

## ISSUES IN THE HISTORIOGRAPHY OF POST - BYZANTINE SCIENCE.

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[Dimitris Dialetis](#)<sup>(1)</sup> and [Efthymios Nicolaidis](#)<sup>(2)</sup>

(1) National Observatory of Athens

(2) National Hellenic Research Foundation

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In this paper, we shall present the expressions and trends of the historiography of science in Modern Greece meaning the Greek world after the fall of the Byzantine Empire. There will be two approaches to this subject. One will examine the different kinds of history of science over all these years and the other will examine their relations with respect to the periods of Greek intellectual life.

What we now call "History of science," was present under different forms in the last five centuries. There have been many approaches and uses, depending on the aims of each historiographer from the confusion of history of science and scientific education in the first post-Byzantine centuries, to the independent discipline of today.

The first example of what we can call "History of science" was scientific education. During the 16th and the 17th centuries, some manuscript presented an historical approach to scientific knowledge. For example, astronomy was sometimes taught as the history of ancient Greek astronomy, and the teaching of mathematics meant the teaching of Euclides, Apollonius and other Greek mathematicians. This teaching policy was in fact a critical presentation of ancient Greek science.

Throughout the 18th century, this critical presentation was the consequence of the educational policy of Modern Greek Humanism. This philosophical trend, born in the beginning of the 17th century and expressed by the Greek Orthodox church, consists of the idea of a revival of the ancient Greek spirit in Modern Greece, and there fore of the revival of ancient Greek science in its homeland.

In that spirit we must also consider a purer type of the history of science during the lath century, that of the historical overviews in prologues of many scientific manuals of those times. These prologues presented only the history of ancient Greek science, especially the history of mathematics. The splendor and the leading role of ancient Greek science was accentuated, as well as the debt of West European science to Greece.

After the middle of the 18th century, the history of science as examined by these prologues, was extended to the evolution of science after the end of the Ancient World. This trend was greatly accentuated during the Modern Greek Enlightenment, that is, after 1780 (Bechrakis and Nicolaidis, 1990). Contrary to the educational policy of Modern Greek Humanism which consisted of the revival of ancient Greek science, the educational policy of the Modern Greek Enlightenment consisted of the popularization of West European science as a means toward the formation of a national conscience different from the conscience which tied Greeks to an

Empire, although the fact that this Empire was now under the control of the Ottomans (Apostolopoulos, 1989; Dimaras, 1975, 1977; Kondylis, 1988; Nicolaidis and Dialetis, 1992).

If we had to point out the main expression of the history of science in post-Byzantine Greece, it would be the history of philosophy. For Modern Greek philology, the history of science was part of the history of philosophy for one of two reasons: either the history of science was considered a branch of the "naturphilosophie", or the pure philosophic work of Greek scholars prevailed on their scientific works (Sat has, 1868; Dimaras, 1975; Papanoutsos, 1953; Voumvlinopoulos, 1966).

Now we know the disadvantage of such an approach. The philosophical work of the different Greek authors is not of equal quality or importance as that of their scientific work. Only in very few cases can we say that the work of a Greek scholar in philosophy had the same importance on the evolution of the Modern Greek culture than his work in science. More there are many cases, especially during and after the 18th century, where the philosophical and scientific work of some scholars present such different characteristics (Kondylis 1988), that we could speak of cultural schizophrenia for these scholars. We could mention the case of the archbishop Nikiforos Theotokis, a great scholar of the 18th century, who philosophically wrote in the spirit of the Orthodox tradition, while scientifically, he was one of the first to try to synthesize the ancient Greek science with West European knowledge (Theotokis, 1766). This approach led to the elevation of the philosophic work of Greek scholars as the main criterion for the estimation of the culture of whole epochs in Modern Greek history. An example is how historians view the entire Greek 18th century elevating the Enlightenment as the main cultural event of Modern Greek history. Without an autonomous study of the history of science, we cannot understand the limits and contradictions of the Modern Greek Enlightenment and, also, the importance during this century of Modern Greek Humanism.

It is obvious that these philosophical approaches were made by scholars who had a deep knowledge in that field - we can mention, for example Papanoutsos or Tatakis, two major scholars of the 20th century - but ignored all about exact science. One characteristic example of the influence of these scholars is that until recently, the Greek scholar community appreciated the already mentioned Nikiforos Theotokis by his philosophical work titled "Metaphysics".

After 1922, the year of the defeat of the Greek army in the campaign of Asia Minor and the formation of the Greek socialist current, the history of science also becomes a part of sociology (we can mention, for example Kordatos, 1957). This new approach, interesting by itself, presents the same disadvantages as the previous one. Now, science was viewed only as an educational policy or as closely related to social events. Under this approach, educational manuals of the 18th century that were written by authors without any scientific knowledge, were considered extremely important texts for the Modern Greek history of science. An example is a manual on Physics by Rigas Feraios (Feraios, 1790), a book without any serious scientific educational value, written by a revolutionary without specific knowledge in that field.

In the 18th and 19th century we also had another, indirect type of history of science. It consisted of the implication of the history of science on the main cultural problem of that time, the cultural identity of the Greek nation. This was the problem of the independence of the Orthodox Church

from West European influences. In the late 18th century, a major anti-West European current again formed in the Orthodox Church, that of Kolyvades (Apostolopoulos, 1989; Dialetis, 1992). As a main vehicle of European culture, contemporary science was distrusted, and polemics rose about the role and utility of science. These polemics also involved the history of science, used at this time for the arguments of each party.

Another indirect approach to the history of science is the history of the Education made by Greek historians of the 19th and the 20th centuries (Gritsopoulos, 1966, 1971; Evagelidis 1936). As, after the fall of the Byzantine Empire, the original Greek scientific production was almost non-existent, the history of science of that period consists mainly of the history of the transfer of science - transfer either from ancient Greece or Byzantium, during the 15th, 16th, 17th and 18th centuries, or from West Europe during the 18th, 19th and 20th centuries. Education having been the main tool of this transfer, the history of the Greek Colleges has been confounded with the history of science. We must note here that Greek Colleges held the control of science during all centuries after the fall of Byzantium until the beginning of the 19th century and their history contributes mainly to the history of Modern Greek science.

The Greek Colleges ([see map](#)) began organizing in the 15th century and spread all over the Greek world, even during the Diaspora, in Italy, Central Europe and Russia. Therefore, their role in the transfer of scientific knowledge is obvious. Another fact is that as these Colleges were independent, their educational science policies were varied. Sometimes, even in the same college, many scientific trends existed, as in the case of the most important, the College of the Patriarchate, which was obliged by the competition to change its educational policy toward science after the impact of the ideas of the French Revolution (Apostolopoulos 1989, Dialetis 1992, Karas 1977).

The main problem of the confusion of the history of science with the history of the Colleges is similar to those of the other indirect approaches. The historians who tried this approach had neither enough information about scientific education in the Colleges nor the adequate scientific knowledge to evaluate this education.

The fact that history of science was either part of the history of philosophy, or sociology, or history of education created an anti-history of science position in the Greek intellectual milieu. It must be clear that the debate was not on the level of the internal or external approach, but on a previous level, this of the existence or not of an history of science. In the last two decades we have begun to see some samples of "pure" - if we can say so - history of science. The main characteristic of this late trend is that it originates from the actual milieu of science, a milieu which can understand and classify the historical matter by criteria derived by the same subjects they are studying. The fields of interest in this new milieu are varied, from science in ancient or Modern Greece to the evolution of science in Europe.

Now we shall try another historiographic approach, the relation of the different kinds of history of science with respect to the periods of post- Byzantine intellectual life.

The first great historical period, the rule of the Ottoman Empire from 1453 until 1821, presents a major interest for the historiographer because of the main intellectual currents, those of the Orthodox tradition, the Modern Greek Humanism and the pro-Occidental current which was

related to the Modern Greek Enlightenment.

The Orthodox tradition, related to the Oriental mysticism of the 14th century, is expressed by an "anti-science" position. For this way of thinking, science corresponds to a spiritual exercise and man cannot approach nature and the world by scientific knowledge alone, but, more directly, through their relation with creation. On the other hand, contrary to Catholicism, the Orthodox Church is liberal concerning scientific theories (Gedeon, 1888). Note that the works of Saint Grigorios Palamas, a Byzantine Ecclesiastic of the 14th century, expresses the relations of Orthodoxy and science. This position toward science influences the history of science. An "anti-scientist" history denies the idea of the scientific evolution of the world.

The relation of science to evolution was made by Modern Greek Humanism, and that is why the history of science itself made its appearance in the prologues of the scientific books written by the followers of that intellectual current. Modern Greek Humanism is a late edition of Byzantine humanism, which appeared in its first form in the 11th century. For the humanism of the 17th and 18th centuries Orthodoxy is not in contradiction with the ancient Greek spirit but closely related to it. A picture can be seen today in a monastery of Mount Athos that expresses that spirit, where Plato and other ancient Greek philosophers are represented as saints.

History of science could serve perfectly this way of thinking if viewed from a specific point. The Modern Greek Humanists, the scholars who introduced science and especially mathematics in Modern Greece, almost always spent some pages in their scientific books on the history of ancient Greek science, insisting on the point that all sciences were born in Greece and that the major evolutions in the history of science took place in the ancient Greek world. An example of that spirit is the repetition by many authors of the 18th century that algebra was born in ancient Greece and not in the Arab world, or that no European mathematician could present in geometry so perfect a system as the Euclidean (Nicolaidis, 1989).

The other major intellectual current of post-Byzantine Greece, the Modern Greek Enlightenment, used the history of science for a totally different aim. The educational policy of that current was to present contemporary science, meaning West European science, as a key to the understanding of the world. This position was better served by a philosophical approach and a presentation of the achievements of contemporary Western science. When the followers of this intellectual current dealt with the history of science, they presented mainly the history of West European science, viewed as the history of the evolution of the humankind.

After 1821 and the birth of the independent Greek State, a completely new period for Greek intellectual life began. This was the period of the development of philosophy against science, which nearly disappeared from education, especially physics.

Characterized by the incorporation of the history of science into the history of philosophy (Papanoutsos, 1953), this period will mark the historiography of science until today. The few pages on the history of science of those years concern the history of mathematics, the only discipline which preserved a certain vitality.

After 1922 and the advent, of socialist ideas in Greece, the history of science and many other disciplines were incorporated into sociology by the Greek Marxists (Kordatos, 1957). The two major schools of the history of science, the history as part of philosophy and as part of sociology, coexisted and represented two different intellectual currents. But this "political" approach began

to fade after 1950 with the advent of what is called the "new generation" of Greek historians, well represented by K. Dimaras (1975, 1977). Even then, history of science was not an independent discipline and was confounded by historians with philosophy, sociology, or the history of education. Even now the current image of post-Byzantine Greek science in the Greek intellectual circles is deeply influenced by that school, which presents the Greek Enlightenment as the major event of the history of Modern Greek science.

We must mention that marginally to those major trends in the historiography of science there existed some exceptions of "pure" historians, who contributed a lot in their respective fields of interest. But those scholars, e.g. E. Stamatis (Stamatis, 1975) who worked on ancient Greek mathematics and M. Stefanidis (Stefanidis, 1926; 1938), did not succeed in creating a community and changing the current trends of the historiography of science.

The actual milieu of the history of science in Greece is a result of post- 1974 Greek intellectual life. Greek historians of science now come from the milieu of exact sciences and their fields of research concern mainly the history of ancient Greek science, the history of science in post-Byzantine Greece and, also, the history of science in Europe after the 14th century. This community has a certain variety and is incorporated, with the evident specificity that mainly concerns the history of science of Modern Greece, in the international community.

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