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A Tribute to Rifa'at Abou-El-Haj

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İSAM

Some Thoughts on the Politics of Early Modern Ottoman Science

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Verily, Plato was a Prophet.
Attributed to Muhammad
by Nev'i (d. 1599)

I am not trained in the history of science. However, inspired by the intellectual courage of Rifa'at Abou-El-Haj for whom this volume is a small tribute, I would like to tackle a well known debate on the "decline" of "Islamic science" with a view to argue that science, just as almost anything else in life, has always been political, and that an awareness of this political context would enrich our understanding of both political and scientific developments in the early modern Ottoman Empire. The present piece is centered on the short-lived Ottoman Imperial Observatory that was founded and then destroyed by Murad III (1574-95). I will point out the political aspects of the decision to establish such an observatory and also underline the political nature of the opposition that led Murad III to order its destruction. But before doing any of this, let me start by providing the contours of the late sixteenth century Ottoman political stage.

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As persuasively argued by Abou-El-Haj, the sixteenth century was a period of profound transformation in the Ottoman Empire.[1] The expansion and unification of imperial currency zones and markets fostered the development of new social forces represented by merchants and financiers who entered the Ottoman political nation despite the vocal protests of the members of the old ruling elite, the descendants of the conquerors and the royal slaves (mostly *devşirme*s), who considered the newcomers as "outsiders," or *ecnebi*s.[2] The gradual demise of feudal institutions and the expansion of the political nation created certain pressures on the ruling institution which had to redefine itself, either by expanding itself to include the newly enlarged political nation, or accepting a representative position vis-à-vis the political nation and thus losing its hegemony over the political process. In this long process of redefining itself, the royal authority increased its efforts to control the sphere of jurists' law (applied Sharia), first, in order to facilitate the development of a market economy by such devices as the cash *vakıf* the beneficiaries of which were the new members of the Ottoman political nation,[3] and second, to sustain its hegemony over the political process by regulating the relations between the members of the political nation that were governed by private law, a sphere of jurists' law rather than feudal administrative law which used to be codified by the dynasty. Elsewhere I elaborate on how these royal efforts to build an Ottoman absolutism opened the way for jurists to intervene in dynastic affairs, such as filicide and fratricide, as the dynasty could not keep trying to control jurists' law if it did not allow them to enter its own domain as well. Thus jurists' law became a more politically contested field than ever, leading to the development of two distinct political positions in the late sixteenth and seventeenth centuries with regard to one's conception of Ottoman royal

1 Rifa'at 'Ali Abou-El-Haj, *Formation of the Modern State: The Ottoman Empire, sixteenth to eighteenth centuries* (Albany: State University of New York Press, 1991).

2 On the expansion and unification of imperial currency zones, see Baki Tezcan, "The Ottoman Monetary Crisis of 1585 Revisited," *Journal of the Economic and Social History of the Orient* 52 (2009): 460-504.

3 On cash *vakıf*s, see Jon E. Mandaville, "Usurious Piety: The Cash Waqf Controversy in the Ottoman Empire," *International Journal of Middle East Studies* 10 (1979): 289-308.

authority and its limits. I call one of these positions absolutist, the other constitutionalist.[4]

Notwithstanding widely held beliefs about the despotic nature of Ottoman royal authority which inspired Max Weber to conceptualize the Ottoman polity as the stereotypical example for "sultanism," an extreme case of patrimonialism,[5] it is quite difficult to find examples of absolutist literature among Ottoman political tracts. The general picture that emerges from reading Ottoman treatises on politics is that sultans did not have the power to change the laws of the polity. Even when the sultans were invited to take an active part in the government of the empire, they were mostly expected to restore the *kanun-ı kadim*, or the "ancient constitution," rather than to change it. And yet, treatises arguing that the sultan should not change the ways of the "ancient constitution" abound,[6] as if the writers of these works were refuting a widely held counter argument which recognized the sultan's royal prerogative. So it is hard to explain why the opposition constantly thought it necessary to refute an argument which almost no one was putting forward in political tracts. When one looks at other kinds of literature than specifically political tracts, however, it becomes clear that the case for absolutism was indeed made, albeit in much more subtle ways than one would expect.

Mehmed Su'udi's *New Report*, or *Hadîs-i Nev*, was such a work.[7] The *New Report* represented an absolutist response to the constitutionalist view

4 For a more detailed discussion of these developments, see Baki Tezcan, *The Second Ottoman Empire: Political and Social Transformation in the Early Modern World* (New York: Cambridge University Press, 2010), 14-78.

5 See Halil İnalcık, "Comments on 'Sultanism:' Max Weber's typification of the Ottoman polity," *Princeton Papers in Near Eastern Studies* 1 (1992): 49-72.

6 See, for instance, the anonymous *Kitâb-ı müstetâb*, ed., Yaşar Yücel (Ankara: Ankara Üniversitesi Dil ve Tarih-Coğrafya Fakültesi Yayınları, 1974); reprinted in *Osmanlı Devlet Teşkilâtına Dair Kaynaklar: Kitâb-ı Müstetâb—Kitabu Mesâlihi'l Müslimîn ve Menâfi'i'l-Mü'minîn—Hırzü'l-Mülûk*, ed., *idem.* (Ankara: Türk Tarih Kurumu Yayınları, 1988), pp. 1-45, 1-77; and Koçi Bey, *Koçi Bey Risalesi*, ed., Ali Kemali Aksüt (Istanbul: Vakit, 1939).

7 For an English translation of a later edition of this work, see Thomas D. Goodrich, *The Ottoman Turks and the New World: A study of* Tarih-i Hind-i Garbi *and sixteenth-century Ottoman Americana* (Wiesbaden: Otto Harrassowitz, 1990).

articulated in a book like the *Law-book of China*,[8] which aimed at limiting the powers of the monarch with a traditionalist argument based on an invented tradition, claiming that the laws enacted by the founding fathers were meant to be for posterity. The case for the independence of the monarch to change the laws as he sees fit was implied in the *New Report* by an experimentalist argument, which asserts that recent discoveries have proven ancient traditions to be deficient. I argue that the *New Report* makes a case for experience that leads to knowledge and for boldness that leads to political glory. In short, I read the *Law-book of China* and the *New Report* as representatives of two opposing political views based on two opposing epistemologies: a constitutionalist view based on a traditionalist epistemology versus an absolutist view based on an experimentalist epistemology.[9]

This connection between an experimentalist epistemology and absolutist politics that is implied in the *New Report* is a great tool to analyze the place of rational sciences in the Ottoman polity of the late sixteenth century. Projects which sixteenth century Muslim scholars would categorize under the umbrella of rational sciences (*al-'ulūm al-'aqliyya*, Ar.) were patronized mainly by the Ottoman court in this period. These projects were either opposed or neglected by most of the representatives of the Ottoman *ulema*, or scholar-jurists. The majority of Ottoman scholar-jurists identified themselves with what they called traditional (or "transmitted") sciences (*al-'ulūm al-naqliyya*, Ar.), such as jurisprudence and exegesis. They saw the patronage offered by the court to rational sciences or to scholars who preferred rationalist arguments as a threat against the supremacy of their traditionalist epistemology that was the basis of jurists' law. In order to restrain absolutist tendencies, I argue, many jurists vigorously protected the domain of the law and the supremacy of traditionalist epistemology; thus were the rational sciences ousted from Ottoman colleges of law, or *medrese*s. This is the political context within which the relative stagna-

8 See Robert Anhegger, "Hezarfen Hüseyin Efendi'nin Osmanlı Devlet Teşkilatına Dair Mülahazaları," *Türkiyat Mecmuası* 10 (1951-53): 365-393, at 365-6.

9 Baki Tezcan, "Law in China or Conquest in the Americas: Competing constructions of political space in the early modern Ottoman Empire," forthcoming in *Journal of World History*; for a textual analysis of certain sections of the *Law-book of China*, see Baki Tezcan, "The Multiple Faces of the One: The invocation section of Ottoman literary introductions as a locus for the central argument of the text," *Middle Eastern Literatures* 12 (2009): 27-41, at 35-8.

tion of rational sciences in the Ottoman Empire of the late sixteenth and seventeenth centuries has to be evaluated. The debates on the "decline" of "Islamic science" had until recently been consumed mainly by two parties, both of which approached the issue in as much an essentialist fashion as the other. While Western Orientalists blamed Islam, some revisionist Muslim scholars responded by asserting that Islam is not against science.[10] Bringing the political context of scientific production into the center of analysis might present a promising way to get out of this unproductive debate between two types of essentialism.

In the years immediately preceding the composition of the *Law-book of China* (c. 1582) and the *New Report* (1583), the Ottoman court had sponsored a project that would be categorized by the contemporary educated elite as one belonging to the domain of rational sciences. This was the Imperial Observatory. The establishment of this observatory, as well as its destruction soon after, has drawn some attention in Ottoman historiography, especially in Ottoman history of science. While its making is hailed as the most significant scientific project that the Ottomans ever undertook, its destruction is seen as the first important symptom of the enmity shown toward science in the Ottoman Empire during the period of decline.[11] I believe that the making and un-making of this observatory within a period of a few years at the beginning of Murad III's reign offers an opportunity to approach the question of decline in Ottoman science politically, espe-

10 Avner Ben-Zaken, "The *Angelus Novus* of Early Modern Science: The Past, the East and the Circulation of post-Copernican Astronomy in the Eastern Mediterranean, 1560-1660," Ph.D. diss. (University of California, Los Angeles, 2004), 15-18. Professional historians of science who worked on the Islamic world produced more subtle analyses and yet did not give up on the centrality of the question of decline over the years; see, for instance, Aydın Sayılı, *The Observatory in Islam and its Place in the General History of the Observatory* (Ankara: Türk Tarih Kurumu, 1960), 407-29, and George Saliba, *Islamic Science and the Making of the European Renaissance* (Cambridge: MIT Press, 2007), 233-55.

11 See, for instance, A. Adnan Adıvar, *Osmanlı Türklerinde İlim*, fourth ed. (Istanbul: Remzi Kitabevi, 1982), 99, 106. For a book length study on the observatory, see A. Süheyl Ünver, *İstanbul Rasathanesi* (Ankara: Türk Tarih Kurumu, 1969). A very well known manuscript illustration from Seyyid Lokman's *Shahinshāh-nāme*, vol. 1 (Istanbul University Special Collections, FY [Manuscripts in Persian] 1404) showing Taqī al-Dīn and his colleagues at work in this observatory has embellished the pages of many a book on "Islamic science" although the observatory was in operation for a very short time only.

cially if one were to follow the threads suggested above which connect an experimentalist epistemology with an absolutist political agenda and a traditionalist one with constitutionalist articulations. Before going any further, though, a short overview of the history of the Imperial Observatory is in order.

Muḥammad Taqī al-Dīn is the man who brought this Ottoman observatory to life. Taqī al-Dīn's father Ma'rūf taught Shafi'ite jurisprudence at a Damascene college of law, and he himself spent most of his life in greater Syria and Egypt.[12] Yet Taqī al-Dīn visited Istanbul many times where he established a number of connections with the scholar-jurists of the mid-sixteenth century and also utilized the private library of the grand vizier Semiz Ali Pasha (d. 1565).[13] After the enthronement of Murad III in late 1574, Taqī al-Dīn came under the protective wings of Sa'deddin, the private mentor of the new ruler. Taqī al-Dīn was already engaged in making observations while he was in Egypt, and he continued them in Istanbul from such locations as the Galata Tower and the private residence of Sa'deddin, where he observed an eclipse in 984/1576-7.[14] It was Sa'deddin who personally introduced the idea of building an observatory to Murad III.[15] The

12 For his father, see Najm al-Dīn Muḥammad bin Muḥammad al-Ghazzī, *Al-kawākib al-sā'ira bi-a'yān al-mi'a al-'āshira*, ed. Jibrā'il Sulaymān Jabbūr, 3 vols. (Beirut: American University of Beirut, 1945-59), vol. 3, 207-8; see also Rula Jurdi Abisaab's article in this very volume, 164, n. 28. There are four schools of law in the Sunni Islamic tradition; Egypt and Syria were predominantly Shafi'ite while the central Ottoman lands were Hanafi. Notwithstanding this obvious eastern Arab context for Taqī al-Dīn's life, modern Turkish scholars emphasize the Turkish ancestry Taqī al-Dīn claims for himself, which goes back to some well-known twelfth century Turkish commander who fought under Nur al-Dīn Zangī and Ṣalaḥ al-Dīn Ayyūbī (Saladin); see, for instance, Ramazan Şeşen, "Meşhur Osmanlı Astronomu Takîyüddîn el-Râsıd'ın soyu üzerine," *Erdem* 4/10 (1988): 165-71 (French tr., 173-80). Rather than showing Taqī al-Dīn's Turkishness, this ancestry suggests the successful assimilation of the conquering political elite into the local culture in the Levant.

13 Taqī al-Dīn seems to have worked in Semiz Ali Pasha's library in the 1550s before the latter became grand vizier; see Ekmeleddin İhsanoğlu, et al., *Osmanlı Astronomi Literatürü Tarihi*, 2 vols. (Istanbul: IRCICA, 1997), vol. 1, 206.

14 Aydın Sayılı, "Alâuddin Mansur'un İstanbul Rasathanesi hakkındaki şiirleri," *Belleten* 20 (1956): 411-84, at 435.

15 Lokman, *Shahinshāh-nāme*, vol. 1, f. 56a, as edited by Aydın Sayılı, "Alâuddin," 452 [tr., 476]. Sayılı misidentified the author of the manuscript by taking the name of the copier for that of the author.

sultan supported the project enthusiastically, making various financial and intellectual resources available for Taqī al-Dīn. Yet soon after the building was completed it seems to have drawn a strong opposition led by Ahmed Kadızade, the grand mufti (*şeyhülislam*), who pressured Murad III to destroy it. Murad III gave in, and the Imperial Observatory was destroyed in early 1580. Taqī al-Dīn died in 1585.[16]

Rather than evaluating the building and destruction of the observatory as an indication of the frequently cited or implied opposition between "progressive science" and "reactionary religion," I am inclined to see the event as a political confrontation. As far as a monarch is concerned, the building of an observatory was a political statement in two different ways. First, it was a claim to great might as the monarch was sponsoring a very rare and complicated project. Second, it was an attempt to assert monarchical power within the realm of knowledge that was the purview of the scholar-jurists.[17] The opposition of the grand mufti, then, becomes a political response, as I indicate below.

In order to demonstrate the first dimension of Murad III's political statement in building an observatory, that is the display of might, one should remember earlier observatories and their patrons. A well known one was spon-

16 For a biography of Taqī al-Dīn, see Muammer Dizer, *Takiyüddin* (Ankara: Kültür Bakanlığı, 1990). Several of his works have been edited and/or studied in Arabic and Turkish; see, for instance, Sevim Tekeli, ed., tr., *The Clocks in the Ottoman Empire in the 16th century and Taqi al Din's "The brightest stars for the construction of the mechanical clocks"* (Ankara: Felsefe Araştırmaları Enstitüsü Yayınları, 1966); Remzi Demir, tr., *Takiyüddin'de Matematik ve Astronomi: Ceridetü'd-dürer ve haridetü'l-fiker üzerine bir inceleme* (Ankara: Atatürk Kültür Merkezi, 2000); Hüseyin Gazi Topdemir, *Takiyüddin'in Optik Kitabı: Işığın niteliği ve görmenin oluşumu, Kitâbu Nûr-i hadakati'l-ebsâr ve nûr-i hadikati'l-enzâr* (Ankara: Kültür Bakanlığı Yayınları, 1999); Muná Sanjaqdār Sha'rānī, *Dirāsah taḥlīliyya li-makhṭūt al-ṭuruq al-saniyya fī'l-ālāt al-rūḥāniyya li-Taqī al-Dīn Muḥammad ibn Ma'rūf al-Dimishqī* (Kuwait: Sharikat al-Khalīj li'l-Istishārat al-Mutḥafiyya, 2002).

17 These observations should not be taken to mean that there was no other significance than an internally oriented political one at stake. The international context that led to the foundation of this observatory has been analyzed with exceptional creativity and vision by Ben-Zaken, "The *Angelus Novus* of Early Modern Science," 34-119. I must add that his analysis could also be used to strengthen some of the points made in this study – perhaps in a different article at a different occasion.

sored by Hulagu, the Mongol conqueror who brought the Abbasid caliphate in Baghdad to an end in 1258. Naṣīr al-Dīn Ṭūsī (d. 1274), a Persian scholar who founded the Maragha observatory for Hulagu, stated that "in no age which was without a great and world-controlling king has it been possible to build observatories." Ṭūsī's pupil Ḥasan bin Muḥammad, known as Nizām al-A'raj (d. ca. 1330), commented upon Ṭūsī's words, stating that

> It is fixed in the minds of intelligent people that the works of kings are kings among works. This is especially true of observation programs.

According to Nizām al-A'raj, it is not the financial resources that constitute the most critical obstacle, but rather the power to bring together the most accomplished masters of an age to work together in a complicated project.[18] It was this kind of power that had made the Mongol observatory in Maragha possible; and it was not a coincidence that the next major observatory of the Islamic World was founded in Samarkand by Ulugh Beg, a scholar-king and the grandson of Timur, another major conqueror.[19]

Thus when Sa'deddin brought the observatory project to the attention of Murad III, the monarch's positive response was not simply an indication of his benevolent interest in science but at the same time a claim for political might. Soon after the foundation of the observatory, Murad III's court historiographer Seyyid Lokman authored a short treatise that described the instruments used in the observatory in some detail and with great precision. In this unusually technical piece of court historiography, Lokman stated that the fortunes of his sultan were much more powerful than those of the Ilkhans, the Mongol monarchs who ruled over Anatolia, Iraq, and Persia in the thirteenth and fourteenth centuries:

> Although the Ilkhans arranged some astronomical observations, this renewal [of the observations] and the abrogation [of the earlier results] rendered them passé.
>
> Everyone who saw the new book of astronomical tables knew that the fortune of this [ruler] is more powerful than all others.[20]

18 Sayılı, "Alâuddin," 442-3; see also Sayılı, *The Observatory in Islam*, 249, 436.

19 L. Bouvat and Orhan F. Köprülü, "Uluğ Bey," *İslam Ansiklopedisi*, vol. 13, 27-9.

20 Sevim Tekeli, "Âlât-ı rasadiye li zic-i şehinşahiye," *Review of the Institute of Islamic Studies* 3 (1959-60): 1-30, at p. 5; my translation of the text slightly differs from Tekeli's, compare Tekeli "Meçhul bir yazarın İstanbul rasathanesinin

Murad III was mightier than the Mongol monarchs because his observatory produced new results that abrogated the old ones.

It was not just in court historiography that one saw such claims to unprecedented might connected with the observatory, but one read similar statements in official orders sent out from the court to relevant officers who had to procure things related to the business of the observatory, as well. One such order about the assignment of a fief to Taqī al-Dīn, for instance, states that timekeeping is of extreme significance for the fulfillment of divine obligations. "Until the present time," the document makes Murad III say, scholars used astronomical tables to ascertain the time. "Since new astronomic observations [perhaps the "new astronomy" (*rasad-ı cedîd*)] were thought to be improbable (*emr-i ba'îd fehm olmagla*)," the emperor is made to assert, none of his forefathers enjoyed God's facilitation to render such a project possible. Yet God's support is behind Murad III.[21] So these new observations, or the "new astronomy" if you will, will be realized during his reign. In short, the Imperial Observatory provided Murad III with an opportunity to project his political power and compare it with the great monarchs of the past, including Mongols and earlier Ottoman sultans. This was the first sense in which the Imperial Observatory was a political statement issued by Murad III.

The second dimension of Murad III's political statement in building an observatory is related to the relationship between the monarch and the law, a field that was represented by the scholar-jurists. The glorification of the new and of the knowledge reached by experience as opposed to that provided by tradition, which are both relevant for rational sciences, have political implications in the context of defining the limits of royal authority. The patrimonial empire of Süleyman the Magnificent was consolidated through a consensus on the supremacy of the law as was defined by the jurists who, in their turn, secured a certain degree of political autonomy for their caste.[22] The royal patronage of rational sciences was not necessarily a frontal attack

âletlerinin tasvirini veren Âlât-ı rasadiye li-zîc-i şehinşahiye adlı makalesi," *Araştırma* 1 (1963): 71-122 [English translation at 86-97], 90. On the identification of the author, see Tezcan, "The Multiple Faces of the One," 39-40, n. 1.

21 See the document as edited by J. H. Mordtmann, "Das Observatorium des Taqī ed-dīn zu Pera," *Der Islam* 13 (1923): 82-96, at 93-4, followed by a German translation, 94-5.

22 Especially the higher echelons of the scholar-jurist hierarchy, the *mevâlî*, or lords of the law, were able to accumulate a considerable degree of political power in their

against the supremacy of the law and the autonomy of the jurists. Yet it had the potential of undermining the traditionalist epistemology that formed the basis of the law and that provided the jurists with relative political autonomy from royal authority. The close relationship between the royal patronage of rational sciences and a policy of active interference in the field of the law, which I would like to focus next, strongly suggests that this potential royal threat to the definition of the law by the jurists was a serious one.

I would argue that historically, rational sciences, such as mathematical, natural, and philosophical areas of inquiry, seem to have enjoyed the most generous royal patronage under rulers who felt politically strong enough to actively legislate in the field of the law. Pre-Ottoman examples of this in the regions that the Ottomans came to rule are readily available. The one that comes first to mind is the Abbasid Caliph al-Ma'mūn (d. 833), who was one of the greatest benefactors of rational sciences as well as rationalist theology — incidentally, he also sponsored observatories.[23] He actively intervened in the domain of the jurists with the *miḥna* he instituted which was a kind of inquisition meant to enforce a certain understanding of theology with a view to control the making and articulation of the law.[24] For the late sixteenth century Ottomans, however, the immediate historical reference was in their recent past. Mehmed II was known for his active interference in criminal law by sanctioning compilations of customary law some of which were against the stipulations of jurists' law,[25] and his abrogation of a very large number of *vakıf*s, foundations that were absolutely legitimate according to jurists' law.[26] He was also one of the most generous patrons of rational sciences. As noted by Ekmeleddin İhsanoğlu,

families; see Baki Tezcan, "The Ottoman *mevâlî* as 'lords of the law,'" *Journal of Islamic Studies* 20 (2009): 383-407.

23 Sayılı, *The Observatory in Islam*, 51.

24 See John A. Nawas, "A Rexamination of Three Current Explanations for al-Ma'mun's Introduction of the Mihna," *International Journal of Middle East Studies* 26 (1994): 615-29; *idem*., "The Mihna of 218 A.H./833 A. D. Revisited: An Empirical Study," *Journal of the American Oriental Society* 16 (1996): 698-708.

25 See Uriel Heyd, *Studies in Old Ottoman Criminal Law*, ed. V. L. Ménage (Oxford: Oxford University Press, 1973), 180-3.

26 Actual examples for such *vakıf*s may be found in *Hüdavendigâr Livası Tahrir Defterleri*, eds. Ömer Lûtfi Barkan and Enver Meriçli, vol. 1 (Ankara: Türk Tarih Kurumu, 1988).

the foundation deed of the college he established in his newly conquered capital included an explicit reference to competence in rational sciences as well as traditional ones while describing the qualifications to be looked for in the professors who would teach there.[27] The professors who taught at the College of Mehmed II in the second half of the fifteenth century were indeed well known for their interest in rational sciences.[28]

In the historical context offered by this relationship between an active patronage of rational sciences and royal initiatives in the field of the law, Murad III's sponsorship of Taqī al-Dīn in the late 1570s acquires a political significance. I argue that for the contemporaries of Murad III, the place of rational sciences in Ottoman public space was a subject of debate in which the sultan intervened for his own interests. In the aftermath of the political consensus that was achieved in the patrimonial empire of Süleyman between the court and the jurists, rational sciences seem to have been gradually ousted from Ottoman colleges. A well-documented anecdote about Taqī al-Dīn's work in the observatory provides a very telling example. Although Taqī al-Dīn must have had a good library of his own, he was still in need of books on astronomy and related sciences. Upon making some inquiries, he must have learned that an endowed library in the city included such books. Thus one reads an order sent by the central administration to the chief judge of Istanbul in April 1578, asking him to procure for Taqī al-Dīn the relevant books of "the late Lutfullah" which should be under the supervision of a certain mosque's imam in the city.[29] Both Adnan Adıvar and Cevad İzgi, two prominent names in Ottoman history

27 Ekmeleddin İhsanoğlu, "Fâtih Külliyesi Medreseleri Ne Değildi: Tarih yazıcılığı bakımından tenkit ve değerlendirme denemesi," in *İstanbul Armağanı*, vol. 1: *Fetih ve Fatih* (Istanbul: İstanbul Büyükşehir Belediyesi Kültür İşleri Daire Başkanlığı, 1995): 105-36; reprinted in *idem*., *Büyük Cihad'dan Frenk Fodulluğuna* (Istanbul: İletişim, 1996), 39-84, at 45.

28 An example that comes to mind right away is Molla Lutfi, see Orhan Şaik Gökyay and Şükrü Özen, "Molla Lutfi," *Türkiye Diyanet Vakfı İslâm Ansiklopedisi* [*İA2* hereafter], vol. 30, 255-8.

29 İsmet Miroğlu, "İstanbul rasathanesine âit belgeler," *Tarih Enstitüsü Dergisi* 3 (1973): 75-82, at 80, document no. 2; for its previous publications, see 78, n. 19. A similar order dated 1583 is noted by İsmail E. Erünsal, *Türk Kütüphaneleri Tarihi*, vol. 2: *Kuruluştan Tanzimat'a kadar Osmanlı Vakıf Kütüphaneleri* (Ankara: Atatürk Kültür Merkezi, 1988), 54, n. 304. The latter one may have been for the use of Su'udi who was working on the *New Report* at the time.

of science, identify "the late Lutfullah" as Mullah Lutfi of Tokad.[30] This identification is well-founded as Mullah Lutfi is known to have owned a rich library and also to have built and endowed a mosque in Istanbul.[31] What makes this anecdote a very telling example about the faith of rational sciences in the Ottoman Empire is that Mullah Lutfi was executed upon allegations of heresy in 1495. Lutfi's execution was not a condemnation of rational sciences as the jurists who condemned him to death included one who had an active interest in rational sciences as well.[32] It is much more significant to note, however, that eighty-three years after the execution of Lutfi, no library in Istanbul could offer as rich a collection in astronomy and related sciences as this personal library from the second half of the fifteenth century. Thus Mehmed II's plans for the Ottoman *medrese*, or college, seem to have been diverted.

That the rational sciences have been ousted from *medrese* instruction during the course of the sixteenth century is a point emphatically made by Katib Çelebi in the seventeenth century. He notes both in his monumental bibliographical dictionary *Kashf al-ẓunūn* and his *Balance of Truth* that works even indirectly related to philosophy were ousted from the *medrese* curriculum.[33] In support of his point, Katib Çelebi cites in his former work a senior contemporary of his, the Egyptian scholar Shahāb al-Dīn Aḥmad al-Khafajī (d. 1659), who spent most of his adult life in Istanbul in the last decade of the sixteenth and the first half of the seventeenth centuries. Khafajī became a student of Sa'deddin, who had introduced Taqī al-Dīn to Murad III (1574-95) earlier. Khafajī was very familiar with the Ottoman educational-judicial system as he himself participated in it and reached some relatively high positions, such as the judgeships of Gümülcine

30 Adıvar, *Osmanlı Türklerinde İlim*, 108; Cevat İzgi, *Osmanlı Medreselerinde İlim*, 2 vols. (Istanbul: İz, 1997), vol.1, 126.

31 Gökyay and Özen, "Molla Lutfi," 256.

32 Ahmet Yaşar Ocak, *Osmanlı Toplumunda Zındıklar ve Mülhidler (15. – 17. yüz-yıllar)* (Istanbul: Tarih Vakfı Yurt Yayınları, 1998), 222-3; for more details on the allegations of heresy, see İsmail E. Erünsal, "XV-XVI. Asır Osmanlı Zendaka ve İlhad Tarihine bir Katkı," *Osmanlı Araştırmaları / The Journal of Ottoman Studies* 24 (2004): 127-57, at 134-6; İzgi, *Osmanlı Medreselerinde İlim*, vol. 1, 118-9.

33 Kâtib Çelebi, *Keşf-el-zunun*, eds. Şerefettin Yaltkaya and Kilisli Rifat Bilge, 2 vols. (Istanbul: Maarif Matbaası, 1941-43), vol. 1, c. 680; *idem*., *Mîzanü'l-hakk fi ihtiyari'l-ahakk (En doğruyu seçmek için hak terazisi)*, modern Turkish ed. Orhan Şaik Gökyay (Istanbul: Tercüman, 1980), 21.

(modern Komotini) and Salonica—both of them in Greece—and the chief judgeship of Egypt.[34] His remarks on the decline of sciences in the central lands of the Ottoman Empire have to be taken with a grain of salt for he left Istanbul in great disappointment in the early 1640s.[35] After his dismissal from the chief judgeship of Egypt in 1642, Khafajī made attempts in Istanbul to regain favor which ended up further alienating the grand mufti Yahya Efendi. Thus he was, in a way, exiled to Cairo with a retirement salary. Nevertheless, Khafajī's reference to a mufti who ousted the instruction of rational sciences from Ottoman colleges, which is repeated by Katib Çelebi, is significant. More important perhaps is the identity of Khafajī's own instructor of algebra and geometry, a certain rabbi named David. This David must be Rabbi David Ben-Shushan, who had moved to Constantinople in the 1570s and had been one of the collaborators of Taqī al-Dīn.[36] It is not surprising that Khafajī could meet with Ben-Shushan as both of them frequented the social circles of Sa'deddin. What is striking to note, however, is that Khafajī's instruction in rational sciences took place outside the *medrese* which confirms Katib Çelebi's point that rational sciences were ousted from the Ottoman *medrese*s.

İhsanoğlu approaches Katib Çelebi critically by referring to the testimony of Luigi Ferdinando Marsigli (1658-1730) and Giambattista

34 Şeyhî Mehmed Efendi, *Vakâyi'ü'l-fudalâ*, 2 vols., Beyazıt Library, Veliyüddin Efendi collection, 2361-2362; facsimile edition with indices in *Şakaik-ı Nu'maniye ve Zeyilleri*, ed. Abdülkadir Özcan, 5 vols. (Istanbul: Çağrı Yayınları, 1989), vols. 3-4, vol. 3, 80, 159.

35 See Rif'at 'Alī Abū-l-Hājj, "Ārā' 'arabiyya 'an al-inḥiṭāṭ al-'uthmānī fī'l-qarn al-sābi' 'ashar," in *La Vie intellectuelle dans les provinces arabes à l'époque ottomane: les actes du III Symposium international d'études ottomanes, Zaghouan, 1988*, ed. Abdeljelil Temimi, 3 vols. (Zaghouan: Centre d'études et de recherches ottomanes, morisques, de documentation et d'information, 1990), vol. 1, 17-21 [English summary, vol. 3, 174]. Khafajī's remarks discussed by Abū-l-Hājj are from his *Rayḥānat al-alibbā wa-zahrat al-ḥayāh al-dunyā*, ed. 'Abd al-Fattāḥ Muḥammad al-Ḥulw, 2 vols. (Cairo: 'Īsá al-Bābī al-Ḥalabī, 1967), vol. 2, 283-4.

36 Who the "David, the mathematician" cited by Taqī al-Dīn in his work was is now well established thanks to Ben-Zaken, "The *Angelus Novus* of Early Modern Science," 34-9. The rabbi named David from whom Khafajī took private lessons in algebra and geometry must be the same person unless there were two rabbis both of whom were named David and had an active interest in mathematics in the last quarter of the sixteenth century in Istanbul, which would be too much of a coincidence; see Ali Şakir Ergin, "Hafâcî, Şehâbeddin," *İA2*, vol. 15, 72-3.

Toderini (1728-1799).[37] Both of these authors spent some time in the Ottoman Empire and were impressed by the educated men they met. Moreover, they noted an active interest in rational sciences as well. Yet Katib Çelebi's point was not that rational sciences were in a general decline. Rather he pointed out that they were ousted from *colleges*. Katib Çelebi himself received instruction in some of these areas and then taught them in the privacy of his home. In short, rational sciences seem to have been expelled from the public space. This point is supported by another eighteenth century testimony, that of Ignatius Mouradgea d'Ohsson (1740-1807), or Muradjan Tosunyan, an Ottoman Armenian:

> It is true that *Mourad I*, *Mourad II*, *Mohammed II*, *Selim I*, and *Suleyman I*, all zealous protectors of the sciences, endeavoured to revive the propitious area of Arabian literature. They wished to impart a similar lustre to the principal *Médressés*, particularly to those of their own foundation; but their intentions were feebly seconded by their successors, especially since the fatal epoch of the imprisonment of the princes of the blood: thus at present these colleges are confined to law and theology.[38]

Leaving aside Tosunyan/d'Ohsson's clear biases for strong royal leadership and the concept of a golden age, his point about the narrow focus of Ottoman colleges on law and theology is important to note. Archival evidence from the last years of Süleyman's reign corroborates this narrow focus as far as the highest ranking colleges were concerned.[39] One should note, however, that the curriculum of the preparatory colleges in the six-

37 Ekmeleddin İhsanoğlu, "Ottoman science in the classical period and early contacts with European science and technology," in *Transfer of Modern Science & Technology to the Muslim World: Proceedings of the International Symposium on "Modern Sciences and the Muslim World:" Science and technology transfer from the West to the Muslim world from the Renaissance to the beginning of the XXth century (Istanbul 2-4 September 1987)*, ed., *idem*. (Istanbul: Research Centre for Islamic History, Art and Culture, 1992), 1-48, at 8-11.

38 Ignatius Mouradgea d'Ohsson, *Oriental antiquities, and general view of the Othoman customs, laws, and ceremonies* [*Tableau général de l'Empire othoman*, in English] (Philadelphia: Select Committee and Grand Lodge of Enquiry, 1788), 539.

39 Shahab Ahmed and Nenad Filipovic, "The Sultan's Syllabus: A Curriculum for the Ottoman Imperial *medreses* prescribed in a *fermān* of Qānūnī I Süleymān, dated 973 (1565)," *Studia Islamica* 98-99 (2004): 183-218, at 207.

teenth century included works on rational sciences that were considered part of introductory subjects, such as arithmetic, astronomy, and logic.[40] An anonymous author who wrote a short treatise on the contemporary curriculum in Ottoman colleges entitled the *Kevâkib-i Seb'a*, or the *Seven Stars*, around 1742 suggests that there was still some instruction in rational sciences in the eighteenth century. However, their place is limited and relatively insignificant in the curriculum. The most telling indication of what may have happened to rational sciences becomes clear in the anonymous author's discussion of *hikmet*, or wisdom, which had also been used to refer to philosophy in the past:

> Since the practical hikmet of the people of Islam consists of the sacred [science] of jurisprudence, one does not treat practical hikmet [separately].[41]

Practical *hikmet*, or *hikmet-i 'ameliye*, referred to practical philosophy in the mid 1560s when Kınalızade Ali wrote his *Ahlak-ı Alâ'î* and comprised the three fields of ethics, economics—in the sense of household management—and politics.[42] Now jurisprudence had taken over the field of practical *hikmet*. Thus *hikmet* was being separated from philosophy, which the anonymous author of the *Seven Stars* deems to be "harmful (*muzırr*)" along with magic and astrology.[43]

That philosophy was becoming controversial in the late sixteenth century is suggested by Nev'i's *Netâ'icü'l-fünûn*, a book on the classification of sciences which the author wrote for Murad III while he was tutoring the sultan's younger princes. Unlike its well-known Ottoman predecessors, Nev'i does not adopt the bipartite division of the traditional and rational sciences, and instead chooses twelve sciences which he puts in an interesting order that starts with history and continues with philosophy and astronomy —Nev'i uses the term *hikmet* to refer to philosophy. Other "sciences" like

40 İsmail Hakkı Uzunçarşılı, *Osmanlı Devletinin İlmiye Teşkilatı* (Ankara: Türk Tarih Kurumu, 1965), 19-21.

41 Cited by İzgi, *Osmanlı Medreselerinde İlim*, vol. 1, 72, for the original text, see vol. 2, 296-7.

42 See Baki Tezcan, "The Definition of Sultanic Legitimacy in the Sixteenth Century Ottoman Empire: the *Ahlâk-ı Alâ'î* of Kınalızâde Ali Çelebi (1510-1572)," M.A. thesis (Princeton University, 1996), Chapter 2.

43 See İzgi, *Osmanlı Medreselerinde İlim*, vol. 2, 289.

theology, jurisprudence, exegesis, and sufism come later. The prominent place given to philosophy is very striking and bespeaks the environment of the court in which the work was produced and strengthens my argument about the connection between absolutist projects and rational sciences. Yet at the same time, the way in which philosophy is represented suggests that it needed some support from revealed knowledge to survive.

One of the things Nev'i does in order to sell philosophy to an audience outside the court is to make Plato a prophet. Thus he relates a spurious prophetic tradition, according to which one of the companions of Muhammad went to Alexandria. Upon his return, people asked him about what he saw there. He responded by saying that he saw a people who wore black and kept praising Plato. Then some of the companions who were in the presence of the Prophet cursed Plato. The Prophet forbid them to do so and said: "No, because Plato was a prophet whom his people did not recognize."[44] It must have been the hostility developed against philosophy that was noted by Katib Çelebi which led Nev'i to present Plato as a prophet in order to reach a wider audience that would extend outside the court.

In short, the available evidence, from Khafajī to Tosunyan/d'Ohsson, suggests that Katib Çelebi seems to have been right about his remarks on the gradual expulsion of rational sciences from Ottoman colleges to the privacy of homes where those who are interested could well engage in such pursuits as mathematics and astronomy.[45] But without funding that would be available at a college, one could not expect much development in these areas.[46] A cursory glance at the popular Ottoman books on rational scienc-

44 Nev'î, *İlimlerin Özü: "Netâyic el-fünûn,"* ed. Ömer Tolgay (Istanbul: İnsan Yayınları, 1995), 127.

45 I should add that Ekmeleddin İhsanoğlu's more recent study on the subject does not add any new evidence in support of his more optimistic view of the place of rational sciences in Ottoman colleges. He cites evidence from the reigns of Mehmed II and Süleyman, but then there is nothing noteworthy from the late sixteenth and seventeenth centuries that Katib Çelebi witnessed; see his "Institutionalisation of Science in the Medreses of pre-Ottoman and Ottoman Turkey," in *Turkish Studies in the History and Philosophy of Science*, eds. Gürol Irzık and Güven Güzeldere (Dordrecht: Springer, 2005), 265-84.

46 The significance of funding and its relative decline in Ottoman colleges have also been touched upon by Avner Ben-Zaken, "Political Economy and Scientific Activity in the Ottoman Empire," in *The Turks*, eds. Hasan Celal Güzel, C. Cem Oğuz, and Osman Karatay, 6 vols. (Ankara: Yeni Türkiye, 2002), vol. 3, 776-94.

es suggests that this expectation is well founded. The two most used books on arithmetic, for instance, were *al-Risāla al-Muḥammadiyya fī'l-ḥisāb* by Ali Kuşci (d. 1474) and *Khulāsat al-Ḥisāb* by Bahā' al-Dīn al-'Āmilī (d. 1622). Ali Kuşci had come to the court of Mehmed II from Samarkand and produced his work for the new emperor of Constantinople. Al-'Āmilī was a Safavid scholar whose Arabic work on arithmetic became *the* textbook of choice in the Ottoman Empire, Safavid Persia, and even beyond.[47] Thus Ottoman colleges could not produce a new textbook for arithmetic after the reign of Mehmed II. The situation was not very different in other fields of rational sciences with the exception of medicine which always kept a place of its own in Ottoman colleges, including the most prestigious one endowed by Süleyman.[48] In law, however, jurists teaching in Ottoman colleges never stopped producing new material.[49]

I would argue that Murad III's support for Taqī al-Dīn's observatory project was thus a political statement made by the monarch at a time when rational sciences were being ousted from Ottoman colleges in order to consolidate the supremacy of the traditionalist epistemology which formed the basis of the law. It is for this reason that the grand mufti Kadızade's reaction to the Imperial Observatory was also a political response, and not an instance of religious fanaticism. If he really wrote what Ata'i claims he did, Kadızade reminded Murad III that producing astronomical observa-

47 İzgi, *Osmanlı Medreselerinde İlim*, vol. 1, 209-26.

48 See *ibid*., vol. 2, 19-104; for an Ottoman work on anatomy from the early 1630s which is written by an immigrant from Safavid lands and reflects recent developments in the field, see *Şemseddîn-i İtâkî'nin Resimli Anatomi Kitabı*, ed. Esin Kâhya (Ankara: Atatürk Kültür Merkezi, 1996). For curricula in Safavid and Mughal empires, see Francis Robinson, "Ottomans-Safavids-Mughals: Shared Knowledge and Connective Systems," *Journal of Islamic Studies* 8 (1997): 151-84.

49 Comprehensive bibliographies of Ottoman works organized according to their subject matters are not available. However, Carl Brockelmann's *Geschichte der arabischen Litteratur*, second ed. (Leiden: E.J. Brill, 1937-42 [first ed., 1898-1902]), which lists only those works that were authored in Arabic and were identified in library catalogs a hundred years ago, gives one an idea if one compares the production of Arabic books in different fields of knowledge in the central lands of the Ottoman Empire in the period 1517-1798. Literary production in law and related areas dominates other fields of knowledge, see the expanded Arabic translation of Brockelmann's work, *Ta'rīkh al-adab al-'arabī*, vol. 9: *Al-'aṣr al-'uthmānī*, tr. Maḥmūd Fahmī Ḥijāzī and 'Umar Ṣābir al-Jalīl (Cairo: al-Hay'a al-miṣriyya al-'āmma li'l-kitāb, 1995), 291-450.

tions in order to acquire knowledge about the mysteries of the heavens is fraught with serious consequences.

> In no kingdom where [such observations] were begun did [the kingdom] not get destroyed while it had once been prosperous and the edifice of its fortune did not become laden with the earthquake of revolutions.[50]

Kadızade's threat is not different from what was going to be written for Murad III a few years later in the *Law-book of China*, a constitutionalist tract. The kings of China are not allowed to change their laws even one iota. If they do, they are deposed and placed in a fortress with their relatives.[51] Kings' fortunes (*devlet*) are thus brought to demise if they try to change the laws of their land or try to acquire knowledge in areas guarded by jurists. Law that is defined by the jurists' articulation of a tradition, which only they are entitled to interpret, is what is at stake here. If the supremacy of the jurists' traditionalist epistemology is challenged by an alternative one, law, too, may one day slip from their hands.

Just as there is a connection between the *Law-book of China* and the grand mufti's statement to Murad III with regard to the observatory, the monarch's patronage of both the observatory and the author of the *New Report*, Su'udi, who had an active interest in rational sciences as well, are closely related phenomena, too. The emphasis on the new, as well as on the renewal and abrogation of the old, which one finds both in the official document and the very unusual example of court historiography cited above while discussing the first political meaning of the observatory, are important threads that connect the political and epistemological meanings attached to the Imperial Observatory with the *New Report* that was to be published in the next few years. These two projects were both directed against traditionalist epistemologies, both in their worldly and divine forms. It is in such projects that one finds some of the most significant —albeit subtle— articulations of the case for absolutism. But absolutist politics did not *have to* align with rationalist epistemology. What mattered was an oppositional stance against the constitutionalism of the jurists as I elaborate shortly.

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50 Nev'izade Ata'i, *Hadâ'iku'l-hakâ'ik fî tekmîleti'ş-şakâ'ik*, 2 vols. (Istanbul, 1268 [reprinted with indices in *Şakaik-ı Nu'maniye ve Zeyilleri*, ed. Abdülkadir Özcan, 5 vols. (Istanbul: Çağrı Yayınları, 1989), vol. 2], 286.

51 Tezcan, "The Multiple Faces of the One," 37-8.

In summary, what I call the experimentalist-absolutist political stance of the construction of an observatory in Istanbul in the late 1570s aligns well with other policies of Murad III that included his grant of permission for the sale of Arabic printed scientific books in the Ottoman Empire,[52] and his support of Su'udi, the author of the *New Report*. Later on in the early seventeenth century, one of the most outspoken anti-traditionalist intellectuals was another royalist, Mullah Ali, an African Ottoman jurist whose arguments about the composition of skin color reminds one of those put forward by Leonardo da Vinci a century before.[53] Neither Taqī al-Dīn nor Mullah Ali made directly political arguments; however, the methods they chose in building their arguments were experimentalist, and they both belonged to the circles of sultans who had absolutist ambitions, Murad III and Osman II, respectively.[54] I suggest that there was a close alliance between an experimentalist methodology and absolutist politics in the late sixteenth and early seventeenth centuries. This alliance opposed the traditionalist-constitutionalist stance in Ottoman politics.

While I suggest that the epistemological opposition between traditional and experimental methods was central in the political struggle between absolutists and constitutionalists, I should emphasize that what is important to recognize is the existence of the opposition rather than the particular positions. Although there is a close connection between rationalist epistemology and absolutist politics in the late sixteenth and early seventeenth centuries, Ottoman absolutism in the seventeenth century aligned much more frequently with religious revivalism than it did with rational sciences.

52 A copy of the imperial decree of Murad III granting permission for the import of printed books into the Ottoman Empire is printed as the final sheet in the Arabic edition of Euclid, see *Kitāb taḥrīr uṣūl li-Ūqlīdis* (Romae: In Typographia Medicea, 1594), reproduced in Selim Nüzhet Gerçek, *Türk Matbaacılığı*, vol. 1: *Müteferrika Matbaası* (Istanbul, 1939), plate 8.

53 Mullah Ali entered the Ottoman Empire as an African slave whose education in law was later sponsored by the black eunuchs of the court; see Baki Tezcan, "*Dispelling the Darkness*: The politics of 'race' in the early seventeenth century Ottoman Empire in the light of the life and work of Mullah Ali," in *Identity and Identity Formation in the Ottoman World: A volume of essays in honor of Norman Itzkowitz*, eds. Baki Tezcan and Karl Barbir (Madison: University of Wisconsin Madison Center of Turkish Studies, 2007), 73-95.

54 On Osman II's absolutist ambitions, see Tezcan, *The Second Ottoman Empire*, 128-40.

In the nineteenth century, it was mostly going to ally with modern rationalism. Thus it was its oppositional stance against the traditionalism of the constitutionalists that defined the absolutists, rather than the particular oppositional strand that they adopted.

Religious revivalism and experimentalism were not as far away from each other as it would appear in so far as they were both in opposition to the constitutionalism of the jurists. The Kadızadeli movement of the seventeenth century was much closer to the Ottoman court than anywhere else in the political spectrum and it targeted certain groups that were known to have constitutionalist tendencies.[55] I argue that this is not a political contradiction with the court's earlier patronage of rational sciences — although it does suggest that the parameters of politics changed quite a bit, leaving the narrow competition between jurists and court-sponsored scholars beyond and reaching out to the streets where the Kadızadelis fought for what one might call the public opinion. Rather than being in opposition to each other, religious revivalism and rational sciences share a common interest in changing that which is customary by way of radical renewal of the way in which people do things. Incidentally, absolutism and astronomy were going to meet each other one more time during the reign of Mustafa II whose mentor Seyyid Feyzullah, a student of Vani Mehmed, who was a second wave Kadızadeli, wanted to convert the Galata Tower to an observatory with the help of European astronomers.[56] In this case, rational sciences as represented by astronomy and religious revivalism as represented by the influence of Vani Mehmed on Seyyid Feyzullah dovetailed perfectly. They were both political instruments adopted with the claim that something was terribly wrong with the old way of doing things, be that one's geographical imagination, the astronomical tables people used for time keeping, or such habits as visiting tombs or ritual-dancing.

I am not denying that in the fields of rational sciences, one may indeed make a case for the falsity of a widely held belief and that belief may indeed

55 The most detailed study on the Kadızadelis is Necati Öztürk's "Islamic Orthodoxy among the Ottomans in the seventeenth century with special reference to the Qadi-Zade movement," Ph.D. diss. (University of Edinburgh, 1981).

56 Mordtmann, "Das Observatorium des Taqī ed-dīn zu Pera," 85. The absolutist politics of Mustafa II (and Seyyid Feyzullah) has been analyzed by Rifa'at Ali Abou-El-Haj in *The 1703 Rebellion and the Structure of Ottoman Politics* ([Leiden]: Nederlands Historisch-Archaeologisch Instituut te Istanbul, 1984).

be wrong objectively — the world is *not* surrounded by Mount Qaf, *period*. Yet patronizing the new position that rectifies the wrong one with royal authority has important political consequences that go beyond a simple announcement of a new invention. It is in these consequences that the political support to rational sciences and religious revivalism become comparable interventions of royal authority into the social structure and its dynamics. Obviously the scale of such interventions reached unprecedented levels during the Ottoman modernization of the nineteenth century. However, qualitatively speaking, there was a certain continuity between, for instance, the closure of coffee houses by Murad IV in the seventeenth century, and then by Mahmud II in the nineteenth century. The first one was justified by the urgent need to rectify the social decadence identified by the Kadızadelis, and the second was necessitated to consolidate the implementation of the New Order in the aftermath of the destruction of the janissaries. The reference of one was in seventh century Arabia, that of the other in contemporary Europe; yet both were primarily political interventions by royal authority into the autonomous dynamics of social change. It is in this sense that I argue the oppositional positioning of the absolutists and constitutionalists with different systems of truth is central to the understanding of the political struggles of the late sixteenth and seventeenth centuries, and beyond. I should, however, emphatically underline that this formal continuity should not be taken for an absence of change. The nineteenth century actors around the positions of absolutism and constitutionalism were very different from those of the seventeenth century, which is, however, a matter that does not concern us in this study that is centered in the seventeenth century.

In conclusion, I would like to rearticulate an important implication of the arguments raised in this study. The oppositional stance of the court vis-à-vis the scholar-jurists, who mostly chose to be jurists first and scholars second, in a number of cases like that of the destruction of the Imperial Observatory in 1580 is very significant in understanding the political dynamics behind such developments as the royal support provided for the religious revivalism of the Kadızadelis in the seventeenth century, or the gradual but wholesale adoption of a modern rationalist epistemology in the nineteenth century by the Ottoman state and its imposition upon society. The Ottoman court, or later the state, found it necessary to support alternative epistemologies or systems of truth when it aspired to absolute political control over Ottoman society because such systems produced different social norms and thus

justified the plans of the political leadership to replace the existing norms. Although it is hard to imagine for us how religious revivalism and modernization may be two sides of the same coin, they do indeed agree in their diagnosis of social ills and the proposed cure: irreversible decadence to be rectified by radical change. Supporting the Kadızadelis or modernization were primarily political initiatives intended to offer alternative social norms the establishment of which would require the replacement of the existing ones by royal intervention. If the epistemology of the jurists could be proven wrong, then eventually their political power would be damaged as well. In order to avoid any possible misunderstandings, I should emphasize that the epistemology of the jurists was not categorically against change, many jurists actually adopted a great deal of social change into their understanding of law throughout the sixteenth and seventeenth centuries. For most of them, however, law had to follow social change and not lead it.

Coming back to the question of the "decline" of "Islamic science," clearly, the political supremacy of the constitutionalists in the seventeenth and eighteenth centuries had a price on rational sciences that were ousted from colleges and thus lost institutional funding. However, this loss was not a consequence of Islam per se but rather of politics. Circumscribing the political authority of the monarch was a legal matter. The guardians of the law did not give in to the absolutist leanings of such monarchs as Murad III or Osman II because they were afraid of losing their exclusive control on the articulation of the law which depended on the supremacy of a traditionalist epistemology. In a sense, they proved to be correct. As the nineteenth century modernization replaced this epistemology with a rationalist one, what followed was a more authoritarian polity than any other in the history of the region we came to call the Middle East. The two concerns of supporting rational sciences, on the one hand, and safeguarding constitutional checks on the political authority of the state, on the other, continue to be significant aspects of politics in the region. I should add, however, that the complicated relationship between politics and science neither was nor is a peculiarly Middle Eastern or "Islamic" problem. European science developed hand in hand with absolutist politics in the early modern period,[57] and questions of science continue to keep American politicians busy to this day.

57 Mario Biagioli, *Galileo, Courtier: The Practice of Science in the Culture of Absolutism* (Chicago: University of Chicago Press, 1993).