History of Medicine 2016. Vol. 3. № 3.
DOI: 10.17720/2409-5834.v3.3.2016.21n

On the problem of periodization in the history of medicine

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Periodization of the history of a research object serves not only as a general guide to a researcher but also reflects his methodology. The author discusses the main methodological issues in the periodization of medical history in a historiography. In relation to the history of medicine, these include the use of analysis principles that are characteristic for universal history, an understanding of the history of medicine as a "healing art", commitment to the theory of conflict between science and religion, as well as the use of periodization schemes developed for other scientific disciplines. All this leads to a distorted view of the object and the subject of scientific research, excludes a holistic understanding of the history of medicine and leads to a phenomenological approach and incorrect research conclusions. The author believes that the history of medicine should be considered as part of the history and philosophy of science and offers a periodization of the development of medicine that corresponds to this approach. In his opinion, four stages should be recognized. The first stage (6th century BC to 2nd century AD) is associated with the birth of ancient Greek rational medicine. The second (2nd to 16th centuries) is associated with rational medicine in its protoscience phase, characterized by conceptual unity on the basis of Galen's theoretical and practical system. The third (17th to 19th centuries) is connected with the scientific revolution in medicine, during which a system of ideas about medicine as a science was formed. The fourth (20th century to the present day) reflects current modern medicine. The author gives consideration to different approaches to the periodization of the history of medicine, with examples from both domestic and foreign monographs and textbooks. Special attention is paid to those that form the main trends in the study of the history of medicine. A particular focus is placed on the concept of "religious and philosophical systems" as a methodological approach in the study of medicine in the protoscience period.

Keywords: *history of medicine, history and philosophy of science, periodization, methodology of the research*

For quotation: Balalykin D.A. On the problem of periodization in the history of medicine. History of Medicine. 2016. Vol. 3. № 3. P. 203–221.

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The presence (or absence) of a systemic idea about our specialty reflects its generally accepted periodization. This statement, generally speaking, is true not only in relation to the history of medicine, but also to the history of other disciplines, such as economics and mathematics.

Periodization does not serve only as a reference point for scientists, but also reflects their research methodologies. It is, indeed, impossible to arbitrarily divide the history of a scientific discipline into certain temporary time intervals. It is necessary to define periodization criteria and justify the chronological frameworks of the stages in the development of a school of scientific thought. This can only be achieved by correctly understanding the value of all the relevant historical events and establishing the epoch-marking importance or the revolutionary nature of some of them. It is necessary to use the correct methodological approaches in order to achieve such goals.

This article is aimed at achieving several objectives. The first goal is to show the existence of serious problems with the current holistic comprehension of the history of medicine in Russian historiography and reveal their reasons. The second objective is to criticize the existing

Received: 20.06.16

approaches to the periodization of Russian medical history and, thirdly, to offer an alternative. In essence, I would like to raise the question of the adequacy of the general view about our specialty that has developed in Russian historiography over the past 60 years.

The state of Russian historiography

The main goal of historical science is to reliably establish (as far as it is possible) the historical facts and use them as a base for formulating a systemic vision of the past. The experts of political history have their research goals, while the historians of physics or medicine also have their own research objectives. Working with different sources forms the basis of all the researches that are conducted by the representatives of any of the directions of historical science, while the professionalism of scientists (or researchers) is defined by the depth of their possession of the skills of historical analysis.

The attempts to reconstruct the processes that took place in different spheres of public life throughout considerable periods of time are made on the basis of the generalizations and analysis of the established historical facts. High quality knowledge of these facts and the reliability of such reconstructions help to recreate a complete vision of the historical past of mankind, including the separate aspects of mankind's culture. Science, naturally, has to be recognized by scientists as an integral part of this culture.

It would be nice to have a scientific manual or review monograph, where all the main problems of the history of medicine had been treated in the best way possible (including its periodization). The problem is that such a manual or monograph does not exist in Russian historiography. The first and, apparently, the only book, which made an attempt to track the development of medicine from the Period of Antiquity to the author's time was S.G. Kovner's work, which was published in 1878–1888 [1]. This situation cannot be explained by the insufficiently important position of the history of medicine that had existed in several medical scientific specialties. It is known, for example, that universities, academies and institutes' official courses timetables were the most important indicators that showed the attention that was paid to each scientific discipline in the Soviet times.

The existence of these special, subjects-related payment rates meant financing, the possibility of publishing monographs and textbooks, to defend theses in specialties, while the absence of such special rates meant such universities had to "fend" for themselves, and justify the necessity of their specialties. All these issues distracted universities from conducting scientific researches and negatively impacted on their possibilities and capabilities for carrying out such researches.

The History of Medicine (or "Medical History") has existed right from the foundation of the USSR Academy of Medical Sciences and has continued to remain a part of it. The History of Medicine has always been an obligatory part of the academic programmes for higher medical education, meaning the existence of special faculties (departments) and courses. In other words, we cannot complain about a lack of due attention to and a decrease in the importance of our specialty. This is evident in the regalia of the medical historians in both the Soviet and post-Soviet eras, such as Corresponding Member of the Soviet Academy of Medical Sciences I.D. Strashun, Corresponding Member B.D. Petrov, Academician of the Russian Academy of Sciences A.M. Stochik,[1] Academician of the USSR Academy of Medical Sciences V.N. Ternovsky and Academician of the Russian Academy of Medical Science Yu. P. Lisitsyn[2] (all listed in a chronological order). Unfortunately, these famous people for a total over 60 years did not publish any book that could set an academic standard for the history of medicine, by analogy, for example, with the "History of Western Philosophy" authored by B. Russell, a fundamental work on the history of philosophy, a subject that is no less difficult than the history of medicine.

Anyone, wishing to get acquainted with the history of medicine, is forced to seek out textbooks or review manuals in the relevant higher educational institutions which the famous Soviet and Russian medical historians wrote about more

[1] A.M. Stochik (1939–2015), held a Doctorate Degree in Medical Sciences, was an Academician of the Russian Academy of Sciences, a Medical Historian and the author of more than 400 scientific works.

[2] Yu.P. Lisitsyn (1928–2013) – Doctor of Medical Sciences, Academician of the Academy of Medical Sciences, one of the founders of social hygiene, medical historian, author of over 600 scientific papers.

willingly: the study of our subject in the 20th century, just like today, was obligatory. Nevertheless, the number of available textbooks was always very limited. Today, there are, for example, two main textbooks: one was authored by Academician Lisitsyn, while the second was written by Professor T.S. Sorokina [2, 3].

It is quite simple to differentiate between an academic review manual and a textbook. A textbook contains data which is considered fully proven and are used in such a volume that is necessary for students to assimilate a subject within the frameworks of the relevant academic curriculum. The information contained in a textbook resulted from previously conducted scientific researches. In academic manuals, the authors, however, seek to provide in full all the scientific information known at present and have the opportunity not only to designate or determine, but also to discuss, the latest hypotheses, as well as express their own personal opinions on the issues under discussion. This can seem obvious. However, I need to mention this, because, unfortunately, on the basis of the existing literature, it is impossible to get a complete picture of the development of medicine as a science.

It is necessary to pay attention to all the developments that have defined the states of the Soviet and post-Soviet historiography: the periodization of the history of medicine has always repeated the dominant chronology of the general history. The events within the history of medicine in the works of the leaders of Soviet sciences in the middle of the 20th century were interpreted according to the formational and class approach: the use of the concepts "Medicine during the slavery system," "Medicine in the era of feudalism," amongst others. The refusal of the domination of the communistic ideology in Russian historical science led to changes and a periodization of the history of medicine: the historians began to base the periodization on generally accepted chronological sequences of the historical periods of world science ("The Ancient World," "The Middle Ages," "The Present Day," amongst others).

I need to note here that the periodization of the history of a concrete scientific discipline assumes the existence of some criteria, on the basis of which different specific time spans characterizing the features of a given area of knowledge are determined. At the same time, however, there is the logical question of "The Beginning" and "The End" of such history. The scientists, who carried out researches into the history of separate clinical specialties, constantly faced a need to justify the significance of a certain historic fact as a reference point of the history of the discipline they studied. For example, during my preparation of a doctoral dissertation (Ph.D. thesis) devoted to the history of gastric surgery in Russia, I had to justify the importance the works of V.A. Basov [4] as the starting point that can be considered the beginning of the history of gastric surgery.

Fortunately for me, Basov's works were pioneering, not only for Russia, but also for world science in general. If Basov was not the first in the world to conduct gastrostomy and at the time of its introduction, Russia was lagging behind the other countries, I would have had to compare these events and sort out the features of the mechanism for borrowing this method from other countries. In this context, I would have found myself in a position where I had to justify the existence of two reference points: one for world science and the other one for Russia's science. Stochik rightly noted in a personal meeting with me that any scientific discipline passes through three different stages: the first stage is the origin (or the beginning), when the specific methods of research clinical practice are only being formulated; the second state is the period of evolvement (or formation), when these methods in the conditions of real clinical practice are able to prove their viability and usefulness; and finally, the third stage is when these methods have begun to determine the internal content of a scientific and clinical process in relation to a certain group of nosologies. The last stage can be provisionally called the "period of blossom" or "the period of broad or mass implementation" of these methods. Several years of my involvement in research practice have convinced me the correctness of the reasoning of Stochik: based on these observations, it is true that all the clinical disciplines really passed these three stages with varying degrees of diversions from these three stages.

The problem is that a similar approach can hardly be used for the periodization of the history of medicine as a whole. At the same time, this approach entails the idea of a continuous accumulation of scientific knowledge. This is true

in relation to the history of medicine: it is obvious that the treatment of a patient at the end of the 19th century was much more successful or better than, for example, at the end of the 13th century, but was much worse or less successful than at the beginning of the 21st century. However, is this fair in relation to the history of civilization, the types of the social system, etc., in other words, is it fair to all the issues that are studied by historical science in general? The answer is, obviously, no. We shall fall into a serious methodological trap if the history of medicine and its periodization are based on the same criteria as those used for general history. As an illustration I will give an example. In a private conversation with a famous Russian historian, a member of the Russian Academy of Sciences regarding one of my students' forthcoming defense of his thesis, coded 07.00.10: "The history of Science and Technology," the historian did not accept the fact that work devoted to medicine in the 2nd–3rd centuries, could, in principle, be defended in such a way. "Is it really that you don't know, the academician asked, that science only began in the 18th century?" This remark, in essence, completely embodied the prejudice that is widespread in the scientific world about the emergence of natural sciences. This stereotype is so strong that it raises the question of whether it is possible or not for a prejudice to be seen as a dominant point of view. It is necessary to note here that the prevailing tradition in Russia's history of medicine that originated in the second half of the 20th century supports this stereotype. However, in my opinion, I believe that developments take place according to the principle of accumulation and improvement of scientific knowledge, and that this is true in relation to medicine (and, evidently, also in relation to any field of natural sciences). The periods of such developments alternate with certain explosions when the new facts accumulated as a result of practical activities cannot be explained by the dominant or prevailing theory. During such periods there is a crisis, which results from the emergence of a new theory that is striving to be accepted as a universal doctrine or principle. This process, in general, is described by the theory of scientific revolutions, which was proposed by T. Kuhn and the concept of changing scientific paradigms as the result [5, 6]. However, it is necessary to accurately recognize the specificity of the history of each scientific field. It is the inadequate level of understanding the differences in the history of medicine from the history of, for example, physics or mathematics, which constitutes the zone of medical historians' responsibility regarding the opinion that is widely spread among our colleagues from the other fields that medicine, as a science, only appeared in the 18th or even in the 19th century. I would like to note one more case: the characteristic features of scientific knowledge that have merged into the modern standard concept of science, such as rationality, objectivity, reproducibility and checkability, logical severity, accuracy, and unambiguousness, as well as logical mutual ties [7, p. 26]. Sometimes, usefulness is added to these characteristics and this portrays science as the essential parts of culture. These characteristic features of scientific knowledge, certainly, are, naturally, understood to be the ideals of scientific scholarship. The mission of science is to discover the regularities and the general principles that are not only closely monitored and noted, but are also used to explain some facts.

When studying the history of any private scientific discovery or formation of general theoretical views in medicine (or, for example, in physics), we naturally always try to understand the "anatomy" of the thinking of the researcher, try to understand how an idea appeared and how a scientific search was conducted. It is not enough to establish a fact by saying when something occurred. We also have to try to understand how and why it happened by revealing the ontological and epistemological prerequisites and conditions that led to the origin of the scientific idea and understanding the reason that led to the emergence of a scientific phenomenon in a particular place and time.

It seems appropriate to me here to revisit the issue of what differentiates the history of medicine from the history of the other natural sciences[3] that assumed a modern outlook in the course of the scientific revolutions of the 17th–19th centuries. When talking about the principal difference between this outlook and protoscience of the Antiquity or the Arab World of the Middle Ages, researchers, as a rule, usually highlight two main issues: the experimental method of studying concrete natural phenomena and mathematical pro-

[3] For more details, please, see pages [8] and [9].

cessing of the obtained data.[4] The last means the systematization and the description of the observed phenomena by means of objective language of mathematical formulae and equations. However, I would like to ask the readers of this publication a question: is it at all possible, from this point of view, to call modern medicine a science. Indeed, the mathematical explanations of all the processes under observation have not become a daily part of a medical doctor's practice. Besides, I would confidently dare to say that they will never become a part of medical doctors' daily practice. Only separate medical disciplines, whose positions are either completely or almost completely defined by the level of development of technologies, can be an exception. These disciplines include, for example, such course in clinical oncology as radiation therapy, whose main feature is the precision of the formation of a ray of ionizing radiation and the accuracy of directly hitting and completely destroying tumour tissues. A separate specialty, called medical physics, was specially invented to address this applied task. The representatives of medical physics study the radiobiology of tissues and, while working with patients, are also responsible for the accuracy of defining the precise dosage of radiation. However, in relation to the vast majority of medical specialties, both today and in Hippocrates' time, it is necessary to use not only strictly scientific methods of treatment, but also the concept of "doctoring art." We absolutely and reasonably use the word "art" in relation to a physician's individual talent to discover a disease and formulate a correct diagnosis. The same also relates to the abilities of a surgeon who masterly conducts operations. This, dear readers, is clear to everyone and company staff, that two different surgeons that attended and graduated from the same university that had undergone the relevant practice or with Ph.D. or M.D. along with corresponding skills can perform one and the same surgery with different outcomes, including lethal cases. Thus, the mathematical language has still not become a universal language of the medical science, and the sources at our disposal have clearly indicated that this experiment is the reality of the antique medicine that existed long before the 17th century.

[4] The issue is not limited to these moments, though these moment, could be seen as the main ones.

An even more dangerous extreme is the equation of the history of medicine with the history of the doctoring art as medicine has always been doctoring art, while doctoring art has not always been medicine. Medicine is an area of scientific knowledge. An important role in the course of its formation (accumulation, analysis and synthesis of data obtained in an empirical way) is played by the subjective practical skills and experience (including manual practice) which can call be referred to as the "art of doctoring." However, the practices of shamans (or sorcerers), occult rituals or sacrifices are also different forms of the art of doctoring. Unfortunately, the interpretation, or understanding, of the history of medicine as an art of doctoring is the prevailing tendency in Russian historiography. This explains the tradition that exists in special literature, where all narrations about the medicine history typically start with the description of the doctoring methods in primitive cultures (in other words, archaic societies).

One more symptom of the methodological illness of our discipline is the stereotypical view of antique medicine, where temple medicine and Hippocratic tradition are mixed. Meanwhile, paganistic occultism and rational medicine in Ancient Greece were absolutely different, and in essence, antagonistic, historical phenomena.

Criticism of the existing concept in special literature

We also should not forget that the history of medicine is not only a field of scientific research, but also an obligatory subject taught in higher medical educational institutions. Today, the concept of continuous medical education has been adopted in Russia which obliges us to review the history of medicine both as a scientific specialty and academic discipline with the propaedeutic nature and it is an important part of the pre- and post-degree (post-graduate) training of medical doctors. It is obvious that a modern doctor is a scientist. The question is not whether they are engaged in independent researches or not when defending Master's and Doctoral Dissertations (Theses). Any expert, even a medical practitioner, is obliged to have the skills of scientific analysis and critical thinking (reasoning) because modern medicine belongs to the sphere of high technologies. When diagnosing

patients and prescribing drugs and methods for their treatment, graduates of modern medical university have to independently analyze the data of the researches gathered by some of the most complicated diagnostic equipment and are obliged to be familiar with the numerous novelties in pharmacopoeia. The division of doctors into pure medical practitioners (so-called "practicians," i.e., those who can afford to ignore the development in the world of modern sciences), and the so-called "advanced" medical doctors-scientists (i.e., those working in faculties in medical universities and research institutes), has long lost its relevance. The researchers, who are studying the history of medicine, have to develop an approach to studying this part of the history of science, which also has to be integrated into the general teaching curriculum.

Let's go to the last editions of the most popular textbook on the history of medicine in Russia, written by my colleague, Professor Sorokina. The book consists of five parts: "The Primitive Society," "The Ancient World," "The Middle Ages," "The Modern Times" and "The Contemporary Times," which correspond to the periodization of the general history. Based on this principle, each of the textbook's five parts was subdivided into chapters. For example, the second part ("The Ancient World") is divided into such chapters as "The Practice of Medicine (Doctoring) in the Ancient East Countries," and "Doctoring and Medicine in Antique Mediterranean" which, in turn, is subdivided into two sections: "Doctoring and Medicine in Ancient Greece" and "Medicine in Ancient Rome." The first is subdivided into "History" and "Mythology and Doctoring," while the second is subdivided into "Doctoring in the Kingdom Period," "Medicine in the Period of the Republic" and "Medicine in the Period of the Empire." The periodization of the history of any scientific sphere, should, after all, be based on the historic facts that affected the main events of its theory and practice. Let's ask ourselves a question: what differentiates "Doctoring in the Crito-Achaean Period" from "Doctoring of the Pre-polis Period," and further from "Doctoring in the Polis Period?" Does this mean that one set of reasons or causes of diseases and treatment modalities existed during the Crito-Achaean Period, and a different set existed in the Pre-polis Period? Certainly, not! Are there historic facts that indicate the existence of methods of diagnostics and treatment of diseases during the "Polis Period" of Ancient Greek history that differed from those that existed in the "Pre-polis Period or the Crito-Achaean Period?" Of course, such facts don't exist. Similarly, the delineation of medicine of Ancient Greece and Ancient Rome also envisages the existence of a certain fundamental distinction in their theories and practices, which do not exist. Such a division was based on the chronological order. In the history of the medicine of Ancient Rome, Sorokina highlights Doctoring in the Kingdom Period, Medicine in the Period of Republic and Medicine in the Period of the Empire. Does establishment of a principate in the practice of the Roman medical doctors mean there were new approaches to the general pathology and semiotics of diseases? No, it does not mean that! Moreover, a similar chronological division cannot be carried out because many events that are attributed to the history of medicine in Greece, Egypt or Rome also took place at the same time in different places. At the same time, societies that are located far from one another are in reality not absolutely isolated from each other because some forms of commercial, political and cultural ties exist between them. This means an exchange of scientific ideas. For example, even Herodotus praised Egyptian medicine, while the Greeks were the first official medical doctors in the city of Rome. The sequence of the narration of the events offered in Sorokina's textbook obliges teachers to explain, for example, why the Republican Period of Ancient Rome differs from that of the Imperial Period. Further, in the third part of the textbook ("The Middle Ages"), one of the chapters is called "Medicine of the Early and Developed Middle Ages" and begins the section with "Medicine in the Byzantine Empire (395-1453)." One structure of this section contains a paragraph, titled, "Byzantine Science and Religion." Does this mean that "Byzantine science and religion" existed, say, for example, in 398 that differed from the preceding "Roman science and religion" that existed in 360? This question, first and foremost, logically stems from the rubrication of Sorokina's book, and secondly, there are scores of similar questions that cannot be addressed within the format of this article. I need to add that the textbook is overloaded with

data on political and economic history, which the author was forced to use for explanatory purposes. In my teaching practice, I repeatedly faced the unwillingness of students to utilize the huge amount of knowledge offered in Sorokina's book. The reason is quite simple: first-year students of medical institutions dream of becoming surgeons, therapists and obstetricians, etc. The purpose of studying anatomy or physiology is absolutely clear to them, but the necessity of knowing or understanding the differences between the public government system of the Roman Republic and that of the Roman Empire is much less obvious to them. It should be noted that in the conditions of a crisis in humanitarian education, we are trying to compensate for the acute deficiencies in the students' overall knowledge that results from their poor preparation in secondary schools. However, it needs to be pointed out here that such a goal is absolutely incompatible with the format of our course, which is formatted as six-eight lectures and the same number of seminars (or tutorials).

The periodization of the history of medicine, which is based on the traditional division of the general history, also has one more shortcoming: This is the impossibility of highlighting the main route of the origination and formation of medicine as a science from the huge number of facts, dates and names. Reverting to the stereotypical idea that medical science originated in the 18th century, I would also like to mention one more popular belief: the idea of the historical unity of the rational methods of gaining knowledge of medicine by physicians and those used by the occult practitioners of temple doctoring. We, the historians of medicine, have no one else to blame, except ourselves, for the emergence of this stereotype. In the same book of Sorokina, the major data on the evolution of methods of gaining the knowledge of medicine "are buried" in the array of data from the general history. Thus, for example, Chapter Five, titled, "Medicine of the Late Middle Ages," contains a subsection, "The Formation of Anatomy as a Science." In this way, Sorokina linked the formation of the medical discipline to the Period of Renaissance. However, anatomy, as a scientific discipline, based on the priority of an experimental method of knowledge started in the 3rd century BC in the Lyceum and Alexandrian Mouseion. Anatomy became a science (in the modern understanding of this word) after its division into normal and pathological anatomy in the 19th century. When Sorokina speaks about the formation of anatomy as a science in the Renaissance Period, she is referring to the value of the works of A. Vesalius. However, such an assessment is characteristic of the historiography that existed about 40 years ago. In recent years, a considerable number of works have been published on this issue. Thus, there is also perversity in the application of this approach within the periodization of general history when the analysis of the events in the history of medicine is, in fact, viewed through the prism of the periodization of social sciences. So, the exaggeration of the value of the Renaissance Period in the history of natural sciences in general is a characteristic feature of the outdated formational approach that was inherent in the Marxist-Leninist interpretation of the history of culture.

Eventually, the use of periodization borrowed from general history in relation to medicine can only lead to grave mistakes due to the incorrect methodology, along with an unsuitable or inappropriate schematization, which was introduced into our specialty. A scientist-historian has to accurately define the "object" and "subject" of his research. When using a general historical periodization, the object of a research will be a certain historical era, while the subject will be the concrete events that happened in that era.

One more publicly accessible source offering a general periodization of the history of medicine is Lisitsyn's book. The book, in fact, repeated the same principle of periodization that was used by Sorokina. The only difference is that Lisitsyn paid additional attention to the history of traditional medicine, temple doctoring and other similar methods. Such approach, in a bigger degree, further confuses the main point. So, for example, if Sorokina, at least, divides concrete historical phenomena and, we sometimes have to reproach her for her obsession with excessive detail, Lisitsyn, on the contrary, erased the boundary between sorcery and rational medicine. So, for example, Chapter Three of Lisitsyn's textbook is titled, "The Development of Traditional Folk Medicine and the First Steps of Scientific Medicine in

the Antique Period in Greece, Alexandria and Rome" and is subdivided into the following paragraphs: "Medicine in Ancient Greece," "Medicine in Alexandria" and "Medicine in Ancient Rome." This raises the question: what does the author mean when speaking about medicine in Alexandria? If one was to follow this logic, this means there were a medicine of Ancient Greece, a medicine of Ancient Rome and a medicine of Alexandria. Naturally, Lisitsyn did not see any ontological links between Platon and Aristotle's views on comparative anatomy and Herophilos' practice of anatomic dissections or autopsies. Excessive attention, from the point of view of the development of medicine, was given to secondary events in Chapter Four, which is titled, "Medicine in the Middle Ages in Byzantium and Nations in the East. The Development of Clinical Observations in Medicine in Caliphates, Kievan Rus and the Muscovite State" is also subdivided into three sections: "Medicine in Caliphates," "Medicine in Armenia and Georgia," "Medicine in Kievan Rus and Moscow State".

Students or teachers (lecturers) will not find the data or information in this book that would enable them to understand the internal interrelation between Ancient Greek rational medicine and the Arab medical tradition that was presented in Ibn Sina (Avicenna) or al-Razi works. A separate paragraph was devoted in the book to the history of medicine in Georgia and Armenia. I would like to note here that the events that took place in these states did not exert a defining impact on the history of medicine. The reason for such detail becomes clear later in the book, specifically, in Chapter Five ("Medicine of the Early and late Middle Ages. Renaissance. Overcoming the antiscientific scholastic and religious dogmas, development of experimental knowledge and clinical observation"). This highlights the second problem (following the narration of the history of medicine according to the periodization of general history) of the methodology of the medical historians that was created in Soviet period: the adherence to the outdated concept of the imminent or intrinsic conflict between science and religion. I had the chance to repeatedly argue on this subject with Lisitsyn, and I can confirm that his scientific view of the world has been formed strictly within this concept. The view on the history of natural sciences, in that case, becomes simple and clear: religion is the enemy of science; the natural sciences develop where atheism reigns. I would like to note here that the idea of "the conflict between science and religion" was prevalent up to the beginning the 1990s, including in western historiography. Against this background, the liberals miraculously aligned themselves with the most orthodox Marxists. As a matter of fact, the Draper-White concept remains an essential part of the Whig history to the interpretation of history. However, more than 20 years have passed since J.H. Brooke offered the concept, "The Complexity of the Interaction of Science and Religion," instead of the outdated paradigm of "Conflict" between them. This time lapse is quite enough to understand and correct these obvious errors [10–13].

One more methodological mistake complicating an understanding of the history of our specialty comes from the extrapolation of the periodization of the history of physics and mathematics to the history of medicine. This mistake was made by A.M. Stochik and S.N. Zatravkin in their series of works [14–17]. In these publications, Stochik and Zatravkin proved the existence of two scientific revolutions, in the 17th and 19th centuries, in the history of medicine that coincides with the ideas that had been developed, for example, at by historians of physics. In reality, in relation to physics, the assertion about the introduction of the experimental method in research practice in the 17th century is fair. However, I have earlier already shown that it is wrong in relation to medicine. The research methods of Stochik and Zatravkin is based on a rational idea – to present the main events of the history of medicine of the 17th–19th centuries not separately, but along the general development of natural sciences of the period under review. However, it turned out that the facts from the history of medicine were imposed on the periodization adopted in physics or chemistry, and this led the authors to the wrong conclusions. It is necessary to understand that a scientific revolution has a beginning and an end. Its essence is in the change of a paradigm of scientific knowledge, and this means the emergence of a new paradigm. Thus, the result of a revolution is the emergence of a new

paradigm. Stochik and Zatravkin fairly noted that by the 17th century the state of medicine was defined by Galen's theory and practice. They also correctly see the essence of a scientific revolution in medicine as a revision of Galen's system and its transformation into modern scientific medicine by the end of the 19th century (the degree of their understanding of these ideas of Galen is another question). However, the problem is that, unlike physics, a new paradigm in medicine did not appear by the beginning of the 18th century. By this time, there was only a certain considerable mass of new facts that would allow researchers to reevaluate, for example, Galen's ideas about anatomy and physiology. At the same time, clinical medicine remained the same as when Hippocrates and Galen had created it up to the beginning of the 19th century. Also, one cannot talk about changes, such as in the rationality of scientists (the most important moment of a scientific revolution), a fact, which is particularly evident in the language of science of that time. In this regard, the view of G. Stahl, for example, has to be understood in the context of the language of science that characterized a certain type of rationality, rather than as vulgar theologisation of the scientist's consciousness. And here, unfortunately, it is necessary again to speak about presentism and positivism, and this, in my opinion, led to the strange terminology used by Stochik and Zatravkin: "Stahl's Animism," The Denial of Galenism," "Galen's Idea of the Body's Vegetable Functions" and "The Animal Functions of an Organism," etc.

My idea is based on the expediency to speak about the scientific revolution in medicine of the 17th–19th centuries as one revolution, albeit a very long one, since the revision of all the components of Galen's concept – about the anatomico-physiological system, the doctrine on the spiritual and corporal unity, the natural philosophical bases of the ideas of the general pathology (pathonomy) and clinical practice – took nearly 200 years and occurred quite mosaically over this period. In this article I can't pay adequate attention to all the elements of this mosaic. However, I will give one (and a very striking) example: the views of F. X. Bichat, C. Rokitansky and R. Virchow are, as a rule, analyzed in Russian historiography as concepts, which are consecutively replacing each other. Actually, they are the separate elements of the mosaic that form a complete new picture of general pathology. Here, I am forced to draw the attention of readers to one more "birthmark" of Russia's history of medicine: the researchers' low level of working with sources and their isolation from wider world science. The readers need to pay attention to the list of book references specified in Stochik and Zatravkin's works. These authors published the whole cycle of articles in different Russian scientific journals. However, having devoted a considerable part of their texts to criticism of Galen, they failed to analyse the extensive western historiography on this subject. But, is it really possible to speak about Galen without carrying out a detailed analysis of the works of V. Nutton, P. De Lacy, A. Karenberg, P. van der Eijk, to A. Debru, etc.? It is needless to say that that Galen's scope of works is not limited only to *De usu partium* which was published over 40 years ago by V.N. Ternovsky and V.P. Kondratiev [18]. It is not surprising that it is impossible to agree with Stochik and Zatravkin's assessments, if, of course, one takes into consideration that certain changes had taken place in world science since the time of K. Sudhoff.

The object and subject of a scientific research in the history of medicine

The methodological mistakes that were reviewed with concrete examples lead to serious errors of judgment in research practice and pedagogical activity. It is extremely important for a scientist-historian to maintain a critical approach to work with sources and strive not to go off track, even when confronted with contradictory evidence. To achieve this goal, it is necessary to accurately define the object and the subject of a scientific research which, I, in general terms, will set down for the history of medicine. In my opinion, the object of research for us is the history of the origin, formation and development of the doctrines on the reasons, the mechanisms of the course of manifestations of diseases, the principles and methods of their treatment. The subject of research under such approach will be the phenomena of the theory and practice of medicine at different stages of its development that define such doctrine (or doctrines) at different times and in different places. These phenomena in the ideas of anatomy and physiology of a human body, the

views on the various etiological factors, concrete doctrines on the mechanisms of pathogenesis and other problems of general pathology, the approaches to the recognition and classification of diseases, the principles of production of medicine and pharmacotherapy, the methods of surgical treatment of diseases, the organization of the medical educational system, various systems of protection of public health and scientific schools, etc.

In the Soviet period, the history of medicine was mainly studied by people from major departments of medical schools, where the history of medicine (it needs to be added here that there was a limitation on the amount of wages paid for teaching scientific courses). Sometimes, students in higher courses often consciously chose the history of medicine department, preferring this to furthering their careers as a doctor or scientist/clinical physician. Such a tendency has in the past 25 years become the defining position, which leads to several problematic situations. Firstly, a specialist, who graduates from medical school, objectively speaking, does not have the necessary training and skills to work as a historian: he or she does not quite understand what historiography is and how it should be analyzed, as well as what is a source and the methods of source-study analysis, etc. Secondly, owing to his or her previous experience, the specialist begins to study the history of the specialty, which he or she studied as a clinical physician.[5] There is nothing wrong with this: I once followed such a path, but, on realising the obvious gaps in my professional training, I turned my attention to eliminating them. This also helps explains the absence of review manuals or monographs on the history of medicine: they were not relevant for people, who had written with pleasure about their former clinical specialty. Textbooks and manuals were necessary because the history of medicine was an obligatory discipline in the system of high school training of future doctors (It is not only an obligatory study, but also to teach it). Moreover, at some point, the separation of a small group of historians of medicine from the other representatives of humanitarian specialties became quite a conscious step. I still vividly remember how one of the academicians repeatedly explained to me that the historians of medicine and historians of science represent absolutely different categories of professionals. When I quite timidly expressed an opinion on the impossibility of adequately reconstructing the history of medicine out of the general context of the history and philosophy of science, the academician quite sharply objected: "You don't understand anything! The history of medicine and all this [your] philosophy are absolutely different things!"

I have previously drawn attention to the need to resolve this most serious methodological question: is our specialty a history of "the art of doctoring" or a part of a more general fundamental discipline called, The History and Philosophy of Science. In my teaching guide, titled "The Origin of Medicine as a Science during the period up till the 17th century" [19] I drew the attention of my colleagues to the fact that the answer to the above question means one of two absolutely different approaches to our discipline in general. I'm basing my proposal on the premises that there are two approaches to the analysis of events in the history of medicine: these approaches could, with a certain degree of conditionality, be called "phenomenological" and "epistemological" [20]. If our specialty is understood as the history of the art of doctoring, then the object or focus of its study will be the various manifestations the hiliastic practice, while the scientific approach to the treatment of diseases represents just only one of the possible options of the "subject."

This phenomenological approach is not characteristic for the history of science, but for ethnography and anthropology, when the lifestyle or way of life, for example, of the Pygmies in Central Africa is as interesting as a Christian culture. There is nothing wrong in this approach; just that these sciences differ from each other! For the history of medicine, the phenomenological approach has serious consequences. Modern scientific medicine was created as a part of European civilization and as a direct product of the development of the Ancient Greeks' rational medicine under the defining influence of Christian civilization. This is a fact, irrespective of whether someone likes it or not. It is these types of specialists or experts in modern scientific medicine that we are training today in the medical universities or

[5] It needs to be noted that the exit from clinical specialty is often forced on such experts.

institutions. Its practical tasks define our research practice. I'm not against defending theses or dissertations devoted to the history of Ayurveda or, for example, so-called temple medicine. However, at this moment, we are discussing "the main ways" of developing our specialty. It is, indeed, the phenomenological approach that is shown in Sorokina and Lisitsyn's books that were criticised by me. The phenomenological approach, used in combination with the principle of periodization of general history, also leads to such (or even more) detailed narration about the medicine of "the Crito-Achaean Period" or the doctoring methods in the time of the Upper Paleolithic Period (or Late Stone Age), as well as a discussion of the events of the times of the scientific revolution. The epistemological approach obliges scientists to see in the endless succession of historic facts and personalities the main directions the accumulation of scientific knowledge and formation of modern medical science have taken**.** For example, the major task for historians of medicine is to highlight those types of rationality, whose philosophical and worldview characteristics helped affirmatively answer the question of the possibility of obtaining reliable knowledge of the structure and principles of the functioning of the human body. It is, indeed, this question, in the wider historical context, that in general, defines the history of natural sciences in general and, certainly, of medicine in particular. In this regard, the reason behind the deformation of the structure of the historiography of our discipline is clear. There is no single expert that can professionally write review manuals that are simultaneously devoted general history, the history of medicine and ethnography and cover all of them with the same quality.

In conversations with senior colleagues, I have also been forced to hear about the negative impact of ideological censorship on some historians of medicine in the Soviet period. In particular, I heard such stories about P.E. Zabludovsky. However, I don't think that ideological pressure had any relevant value for our specialty. Firstly, this is because the impact of such pressure was much greater on the experts of Russia's national history. Of course, it is difficult for our young colleagues to understand that the thrill or awe felt by the scientists of the 1960s–1980s generation at the mere mention of the names of I.I. Mintz or M.V. Zimyanin.[6] Secondly, nothing prevented historical science, during the period of a lowering and disappearance of ideological pressure, to swiftly return to a normal state. The fact that such a fate or similar change did not befall the history of medicine also indicates that our problems are of a conceptual rather than being of social origins.

The new approach to the periodization of the history of medicine history as a science

It is important to understand that when studying and teaching the history of medicine it is necessary to be guided by the general scientific principles of historicism and systemization, the concepts of history and philosophy of science, to study the philosophical and worldviews of the outstanding doctors of the past, to try to analyze the logic of continuity in the development of rational methods of medical knowledge, and to use a broad set of scientific methods of research. It is also necessary to know that the medicine of the Ancient World, the medicine of the 19th century and modern medicine are not mutually exclusive forms of the same branch of knowledge.

I suggest that, going forward, the main objective of our scientific specialty will be the study of the history of medicine as a science. Firstly, this will appropriately define its object and subject. Secondly, it does not exclude, but rather facilitates the performance of scientific researches along with other specialties (for example, ethnography and anthropology, Russian national history, etc.). It will become much easier to conduct cross-disciplinary researches if the problems of each separate specialty are more clearly defined. Thirdly, this assumes the definition of a global chronological framework and a new more accurate periodization. I have highlighted four stages in the history of medicine as a science.

[6] I.I. Mintz is a full member of the Academy of Sciences of the Soviet Union who was considered the leading expert on the history of the Communist Party of the Soviet Union (CPSU). Consequently, he was one of the main enforcers of the "ideological purity" of the Soviet historical science. M.V. Zimyanin was the secretary of the Central Committee of the CPSU overseeing the Soviet science. The "life-changing" instructions of these people easily "destroyed" the fates of scientists that were seen as not truly or fully committed to the Marxist-Leninist orthodoxy.

The first stage is defined as the origin of the Ancient Greeks' rational medicine and its chronological framework, ranging from the 6th century to the 2nd century BC.

It is, indeed, the period from the 6th century to the Birth of Christ that should be set as the date of the origin of the Ancient Greek rational medicine as the direct ontological predecessor of modern medicine. It was also at this time that the phenomenon of the "Early Ionic Physics," the first in the history of the systemization of rational knowledge about nature was born. Unlike the traditional pagan cults, this system was characterized by the aspiration to explain all the natural processes by natural, rather occult reasons. The phenomenon of the Ancient Greek's rational medicine originated within the first natural-philosophical theories when the reasons, the mechanisms of the development of diseases and the principles of their treatment were explained essentially via physical and chemical processes. The doctors-rationalists (rationalist doctors) were distinguished by their aspiration to obtain objective data on the anatomy and human physiology that naturally led to the emergence of the works of the Alexandria school in the 3rd century BC, which should be shown on the example of the inventions of Herophilos as the founder of anatomical science. It is natural that the knowledge accumulated during the period from ancient rational medicine to the scientific revolution of the 17th–19th centuries can be characterized as proto-scientific. Up to Galen's inventions, the ancient medicine, in general, could not be described only in the concepts of the history of science. This was because up till the 2nd century, the antique medicine was represented by different schools (such as the followers of Hippocrates, doctors-methodologists, doctors-empiricists and doctors-pneumaticians). However, at the same time, it was only the Hippocrates' approach in the ancient medicine that tried to obtain reliable knowledge of the processes taking place in a human body. In effect, obtaining such knowledge is the main task of a modern practicing doctor, and, nothing, in this context, has changed since the time of Hippocrates. Another thing is that the level of technical equipment available to doctors has consistently, along with the rate of change of technological ways, been increasing since the end of the 19th century and this offers physicians a totally different range of capabilities to understand the hidden processes.

Nevertheless, I am not inclined to characterize the first stage of the history of medicine as proto-scientific. This is because scientists of different medical schools so differed from each other that it is impossible to speak about the ontological or epistemological unity of medical knowledge and education. This referred equally to both the issues of natural philosophical theory and those of clinical practice. Firstly, the vast majority of the opponents of the representatives of the rationalistic school essentially did not acknowledge the possibility of obtaining reliable knowledge about anatomy, physiology and general pathology. Secondly, the positions of various medical schools, owing to the fundamental discrepancies in their views, also did not coincide in their approaches to clinical medicine. It is impossible to understand these circumstances, without fully understanding the fundamental role of the doctrines of Plato and Aristotle in the development of the rational medicine of the ancient world [21].

The second stage – the 2nd-16th centuries – was the period of rational medicine in the era of protoscience which was characterized by conceptual unity based on Galen's theoretical and practical system. Medical knowledge was understood by Galen as a unified theoretical and practical system, which in the history of medicine can be characterized by signs that corresponded to the standard concept of science as protoscientific. Besides, the purely epistemological reasons, Galen's victory over the competing medical schools also stemmed from social reasons caused by the complementarity of his theory with the natural philosophical views of the early Christian philosophers. The system of ideas created by Galen remained the fundamental base of medicine up to the end of the 16th century when it was significantly updated and enriched (though not rejected) by Vesalius. I will like to note that prior to Galen, medicine did not exist as a unified ontological and epistemological field of the nature of knowledge, and it only became so, after him, in the 19th century. Thus, without the knowledge of the works of this great Roman doctor (and understanding their influence on the late Ancient Period, the Arab World, etc.) it is impossible to understand medicine history

up to the time of N.I. Pirogov. Naturally, there is an element of challenge in such an assertion. However, all my previous attempts to instigate professional discussions in the scientific circle of historians of medicine have been unsuccessful. Therefore, I hope that this effort will be more productive in the future.

The third stage – the 17th-19th centuries – was the period of the scientific revolution in medicine, which eventually formed the system of the ideas of medicine as a science. The events of the 17th-19th centuries described in the history of physics, chemistry and other natural science specialties as "scientific revolutions" are seen in relation to the history of medicine as a long process spanning over 200 years of replacing Galen's theory and practice with new ideas about anatomy, physiology and clinical medicine. This process in anatomy and physiology began with W. Harvey's discovery of the closed nature of the blood circulatory system and ended only in the middle of the 19th century. This is because the process of a scientific revolution is understood as the replacement of an old paradigm with a set of new theoretical approaches arising from revaluating lots of experimental results. Such a single correct approach, in the scientific aspect, raises the need to reevaluate many fundamental postulations or paradigms in the periodization of the history of medicine. I have already previously drawn attention to the wrong, but deeply ingrained in Russia's educational literature, view about the history of general pathology in the 19th century as the successive replacements of Bichat's "The tissue theory," Rokitansky's "The humoral theory" and Virchow's "The cell theory" with one another. However, real acquaintance with historical sources rejects this point of view. One only needs to pay attention to Pirogov's sharp criticism of some of Virchow's views about general pathology. At the same time, Pirogov is considered one of the outstanding architects of the scientific revolution of the 19th century: his works defined the final fundamental status of anatomy in medical theory and practice. So, we are talking about a set of discoveries that was made over 60 years that helped create a new complete picture of anatomical and physiological ideas of the principles of the structure of the human body that were reinforced in the works of C. Bernard, R. Heidenhain and I.P. Pavlov. Also, the formation of the new clinical medicine was not any less difficult, as it, judging by its technical capabilities in the first third of the 19th century, was little or no different from the art of doctoring at the times of Hippocrates and Galen. It is expedient here, in our opinion, to discuss technologies as one of the fundamental factors behind the scientific revolution of the 19th century. The emergence at the end of the 19th century of modern scientific medicine was a multi-factor process, which calls for a multidisciplinary analysis. A favorite example which I frequently give during lectures and practical classes (tutorials) is the change in clinical surgery. Before the invention of anesthesia, aseptics and antiseptics and Pirogov's creation of a complete system, uniting topographical anatomy and operational surgery, any surgical operation was seen as a kind of "intervention out of despair," as the percentage of patients who recovered was insignificant. A. Carrel and E.T. Kocher were among the winners of the first Nobel Prizes, and this reflect the importance of the discoveries made at the end of the 19th century. It indicates the fact that only taking into account the technology factor and the emergence of new approaches to experimental physiology, enables clinical surgery to acquire qualitatively capabilities and equipment to effectively treat patients.

The fourth stage – from the 20th century till present day – is the era of modern scientific medicine. The main feature of this stage is that both technological and economic factors define the development of medicine as a science, not to a lesser extent, than ontology – a type of rationality, the structure of scientific thinking and epistemology, etc. Unfortunately, the format of this article does not allow me to talk in more detail about the revolutions in the science of the 20th century and about their influence on the history of medicine history as a specialty. That is a subject of a separate and large research.

Certainly, this proposed periodization can, and has to, become a subject of serious discussions in the professional community. Moreover, this article is an invitation for such discussions in the scientific community. It is absolutely clear that our specialty cannot develop further without discussions about serious, fundamental methodological problems.

I am not calling for the exclusion from the zone of the attention of historians such subjects as the

art of doctoring in the archaic cultures or medicine of the Ancient East, notably, China or India. But it is necessary to accurately understand the events that led to the rise in the past to the emergence of modern scientific medicine and which parts can be considered as interesting historical phenomena which do not have ontological links with what we often teach to future doctors. Naturally, the observation of this principle requires the development of a corresponding methodology. In modern research practice, there are examples of successful solutions to this question. For example, the methods of the traditional Chinese medicine have recently taken a certain place in clinical practice. On the one hand, the set of the views about general pathology, which was based on the idea of violating the circulation of energy "chi" does not obviously coincide with the system of the idea that is characteristic of our science. On the other hand, the progress of acupuncture, massage and other similar methods of the Chinese medical tradition are sometimes empirically obvious, and this helps define a place for them, for example, in rehabilitation practice. Correspondingly, their history can, and has to be studied, notably as history, along with the introduction of new sources by experts that know the original language and culture. But the most important is the need to fully and accurately understand the differences of this tradition from the "mainstream" that are forming the history of medicine.

Another example is the concept of "religious and philosophical systems" as a methodological approach that I have proposed for solving the problems connected with the assessment of the medical traditions of the protoscientific period [22]. The essence of the concept of the "religious and philosophical system" and its influence on the history of science, in my opinion, is based on the premises that any doctor who is famous in history is, to a greater or lesser extent, a natural scientist (naturalist). A scientist, starting a concrete research, usually sets for him or herself specific or concrete purposes and tasks. What is the scientist guided by? Any scientist (in the 2nd, 5th, 13th centuries, etc.) saw the world around them through the prism of certain natural philosophical (or general scientific) systems of ideas. Up until the 19th century we could hardly find any significant secular philosophical system. Each of these experts tried to develop his or her system of concepts about natural and supernatural phenomena, and using for this purpose the definition "God," tried to understand the place of human beings in the world and their cognitive capabilities. I need to specifically emphasize that this is not about religion and its influence on science. The relations between religion and science are a separate subject, which several authoritative scientists had written a lot about [10-12, 23, 24]. Our model looks as follows. Any religion creates a system of ideas of the world around from which a certain framework of views evolves (this could conditionally be called natural philosophical system). These prerequisites and methodological arrangements guide a specific researcher during the formation of their picture of the world and setting the purposes and tasks of his or her scientific search. The final importance of the concrete religious and philosophical system for the history of natural sciences is defined, in my opinion, by how it answers the question of the cognoscibility of the material world and human beings as parts of this world and the possibilities of obtaining evidential knowledge. If a religious and philosophical system offers such a possibility, then the development of natural sciences within the forum's framework is possible. A negative answer means there will be no growth or development in natural sciences in a society where such systems dominate.

It seems to me that, N. Wiener, when speaking about the need of the aprioristic confidence of a scientist in the cognoscibility of an object of a research meant: "I have said that such a science is impossible without faith. By this I don't mean that the faith on which science depends is religious by nature or involves the acceptance of dogmas of the traditional religious beliefs. However, there can be no science, without faith in the fact that nature is subordinated to laws. It is impossible to prove that nature is subordinated to laws because all of us know that the world can change at any moment is akin to playing the croquet game from L. Carroll's book "Alice in Wonderland" is impossible" [25, p. 223].

The Ancient Egyptian civilization was an example of a religious and philosophical system that did not give an impulse to the systemic development of knowledge of natural sciences. Undoubtedly, it did have a huge cultural and historical value. However, we shall try here to

assess it from the position of the medicine history. In sources, beginning from the period of the Old Kingdom, we have come across the names of outstanding Egyptian doctors; the praise of the Egyptian medicine by Homer. The medicinal mixtures or solutions, made in the empirical ways, had been found in the recipes and texts of ancient medical papyruses. Some of the fragments of the Kahun papyruses devoted to obstetrics [the description of the early and late stages of the labor process] and veterinary science have remained (cow poisonous flies, bull plague, etc.)] have remained intact. Huge medical collections compiled since the New Kingdom have survived till present day. For example, Ebers papyrus, dated to the period of Pharaoh Amenhotep's rule (the 18th dynasty), contained a set of recipes, descriptions of 22 vessels, leading from the heart, as well as a number of practical medical ideas. These works were filled with hymns and invocations that helped make very clear it that the Ancient Egyptian medicine was all about magic and had absolutely nothing to do with the anatomy and physiology. A doctor in the Ancient Egyptian medical system was nothing but a priest of the goddess Sekhmet. Brugsch's papyrus was dated in the 19th dynasty and was written about 200 years after the Ebers papyrus. Nevertheless, when studying it, we also see the same (and often coinciding) recipes and magic formulas. In the Hearst's papyrus, the emphasis was placed on the information for surgeons, while the key focus of the so-called small Berlin papyrus was on health issues of women (mothers and nursing mothers) and also children diseases (or pediatrics). All these works were also similarly filled with hymns and invocations as well as magic formulas [19].

The immortality of the soul and the need for preserving the physical bodies of dead people in order to ensure their safe existence in "the afterlife kingdom" epitomized the religious beliefs of the ancient Egyptians. These beliefs in ensuring safety for dead people in their afterlife existence led to the practice of embalming dead bodies. The embalming methods were honed to the smallest details, while the techniques for carrying them out were hammered out to an absolute perfection. It is obvious that we would be facing the phenomenon of mass posthumous (postmortem) examinations of dead bodies conducted over the past three millennia (3,000 years)! Against this background, it is particularly surprising that there were no serious sources of works on human anatomy after such a huge number of posthumous (postmortem) examinations of the embalmed bodies, from the ancient Egyptians and spanning almost 2,000 years. This, in my opinion, is an indicator of the failure of the systemic nature of the epistemological approach. The thousands of years of medical observations (as the medical profession did exist as such), the uses of recipes, medicinal mixtures (solutions), as well as tens of thousands (we are unlikely to get these estimated figures wrong) of postmortem examinations of embalmed dead bodies did not lead to the creation of a complete anatomological and physiological system. There was not even an attempt to create such as system. For century after century medicine existed merely as a priestly art of doctoring, equipped with an arsenal of magic, and, within this paradigm, the main principle of pathogenesis of all the diseases was seen a result of the influences of evil spirits, while the main principle of treatment was seen in the regular worships of the temple cult practicians.

It is necessary to note and undeStahlrstand that at the same time that certain useful data were, of course, gathered or accumulated. For example, in Ancient Egypt, the issue of hygiene, both personal or individual and general, was treated with high priority. (Herodotus wrote about this with delight). One more example: the old papyruses that have survived till modern days contain interesting descriptions of a number of infectious diseases, for example, schistosomiasis (or bilharziasis). The Ancient Egyptians understood at the empirical level that bathing in dirty water reservoirs could lead to catching some infectious diseases. And, nevertheless, one fact is indisputable, and that is, despite the huge opportunities and timeframe of its development, the Ancient Egyptian civilisation could not produce any serious anatomological-physiological system or offer any serious theory on the art of doctoring. Based on this background, I can draw a conclusion that this civilization contained a religious and philosophical system that absolutely excluded the search for positive answers to the questions of understanding nature and human beings. Besides, the social structure of a despotic society excluded the emergence of the conditions for growth, development and aspiration to

accumulate scientific knowledge about a public group or an individual. The existence of a despotic society, in combination with a totalitarian pagan cult that was characterized by rough fetishism that penetrated all the spheres of public and individual consciousness, was, as it later became clearly evident, not the best environment for the origination of science [22].

The key features of foreign historiography

I do not have the all the resources in this article to carry out an exhaustive analysis of foreign historiography of the 20th century or list all the special review manuals where the complete vision of the history of medicine has been presented. Even if to begin with K. Sudhoff, the manuals will be very many. Nevertheless, I will try to highlight the main tendencies that have promoted the formation of the wholeness or completeness of foreign historiography at different times. At the same time, I take into consideration the works of K. Sudhoff, W. Osler, O. Temkin and other world famous scientists. It is possible to speak with confidence about the formation (first of all in the US and Great Britain) of an academic tradition of the general nature of the methodology of assessments [23, 26–28]. Certainly, this was based on the traditional periodisation of general history, but at the same time, was also filled with absolutely new and different contents. The similarity of these works to the works of Russian authors ended on the fact of the alternation of "The Antiquity Period" and "The Middle Ages." However, these traditions, in recent years, are changing, and I would like to concentrate my attention on the essence of these changes I will, as examples, analyse three fundamental editions: "The Western Medical Tradition: 800 BC to AD 1800" [29], "The Cambridge Illustrated History of Medicine" by R. Porter [28], "The Oxford Handbook of the History of Medicine" by M. Jackson [30]. It could seem that the approach to the periodisation of the history of medicine through the prism of general history that was criticized by me had been reproduced in the "The Western Medical Tradition: 800 BC to 1800 AD." Nutton, the author of the First Chapter, titled, "Medicine in the Greek World, 800-50 BC," begins the description of the history of our specialty from the 8th century to the Birth of Christ, while further narration was based on the civilisation principle. However, this view was not characteristic for Russian historiography. First, Nutton immediately outlines his narration framework, limiting it to the western medical tradition. In fact, this also means the "mainstream" that I'm using as a guideline. Modern science is, undoubtedly, a product of European civilisation, and Nutton only describes simply all of the phenomena that had in one way or the other influenced the overall development of medicine as a science [24, 31]. Even if the point of reference of this narration was not seen as the period between the 6th century and the Birth of Christ, it will not help to show the condition of the art of doctoring within the orthodox, pre-Thales pagan culture and its differences from the later period of the Hippocrates tradition. This is the main reason why Nutton chooses the period from the 8th century to the Birth of Christ, and not, for example, the 10th or 16th centuries.

There is no mention of doctoring methods in primitive and communal cultures or stories about medicine in Ancient India or in Mesopotamia in his works. Moreover, Nutton uses the systemic approach, constantly emphasizing the interrelations between medicine and the major natural philosophical concepts, and also the influence of the monotheistic religions (notably, the Christianity and Islam) on the main directions of general medical thought. However, this does not at all mean that I completely agree with all of Nutton's assessments, but it, certainly, means the use of an adequate methodology that evidently leads to a concrete result. Besides, my friend and colleague, Nutton, (the author of the Chapters 1-3 and 5 in the book under review) and his coauthors, L. Conrad (the author of Chapter 4), A. Wear (the author of Chapter 6), R. Porter (the author of Chapter 7), M. Neve (the author of Chapter 8) were scientists that were perfectly trained as the representatives of classical science.[7]

I will note here that the structure and contents of "The Western Medical Tradition: 800 BC to AD 1800" demonstrate the approaches that characterised English-speaking historiography in the 20th century. Moreover, the authors of this book were not supporters of the theory of the conflict of science with religion. Therefore, even

[7] V. Nutton sees himself as O. Temkin's student.

their earlier works did not contain the obvious inaccuracies and miscalculations caused by this methodology. The last ten years have seen the rise of another tendency in foreign historiography, which can be characterised as the movement towards the phenomenological approach. So, if in the book, "The Cambridge Illustrated History of Medicine," authored by R. Porter, with the participation of V. Nutton, E. Shorter, M. Weatherall, G. Watts and other scientists, there was an attempt to present the analysis of the categorical apparatus of the history of medicine, but the phenomenological approach and the departure from the systemic and complete view to the history of medicine were presented in the book, "The Oxford Handbook of the History of Medicine" by M. Jackson.

Porter's book includes the following sections: "The History of Disease," "The Rise of Medicine," "What Is Disease?", "Primary Carre," "Medical Science," "Hospitals and Surgery," "Drug Treatment and the Rise of Pharmacology," "Mental Illness," "Medicine, Society, and the State," "Looking to the Future (1996)." Even these names show that the subject of the authors' analysis were the main institutes and categories of medicine. The authors had also tried to answer several questions: What is a disease? What characterises medical science? What are the main aspects of interactions of medical science with the healthcare system and the application focus of the state policy in this area?

It must be kept in mind that "The Cambridge Illustrated History of Medicine," as well as "The Western Medical Tradition: 800 BC to AD 1800," are used as university textbooks. Teaching the history of medicine in the United States and in the United Kingdom, as well as in most western countries, is facultative. This is because at some point higher course students of this discipline are offered options, i.e., to pick the subjects of their choice. On the one hand, this worsens the position of the history of medicine, while on the other hand, it facilitates the teaching of it: In other words, this means that students who are studying it do so absolutely consciously (It is a great opportunity when we interact with higher course students who are very much interested in this discipline and with whom various aspects of the history of medicine can be discussed). Thus, our American and British colleagues have both the advantages and disadvantages of teaching our discipline. A different view on the history of medicine history was presented in the book edited by Jackson**.** The structure of the book, "The Oxford Handbook of the History of Medicine" is as follows. The base of periodization was offered in the first part ("Periods"): "Medicine and Health in the Greco-Roman World," "Medieval Medicine," "Early Modem Medicine," "Health and Medicine in Enlightenment," "Medicine and Modernity," "Contemporary History of Medicine and Health." A substantial part of these chapters forces one to remember the previously cited remark of a famous scientist that says "science begins in the 18th century."

In the second part ("Places and Traditions"), an approach, similar to the descriptive approach, which was practiced in Soviet historiography, was presented. The book listed several historical phenomena, seen as having an equal importance in the history of medicine, such as: "Chinese Medicine," "Medicine in Islam and Islamic Medicine," "Medicine in Western Europe," "History of Medicine in Eastern Europe, including Russia," "Science and Medicine in the United States of America," "Public Health in Latin America," "History of Medicine in Sub-Saharan Africa," "Medicine and Colonialism in South Asia since 1500," "History of Medicine in Australia and New Zealand." It was not accidental that the second part of the book was titled, "Global and Local Histories of Medicine: Interpretative Challenges and Future Possibilities." It turns out that, according to Jackson and his coauthors, a complete history of medicine is like a mosaic consisting of several separate "local stories," each of which had played an independent role in the overall development of the history of medicine. In other words, just like the Soviet historiographical tradition, these "local stories" are united into "some integral whole" only by the approach to the history of medicine history as the history of "the art of doctoring."

The third part of the book ("Themes and Methods") was devoted to the description of the condition of modern medical science, and it was completely based on the listings and descriptions of various phenomena, such as, for example: "Childhood and Adolescence," "Medicine and Old Age," "Death," "Historical

Demography and Epidemiology: The Meta Narrative Challenge," "Chronic Illness and Disease History," "Public Health," "Women, Health and Medicine," "Health and Sexuality," "Medicine and the Mind," "Medical Ethics and the Law," "Histories of Heterodoxy," "Oral Testimony and the History of Medicine," etc. The names or titles of the paragraphs in this book allow one to conclude that modern medicine and all its previous traditions represent absolutely different phenomena. The book, "The Oxford Handbook of the History of Medicine," evidently shows one of the important trends of modern western science – the blurring (or degradation) of the fundamental categories and the relevant approach to mutually exclusive cognitive models.

All these point to the fact that the discussion about the systemic approach to the understanding of the history of medicine and its periodization remains relevant in world science.

Summing up the results, I would like to briefly list the main methodological problems that are characteristic features of our scientific specialty:

• the understanding of the history of medicine as "an art of doctoring" excludes its complete understanding and leads to the phenomenological approach in scientific researches;

• the application of periodization used in general history in the history of medicine leads to distortion in the view of the objects and subjects of scientific researches;

• the commitment or adherence to the outdated doctrine of the imminent conflict of religion with science complicates the adequate reconstruction of the events of the protoscientific period;

• the use of the periodization schemes developed for other natural science disciplines (for example, physics, chemistry, etc.), and their transfer to the history of medicine leads to inaccurate conclusions. Thus, the history of medicine should be considered, first and foremost, as a part of the general history and philosophy of science.

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