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## The Significance of Late Anthropological Collections

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**Abstract:**

*Late medieval anthropological materials are rarely subjected to scientific research. The authors of this work attempt to demonstrate the importance of such investigations. Despite a rather large number of written sources, late anthropological materials can significantly extend the collection of sources related to the specified period.*

*In order to illustrate this concept the authors conducted an analysis of paleoanthropological materials from the island town of Sviyazhsk dating back to 16th-17th centuries. The materials have been discovered at excavations of parish Orthodox burial grounds. All the burial grounds date back to the same period, which allowed the researchers to incorporate the materials into a single series.*

*The investigation was conducted in accordance with a standard program adopted in the Russian Federation: determination of gender and age; subdivision of the collection into two series on the basis of gender; intragroup and intergroup analysis of the series. This article features a analysis of the male portion of the collection, as investigations of male collections is more widely used in palaeoanthropology, and much more reference material is available for their execution.*

*The analyzed material was subdivided into the following two series: the first one comprised materials from a monastery burial ground, and the second – parish necropoleis of the town. An intergroup comparison was conducted with the application of canonical analysis. A dendrogram was plotted in order to visualize the acquired data.*

*As a result of conducted investigation the authors established that both monastery and parish series from the island town of Sviyazhsk subjected to intragroup analysis demonstrate their correspondence to the Eu Caucasian group with a Mongoloid component of local Ural origin in the morphology of skulls from the parish series.*

*An intergroup analysis revealed a morphological similarity of the parish series with the Russian series from Moscow governorate illustrating the local colonization routes. Thus, as a result of investigation the authors acquired new information on the history of the Middle Volga region providing an insight into the origination of the anthropological appearance of local peoples.*

**Keywords:** *Palaeo-anthropology, Craniology, The Middle Volga Region, Sviyazhsk Population in 16th-17th Centuries.*

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## **1. Introduction**

The late Middle Ages are associated with intensive migration processes of both Russian and non-Russian population accounted for by Russian expansion in the entire territory of the Middle Volga region. Considering the issue of studying the mutual influence of various peoples on the anthropological appearance of contemporary population one cannot rely on archaeological data only, as the continuity of cultures does not always correspond to the process of biological blending of various anthropological types. Accordingly, only an anthropological investigation provides a sufficiently accurate assessment of the influence of various anthropological types on the establishment of the physical appearance of contemporary peoples.

According to V.P. Alekseev, the complex ethnical composition of the late medieval population of the Middle Volga region was mainly composed of mixed population groups (Alekseev, 1969). As noted by researchers, it is difficult to determine the ethnogenetic origins of the local Middle Volga population in this particular period on the basis of archaeological data only (Khalikova, 1986). Indeed, the Christian or Muslim funerary rite recorded during excavations at late medieval necropolis negates the available ethnical and cultural elements. Therefore, the anthropologic investigation of burial mounds dating back to the specified period is of importance.

The investigation of anthropological material from the late medieval period is also relevant because large-scale archaeological excavations of the recent years have provided an extensive anthropological material requiring processing and detailed analysis. Therefore, of special interest is the research of craniological material originating from Christian burial grounds dating back to 16th-17th centuries located in Sviyazsk, representing one of the outposts of colonization and Christianisation of the Middle Volga region. It should also be noted that the research of the specified series will allow to establish the genetic origins of the local Russian population and to a certain extent determine the colonization "routes" of the Russians people reclaiming the local area after 1552.

In 2010 anthropologist acquired the first anthropological materials from Sviyazhsk discovered at burial grounds of Assumption Monastery, John the Baptist Convent, Nicholas and Sophia (Tikhvin) Churches, and the territory of a family chapel of the brethren building amounting to 56 individuals comprising 16 skeletons from the monastery burial grounds, 6 skeletons from the convent burial grounds, 14 male skeletons, 11 female skeletons and 9 child skeletons from parish cemeteries. The material is rather scarce, but the collection is nonetheless very significant from the viewpoint of anthropology. Until now the anthropological composition of the population inhabiting the former Kazan Khanate has only been known based on materials from the burial grounds of Kazan Kremlin. Now we have an opportunity to determine the anthropological composition of the population of one of the towns of Kazan Khanate which represented a large centre of colonization and Christianization in the local area.

## **2. Methods**

Gender and age were determined with the application of a method adopted in Russian paleo-anthropology consisting in the use of scales established based on cranial suture obliteration and tooth attrition degree (Gerasimov, 1955; Dobryak, 1960), as well as the skeletal bones (Pashkova & Reznikov, 1978; Alekseev, 1966).

The gender of individual skeletons was determined as male based on measurement results, a strongly developed relief and high levels of descriptive indicators. A receding and retreating forehead, large mastoid bones, strongly developed brow ridges, sub square eyelids and a copious lower jaw signify the correspondence of individual skeletons to the male gender. The robustness of bones belonging to postcranial skeletons, and oblique angle of the greater sciatic notch confirmed the results obtained on the basis of the skulls.

The age was established using the following three techniques: cranial suture occlusion degree, tooth grinding surface attrition degree, and the evaluation of age-related changes in postcranial skeleton bones. If the condition of cranial sutures and postcranial skeleton bones was influenced by pathologic processes, tooth attrition was used as the primary age indicator.

The investigation was conducted with the use of male skulls discovered at all excavations on the island town of Sviyazhsk. This choice is justified by the fact that the investigation of male collections is more widespread in palaeoanthropology, and much more reference material for the determination of the genetic origins of investigated population will be available.

The skulls were measured in accordance with a standard craniometric program on the basis of a craniological form on the Institute of Ethnography named after N.N. Miklouho-Maclay of the USSR Academy of Sciences dated 1965 (Alekseev & Debets, 1964). Tables of craniometric constants were used in the morphological characterization of the series and individual skulls (Alekseev and Debets, 1964), as well as certain classifications by Martin (1928).

The intragroup analysis of the series included the evaluation of arithmetic averages of characteristics and their second order deviations with subsequent comparison with reference values for homogeneous groups (Alekseev and Debets, 1964).

The character of intergroup variability and ethnogenetic relations was determined with the use of canonical analysis. An application software package by B.A. Kozinsev was used during the calculation of intragroup and intergroup statistical parameters. A dendrogram is provided in the article for illustration purposes. Certain results of craniological analysis were additionally correlated to archaeological data and information from written sources.

### 3. Results

The entire collection of skulls was subdivided by the authors into two separate groups. The first group comprised skulls from the monastery burial ground, and the second group included skulls from the parish cemeteries of the island. Interestingly, the resulting groups sharply differ from one another both in terms of appearance and metrical parameters. Skulls from the monastery burial ground are characterized by an oblong face, high nose and large eye sockets. Skulls from the parish cemetery feature a complex which according to Alekseev (1969) are characteristic of late medieval Russian population consisting of various local Finnish elements (Table 1).

**Table 1:** General craniometric indicators of the series

No. acc. to Martin	Indicator	Parish cemetery series				Assumption Monastery series			
		N	X	S	min-max	N	X	S	min-max
1	Longitudinal diameter	12	173.1	4.7	162.0 - 180.0	9	180.7	3.7	176.0 - 187.0
8	Transverse diameter	12	140.1	6.1	130.0 - 149.0	9	144.2	3.1	141.0 - 150.0
17	Altitudinal diameter	11	132.5	5.5	123.0 - 140.0	7	136.6	3.9	133.0 - 143.0
5	Scull base length	12	99.8	3.6	94.0 - 104.0	7	104.6	4.1	100.0 - 111.0
9	Minimum forehead width	14	95.1	2.1	91.0 - 98.0	9	102.1	4.4	95.0 - 108.0
10	Maximum forehead width	14	119.8	3.8	114.0 - 127.0	9	128.3	6.4	121.0 - 137.0
11	Scull base width	13	123.0	6.3	111.0 - 133.0	6	126.3	9.9	110.0 - 139.0
12	Nape width	11	110.9	7.5	97.0 - 120.0	8	111.8	4.1	106.0 - 118.0
45	Bizygomatic diameter	8	131.5	4.8	123.0 - 138.0	5	134.6	3.8	130.0 - 139.0
40	Face base length	8	98.1	4.0	91.0 - 103.0	6	104.7	5.9	96.0 - 113.0
48	Upper face height	8	68.3	3.4	62.0 - 73.0	6	76.3	3.4	73.0 - 83.0
47	Total face height	7	114.4	4.3	109.5 - 121.0	3	126.3	9.5	119.0 - 137.0
43	Upper face width	13	105.0	3.0	100.0 - 109.0	8	108.3	3.7	103.0 - 114.0
46	Average face width	9	94.4	4.7	88.0 - 100.0	6	95.5	3.6	92.0 - 101.0
60	Alveolar arch length	9	52.6	2.8	47.0 - 56.0	6	57.7	3.9	52.0 - 62.0
61	Alveolar arch width	10	60.0	4.4	51.0 - 66.0	7	60.7	3.6	57.0 - 68.0

62	Palate length	10	46.9	4.9	41.0 - 59.0	6	50.3	3.1	47.0 55.0	-
63	Palate width	10	38.9	3.1	33.0 - 43.0	7	37.9	3.3	34.0 43.0	-
55	Nose height	8	49.0	2.2	47.0 - 53.0	6	53.8	2.3	51.0 57.0	-
54	Nose width	8	24.2	1.3	21.5 - 26.0	6	25.2	2.2	22.0 28.0	-
51	Eyepit (maxil.) width	8	41.5	1.1	40.0 - 43.0	6	42.5	1.6	40.0 45.0	-
51a	Eyepit width (dacr.)	8	39.8	1.3	38.0 - 42.0	6	41.0	1.8	39.0 44.0	-
52	Eyepit height	8	32.3	1.5	30.0 - 34.5	6	35.3	1.9	33.0 37.0	-
Sub.NB	Forehead curve height	13	24.6	2.2	21.5 - 30.0	9	24.8	2.6	21.0 29.0	-
20	Ear height	12	111.2	4.8	102.5 119.0	6	114.0	3.4	108.0 117.0	-
SC	Simatic width	9	8.9	2.0	6.0 - 12.0	6	10.3	2.3	7.0 13.0	-
SS	Simatic height	9	4.9	1.3	3.0 - 7.0	6	5.7	1.8	4.0 - 9.0	-
DC	Dacrial width	8	22.4	3.4	18.0 - 28.0	6	21.5	2.7	17.0 25.0	-
DS	Dacrial height	7	12.9	1.6	11.0 - 15.0	6	12.5	0.8	12.0 14.0	-
77	Naso-malar angle	14	141.0	6.1	129.3 151.1	8	140.9	8.0	131.0 155.6	-
ZM	Zygomaxillar angle	9	130.2	2.8	125.2 134.0	6	121.8	6.0	115.9 128.9	-
32	Forehead profile angle of n	8	84.0	3.8	79.0 - 89.0	3	77.7	1.2	77.0 79.0	-
72	Topinard facial angle	8	83.9	1.6	82.0 - 87.0	5	79.4	1.7	77.0 81.0	-
73	Average facial angle	8	87.0	2.4	83.0 - 91.0	5	84.4	2.4	82.0 87.0	-
74	Alveolar angle	8	75.1	2.4	70.0 - 78.0	5	69.8	6.4	64.0 80.0	-
75(1)	Nose protrusion angle	8	29.5	2.9	26.0 - 34.0	5	30.0	7.1	21.0 40.0	-
68(1)	Lower jaw length from the condyle	10	103.2	6.4	93.5 112.0	3	116.3	9.5	107.0 126.0	-
79	Lower jaw branching angle	10	131.7	5.4	123.0 139.0	3	136.7	6.8	129.0 142.0	-

68	Lower jaw length from the corners	10	75.2	3.0	71.0 - 80.0	3	85.3	7.6	80.0 94.0	-
70	Branch height	10	62.3	3.4	57.0 - 70.0	3	61.3	1.5	60.0 63.0	-
71a	Minimum branch width	10	30.9	2.2	27.5 - 34.5	4	33.0	1.4	32.0 35.0	-
65	Condylar width	9	120.0	4.7	114.0 128.0	- 3	123.3	9.3	117.0 134.0	-
66	Angular width	10	102.8	6.8	95.0 118.0	- 3	106.3	6.0	100.0 112.0	-
67	Front width	10	43.9	2.5	40.0 - 48.0	3	46.3	2.3	45.0 49.0	-
69	Symphysis height	10	32.7	1.8	30.0 - 35.0	4	34.5	1.3	33.0 36.0	-
69(1)	Body height	10	28.4	1.9	25.0 - 31.0	4	29.5	1.3	28.0 31.0	-
69(3)	Body thickness	10	12.9	1.6	11.0 - 16.0	4	14.8	1.3	13.0 16.0	-
8:1	Transverse-longitudinal index	11	81.2	3.9	74.4 - 87.1	9	79.9	3.1	75.4 84.8	-
17:1	Altitudinal-longitudinal index	10	77.1	2.9	73.9 - 82.4	7	75.1	1.6	73.4 77.8	-
17:8	Altitudinal-transverse index	11	94.6	4.7	86.6 100.7	- 7	95.1	4.3	88.7 101.4	-
9:8	Frontal-transverse index	12	68.1	2.8	63.5 - 73.1	9	70.8	3.0	65.1 74.5	-
40:5	Face protrusion index	8	96.7	2.4	93.2 100.0	- 6	101.2	5.4	95.1 108.0	-
48:45	Upper face index	8	51.8	1.3	49.6 - 53.4	5	56.8	2.6	52.8 59.7	-
54:55	Nose index	8	49.5	4.0	42.2 - 54.3	6	46.8	3.8	42.1 50.9	-
52:51	Eyelid index	8	77.7	3.7	73.2 - 84.2	6	83.2	5.1	78.6 92.5	-
SS:SC	Simotic index	9	55.6	11.0	38.9 - 75.0	6	54.7	8.2	46.2 69.2	-
DS:DC	Dacrial index	7	58.6	13.3	42.9 - 75.0	6	59.0	9.2	48.0 70.6	-

In order to determine the genetic origins of late medieval Christian population of Sviyazsk, the authors conducted a multi-dimensional analysis on the basis of primary racial diagnostic indicators. A comparison was conducted with the use of collective series dating back to identical time periods corresponding to the Russian population

from central and northeaster regions of Russia (Moscow, Ryazan, Tver, Vologda, Kostroma, Yaroslavl and Vyatka governorates) (Alekseev, 1969). They characterize the Russian population with various intensity of the indicator complex. This group was supplemented with synchronous series from the Orthodox burial grounds of Kazan Kremlin and the city of Cheboksary characterizing the population of Kazan Khanate after the inclusion of Khanate's lands into the Russian state.

In order to establish the influence of local Finnish- and Turkic-speaking groups on the formation of the physical appearance of the Middle Volga Orthodox population, the researchers used the collective Tatar series from Kazan dating back to 19th century and the series characterizing the physical appearance of the local Finnish-speaking population groups: Mordva-Moksha and Mordva-Erzya, mountain and meadow Mari, and two collective Chuvash (northern and southern) series (Alekseev, 1969; Gazimzyanov, 2006). All series of the mixed type feature a Mongoloid element with various intensity degrees.

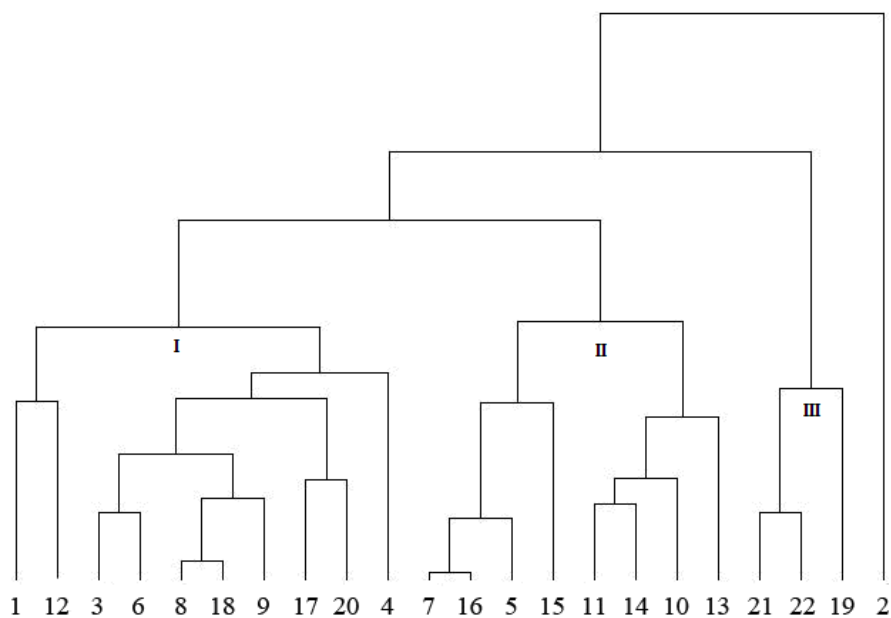
#### 4. Discussion

Canonical analysis results are provided in the form of a dendrogram (Fig. 1). Especially evident is the fact that the series in question are located at the opposite ends of the dendrogram. The monastery series (No.2) is positioned at a distance from all analysed groups. The parish (No.1) group is on the contrary morphologically close to the series from Moscow governorate (No.12). The arrangement of these series in a single cluster confirms the conclusions by Lipakov (1989a; 1989b) drawn on the basis of an analysis of book copies according to which the newly included territories were populated by servicemen from "Trans-Moscow" cities.

The second cluster of the dendrogram comprises series from Orthodox cemeteries of Kazan and Cheboksary (No. 3, 4, 6, 8) with series corresponding to Kazan Tatars (No.9), Mordva-Mosha and Mordva-Erzya (No.17 and 18, respectively) and meadow Mari (No.20). Perhaps, the classification of these series into a single cluster reflects the intermixture of Russian population with the local groups during the reclamation of the region after its inclusion into the Russian state. Another characteristic fact is that the late medieval Christian population of Volga region towns (Cheboksary and Kazan) demonstrates a morphological similarity. Presumably, their ancestral genetic relationship can be discovered as well.

The third cluster of the dendrogram contains series from the territory of Kazan Kremlin (No. 5, 7) and series of Russian population inhabiting the central regions of Russia (No. 10, 11, 13-16). Anthropologic data has provided another confirmation of the conclusions drawn on the basis of book copies demonstrating that the number of Kazan population with by names and last names indicating their regional affiliation to central Russian regions was rather large. The obtained data illustrates another possible route of Kazan region's colonization after the inclusion of the lands into the Russian state.

**Figure 1: Dendrogram.** 1 - Sviyazhsk. Parish cemetery; 2 - Sviyazhsk. Monastery burial ground; 3 - Cheboksary. A 16th-17th century cemetery; 4 - A cemetery in the area of Soyembika Tower, Kazan; 5 - A cemetery in the area of Qol Sharif Mosque, Kazan Kremlin; 6 - Praskeva-Pyatnitsa Church, Kazan Kremlin; 7 - Nikola Ratny Church; 8 - Voskresensky Cahedral, Kazan (Alekseev, 1969); 9 - A collective Kazan Tatar series (Alekseev, 1969); 10 - Kostroma governorate (collective group) (Alekseev,1969); 11 - Yaroslavl governorate (collective group) (Alekseev, 1969); 12 - Moscow governorate (collective group) (Alekseev,1969); 13 - Tver governorate (collective group) (Alekseev, 1969); 14 - Ryazan governorate (collective group) (Alekseev, 1969); 15 - Vologda governorate (collective group) (Alekseev, 1969); 16 - Vyatka governorate (collective group) (Alekseev, 1969); 17 - Mordva-Moksha (Alekseev, 1969); 18 - Mordva-Erzya (Alekseev, 1969); 19 - Mountain Mari (Alekseev, 1969); 20 - Meadow Mari (Alekseev, 1969); 21 - Northern Chuvash (Alekseev, 1969); 22 - Southern Chuvash (Alekseev, 1969).



## 5. Resume

1. An analysis of both monastery and parish series from the island town of Sviyazhsk demonstrated their correspondence to the Caucasian group with a Mongoloid component of local Ural origin in the morphology of skulls from the parish series.
2. An intergroup analysis revealed a morphological similarity of the parish series with the Russian series from Moscow governorate illustrating the local colonization routes.
3. On a larger scale the similarity of skulls from the parish series with the series from Orthodox churches in Cheboksary, Voskresensky Cathedral, Praskeva-Pyatnitsa Church, cemetery in the area of Soyembika Tower, collective series



of Kazan Tatars, Mordva-Moksha, Erzya and meadow Mari, allows to conclude that the population of Sviyazhsk, Kazan and Cheboksary formed as a result of an intermixture of foreign servicemen and the indigenous medieval population which adopted Christianity after the inclusion of Kazan and Kazan lands to the Moscow state.

4. The fact that the monastery series has no identified counterparts in any of the selected series, implies that the latter have a different origin. It is known that monks were appointed for service in the newly established Sviyazhsk Assumption Monastery from Joseph-Volokolamsk Monastery of the Moscow region, but it remains unclear how they found themselves in the Moscow region monastery. Surprisingly, despite its small size the series is very homogeneous. It was an interesting question whether these specific features would preserve as the series expanded.
5. A promising research direction in the investigation of the craniology, odontology and osteology of materials from Sviyazhsk burial grounds. In this connection, it is critically important to continue excavations at the cemeteries. Completely excavated cemeteries can provide priceless material on palaeodemography, study of the population's physiological stress and physical activity indicators and the pathologies of the skeletal system allowing to recreate the paleoecologic environment and welfare of Sviyazhsk population.

## **6. Conclusions**

As a result of completed investigation, the authors have acquired new information on the history of the Middle Volga region providing an insight into the establishment of the anthropologic appearance of the local peoples.

One of the promising directions of future research will be the investigation of the craniology, odontology and osteology of materials from Sviyazhsk cemeteries. In this regard, it is critically important to continue excavations at the cemeteries and investigations of anthropological materials. Completely excavated cemeteries can provide priceless material on palaeodemography, study of the population's physiological stress and physical activity indicators and the pathologies of the skeletal system allowing to recreate the paleoecologic environment and welfare of Sviyazhsk population.

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