

# **Faith or knowledge?**

## **Normative relations between religion and science in Byzantine textbooks**

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The purpose of this paper is, through the analysis of the content of two Byzantine scientific textbooks, a first attempt to make an explanatory approach to the science-religion relations during the corresponding period by seeking the factors that contributed to the formation of the specific ideological frame.

### **The currency of a discussion**

The concept about the difference between religious and scientific systems, proposed since the 19<sup>th</sup> century, should nowadays be considered a fact. On the one hand, there is a transcendental foundation of the revelation truth, while, on the other hand, an attempt has been made to rationally explain the world. However, the discussion that has been lately aroused on a bibliographical level and the relative spreading of the religious fundamentalistic perceptions all over the world<sup>1</sup> indicates that such a discussion is definitely timely, at least on the part of sciences and their history.

The relation between science and religion is one of the issues that have concerned the history of sciences from its very beginning. We are referring, of course, to modern science, from the period of the Scientific Revolution of the 17<sup>th</sup> century and later on, as well as to its relation to the various western Christian doctrines.

Three are the main approaches that have developed in the inner area of historiography of science as far as this debate is concerned.

According to the first approach (J.W. Draper,<sup>2</sup> A.D. White<sup>3</sup>), already since the 19<sup>th</sup> century, these relations have been and will always be conflicting due to the fundamental principles of each one of the poles of the dipole: religion is based on

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<sup>1</sup> R.L. Numbers, *Science and Christianity in Pulpit and Pew*, Oxford University Press, Oxford 2007, σ. 129 κ.ε.

<sup>2</sup> J.W. Draper, *History of the conflict between religion and science*, Henry S. King & Co, London 1875.

<sup>3</sup> A.D. White, *A history of the warfare of science with theology in Christendom*, 2 vols, D. Appleton and Co., New York 1896.

faith not logic, while science is based on – and studies – plausible facts and is characterised by strictness and certainty.

The second approach maintains that religion and science complement each other, since each one satisfies different human needs. According to this approach, the issue of a relation between religion and science is not even brought into question as long as each one does not exceed its area.<sup>4</sup>

The last approach supports that the relations between religion and science not only have never been conflicting but on the contrary there have been times when the first has promoted the second (A.N. Whitehead,<sup>5</sup> Collin Russel,<sup>6</sup> R. Merton<sup>7</sup> in a way, and others).<sup>8</sup>

All three aforementioned approaches, however, with their variations, do not perfectly explain the complexity of the relations as they appear in their historicity, in specific social formations and certain conditions. If we consider that science is a social activity historically positioned, and should therefore be placed into its own chronological, social etc. frame<sup>9</sup> in order to be understood, then the uninterpretable points that come up through historical reality still remain, since both the ideological use of history in each of these and the subsequent projections are obvious.

Yet more, when referring to periods before the development of modern science, for which historical research on the field of sciences was still in its beginning with many lapses even on the conceptualization level.<sup>10</sup> The problem becomes bigger when the subject matter ceases to be Western Europe, for which relative researches have advanced, as is the case with Byzantium.

According to the aforementioned, the discussion on the relation between religion and science in the Byzantine period is open and current altogether because it examines their immediate interaction in many of its manifestations, in a conceptual frame under development and subject to various overdeterminations with arguments which are a

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<sup>4</sup> William H. Austin, *The relevance of natural science to theology*, Macmillan, London 1976.

<sup>5</sup> A.N. Whitehead, *Science and the modern world*, Macmillan, New York 1925.

<sup>6</sup> Collin Russel, *Cross-currents: interactions between science and faith*, Inter-Varsity Press, Leicester 1985.

<sup>7</sup> Robert Merton, *Science, technology and society in seventeenth-century England*, Harper and Row, New York 1970.

<sup>8</sup> John Hedley Brooke, *Science and Religion. Some Historical Perspectives*, Cambridge University Press, Cambridge 1991 (in Greek: *Επιστήμη και θρησκεία*, Πανεπιστημιακές Εκδόσεις Κρήτης, Ηράκλειο 2008, σ. 16-17).

<sup>9</sup> Steven Shapin, *The Scientific Revolution*, University of Chicago Press, 1996 (in Greek: *Η Επιστημονική Επανάσταση*, Κάτοπτρο, Αθήνα 2003, σ. 33).

<sup>10</sup> David C. Lindberg, *The Beginnings of Western Science*, University of Chicago Press, Illinois 1992 (in Greek: *Οι απαρχές της δυτικής επιστήμης*, Πανεπιστημιακές Εκδόσεις ΕΜΠ, Αθήνα 1997, σ. 1-6).

basis even for the respective present ones. Still more, the discussion reciprocates in the frame of a powerful state formation that resembles in the greatest part of its duration to the Asian production way,<sup>11</sup> where, however, the most dominant ideological apparatus is the church, as is also in the feudal states of the West.<sup>12</sup> In this frame, of great interest is the phenomenon of the from time to time confliction between secular education and the church on issues that have to do with studying and explaining nature, with whatever it brings about for the equilibrium of the social formation itself.

### **Explanatory approach**

Approaching the issue of science-religion relations inside a historical social formation, Eastern Roman Empire in this case, demands disregarding the given differences, as they have developed through today's certainties and the after-Marx approach to religion, and focusing on the particularity of this specific period.

In the case of Byzantium, characteristic of the discussion on the science-religion relations is the study of two complete surviving sources-textbooks used for studying sciences, the *Quadrivium* of 1008 and the *Syntagma* by George Pachymeres. Before proceeding to exhibiting the contents of these texts, we have to accept a series of facts and examine various contradicting but simultaneously interlacing factors which were shaping reality at that time. It is necessary to avoid the simplicities and the general aphorisms that for long time were typical of and even hindering the examination of this period, especially as far as the field of sciences is concerned.<sup>13</sup>

First of all, concerning religion in this discussion multiple levels should be examined: the official doctrinal expression, as was developed mainly by the Fathers of Church,<sup>14</sup> the institutional expression of Christianity, in other words the church as an ideological state apparatus,<sup>15</sup> the scholars as communicators of Christian faith, since it is obvious

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<sup>11</sup> Ελένη Μπιμπίκου-Αντωνιάδου, *Το Βυζάντιο και ο ασιατικός τρόπος παραγωγής*, Σύγχρονη Εποχή, Αθήνα 1988.

<sup>12</sup> Louis Althusser, "Ideology and Ideological State Apparatus", *Lenin and Philosophy and Other Essays*, Monthly Review Press, 1971 (in Greek: Λουί Αλτουςέρ, «Ιδεολογία και ιδεολογικοί μηχανισμοί του κράτους», *Θέσεις*, Θεμέλιο, Αθήνα 1983, σ. 90).

<sup>13</sup> Gianna Katsiampoura, "Marxist approaches in Byzantium by Greek historiography", *Kritiki: Critical Science and Education*, vol. 1, June 2005, pp. 73-81.

<sup>14</sup> Νικολαΐδης Ευθ., «Η κοσμολογία των Ελλήνων Πατέρων της εκκλησίας – Μέγας Βασίλειος και Γρηγόριος Νύσσης», *Βυζαντικά*, τ. 11ος, σ. 205-230.

<sup>15</sup> Louis Althusser, "Ideology and Ideological State Apparatus", *op.cit.*

that we refer to a prenational, precapitalist society, constitutional and homogenizing factor of which was among others religion.<sup>16</sup> In the form of the Gramscian “necessity”, a certain way of rationalising the world “in a given historical period and under certain historical circumstances”.<sup>17</sup> Finally, important role in the development of Byzantine reality concerning religion played the monastic tradition with its radical beliefs for the rejection of every secular knowledge, a tradition which was influential from the early 9<sup>th</sup> century until the end of the Byzantine period.<sup>18</sup> Notable is also the fact that the imperial authority was at times unable to handle the monks, something that could manage in the case of the official church.<sup>19</sup>

With reference to the word of sciences in higher education textbooks, evident are many inconsistencies and overdeterminations. On the one hand, higher education as an ideological state apparatus, as a means of imparting the status quo rules<sup>20</sup> and simultaneously as hazardous for questioning the value of every authority.<sup>21</sup> In the case of Byzantine education, this danger is spotted in the relationship of a group, which would later become powerful as state bureaucracy or members of the church hierarchy or would contribute to the development of the main attitude on the part of the teacher,<sup>22</sup> with pagan tradition.

### The two texts

Taking the above into consideration, we are going to see how two texts, which belong to different chronological periods in the inner chronology of the Byzantine period, depict the relation between scientific knowledge and religious faith.

The Quadrivium (*Ευσύνοπτον σύνταγμα εις τας τέσσαρας επιστήμες*), the oldest textbook of the four sciences that has survived complete<sup>23</sup> since the Byzantine period,

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<sup>16</sup> A.A. Vasilief, *History of Byzantine Empire* (in Greek: *Ιστορία της Βυζαντινής Αυτοκρατορίας*, Μπεργαδής, Αθήνα, τ. Α, σ. 189).

<sup>17</sup> Antonio Gramsci, *Il materialismo storico e la filosofia di Benedetto Croce*, Einaudi, Torino 1948 (in Greek: *Ιστορικός υλισμός*, Οδυσσέας, Αθήνα 2009, σ. 29).

<sup>18</sup> R. Browning, “Byzantine Scholarship”, *Studies on Byzantine History, Literature and Education*, Variorum Reprints, London 1977, σ. 4.

<sup>19</sup> A. Cameron, *The Byzantines*, Blackwell, Oxford 2006 (in Greek: *Οι Βυζαντινοί*, Ψυχογιός, Αθήνα 2009, σ. 171).

<sup>20</sup> Louis Althusser, “Ideology and Ideological State Apparatus”, *op.cit.*, p. 74.

<sup>21</sup> R. Browning, “Enlightenment and repression in Byzantium in the 11<sup>th</sup> and 12<sup>th</sup> centuries”, *Studies on Byzantine History, Literature and Education*, Variorum Reprints, London 1977, σ. 3.

<sup>22</sup> I. Ševčenko, “Society and Intellectual life in the fourteenth century”, *Society and Intellectual life in Late Byzantium*, Variorum Reprints, London 1981, σ. 76.

<sup>23</sup> Εκδόθηκε από τον J.L. Heiberg και δημοσιεύθηκε το 1929, μετά το θάνατό του, με τον τίτλο *Anonymi, Logica et Quadrivium*, Heiberg J.L. (ed.), *Anonymi, Logica et Quadrivium, cum Scholiis*

was written in 1008. Before this period particular interest was aroused for education as an institution on the part of the imperial authority while the Byzantine scholars involved in a growing discussion on sciences. Thus, it depicts an attempt for the creation of a textbook in the form of quadrivium<sup>24</sup> in order to cover the educational needs of those who wanted to continue their studies to a higher level.

On the other hand, the *Syntagma* by George Pachymeres<sup>25</sup> was written at about 1300, a period often referred to as the Palaeologan Renaissance, which saw the revival of the greatest part of the ancient knowledge and an introduction of the Arabic processes. The analysis of its content reveals the high level of the study of sciences during the centuries after the creation of the aforesaid textbook.

In the first text, the writer of which is unknown to us but in all probability a monk,<sup>26</sup> issues on faith and knowledge are often brought into discussion. The role of God as a creator comes into the discussion on the explanation of the world, as we can read on the passage about the globe: “and the creator word in nature created dual heavens, where all the words of sciences were born coeternal before the creation of species and then placed with them. Among creatures the humans gathered among the theories that came to them the sciences, and, on the one hand, those which are sciences to us as if being matrix [απομόργματα] among the words, and, on the other hand, the words among the preeternal words of God like shadows and idols leading to that first cause, as long as life was led according to their theory, pure and clean and with critical morale, which, indeed, among these organic (constructed) sciences with the inorganic (unconstructed) theory, without directly disregarding the creatures’ opinion as well as the cause, as is feasible on the part of the humans, bears the mind.”<sup>27</sup> Remarkable is here the fact that the writer's perception about science and its relation to God and the eternal reveals a platonic influence when he talks about matrix (απομόργματα) and the relation between the eternal truths and the possibility of them being perceived by man. Another passage of the text, which refers to geometry, mentions: However,

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*Antiquis*, Det Kgl. Videnskabernes Selskab., Historisk-filologiske Meddelelser XV, 1, Copenhagen 1929.

<sup>24</sup> Gianna Katsiampoura, *Perception, Transmission and Function of Science in the Middle Byzantine Era and the Quadrivium of 1008*, PHD Thesis, Panteion University of Social and Political Sciences, Athens 2004.

<sup>25</sup> «Σύνταγμα των τεσσάρων μαθημάτων, αριθμητικής, μουσικής, γεωμετρίας και αστρονομίας». Εκδόθηκε από τον P. Tannery, Tannery P., *Quadrivium de Georges Pachymère*, Studi e Testi 94, Citta del Vaticano 1940.

<sup>26</sup> Gianna Katsiampoura, *Perception, Transmission and Function of Science*, op.cit., p. 186.

<sup>27</sup> Heiberg J.L. (ed.), *Anonymi, Logica et Quadrivium*, ό.π., σ. 64.

concerning the difficulties (*δυσανάγωγο*) of nature which lies underneath (“what a miracle”, exclaims the writer of the textbook here) the same one (obviously, the word, God, is meant by the writer) “appears in nature to suggest another way, passable for the ignorant, which is advisable to follow, the way of virtue that teaches apart from pleasure the truth, removing the mist from the eyes and providing holy light so that we are able to see God and the creation. Otherwise, the wise will be able to hear such a glory but not to see it. Because science and learning are tied in with virtue. We could therefore say that virtue is also their guide, since mathematical knowledge itself, without virtue, is, as far as everything is concerned, false, while the virtue itself can succeed even without the mathematical knowledge.”<sup>28</sup> All these as a conclusion concerning a text that is mentioned by various ancient physical philosophers and mathematicians. The writer draws the conclusion that merely through science no one is able to discern God. Virtue is also needed, and obviously Christian virtue and faith. Science itself is not enough, scientific knowledge itself can be false, whereas virtue can stand on its own: *ως αρετής άνευ μαθηματικόν του παντός αμαρτάνειν, μαθηματικής δε χωρίς την αρετήν και καθ’ αυτοίν του παντός ευμοιρείν.*<sup>29</sup> We could say that the conclusion of the unit is in some way a declaration of the unknown writer’s faith, who considers it necessary to include some Christian principles in a text that is entirely based on the heritage of the pagans.

The unknown writer of the text of 1008 often refers to the relation between scientific knowledge and Christian virtue-faith, whereas George Pachymeres, tutor at the Patriarchal School of Constantinople, makes only one relative reference in the introductory poem of his *Syntagma*: whoever hates wisdom can not see God (*Καν γαρ σκοτεινός προς το φως θέλοι μένειν / ω μίσος εντέτηκε κατά σοφίας, / αλλά συνάμα καμμύει και τας κόρας ως αλαός φευ και ψυχήν και καρδίαν / μενει γε τοις βλέπουσι δυσκλεής θέα / ως αποφυγόν του Θεού λαμπράν δόσιν, / δι’ ης διδακτούς και Θεού των κριμάτων / ποιείν εδίδου τους βροτούς θαυμασίως / ως δ’ ου συνήκαν ευδοκεί την μωρία / και την αφ’ απλής πίστεως σωτηρίαν*).<sup>30</sup> Here Pachymeres’ concept is clearly expressed: knowledge leads to seeing God and therefore leads man to salvation. Knowledge about nature does not result to deviating from faith, but acts as a means

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<sup>28</sup> Ibid., σ. 103.

<sup>29</sup> Ibid., σ. 103.

<sup>30</sup> Tannery P., *Quadrivium de Georges Pachymère*, ό.π., σ. 3.

towards the salvation of the soul. Therefore, the study of sciences could give people the chance to come closer to God, as this is their ultimate aim.

### **First Conclusions**

According to what has been mentioned above, a series of open issues results from the concepts proposed in the two texts. First of all, as already mentioned, they are textbooks and not simple annotations. As a result, they are significant in the frame of the educational apparatus and the propagation of concepts.

The first issue that could be discussed is the perception about the main aim that people should have, which is no other than the salvation of the soul. Therefore, the study of sciences for understanding the natural world cannot be a sole aim. The dominant perception suggests that studying contributes to salvation through leading a virtuous life.

On the other hand, it is obvious that the two texts place a different significance on the relation between knowledge and faith. The writer of the text of 1008 stresses on many occasions the importance of faith, which probably reveals that the study of sciences had not yet been completely acceptable and legalised and that there was an on going debate among scientists, as representatives of the pagan tradition, and the Christian concepts. This fact denotes that the well-known Byzantine *Synthesis* of the two traditions, which has been supported, was not necessarily effective.<sup>31</sup> Even in periods during which no religious debates were taking place and as a result there was no spreading of the accusations concerning doctrinal deviations, as for example during the period of the Debate over Icons or the period of the argument about the Unification of the Churches, it seems that the prevailing belief was that the study of sciences and philosophy could prove a dangerous activity for the status quo, even if education was a secular institution, a mechanism on the hands of the imperial authority or the private tutors.

At the beginning of the 14<sup>th</sup> century, when Pachymeres was writing the *Syntagma*, the wariness remains. Pachymeres, as was previously mentioned, makes a declaration of faith in the introduction of his work, although this is the only reference, in a work in which the influence of platonic ideas is more than evident.

Taking these into account, a series of questions remain open. Among other things, the capability and strength of the scholars with their ideological and social determinants

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<sup>31</sup> R. Browning, "Byzantine Scholarship", ό.π., σ. 5.

in the specific scientific frame, if we consider them as members of a group sharing the same characteristics, to pose, inside the given social formation, the issues and the questions they posed.<sup>32</sup> Accordingly, the questions that the society could stand and its determinant characteristics on an ideological level.

In the end, another interesting point for discussion is the creation of a certain tradition, as we could see through the contradiction of the concepts proposed by the two texts with Galileo's perception, as it is expressed in the letter to the Grand Duchess Christina, that sciences help scientists look for the meaning of the Holy Bible...<sup>33</sup>

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<sup>32</sup> A. Gramsci, op.cit., σ. 15.

<sup>33</sup> James T. Cushing, *Philosophical Concepts in Physics-The Historical Relation between Philosophy and Scientific Theories*, Cambridge University Press, Cambridge 1998 (in Greek: *Φιλοσοφικές έννοιες στη φυσική*, επ. επιμ. Κ. Σκορδούλης, Leader Books, Αθήνα 2003, σ. 183).