Diagnostic Morphological Traits for the Walcolid Variety of American Indians

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The ultimate purpose of this study is the delimitation of a racial group on a varietal level. The Walcolid variety was selected mainly because of current interest in the Indians associated with the Middle Mississippi cultural Phase and because measurements and observations of these series are numerically the best represented in the files of the Laboratory of Bioanthropology of Indiana University. In 1952, Neumann (1) presented a metric and morphological description of the variety using a group of forty-five undeformed adult male skulls of the Spoon River Focus as a type series. The present study differs first of all in scope in that four geographically separated series have been included. These are the Spoon River Focus series of forty-five skulls from central Illinois, twenty-one skulls of the Aksarben complex of eastern Nebraska, eight skulls of the Upper Republican manifestation from the same state, and twenty-four from the Angel Site in southern Indiana. Temporally the four archaeological series fall into a time span of roughly three hundred years, that is, 1200 to 1500 A. D. Secondly, this study differs in that it is entirely on a morphological basis, as it was felt that this approach would come closer to expressing genetic differences.

The first step in the analysis consisted of determining which of the forty-six morphological traits considered can be regarded as typical of the Walcolid variety as a whole. This involved a comparison of the frequencies with which the traits appear in varieties of adjacent areas. Thus if one of the four groups differs widely in a particular trait from the other three, and if this difference can be explained in terms of admixture from a known neighboring variety, it was excluded from the total group average. In this way the ancestral or unmixed type can be reconstructed. Each trait is, then, taken separately.

Comparisons revealed: (1) that the specific trait may exhibit a uniform frequency distribution in the four groups, (2) that the frequencies of one of the groups may be aberrant in the direction found in a neighboring variety, and (3) that due to overlapping with neighboring groups or due to smallness of the sample, the trait is adiacritical. It is only after broader comparisons with other varieties—and here I use the four varieties established by Neumann (1952) as a basis—that one can determine which of the traits are actually diagnostic for the group as a whole.

An example of a uniform trait frequency distribution for the four Walcolid series is that for the development of the parietal eminences. All four groups are close to 100% for the medium category. But since about the same condition is found in Early Woodland series (Lenid variety) of the Great Lakes area, and in Archaic series (Iswanid variety) from Kentucky, which may be ancestral to the Walcolid variety, this trait has no diagnostic value as far as the Iswanid-Walcolid and Lenid-Walcolid pairings are concerned.

Parietal Eminences

	small	*medium*	*large*
Spoon River Focus	4%	94%	2%
Nebraska	0%	100%	0%
Upper Republican	0%	100%	0%
Angel Site	0%	100%	0%
Walcolid variety	2%	98%	0%

Another uniform distribution is that for size of the nasal bones. Here again the frequencies for the medium category range in the four series from 90 to 100%.

Size of Nasals

	small	*medium*	*large*
Spoon River Focus	10%	90%	0%
Nebraska	0%	95%	5%
Upper Rebublican	0%	100%	0%
Angel Site	0%	100%	0%
Walcolid variety	3%	96%	1%

In contrast to the preceding, however, this trait has diagnostic value in a Dakotid-Walcolid pairing, for in the Plains area the "large" category may rise to eighty percent. In other words, great uniformity of a morphological trait does not necessarily make it diagnostic for the group.

In some cases admixture may be indicated when the frequencies of a trait are aberrant in the direction found in a neighboring variety. Lambdoid flattening furnishes an example:

	Absent	*Small*	*Medium*	*Pronounced*
Spoon River Focus	49%	46%	5%	0%
Nebraska	90%	10%	0%	0%
Upper Rebublican	86%	14%	0%	0%
Angel Site	83%	13%	4%	0%
Walcolid variety average	77%	21%	2%	0%
Typical Walcolid average	87%	12%	1%	0%
Typical Lenid average	7%	13%	67%	13%

Although there is some overlapping of frequencies in the comparison of the Walcolid variety and the Lenid variety (Early Woodland groups from Wisconsin and Illinois), bipolarity is obvious. The virtual absence of the feature in one variety and the presence of a medium amount of flattening in the other makes this a diagnostic trait, which in combination with other morphological characteristics allows one to make a clear distinction between the two varieties.

The above table also illustrates how we may reconstruct the ancestral or typical Walcolid type. The Spoon River Focus people, who were in contact with a Lenid population, should be excluded from the typical Walcolid average. Combining the remaining three series the Walcolid-Lenid difference is accentuated.

Finally, one may consider morphological traits the frequencies of which are adiacritical. An example is brow ridge size. The frequencies cover the whole range of the distribution from small to large, do not exhibit polarity in any of the series, and overlap largely in varietal pairings. The percentages are the following:

	small	*medium*	*large*
Spoon River Focus	27%	42%	31%
Nebraska	43%	43%	14%
Upper Republican	24%	38%	38%
Angel Site	26%	39%	35%
Walcolid variety average	30%	40%	30%

Omitting the traits that deviate from the general trend of the variety, we can now describe and delimit the Walcolid variety on a morphological basis:

Trait Frequencies for the Walcolid Variety

	Trait	*Percent*		
1.	Muscularity	sm 1	m 55	l 44
2.	Vault form	ell 2	ov 83	spr 15
3.	Brow ridge size	sm 30	m 40	l 30
4.	Glabellar prominence	sm 38	m 42	l 20
5.	Frontal slope	sl 23	m 76	l 1
6.	Frontal eminences	sm 50	m 50	l 0
7.	Median crest	abs 94	sm 5	m-l 1
8.	Frontal breadth	sm 13	m 72	l 15
9.	Sagittal elevation	abs 82	sm 17	m-l 1
10.	Parietal eminences	sm 2	m 98	l 0
11.	Lambdoidal flattening	abs 7	sm 13	m 67 p 13
12.	Occipital curve	abs 0	sm 54	m 46 p 0
13.	Occipital position	hi 0	m 100	low 0
14.	Occipital breadth	bun-n 17	m 77	br 6
15.	Temporal fullness	flat 0	sm 32	m 54 l 14
16.	Mastoid size	m 29	l 60	vl 11
17.	Styloid process	sm 56	m 35	l 9
18.	Mandibular fossa	sm 0	m 71	l 29
19.	Tympanic plate	thin 88	m 12	thick 0
20.	Platybasia	abs 98	pres 2	
21.	Orbit shape	obl 3	rhom 61	sq-rd 36
22.	Orbit inclination	sm 39	m 54	p 7
23.	Size of Zygomatics	sm 4	m 43	l 50 vl 3
24.	Suborbital fossa	abs 9	sm 53	m-dp 38
25.	Lateral projection of zygomatics	sm 1	m 28	l 71
26.	Anterior projection of zygomatics	sm 6	m 80	l 14
27.	Nasion depression	abs 19	sm 51	m-dp 30
28.	Nasal root height	low 4	m 90	hi 6 vhi 0
29.	Nasal root breadth	sm 11	m 83	l-vl 6
30.	Nasal bridge height	low 4	m 85	hi 11 vhi 0
31.	Nasal bridge breadth	sm 6	m 87	l 7
32.	Nasal profile	str 0	scv 100	cv 0
33.	Size of nasals	sm 0	m 100	l 0
34.	Anterior nasal spine	sm 52	m 45	l 3
35.	Nasal sills	abs-dull 33	m 54	srp 13
36.	Subnasal sulcus	abs 72	sm 15	m-pr 13
37.	Face size	sm 1	m 66	l 33
38.	Midfacial prognathism	abs 50	sl 46	m-p 4
39.	Alveolar prognathism	abs-sl 38	m 58	pr 4
40.	Total prognathism	abs-sl 49	m 48	pr 3

41.	Palate shape	par 92	hyp-ell 5	up 3	
42.	Palatine torus size	abs 70	sm 26	m-l 4	
43.	Size of mandible	sm 6	m 53	l 35	vl 6
44.	Chin form	md 24	bi 76		
45.	Chin projection	neg 12	neut 54	sm 11	m 23
46.	Eversion of gonial angles	abs 48	sm 30	m 17	pr 5

The following abbreviations are used above: abs—absent, pres—present, sl—slight, sm—small, m—medium, l—large, vl—very large, p—pronounced, hi—high, vhi—very high, dp—deep, neg—negative, neut—neutral, srp—sharp, str—straight, scv—slightly concave, cv—concave, md—median, bi—bilateral, sq—square, rd—round, ov—ovoid, ell—ellipsoid, spr—spheroid, rhom—rhomboid, par—paraboloid, hyp—hyperboloid, obl—oblong, bun—bun-shaped, n—narrow, br—broad.

As has been pointed out above, diagnostic morphological traits are relative, that is, depend on what particular pair of varieties are compared. At this time a Lenid-Walcolid comparison would perhaps be of greatest interest. The relationship is perhaps something like an avuncular relationship. The Lenid variety is probably the ancestral Paleo-Indian type. In the South the Iswanid variety differentiated approximately around 8000 B. C. in Archaic times, while the Lenid variety persisted relatively unchanged in the northeastern woodland area. Subsequently, sometime around 3500 B. C., further changes occurred in some Archaic Iswanid populations, which resulted in the differentiation of Walcolids as we find them in early historic times. This evolution is paralleled by a linguistic development from Algonquian-Gulf to separate Algonquian and Gulf language families.

The morphological characteristics in which the Northern Archaic and Early Woodland Lenid peoples differ most markedly from the Middle Mississippi Walcolid people seem to be the following. In cranial vault form the Lenid variety tends toward exhibiting more elliptical contours, while the Walcolid variety tends to broader ovoid and spherical forms. Development of more medial frontal cresting, greater sagittal elevation and lambdoid flattening, greater occipital prominence, lower occipital position, larger styloid processes, more oblong orbit form, greater anterior projection of the zygomatic bones, a more elevated nasal bridge, a somewhat larger face, and greater chin prominence, distinguish the Walcolid from the Lenid variety.

Literature Cited

(1) NEUMANN, GEORG K. 1952. Archeology and Race in the American Indian. Yearbook of Physical Anthropology 8:213-255.