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Comment

Theology and Science in the Orthodox World: Some Doubts from a Latin Perspective

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Abstract: Efthymios Nicolaidis *et alii* open their essay with what amounts to a paradox: they maintain that Orthodox Christianity “scarcely participated in the making of the new European science” but also quote John William Draper’s positive assessment of the openness of the Orthodox Church to the sciences. Whether they manage to resolve this paradox is unclear. This response to their overview suggests that they neglect two key elements: the categorical difference between medieval *scientia* and modern science; and the role of institutions such as universities and scientific societies. Furthermore, to gauge the relation of Orthodox Christianity to modern science, one would also have had to take the Russian Orthodox Church into account, as after the fall of Constantinople the Greek Orthodox Church was deprived of much of its political and institutional power.

In their essay, Efthymios Nicolaidis and his colleagues sketch the relation between science and Orthodox Christianity over a period of roughly two thousand years. Their very first phrase introduces that relation thus: “Eastern Christianity scarcely participated in the making of the new European science”—the implication being that “Western Christianity” did participate. But a paradox emerges at once, as Nicolaidis *et alii* turn to citing John William Draper to the effect that, in contrast to Catholicism, the Greek Orthodox Church did not combat the new science but, rather, attempted to reconcile revealed truth and scientific rationality. “It would have been well for modern civilization if the Roman Church had done the same,” Draper suggests in the passage quoted by Nicolaidis *et alii*. The following question obviously asserts itself forcefully: If the Orthodox Church had been so open to modern science, why did it “scarcely participate” in it?

Whether, with their *longue durée* overview, Nicolaidis *et alii* manage to provide an answer to this paradox is not evident to me. Even less evident, in my view, is how the story they tell can be matched up with the one that is traditionally told about the emergence of science in Western Europe. Two of the key ingredients that define the Western narrative are missing from theirs: namely, the “internal” factor of the radically changing nature of “science” between the premodern and the modern age; and the “external” factor of the institutions that fostered—or

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impeded—the development of modern science. In the essay under discussion, “science” seems to me to be black-boxed as much as the institutions and bodies that engaged in it or combated it.

A DIFFERENT WAY OF FORMULATING THE QUESTION

The Rise of Scientific Europe, 1500–1800, that highly useful course book edited by David Goodman and Colin A. Russell, contains a number of significant maps, three of which appear to be of particular relevance for our topic. Together, they seem to suggest a reformulation of the issue proposed by Nicolaidis and his colleagues.

The first maps the “centres of translating Greek science, 500–1500.” It has the Mediterranean at the center, with Europe, the Middle East, and North Africa grouped around it. Lots of arrows are seen connecting the Greek-speaking world with Syriac-, Persian-, Arabic-, and Latin-speaking areas, pointing to a thousand-year process of diffusion of Greek learning to other cultures. With respect to the Latin-speaking world, the arrows on the map roughly correspond to Sten Ebbesen’s five distinctive periods in which Greek knowledge spread to the Latin West, the Hellenistic period being the first and the Renaissance the last, with only “a tiny stream of Latin thought” flowing back into the Greek environment in the twelfth and thirteenth centuries.¹

The second map is adapted from the 101st edition of Putzger’s *Historischer Weltatlas* (1990), and it shows “the spread of European universities” between the late twelfth century and the year 1500. The map contains a few dozen dots, with city names and dates attached to them, that cover an area with Lisbon as its westernmost point, Uppsala and Aberdeen as its northernmost limits, Catania and Seville at its southernmost confines, and Fünfkirchen (the modern Pécs, in Hungary), Ofen (today’s Buda, also in Hungary), and Cracow (now in Poland) as the easternmost university cities.² This map shows that while the medieval university system spread to the very limits of inhabited Europe in the west, north, and south, with the shores of the Atlantic Ocean and the Mediterranean providing natural borders, it petered out in the east, with no natural obstacle visible on the map. In fact, the university system, while “supranational” (in the sense of transcending kingdoms and duchies), did not spread beyond the limits of the Catholic world and of Latin as the language of learning. What systems of education may have existed to the east of the Catholic, Latin world, in the domain of Greek and Russian Orthodoxy, remains as unexplained in that particular map as it does in most overviews of medieval learning. It is regrettable that Nicolaidis and his colleagues remain equally silent about higher education in Byzantium, although a comparison of its institutions with those arising in the West would surely have provided an important element in explaining the asymmetrical evolution of “science” in the Catholic and Orthodox worlds.³ Taken together, these two maps suggest a continued cultural transfer from the Greek-speaking world to the Latin one but no inverse movement back into the Byzantine and Orthodox worlds, at either the intellectual or the institutional level.

The third map is equally striking. Adapted from James McClellan’s *Science Reorganized* (1985), it shows the location of scientific societies and academies in 1789. Once again, we are given a European map studded with dots and place-names.⁴ The area covered coincides widely with the second map, although the scarcity of organized scientific activity on the Iberian Peninsula and in the Eastern Hapsburg territories is conspicuous (telling us something about

¹ David Goodman and Colin A. Russell, eds., *The Rise of Scientific Europe, 1500–1800* (Sevenoaks: Hodder & Stoughton, 1991), map 1.3 (p. 20); and Sten Ebbesen, “Greek–Latin Philosophical Interaction,” in *Byzantine Philosophy and Its Ancient Sources*, ed. Katerina Ierodiakonou (Oxford: Clarendon, 2002), pp. 15–30, on p. 28.

² Goodman and Russell, eds., *Rise of Scientific Europe*, map 1.4 (p. 25).

³ See Robert Browning, “Universities, Byzantine,” in *Dictionary of the Middle Ages*, Vol. 12 (New York: Scribner’s, 1989), pp. 300–302; and Browning, “The Patriarchal School at Constantinople in the Twelfth Century,” *Byzantion*, 1962, 32:167–202.

⁴ Goodman and Russell, eds., *Rise of Scientific Europe* (cit. n. 1), map 9.1 (p. 245).

the effects of the Hapsburgs' and Bourbons' implementation of Counter-Reformation educational policies). The other element of discontinuity is constituted by that exceptional scientific society beyond the borders of the formerly Latin world—that is, the St. Petersburg Academy established by Tsar Peter the Great in 1724/1725 on the basis of plans originally designed by Leibniz. When viewed together, the second and third maps underscore the importance of the medieval university system for the birth of what by the eighteenth century began to be called “science” in several vernacular languages. They also show the slowness with which the institutionalization of that combination of systematic natural investigation, experimentalism, and the application of quantitative tools that we associate with the “Scientific Revolution” spread beyond the geographically limited area in which it first took shape. Judging by the third map, it does not seem to have penetrated the Orthodox world, with the exception of St. Petersburg, or, for that matter, the Ottoman Empire.

With respect to Orthodox Europe, the three maps provoke a series of important questions, of which the two most obvious ones are the following. First, what happened in educational, philosophical, and scientific terms in that cultural space that, until the fall of Constantinople in 1453, was not only Christian but continued to radiate out to Latin Christianity? The empty spaces on Europe's eastern flank in the second and third maps amount to the proverbial lacuna that needs to be filled, a *terra incognita* that remains to be explored and brought into the general narrative of the history of science. The second question is this: How did the world of Orthodox Christianity react to the development of the new sciences in the seventeenth and eighteenth centuries? In order to answer that second question, one would have had to look specifically at Russia, because the territory of Greek Orthodoxy had meanwhile fallen into Ottoman hands. But, regrettably, despite the title of their essay, Nicolaidis and his coauthors confine themselves almost exclusively to the area defined by modern Greece and therefore remain silent about the fairly successful Russian attempts to latch onto the scientific awakening of Western Europe. It would have been important to learn what role the Russian Orthodox Church played in fostering, accommodating, or combating this development.

In short, for a satisfactory answer to the question concerning the relation between “Orthodox Christianity” and “science,” one would need to understand, first, how what Nicolaidis *et alii* summarily call “science” developed between the long Middle Ages and the birth of modern science; and, second, the nature of the teaching or research institutions that existed in the various time periods under review and the role that the ecclesiastical hierarchies of Orthodox Christianity played in them.

TERMINOLOGY

Up to now, I have put “science” in quotation marks, for the simple reason that what we call “science” today has very little to do with anything that existed in the Byzantine world—as, conversely, the Greek equivalent of the Latin “*scientia*,” namely “*epistêmê*,” has very little in common with what we nowadays call “science.” The latter is a collective enterprise carried out in research teams or laboratories by salaried “scientists” who seek provisional and empirically falsifiable answers to questions pertaining to the natural world. “*Epistêmê*,” or “*scientia*,” by contrast, signaled the individual and personal possession of a mental disposition thanks to which one had a proper—that is, causal—understanding of a domain of phenomena or actions, which, moreover, was not limited to the natural world. This is why theology could be defined as the *regina scientiarum*, “the queen over the *scientiae*”—a definition that renders all talk of a “battle between science and theology” of course either logically impossible or terminologically anachronistic.

Scholars dealing with Byzantium usually resolve this issue in the following way. When they do use the word “science,” as Anne Tihon does in her essay “Science in the Byzantine

Empire” in *The Cambridge History of Science*, they accept the terminological anachronism by classifying Byzantine knowledge claims according to modern scientific disciplines, such as mathematics, astronomy, geography, optics, botany, and so forth.⁵ Alternatively, when they refer to that large body of natural knowledge that included cosmology, physics, matter theory, and psychology, scholars speak of “natural philosophy,” which is the Aristotelian term that the Byzantines also used and which designated a philosophical discipline that was clearly linked to metaphysics and theology already by Aristotle himself—and even more clearly so in Greek and Latin Christianity.

Alas, Nicolaidis *et alii* do not feel the need to clarify this important terminological issue, and most of the time they project the modern meaning of “science” back to ages in which it did not exist, with the odd consequence that we hear them complain that Orthodox scholars failed to produce “groundbreaking new scientific ideas.” Their failure to define the nature of natural philosophy furthermore results in their apologetic remark that in Byzantium the “natural sciences were related to areas of knowledge that today are not thought of as scientific.” The sentence might instead have read as follows: “In the world of Greek Christianity, just as in the Latin West, there existed no natural sciences in our sense of the word.” In fact, with respect to the period up to roughly 1800, what our five authors often appear to mean by “science” is what they sometimes call “secular humanism,” an equally anachronistic way of referring to “pagan philosophy”—that is to say, the kind of Greek natural philosophy and metaphysics that Christian philosophy and theology combated, transformed, rejected, or absorbed.

To be sure, for the modern age, and certainly for the period after the entry of Newtonian physics or Darwinian biology into the Orthodox world, it certainly is meaningful to speak of science without using quotation marks. For those past two or three centuries, it would indeed be crucial to contrast the reactions of Orthodox churches, and notably of Greek and Russian Orthodoxy, with those of the various Western confessions, not only in conceptual and ideological terms but also in terms of political, economic, and institutional factors. Once again, a specific comparison of the Greek and Russian responses would have been enlightening.

By contrast, for the long period from late antiquity to the Renaissance, what one would need instead is a comparison of the ways in which the two dominant Christian religions went about fitting the Greek heritage to their theological needs. On the face of it, given their largely shared textual basis, medieval Byzantine and Latin natural philosophy do not seem to have differed from one another in radical ways. After all, philosophers and theologians in both cultural and linguistic areas were confronted with the same problem of reconciling Jerusalem with Athens, Christianity with pagan philosophy. For example, could one reconcile Aristotle’s uncreated world with the Judeo-Christian account of Creation?⁶ Differences between the two cultures—for example, the major reliance in Byzantium on Stoic sources—seem to pale next to what they share in terms of common questions and answers.

INSTITUTIONS

With respect to the institutions, the second and third of the above-mentioned maps appear to imply that the Greek Orthodox world possessed neither medieval and Renaissance universities nor early modern scientific academies. Surveys of Byzantine learning seem to confirm this impression: “There were in Byzantium no institutions of higher education in which philosophers could be trained as philosophers. The main purpose of institutional higher studies was to train

⁵ Anne Tihon, “Science in the Byzantine Empire,” in *The Cambridge History of Science*, Vol. 2, ed. David C. Lindberg and Michael H. Shank (Cambridge: Cambridge Univ. Press, 2013), pp. 190–206.

⁶ See, e.g., Börje Bydén, “Natural Philosophy, Byzantine,” in *The Encyclopedia of Medieval Philosophy*, ed. Henrik Lagerlund (Dordrecht: Springer, 2011), pp. 858–863.

civil servants,” we are told by Katerina Ierodiakonou. And Sten Ebbesen adds that even in the thirteenth century, when Constantinople was ruled by the knights that had conquered it during the Fourth Crusade (1204), “no university took root in the Greek world.”⁷ Whether this absence of institutes of higher learning was specifically due to a different attitude to the philosophical disciplines on the part of the Orthodox Church is something one would have liked to learn from the article under discussion, but the topic is not broached by Nicolaidis *et alii*.

The Byzantine Empire is routinely described in the literature as “hierarchical (in both senses of the term), patriarchal, and authoritarian.” After drawn-out battles over the relation between emperor and patriarch, the ranking among the patriarchal sees, the Orthodox creed, and the definition of the nature of Christ, as well as two violent iconoclastic periods, the Seventh Ecumenical Council (843), known as the “Triumph of Orthodoxy,” is said to have generated a certain stability at the doctrinal front—which, however, implied a rigid suppression of deviant views. “No manner of impiety [i.e., heresy] shall henceforth speak freely,” in the words of the patriarch Photius (867). The litany on the Sunday of Orthodoxy, the so-called *Syndokon of Orthodoxy*, contained a denunciation of errors and of individuals that maintained them.⁸ One would have liked to know whether this doctrinal practice differed from what one knows from the Latin Middle Ages and, if so, how. To be sure, there was no Holy Office in Constantinople, no Index of Forbidden Books, and no trials for adherence to heliocentrism—Catholic instruments of repression on which Draper’s conflict thesis puts much emphasis. But for purely chronological reasons, it is not evident whether we should therefore conclude that Orthodoxy was more open-minded with regard to “science.” After all, Constantinople was conquered by the Ottomans in 1453, and the last remains of the Byzantine Empire followed quickly thereafter. But 1453 is just about when printing was invented (without which an Index of Forbidden Books is meaningless); it is roughly sixty years before the Reformation (in reaction to which the Holy Office was established in Rome) and ninety years before Copernicus’s *De revolutionibus* (for public adherence to which Galileo was condemned). Since, after 1453, the Greek Orthodox Church lacked the political and institutional power that the Catholic Church still possessed, we can only speculate about how it would have reacted to the events that the Catholic Church fought so forcefully. For this reason, again, it would have been illuminating to examine the response of Russian Orthodoxy, which had lost neither territory nor power to non-Christian conquerors.

DRAPER’S CONFLICT THESIS

All of this brings us to the Draper thesis, with which Nicolaidis and his coauthors begin their essay and with which I propose to conclude mine. Nicolaidis *et alii* are fully aware that Draper’s famous *History of the Conflict between Religion and Science* of 1875 was mainly directed at the Roman Catholicism of the 1870s and, more specifically, at the theocratic papacy and its all-Italian court, the *curia*: “Look at its composition! It consists of pope, cardinal bishops, cardinal deacons, who at the present moment are Italians; cardinal priests, nearly all Italians; ministers and secretaries of the Sacred Congregation in Rome, all Italians.” In the 1850s and 1860s, *Risorgimento* Italy had moved toward unification under one crown, and in 1871, exactly four years before Draper’s book was published, the last missing region, the pontifical state, was conquered by monarchical troops. In his drawn-out fight against these developments, the pope had not only declared himself infallible but had launched an out-and-out war on modernity. In

⁷ Katerina Ierodiakonou, “Introduction,” in *Byzantine Philosophy and Its Ancient Sources*, ed. Ierodiakonou (cit. n. 1), pp. 1–13, on p. 4; and Ebbesen, “Greek–Latin Philosophical Interaction,” p. 25.

⁸ Dion C. Smythe, “Byzantine Empire,” in *Censorship: A World Encyclopedia*, ed. Derek Jones (London: Fitzroy Dearborn, 2001), pp. 394–395, on p. 395.

so doing, in Draper's eyes, the Catholic Church, held hostage by a few noble Italian families, espoused an intolerably extremist position. Given the aim of his book, which was to expose the prehistory of the pope's antimodernism, it comes as no surprise that Draper explained: "I have had little to say respecting the two great Christian confessions, the Protestant and Greek Churches." As for the Greek Orthodox Church, it looked to Draper disempowered and meek enough, although there is little evidence that he dedicated any time to investigating its doctrinal positions. As for the other confessions, he held that "none of the Protestant Churches has ever occupied a position so imperious" as the Catholic Church. But this is not the whole story: in Draper's eyes, the Protestant Churches were not only involved in the history of science negatively, by lacking the power to stop it, but also positively, as "modern Science is the legitimate sister—indeed, it is the twin-sister—of the Reformation."⁹

His thesis regarding Protestantism shall not detain us here; what is of interest in the present context is that in narrating the prehistory of the antimodernist and antiscientific attitude of the Catholic Church, Draper conveniently forgets that the Jewish messianic movement that eventually became the state religion of the Roman Empire was not called "Catholicism" and that the confessional subdivisions he handles are of a later date. Nor was the initial persecution of pagan philosophy, and whatever may with hindsight be called "scientific" about it, specifically Catholic. Take the clash between the Patriarch of Alexandria, Cyril, and the philosopher Hypathia, famous daughter of the equally famous mathematician Theon, which ended with the atrocious murder of the philosopher in 415. "Hypathia and Cyril! Philosophy and bigotry. They cannot exist together," Draper exclaims. Why this episode should belong exclusively to the history of Catholicism and not equally to that of the Orthodox Church remains however unexplained.¹⁰ Draper conveniently forgets that the Great Schism, which formally separated the two Churches, occurred in 1054, a full six centuries after Hypathia—who, moreover, spoke Greek.

Like Nicolaidis *et alii*, Draper thus tends to project constellations defining the modern age back to centuries that in reality should be categorized differently. In Draper's case, it is Pope Pius IX's antimodernism whose roots are sought as far back as the first centuries A.D. But Draper's leitmotif of Catholic theology as an impediment to science implies not only an anachronistic application of confessional distinctions to earlier ages but also a willful omission of the constructive role of the ecclesiastical hierarchies in the founding of schools, universities, and teaching orders, which resulted in the medieval flourishing of learning, which in turn was a necessary, though certainly not a sufficient, reason for the emergence of modern science. In the case of Nicolaidis *et alii*, the observation that, in the modern age, "Eastern Christianity scarcely participated in the making of the new European science" leads to a backward projection of a modern notion of science to a period in which it cannot possibly be found.

This does not mean that it would not be highly meaningful to ask the same question that has been asked with respect to China and the Islamic world: Why did the Scientific Revolution not take place in China or the Middle East—or, for that matter, in Byzantium?¹¹ In order to find a satisfactory answer, I suggest, we would need a close comparison of the intellectual, political, institutional, and economic factors defining the evolution of West and East European societies. In such a comparison, religion would obviously have to play an important role, in its various guises: religion as a social force, as a theological system, as a political power, and as a worldview.

⁹ John William Draper, *History of the Conflict between Religion and Science* (London: Henry S. King, 1875), pp. 341, x, xi, 353.

¹⁰ *Ibid.*, p. 55.

¹¹ For a discussion of all three regions—China, the Islamic world, and the Byzantine Empire—see H. Floris Cohen, *How Modern Science Came into the World: Four Civilizations, One Seventeenth-Century Breakthrough* (Amsterdam: Amsterdam Univ. Press, 2012), esp. Ch. 1.