THE RELATIONSHIP BETWEEN A COASTAL ALGONKIN AND A KARANKAWA CRANIAL SERIES

CHARLES E. CLAUSER, Indiana University

This brief paper is an attempt to test Dixon's[1] contention that marginally distributed groups constitute remnants of the earlier migrants to the New World. In the past this contention generally has not been clearly demonstratable because of the lack of archaeologically datable crania from early horizons. All too frequently such material was pooled with later series, or if with contemporaneous ones, pools were made over so wide an area as to obscure local differences. At the suggestion of Professor Georg Neumann, two marginal series are used in this present comparison. One of these is a pooled series of crania from Long Island and Manhattan Island from the collection of the American Museum of Natural History; the other, a series of Karankawa crania from the Oso site, Neuces County, Texas. The latter are in the collection of the Department of Anthropology of the University of Texas. The New York Coast crania have been previously described by Hrdlicka;[2] the Texas coast crania, by Woodbury.[3] Both of these workers confined their studies to a brief list of metrical traits; therefore the collecting of additional measurements and observations was necessitated. These additional data were made personally by the writer on the New York Coast crania last summer,[4] while measurements and observations on the Texas coast series were kindly supplied by Professor Neumann.

In examining the measurements given in Hrdlicka's *Catalogue*, the writer found that a series of crania from Long Island and another from Manhattan Island, New York, were similar in many respects to the Karankawa. There were eleven crania in the Manhattan and six in the Long Island series. In order to have a larger series for statistical comparison with the Karankawa, the Long Island and Manhattan series were pooled. Hrdlicka previously has shown that they are identical.

The metrical comparison is made in Tables I and II. Here twenty-four measurements and fifteen indices are listed for each series. The statistical constants include the means and their probable errors (PeM), number of cases for each measurement (N), and the standard deviations (SD) with their probable errors (PeS). In the last two columns are listed the differences between the means of the two series (D) and

---

[1] Roland B. Dixion, *The Racial History of Man* (New York: Charles Scribner's Sons, 1923), p. 398.

[2] Ales Hrdlicka, *Catalogue of Human Crania in the United States National Museum Collections* (Washington: United States Government Printing Office, 1927), pp. 18-19.

[3] G. Woodbury and E. Woodbury, "Prehistoric Skeletal Remains from the Texas Coast," *Medallion Papers,* No. 18 (Gila Pueblo, Globe, Ariz.).

[4] In this place I would like to express my indebtedness to Dr. Harry Shapiro of the American Museum of Natural History for help in locating eleven of the seventeen crania described by Hrdlicka.

TABLE I. Comparison of Measurements

	Karankawa					New York Coast						
	Mean	PeM	N	SD	PeS	Mean	PeM	N	SD	PeS	D	3PED
Cranial module	155.04	± .81	12	4.18	± .58	157.48	± .55	10	2.57	± .39	2.44	2.94
Glabello-occipital length	189.28	±1.26	18	7.92	± .75	191.91	± .75	11	3.68	± .53	2.63	4.44
Maximum breadth	133.50	± .69	18	4.34	± .49	137.59	± .66	10	3.08	± .46	4.09	3.10*
Minimum Frontal breadth	92.20	±1.07	15	6.17	± .79	95.82	± .57	11	2.80	± .40	3.62	3.64
Basion-bregma height	140.42	± .83	12	4.27	± .59	140.00	± .97	11	4.79	± .69	.42	3.81
Cranial Base length	102.50	±1.90	6	6.89	±1.34	103.90	±1.01	10	4.74	± .71	1.40	6.45
Total Facial height	128.30		3			118.33	±2.00	6	7.43	±1.45	9.97	*
Upper Facial height	78.00	± .63	5	2.10	± .45	72.89	± .98	9	4.36	± .69	4.17	3.34*
Total Facial breadth	134.16	± .76	12	4.95	± .68	131.37	±1.42	8	5.96	±1.00	2.79	4.83
Midfacial breadth	98.00		3			95.00	± .89	9	3.97	± .63	3.00	
Subtense to Inter-orbital breadth	19.54	± .52	11	2.54	± .37	17.44	± .33	9	1.48	± .23	2.10	1.85*
Inter-orbital breadth	96.80	± .63	14	3.50	± .35	97.78	± .85	9	3.80	± .60	1.07	4.17
Biorbital breadth	96.71	±1.90	7	7.56	±1.36	95.33	±1.03	9	4.60	± .73	1.38	6.48
Ant. interorbital breadth	19.90	± .26	10	1.23	± .18	19.30	± .46	10	2.17	± .33	.60	1.58
Nasal breadth	25.22	± .41	9	1.83	± .29	25.40	± .41	10	1.94	± .29	.82	1.73
Nasal height	56.70	± .59	5	1.95	± .42	52.10	± .79	10	3.70	± .59	4.05	2.86
Dacryal chord	22.50	± .08	5	.28	± .06	20.38	± .25	8	1.03	± .17	2.10	.20*
Dacryal subtense	13.04	± .40	5	1.67	± .36	11.83	± .59	6	2.12	± .41	1.18	2.14
Left Orbital height	33.60	± .38	9	1.70	± .27	32.60	± .26	10	1.20	± .18	1.00	1.73
Left Orbital breadth	41.13	± .32	8	1.37	± .23	42.60	± .30	10	1.41	± .21	1.47	1.31*
Maxillo-alveolar breadth	64.60	±1.11	6	4.08	± .79	64.60	± .70	10	3.29	± .49	0.00	3.93
Maxillo-alveolar length	56.60	± .99	5	3.28	± .69	51.44	± .79	9	3.52	± .56	5.16	3.80*
Left Orbital breadth, (d)	39.90	± .70	6	2.55	± .49	38.56	± .47	9	1.63	± .26	1.34	2.53
Bicondylar breadth	120.00	±1.50	4	4.40	±1.05	121.17	±2.25	6	8.17	±1.59	1.17	8.10
Mandibular length	109.66		3			112.17	±1.70	6	6.2	±1.21	1.51	

* Denotes a significant difference.

TABLE II. Comparison of Indices

	Karankawa					New York Coast						
	Mean	PeM	N	SD	PeS	Mean	PeM	N	SD	PeS	D	3PED
Cranial	70.66	± .62	18	3.91	± .44	71.62†	± .37	17	2.24	± .26	.96	2.17
Length-height	73.77	± .46	12	2.38	± .33	73.04†	± .42	16	2.46	± .29	.73	1.16
Breadth-height	104.71	± .60	12	3.09	± .43	101.76†	± .29	16	1.74	± .21	2.95	1.99*
Trans. Fronto-parito	69.30	± .91	15	5.24	± .65	68.21	± .46	10	2.17	± .33	1.09	3.06
Total Facial	97.39		3			90.07	±1.10	6	4.01	± .78	7.32	*
Upper Facial	58.99	± .71	5	2.37	± .50	54.86	± .44	11	2.17	± .31	4.13	2.51*
Midfacial	78.58		3			76.61	± .74	9	3.28	± .52	1.97	
Zygo-frontal	68.11	±1.07	9	4.75	± .76	72.19	± .93	8	3.90	± .66	4.08	4.23
Facial-flatness	20.13	± .50	11	2.47	± .36	17.83	± .39	9	1.76	± .28	2.30	1.19*
Anterior Interorbital	19.96	± .23	6	.82	± .16	19.79	± .29	9	1.30	± .21	.17	1.11
Left Orbital, (mf)	81.89	±1.17	7	4.60	± .83	76.04	± .74	10	3.47	± .52	5.85	4.14*
Left Orbital, (d)	85.02	±1.14	5	3.74	± .80	83.40	±1.15	9	5.12	± .81	1.62	4.83
Nasal	44.26	±1.03	5	3.40	± .76	46.43	± .71	15	3.50	± .50	2.17	3.75
Nasal Root height	59.58	±2.66	4	7.89	±1.89	54.49	±1.85	6	6.71	±1.31	5.11	9.69
Maxillo-alveolar	114.90	±1.66	5	5.50	±1.17	125.46	±1.79	9	7.94	±1.26	10.60	7.30*

* Denotes a significant difference.

† From Ales Hrdlicka, *Catalogue of Human Crania in the United States National Museum Collections* (Washington: United States Government Printing Office, 1927), pp. 18-19.

three times the probable error of the difference (3PED). If three times the probable error of the difference (3PED) exceeds the difference between the two means (D), it is almost certain that the differences are of statistical significance.

Nine of the twenty-four measurements compared showed such a statistically significant difference. These are as follows: maximum breadth, total facial height, upper facial height, midfacial breadth, subtense to interior orbital breadth, nasal height, dacryal cord, left orbital breadth, and maxillo-alveolar length. The most important difference between the two series is in facial height. The crania from Texas average approximately ten millimeters greater in total and about half that amount in upper facial height than those of New York. The average difference in midfacial breadth is only three millimeters. This might not prove to be of significance if more cases were available. It also should be noted that if dacryon instead of maxillofrontale is used as the terminal for orbital breadth, the difference is not significant. Although the differences in maximum cranial breadth and nasal height are real ones, they are not reflected in the cranial and nasal indices.

Both series are dolichocranial; high vaulted; narrow faced; although the faces of the Karankawa are considerably higher; mesoconch in orbital proportions; and leptorrhine; and like most American Indians, on the border of, or brachyuranic.

TABLE III. Comparison of Observations of Vault

	Karanka	New York Coast
Muscularity	sm. 1, med. 10, pron. 7	sm. 0, med. 10, pron. 1
Form	ellipsoid 9, ovoid 9	ovoid 4, pentagonoid 2, rhomboid 2
Brow ridge size	sm. 1, med. 6, large 9, v. large 2	sm. 2, med. 8, large 1, v. large 0
Glabeller prom.	sm. 2, med. 7, large 8, v. large 1	sm. 1, med. 7, large 3, v. large 0
Frontal slope	med. 6, pron. 12	sl. 4, med. 6, pron. 1
Frontal bosses	sm. 18, med. 0	sm. 9, med. 2
Median crest	none 1, sm. 7, med. 5, large 5	none 5, sm. 6, med. 0, large 0
Breadth	narrow 16, med. 2	narrow 1, med. 10
Sagittal elevation	abs. 2, sl. 6, med. 9, large 0, v. large 1	abs. 0, sl. 7, med. 4, large 0 v. large 0
Parietal bosses	sm. 9, med. 9, large 0	sm. 5, med. 6, large O
Lamboid flattening	abs. 2, sl. 6, med. 8, pron. 2	abs. 0, sl. 2, med. 7, pron. 2
Occipital curve	sl. 1, med. 7, pron. 10	sl. 0, med. 5, pron. 6
Temporal fullness	flat 13, sl. 4	flat 6, sl. 5
Mastoid size	sm. 0, med. 5, large 0, v. large 10	sm. 4, med. 7, large 0, v. large 0
Styloid process	sm. 13, med. 0, large 0	sm. 1, med. 1, large 1
Mandibular fossa	shallow 1, med. 4, deep 13	shallow 1, med. 9, deep 0
Tympanic plate	thin 12, med. 4, thick 0	thin 4, med. 3, thick 3

TABLE IV. Comparison of Observations of Face

	Karankawa	New York Coast
ORBITS		
Shape	oblong 2, rhomboid 0, ellipse 0, square 14	oblong 6, rhomboid 2, ellipse 2 square 0
Inclination	none 1, sm. 8, med. 9	none 0, sm. 7, med. 3
CHEEK REGION		
Size of zygomatic	sm. 0, med. 10, large 1	sm. 1, med. 8, large 1
Suborbital fossa	abs. 0, sl. 7, med. 1, deep 0	abs. 2, sl. 4, med. 0, deep 3
Lateral projection of zygomatics	sl. 1, med. 9, pron. 1	sl. 0, med. 9, pron. 1
Anterior projection of zygomatics	sl. 3, med. 8, pron. 0	sl. 1, med. 9, pron. 0
NASAL REGION		
Nasion depression	abs. 0, sl. 5, med. 10, deep 0	abs. 0, sl. 5, med. 4, deep 0
Nasal root height	low 0, med. 13, high 1	low 4, med. 6, high 0
Nasal root breadth	narrow 6, med. 9, wide 0	narrow 5, med. 5, wide 0
Nasal bridge height	low 0, med. 2, high 5	low 0, med. 3, high 2
Nasal bridge breadth	narrow 3, med. 4, wide 0	narrow 3, med. 2 wide 0
Nasal profile	straight 0, sl. concavo-convex 8	straight 1, sl. concavo-convex 6
Anterior nasal spine	abs. 0, sm. 6, med. 3, large 0	abs. 1, sm. 0, med. 4, large 1
Nasal sills	abs. 0, dull 4, med. 5, sharp 0	abs. 0, dull 2, med. 6, sharp 0
FACE		
Face size	med.	med.
Midfacial prognathism	abs. 9, sl. 0, med. 0, pron. 0	abs. 2, sl. 6, med. 1, pron. 0
Alveolar prognathism	abs. 0, sl. 8, med. 1, pron. 0	abs. 1, sl. 5, med. 1, pron. 0
Total prognathism	abs. 1, sl. 8, med. 0, pron. 0	abs. 1, sl. 7, med. 1, pron. 0
PALATE		
Palate shape	parabolic 9	parabolic 10
Palatine torus	abs. 8, sm. 0, med. 1	abs. 4, sm. 5, med. 1
MANDIBLE		
Size	sm. 0, med. 3, large 3, v. large 1	sm. 1, med. 5, large 2, v. large 0
Chin form	median 1, bilateral 5, medio-bilateral 1	Median 1, bilateral 7
Chin projection	negative 0, neutral 4, sm. 2, med. 1, large 0	negative 0, neutral 1, sm. 5, med. 2, large 0
Gonial angles eversion	none 1, sm. 3, med. 1, none 0, sm. 7, med. 1, pron. 0	pron. 1

In making morphological observations of the New York Coast crania, the list of traits are the same as those which appear on the Harvard sheets, with certain modifications by Neumann. Of forty-one traits compared, the modes of twenty-nine traits were the same for both series; of the remaining twelve, some of the differences may be due to the personal factor. However, in case of frontal slope, median frontal cresting breadth of the frontal, and shape of orbits, real differences appear to exist.

The New York Coast series in general can be characterized morphologically as ovoid to pentagonoid in form, with medium developed brow ridges, medium frontal slope, submedium frontal and medium lambdoid flattening, pronounced occipital curvature, oblong to rhomboid orbits, zygomatic bones of only medium size with medium amount of lateral and anterior projection, medium wide and medium to low root height, medium high nasal bridge, medium face size, bilateral neutral chin, and a small amount of gonial eversion.

The Karankawa crania similarly can be described on the average as ovoid to ellipsoid in form, with large to medium developed brow ridges, pronounced frontal slope, submedium frontal and medium sagittal cresting, narrow foreheads, small to medium parietal eminences, medium lambdoid flattening, pronounced occipital curvature, low placed occiput, square orbits, zygomatic bones of only medium size with a medium amount of lateral and anterior projection, a medium wide and medium size with a medium amount of lateral and anterior projection, a medium wide and medium high nasal root, high nasal bridge, medium face size, bilateral neutral chin, and a small amount of gonial eversion.

In concluding, it may be suggested (1) that a breaking down of the widely distributed Algonkin type of Hrdlicka may be justified both metrically and morphologically, (2) that on a geographic basis the marginal eastern dolichocephals may represent an older type that resisted complete absorption by the later coming Algonkquian-speaking groups, and (3) that these coastal long-heads are closely related to other peripheral groups, such as the Karankawa of the Texas coast.