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Anthropological Types in Bulgarian Population around 1940 – Regional and Local Level

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The largest anthropological survey in Bulgaria has been organized by M. Popov in 1938-1943. Its materials include individual data of 5725 men. Only this study gives a possibility to analyze complex individual anthropological characteristics on regional and local level. The data of the distribution of six anthropological types collected in this survey are analyzed by regions and by counties and an anthropological map of Bulgaria has been made. The analysis shows that recent Bulgarian population is highly heterogeneous. Brachycephalic Dinaric and Alpine types dominate in North and especially in Northwest Bulgaria. Mesocephalic Pontian and Mediterranean types dominate in South and especially in Southeast Bulgaria. However, there are bands of mesocephalic population in North Bulgaria (along the Black Sea coast and along the Danube river) and islands of brachycephalic population in South Bulgaria (in the Rhodopes and in Eastern Thrace). The anthropological composition of Northwest Bulgaria is similar to the Central European one.

Key words: anthropological types, ethnic anthropology, modern Bulgarians, regional anthropological characteristics, local anthropological characteristics.

There were four major ethnoanthropological surveys in Bulgaria, which cover all the territory of the country – carried out by: acad. Stefan Vatev around 1899, acad Methody Popov at 1938-1943, Aris Poulianos at 1963, and the National Anthropological Program at 1989-1993 [14, 17, 8, 16]. Their results show that the anthropological structure of the present Bulgarian population is very heterogeneous. Unfortunately, their results are presented only at national and regional levels. Only few data are published on lower level [14, 17]. The survey of Krum Dronchilov [2], perhaps the best exact and best known outside Bulgaria, also presents anthropological data on local level, but it do not cover the whole territory of Bulgaria. The materials of the extensive anthropological studies of Peter Boev, Luchia Kavgazova and their collaborators, collected at 1970s and 1980s are only partly published and also do not cover the whole country [3, 4, 5].

The largest anthropological survey in Bulgaria of these four studies, mentioned above, is the study organized by M. Popov in 1938-43. Part of the collected by him and his collaborators materials was destroyed at the time of bombing of Sofia at 1943-1944. The survived materials include individual data of 5759 men. This material has been elaborated and the results were published only after his death (1954) by his student

Georgi Markov in 1959 [17]. However, because of political reasons he had to make a conscious error in the text (not in the numeral data), probably for to insure that the results could be published. This mistake has been repeated in some later Bulgarian works about the anthropology of Bulgarians for inner use [12, 13]. But the anthropologists outside the borders of Bulgaria were not influenced by it [15, 10, 11]. The published material of this study gives a possibility to analyze anthropological characteristics and the distribution of anthropological types on regional and local level (by counties – "okolias") as it has been made, for example in Poland or Switzerland long ago [9, 6].

Materials and Methods

The published materials of the anthropological survey of M. Popov are used at regional level, namely for each regional population the share of the anthropological type is calculated. The classification of anthropological types is taken as in the original publication, which is close to the classification of Cheboksarov [19] and coincides with the classification of Henzel-Michalski in the main points [6, 7]. The share of individuals of intermediate type are divided between the main anthropological types after Michalski [6]. Then euclidean distances are calculated between the local samples and cluster analysis is made by UPGMA [1]. The classification of the distances as very small, small, medium, large and very large is made after Heet [18].

On local (county) level only the percent distribution of five anthropological traits has been given on maps (height, cephalic index, morphological face index, percentage of individuals of dark complexion (dark eyes, dark hair), percentage of individuals of light complexion). Based on this, it is possible to combine these traits and to calculate the approximate theoretic share of the major anthropological types. For example:

County of Vidin – height over 170 cm – ca 62.5% (60-64.9%); cephalic index over 81 – ca 52.5% (45-59.9%); morphological face index over 88 – ca 77.5% (75–79.9%); dark complexion – ca 62.5% (60-64.9%); light complexion – ca 6% (under 7.9%).

Mediterranean type – height under 170, cephalic index under 81, face index over 88, dark complexion : $0.375 \times 0.\ 475 \times 0.775 \times 0.625 \approx 0.086 = 8.6\%$;

Pontian (Atlanto-mediterranean) type – height over 170, cephalic index under 81, face index over 88, dark and mixed complexion + height under 170, cephalic index under 81, face index over 88, mixed complexion: $0.625 \times 0.475 \times 0.775 \times 0.94 + 0.375 \times 0.475 \times 0.775 \times 0.315 \approx 0.260 = 26.0\%$;

Dinaric type – height over 170, cephalic index over 81, face index over 88, dark and mixed complexion: $0.625 \times 0.525 \times 0.775 \times 0.94 \approx 0.239 = 23.9\%$

Alpine type – height under 170, cephalic index over 81, face index under 88, dark and mixed complexion: $0.375 \times 0.525 \times 0.225 \times 0.94 \approx 0.942 = 4.2\%$

Atlanto-baltic (Nordic) type - height over 170, cephalic index under 81, face index over 88, light complexion: $0.625 \times 0.475 \times 0.775 \times 0.06 \approx 0.014 = 1.4\%$

Eastern Baltic (White see-Baltic) type: cephalic index over 81; face index under 88; light complexion: $0.525 \times 0.225 \times 0.06 \approx 0.007 = 0.7\%$

The names of the anthropological types and their description and borderlines between them are that of the original publication.

Results and Discussion

The share of the basic anthropologic types in the regional population samples are presented in **Table 1**.

Table 1. Regional distribution of major anthropologic types

Region	Vratsa	Pleven	Ruse	Varna	Sofia	Plovdiv	St. Zagora	Burgas	Blagoevgrad	Total	Macedonians	Bulgarians-Muslims
n	593	861	234	316	1615	1274	377	299	156	**5725**	413	356
Type. %												
Mediterranean	1.85	2.15	2.78	2.78	4.61	**11.93**	7.96	11.04	9.94	**6.19**	6.05	10.25
Pontian	27.32	30.31	34.62	34.62	32.07	33.28	38.06	**40.13**	31.09	**33.82**	30.15	26.26
Dinaric	19.48	18.18	**20.94**	**20.94**	13.03	9.30	12.33	9.20	6.73	**13.88**	14.77	5.48
Alpine	**4.89**	4.24	3.63	3.63	3.10	1.57	0.80	0.84	1.60	**2.75**	1.94	1.69
Atlanto-Baltic	4.89	4.12	3.63	3.63	6.90	10.05	6.37	7.19	7.05	**6.75**	3.39	**10.39**
Eastern Baltic	2.45	2.44	1.92	1.92	2.01	0.59	0.80	0.84	**2.56**	**1.63**	0.85	1.26
Undefined	39.12	38.56	32.48	32.48	38.27	33.28	33.69	30.77	41.03	**35.00**	42.86	44.66

Note: The maximum share of every anthropological type is bolded.

As it can easily be seen, the major concentration of Pontian type is in Southeast, not in Northeastern Bulgaria, as in the text written by G. Markov for to stress the role of Slavic elements in the formation of Bulgarian people (17). The most extreme position in the table have the samples from Southeast Bulgaria (St. Zagora and Burgas)from one side with very high concentration of Pontian type and of North Bulgaria (especially Northwest Bulgaria) from other side with high concentration of Dinaric type. The samples of Sofia, the Macedonians, of Blagoevgrad and Plovdiv have something intermediate position. This can easy be seen in the diagram of Czekanowski **(Fig. 1).**

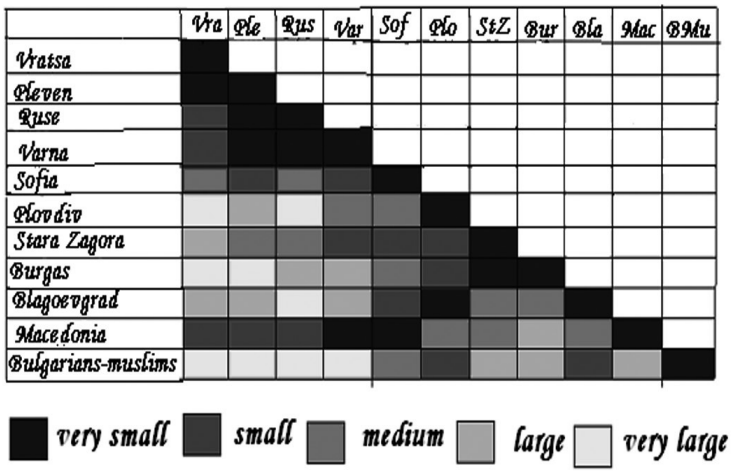

Fig. 1. Euclidean distances between regional Bulgarian populations based on the share of the major anthroplogical types

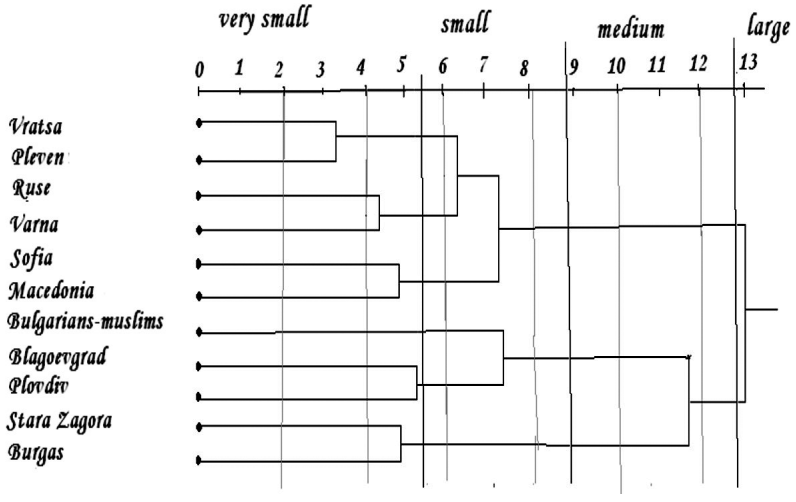

Fig. 2. Cluster analysis of the Euclidean distances between the regional anthropological samples

The cluster analysis of the euclidian distances between these samples (**Fig. 2)** shows that they present two well defined clusters. The first of them includes all samples from Danube Basin + Macedonians, the second – all Southern Bulgaria from Struma to the Black Sea.

Table. 2. Theoretic share of major anthropological type in the population – county level

	Mediterranean	Pontian	Dinaric	Alpine	Atlanto-Baltic	Eastern Baltic	Predominance
County	%	%	%	%	%	%	
Vidin	8.6	26.0	23.9	4.2	1.4	0.7	PD
Kula	3.6	5.8	21.1	14.0	0.7	4.3	Da
Belogradchik	2.2	6.8	24.5	13.4	0.6	3.5	Da
Lom	1.9	8.4	35.1	8.0	0.5	1.9	D
Montana	1.9	7.6	32.3	9.1	0.4	2.1	D
Berkovitsa	3.2	6.9	25.1	11.0	0.9	3.8	Da
Oryahovo	4.1	12.6	19.9	8.8	2.1	4.6	Dp
Byala Slatina	1.7	8.1	29.0	10.4	0.7	3.1	Da
Vratsa	2.2	7.7	29.0	10.4	0.7	3.1	Da
Nikopol	6.1	18.5	12.9	10.5	1.3	2.2	pda
Pleven	7.7	23.3	19.7	5.5	2.0	1.4	Pd
Lukovit	2.2	8.1	27.9	12.4	0.4	1.9	Da
Teteven	1.7	6.5	26.3	9.3	1.2	**6.3**	D
Troyan	1.6	8.3	33.6	7.7	0.8	3.1	D
Lovech	4.5	14.4	26.4	6.1	2.1	3.1	Dp
Sevlievo	3.6	17.6	29.7	5.4	1.6	1.9	Dp
Gabrovo	3.3	16.1	27.1	4.9	2.9	3.3	Dp
Dryanovo	2.2	9.3	36.3	6.6	0.9	2.3	D
Svishtov	2.2	10.0	36.0	6.3	0.8	1.9	Dp
Pavlikeni	2.5	8.1	31.3	9.0	0.7	2.7	D
Tarnovo	2.5	8.1	31.3	9.0	0.7	2.7	D
Gorna Oryahovitsa	2.9	7.7	28.8	10.3	0.7	2.7	Da
Elena	3.8	6.8	26.3	11.5	0.6	2.7	Da
Ruse	6.3	14.9	25.3	7.1	1.4	1.9	Dp
Byala	3.0	6.5	23.4	**15.7**	0.3	2.1	Da
Razgrad	2.5	7.1	28.5	8.2	1.3	4.8	D
Popovo	4.3	13.7	23.4	6.7	2.5	3.9	Dp
Silistra	9.8	24.8	22.0	4.7	1.3	0.7	PD
Targovishte	2.9	10.1	41.3	4.2	1.0	1.4	Dp
Omurtag	2.3	9.9	41.7	4.6	1.0	1.9	D

Table 2 – continued

Preslav	2.5	11.1	46.4	3.7	0.6	0.9	Dp
Shumen	7.2	24.4	21.9	3.8	3.2	1.7	PD
Novi Pazar	10.6	22.6	21.1	4.5	2.1	1.2	PDm
Provadiya	9.1	23.2	20.6	5.8	1.2	0.9	PD
Varna	7.0	24.0	23.1	4.2	2.3	1.4	PD
Balchik	5.5	18.2	33.2	4.6	1.0	0.9	Dp
Dobrich	5.5	14.3	19.5	10.4	1.0	2.2	dpa
Godech	8.2	30.8	13.4	3.8	3.6	1.4	PD
Sofia	8.0	19.6	16.0	7.0	2.4	2.4	pd
Elin Pelin	2.6	7.1	26.3	9.3	1.2	4.8	D
Samokov	6.4	13.8	22.1	7.6	1.7	2.6	Dp
Ihtiman	4.9	14.8	23.6	8.4	1.3	2.2	Dp
Pirdop	8.2	29.0	12.8	3.6	4.7	1.9	Pd
Botevgrad	2.2	7.7	29.0	10.4	0.7	3.1	Da
Tran	7.2	29.9	13.9	3.2	5.1	1.9	Pd
Breznik	7.6	32.5	7.9	2.8	3.0	1.0	P
Pernik	8.8	25.0	11.7	6.4	1.2	1.0	Pd
Radomir	12.5	25.4	12.0	5.2	2.2	1.2	Pmd
Kyustendil	6.1	24.8	12.5	4.5	3.4	2.2	Pd
Dupnitsa	7.7	25.9	12.6	4.5	3.4	2.0	Pd
Blagoevgrad	8.7	24.9	11.6	5.1	3.1	2.0	Pd
Sandanski	8.7	24.9	11.6	5.1	3.1	2.0	Pd
Petrich	8.7	24.9	11.6	5.1	3.1	2.0	Pd
Razlog	12.8	32.2	7.5	2.7	4.2	1.0	Pm
Gotse Delchev	8.7	24.9	11.6	5.1	3.1	2.0	Pd
Panagyurishte	11.5	29.3	15.3	3.5	2.8	1.0	Pdm
Pazardzhik	7.8	20.5	16.4	5.6	3.3	2.6	Pd
Velingrad	12.5	33.5	6.4	2.7	4.8	1.1	Pm
Peshtera	7.7	33.0	16.5	3.0	3.1	1.0	Pd
Karlovo	10.2	34.2	16.6	2.1	4.5	0.9	Pd
Plovdiv	12.9	28.8	14.4	3.1	3.9	1.2	Pdm
Asenovgrad	17.6	34.8	7.2	1.7	5.5	0.7	Pm
Chepelare	10.1	27.0	12.8	3.6	4.7	1.9	Pdm
Devin	7.3	28.0	28.3	2.3	2.8	0.9	DP
Smolyan	8.1	22.9	21.4	4.9	2.2	1.4	PD
Ardino	8.1	22.9	21.4	4.9	2.2	1.4	PD
Kazanlak	7.3	26.4	25.1	2.6	3.7	1.3	PD

Table 2 – continued

Chirpan	6.1	30.2	15.8	2.9	4.3	1.7	Pd
Parvomay	10.6	31.0	16.9	2.4	4.6	1.2	Pdm
Stara Zagora	10.8	32.8	15.0	3.2	2.8	0.8	Pdm
Nova Zagora	5.9	33.0	17.0	2.4	4.6	1.4	Pd
Haskovo	6.7	27.1	14.7	4.1	1.6	1.0	Pd
Harmanli	5.1	25.1	24.2	4.4	1.4	1.0	PD
Svilengrad	1.8	9.1	37.3	5.4	1.3	3.2	D
Ivaylovgrad	**22.7**	32.3	7.6	1.8	4.3	0.6	PM
Sliven	9.2	**45.8**	11.6	0.9	**6.5**	0.6	Pd
Kotel	9.4	26.9	12.5	4.5	3.4	1.7	Pd
Yambol	15.9	27.7	12.4	4.0	2.3	0.8	Pmd
Elhovo	9.0	25.6	22.0	4.7	1.3	0.7	PD
Karnobat	12.1	40.7	9.6	2.2	2.1	0.4	Pm
Aytos	15.3	31.1	14.6	2.8	2.7	0.7	Pmd
Pomorie	13.2	43.3	11.1	1.5	2.4	0.3	Pmd
Burgas	10.6	22.6	21.1	4.5	2.1	1.2	PDm
Tsarevo	15.0	42.6	10.4	1.3	4.0	0.4	Pmd
Malko Tarnovo	15.0	42.6	10.4	1.3	4.0	0.4	Pmd
Mean arithmetic	**7.2**	**21.2**	**20.9**	**5.7**	**2.3**	**1.9**	PD
SD	**4.3**	**10.6**	**9.0**	**3.2**	**1.4**	**1.2**	

Note: In the column "predominance" is shown the major anthropological types according to their share – P = Pontian, D = Dinaric, M = Mediterranean, A = Alpine. By capital letters types with share more than 20% are presented, by small letters – types with 10 to 19.9%. The maximal share of every anthropological type is bolded.

The analysis on anthropological type distribution on local level, presented in **Table 2** and **Fig. 3** clearly present how heterogeneous modern Bulgarians are. However, one can see that there is some order in the picture – Northern Bulgaria is an area of predominance of Dinaric type, Southern – of Pontians. Dinars are predominating also in a belt in the eastern part of Sofia district, which is connected with the predominantly dinaric Northern Bulgaria – this brachycephalic belt can be well observed also in the materials of St.Vatev's and Kr. Donchilov's surveys [14, 2]. Dinaric islands can also be found in Central Rhodopes and Eastern Thrace. Pontians and other meso-dolichocephals can be found also in Notheast Bulgaria and along Danube up to Vidin – this can also be traced and even more clear in the materials of St. Vatev's survey, but the colonization of Danube plain by brachycephalic Balkandzhi –Bulgarians from the Balkan Mountains valleys in the end of 19th and in the beginning of the 20th century has obscured the picture. However, Pontian type on a local level is concentrated in Northeast Bulgaria, but the major concentration being in Southeast Bulgarian counties – Sliven, Pomorie, Tsarevo, Malko Tarnovo, Karnobat. Thus this type has been renamed as Poulianos Thracian type [8].

If we have to look for Slavic heritage in modern Bulgarians, we surely have not to look in the regions of predominance of Pontian type, which is only sporadically

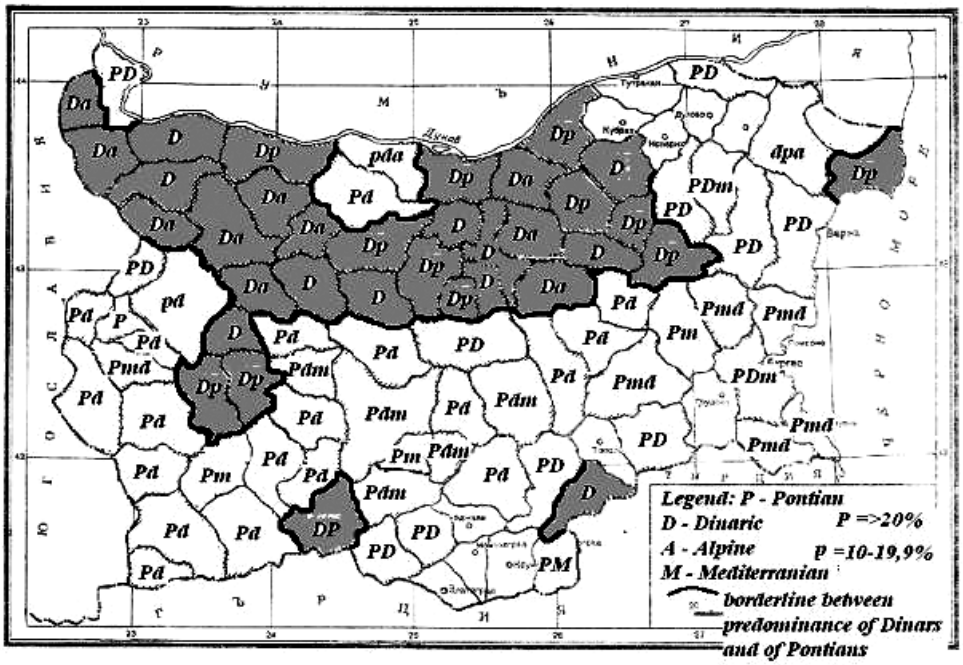

Fig 3. Predominating anthropological types in Bulgarians around 1940

Note: There were insufficient numbers of investigated from some counties and thus they are left empty on the map.

presented in significant degree in Eastern Slavic populations [15, 10, 11]. The Northern Bulgarians with their brachycephaly and mixed pigmentation are more similar to the populations of Central Europe north of Danube and thus are better candidates to be Slavic descendents. Especially interesting are the counties with higher concentration of Eastern Baltic type, which is synonym with the Subnordic type. The latter is considered by the Polish anthropologists as typical for Slavic populations [6].

Conclusion

The analysis of the anthropological data collected by acad. M. Popov presents that modern Bulgarians anthropologically are very heterogeneous in territorial aspect. Southern Bulgaria is a region of predominance of Pontian Anthropologic type with higher concentration in Southeast Bulgaria. Northern Bulgaria is a region of predominance of Dinaric type. However, there are islands and belts of Dinaric predominance in Southern and of Pontian predominance in Northern Bulgaria.

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