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SCIENCE AND THE ORTHODOX CHURCH IN 18th AND EARLY 19th CENTURY GREECE: SOCIOLOGICAL CONSIDERATIONS*

1. Introduction

A new phase in the intellectual development of the Greek world began after the fall of the Byzantine Empire to the Ottoman Turks. Though the Greeks acquired a notable degree of freedom in organizing their education, especially after the 16th century, the condition of scholarship and intellectual inquiry deteriorated essentially. One basic reason was the departure of numerous Greek scholars for free Europe[1]. At that time the intellectual development of Europe was unquestionably impressive in several fields. As a result a gap was gradually created between West and East, and made obvious by the intellectual superiority of the former over the latter. This does not mean of course that scholarship was completely abandoned in Greece during that period. The main difference is that before the Ottoman domination the intellectual foundations of the Byzantine world were strong, autonomous, and able to exercise considerable influence upon other cultures[2], whereas during the Ottoman domination Greece remained, to the greatest extent, under the continuous impact of European ideas. These ideas infiltrated Greek society not only through the efforts of many Greeks who had studied at European universities and wanted to bring the progress of "enlightened

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1. For further information, see D. J. Geanakoplos, *Greek Scholars in Venice. Studies in the Dissemination of Greek Learning from Byzantium to Western Europe* (Cambridge, MA 1962).

2. According to H. Hunger ["Byzanz, eine Gesellschaft mit zwei Gesichtern", *Det Kongelige Danske Videnskabernes Selskab, Historisk-filosofiske Meddelelser* 51:2 (København 1984) 10-11: "Die Byzantiner verstanden sich wie die alten Israeliten als auserwähltes Volk des Herrn ... und waren von ihrer Überlegenheit gegenüber fremden Völkern überzeugt".

Europe" (Φωτισμένη Εὐρώπη)[3] to their country but also through the financial support (given by founding schools, editing books, etc.) of numerous Greek merchants who due to their businesses were strongly influenced by the European way of life in general[4]. Thus one can speak—during the 18th century and especially from 1774 to 1821—of a "Neohellenic Enlightenment" which presented some analogies to the European Enlightenment notwithstanding its idiosyncratic features[5].

The introduction of science into Greece was principally effected by the scientific revolution in 17th century Europe and must be seen as a part of this ongoing Enlightenment process. It slowly began in the first decades of the 18th century and culminated in the second half of that century. The new scientific ideas, however, initiated a conflict between the Greek scientists and the Orthodox Church including not only the official Church represented by the Patriarchate of Constantinople and the local bishops but also several isolated priests and monks. It must be mentioned here that there existed a small number of Church officials who had more progressive ideas and favored the introduction of science (e.g. Chrysanthos Notaras, Dionyssios Kalliarchis, Ignatios of Hungro-Wallachia) and that most of the Greek scientists belonged to or were connected to the Orthodox Church. On the other hand, this conflict by no means signifies that the Church played a negative role during the Ottoman rule, since its contributions to the Orthodox millet were in general diverse and numerous. The conflict took various forms throughout the 18th century and lasted until the eruption of the Greek revolution in 1821. Although similar earlier conflicts between science and the Roman Catholic Church or Protestant denominations in Europe have already been the focus of several investigations, the present case of Greece has not yet been substantially examined. Therefore we will try to examine it here from a sociological point of view based on relevant historical data. It must be noticed, however, from the beginning that in our opinion the causes for this conflict are principally to be found in the intrinsic character of the Orthodox tradition itself and its social influence and only secondarily in the socio-historical circumstances of the 18th century (e.g. Ottoman domination). Apart from the following elaborations on this issue, this assumption is basically corroborated

3. Cf. Κ. Θ. Δημαρᾶ, «Ἡ Φωτισμένη Εὐρώπη», *Νέα Ἑστία* 51 (1952) 225-230, 306-311.

4. See for example E. Turczynski, *Die deutsch-griechischen Kulturbeziehungen bis zur Berufung König Ottos* (München 1959) 24-29.

5. See Κ. Θ. Δημαρᾶ, *Νεοελληνικὸς Διαφωτισμός* (Νεοελληνικὰ Μελετήματα 2: Ἀθήνα 1985[4]).

by the fact that similar conflicts between the Orthodox Church and science also took place in Tsarist Russia, where the socio-historical conditions were quite different[6].

2. The Orthodox traditionalism and its social impact

The reaction of the Orthodox Church against science will be better understood, if attention is paid to the sociological implications of religious orthodoxy in Greece. Orthodoxy here does not simply mean religious conservatism (e.g. as is the case in Orthodox Judaism), but a deep and strong conviction that the Eastern Orthodox tradition is the only true and genuine one. This claim for absolute and exclusive religious truth is reinforced by the literal interpretation of the word ὀρθοδοξία which means right faith and is, even nowadays, understood as such by a major part of the Greek population. After the definitive schism between the Eastern Orthodox and the Roman Catholic Church in 1054, the former has considered itself as the sole bearer of the original and genuine Christian tradition. Consequently, the preexisting emphasis on the defense of Orthodoxy was intensified in the centuries following the schism. The inherited tradition had to be preserved without any substantial innovations.

Bearing this in mind, one can speak of a strong traditionalism within the Orthodox Church. Orthodox theologians, however, consider this attachment to tradition as a crucial sign for the authenticity of their Church. They also deny the accusations concerning the alleged stagnation in their Church and try to show how this tradition is dynamically and fruitfully used[7]. Needless to say that these opinions have theological presuppositions as point of departure. From a sociological point of view, any extensive preoccupation with the preservation of a tradition may lead to an imperceptible absolutization of the past and to the development of strong anti-progressive trends and social structures directed not only against radical but against any attempted innovations as well[8]. In the Greek case, this tradition does not only contain

6. For such conflicts in Russia, see A. Vucinich, *Science in Russian culture. A History to 1860* (Stanford 1963). V. Boss, *Newton and Russia. The Early Influence, 1698-1796* (Cambridge, MA 1972).

7. See for example G. Mantzaridis, "Zum Begriff der Orthodoxie", in G. Galitis, G. Mantzaridis und P. Wiertz (eds.), *Glauben aus dem Herzen. Eine Einführung in die Orthodoxie* (München 1987) 18-26.

8. On tradition in general from a sociological point of view, see E. Shils, *Tradition* (London-Boston 1981).

the fundamental elements for defining and preserving Orthodoxy, e.g. dogmas, decisions of councils, but also many secondary elements which due to various reasons and historical circumstances were incorporated without serious problems into the official ecclesiastical tradition. The fusion between official and popular religion in Greece today is a case in point[9]. Nevertheless, a long-standing acceptance of the above-mentioned elements may lead to a different appreciation of their importance. Due to the emphasis placed upon the unaltered preservation of the tradition and the alleged imminent dangers threatening Orthodoxy, the past is collectively idealized and not distinction can be made between the traditional elements which can be changed and those which can not. Therefore even an attempt to innovate within the secondary elements of the tradition is often strongly repudiated.

This process is mirrored by the reaction of the Orthodox Church to the introduction of science. During the Ottoman domination the Church, due the privileges given to it by the Sultans, was the most basic, if not the sole, agent for the preservation of the Greek nation. Emphasis was preeminently placed upon the protection of Orthodoxy from the Roman Catholic propaganda and from Islam and the maintenance of Greek ethnic identity. Its jurisdiction was not limited to religious matters, but was extended over many other social sectors. For example, education was "wholly in the hands of the Greek Church"[10].

As far as science was concerned, the only worldview accepted by the Church was based on Aristotle. This was chiefly effected by the influence of Theophilos Korydaleus (1570-1646)[11]. He was an important philosopher at that time and had studied under Cesare Cremonini (1550-1631) in Padova, where Neo-Aristotelism was the most widespread current[12]. Through the intervention of Patriarch Cyril Loukaris (1572-1638) he was appointed director of the Patriarchal Academy of Constantinople and essentially reorganized its curriculum. Notwithstanding the problems with the Church concerning

9. Cf. N. Kokosalakis, "Populare, offizielle und Zivilreligion. Zur Soziologie des orthodoxen Christentums in Griechenland", in M. N. Ebertz und F. Schultheis (eds.), *Volksfrömmigkeit in Europa. Beiträge zur Soziologie populärer Religiosität aus 14 Ländern* (München 1986) 265-276.

10. R. Demos, "The Neo-Hellenic Enlightenment (1750-1821)", *Journal of the History of Ideas* 19 (1958) 526.

11. See C. Tsourkas, *Les Débuts de l'enseignement philosophique et de la libre pensée dans les Balkans. La vie et l'œuvre de Théophile Corydalée (1570-1646)* (Thessalonique 1967).

12. See B. Nardi, *Saggi sull'Aristotelismo padovano dal secolo XIV al XVI* (Firenze 1958).

some of his theological ideas, Corydaleus' Neo-Aristotelism exercised such an influence upon the Church in the following years that it became the sole acceptable philosophical and scientific system. For example, in a letter of the Orthodox Patriarchs to the Anglican Church (18 April 1718) it is clearly outlined that the Aristotelian philosophy was sufficient for them as far as secular knowledge was concerned.

> Οὐ χρήζομεν οὖν ταύτης (i.e. the secular knowledge) ἀναγκαίως ἡμεῖς· εἰ δὲ καὶ κατά τινα περιέργειαν καὶ πολυμάθειαν ἢ νοὸς ὀξύτητα καὶ ταύτης τὴν γνῶσιν βουληθείημεν κτήσασθαι, ἔχομεν παρ' ἡμῖν τὰς ἀριστοτελικὰς βίβλους καὶ ἄλλων σοφῶν καὶ τοὺς τούτων ὑπομνηματιστὰς καὶ ἐξηγητάς, καὶ σχολαὶ εἰσὶ παρ' ἡμῖν κατά διαφόρους πόλεις καὶ χώρας, ἐν αἷς αὗται διδάσκονται καὶ διαλευκαίνονται, ἐξ ὧν δυνάμεθα πλοῦτον σοφίας οὐκ ὀλίγον ἀρύσασθαι[13].

This spirit of self-sufficiency was caused by the absolutization of the Aristotelian philosophy in the Greek curriculum. There was no need to change this *status quo* and to get involved into problems with new and perhaps dangerous philosophical systems. Though some Aristotelian ideas were distinctly opposed to the Christian views, like *ex nihilo creatio mundi* and Neo-Aristotelism was not used for the corroboration of Christian dogmas, as it was the case with Scholasticism, this system was not considered dangerous by the Orthodox Church at that time.

The introduction of new scientific ideas from Europe strongly challenged this Aristotelian *status quo*. Due to its long acceptance, this system was seen as a fundamental part of the Orthodox tradition and thus its attempted change was not simply seen by the Church as a scientific issue, but as a serious danger threatening the very foundations of Orthodoxy. The Church, being the sole authoritative institution to decide on such matters, strongly reacted against the new ideas and followed the path of scientific obscurantism. There was no room for academic freedom at that time guaranteeing the progress of science without external obstacles. This attitude of the Church can be observed several times in the case of Methodios Anthrakitis (c. 1660-1736), who was condemned by the Patriarchal Synod (23 August 1723). Anthrakitis tried *inter alia* to overcome Aristotelism and to teach new philosophical

13. J. D. Mansi, *Sacrorum Conciliorum nova et amplissima Collectio* (Graz 1961) Vol. 37, 413.

systems (Descartes, Malebranche). In an apologetic letter (30 November 1723) he wrote explicitly:

> Καταδικάζομαι λοιπὸν ὑπὸ τῆς Συνόδου ὄχι ὡς κακὸς Χριστιανὸς, ὄχι εἰς κανένα δόγμα τῆς Ἐκκλησίας, ἀλλὰ πὼς φιλοσοφῶ διαφόρως ἀπὸ τοὺς Ἀριστοτελικούς[14].

His indictment clearly stated that he had rejected Aristotelian philosophy which was being taught following an old tradition (ὅσα μὲν ἄνωθεν κατὰ παράδοσιν ἀρχαίαν οἱ εὐσεβεῖς τοῦ ἡμετέρου γένους διδάσκουσι καὶ διδάσκονται μαθήματα, ἐν μὲν τοῖς περὶ φύσεως λόγοις καὶ ταῖς θύραθεν ἐπιστήμαις, δηλαδὴ τὰ τῆς περιπατητικῆς φιλοσοφίας ... παρῃτήσατο καὶ ἀπεδοκίμασεν)[15]. Moreover, in his reinstatement (1 June 1725) Anthrakitis was given the order to teach only Aristotelism based on the «school» of Korydaleus, a system absolutely harmless to the Orthodox faith (μόνα τὰ ὑπὸ ἐξηγητῇ τῷ κυρῷ Κορυδαλεῖ ἑρμηνευόμενα τῆς περιπατητικῆς φιλοσοφίας μαθήματα, τὰ καὶ ἐν τῇ πατριαρχικῇ σχολῇ ἐνταῦθα εἰς Κωνσταντινούπολιν παραδιδόμενα, καὶ μηδεμιᾶς ἐξ αὐτοῦ λύμης τῇ ὀρθοδοξίᾳ προστριβομένης)[16].

It is very important to notice in this context that this traditionalism was also caused by the continuous need to be guided by the religious past in the quest for the original and most genuine Christian tradition. This trend to look for truth in the past and to overestimate the prestige of elapsed times (e.g. the golden age of the Cappadocian Fathers) led to the general predisposition always to seek the truth in the past. No expectations were directed towards the future because religious as well as secular knowledge was to be found in the past. This was quite evident during the Ottoman rule when the Orthodox Church controlled the society to a great extent and influenced it accordingly. To mention an example, Nektarios (1602-1676), Patriarch of Jerusalem, exhibited the characteristics of this religious and scientific traditionalism:

> Ἐξαρκεῖ πρὸς πᾶσαν ἐπιστημονικὴν γνῶσιν τήν τε καθ' ἡμᾶς

14. Α. Ἀγγέλου, «Ἡ Δίκη τοῦ Μεθοδίου Ἀνθρακίτη (ὅπως τὴν ἀφηγεῖται ὁ ἴδιος)», *Ἀφιέρωμα εἰς τὴν Ἤπειρον. Εἰς μνήμην Χρίστου Σούλη* (Ἀθῆναι 1955) 171.

15. Mansi, *Sacrorum*, Vol. 37, 235.

16. Ε. Πελαγίδη, «Ἡ συνοδικὴ ἀπόφαση γιὰ τὴν ὁριστικὴ 'ἀποκατάσταση' τοῦ Μεθοδίου Ἀνθρακίτη», *Μακεδονικὰ* 23 (1983) 137.

(i.e. theological) καὶ τὴν ἔξω (i.e. secular) ἐγκύπτειν ταῖς βίβλοις καὶ συγγράμμασι τῶν πρὸ ἡμῶν, κἀκεῖθεν ἐρανίζεσθαι τὴν περὶ παντὸς τοῦ ζητουμένου ἀλήθειαν[17].

In addition, he rejected the new theories by Copernicus and Galilei because they turned heaven and earth upside down and denied the Bible. And he concluded: "We do not need such teachers and lessons" (Τοιούτων ἡμεῖς διδασκάλων καὶ μαθημάτων οὐ χρήζομεν)[18]. From these traditionalist tendencies one understands why the Church reacted against the new ideas. This spirit is very well described by D. Martin: "Tradition knows no better than its own. The phrase is ambiguous: it means either that there is no recognition of what lies outside or it means that recognition is combined with secure knowledge of superiority"[19]. Several such conflicts took place in Greek schools initiated by persons who were profoundly attached to Aristotelism (e.g. Sergios Makraios until his death in 1819) or reacted against the introduction of science into the curriculum by favoring the predominance of religious and grammatical lessons. This Aristotelian milieu presented serious obstacles and it took a long time and consistent efforts (e.g. by Eugenios Voulgaris) to overcome it, especially in the second half of the 18th century.

To sum up, the Greek Church, due to its intensive preoccupation with preserving Orthodoxy, was—in the present case—led to a strong traditionalism equated to a scientific obscurantism, which altogether denied the idea of progress in science and the revolutionary European discoveries. This describes the general context within which the present conflict in Greece took place, whereas its particular causes will be discussed in the next unit. Needless to say that similar traditionalist tendencies and their great social importance can be observed in several other cases in the history of the Greek Church (cf. recently the movement of the Old Calendarians).

3. The specific reasons for the conflict

The specific reasons for this conflict can roughly be classified into the following categories:

i. The Church generally feared the radical ideas coming from Europe

17. Ι. Σακελλίωνος, «Διονυσίου Πατριάρχου Κωνσταντινουπόλεως καὶ Νεκταρίου πρώην Ἱεροσολύμων Ἔγγραφα», *Ἐκκλησιαστικὴ Ἀλήθεια* 1:2 (1881) 107.

18. Σακελλίωνος, *Ibid.*

19. D. Martin, *The Dilemmas of Contemporary Religion* (New York 1978) 23.

at that time because they were often connected to atheistic worldviews. The same was true with regard to scientific ideas which were able to provide humans with new orientations in the world without any metaphysical assumptions. Bearing this in mind, many clergymen preferred the Aristotelian to the new European science which could turn out dangerous for the believers. In their opinion, education had to be concentrated especially on religious lessons which were needed for moral improvement and the salvation of the soul, and secondarily on grammatical lessons. In the Orthodox spirituality, a strong emphasis has always been placed upon otherworldly oriented activities. The basic idea that men are πάροικοι and παρεπίδημοι on earth and that eternal life is by far more important than this transient one has had serious social impact upon Orthodox societies. Several social domains and activities, which were viewed as unimportant for and distracting from redemption and gain of the eternal life, have been often neglegted. Such cases can be especially seen among monks, who, by devoting themselves entirely to their redemption, were inimical towards several mundane activities (e.g. extensive preoccupation with the acquisition of knowledge)[20]. Thus, from this standpoint *sub specie aeternitatis* European science was not highly valued, was often considered dangerous and there was no need to introduce it into the schools. In so far, the reaction of Athanasios Parios (1721-1813) against science and additional studies in Europe can be understood[21]. As a monk, he was totally devoted to the needs of the Church and his own salvation. His numerous books referred only to religious issues. Therefore, he could not

20. Cf. M. Καβαδία, *Λόγος παραινετικὸς πρὸς τοὺς μαθητὰς ἢ κατὰ Οὐολταίρου καὶ τῶν ὀπαδῶν* ('Ενετίησιν 1802) 14-15: «Οἴδαμεν δὲ πολὺν ἐπιστήσαντες χρόνον ἑταῖροι ἣν ἐπικομποῦσιν φιλοσοφίαν καὶ γνῶσιν θείων καὶ ἀνθρωπίνων πραγμάτων, καὶ τέχνην τεχνῶν καὶ ἐπιστήμην ἐπιστημῶν καὶ τὰ τοιαῦτα οἱ λεγόμενοι φιλόσοφοι, πάταγον ὀνομάτων ὄντα· κενεμβατούντων τε, καὶ ματαιοσχόλων ἔργον· καὶ τὸ πέρας, αὐτόχρημα ὑομουσίαν. Καὶ μηκύνειν τί δεῖ; Ταύτης γὰρ αἴτιον ὄκνος καὶ ἀπραξία, ἡ τε ἄλλη τῶν παθῶν ἀλογία. Αὐτίκα τοῦ γεωμετρεῖν ἡ πλεονεξία, τοῦ φυσιολογεῖν τὸ σφόδρα περίεργον, τοῦ ἀστρονομεῖν ἡ πάλαι δυσειδαιμονία, τοῦ ρητορεύειν ἡ κενοδοξία, τὸ μισάλληλον, ἡ κολακεία, τὸ ψεῦδος καὶ τὸ ὅλον ἡ τοῦ κέρδους ἐπιθυμία. Ὡς δ' αὔτως καὶ τῆς ἄλλης κενοσπουδίας· ἀρχικώτατον δ' αἴτιον τούτων ὁ διάβολος, ὁ τοῖς πρωτογόνοις ἐπιθυμίαν ἐμβαλὼν γνώσεως καλοῦ καὶ πονηροῦ, ὡς ταύτην δῆθεν θέωσιν οὖσαν, σπουδὴν πᾶσαν θέμενος ἐκβαλεῖν τῆς διανοίας αὐτῶν ἣν ἐνῆκε σφίσι σώφρονα ἁπλότητα εὐθὺς γεγονόσιν ὁ Θεός». Concerning the intellectual interests of monks (esp. in Athos) and their attitude toward profane studies, see E. Amand de Mendieta, *Mount Athos. The Garden of the Panaghia* (trans. M. R. Bruce) (Berlin-Amsterdam 1972) 252-261.

21. See his works *'Απολογία Χριστιανικὴ* (Λειψία 1805²) and *'Αντιφώνησις πρὸς τὸν παράλογον ζῆλον τῶν ἀπὸ Εὐρώπης ἐρχομένων φιλοσόφων* (Τριέστιον 1802).

understand why scientists (e.g. Veniamin Lesvios) gave priority to scientific lessons following different European patterns. This change seemed strange to him, since science was not at all needed for salvation. His sole concession was to accept the integration of some mathematics of lesser importance into the curriculum. Apart from this he knew that after having studied in Europe, many Greeks had been influenced by alien ways of life and finally had lost or relativized their Orthodox faith and practices (e.g. fasting). The same consequences resulted from an extensive preoccupation with science. Thus, in order to prevent the religious demolition of Greece by the new ideas, he fought them passionately and in collaboration with other clergymen (e.g. Dorotheos Voulismas), too. These fears were also shared by several Patriarchs who emphasized the precariousness of dealing with scientific issues. For example, the Patriarch of Constantinople, Callinicos III, characterized, in a letter to the teacher Constantinos Triantaphylidis, physics *inter alia* as dangerous for the piety and faith of the people (e.g. because of physical, empirical and not metaphysical explanations of natural phenomena)[22]. Also, in an encyclical issued by the Patriarch Grigorios V in March 1819, the profit from learning "algebra, and cube and cube roots, and triangles and triangulated tetragons, and logarithms and symbolic logic, and elliptical projections, and atoms and vacuums, and whirlpools, and power and attraction and gravity ... and a myriad of the same kind and other monstruous things" was questioned[23]. The negative consequences of such an education included, according to this encyclical, among other things ignorance of and indifference to religious matters.

22. **B.** Σκουβαρᾶ, *Ἰωάννης Πρίγκος (1725;-1789). Ἡ ἑλληνικὴ Παροικία τοῦ Ἀμστερντάμ, ἡ σχολὴ καὶ ἡ βιβλιοθήκη Ζαγορᾶς* (Ἀθήνα 1964) 238: «Ἐπὶ πᾶσι δὲ ἡ ἐπιστήμη ἡ φυσικὴ, καὶ τὴν ἡμῶν εὐσέβειαν τὴν πρὸς τὸν Θεὸν διαφθείρει. Θεοῦ γὰρ τὴν ἑαυτοῦ ὀργὴν, καὶ μελλούσας τιμωρίας φρικτοῖς τέρασιν ἐπὶ γῆς, καὶ ἐν ἀέρι ἀπειλοῦντος, οἱ τῶν τῆς φύσεως ἐρευνητῆρες ἀνθρώποις, τοῖς τοῦ φάσματος καινότητα ἐκπλαγεῖσι, λέγουσι: Τί ἀνόητοι τὰ φοβερὰ φοβεῖσθε; ἄραγε μὴ ὁ οὐρανός καταπίπτῃ; Καὶ τὰ τοιαῦτα γάρ πάντα φύσεως ἔργα. Οὗτος ὁ κομήτης τί ἡμᾶς βλάψαι ἄν; Καπνὸς γὰρ μόνον ὑγρός τε και ξηρὸς γενόμενος ἐν ἀκροτάτῃ ἀέρος χώρᾳ, ἐξεπυρώθη. Καὶ οὕτω τὴν τῶν ἀνθρώπων καρδίαν ἐν ἁμαρτίαις παραθαρσύνοντες μεγίστων πολλάκις κακῶν, καὶ δεινοτάτων ποινῶν αἴτιοι εἰσίν οἱ φυσιολόγοι. Δικαίως οὖν ἡ τοιαύτη ἐπιστὴμη ἡ περὶ τὸ τοῦ ἀνθρωπίνου ἀγαθοῦ ἐφικέσθαι ἄχρηστος οὖσα, καὶ ἑαυτῇ ἀντιλέγουσα τέλος δέ, καὶ ζωὴν τὴν αἰωνίαν ἐμποδίζουσα, ἐκ τῶν σχολῶν ἐξοριστέα ἐστί». Callinicos, however, later changed his mind and, to a certain degree, became familiar with the European scientific progress. See Σκουβαρᾶ, *Ibid.*, 238-240, 302-303.

23. Quoted by R. Clogg, "Anti-clericalism in pre-independence Greece c. 1750-1821", in D. Baker (ed.), *The Orthodox Churches and the West* (Oxford 1976) 267.

These thoughts also help to understand, to a certain extent, the reactions against some scientific theories. For example, in the long debate over heliocentrism a lot of arguments against it were taken from the Bible and were based on a literal interpretation of the relevant passages (e.g. Joshua 10:12-13, Eccl. 1:4-5) in which the sun and not the immobile earth was presented as moving. The Bible as a God-inspired work was considered infallible not only in religious but in scientific matters as well; therefore it was by far superior to the trivial human knowledge[24]. The whole argumentation presents clear analogies to the earlier critique of heliocentrism in 16th and early 17th century Europe. Yet these reactions can not be fully understood on the basis of the literal understanding of the Bible. More important was the basic conviction that any disagreement with the Bible could jeopardize salvation. Men who considered the world from this standpoint were extremely preoccupied with any potential problems threatening the redemption they most desired. This attitude can be also observed in Eugenios Voulgaris (1716-1806), one of the progressive minds of his era. Due to his close connections to the Church throughout his life and his sincere faith he tried to introduce new ideas into Greece without making any concessions concerning his Orthodox faith. Thus, in the difficult issue of heliocentrism and its apparent disagreement with the Bible he took a compromising position by accepting the system of the Danish astronomer Tycho Brache which somehow combined Bible and science[25]. He could not accept the Copernican system, not only due to scientific reasons but most important—in our opinion—due to his fear of jeopardizing his salvation by denying the authority of the Bible and its traditional interpretation, especially during the last decades of his long life when he was expecting his death. As M. Knapp puts it, "Vulgaris' Verhältnis zur Aufklärung im allgemeinen sollte neu überdacht werden. Seine Leidenschaft für die Naturwissenschaften sollte nicht mißverstanden werden. Bloße Beschäftigung mit naturwissenschaftlichen Themen ist nicht gleich Aufklärung ... Dort wo es kritisch wird, wo sich das empirisch Feststellbare und das Dogma widersprechen, zieht Vulgaris sich auf die sichere Plattform seiner Religion zurück.

24. See Π. Κονδύλη, «Τὸ ἡλιοκεντρικὸ σύστημα καὶ ἡ πληθὺς τῶν κόσμων. Μιὰ κοσμοθεωρητικὴ μάχη στὸν ἑλληνικὸ 18ο αἰώνα», *Ἀμητός. Στὴ Μνήμη Φώτη Ἀποστολόπουλου* (Ἀθήνα 1984) 79-96. See also my forthcoming dissertation in Tübingen *Die religiöse Kritik des kopernikanischen Weltbildes in Griechenland in der Zeit von 1794 bis 1821.*

25. See Ε. Βούλγαρι, *Περὶ τοῦ Συστήματος τοῦ Παντὸς* (Βιέννη 1805) esp. 34-41. Similar opinions were professed earlier by Vikentios Damodos. See Β. Μπόμπου-Σταμάτη, *Βικέντιος Δαμωδός. Βιογραφία-Ἐργογραφία 1700-1752* (Ἀθήνα 1982) 249-250.

Seine Haltung gegenüber dem Weltbild des Kopernikus ist ein klares Beispiel dafür. Im Zweifelsfall muß sich eben die Natur nach dem Dogma richten"[26].

ii. The old rivalry between the Orthodox and the Roman Catholic Church must be taken into account in the present case. After the schism the collective term "West" gradually acquired, due to various reasons (e.g. proselytism by Roman Catholics in the East), strong negative connotations among Orthodox Christians. It designated a different world out of which several serious dangers for Orthodoxy originated. This tension between East and West was, however, not solely confined to theological issues and was made obvious in many latent forms in the centuries following the schism[27]. This phenomenon can also be observed in the present conflict. Science, the "product" of Europe, was from the beginning suspiciously viewed as an alien and dangerous element penetrating the Orthodox world. The Orthodox Church as the sole bearer of the Christian truth did not need the intellectual products of the fallen and heretical West. Any contact with it could lead to a contamination and even to a potential loss of Orthodoxy since science could be a subterfuge for its definitive conquest. It is interesting to notice here that in a pamphlet published under the name of Anthimos, Patriarch of Jerusalem and entitled Πατρικὴ Διδασκαλία (Constantinople 1798) the Ottoman Empire was considered as a God-given institution placed upon the Greeks in order to protect them from the heretical West. Thus, any revolt against the Ottoman Turks was viewed as ungodly and as a jeopardization of the Orthodox tradition[28]! This pamphlet was, according to some historians, actually written by Athanasios Parios, and one can easily understand his hostility and aversion against the "products" of Europe including science.

iii. Several scientific theories, e.g. heliocentrism and plurality of the worlds, were strongly repudiated because they destroyed the acceptable aristotelian worldview and, more important, had serious social consequences as well. The earth, the alleged center of the universe, was, according to such theories, a small planet orbiting around the sun. Also, the great number of still unknown worlds, promulgated by the followers of Copernicus, e.g. Ber-

26. M. Knapp, *Evjenios Vulgaris im Einfluß der Aufklärung. Der Begriff der Toleranz bei Vulgaris und Voltaire* (Amsterdam 1984) 121-122. Concerning Voulgaris' thoughts on his expected death and his preoccupation with salvation, see come of his letters in [A. Μαυροκορδάτου τοῦ Φιραρῆ], *Βόσπορος ἐν Βορυσθένει* (Μόσχα 1810).

27. See Π. Νούτσου, «ΑΝΑΤΟΛΗ-ΔΥΣΗ. Μεταμορφώσεις ἑνὸς ἰδεολογήματος», *Δωδώνη* 12 (1983) 81-92.

28. See R. Clogg, "The 'Dhidhaskalia Patriki' (1798): An Orthodox Reaction to French Revolutionary Propaganda", *Middle Eastern Studies* 5 (1969) 87-115.

nard de Fontenelle (1657-1757), destroyed the closed and finite aristotelian world and rendered the earth unimportant within the vastness of the universe[29]. This was a serious humiliation of the alleged central and unique position of humans in the universe and simultaneously a strong blow to human narcissism[30]. These ideas were not attacked by the Church for the sake of theological reasons alone. Rather, the Church feared that the fall of the hierarchically structured world could lead to the concomitant fall of the existing social order, which was structured in a static and hierarchical way too. The consequences would have been the destruction of the cosmic order and the confrontation with chaos[31]. On the other hand, religion, i.e. Orthodoxy, was the traditional powerful institution exclusively defining meaning, order and teleology within the universe as far as the Greek population was concerned. It had contributed to the establishment of a sacred cosmos within which life had become meaningful[32]. It had also, to a certain degree, legitimized the

29. The translation of the work by Fontenelle *Entretiens sur la pluralité des mondes* into Greek by P. Kodrikas in 1794 met the reaction of the Church including the book by S. Makraios *Τρόπαιον ἐκ τῆς Ἑλλαδικῆς Πανοπλίας κατὰ τῶν ὀπαδῶν τοῦ Κοπερνίκου ἐν τρισὶ διαλόγοις* (Βιέννη 1797). Cf. also the problems faced by Veniamin Lesvios concerning his theories. See A. Ἀγγέλου, «Πρὸς τὴν ἀκμὴ τοῦ Νεοελληνικοῦ Διαφωτισμοῦ», *Μικρασιατικὰ Χρονικὰ* 7 (1957) 1-81. Γ. Βαλέτα, *Βενιαμικὰ* (Μυτιλήνη 1982). Ι. Μουτζούρη, *Βενιαμὶν Λέσβιος. Οἱ κατήγοροι τῶν ἰδεῶν του καὶ ἡ μεγάλη Ἐκκλησία* (Ἀθήνα 1982).

30. This point has been masterfully explained in a broader context by S. Freud, "Eine Schwierigkeit der Psychoanalyse", in *Gesammelte Werke* (London 1947) Vol. 12, 3-12.

31. Cf. the fears of S. Makraios (*Τρόπαιον,* in the preface, no page): «Ποῦ οὖν ἐπιστήμη; ποῦ σύνεσις; ποῦ φρόνησις; ποῦ ὀρθὸς βίος; ποῦ νόμοι καὶ τάξις; μήτε ἀρχῆς παρούσης, ὑφ' ἧς, μήτε τέλους πρὸς ὃ ἕκαστα διϊθύνεται. Τὸ γὰρ οὑτωσὶ κατακερματίζειν τὸ μέγα τοῦτο σὐστημα, καὶ διϊστᾶν ἀπ' ἀλλήλων τὰ μέρη, συγχέειν ἐστὶ καὶ αὐτοματίζειν ἅπαντα, καὶ τὸν ἄνθρωπον παρ' οὐδέν ποιεῖν· πληθύνει γὰρ πανούργως τοὺς κόσμους, ὅτι τὸν ἄνθρωπον τοῦ αἰσθητοῦ τοῦδε κόσμου παντὸς οὐκ ἐθέλει πολίτην, οὐδὲ τέλος ᾧ ἐφορᾷ πάντα τὰ φαινόμενα». A similar reaction against turning the universe upside down through the heliocentric theory can be seen in the antiquity. According to Plutarch, the Stoic philosopher Cleanthes (331-232 B.C.) «thought that the Greeks ought to lay an action for impiety against Aristarchus the Samian on the ground that he was disturbing the hearth of the universe, because he sought to save the phenomena by assuming that the heaven is at rest while the earth is revolving along the ecliptic and at the same time about its own axis». (*De facie quae in orbe lunae apparet,* 923A). The idea that the earth, the immobile hearth of the house of Gods according to Plato (*Phaedrus,* 247A), was actually moving, was seen as blasphemous principally because it overthrew the existing cosmic order. See T. Heath, *Aristarchus of Samos. The ancient Copernicus* (Oxford 1913) 304.

32. On the role of religion in society, see the interesting analysis of P. Berger, *The Sacred Canopy. Elements of a Sociological Theory of Religion* (Garden City 1969) 3-51.

existing social order. Nevertheless, the new theories could jeopardize the important role of Orthodoxy in guiding the people in the world. This role could be taken over by a new ideological system sustained by science, a fact signifying the decline of the social status of the Church. Moreover, according to Adamantios Korais (1748-1833), the clergymen were not opposed to the motion of the earth because of their zeal for religious matters; rather they feared that the rotation of the earth would destroy the prestige and privileges, which they undeservedly had obtained[33]. Korais' point refers to the social status of some members of the higher clergy, who were involved in corrupt dealings with the Ottoman government and subsequently enjoyed several privileges within Church and society. They had, of course, no intention of losing their *status quo* and thus were strongly opposed to anything that would endanger it, including these perilous new scientific theories.

iv. Another reason for the conflict can be found in the intellectual rivalry between Greece and Europe. The ancient Greeks were to a notable degree superior to other people as far as scientific and other intellectual achievements were concerned. In the 18th century, however, this old superiority had ceased to exist. The remembrance of their glorious past undoubtedly has had a positive impact upon several Greeks, who evaluating it critically acknowledged the progress made by the Europeans. In their opinion, Greece had to follow the scientific path of Europe without totally rejecting its ancestors who first started purely scientific inquiries and opened the way for the Europeans. As opposed to them, several other Greeks remained blindly attached to their past (e.g. to Aristotle) and were unable to discern the new progresses. For them, science was discovered and definitively developed by their ancestors, whereas modern science was viewed as a blatant fraud. They also considered themselves genuine heirs of the ancient Greeks and tried to refute the European scientists. A classical example for such a case was Sergios Makraios (1734/9-1819), professor of science at the Patriarchal Academy of Constantinople. Admonished by the Patriarch of Jerusalem, Anthimos, he wrote a book against the followers of Copernicus trying to refute them with "the Greek panoply" (ἐκ τῆς ἑλλαδικῆς πανοπλίας), i.e. with the correct reasoning innate to Greeks (τοῦ ἐν ἡμῖν ἐμφύτου λόγου). In several passages of his book he attacked τοὺς ἀλλοφύλους (= the European scientists) in a strong, derogatory way, e.g. as lunatics, uneducated and irrational[34].

33. A. Κοραῆ, *Ἀλληλογραφία*, Τόμ. Γ'. 1810-1816, (Ἀθήνα 1979) 514 (Letter to Dorotheos Proios, 16 November 1816).

34. Μακραίου, *Τρόπαιον*, 4, 18-20, 27-28, 48, 71-72.

This case of racial rivalry between the Greeks and the Europeans substantially hindered the development of the Greek scientific thought and was analogous to the famous earlier battle in Europe between "the ancient and the moderns".

v. Last but not least, one can understand the present conflict by having a careful look at the social, cultural and economic structures of the Greek society at that time which did not at all favor the introduction of science. The majority of the population was living in rural areas under difficult financial conditions combined with a high degree of illiteracy and many superstitious beliefs. The same was true with regard to a significant part of the clergy. It is interesting to notice here that several scientific books in Greek were especially written in order to eliminate the superstitions of the people[35]. The delay of the Greek Enlightenment can be chiefly explained by means of this belated economic and socio-political development since the passing to an early bourgeois society took place around the middle of the 18th century through the appearance of a strong merchant class and subsequent accummulation of capital in its hands. This transformation from a closed agrarian to a pre-capitalist economy had important effects upon the cultural development of the Greeks and fostered the cultural relations to other nations. Yet the appearance of early bourgeois classes in Europe (e.g. in England) had taken place at least two centuries earlier and had acted as a catalyst for the societal and intelectual evolution and subsequent change.

Moreover, the traditionalist milieu of the Ottoman Empire was stagnating as far as scientific inquiries were concerned and had, for a long time, not had any connection with Europe in such domains[36]. Only around the end of the 18th century, due to the progressive policies of Sultan Selim III (1789-1807), a Westernization of the Empire was attempted but without significant results[37]. In connection to this, the structural differentiation of society was extremely limited, since a variety of independent institutional sectors did not exist which could have helped the acceptability of science and its further development. The cultural differentiation was also limited, the preeminent authoritative system of ideas being under the direct influence of the Church. The educational system was exclusively organized under the auspices of the Church which was not very much in favor of scientific lessons. Scientific

35. Cf. for example Σ. Βλαντῆ (ed.), *Φυσικὴ δημώδης εἰς παῦσιν τῆς δεισιδαιμονίας* (Ἐνετίησιν 1810).

36. See A. Adnan, *La science chez les Turcs Ottomans* (Paris 1939).

37. See S. J. Shaw, *Between Old and New. The Ottoman Empire under Sultan Selim III 1789-1807* (Cambridge, MA 1971).

theories could not enjoy an autonomy from this religious milieu, which hindered their expansion from the beginning. Public opinion was also notably influenced by the attitude of the Church towards science. In short, science was not deemed legitimate by the Greek society at that time and its social impact was very limited. Exceptions can be found especially in the Danubian principalities under Phanariote rule where the foundation of the princely academies in Bucharest and Jassy proved to be an essential penetration channel of Western scientific ideas under the aegis of the Phanariots, a *noblesse de robe* closely connected to the European spirit.

On the other hand, the absence of adequate motivation and rewards on the part of society did not stop scientists from seeking the legitimation necessary to their work. They viewed these initial problems as temporary and firmly believed that the scientific enlightenment of Greece was inevitable in the long run. They also connected the desired liberation from the Ottoman rule with this kind of enlightenment. Though they remained within isolated circles together with their students and followers, they sometimes managed to get permission to teach at the greatest schools of the nation. Nevertheless, they were often forced to resign or to change school in order to avoid further confrontation with the conservatist *status quo*. The existence of a small sector of people vividly interested in educational matters and connected to the flourishing Greek diaspora in Europe was not sufficient to change the aforementioned structures of the Greek society. As R. Clogg noted, "the nascent Greek intelligentsia was never more than a minuscule percentage of the Greek population"[38]. Though there was an improvement in the social acceptability of science from the late 18th century onwards, science still needed a long time to its final establishment as an activity independent from the Church. Full institutionalization of science was gradually achieved in the new-born Greek state after the foundation of the University of Athens in 1837[39]. These elaborations make clear why the function of the Greek social system which was to a great extent isolated from Europe rendered it inappropriate for the normal acceptance of new scientific ideas.

4. Social consequences of the conflict

This conflict did not have extremely negative consequences as far as the

38. R. Clogg, "The Greek Mercantile Bourgeoisie: 'Progressive' or 'Reactionary'?", in idem (ed.), *Balkan Society in the Age of Greek Independence* (London 1981) 96.

39. On the Greek science between 1700 and 1821, see Γ. Καρᾶ, *Οἱ Φυσικὲς-Θετικὲς ἐπιστῆμες στὸν ἑλληνικὸ 18ο αἰῶνα* (Ἀθήνα 1977).

Greeks' attitude towards their Church was concerned. As mentioned above, the impact of science upon the population was not enormous. The scientists were the ones who cared most for the problems with the Church. It is true that a popular anticlericalism existed in Greece from the late 18th century onwards which was caused by several evils in the structure of the Church[40]. The same attitude can be found among scientists, who defended themselves against the obscurantist attack of the Church. Yet in most of these cases we encounter a critique of the Church's mistakes and not its total rejection. The Church was at that time of overwhelming importance to the Greeks, who generally showed a great respect for it. The cases of radical scepticism and atheism are scarce[41]. Many scientists were accused of being atheists, a term often used by clergymen to denote the bearers of new scientific and philosophical ideas; nonetheless, none of them could be called an atheist in the literal meaning of the term. The most radical critique against the very foundations of the Church was exercised only by Christodoulos Pamplekis (1733-1793) who was condemned and excommunicated by the Church for his ideas; his example, however, was not followed by other intellectuals and scientists[42].

To be more specific about the Greek scientists, we must mention that most of them were bishops, priests or monks, in other words they belonged or were somehow connected to the Church. It is evident in their books that they by no means wanted to break their relationship with the Church notwithstanding their hard critique against the committed mistake of rejecting science. In their opinion, science and religion were not irreconcilable.There existed a clear reinforcing connection between religion and the pursuit of scientific knowledge among them. One of the basic aspects of this connection was the use of scientific research *ad gloriam Dei*. Science could lead to the elucidation of the world's mysteries and subsequently to the praise of God who created everything in wisdom. Proofs of God's existence, e.g. cosmological, were also used within this context of *propagatio fidei per scientia*[43]. With such ideas they also tried to mitigate the conflict and to show that the fears of the Church with regard to science were unfounded. Bearing this in mind, we can argue that religion was initially a positive factor among these scientists

40. On the Greek anti-clericalism at that time, see Clogg, *Anti-clericalism*, 257-276.

41. See generally L. C. Theocharides, *The Greek National Revival and the French Enlightenment* (Ph. D. Dissertation, University of Pittsburgh, 1971) 113-132.

42. See Φ. Ἡλιοῦ, «Ἡ σιωπὴ γιὰ τὸν Χριστόδουλο Παμπλέκη», *Τὰ Ἱστορικὰ* 2:4 (1985) 387-404.

43. See for example *Τὰ στοιχεῖα Μεταφυσικῆς* (Βιέννη 1820) by Veniamin Lesvios.

influencing the development of Greek science. There exists *mutatis mutandis* a clear similarity to R. Merton's thesis concerning the close connection between Puritanism and scientific progress in 17th century England where "the deep-rooted religious *interests* of the day demanded in their forceful implications the systematic, rational, and empirical study of Nature for the glorification of God in his works and for the control of the corrupt world"[44].

The absence of many atheistic trends among Greek scientists can be chiefly explained by the fact that science was not institutionalized and was under the supervision of the Church. It can be generally observed that during their studies in Europe the scientists were more liberal or at least ready to accept new ideas, whereas after returning to Greece they were more conservative and careful in openly expressing their views, a change in all probability caused by the existing social and especially religious milieu. They could of course not question the major institution of the day, i.e. the Church. This process can be seen in the case of Chrysanthos Notaras (c. 1663-1731), the subsequent Patriarch of Jerusalem, who during his studies in Paris under J. D. Cassini (1625-1712) had probably accepted the Copernican system, but after his return still professed the old Ptolemaic system without, however, heavily and fanatically criticizing the Copernican one[45]. On the other hand, the institutionalization and subsequent functional autonomy of science facilitated the emergence of atheistic or agnostic trends among scientists. This can be observed first in the case of Western science which in the later centuries of its development was completely cut off from its original religious roots[46]. The same is true with regard to modern Greece as well where the scientists were free to promulgate their opinions notwithstanding the still existing conservatism of the Church. This is obvious in the long debate between Evolutio-

44. R. K. Merton, "Puritanism, Pietism and Science", in idem, *Social Theory and Social Structure* (Glencoe, Ill., 1961) 574-575. See also idem, *Science, Technology and Society in Seventeenth-Century England* (New York 1970). See also R. L. Greaves, "Puritanism and Science: The Anatomy of a Controversy", *Journal of the History of Ideas* 30 (1969) 345-368.

45. See X. Νοταρᾶ, *Εἰσαγωγὴ εἰς τὰ Γεωγραφικὰ καὶ Σφαιρικά* (Ἐν Παρισίοις 1716) 77-85. Cf. also A. Καραθανάση, *Οἱ Ἕλληνες Λόγιοι στὴ Βλαχία (1670-1714)* (Θεσσαλονίκη 1982) 120.

46. According to R. Wuthnow ("Science and the Sacred", in P. E. Hammond, ed., *The Sacred in a Secular Age*, Berkeley 1985, 193), "an initially reinforcing relation between Puritanism and science does not rule out the possibility of subsequent conflict once science has become institutionalized". See also idem, "The World-Economy and the Institutionalization of Science in Seventeenth-Century Europe", in A. Bergesen (ed.), *Studies of the Modern World-System* (New York 1980) 25-55.

nism and the Orthodox Church which originated in the late 19th century and still goes on in various forms.

These considerations on this conflict between science and the Orthodox Church in Greece undoubtedly show the importance of this particular stage in the relationship between science and religion generally. It is to be hoped that more information will be discovered by analyzing the many unedited scientific and historical texts of this period in order to shed light on the still unknown sides of the present issue.

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