

## INTRODUCTION

# Narratives of Science, Old and New

Hence the humanistic historian must concern himself with the great commitments and loyalties that human beings have borne, with which every sort of norm and ideal has been made explicit; and he must concern himself with the interactions and dialogues in which these commitments have been expressed. Hence, for an “exceptionalizing” historian with such intentions, it is Islamdom as a morally, humanly relevant complex of traditions, unique and irreversible, that can form his canvas. Whether it “led to” anything evident in modern times must be less important than the quality of its excellence as a vital human response and an irreplaceable human endeavor. In this capacity, it would challenge our human respect and recognition even if it had played a far less great role than, in fact, it did play in articulating the human cultural nexus in time and space and in producing the world as we find it now.

Marshall Hodgson, *The Venture of Islam*

## OVERVIEW

For this book to tell its story another needs to be untold. This is because the seismic political and intellectual changes that took place globally in the nineteenth to twentieth centuries during successive stages of European colonial and economic expansion and the subsequent periods of decolonization and globalization have profoundly shaped our understandings of the preceding centuries.<sup>1</sup> It has frequently been argued that modernity

<sup>1</sup> As one eloquent example of how our understanding of the Middle Ages came into focus during European colonial expansion, see Kathleen Davis, *Periodization and Sovereignty: How Ideas of Feudalism and Secularization Govern the Politics of Time*. For two masterful

itself emerged in connection with industrialization in the long European century that began in the eighteenth century with European colonial adventures into the Middle East and Africa and ended with a world war in 1914–18, although it is far less clear what this actually means.<sup>2</sup> Today, to attempt to reconstruct the premodern, preindustrial societies before this century requires a considerable feat of imagination.<sup>3</sup> Our interest here is less the political and economic changes witnessed by this century than the intellectual and cultural shifts that accompanied them, and specifically the ways in which both European and Middle Eastern scholars adopted new definitions of science and religion during the long nineteenth century. Concurrently, and in the context of increasing European colonization of the Middle East, many European Orientalists and traditionally educated scholars in the Middle East came to view the intellectual landscape of the region in the pre-nineteenth century as largely static, and in stark contrast to an earlier period of intellectual fertility.<sup>4</sup> Unsurprisingly, the lessons that colonial administrators, Middle Eastern intellectuals, and Western Orientalists, drew from this insight differed. For many of the first group, Eastern decadence and weakness justified if not necessitated colonial tutelage. For their part, scholars in the region were divided between those who believed in the necessity of defending the traditional educational institutions and their curricula in order to resist the cultural imperialism of the colonial powers, and reformers who argued for a radical break with the recent past in order to restore the scholarly creativity and vigor of

syntheses on the importance and nature of the changes brought about by the long nineteenth century see C. A. Bayly, *The Birth of the Modern World 1780–1914* and Jürgen Osterhammel, *The Transformation of the World: A Global History of the Nineteenth Century*.

<sup>2</sup> For a valuable discussion of the problematic fashion in which modernity in the Middle East has traditionally been linked to Napoleon's invasion of Egypt in 1798 see Dror Ze'evi, "Back to Napoleon? Thoughts on the Beginning of the Modern Era in the Middle East." On the confusion surrounding the term "modernity," see Dipesh Chakrabarty, "AHR Roundtable: The Muddle of Modernity."

<sup>3</sup> For one lucid attempt to lay out the differences between our world and the preindustrial one, see Patricia Crone, *Pre-Industrial Societies: Anatomy of the Pre-Modern World*. The story as I present it contains a number of crude generalizations, which need to be nuanced: different parts of the world experienced industrialization at different times, Britain, notably, in the eighteenth and not the nineteenth century. For this and much more, see Robert Allen, *The British Industrial Revolution in Global Perspective*.

<sup>4</sup> See Indra Gesink, "'Chaos on the Earth': Subjective Truths versus Communal Unity in Islamic Law and the Rise of Militant Islam," and *ibid.*, *Islamic Reform and Conservatism: Al-Azhar and the Evolution of Modern Sunni Islam*. This story is laid out now in Ahmed Shamsy in a fashion that complements Gesink's analysis, even as it comes to some distinct conclusions, in his *Rediscovering the Islamic Classics: How Editors and Print Culture Transformed an Intellectual Tradition*.

a distant Golden Age. Both groups of local scholars agreed that, in terms of scholarly production, the centuries preceding the arrival of colonial powers were characterized by adherence to tradition, though they differed on its nature and desirability. At the beginning of the twentieth century, and at times in conversation with scholars in the Middle East, Western Orientalists, a group with a diverse set of relations to the colonial project, developed an increasingly consistent argument for the region having long been intellectually dormant.<sup>5</sup>

These narratives that developed in Europe and the Middle East coincided with the emergence among European historians of science in the first half of the twentieth century of the concept of a Scientific Revolution that had taken place in Northern Europe in the seventeenth century and which set Europe alone on a path toward modern science and modernity itself.<sup>6</sup> The story of the Scientific Revolution drew on the nineteenth-century belief in a historical European exceptionalism and the argument that modernization entailed secularization – the Weberian “disenchantment of the world” – which itself built on a late nineteenth argument that Protestantism – in stark contrast to Catholicism – had helped birth modern science.<sup>7</sup> The notion that the wrong kind of religion blocked rational thought and historical progress – the latter a notion that acquired greater currency due to the work of nineteenth-century thinkers such as Hegel, Marx, and Burkhardt – was transferred from Catholicism to Islam in greatly divergent ways by the Muslim reformers mentioned above and many of their Orientalist contemporaries.<sup>8</sup>

<sup>5</sup> Edward Said’s *Orientalism* presented a distorted (if influential) account of European scholars working on the Middle East and North Africa in the nineteenth and twentieth centuries. For an excellent example of a more accurate and productive analysis, see Suzanne L. Marchand, *German Orientalism in the Age of Empire: Religion, Race, and Scholarship*. For Morocco, see the insightful work of Edmund Burke III, *The Ethnographic State: France and the Invention of Moroccan Islam* and Manuela Marín, “Los estudios árabes y el colonialismo español en Marruecos (siglos XIX–XX),” and *Testigos coloniales: españoles en Marruecos [1860–1956]*.

<sup>6</sup> While generally separate conversations, both narratives emerged from a conviction in European exceptionalism that took on a new character in the nineteenth century. The assumption of the conflation of the Scientific Revolution and modernity is widespread, but see especially Herbert Butterfield, *The Origins of Modern Science: 1300–1800* and then Michael Adas, *Machines as the Measure of Men: Science, Technology, and Ideologies of Western Dominance*.

<sup>7</sup> The *locus classicus* being Andrew D. White, *A History of the Warfare of Science with Theology in Christendom*, but see also Robert K. Merton, *Science, Technology and Society in Seventeenth Century England* and Peter Harrison, *The Bible, Protestantism, and the Rise of Modern Science*. For a favorable Turkish reading of John W. Draper’s 1874 volume on the *History of the Conflict between Religion and Science*, see M. Alper Yalcinkaya, “Science as an Ally of Religion: A Muslim Appropriation of ‘the Conflict Thesis’.”

<sup>8</sup> On the broad historical framings of nineteenth century historical thought, see Hayden White, *Metahistory: The Historical Imagination of the Nineteenth Century*. Protestant authors

Taken together, these narratives suggested that there was little for historians to study when it came to intellectual production, much less the natural sciences, in the Middle East (often conflated with the Muslim world as a whole) following a Golden Age that had ended at some point in the Middle Ages. Over the past decades, historians have readily provided a series of compelling critiques of this story. One lies in exploring how modern science emerged through the interaction of Europeans with their colonial worlds, thus partially de-centering if not provincializing Europe and drawing attention to the ways in which the production of science occurred globally.<sup>9</sup> Another, related, corrective is to push the date of the importance of the intellectual production of the Middle East for modern science forward from the Abbasid period (750–1258) to the beginning of the Scientific Revolution itself.<sup>10</sup> Still another has been to question the Protestant nature of the Scientific Revolution, with a special emphasis on the intellectual production of Spain and its colonies in the New World.<sup>11</sup> As suggested in the Preface, *Revealed Sciences* charts a different path and looks instead at a history of science that is marginal in the genealogy of modern science. In this, it is distinct, but has parallels with recent efforts to recenter the importance of esoteric works in post-formative Islamic thought: in both cases, the aim is to explore and describe histories of rational thought within the category of natural philosophy broadly defined, which have fallen out of the teleological narratives that dominate contemporary histories of science. The most important difference between this book and those who have been writing on esotericism is not only geography, period, or subject matter. Instead of a focus on the natural sciences themselves, here I trace their presence and role in the hegemonic

had used Islam as a foil for criticizing both the Pope and Catholicism since the sixteenth century. For one especially relevant example, see Sonja Brentjes, “Pride and Prejudice: The Invention of a ‘Historiography of Science’ in the Ottoman and Safavid Empires by European Travellers and Writers in the Sixteenth and Seventeenth Centuries.”

<sup>9</sup> Two examples are provided by Kapil Raj, *Relocating Modern Science: Circulation and Construction of Knowledge in South Asia and Europe, 1650–1900* and Harold Cook, *Matters of Exchange: Commerce, Medicine, and Science in the Dutch Golden Age*. But see now the collection of articles with the excellent introduction of J. B. Shank, “Special Issue: After the Scientific Revolution: Thinking Globally about the Histories of the Modern Sciences.”

<sup>10</sup> See the contributions to Riva Feldhay and F. Jamil Ragep (eds.), *Before Copernicus: The Cultures and Contexts of Scientific Learning in the Fifteenth Century* and Robert Morrison, “A Scholarly Intermediary between the Ottoman Empire and Renaissance Europe.”

<sup>11</sup> See Victor Navarro Brotóns and William Eamon (eds.), *Más allá de la Leyenda Negra: España y la Revolución Científica* and Jorge Cañizares-Esguerra, *Nature, Empire, and Nation: Explorations of the History of Science in the Iberian World*.

Islamic religious discourses of their time: jurisprudence, theology, and, to a lesser extent, Sufism. Writings in the natural sciences themselves, principally astronomy and medicine, while playing an important role in the chapters that follow, are not the primary focus until Chapter 4. I am more interested in following the ways in which the natural sciences and the natural world were inextricably woven into Islamic thought as a whole, in challenging the assertion that Muslim scholars compartmentalized religious and philosophical questions, and in exploring how genre and subject matter were only partially successful in disciplining the natural sciences.<sup>12</sup> In this manner, *Revealed Sciences* moves past the now tired question of the compatibility of science and religion – and especially of Islam and science – as well as the question of the degree and nature of the influence of Muslims and Islam on modernity, to examine the significance of the natural sciences for scholarly individuals and networks that were profoundly religious.

#### CREATING SCIENCE AND ISLAM: REVISITING TERMINOLOGICAL ANXIETIES

During the nineteenth and early twentieth centuries, the disciplines of history and history of science were professionalized in Europe, and subsequently in the United States.<sup>13</sup> This process went hand in hand with the professionalization of science itself, the term “scientist” famously being coined in 1833 by William Whewell of Cambridge University, who became a pioneer in the field of the history of science by writing both a history and a philosophy of the inductive sciences.<sup>14</sup> Some work was involved in separating science from the natural sciences and natural philosophy, but by the end of the nineteenth century both historians and scientists could speak of science as an intellectual pursuit that had played a central role in Europe’s past and which would continue to drive mankind’s progress forward. Soon after, in the early twentieth century, you could even get a job doing it and not have to rely on private wealth or patronage.<sup>15</sup> All of this is to say that our understanding of science today is decidedly different

<sup>12</sup> The compartmentalization thesis has been eloquently advanced by Ahmed Dallal in *Islam, Science, and the Challenge of History*.

<sup>13</sup> The literature is extensive. Two places to begin regarding England and the United States are Steven Shapin, *The Scientific Life: A Moral History of a Late Modern Vocation* and Richard Yeo, *Defining Science: William Whewell, Natural Knowledge and Public Debate in Early Victorian England*.

<sup>14</sup> John F. M. Clark, “Intellectual History and the History of Science,” 157.

<sup>15</sup> For this shift from vocation to profession, see Steven Shapin, *The Scientific Life*.

from that of the natural philosophers of the early nineteenth century, much less those who studied and wrote natural philosophy in the preceding centuries before science acquired its current meaning. The differences are so substantial that they urge us to question the degree to which the classic notion of scientific progression is still sufficient to explain attitudes toward the natural sciences over the centuries immediately preceding the nineteenth century.

Looking at science and its history in this fashion is possible in large part due to the cultural turn in historical studies of the 1960s and 1970s, and what came to be known as the externalist critique of a history of science that limited itself to the internal developments of scientific thought. The practice and results of science were, in this view, constructed, and not facts merely to be discovered.<sup>16</sup> Credit for this shift also lies with Thomas S. Kuhn's 1962 *The Structure of Scientific Revolutions* – which itself drew considerably on Ludwig Fleck's remarkable if neglected 1936 *Genesis and Development of a Scientific Fact* – that offered a sustained critique of the teleological notion of scientific progression that had characterized the nineteenth century and which carries through until today.<sup>17</sup> While Kuhn's theory of successive and incompatible scientific paradigms in which long periods of normal science were interrupted by crisis and revolutionary science that in turn ushered in new periods of normal science remains evocative and is rhetorically impressive, it was more effective in stimulating discussion around the social transmission of science than in producing disciples.<sup>18</sup> Despite these destabilizing and critical interventions from the 1960s onwards that came to occupy a field at times called science and technology studies, the older teleological understanding of the history of science persisted, albeit in some tension with the former.

An example may help clarify what this tension looks like in scholarship. In a series of exchanges in the 1990s and culminating with a debate in the 2000 volume of *Early Science and Medicine*, the historians of Medieval and Early Modern European science Edward Grant and Andrew Cunningham argued passionately over whether Isaac Newton's claim in the *Principia* that he was engaged in natural philosophy meant that he was

<sup>16</sup> See Jan Golinski, *Making Natural Knowledge: Constructivism and the History of Science*.

<sup>17</sup> Ludwik Fleck, *Genesis and Development of a Scientific Fact*.

<sup>18</sup> For an insightful discussion of the nature and influence of Kuhn's argument, see Ian Hacking, "Introductory Essay," in *The Structure of Scientific Revolutions*, and for Kuhn's own regrets with the relativistic ways some historians and philosophers used his work, see "The Trouble with the Historical Philosophy of Science." My reading of Kuhn has been influenced by Bojana Mladenović, *Kuhn's Legacy: Epistemology, Metaphilosophy, and Pragmatism*.

doing science.<sup>19</sup> Why did this matter? Grant believed strongly in the steady progression of scientific thought from the Medieval European universities to Newton as father of modern science, and then until today.<sup>20</sup> Cunningham, for his part, stressed that precisely because natural philosophy was about explaining the workings of God in the world, and not predicated on establishing natural laws, that the medieval study of natural philosophy up to and including Newton's own work needed to be understood as qualitatively distinct from modern science.<sup>21</sup> While my own scholarly sympathies are with Cunningham and his consistent focus on refraining from describing the writings of scholars with presentist categories, more important here is that Grant and Cunningham's differences derive in great part from the nature of their questions, which are as incommensurable as their conclusions. Grant was invested in exploring the vibrancy of the rational philosophical heritage of the Middle Ages and in stressing the continuities between the scholarship of that period and of the Scientific Revolution. Cunningham, for his part, although he seldom refers to Kuhn explicitly, comes close to positing the types of epistemological ruptures Kuhn memorably termed paradigm shifts in his contextualization of the conceptual worldviews of European scholars of the seventeenth–nineteenth centuries.

Rehearsing the Grant-Cunningham debate in the context of the emergence of modern science in the nineteenth century helps clarify what is meant in this book by science – a term that will more often appear in the plural, and which simply refers to a discrete body of knowledge that can equally refer to the natural as the religious sciences. I will spend some time in Chapter 2 examining taxonomies of knowledge of seventeenth–eighteenth century Moroccan scholars and will expound there on semantic range of the term science, but wish here to emphasize the term's historical contingency.

What is true for science is also true for religion: the word existed before the nineteenth century but it was during that century that building on changes

<sup>19</sup> I previously referred to this argument in "Writing the History of the Natural Sciences," 938.

<sup>20</sup> Along with the references to Grant's work given in the above-cited article, see the long chapter on the teaching of natural philosophy in the Medieval University in Grant's *God and Reason in the Middle Ages*, 148–206. Grant argues here that the institutionalization of natural philosophy in a separate faculty in Medieval European universities that marginalized theological questions laid the groundwork for the later emergence of Modern Science. See his comments on Newton in *ibid.*, 204–05.

<sup>21</sup> Cunningham's views on this question are laid out fully in "Getting the Game Right: Some Plain Words of the Identity and Invention of Science." For his debate with Grant, see the references in Stearns "Writing the History of the Natural Sciences."

beginning in the sixteenth–seventeenth centuries, it acquired the meaning we associate with it today.<sup>22</sup> In the modern period, the concept of religion comes to entail a series of inner beliefs and external actions as well as implying the existence of a plurality of religions – in this it is not dissimilar from the Arabic word *dīn* in Islamic writings in the premodern period.<sup>23</sup> It was during the sixteenth and seventeenth centuries, however, and as a direct result of a concurrent European and (initially) largely Catholic expansion into the so-called New World on the one hand, and Reformation and Counter-Reformation polemics on the other, that religion became a universal category in European thought, one that could be applied to all peoples. Different from contemporary Western understandings of religion, European scholars of these centuries considered religion most legible in the ritual activities of its practitioners.<sup>24</sup> This early modern shift to religion becoming a universal category allowed European thinkers to place the worlds’ peoples into an admittedly changing understanding of a universal history. This growing conceptualization of religion as both universal and historically contingent was accentuated in the Iberian context from the fourteenth to seventeenth centuries by the forced conversion of Jews in 1391, the expulsion of Jews and Muslims in 1492 and 1501 respectively, the concurrent discovery of the “New World,” and then the wave of expulsions of Moriscos (descendants of converted Muslims, many of whom historians now believe were sincere Catholics) to North Africa between 1609 and 1614.<sup>25</sup>

For Early Modern European scholars, then, religion was first a comparative category, coming into focus at moments of categorization and comparison.<sup>26</sup> Its equation with rituals should be contrasted with the

<sup>22</sup> For much of this discussion I have benefitted greatly from Guy Stroumsa, *A New Science: The Discovery of Religion in the Age of Reason*, and have also drawn on J. Z. Smith’s ever useful “Religion, Religious, Religions . . .” in Mark C. Taylor, *Critical Terms for Religious Studies*, and Peter Harrison’s eloquent *The Territories of Science and Religion*.

<sup>23</sup> For nineteenth century developments in European thinking on religion, see Tomoko Masuzawa, *The Invention of World Religions: Or, How European Universalism was Preserved in the Language of Pluralism*. A good and for our purposes chronologically relevant overview of the meanings of *dīn* in early modern Muslim scholarship is found in Stefan Reichmuth, “The Arabic Concept of *Dīn* and Islamic Religious Sciences in the 18th Century: The Case of Murtaḍā al-Zabīdī (d. 1791).”

<sup>24</sup> See Stroumsa, *A New Science*, chapter One: “Paradigm Shift: Exploring the World’s Religions,” especially at 29.

<sup>25</sup> For the ways in which these events relativized religious truth for some, see Stuart B. Schwartz, *All Can Be Saved: Religious Tolerance and Salvation in the Iberian Atlantic World*.

<sup>26</sup> In this comparative sense, religion has more in common with the Arabic *milla*, pl. *mīlāl* in the Islamic tradition, usually used to refer to religious communities. For a brief overview of its use in the heresiographic tradition, see D. Gimaret, “al-Mīlāl wa ’l-niḥāl.”

interiority of belief, which later came to characterize the concept of religion during the nineteenth century. Within the European context in which this change occurred, it is related to theological debates between Protestants and Catholics during and following the Reformation in the sixteenth century, in which the former critiqued the importance the Catholic Church gave to acts and stressed the radical primacy of the individual's faith in order to attain salvation. The debates continued through the counterreformation into the wars of the seventeenth century and down to the writings of the great social theorists of the nineteenth century mentioned above (Marx, Hegel, Weber).

The point here is not that Enlightenment thinkers in Europe posited the universality of religion for the first time, much less that there was no concept of religion before this period – here I follow Daniel Boyarin's argument that the separation of Christianity from Judaism during Late Antiquity involved conceiving of a multiplicity of religions, including Hellenism.<sup>27</sup> Instead, I am offering the weaker argument that during the nineteenth century in Europe scholars came to understand religion much more than previously as a category of beliefs and attitudes that could be attributed a role in supporting or retarding other values or systems of belief such as the newly emerging category of science. And while this new understanding of religion had certainly had much to do with internal arguments within the Christian tradition, it was easily if not readily applied to other religious traditions, Islam being the one we are primarily concerned with here.

The tradition of Western European scholarship that preceded the transformation of the concepts of science and religion in the long nineteenth century had dealt with Islam in a range of ways.<sup>28</sup> Whereas Christian scholars in Late Antiquity had successfully (to themselves in any case) explained Judaism as a superseded revelation the true import of which had never been fully understood by Jews themselves, the early Muslim community emerged into a monotheistic Middle East that, for Christian writers, had already witnessed the last true prophets.<sup>29</sup> For European Christian observers of Late Antiquity Islam was idolatry, among Catholic scholars it attained the status of heresy in roughly the twelfth century, and for the Protestants of the

<sup>27</sup> See Daniel Boyarin, *Borderlines: The Partition of Judaeo-Christianity*, 202–11.

<sup>28</sup> The scholarship here is substantial. A good place to start is with Suzanne Conklin Akbari, *Idols in the East: European Representations of Islam and the Orient, 1100–1450* and John Tolan, *Saracens: Islam in the Medieval European Imagination*.

<sup>29</sup> For a stimulating overview of the seventh century world of the early Muslim community, see Garth Fowden, *Empire to Commonwealth: Consequences of Monotheism in Late Antiquity* and Fowden, *Before and After Muhammad: The First Millennium Refocused*. For the indispensable survey and analysis of how others viewed the emergence and early

sixteenth century it served in part as metaphor for the error of Catholicism.<sup>30</sup> During the nineteenth century, with the ascendancy of a historicist philology, and the awareness that the existential threat posed by the Ottoman Empire in the sixteenth–seventeenth centuries had been tamed, European scholars of comparative religion began to stress how Islam was essentially an Arab faith and not a full-fledged religion.<sup>31</sup> Among those European scholars who had established their professional credentials through their philological expertise in the languages of the Islamic world – Orientalists – the matter was different. Here, Islam did not represent only a religion (in the newly defined sense encompassing both external acts and professions of faith as well as internal convictions and beliefs) but a way of life, if not a civilization.<sup>32</sup> Indeed, many of the most innovative and creative approaches to the concept of Islam at the beginning of the twenty-first century have involved critiquing the many scholars who posited a singular Islamic civilization or culture in the late nineteenth and early twentieth centuries.<sup>33</sup> As European scholars increasingly described themselves as living in a modern, disenchanted world in which religious and secular spheres were neatly divided, they stressed the absence of this distinction in the Muslim world, where everything was subsumed under the rubric of religion.<sup>34</sup>

Recent trends in the study of Islam as a religious tradition have stressed the diversity of approaches Muslims have taken over time to understanding and practicing their faith. Taking this diversity seriously has involved on the one hand accepting an older anthropological critique of religious studies for privileging elite literate discourses over popular practices when defining orthodoxies, but more pertinently here in a related move it has entailed decentering the privileged place occupied by Islamic law and

expansion of this community, see Robert Hoyland, *Seeing Islam as Others Saw It: A Survey of Christian, Jewish and Zoroastrian Writings on Early Islam*.

<sup>30</sup> Such a generalization has value as a heuristic, although it obscures the complex richness of Christian representations of Islam. See for example Tolan, *Saracens*, 51–55, for his discussion of John of Damascus' (d. 749) depiction of Islam as both Christian heresy and idolatry, and compare with Hoyland's discussion of seventh-century Christian authors seeing Islam as a primitive Abrahamic faith in *Seeing Islam as Others Saw It*, 535–38.

<sup>31</sup> See Masuzawa, *The Invention of World Religions*, 179, and compare with the discussion in Alexander Bevilacqua, *The Republic of Arabic Letters: Islam and the European Enlightenment*.

<sup>32</sup> For one example of such an approach, see G. E. Grunebaum, "The Problem: Unity in Diversity."

<sup>33</sup> For two recent, sustained and eloquent critiques of essentializing visions of Islam, see Thomas Bauer, *Die Kultur der Ambiguität: Eine andere Geschichte des Islams* and Shahab Ahmed, *What is Islam? The Importance of Being Islamic*.

<sup>34</sup> See chapter 6 of Bauer's *Die Kultur der Ambiguität*, entitled "Die Islamisierung des Islams."

restoring Sufism to a central place in the history of premodern Muslim societies.<sup>35</sup> The view in European and Middle Eastern scholarship that Sufism was a supplement or variant of a variously defined authentic Islam can similarly be dated to the long nineteenth century and complicated interactions between Islamic reformers and European Orientalists.<sup>36</sup> The narrative presented both by recent surveys and more focused studies has shown, instead, that not only was Sufism central to the societies of the premodern Middle East in terms of the institution of the Sufi lodge and practices such as saint visitation, but also that the majority of religious scholars in the postclassical period who wrote on the religious and rational sciences were affiliated in one way or another with Sufism.<sup>37</sup>

The above sketch suggests that the political, economic, and social effects of European colonialism in the nineteenth century, along with Muslim reform efforts from the eighteenth century onwards, and finally the emergence of modern science in nineteenth-century Europe, substantially influenced the historian's ability to evaluate the intellectual landscape of the Muslim Middle East in the preceding centuries. This was not only due to the essentializing tendencies of Western scholars or their own cultural chauvinisms – these certainly played a role – but also due to reform efforts within the Muslim world, with which European Orientalists interacted, and which shaped their own views of the intellectual history of Muslims.<sup>38</sup>

#### THE REFORMATION OF ISLAM AND THE BREAK WITH THE CLASSICAL TRADITION

Several decades ago, it was common to argue that in the nineteenth and twentieth centuries European scholars (and later their American

<sup>35</sup> The tendency in a colonial context to equate the religion of Islam with a civilization went hand in hand with the equation of an Islamic normativity with Islamic law. See the discussion in Chapter 3, and Léon Buskens and Baudouin Dupret, "The Invention of Islamic Law: A History of Western Studies of Islamic Normativity and Their Spread in the Orient," and David Powers, "Orientalism, Colonialism, and Legal History: The Attack on Muslim Family Endowments in Algeria and India."

<sup>36</sup> For three recent, excellent overviews of Sufism with different approaches, see Alexander Knysh, *Sufism: A New History of Islamic Mysticism*; Arthur F. Buehler, *Recognizing Sufism: Contemplation in the Islamic Tradition*; Nile Green, *Sufism: A Global History*. The emergence of the various Salafi criticisms is discussed in Knysh, *Sufism*, chapter 6.

<sup>37</sup> Along with the above-mentioned surveys, see Nathan Hofer, *The Popularisation of Sufism in Ayyubid and Mamluk Egypt*, especially the book's argument as laid out in its introduction.

<sup>38</sup> See here also the introduction of Abraham Marcus regarding writing the history of Aleppo in the eighteenth century *The Middle East on the Eve of Modernity*, 1–12.

counterparts) developed a narrative of Islamic decline that justified a paternalistic European colonialism and reassured Western audiences of their own inherent superiority. This is, after all, a central argument in Edward Said's influential 1978 *Orientalism*, a book that was instrumental in the development of the field of postcolonial studies and which initiated a sea change in Middle East studies in the United States.<sup>39</sup> Yet *Orientalism* was a polemic (an arguably necessary one), and as such it generalized broadly, suffered at times from conceptual incoherence, and, as Said admitted himself, did not address Middle East history, restricting itself to studying how Europeans and Americans wrote about the region.<sup>40</sup> A corollary to the focus on Western scholarship was a marginalization of Middle Eastern actors and the role that they played in establishing a narrative of decline to forward their own ends. To understand how both Muslim reformers and Orientalists came to advance this narrative at the end of the nineteenth century, Jonathan Wrytzen's approach in the Moroccan colonial context to talk of a colonial intellectual field in which knowledge production of both foreign and local actors interacted is instructive.<sup>41</sup> The two groups clearly enjoyed differentiated access to power in a variety of colonial contexts, but the role played by Middle Eastern scholars in recasting their own intellectual heritage is vital to understanding how deeply entrenched aspects of the decline narrative became in both Middle Eastern scholarship and scholarship on the Middle East.

The story of modernist reform movements in the Middle East – often glossed in Arabic as *al-naḥḍah* – has traditionally been told as an Egyptian one with a Levantine subplot. Egypt's outsized importance in the historiography of the modern Middle East as well as Islamic reformist movements can be linked to its demographic importance as the single largest Arab country in the Middle East, its strategic importance, reflected in Napoleon's misguided and brief occupation between 1798 and 1801, the subsequent reforms it experienced under its largely independent Ottoman governor Muḥammad 'Alī (d. 1849), and above all to it being the home of al-Azhar, the most influential educational institution in the Sunni Muslim

<sup>39</sup> See Zachary Lockman, *Contending Visions of the Middle East: The History and Politics of Orientalism* (2nd ed.), chapter 6 "Said's *Orientalism*: a book and its aftermath".

<sup>40</sup> For a comprehensive study of what has been written about *Orientalism*, and a critique of Said's approach to his sources, see Daniel Martin Varisco, *Reading Orientalism: Said and the Unsaid*.

<sup>41</sup> See Jonathan Wrytzen, *Making Morocco: Colonial Intervention and the Politics of Identity*, introduction.

world. So, to sketch the depiction of premodern Islamic intellectual history that emerged out of Islamic modernist thought – an essential task for the untelling of this narrative of decline – a detour through developments in the eastern Mediterranean is required.

The nineteenth century was of central importance to an array of reform projects in Egypt and the Ottoman Empire, most famously perhaps the administrative, military and educational reforms in the Ottoman Empire glossed as the Tanzimat Reforms (1839–76), and in Egypt Mehmet Ali's efforts to reform the economy, create a modern army, and a secular educational system during the first decades of the nineteenth century. When it comes to intellectual trends in Arab Muslim thought, Western scholars often refer metonymically to the trio of Jamāl al-Dīn al-Afghānī (d. 1897), his student Muḥammad 'Abduh (d. 1905), and the latter's student Rashīd Riḍa (d. 1935) as representative of a reformist wave that decentered classical centers of religious education such as al-Azhar and broadened popular participation in redefining the significance of religious traditions.<sup>42</sup> These three scholars self-consciously drew on the Protestant narrative of European modernity – al-Afghānī called explicitly for an Islamic Reformation, and both he and 'Abduh adopted the Protestant narrative that religious conservatism had distorted their respective tradition's early dynamism.<sup>43</sup> With 'Abduh's student Riḍa the reform movement shifted from a liberal to a more neotraditional bent, but the rupture with the classical scholarly system was complete, due to 'Abduh's emphasis on juridical reinterpretation, his efforts to reorganize al-Azhar and the overall use by the reformers of newspapers to promote their religious views. Islam had become modern.

There is much to take issue with the above narrative, of course, not to mention that there are other equally simplistic narratives, such as the one in which intellectual reform in the Arab Middle East in the nineteenth century began with its Christian minority, itself influenced by European and North American Protestant missionaries.<sup>44</sup> Recent scholarship, including notably

<sup>42</sup> The classic source being Albert Hourani, *Arabic Thought in the Liberal Age 1798–1939*, but see now Jans Hanssen and Max Weiss (eds.), *Arabic Thought beyond the Liberal Age: Towards an Intellectual History of the Nahda*.

<sup>43</sup> For al-Afghānī's explicit comparisons of Islamic reform with Protestantism and his implicit comparisons of himself with Martin Luther, see Gesink, *Islamic Reform*, 72–73. Compare with Nikki R. Keddie, *An Islamic Response to Imperialism: Political and Religious Writings of Sayyid Jamāl ad-Dīn al-Afghānī*, 171–72. For the impression that 'Abduh undertook the "Protestantization of Islam," see Gesink, *Islamic Reform*, 228.

<sup>44</sup> This is, also the classic narrative for the beginnings of Arab nationalism, as found in George Antonius, *The Arab Awakening*. See chapter 3 ("The Start: 1847–68") for the importance of French and American missionaries in Beirut in sowing the seeds of Arab nationalism.

the work of Indira Gesink and Marwa Elshakry, has offered a valuable corrective to such diffusionist narratives where Europeans and Americans imported various aspects of modernity into the Arab Middle East.<sup>45</sup> Instead, this scholarship either depicts modernity coming into being at the encounter of European nations with their future colonies, or posits the existence of multiple modernities occurring in parallel within an increasingly globalized world.<sup>46</sup> When it comes to the Egyptian case, Gesink has provided us with a nuanced rereading of the reform aspirations of Muḥammad ‘Abduh, demonstrating that the utilitarian reforms pushed through the Azhar at the end of the nineteenth and the beginning of the twentieth centuries were due more to the conservative forces than to ‘Abduh and other liberal reformers.<sup>47</sup> The latter, an outsider who was viewed with suspicion by scholars representing the Azhar establishment, also did himself few favors by his close relationship with leading British colonial figures (despite his own anti-colonial views) and following his trips to Europe was subjected to a virulent smear campaign in the Egyptian press. When ‘Abduh died of liver cancer in 1905 he became a martyr for the liberal reformist cause, but the actual reforms that would go on to modernize al-Azhar were carried out by the conservative establishment that was intensely wary of ‘Abduh’s perceived infatuation with European thinkers such as the educational reformer Herbert Spencer, and who had also internalized the need to reform the Azhar along utilitarian lines to meet the challenges of the times. What ‘Abduh himself had been aiming to accomplish with his championing of intellectual exertion (*ijtihād*) has similarly been largely misunderstood as his advocating for nonspecialists to play a role in reinterpreting Islamic law, when he was actually calling for a broad social reengagement with reforming Egyptian society.<sup>48</sup> Gesink’s reading of the reform movement at al-Azhar argues that the vision of the intellectual history of the Middle East presented by ‘Abduh in his writings, and seized on by a generation of European

Tellingly, Mehmet ‘Ali’s efforts, which Antonius described in chapter 2, were given the title, “A False Start.”

<sup>45</sup> Indira Gesink, *Islamic Reform*; Marwa Elshakry, *Reading Darwin in Arabic, 1860–1950*.

<sup>46</sup> For an overview of the misguided quest for the origins of Islamic reform movements in the nineteenth century and limitations of the Afghani/‘Abduh/Riḍa triumvirate, see the exhaustive and insightful survey of Catherine Mayeur-Jaouen, “À la poursuite de la réforme”: Renouveaux et débats historiographiques de l’histoire religieuse et intellectuelle de l’islam, XV<sup>e</sup>–XXI<sup>e</sup> siècle.” Much of the most innovative work when it comes to the intellectual significance of modernity in the Arab world has been carried out by scholars of literature. See Tarek El-Ariss, *Trials of Arab Modernity: Literary Affects and the New Political* and Maya Kesrouany, *Prophetic Translation: The Promise of European Literature in the Egyptian Imaginary*.

<sup>47</sup> Gesink, *Islamic Reform*, chapter 9. <sup>48</sup> *Ibid.*, chapter 8.

Orientalists, was at best an incomplete rendering of nineteenth-century Muslim reform, and at worst it contributed to a substantial misrepresentation of the vibrancy and creativity of premodern Islamic thought.<sup>49</sup> This representation continued and shifted in the thought of ‘Abduh’s most famous student and collaborator, Rashīd Riḍa.

Henri Lauzière’s careful study of the origins and significance of the term Salafism (*al-salafiyya*) has helped nuance our understanding of Riḍa’s role in the decades following ‘Abduh’s death in coordinating and shaping intellectual and political reform in the Middle East.<sup>50</sup> Relevant here is Lauzière’s thoughtful tracing of how a series of careless translations and lazy historical narratives of European Orientalists – beginning with Louis Massignon (d. 1962) in the early 1920s – created a narrative of reformers harkening back to an early pure Islam that was initially linked to the efforts of Afghani and ‘Abduh and which was then through the efforts of Riḍa linked to the Hanbali school of Wahhabism that appeared in Arabia in the eighteenth century and which formed the intellectual basis for the third Saudi state at the beginning of the twentieth century.<sup>51</sup> Not only was this narrative incorrect – one main argument of Lauzière’s book is that Salafism as a coherent school did not emerge until the middle of the twentieth century – it also simplifies the diverse intellectual landscape of the Middle East in the late nineteenth and early twentieth centuries. Yet, despite the shared confusion between Western and Middle Eastern scholars about the genealogies of various Islamic reform movements, Lauzière’s analysis confirms that the increased importance of Salafi reformist thought throughout the Muslim world during decolonization and into the postcolonial period went hand in hand with a critique of certain Sufi practices as

<sup>49</sup> There is much more to say regarding how individual Orientalists drew on the arguments presented by Egyptian and Syrian reformers in the nineteenth century. For a particularly important case, Lawrence Conrad, “The Pilgrim from Pest: Goldziher’s Study Tour to the Near East (1873–74).” Conrad shows how Goldziher’s views of Islam and the Middle East profoundly shaped by his own participation in the *Haskala* Jewish reform movement in Hungary and Germany as well as his conversations with both al-Afghānī and Muḥammad al-‘Abbāsī, who was both Grand Mufti of Egypt and Rector of al-Azhar in 1873 (see also Conrad, “The Dervish’s Disciple: On the Personality and Intellectual Milieu of the Young Ignaz Goldziher”). I have previously commented on Goldziher’s, at times, incoherent representation of Islamic intellectual history in “Writing the History of the Natural Sciences,” 926–28.

<sup>50</sup> See Henri Lauzière, *The Making of Salafism: Islamic Reform in the Twentieth Century*, especially the introduction and chapter 3. Lauzière argues that Riḍa’s support of Saudi Arabia and Wahhabism during the 1920s was closely tied to his belief that King ‘Abd al-‘Azīz was the strongest Arab leader of the time and the best positioned to resist colonial powers and to help other Arab countries to do the same.

<sup>51</sup> On the influence of Massignon, see Lauzière, *The Making of Salafism*, 37–40.

well as much of the post-formative Islamic intellectual tradition.<sup>52</sup> This critique, which in scope addressed much of the premodern Islamic intellectual production, should not be understood to have entailed a rejection of all of it, much as Afghani and ‘Abduh, while criticizing numerous popular Sufi practices, did not reject Sufism itself.<sup>53</sup> Still, in conjunction with Orientalist depictions of intellectual stasis during the post-Abbasid period, these Salafi narratives have been effective in distracting attention from the period preceding nineteenth-century reforms.<sup>54</sup>

#### THE MOROCCAN CONTEXT

The narrative of Islamic modernism sketched out here, and its account of premodern Islamic intellectual history had a significant impact in the Moroccan context, where, however, political and social circumstances differed markedly from the Egyptian and Levantine landscape. Unlike Egypt, where the British intervened militarily in 1882 to consolidate their economic and political influence, or Algeria, which the French had incorporated into France from the 1830s onward at the cost of hundreds of thousands of Algerian lives, Moroccan political and intellectual elites were able to entertain hopes of continued independence through the end of the nineteenth century. This hope continued despite Morocco’s military defeats by France in 1844,

<sup>52</sup> See Lauzière, *The Making of Salafism*, 51–58, 119. For an important critique of Lauzière’s argument, see Frank Griffel, “What Do We Mean by ‘Salafi’? Connecting Muḥammad ‘Abduh with Egypt’s Nūr Party in Islam’s Contemporary Intellectual History.” Unlike Lauzière, who argues that a coherent Salafi movement didn’t emerge until the second half of the twentieth century and that Orientalist observers in the 1920–30s confused two intellectual genealogies with each other, Griffel believes that there was general confusion among Muslim scholars as well as Western ones regarding the meaning of the term Salafi, and that it is not possible to untangle two (or more) genealogies cleanly. Like Gesink, whose work he does not engage with, Griffel thus links the liberal reformers of the late nineteenth century such as ‘Abduh, with more conservative rejections of the authority of established legal and theological schools in the late twentieth century. Lauzière provided a persuasive rebuttal to Griffel’s arguments in “What We Mean Versus What They Meant by ‘Salafi’: A Reply to Frank Griffel.”

<sup>53</sup> See, for example, Oliver Scharbrodt, “The Salafiyya and Sufism: Muḥammad ‘Abduh and his *Risālat al-Wāridāt* (Treatise on Mystical Interpretations).”

<sup>54</sup> The same was not true of the various reform movements of the eighteenth century, which, with the exception of the writings of Ibn ‘Abd al-Wahhāb, largely did not have the same dismissive attitudes towards the intellectual contributions of the preceding centuries. For an overview, see Ahmad Dallal, “The Origins and Early Development of Islamic Reform”; for an additional view on the importance of Rashid Riḍa in evaluating the intellectual contributions of earlier reformers, in this case, the Yemeni al-Shawkānī, see Dallal, “Appropriating the Past: Twentieth Century Reconstruction of Pre-Modern Islamic Thought.” See also the survey of Mayeur-Jaouen, “À la poursuite de la réforme,” 342–47.

by Spain in 1859–60, and the ongoing encroachment of both European powers on Moroccan territory.<sup>55</sup> It was only with the substantial erosion of Moroccan sovereignty that took place through the Moroccan crown's increased indebtedness to France at the end of the nineteenth century and France's growing influence at the beginning of the twentieth century in part through its military advisors at the court of the Moroccan ruler 'Abd al-'Azīz (r.l. [1894–1908]), that Islamic modernism found a positive reception through the influence of Moroccans such as Abū Shu'ayb al-Dukkālī (d. 1937) who had studied in Egypt.<sup>56</sup> The story of the competing strands of Moroccan political thought at this time, and how Moroccan nationalism emerged out of Islamic modernism, competing Sherifian claims, and the social networks supplied by Sufi orders is a fascinating one and has been told in detail by a number of scholars.<sup>57</sup> More pertinent here is that a number of the central figures in Morocco who struggled to articulate a way forward for the country in face of European power, from the prominent Sufi scholar and rebel Muḥammad b. 'Abd al-Kabīr al-Kattānī (d. 1909) to the Islamic modernist and nationalist 'Allāl al-Fāsī (d. 1974) argued for the importance of renewing Islam and correcting the errors of the past.<sup>58</sup> For 'Allāl al-Fāsī, who founded the Independence (*Istiqlāl*) Party, which played a central role in Morocco during its first years of independence, this process of renewal involved stripping Islam of fancies and accretions and returning to the pure faith of the forefathers, while also studying the modern sciences in European languages to strengthen the Moroccan nation.<sup>59</sup> While defending the

<sup>55</sup> Morocco's relationship to Europe, and its internal politics during the nineteenth century has been the subject of a number of excellent studies. See Edmund Burke, *Prelude to Protectorate in Morocco: Precolonial Protest and Resistance, 1860–1912* and Eric Calderwood, *Colonial al-Andalus: Spain and the Making of Modern Moroccan Culture*, but also Jean-Louis Miège, *Le Maroc et l'Europe (1830–1894)*.

<sup>56</sup> See Ann Waincott, "Islamic Modernism, Political Reform and the Arabisation of Education: The Relationship between Moroccan Nationalists and al-Azhar University," 158. See also Mohamed El Mansour, "Salafis and Modernists in the Moroccan Nationalist Movement," and Edmund Burke, "Pan-Islam and Moroccan Resistance to French Colonial Penetration, 1900–1912."

<sup>57</sup> In addition to the sources mentioned in the previous footnotes, see Sahar Bazzaz, *Forgotten Saints: History, Power and Politics in the Making of Modern Morocco* and Emilio Spadola, *The Calls of Islam: Sufis, Islamists, and Mass Mediation in Urban Morocco*.

<sup>58</sup> For the context surrounding al-Kattānī's career and ignominious death at the hand of the Moroccan Sultan 'Abd al-Hafīz (r.l. 1908–12) see Sahar Bazzaz, *Forgotten Saints*. For al-Kattānī's views of the importance of renewing the proper practice of Islam and Sufism in order to strengthen the Muslim community in the face of European aggression, see the writings collected in Muḥammad al-Kattānī, *Min rasā'il al-Imām Muḥammad b. 'Abd al-Kabīr al-Kattānī fī-l-adāb wa-l-sulūk*, especially 48, 51–53, 66, 103–05.

<sup>59</sup> See the writings collected in 'Allāl al-Fāsī, *Aḥādīth fī l-falsafa wa-l-tārīkh wa-l-ijtimā'*, especially the article printed in 1934 entitled "Africa's Youth: Their Current State and

inherently Islamic nature of Sufism from Orientalist allegations of its Christian origins, al-Fāsī was also at pains to stress the importance of a true Sufism, and like other Islamic modernist thinkers of his time, he looked back to the eighth/fourteenth century iconoclastic thinker Ibn Taymiyya (d. 728/1328) to do so.<sup>60</sup> The intellectual history of Morocco during the centuries preceding the French colonial presence played a marginal role in his thinking, where the needs of the Moroccan nation would be best met by recovering and practicing a pure form of Islam in conjunction with acquiring the modern sciences. For al-Fāsī, as for Muslim scholars in the Middle East in the late nineteenth and early twentieth century, the social, intellectual, and national benefits of the modern sciences were clear.

Scholars of the history of education in Morocco during the twentieth century have in this context argued persuasively that what French and Moroccan administrators considered to be traditional Moroccan education during the protectorate and post-independence eras was decisively influenced by the French colonial presence.<sup>61</sup> Faced with the overlapping imperatives of undermining local and foreign Salafi intellectuals, needing to build up the religious legitimacy of the Moroccan regime that they claimed to be helping develop a modern government, and wishing to control the creation of a class of modern Moroccan intellectuals, French colonial officials played an important role in crafting a vision of traditional Moroccan Islamic education. Following their occupation of Morocco in 1912 under Lyautey (d. 1934), French administrators worked both to support and revive a form of traditional Islamic education in the Qarawiyyīn in Fez a process that involved them carefully curating and determining what that tradition entailed and pruning it of the mathematical and natural sciences as well as history.<sup>62</sup> This curriculum, closely tied with their curation of Fez's architectural monuments to preserve what French scholars and administrators saw as pure Moroccan heritage, ran under the name of "Traditional Education System" between 1933 and 1959 and determined the content of what the Moroccan government restarted in 1988.<sup>63</sup> As with other aspects of Islamic intellectual production – Islamic

What They Should Become" (*al-shabāb al-īfrīqī: ḥālatuhu wa kayf yajib an yakūn*), 165–82, at 171, 177–79.

<sup>60</sup> See 'Allāl al-Fāsī, *Al-Taṣṣawuf al-Islāmī fī-l-Maghrib*, 6–10.

<sup>61</sup> I have drawn here on Geoffrey Porter, "At the Pillar's Base: Islam, Morocco, and Education in the Qarawiyyīn Mosque, 1912–2000." Porter lays out his overall argument in brief in his conclusion (357–79). For a discussion of education in Morocco in general during the protectorate period, see Spencer D. Segalla, *The Moroccan Soul: French Education, Colonial Ethnology, and Muslim Resistance, 1912–1956*.

<sup>62</sup> Porter, "At the Pillar's Base," 114–16. <sup>63</sup> *Ibid.*, chapter 2.

jurisprudence being the example par excellence – colonial and postcolonial Muslim understandings of Islamic intellectual history were decisively influenced by colonial interventions.<sup>64</sup> For our purposes, what is most significant regarding Porter’s analysis of the French influence on Islamic education in colonial and postcolonial Morocco is that it shows how this influence hardened differentiations between religious and nonreligious sciences and projected a modern understanding of “traditional Islam” into the premodern period.

#### SCIENCE IN THE MIDDLE EAST IN THE NINETEENTH CENTURY

Within the broader discussions of Islamic reform in the nineteenth century, science has played an important role, as it was a tool for Protestant missionaries in Lebanon who used it to attract both Maronite Christian and Muslim students to the schools they opened in Beirut.<sup>65</sup> Using “the Gospel of Science” at the Syrian Protestant College (founded in 1866, it was renamed the American University of Beirut in 1920), American professors attempted, with various degrees of enthusiasm, to use the promise of Western technological advances to impart a narrative of spiritual superiority.<sup>66</sup> The success in conversion was limited, and more ironically, as seen most dramatically in the College’s leadership to fire one of its professors, Edwin Lewis, for lecturing on the evolutionary theory of Charles Darwin in 1882, the year of the latter’s death, it struggled with balancing its own theological and scientific priorities.<sup>67</sup> This struggle and its outcome disillusioned two of its local instructors, Ya‘qub Sarruf (d. 1927) and Faris Nimr (d. 1951), who had frequently discussed Darwin’s ideas in *al-Muqtataf*, an Arabic journal that they had founded in 1876 that was dedicated to popularizing trends and discoveries in the natural sciences. Dismayed by the outcome of the “Lewis affair,” Sarruf and Nimr moved to Cairo, taking their journal with them. This incident, along with the broader mixed Arab Christian and Muslim reception of Darwinian thought in the late nineteenth and early twentieth centuries,

<sup>64</sup> For the example of French and British influence on determining the content and practice of Islamic jurisprudence see the already cited study of David Powers, “Orientalism, Colonialism, and Legal History.”

<sup>65</sup> For the following see Adel A. Ziadat, *Western Science in the Arab World: The Impact of Darwinism, 1860–1930* and Marwa Elshakry, *Reading Darwin in Arabic*. Elshakry’s book covers much the same ground as Ziadat, albeit in much more detail and with a greater awareness of contemporary debates on the globalization of science.

<sup>66</sup> Elshakry, *Reading Darwin in Arabic*, chapter 1. <sup>67</sup> *Ibid.*, 65–72.

emphasizes the ways in which Middle Eastern scholars experienced and contributed to modernization through the discourse of science.<sup>68</sup> A number of these authors stressed the compatibility of Islam correctly understood with recent European scientific discoveries, and in a fashion not dissimilar to Muslim reformers such as al-Afghani and 'Abduh (who themselves had stressed how as a religion Islam was inherently rational) linked their openness to scientific developments to the intellectual achievements of a past age of Islamic intellectual glory.<sup>69</sup> Talking about modern science was to talk about reform, European knowledge production, colonialism, and, in some fashion, about modernity.

Modern science played a similar role as an index of social and intellectual attitudes in Istanbul, at the heart of the Ottoman Empire, during the last decades of the nineteenth century when debates regarding political and intellectual reform were intensifying.<sup>70</sup> Here too, the narratives of reformers and Orientalists overlapped and drew upon each other, as the modernist aspirations of the reform movement harkened back to a Golden Age of Islamic scientific achievement as support for their own modernization agenda.<sup>71</sup> Within a community of Ottoman intellectuals struggling with defining their own identity along religious and ethnic lines – Islamic Empire or Turkish Nation – the attitude toward a legacy of Arabic science was more complicated than in Egypt.<sup>72</sup> In both cases, however, science remained a symbol of modernity, the danger of European political and intellectual superiority, and the memory of past glory in need of recovery. The relay-race narrative of the history of science remained intact as did the implicit intellectual sterility of the premodern Muslim world.

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<sup>68</sup> For a diverse number of contemporaneous Muslim responses to Darwinism, see Ziadat, *Western Science*, 82–122.

<sup>69</sup> For one particularly striking case, consider the writings of the Lebanese Shi'a scholar Hussein al-Jisr, who argued for the compatibility of Islam and Science while also leveling a harsh critique against materialism. Al-Jisr was praised by al-Afghani and was one of Riḍa's teachers, although the two would later disagree bitterly over the proper role of the 'ulama. See Ziadat, *Western Science*, 91–95; Elshakry, *Reading Darwin in Arabic*, 132–41 and 158–59, and compare with M. Alper Yalcinkaya, *Learned Patriots: Debating Science, State, and Society in the Nineteenth-Century Ottoman Empire*, 155–56.

<sup>70</sup> See Yalcinkaya, *Learned Patriots: Debating Science, State, and Society in the Nineteenth-Century Ottoman Empire*.

<sup>71</sup> See *ibid.*, 15, 17–18. It is not surprising that Yalcinkaya drew productively on Steven Shapin's discussion of the importance of social status in seventeenth century England for the production of scientific truth (see Shapin, *A Social History of Truth*).

<sup>72</sup> See Yalcinkaya, *Learned Patriots*, chapter 5.

But this book is about a different story, one that can be told more easily once the fault lines in the narrative of decline and decadence have been uncovered. It is one of the significances of the natural sciences in one corner of the premodern Islamic world in the long seventeenth century. This is a story of marginal importance within the broader historiographical landscape, and yet it speaks to the intellectual dynamism of the scholarship of the age it examines and aims to add to our understanding of the complex ways in which different bodies of knowledge were related to each other. The narrative here draws on the work of a generation of scholars fascinated by science in all its guises and by the ways in which modernity has distorted our understandings of our pasts. To grasp what it does offer the reader, we need to set aside the narratives presented above and turn to what we currently know regarding the intellectual history of the premodern Muslim Middle East during the very centuries that Europe experienced the developments commonly glossed as the Scientific Revolution and the Enlightenment and often equated in the European context with Early Modernity.

THE INTELLECTUAL LANDSCAPE OF THE MUSLIM MIDDLE EAST  
IN AN AGE OF EMPIRES

It is curious, and a testimony to the power of the historical narratives sketched out above, that the intellectual history of the Muslim world in the centuries immediately prior to European colonialism would have been comparatively neglected for so long. This was, after all, a period in which much of the Muslim world enjoyed great political unity, demographic growth, and economic productivity – all due in part to the stability offered by three great empires, Ottoman, Safavid, and Mughal, that united the Muslim world from Algeria to Bangladesh between the sixteenth and eighteenth centuries and beyond.<sup>73</sup> To be sure, beginning in the seventeenth century the first of these three empires would suffer a series of military defeats in Europe, and by the eighteenth century the latter two would collapse.<sup>74</sup> But more pertinent to the question of the period's

<sup>73</sup> For a survey of the diverse economic strengths of these three empires during the sixteenth century, see Stephen Dale, *The Muslim Empires of the Ottomans, Safavids, and Mughals*, chapter 4, and compare with Baki Tezcan, *The Second Ottoman Empire* and Nelly Hanna, *Ottoman Egypt and the Emergence of the Modern World 1500–1800*.

<sup>74</sup> The seventeenth century, which witnessed the decline of the Safavid Empire, was a difficult one globally. See Rudi Matthee, *Persia in Crisis: Safavid Decline and the Fall of Isfahan* and compare with Geoffrey Parker, *Global Crisis: War, Climate Change, & Catastrophe in the Seventeenth Century*.

intellectual history in European scholarship is that its production did not register among European scholars: Renaissance translations of Arabic texts focused almost entirely on the known medieval authors, and when European visitors did visit these empires, they seldom interacted with indigenous scholarly networks and when they did, they played down the achievements of local scholars in order to accentuate their own.<sup>75</sup> Furthermore, the areas in which the vast majority of the local scholars of these empires were interested – for the most part the religious sciences – were of little interest to European travelers, who had their own religious agendas.<sup>76</sup>

The inability to parse internal developments within Islamic jurisprudence, theology and Sufism, not to mention literature, facilitated arguments that played up the negative effects of religious movements such as the Ottoman Kadizadelis, whose attack in the first half of the seventeenth century on what they considered to be innovations in spiritual practice gave some the impression of a static Islamic orthodoxy that rejected new developments. Recent scholarship has both disputed this understanding of the Kadizadelis, and has offered a fuller account of their intellectual context, as well as problematizing the use of “orthodoxy” as an explanatory concept.<sup>77</sup> But the most important revisions of this period’s intellectual history have been offered by three recent projects that contain sufficient detail and historiographical sophistication to genuinely revolutionize the field’s understanding of the intellectual production of this period. *Revealed Sciences* draws on all three to varying degrees. The first is found in a series of articles and two monographs by Khaled El-Rouayheb, in which he first explored the vibrant nature of Arabic logic as a field into the nineteenth century, and subsequently took up new

<sup>75</sup> See the list of translated authors in Hasse, *Success and Suppression: Arabic Sciences and Philosophy in the Renaissance*, 318–19, all of whom were from the Early or High Middle Ages; on European travelers to the Ottoman and Safavid Empires, see the studies gathered in Sonja Brentjes, *Travellers from Europe in the Ottoman and Safavid Empires, 16th–17th Centuries: Seeking, Transforming, Discarding Knowledge*, especially “Early Modern Western European Travellers in the Middle East and their Reports about the Sciences” [2004], and “Pride and Prejudice: The Invention of a ‘Historiography of Science’ in the Ottoman and Safavid Empires by European Travellers and Writers in the Sixteenth and Seventeenth Centuries” [2005].

<sup>76</sup> See Brentjes, “Early Modern Western European Travellers in the Middle East.”

<sup>77</sup> Compare Madeline Zilfi, “The Kadizadelis: Discordant Revivalism in Seventeenth-Century Istanbul,” with the valuable overview of the field of Ottoman intellectual history between the sixteenth and eighteenth centuries in Marlene Kurz, *Ways to Heaven, Gates to Hell: Fazlîzâde ‘Alî’s Struggle with the Diversity of Ottoman Islam*, 9–17, and Khaled El-Rouayheb, *Islamic Intellectual History in the Seventeenth Century*, 14–18 and 190–92.

developments in dialectics, scholarly methodology, Islamic theology and Sufism in the long seventeenth century.<sup>78</sup> El-Rouayheb demonstrated that during the seventeenth century the central Ottoman Empire and its Arab territories experienced an intellectual revival through the influx of three groups previously marginal to it: Kurdish scholars drawing on the broader intellectual legacy of the Timurids in the rational sciences who promoted the practice of “independent logical demonstration” (*taḥqīq*), North African scholars who excelled in logic and who built on the Algerian theologian al-Sanūsī (d. 895/1490)’s strident opposition to blind imitation (*taqlīd*) in matters of belief, and South Asian Sufis who championed Ibn ‘Arabī’s (d. 638/1240) often controversial theory of the unity of existence (*wahdat al-wujūd*).<sup>79</sup> This revival and the intellectual richness that accompanied it, was qualitatively different from previously studied eighteenth-century reform efforts of scholars as disparate as al-Zabīdī (d. 1205/1791) and al-Shawkānī (d. 1250/1834), which were centered on reviving the study of Prophetic tradition and which were critical of the rationalist sciences that form the heart of El-Rouayheb’s study.<sup>80</sup> Further, El-Rouayheb argued for the rise during this period of “deep reading” (*ādāb al-muṭāla‘a*), in which learning happened directly through books, and independently of the teacher-student relationship that had been at the heart of education in the Islamic world both before and after the emergence of the *madrasa* in the eleventh century.<sup>81</sup> This is a significant insight into postclassical trends in the transmission of knowledge in Muslim societies, although its overall applicability will need to be confirmed by future research.

<sup>78</sup> See Khaled El-Rouayheb, *Relational Syllogisms and the History of Arabic Logic, 900–1900* and *ibid.*, *Islamic Intellectual History*. Compare with Asad Ahmed, “The *Sullam al-‘ulūm* of Muḥibballāh al-Bihārī: A Milestone in Arabo-Islamic Logic.”

<sup>79</sup> This summary is insufficient. For a fuller summary of the book and its importance, see my review of *Islamic Intellectual History* in the *Journal of the American Oriental Society* 137 (2017), 437–40.

<sup>80</sup> Note, however, El-Rouayheb’s point that studies of Prophetic Tradition in the Ḥijāz were revived already in the seventeenth century (*Islamic Intellectual History*, 164).

<sup>81</sup> El-Rouayheb explores this argument at greater length in “The Rise of ‘Deep Reading’ in Early Modern Ottoman Scholarly Culture.” On the nature of instruction in and outside of the *madrasa*, see the discussion and cited literature in Michael Chamberlain, *Knowledge and Social Practice in Medieval Damascus, 1190–1350*, especially chapter 2, and compare with Sonja Brentjes, *Teaching and Learning the Sciences in Islamicate Societies (800–1700)*. In this context, the example of the Damascene scholar and Sufi ‘Abd al-Ghānī al-Nābulūsī (d. 1731) is striking for both being known for his studies in isolation and for having written a treatise praising the practice (Samer Akkach, *‘Abd al-Ghani al-Nabulusi: Islam and the Enlightenment*, 34–39). But see also Houari Touati, *Entre Dieu et les Homees: Lettrés, saints et sorciers au Maghreb (17<sup>e</sup> siècle)*, 34–38, for a more restrained view of the independence of the book in the seventeenth century.

Overall, El-Rouayheb's work established criteria by which progress and developments in the fields he examined could be measured and the master narratives he offered do an enormous amount to push back against prevalent narratives of decline. As he notes in both the introduction and conclusion of his survey of Islamic intellectual history in the seventeenth century, the narratives of decline that he has attempted to dispel are shared by both past generations of Orientalists and Middle East scholars, although one suspects that the intellectual work that is needed to create more nuanced intellectual histories will differ in distinct cultural and social contexts.<sup>82</sup> Unlike El-Rouayheb's recent book, *Revealed Sciences* offers less a series of master narratives or debates that can be used to chart the principal developments in specific sciences during the seventeenth century than a close reading of the ways in which the natural sciences were interwoven, institutionally and intellectually, into the scholarly landscapes of Morocco during this period.

The second scholar, whose work parallels my attempt in *Revealed Sciences* to recover neglected aspects of the premodern intellectual history of the Islamic world, is Matthew Melvin-Koushki, whose argument for the centrality of esoteric thought in postclassical thought in the Mughal, Safavid, and Ottoman Empires challenges many of the field's core assumptions. Melvin-Koushki's work was initially situated around the figure and writings of the occult philosopher Şā' in al-Dīn Ibn Turka (d. 835/1432), but his prodigious output consists of a frontal assault on the intellectual history of the Islamic post-formative period, in which he argues that the esoteric and occult occupied a much more important position than previously acknowledged, one that was much closer to the one it occupied in Europe.<sup>83</sup> In doing so, he argues for a decolonialization of premodern Islamic intellectual history that is no longer filtered through the disenchanting criteria of a modernist historiography that mines the premodern for its precursors.<sup>84</sup> While acknowledging opponents of occult disciplines such as lettrism – a prime example here would be his decisive critique of

<sup>82</sup> See El-Rouayheb, *Islamic Intellectual History*, 1–3 and 360–61.

<sup>83</sup> Melvin-Koushki has two forthcoming monographs with Brill, *The Lettrist Treatises of Ibn Turka: Reading and Writing the Cosmos in the Timurid Renaissance* and *The Occult Science of Empire in Aqqayunlu-Safavid Iran: Two Shirazi Lettrists*, a third volume on the life of Ibn Turka and over ten articles or book chapters dealing with related matters. As such, my summary of his scholarly intervention is necessarily abbreviated and partial.

<sup>84</sup> He makes this point most clearly in two review essays, where he takes up his attack on what he calls the “science-religion-magic” triad: “(De)colonizing Early Modern Occult Philosophy”; *ibid.*, “*Tahqīq* vs. *Taqīd* in the Renaissances of Western Early Modernity.” Melvin-Koushki's refusal to separate the intellectual history of Christian Europe and the

the famed North African historian Ibn Khaldūn's (d. 808/1406) attack on esotericism – he argues that their importance and representativeness have been exaggerated, significantly distorting our understanding of the pre-modern Islamic world.<sup>85</sup> The occult is not central to this book, and despite its reputation in the premodern period as a land of magicians, North Africa is at the margins of Melvin-Koushki's work, which is principally engaged with the scholars of the Ottoman, Safavid, and Mughal Empires that claimed a Timurid legacy.<sup>86</sup> Yet, like Melvin-Koushki, my work is based on the assumption that our understanding of the intellectual life of the premodern Islamic period – and specifically of the nature and significance of the natural sciences therein – has been profoundly distorted by the reform-oriented modernizing discourses of the nineteenth century.

The third intellectual project that has influenced my thinking profoundly in writing the book is that of Sonja Brentjes in her work on the teaching and studying of the natural and mathematical sciences in Muslim societies, work that has recently culminated in her impressive survey *Teaching and Learning the Sciences in Islamicate Societies (800–1700)*. Brentjes' wide-ranging historical and historiographical writings, largely focused on Egypt, Iran and the Levant, have shown that the natural and mathematical sciences were part of institutional learning in Muslim societies in the post-formative period of Islamic intellectual history. In doing so, she has provided a powerful and productive counter to the influential observations of George Makdisi in his foundational work on the *madrassa* or college that the philosophical sciences were not taught in institutional settings.<sup>87</sup> Yet, she has also drawn attention to the importance of tracing the diffusion of the sciences in Muslim societies through genres including introductory manuals, mnemonic poems, and the rich commentary literature. In this regard, her work has contributed significantly to a framework for a social as opposed to a purely intellectual history of the sciences.

Muslim Middle East is especially evident in "Afterword: Conjuncting Astrology and Lettrism, Islam and Judaism."

<sup>85</sup> See Melvin-Koushki, "In Defense of Geomancy: Sharaf al-Dīn Yazdī Rebutts Ibn Khaldūn's Critique of the Occult Sciences."

<sup>86</sup> A useful survey of the importance of Timur (d. 1405) for the subsequent Ottoman, Safavid, and Mughal Empires is given by Stephen Dale in chapter 2 of his *The Muslim Empires of the Ottomans, Safavids, and Mughals*, but compare with the introduction and second chapter of A. Afzar Moin, *The Millennial Sovereign: Sacred Kinship & Sainthood in Islam*, whose argument that Timur provided a valuable millennial precedent for later rulers such as the Mughal ruler Akbar (d. 1605) places astrology at the heart of both the political and intellectual life of the time.

<sup>87</sup> See George Makdisi, *The Rise of Colleges: Institutions of Learning in Islam and the West*, 10, 75–76.

*Revealed Sciences* draws on Brentjes' contributions to investigate both the broader institutional settings of the sciences in seventeenth-century Morocco as well as their diffusion through a broad number of genres.

#### REVEALED SCIENCES

The title of this book comes from a key passage in a work on epistemology by the seventeenth-century Moroccan scholar al-Yūsī (d. 1102/1691), in which he disputes the taxonomy of knowledge of the fourteenth-century Granadan jurist Ibn al-Juzayy (d. 741/1340).<sup>88</sup> The passage is found in a section that is fascinating primarily for its elucidation of al-Yūsī's blurring of what was otherwise, even in his writings, a clear differentiation between those sciences that had a religious origin and those that did not. Al-Yūsī's initial point engages with Ibn al-Juzayy's breakdown of knowledge into three types: religiously sanctioned sciences, those sciences that are subsidiary to these sciences and facilitate them, and those sciences that are not religiously sanctioned. Al-Yūsī refutes the validity of this breakdown by challenging the validity of the distinction between the second and third categories. Ibn al-Juzayy's second category was to contain sciences that are not explicitly mentioned in revealed texts, but which are integral to religious sciences such as jurisprudence: these, in Ibn al-Juzayy's view, should also be considered religiously sanctioned or revealed (*shar'ī*) by virtue of their supplementary role. Before parsing the best translation for this last Arabic term, let us turn to al-Yūsī's own words, where he moves beyond the starting point to consider a more functional description of all knowledge that benefits the Muslim community having been revealed. He begins by raising the question of the scope of the term *shar'ī*:

It can then be objected to Ibn al-Juzayy that that it is not right for one to intend with the use of religiously sanctioned in this context (*annahū lā yaṣībū an yurīd bi-l-shar'ī fī hādihā al-bāb*) only what has acquired this name from Revelation, according to the technical meaning of this phrase for the legal theorists. There remains nothing but to intend by it either what has been explicitly legally permitted by Revelation – as one says of a proper sale that it was religiously sanctioned – with everything else not being so. Or, instead, it refers to what is known in this community.

Here al-Yūsī focuses on Ibn al-Juzayy's limitation of religiously sanctioned sciences to those which aid in the pursuit of those sciences that deal with

<sup>88</sup> See al-Yūsī, *al-Qānūn fī aḥkām al-'ilm wa aḥkām al-'ālim wa aḥkām al-muta'allim*, 294–95. I discuss the work at greater length in Chapter 2.

religious matters proper, and opens the possibility that all knowledge available to the Muslim community should be considered *shar'ī*, or revealed. He then moves to unpack the implications of such a move:

If I intend the first, then what is intended is what is permitted concerning the science as a whole, or in its entirety and in parts, in a fashion that does not include anything outside of it. If I intend the second, then we hold that all of the sciences that contain in them something that has been permitted are religiously sanctioned (*kullu-hā shar'īyya*) due to their overall inclusion of religious and temporal benefits. If I intend the second, it implies it is necessary that nothing but the book itself is considered revealed (*shar'ī*) – concerning which “Falsehood cannot come from before it or behind it” [Q41:41] – and following it, the established example of the Prophet (*al-sunna al-thābita*).

The passage is somewhat confusing due to al-Yūsī's use of “the first” and “the second” in the reverse order that one would expect, but it is clear that he is setting up an opposition between the term *shar'ī* referring to solely the Qur'an and Prophetic Tradition on the one hand, and to all knowledge that benefits the Muslim community in this world or the next on the other. Before developing his argument further, al-Yūsī offers the following aside on how while any given body of knowledge contains elements that were not reliable, this does not invalidate it as a whole:

In every science there are necessarily false matters that proceed from ignorance, mistakes, or delusion, which are not permitted in a given science, nor in listening to it, or in the teaching of it. It is not for you to consider correcting accomplished jurists (*mujtahids*), for the sciences also contain attested (*qad ishtamilat bi-l-mushāhida*) delusions and mistakes, as we have said, and not only authoritative scholarly opinions (*'alā siwā al-ijtihādāt*).

The point here is that all knowledge is fallible and the result of human effort. Every science contains aspects that are false because of this fallibility, but this does not change the nature of a science that is religiously sanctioned. Al-Yūsī's emphasis on contingency may surprise, but he is taking a basic interpretive principle from Islamic jurisprudence – that authorities in the field can err, even when trying their best – and applying it to all sciences.<sup>89</sup> The fact that a given science contains erroneous knowledge does not detract from its overall permissibility or that it has substantial benefits in this world and the next.

<sup>89</sup> The *locus classicus* on this topic is Aron Zysow, “The Economy of Certainty: An Introduction to the Typology of Islamic Legal Theory.”

If I mean by revealed what is known in the community in its entirety (*fa-in urīdu 'alā itlāqihī*), then this includes what the community knows of medicine, arithmetic, logic and so on. If I mean what is known only in it, then the science of rational theology (*kalam*) is not religiously sanctioned, for it is a metaphysical science that has been trimmed and pruned (*li-annahū huwa al-ilāhī hudhība wa nuqīha*), as the other sciences have been trimmed.<sup>90</sup> It is false and not religiously sanctioned. Yet how is this possible when it is the foundation of the revealed injunctions (*al-shar'īyyāt*) and their head, and it has been counted as one of them?

The syntax of this passage is convoluted in the Arabic, but the overall point is clear: revealed knowledge is defined by what is useful and present within the Muslim community, not only what is contained in the Qur'an and Prophetic Tradition. If it were limited to the latter, then much of what Muslims considered the religious sciences would in fact not be revealed, and this would in fact be true of Islamic law itself:

If I consider religiously sanctioned what is contained in the revealed rulings (*al-ahkām al-mashrū'a*), and what is specifically sought after (*fa-in urīdu al-maṭlūba bil-dhāt*), then, save the quarter that deals with ritual obligations, jurisprudence would necessarily not be counted as religiously sanctioned – the rest of it dealing with what is permitted in its essence and which may be sought after. Such is the case with medicine, despite those whom God has placed at the station of understanding causes being legally enjoined to provide treatment. It is similar to seeking sustenance.

Al-Yūsī makes here what is clearly a *reductio ad absurdum* argument that if revelation were limited to the textual basis of the Qur'an and Prophetic Tradition, even Islamic law could not be considered revealed. In this regard, Islamic law was similar to the science of medicine. Both were based on general injunctions, Islamic law dealing with ritual obligations and the regulation of permitted matters, while medicine met the requirement of providing treatment for body's ills. Al-Yūsī concludes by taking up what he clearly sees as the logical implication of the preceding passages – the study of all sciences, because they are revealed, is permissible:

If I have a broader understanding of the term, then generally speaking, none of the sciences contains anything that infringes on their permissibility. This is the correct legal judgment (*wa hiya hukm shar'ī 'alā l-ṣaḥīḥ*).

It should be clear why I have spent this much time on al-Yūsī's reasoning for including all sciences – including the natural ones – within the bounds of

<sup>90</sup> In my translation *al-'ilāhī* as metaphysical, I have drawn on the discussion in al-Urmawī's (d. 672/1274) *Risāla fī farq bayna naw'ay al-'ilm al-ilāhī wa-l-kalām*, 71–72. My thanks to Zakaria El-Houbba for the reference.

the religiously sanctioned and the revealed, the two translations overlapping here. In doing so, he blurs categories and shows how for this scholar in seventeenth-century Morocco there was no firm border between religious and natural sciences or between religious and secular knowledge. It is worth dwelling on this point for a moment.

In a recent article, Rushain Abbasi has made an insightful argument for this type of blurring of epistemological boundaries having had a solid precedent in none other than al-Ghazālī (d. 505/1111).<sup>91</sup> In his nuanced survey of the prevalence and the productive nature of the contrasting categories of *dīn*, religion, and *dunyā*, temporal world, Abbasi shows how for some scholars, including al-Ghazālī, this differentiation broke down when one considered how worldly activities such as travel or even acquiring worldly goods contributed on a secondary level to religious imperatives such as acquiring knowledge of God.<sup>92</sup> Abbasi uses his careful parsing of the overlapping realms of religious and worldly to argue for a new understanding of “the secular” as a lens to understand the premodern Islamic intellectual history. For us here, the value of Abbasi’s analysis is that it shows how what al-Yūsī does in his canon by including the natural sciences within revealed knowledge had conceptual precedent in Islamic scholarship, although no other scholar before him, to my knowledge, had framed this inclusion as broadly. The title, *Revealed Sciences*, speaks therefore to al-Yūsī’s innovative work, but more pertinently to its relevance as a description of seventeenth-century Moroccan attitudes to the natural sciences more broadly and as an opportunity for us to rethink the categorizations of the sciences we bring to the study of Islamic scholarship.

#### INTERTWINED INTELLECTUAL WORLDS: GENRE AND DISCIPLINE IN ISLAMIC SCHOLARSHIP

For some generations of scholarship, now, we have known that while scholars of the premodern Muslim world often wrote works specializing in a specific religious or rational science, their own intellectual lives were not as compartmentalized as our curricula today make them out to be. While scholarly giants such as Ibn Sīna (d. 428/1037), al-Ghazālī (d. 505/1111), Ibn Rushd (d. 595/1198), Ibn ‘Arabī (d. 638/1240), Ibn Taymiyya (d. 728/1328), and al-Suyūfī (d. 911/1505), with all the many differences

<sup>91</sup> Rushain Abbasi, “Did Premodern Muslims Distinguish Between the Religious and the Secular? The *Dīn-Dunyā* Binary in Medieval Islamic Thought.”

<sup>92</sup> See *ibid.*, 26–30.

between them, may have been exceptional in the depth of their engagement with a large number of religious and rational sciences, they were representative of a rich and dynamic world of scholarship in which scholars could draw on jurisprudence, medicine, theology, logic, Sufism, astrology, grammar, and mathematics, to mention only a few sciences. Although there is heuristic value in discussing developments in a specific legal or theological school – or in devoting books or classes to specific subjects in individual sciences – such a focus does scant justice to the broader intellectual worlds inhabited by individual scholars and often prevents us from comprehending their own projects. This insight, simple though it is, cannot be realized without the ability to treat multiple fields of knowledge as dynamic, each with their own debates that can impact developments in other fields. Thus, some of the best recent histories of the natural sciences in the premodern Islamic world – Nahyan Fancy on Ibn al-Nafīs (d. 687/1288), Robert Morrison on Nīzām al-Dīn al-Nīsabūrī (d. c. 730/1330), or Miquel Forcada on Ibn Bājjah (d. 533/1138) – have shown how the respective scholars’ insights into medicine or astronomy were contextualized by their theological or philosophical convictions.<sup>93</sup> It is no accident that these histories focused on a period of Islamic thought whose contours are reasonably well understood. Our generally insufficient understanding of post-formative developments in all areas of Islamic intellectual history – due in part to a scholarly focus on the early and modern periods to the detriment of the so-called Middle period and equally if not more so to the fact that the vast majority of the intellectual production of that same Middle period is still in manuscript – has impeded the field’s ability to produce nuanced intellectual histories of this period.<sup>94</sup>

*Revealed Sciences* takes up this challenge with regard to Morocco in the seventeenth century, a corner of the Muslim world outside of the great empires that controlled much of the remainder of the Mediterranean, Middle Eastern, and South Asian worlds. This was a tumultuous century for Morocco, beginning with the dissolution of the Sa’dī dynasty and ending with the ‘Alawites’ consolidation of power – the dynasty that continues to rule Morocco until today. Chapter 1 will lay out the political and social context for the remainder of the book, focusing especially on the

<sup>93</sup> Nahyan Fancy, *Science and Religion in Mamluk Egypt*; Robert G. Morrison, *Islam and Science*; Miquel Forcada, *Ética e ideología de la Ciencia*. The same could, of course, be said of the work of Khaled El-Rouayheb on logic and Matthew Melvin-Koushki on lettrism.

<sup>94</sup> Exceptions here include many of the works that I rely upon for this study, including those by Ḥajjī, Berque, Touati, and Warscheid – all of which rely extensively on sources still in manuscript.

importance of the Sufi lodges (*zāwīyah*, pl. *zawāyā*) that emerged in North Africa in the fifteenth century as sites of knowledge production and transmission. This contextualization is especially needed for an English-reading audience, who have not been able to access the few surveys of Moroccan intellectual and social history during this period that have been written in Arabic and French.

This book intends primarily to trace the broader significance of the natural and rational sciences and the natural world in the intellectual landscape of seventeenth-century Morocco, and not to establish a parallel with developments taking place in Europe.<sup>95</sup> In the belief that more such local studies are needed before broader generalizations can convincingly be made, it reads deeply across the scholarship produced by Muslims in Morocco's long seventeenth century. This scholarship was largely not concerned with European expansion or intellectual developments in Europe, for although these were not ignored, neither was seen as central to the main intellectual pursuits of the day.<sup>96</sup> The nature and status of what could be known and studied is therefore the subject of Chapter 2. Drawing on scholarly autobiographies (*fahrasa*, pl. *fahāris*), biographical dictionaries, and classificatory discussions of the sciences, this chapter shows that the natural sciences were an important if minority pursuit in Morocco during the seventeenth century and that their study and transmission were closely interwoven in both urban and rural contexts with Sufism, jurisprudence and theology.

Chapter 3 turns from the place of the natural sciences in the transmission of knowledge to the role they played in jurisprudence. While Islamic jurisprudence has in recent years been rightly critiqued for all too often being used as a synecdoche for Islam itself, it is difficult to dispute its importance as one discourse among several through which Muslims understood their relation to the divine. The genre of legal opinion (*fatwā*, pl. *fatāwā*) has in recent decades been used to write the social history of North Africa, and as a source it also offers valuable insights onto how and when the authority of the natural sciences manifested itself in law. As a case study, this chapter pays special attention to the great tobacco debate that echoed throughout the Muslim Mediterranean and beyond in the seventeenth century, and to the role the body and its states of consciousness played in it.

<sup>95</sup> For the latter approach, see Akkach, *'Abd al-Ghani al-Nabulusi*, as well as the above discussion of nineteenth-century reform efforts in Egypt.

<sup>96</sup> Here my approach is at odds with the teleological line taken by Nabil Matar, when he argues that an absence of engagement with European thought and refusal to acknowledge cultural decline on the part of seventeenth century Arab scholars was proof of their intellectual stagnation ("Confronting Decline in Early Modern Arabic Thought").

In Chapter 4, the book turns to a series of close readings of works of natural science produced in Morocco in the seventeenth century, including discussion of works of astrology and alchemy alongside works of the more traditionally privileged disciplines of astronomy and medicine. It takes up the example of the best-known Moroccan astronomer of this century, Muḥammad b. Sulaymān al-Rūdānī (d. 1094/1683), whose works, while written in the Ottoman East, returned west and were preserved, among other places in the Ḥamziyya-‘Ayyāshiyya lodge in the High Atlas. Al-Rūdānī’s writings are then compared with those of the lesser known al-Mirghitī al-Sūsī’s (d. 1089/1678) astronomical and alchemical work. Turning from astronomy to medicine, the chapter examines Aḥmad b. Šālīḥ b. Ibrāhīm al-Dar‘ī’s (d. 1144/1731) writings on *materia medica*, and contextualizes them in relation to other medical works read and written in the Islamic West at this time.

Between these chapters I have placed four short excursuses addressing in broad terms some of the central methodological suppositions that have determined my approach in writing *Revealed Sciences*. These are intended to be general in tone and to help the reader think through what may seem self-evident propositions that nonetheless have in the past led to partial understandings of the history of the natural sciences in the Muslim world. As such, they take up themes introduced elsewhere in the book and consider them with greater focus. The first, “The Poverty of Intellectual History as a Series of Great Men,” explores the self-evident proposition that summarizing the achievements of major scholars results in an insufficient understanding of a field of study. The second, “The Horizons of Causality or How to Think about Causes, Nature, and Ghosts of Scientific Methods,” traces how modern preconceptions regarding causality have shaped depictions of premodern and non-Western ways of thinking about the natural world. The third, “Kuhn and the History of Science in Islamicate Societies,” argues that the historian of science Thomas Kuhn’s work offers productive tools for us to think beyond the category of progress that has limited many previous debates regarding the natural sciences in post-formative Muslim societies. The fourth, “Sufism and the Spiritual Life or Balancing the Exoteric and Esoteric Sciences,” offers reflections on the vexed category of Sufism in the writings of Muslim reformers and Western scholars of Islam, noting how it is often drawn into the older conflict narrative of religion opposing the natural sciences.

The Conclusion of *Revealed Sciences* returns to the broader historiographical concerns of this Introduction and poses the question of what a history of the natural sciences of the early modern Muslim world would

look like if not measured by the teleological standards of modern science. As this book argues, it would first and most simply entail addressing and recognizing the amount of energy and activity Muslim scholars in the premodern world put into scientific pursuits that today might seem useless or not even scientific. Here, the critique of a traditional history of science that the book advances is also tied up with the recognition that its own interest is a very modern one – it is not free from the object of its critique and this is a tension that it is not able to resolve. Despite this, exploring the benefits of considering the importance of the natural sciences in the broader worldview of Muslim scholars of this period opens up new ways to appreciate the pervasive importance of their contemplation of the natural world during the long seventeenth century and more importantly it offers us the possibility of more fully reconstructing their scholarly worlds.