ORIGINS OF THE HISTORY OF SCIENCE

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Applying for the Wissenschaftskolleg in 1999, I submitted a project on the origin of the ancient Greek historiography of science. When I came to Berlin in 2002, the Russian version of my book was already published in St. Petersburg. This gave me a possibility to look at my subject from a broader perspective. In an additional chapter for the English version of my book that will be published by Walter de Gruyter (Berlin), I try both to trace the development of the historiography of science from the ancient period to the early 19th century and to answer the question why so little was written on this subject till now.

Indeed, unlike the origin of science, which historians of science have always taken seriously, the origin and the early stages of the history of science have never excited any special interest. Although historians of science must be interested in the origins of their discipline, they usually date its beginning to the 17th–18th centuries. However, the history of science

actually goes back to classical antiquity, and by the end of the 18th century it had already become a well-established discipline.

Obviously there is something more here than just lack of historical consciousness. Closer examination of the literature on science and medicine written between 1500 and 1800 reveals as much continuity between ancient Greek and "pre-modern" historiography, as discontinuity between the latter and the history of science in the 19th century. First, this historiography was deeply conservative and antiquarian because it originated as a history of Greek science and focused on this subject until the end of the 18th century. It was more about Euclid, Hippocrates, and Ptolemy than about Kepler and Newton. Second, many of its approaches and methods are borrowed from the Greek historiography of science. Third, it was uncritical, both historically and philologically, and descriptive rather than analytical and explanatory. Hence, this historiography seems a continuation of the Greco-Roman tradition, which around 1800 was transformed into a modern, critical, and source-oriented discipline that took contemporary science as its main reference point.

The historiography of philosophy is quite different. There has been much work done on the ancient and early modern historiography of philosophy, so we know and understand these writings much better. Different approaches to the historical past of both disciplines – the history of philosophy and the history of science – reflect differences between science and philosophy, and specifically reflect that disagreeable but well-known fact that the history of science does not have the same value for scientists as the history of philosophy does for philosophers. Normally, scientists do not need any history of science – indeed some of them have deep suspicions about this discipline – but even those who appreciate it do not regard reading a book on Galileo, Faraday, or Darwin as a part of their regular scientific work. There are historically conscious scientists, but these few are insufficient to change general attitudes, for the simple reason that scientists and historians of science solve different problems, whereas contemporary philosophers often still try to solve problems first posed by Parmenides, Aristotle, or Descartes.

As opposed to the history of philosophy – which is still an integral part of philosophy – or the history of medicine, which was an integral part of medicine up to the 19th century – the history of science becomes really *necessary* for scientists only when, for whatever reason, scientific and cultural traditions are disrupted. One such period was the 9th and 10th centuries, when Greek science was appropriated by the Arabic-speaking world. Muslim scientists had a lively interest in their Greek predecessors, and they tried to find every last bit of information on them, drawing up catalogues of their works, commenting on them,

translating the extant biographies of famous scientists and doctors, and compiling new ones. Later, on the basis of all this, a historiography of Arabic science and medicine arose, which in turn influenced both medieval Jewish and Western traditions.

In the Renaissance we see a very similar situation. To return to Greek science after so many centuries; to edit and translate Euclid, Archimedes, and Ptolemy; to understand "who was who" in ancient science – all this urgently demanded the creation of at least a general historical picture of Greek mathematics and astronomy, whose achievements would be presented in a chronological way. Under such circumstances the question of "who discovered what?" is highly relevant for scientific investigation as such. For the absence of clear answers to this question hinders the development of science, forcing it to spend time and energy in proving what has already been proven or in refuting what has already been refuted. Thus, there was a kind of objective necessity – or at least a very powerful impetus coming from science itself – for the history of science to be born at this time.

In contrast to the Arabic Middle Ages and the European Renaissance, the Greek historiography of science arose not in the scientific milieu where it "should" have arisen, but in the philosophical school, which nevertheless stood close to contemporary science. In the late 4th century BC, Aristotle's student Eudemus of Rhodes wrote such important works as the *History of Geometry*, *History of Astronomy*, and *History of Arithmetic*. Furthermore, the Greek historiography of science originated not in the course of the restoration of a disrupted scientific tradition, but at that moment when Greek mathematics and astronomy, having laid their foundations, were soon to achieve their most glorious heights. Even more important is that the history of science, unlike other historiographic genres emerging in Aristotle's school – biography, cultural history, and the historiography of philosophy and medicine – received almost no continuation during antiquity, and especially – not in the scientific community. Biography was addressed to a wide audience and did not avoid scandalous details, the historiography of philosophy and medicine later found new forms answering the intellectual interests of the followers of various philosophical and medical schools. The history of science was written by a philosopher and was read almost exclusively by philosophers, as far as we can judge by the later quotations of Eudemus' works. Some Greek scientists may have been interested in the history of science – but not interested enough to continue Eudemus' work.

All this means that, in explaining the appearance of Greek historiography of science, we need to look for the other factors and motivations. Here I would point to just two of them. The main question underlying Eudemus' histories of science is "who discovered what?",

and by his time the question was a traditional one. The history of science has one of its "origins" in the attempts of many classical writers to find out who was the first discoverer of all the things that constitute civilized life. Who invented masonry? Ironwork? Who was the inventor of the alphabet, of astronomy, of rhetoric? Originally this quest for the "first discoverers" was not a historical study but rather a rationalization of the mythical past, and many of the discoverers were legendary or mythical figures. But due to the attention paid to the question of priority, human figures also came to light, such as Thales with his prediction of the solar eclipse.

The other important motivation for the Peripatetic history of science was a belief, popular in the classical period, in progress, both social and intellectual. To be sure, the Greek idea of progress differs from the 19th-century ideology, according to which in the *future* we will experience constant improvement in *all* spheres of human life. The Greek idea of progress was more limited, and therefore more realistic. It was related rather to the growth of technology and knowledge, and even within this narrow scope it was concerned with real achievements of the past and present, and not with imagined prospects for the future. A line connecting us with the past, when there was no agriculture, no state, no writing, no medicine, no drama, mathematics, or philosophy – this line does not continue into the future but finishes in the present. Why? Because medicine had already found all that it could for curing diseases, drama had already achieved perfection, rhetoric could not be bettered, and science and philosophy had discovered nearly everything that is was possible to discover.

According to Aristotle, everything in nature, society, and culture develops from a primitive state to a perfect one, and in many things this perfection has already been achieved or is on the verge of being achieved. Luckily for us, Aristotle was not satisfied in just establishing the starting and finishing points of progress and setting its proper direction. As a naturalist, he was deeply interested in details: What happened in between those pinnacles of progress? How exactly does knowledge progress? Which discoveries and names mark its different stages? To answer these questions, Aristotle initiated a wide-ranging historiographic project that was carried out by his students. It included, first, three histories of science by Eudemus as well his other work, *History of Theology*. Then came the doxographical treatise by Theophrastus, *Opinions of the Natural Philosophers*. And the last work was Menon's *Medical Collection* a medical doxography analogous to Theophrastus' physical doxography. Thus, the Peripatetic history of science originated as a part of an ambitious

historiographic project that aimed at describing the most important achievements in the field of knowledge.

Apart from this concluding chapter, during this year I was also working on the chapter on Pythagoras and the Pythagoreans for the new edition of Ueberweg-Praechter's *Grundriss der Geschichte der Philosophie* and was editing the book of my late teacher Professor Aleksei Zaicev on Greek mythology and religion.