

Contribution Of Anatomists To Anthropology

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Abstract: *A scientific and historical excursion shows that anatomists played an important if not decisive role in the development and establishment of anthropology. Each case of the nomination of important anthropological statements by anatomists was dictated by their vast scientific and practical experience. There is no doubt that these cases themselves require a detailed analysis and can be the subject of a study of the history of medicine and anthropology in particular. Azerbaijani anatomists were also involved in anthropological research, starting from the very inception of the Department of Human Anatomy of the Azerbaijan Medical University, in other words, exactly 100 years ago. The real upsurge of these studies has begun in recent decades. Under the guidance of Academician of the Russian Academy of Sciences, Honored Scientist of Azerbaijan, Professor V.B. Shadlinski, several dissertations on anthropological topics were successfully defended, the textbook «Anthropology with the Basics of Morphology» (in Azerbaijani) was published (authors: Honored Scientist Professor V.B. Shadlinski and Associate Professor A.S. Abdullayev; the chapter "Morphology" was written by the senior lecturer S.V. Shadlinskaya).*

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1. INTRODUCTION

The content of anthropology, of course, implies the study of man. The uniqueness of this task is that it can be solved by starting a "journey" in time before the advent of Homo sapiens, or, as recently indicated in the literature by Anatomically Modern Human (AMH).

The foregoing clearly shows that even in the most scientific definition of the concept of "man", anatomical belonging and properties gradually take their deserved place. There is no doubt that the growth of a new, healthy and comprehensively developed generation is a strategic task, which, along with the correct physical and moral education, propaganda and agitation conducted by the family, educational institutions and the media, should also be based on a fundamental scientific base. The definition of features that accurately characterize the physical types of a person goes back to the unity of mathematical parameters and biological functionality.

Man is the only living creature on earth who has always been interested in his origin and place in nature. In early prehistoric times, human exposure to nature was rather primitive; there could not even be any talk of changing nature by man. But even then, a person understood that to survive and continue his existence, he first of all required knowledge of the structure, i.e. about the structure of himself and his natural enemies, which also could and should act as food. Cave paintings found in all parts of the world abound in such motifs. So, we can say, the first anatomical knowledge was born. Yes, many millennia will pass and in 1936 Le Gros Clark, an English anatomist and, surgeon, will propose a scheme of the

structure of dentitions bearing his name and based on this scheme brilliantly analyze the morphological features of Australopithecus and prove that these properties bring Australopithecus closer to hominids, rather than with pongids, will say: "Anatomy is the science of the form and structure of living organisms. In other words, it concerns the study and interpretation of those factors that determine or change the form and structure, whether chemical, physical, physiological or, phylogenetic, as well as the exact relationship between structure and function."

It was said almost 90 years ago. During this time, of course, all the latest morphological and clinical methods have come into close integration with anatomy; anthropology is a relatively young science and it should be noted that in its development, as a science, anatomists had great contributions. Of course, when we call science young, we do not mean the term "anthropology" itself. It is very ancient and did not always reflect the meaning that is being invested in it today. In antiquity, this concept was used to describe the state of mind of a person [7]. Aristotle called scientists studying humans as anthropologists.

In the 1740th year, the Chamber's Encyclopedia was given the following definition: "The study of the body and soul and the laws that govern their connection" [6]. The same Topinard wrote that in his time the concept of anthropology is sometimes so perverted that one author used this term to refer to the art of reproducing the human image in vases.

Of course, just as a diverse object for research is a person, so the interpretation of the term anthropology did not differ monolithically. In our opinion, it was the entry of anatomists into the struggle for the future "fate" of anthropology that predetermined the current state of things in this science. So, in the year 1501, Magnus Hundt first used the term anthropology in his book to refer to the structure of the human body. The book was called «Antropologium de hominis dignitate, natura et proprietatibus, de elementis, partibus et membri humani corporis». Although this book was just an anatomical source but it had indicated to the relation of anatomy to anthropology.

Jean Riolano also examined the physical organization of man in his «Anatomica seu Anthropologia». In the year 1533, Qaleasso Kapella became the author of «L'Anthropologia ovvero ragionamento della natura umana», where he examined the individual variations of the human body.

Starting from the 19th century, in England, France, and the United States, anthropology began to be understood as a science that studies the physical structure of man, as well as past and modern cultural and everyday features of various peoples and tribes. In other words, dualism has always been at the root of anthropology - some authors have studied the physical structure of man, while others have studied his spiritual architecture. Now in some Western sources, it is customary to refer to the subject and science of anthropology as "physical anthropology" [3]. It is believed that physical anthropology along with social anthropology, linguistic anthropology, and archeology is one of four sciences that study man.

There are many examples of important discoveries made by anatomists in anthropology, and there are simply very important decisions that belong to them. The German anatomist and anthropologist Blumenbach (Johann Friedrich Blumenbach), the father of physical anthropology [4] in 1790 presented to the public his collection of skulls - "Decades craniorum". According to the shape of the skulls, he divided people into 5 races: the Mongoloid, Americanoid, Caucasian, Malay and Negroid races (Ethiopians). Before to this, in 1775, his work «De Generis Humani Varietate Nativa» appeared, which was a dissertation for the degree of Doctor of Medicine. Blumenbach first proposed the term Norma Verticalis, which is extremely important for the study of the skull; he also belongs to another, the no less important term "clivus" - clivus Blumenbachii, stretching between the body of the sphenoid bone and the basilar part of the occipital bone.

Nevertheless, 1842 is considered to be the “year of birth” of scientific craniometry. It was in this year that the Swedish anatomist Retzius published a scientific paper on the shape of the head of the population of Northern Europe. Retzius proposed an anthropological classification, according to which long-headed - Dolichocephalen and short-headed - Brachycephalen were distinguished. The name of Retzius also linked anatomical structures such as the retropubic (Retzius) space and the fundiform ligament of the penis. The facial angle, widely used in craniometry, was proposed by the Dutch anatomist Petrus Camper, who had high painting abilities.

The undoubted authority in anthropology enjoyed the French anatomist and anthropologist Paul Broca. It was after he and his associates founded the Paris Anthropological Society in 1859 that a new period began in the modern history of anthropology, full of discoveries, teachings, and bold hypotheses. Ethnological societies in Paris, London, and New York, which preceded the Paris Anthropological Society, could not extend their influence beyond the insignificant circle. Along with brilliant theories and no less brilliantly proven by Broca, he also proposed the construction of most anthropological instruments and methods for determining the size of body parts (Broca's caliper, Broca's skull capacity determination method, Broca's anthropometer). His excellent organizational skills enabled him to organize the «Revue d'anthropologie» journal in 1872 and the Higher School of Anthropology in 1876.

At universities in Europe and Latin America, a unique treatise on human anatomy is still in great demand. It was authored by Jean Leo Testut, an anatomist and anthropologist who also worked at Broca's laboratory, who later reached the heights of world fame and became president of the World Association of Anatomists. In 1884, Testut published a paper on the brachial part of a musculocutaneous nerve; later this nerve was named after him [2]. Then his work on muscle anomalies of man, their comparative anatomy and importance in anthropology appeared.

Daniel John Cunningham is a great anatomist and master of preparation, known for his magnificent Cunningham's Dissection Manuals. Besides, he published works on comparative anatomy, anthropology, and anthropometry («The lumbar curve in man and the apes: with an account of the topographical anatomy of the chimpanzee, orangutan, and gibbon»).

The main scientific work of the outstanding Russian anatomist D.N. Zernov, «A Guide to Descriptive Human Anatomy», has endured 14 editions from 1890-1892 to 1939. He created an encephalometer - the first apparatus for anatomical studies of the brain. The task of the encephalometer was to indicate in a living person any point on the convex surface of the brain (grooves and convolutions), regardless of the cranial sutures, which were usually guided by such definitions. The encephalometer could be used to study the curvature of the skull on all parts of its roof and in this case replace other devices, for example, the Antelma cephalometer.

Sir Arthur Keith, a distinguished Scottish anatomist, and anthropologist, President of the Anatomical Society of Great Britain and Ireland, is known in anatomy for the opening of the atrial or sinoatrial node of the heart. The node was named after the anatomist. Also, Sir Arthur Keith was the editor of the world-famous Journal of Anatomy in 1915-1936 [1]. In 1897, he published "An introduction to the study of anthropoid apes." Then followed "Human embryology and morphology" (1902), "Ancient types of man" (1911).

M.A. Popov - Russian anatomist, professor of Kharkov University, in 1902 published his report prepared for the Preliminary Committee of the XII Archaeological Congress "Anatomical study of bones found during excavations of mounds in the Kharkov province." Deep knowledge of the material, high intelligence, and professionalism, extensive experience of the author make this work invaluable for our time. The author concludes his work with the following lines: «In conclusion, I must say that anatomical studies not only do not diverge but

on the contrary confirm that the tribe that once inhabited the area called now Nitsaha village really can come closest to the ancient Slavs».

Cristoph Teodor Aeby (1835-1885) is well known in the scientific community of anatomists and anthropologists. The depressor labii inferioris or Aeby's muscle, Aeby's plane - a craniometric plane perpendicular to the median plane of the skull passing through the craniometric points of nasion and basion - these are just some of the eponyms bearing his name.

The German anatomist and anthropologist Gustav Albert Schwalbe (1844-1916) was the first to apply cranioscopic and craniometric methods in the study of fossil remains. Having deeply analyzed the skulls of Neanderthals, Schwalbe concluded that Neanderthals are not a special race of Homo Sapiens but a separate species; to identify this species, he coined the term Homo primigenius.

The term «pithecanthropus» is also associated with the activity of another anatomist - the Dutchman Dubois, who in 1891-1893 discovered a thigh bone, a skull roof, and 3 teeth of a still unknown hominid on Java Island.

An outstanding anatomist, a graduate of the Leningrad Medical Institute, V.V. Ginzburg is rightfully considered one of the founders of ethnic anthropology in the USSR. He took an active part in expeditions to study the anthropology of Tajiks and other peoples of Central Asia. The works of V.V. Ginzburg are devoted to various problems of anthropology, such as methods of racial analysis, the relationship of race and constitution; he also published works on anatomy, in particular on lymphology and the history of anatomy.

Buntaro Adachi is considered to be a master of Japanese anatomical variation [5]. Adachi believed that differences between races should not be sought in the structure of the skeleton. In his opinion, all attention should be directed to the soft tissues. «Das arteriensystem der Japaner» (1928) and «Das Venensystem der Japaner» (1933 and 1940) are the two main scientific works, of the Japanese anatomist and anthropologist, which are still being carefully studied.

Vast experience in anatomy allowed P.I. Karuzin (1864-1939) to conduct very important studies regarding the relationship of body parts to each other. He determined the width of the pelvis (intertrochanteric line), added the width of the shoulder girdle to the measurements of the upper limb. This size is equivalent to the distance between the most convex points of the deltoid muscles.

Franz Weidenreich (1873-1948) in 1904 became a professor of anatomy in Strasbourg and until 1918 published more than 50 works. He later headed the Department of Anatomy at the University of Heidelberg and the Department of Anthropology at the University of Frankfurt.

N.M. Maliev, an anatomist and anthropologist, founded the Department of Normal Anatomy of the Imperial University of Tomsk [8]. The fruitful activity of N.M. Maliev covered current issues of anatomy and anthropology. From his pen came such works as «On the respiratory organs of man», «Anthropological essay of the Bashkirs», «Report on the Vogul expedition», «General information about the Mordva of the Samara Province, their anthropological nature, late marriages and their influence on the fortress of the people. National features of the skull».

The outstanding Russian anatomist and anthropologist K.Z. Yatsuta headed the departments of the normal anatomy of the Military Medical Academy in St. Petersburg and Rostov-on-Don [9]. In 1924, he joined the special commission, which took the bodies of V.I. Lenin after embalming. The authority of Yatsuta in anthropology was also high. In addition to organizing the Society of Anatomy and Anthropology in 1921, he wrote very importantly anatomical works: «On artificially deformed turtles in the South-East of Russia», «On

deformed skulls in the South-East of Russia», «Purpose and tasks of the anatomy society and anthropology», «On some neanderthaloid signs on the skulls of modern people».

Azerbaijani anatomists were also involved in anthropological research, starting from the very inception of the Department of Human Anatomy of the Azerbaijan Medical University, in other words, exactly 100 years ago. The founder of the national anatomical school K.A. Balakishyiev participated in ethnographic and archaeological expeditions published an anthropological study on the study of the Turkish woman's pelvis.

Over the next 100 years, the staff of the department conducted many anthropological studies; but, the real upsurge of these studies has begun in recent decades. Under the guidance of Academician of the Russian Academy of Sciences, Honored Scientist of Azerbaijan, Professor V.B. Shadlinski, several dissertations on anthropological topics were successfully defended, the textbook «Anthropology with the Basics of Morphology» (in Azerbaijani) was published (authors: Honored Scientist Professor V.B. Shadlinski and Associate Professor A.S. Abdullayev; the chapter "Morphology" was written by the senior lecturer S.V. Shadlinskaya). The topics of dissertations performed at the department in recent years, as was noted, are in tune with current issues of both anatomy and anthropology; in these works, applying modern methods of study, such as computed tomography, MRI imaging, the scientists of the department shed light on the most important aspects of the anatomical science bordering on anthropology. All research works on the topics of these dissertations were published in authoritative domestic and foreign journals and are devoted to questions of craniology, craniometry, the topography of the cerebral and facial parts of the skull, also to the morphology and evolution of the paranasal sinuses.

Thus, the historical and scientific excursus shows that anatomists played an important if not decisive role in the development and formation of anthropology. In our opinion, each case of the nomination of important anthropological statements by anatomists was dictated by their vast scientific and practical experience. There is no doubt that these cases themselves require a detailed analysis and can be the subject of a study of the history of medicine and anthropology in particular.

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