Le Gros Clark 1964:62). It is still long and low but the sides bulge out to give a transverse section that is rounder even than in early *H. sapiens*. The splanchnocranium is anterior to the neurocranium. The upper face is not flat transversely, the zygo-maxillary junction being rounded in basal view, while the lower face has alveolar propnathism which, coupled with the lack of transverse facial flatness, emphasizes the great total prognathism of the face due to the massive splanchnocranium being well in front of the neurocranium.

In the Sapiens grade, the neurocranium remains large in size (at 1,350 c.c. actually slightly smaller in mean capacity than in the Neanderthal grade), but the shape changes to a shorter, higher, more straight-sided form. The splanchnocranium is posteriorly oriented to recede under the neurocranium. The upper face is again flat transversely. The lower face is not as prognathic as in the Erectus and Neanderthal grades. The transverse facial flatness in the Erectus and Sapiens grades are different in structure, however. In the Erectus grade, the zygomatic process is long, the splanchnocranium being forward, and the maxillary process is short, while in Sapiens, the zygomatic process is short with the maxillary process variable in length. The above description is of the general trends shown in the Sapiens grade. There is more variation in the Sapiens grade than in the other two (by the relatively sparse evidence available for these latter) so that some recent Sapiens races like Causasoids and Negroids do not have transverse facial flatness and some like Negroids and Australoids may have greater alveolar prognathism than the Neanderthals.

The Neanderthal grade was of special interest taxonomically to Dr. Oschinsky. It provides the first good evidence within the genus *Homo* of one group evolving into another with intermediate forms such as Skhul (cf. Oschinsky 1963:134-5) and Jebel Qafzah. (An earlier instance of an intermediary form in hominid evolution, "Homo habilis", is here regarded as intermediate between the Australopithecines and the Hominines.) Neanderthal taxonomy also provides an instance of a faulty application of vertical classification which has led to an overdifferentiation of phylogenetic lines, namely, the "Generalized" leading to *H. sapiens* and the "Classic" as a dead end. The problemmatical Mauer mandible was judged by Dr. Oschinsky to be definitely Neanderthal in total morphological pattern rather than Erectus. He felt that the massive jaw represented an early expression of a robust form of Neanderthals exemplified by the later so-called Classic Neanderthals. By postulating the early occurrence of a robust Neanderthal form, 200,000 to 400,000 B.P., Dr. Oschinsky made Classic Neanderthal a less isolated and less distinct development within the Neanderthal grade than such writers as Le Gros Clark (1964:66, 76-8). Instead of having *H. sapiens* developing

from a special infra-grade group of "Pre-sapiens" Neanderthals, Dr. Oschinsky would have sapiens develop from the Neanderthal grade as a whole which includes a robust form of which the very late (40,000 years B.P.) Classic Neanderthal was a conservative population in a relic area in western Europe. The above hypothesis was perhaps already developed when Dr. Oschinsky (1963: 134) first interpreted the Mauer mandible as Neanderthal for he wrote:

> The fact that the so-called classic types of Neanderthal are later in time than the Steinheim, Fontéchevade, and Skhul does not mean necessarily that they developed from these so-called "sapiens-like" types. There is a possibility that their gerontomorphic ancestors have not yet been found, since material from the Mindel-Riss period is not too abundant. In any case, except for the Steinheim skull, these other crania are rather fragmentary. They consist mostly of calvaria and it is difficult to know such crucial relationships and features as splanchnocranial relationship to neurocranium, foramen magnum position, relative size of mastoid, and mandibular morphology.

In the Mauer mandible Dr. Oschinsky found, of course, a "gerontomorphic ancestor" for Classic Neanderthal.

Solo Man and Rhodesian Man (here including Saldanha) seemed to be regarded as persistent relic populations of the Erectus grade, persisting, with some modifications to be sure, through unequal rates of evolutionary change (cf. Mayr 1963b: 337-8). Dr. Oschinsky considered Solo Man a "souped-up pithecanthropine" following Weidenreich (1951) whose abundant and excellent illustrations, incidentally, were much admired (the comparative craniograms and figures 22 and 23 in particular were considered especially instructive). In connection with Rhodesian Man, Dr. Oschinsky wondered whether it, together with Chellean III, might not be evidence of an African clade of *Homo erectus* characterized by very massive supra-orbital ridge development.

3. TOTAL MORPHOLOGICAL PATTERN AND MOSAIC EVOLUTION

Total morphological pattern was the central unifying concept in Dr. Oschinsky's physical anthropology. Since it is so well explained by Le Gros Clark (1964), and since Dr. Oschinsky

agreed with him so whole-heartedly, no further explanation is necessary in the present exposition which is supposed to be just an outline.

A related matter which may be discussed, however, is Dr. Oschinsky's frequently reiterated criticism of the popular but often naive, taxonomically and otherwise, use of metrical and serological (or "haematological") data. Shortly after his arrival in Ottawa to work at the National Museum of Canada, he brought out a paper contrasting the "genotypical-serological school" and the "phenotypic school", championing the latter, of course (1959). With regard to serology, a question he posed, but did not get to answer, was: "Is there such a thing as a *total serological pattern,* as there is a total morphological pattern?" He also asked: "Is there a *total metrical pattern?*" Statistical approaches in the direction of the latter might be Penrose's Size and Shape analysis (1953), and Mahalonobis's D^2 analysis with which Dr. Oschinsky had some contact (East and Oschinsky 1958). But in such analyses, measurements are probably given equal taxonomic weight, and, of course, the particular measurements used must first be chosen on some non-mathematical basis. Furthermore, interpretations of the results must be made in taxonomic terms. Dr. Oschinsky constantly cautioned students against being blinded by numbers and believing that comparisons expressed in figures are by virtue of the quantification more valid than qualitative evaluations. Students were referred to discussions by Le Gros Clark (1964:24-39) of fallacies often present in applications of biometrics to taxonomic enquiries. In his criticism of misapplied biometrics Dr. Oschinsky at times seemed almost "anti-numbers," yet his first major work, *The Racial Affinities of the Baganda* (1954), was quite metrical and full of figures. He collaborated much with D. A. East to obtain statistical treatment for his qualitative morphological studies, and he continued to measure, most notably for transverse facial flatness, that area of special interest over several years of concentration upon Mongoloids. When he found new morphological features of crucial diagnostic value, such as the "flat nasal bridge" characteristic of Negroids,[3] he

[3] Gaherty can best explain Dr. Oschinsky's particular morphological insight into Negroid nasal bone structure and the method of measurement which he was contemplating for its quantified study.

sought ways to measure and quantify them. So Dr. Oschinsky's criticism of quantification is not to be regarded as merely negative and destructive.

Mosaic evolution, or "mosaicism", of which "... the *Hominidae* are a classical example ..." (Mayr 1963b:344), was another very central concept in Dr. Oschinsky's taxonomic thinking. It was closely associated with total morphological pattern and might be regarded as the latter's processual background. Mosaic evolution will be mentioned again under the selection on hybrid variation. A related critical concept developed in class was *inverse palaeontology.*[4] It refers to the rather common physical anthropological error of tracing racial origins back to the Upper Palaeolithic or even earlier fossil specimens. An example by Oschinsky *et al.* (1964:112) is given as follows:

> ... to apply the name of a contemporary subspecies to that of a variable character which was invariable in the past, as Coon has done in calling Sinanthropus' shovel-shaped incisors Mongoloid, as well as referring to Sinanthropus himself as Mongoloid, is confusing.

After mentioning facial flatness, prognathism and brow ridges as other misinterpreted archaic features, the writers state (p. 113):

> It seems more plausible to view the present day distribution of archaic traits in Homo sapiens subspecific groups as a mosaic of remnants of what was once a total morphological pattern which is now redistributed in several new total morphological configurations[5].

4. THE GAP IN RACIAL STUDIES: THE NEED FOR RACIAL OSTEOLOGY

As Emil Breitinger (1962:447) noted, there is a gap in physical anthropological studies between the past development of *Homo sapiens* and the modern situation since osteological analysis has not been carried on up to the present and modern races are studied in terms applicable only to the living by somatology and

[4] *Inverse palaeontology* was coined by Kettel, following Niemann's phrasing "reverse derivation. Previously Sally Wilson had spoken of ... making the subspecies older than the species".

[5] "Subspecific" originally read "specific", but the latter seems unsuitable in the context of the passage.

serology. Dr. Oschinsky criticized the present neglect of the osteological study of modern races and the consequent lack of time depth in racial studies. He sought to correct the situation, to fill in the above-mentioned "gap", by doing *racial osteology*. At the time of his death, he was trying to launch a program of studies which would encompass all of the living races on an osteological basis. Osteological definitions of the principal racial groupings were beginning to emerge, some more completely than others (e.g., Mongoloids: Arctic, Old World and New World), and it is hoped that these definitions (e.g., Negroids and Australoids) will be set forth in detail by Dr. Oschinsky's students. Indeed, it was Dr. Oschinsky's hope that his students would fully work out the osteological characterizations of the modern races with him since the undertaking was much too great for one person alone.

5. *HOMO SAPIENS* SUBSPECIFIC TAXONOMY BY TOTAL MORPHOLOGICAL PATTERN

Dr. Oschinsky's main theoretical contribution was perhaps his application of the concept of total morphological pattern to the subspecific taxonomy of *Homo sapiens,* in particular (methodologically), through the quantification of morphological features, as in *The Most Ancient Eskimos* (1964). By this approach, no one single character is racial, i.e., racially diagnostic; it cannot be said that such and such a character is a "racial character". A certain pattern of morphological characters is needed which is "sufficiently distinctive and consistent" (Le Gros Clark 1964: 27) to distinguish the subspecific group in question from others on the same taxonomic level. Speaking metaphorically one might say that there is no special "Mongoloid gene". A given individual may lack certain elements of the racially diagnostic pattern of characters, but he will show the major part of it and will still be within range of the "theme of variation" of his racial group. There are a number of features which have high frequency in a given population, but they are not all necessary conditions.

Le Gros Clark (1964:25) applies his concept of the total morphological pattern primarily on the species and genus levels.

He does not give much analytical attention to subspecies. He mentions biometrics as being of value in assessing degrees of affinity between groups which are already known to be closely related (by morphological evaluation presumably), e.g., subspecies or geographical races. Dr. Oschinsky seemed to feel that Le Gros Clark implicitly took biometrics to be more relevant for taxonomy on the subspecific level than total morphological pattern. Such a view may perhaps be supported by the failure of Le Gros Clark to see that Upper Palaeolithic *Homo sapiens* has a subspecifically consistent and distinct total morphological pattern different from those of modern races (Upper Palaeolithic man is here considered a temporal subspecies, of course). Le Gros Clark (1964:55) writes:

> ... the skeletal remains of Aurignacian and Magdalenian date which have so far been discovered in Europe not only are indubitably those of *H. sapiens* but are actually not distinguishable, on present evidence, from modern Europeans.

But there is a distinctive Upper Palaeolithic total morphological pattern, a finding which is one of Dr. Oschinsky's major insights.[6]

The main practical purpose of racial studies is, however, *racial identification* rather than description. An illustration is provided again by *The Most Ancient Eskimos* which answers the question, "What are the bones dug up by Dr. W. E. Taylor, Jr.

[6] "A major breakthrough", to use his expression. Supporting evidence is to be found in Morant's studies, notably those of 1926 and 1930-31. Christopher Meiklejohn, another student of Dr. Oschinsky, has examined Morant in this light. The establishment of a distinct Upper Palaeolithic total morphological pattern makes the differentiation of *Homo sapiens* into the present races a very recent development, for the Upper Palaeolithic pattern persists up to about ten thousand years ago. It is only with the advent of the Bronze Age about five or six thousand years ago in the Near East that skulls can be definitely distinguished as Causasoid, Mongoloid, etc. The intervening Mesolithic pattern seems to be a transitional one in which everything grew very big, the face being very long as well as very wide. The low rectangular orbits, so diagnostic for the Upper Palaeolithic, become square and more open vertically in the Mesolithic. Modern races, as mentioned in the text under evolutionary rates, have smaller, generally more gracile craniums with diminution greatest in the face, especially in the alveolar regions. There is differential retention of features of the Upper Palaeolithic total morphological pattern such as facial flatness, prognathism and brow ridges, and Dr. Oschinsky used to quickly characterize the major races by the presence or absence of these three features in each.

— Indian or Eskimo?" The sample to be identified is often small, at times just one individual. But large samples in comparative groups provide the detailed total morphological patterns with which the small sample in question can be evaluated. These large samples in the comparative groups make up for the insufficient size of the sample that is being identified. In the case of the "Indian or Eskimo?" question, such large comparative groups would be provided by *The Cranial Morphology of Arctic Mongoloids: A Statistical Morphological Study* (Oschinsky and East, in press).

6. SUBSPECIFIC LEVELS

Dr. Oschinsky distinguished a hierarchy of taxonomic levels below the species level as well as above it. In the absence of a satisfactory taxonomic terminology, he simply spoke of subspecies, sub-subspecies, sub-sub-subspecies and so on. Once in class he did consider S. M. Garn's system, illustrating the levels as shown in Table 1 (below).

Biometrics would become fully relevant in its own right for Dr. Oschinsky only at the sub-sub-subspecies level, the level exemplified in the classification of North American Indians into Lakotid, Lenapid, Deneid, etc. (Newman 1852). Below this level cultural data, rather than biological characteristics, would be more primary in demarcating groups. Thus, the Crow would first be demarcated by ethnology and after that be analyzed for any biological distinctiveness. "Tribe" was a unit comparable to the zoologist's breeding isolate or deme. Simpson (1961:177), however, says the demes are the basic population units but that they should not enter into classification or be named because they are highly evanescent and do not lend themselves to formal stable classification. And no doubt Dr. Oschinsky would not have attempted taxonomic classification on this level. But for the intervening levels between demes and subspecies which Simpson does not distinguish, Dr. Oschinsky did want classification in modern *Homo sapiens,* at least down as far as the sub-sub-subspecies level as in Neumann's attempt.

7. HYBRID VARIATION

In hybrid studies, the great variation of pattern observed in individuals was thought by Dr. Oschinsky to be due to the combination of features in an *individual mosaic* as opposed to a *population mosaic*. In a hybrid population, the means of separately considered features show normal distributions, and, when they are all pooled together, give a certain population mosaic. But the individuals would show different combinations of the characters involved, often at the extreme of their distributions. The important concept here is *mosaicism*. The above type of population was called *heteromorphic hybrid* in contrast to a *homomorphic hybrid* population in which the individual pattern is more stabilized and which is then, in effect, a new race. The latter, strictly speaking, is no longer a hybrid population although we may know that such was its origin.[7] The process of such stabilization of characters in hybrid populations was to be examined in Dr. Oschinsky's hybridization course. Unfortunately he was gone before this new course had really gathered momentum.

TABLE 1

Oschinsky's terms derived from Garn	*Example*	*Garn's equivalent terms*
species	Homo sapiens	(same)
subspecies	Mongoloid	(same)
macro race (sub-subspecies)	New World Mongoloid	geographical race
micro race (S_3-species)	Lakotid	local race
local race (S_4-species)	Plains	(level blurred in Garn)
tribe (S_5-species)	Crow	micro race

[7] Niemann was the one who came to this seemingly contradictory conclusion that a homomorphic hybrid population is not hybrid.

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