Making History: Identity, Progress and the Modern-Science Archive

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Abstract

The history of pre- and early-modern science, medicine, and technology in the Islamicate world has been traditionally charted around certain signposts: Translation, Golden Age, and Decline. These signposts tethered the history of Islamic sciences to a European story that culminates in the Scientific Revolution and that links European colonial expansion (causally and chronologically) to modernity. This article looks at the roots of the classical narrative of the history of Islamic sciences and explores its connections to the production of colonial sciences and the proliferation of colonial education. Moving beyond the validity or accuracy of the Golden-Age/Decline narrative, it asks about the archives that such a narrative constructs and the viability of categories and chronologies, such as the “early modern,” in thinking about histories of the Global South, in general, and of the Islamicate “world” in particular.

Keywords

Postcolonial history – colonization – Islamic history – Golden Age – Decline – Modernity – Perron – Clot

Introduction

In 1841, The French chemist and physician, Nicolas Perron, wrote to a friend about the developing war in Algeria:

Muslims sincerely accepting the authority of Christians! But there is nothing of the sort in the Quran. [Any peace requires that] Muslims are made more civilized so that they can understand the fraternity of man. But how [does one] enter into the heads of Muslims? The Quran is a skull-cap of iron that is applied on their heads, doubling the shields around their unteachable brains. One cannot keep the Muslims of Algeria (as is the case with all other [Muslims]) under the French authority excepting by imposing a vigorous and inflexible authority. They are indeed children [...], and it is not by severity that you can control them. Rather, because of their lack of knowledge, one has to develop their intelligence bit by bit.¹

Perron spent the middle decades of the nineteenth century in Cairo working at the newly opened European-style medical school, which was led by his compatriot Antoine Barthélemy Clot,² before moving to Algeria, where he led the newly established Imperial Arab-French college in 1858.³ In addition to his medical practice and interest in chemistry, Perron was also an Arabist and a translator who edited books on Islamic law, pre- and early-Islamic literature, and prophetic medicine.⁴ Along with many others who worked in and supervised the various European-style schools, which opened in the provinces of the Ottoman Empire, Nicolas Perron thought a “modern,” European-style education would civilize and modernize Muslims and prepare them to accept the authority of the colonizing metropole.⁵ Colonization, in his view, was predi-

1 Nicolas Perron, *Lettres Du Dr. Perron Du Caire Et D'alexandrie À M. Jules Mohl, À Paris, 1838-1854*, ed. Yacoub Artin (Le Caire, 1911), 8.

2 The school was established by Mehmet Ali Pasha, the viceroy of Egypt, as will be explained later.

3 Osama Abi-Mershed, *Apostles of Modernity: Saint-Simonians and the Civilizing Mission in Algeria* (Stanford, 2010), 190.

4 Perron contributed to the translations of a number of medical books in Egypt in the early decades of the nineteenth century. For instance, he contributed to the correction and translation of the famous book *Treasures of Health* (*Kunūz al-Ṣiḥah*), which was authored by Antoine Barthélemy Clot at the instruction of Mehmet Ali Pasha. See Antoine Barthélemy Clot-Bey, *Kunūz Al-Ṣiḥḥah Wa Yawāqūt Al-Minḥah* (Cairo, 1863), 4.

5 Perron was not alone in his views concerning the importance of education for civilizing Muslims. In his speech before the exam of 1830 (the third year of school operation), Clot explained to his students how delighted he was to see their progress: “The exams of these first years have proven that you can be part of an intelligent community, whose main character should always be the distinguished love for sciences.” (Antoine Barthélemy Clot, *Compte Rendu Des Travaux De L'école De Médecine D'abou-Zabel (Egypte), Et De L'examen Général Des Élèves, ... Suivi De La Description Et Du Plan De L'hôpital. 1243-1838, 1244-1829, 1245-1830* (Marseille, 1830) 13.)

cated upon the enormous gap between the European and Muslim mind, the latter being in a state of childhood.

In this context, “modernity” carried two distinct connotations: one historical and another moral. As a historical concept, it gestured to the specific historiography that wrote the rise of European sciences in the late seventeenth and eighteenth centuries against the background of the decline of other civilizations, such as the Islamic civilization.⁶ This historiography accepted and often even celebrated an Islamic Golden Age, where sciences derived from Greek origins were preserved until recovered by the Europeans.⁷ On the other hand, modernity described values and virtues that conditioned the “modern” mind and justified its perceived superiority. The “modern” scientific mind was capable of understanding and conquering nature. It was free from the shackles of superstition and false modesty and enthusiastic and daring in its pursuit of knowledge.⁸ It accepted only the authority of experimentation and empirical knowledge, rejecting heritage, tradition, or inherited wisdom.⁹ From this descriptive that conditioned the meaning of the modern scientific mind, the mind of the other emerged as both the ante- and anti-thesis to modernity. Controlled by superstition and prejudice and unable to understand “the fraternity of man,”¹⁰ the Muslim mind, much like other uncivilized and unmodern minds, was unable to accept the authority of modernizing powers and the legitimacy of scientific knowledge.¹¹ It languished in intellectual childhood, awaiting education and maturity, and lived in a proverbial pre-modernity,

6 See, for instance, David C. Lindberg, *The Beginnings of Western Science: The European Scientific Tradition in Philosophical, Religious, and Institutional Context, Prehistory to A.D. 1450*, 2nd ed. (Chicago, 2007); Edward Grant, *The Foundations of Modern Science in the Middle Ages: Their Religious, Institutional, and Intellectual Contexts* (Cambridge, 1996); Toby E Huff, *The Rise of Early Modern Science: Islam, China and the West* (Cambridge, 2003); *Intellectual Curiosity and the Scientific Revolution: A Global Perspective* (Cambridge, 2010).

7 This is evident in works as early as William John Draper's famous “History of the Conflict between Science and Religion” in John William Draper, ed., *History of the Conflict between Religion and Science*, 6th ed. (New York, 1875).

8 In a ceremony held to examine three contestants for a position of a professor of medicine, and attended by all the students in the school, the famous French physician Étienne Pariset (1770-1847), who presided over the event on Clot's invitation, explained to the attendants that, for a people deprived of enlightenment, knowledge of medicine may be key to their progress, Clot, 11.

9 Nicolas Perron and Alfred Clerc, *L'islamisme: Son Institution, Son Influence Et Son Avenir* (Paris, 1877).

10 Perron.

11 Huff, *Intellectual Curiosity and the Scientific Revolution: A Global Perspective*. See also Justin Stearn's critique of Huff and others in Justin Stearns, “Writing the History of the Natural

oblivious to the modern age that had appeared around it. At the same time, the Muslims' commitment to their religions and superstitions and their failure to properly understand even their own history fueled their antagonism to modernity and prevented them from attaining its fruits, even when offered to them. In this vein, modern science was the justification, goal, and fruit of colonization.¹²

In the narratives of history of science and intellectual history, modernity as a historical category acquires its meaning from the changes that happen to the structures of knowledge making. The hybridization of theoretical and practical knowledge and the triumph of the logic of the artisan enabled more experimentation and removed the stigma of handwork that hindered the development of various sciences.¹³ The "discovery" of the Americas and of parts of Africa and Asia brought far more new objects of knowledge to the European epistemic landscape, slowly threatening stable definitions of nature and undermining the authority and wisdom of the Ancients.¹⁴ It forced the development of new tools of knowledge management and brought about a fascination with novelty that stoked curiosity and fueled discoveries and inventions.¹⁵

The Islamic Golden Ages figure in this master narrative as a prelude or a necessary prologue to modern science. At the same time, the Golden Age and the Decline are deeply connected. While the Golden Age seems necessary for the march of knowledge, the Decline is central to constructing the uniqueness of the European experience and to underwriting the colonial project that is justified by such uniqueness. The Golden Age/Decline couplet play an equally important role in postcolonial debates of modernization as they remain the central lens through which Islamic history is viewed. In the coming pages, I will look at some of the historical junctures where this narrative was created and disseminated in some Ottoman provinces and explore how this history of history can inform our thinking about this narrative.

Sciences in the Pre-Modern Muslim World: Historiography, Religion, and the Importance of the Early Modern Period," *History Compass* 9, no. 12 (2011): 938.

- 12 Antoine Barthélemy Clot, *Aperçu Général Sur L'Égypte* (Paris, 1840); Bijin and Antoine Barthélemy Clot-Bey, *Mubligh Al-Barāh Fī 'ilm Al-Jirāh* (Cairo, 1835), 11-12. For a discussion of this and similar views on education and modernization, see *Abi-Mershed*, esp. 188-200.
- 13 Pamela H. Smith, *The Body of the Artisan: Art and Experience in the Scientific Revolution* (Chicago, 2004).
- 14 Katharine Park and Lorraine Daston, *Wonders and the Order of Nature, 1150-1750* (New York, 1998).
- 15 "Introduction: The Age of the New," in *The Cambridge History of Science Volume 3: Early Modern Science*, ed. Katharine Park and Lorraine Daston (Cambridge, 2008).

A New Islamic History

Antoine Barthélemy Clot (1793-1868), a surgeon from Montpellier, gained some experience as a military surgeon serving briefly in the Napoleonic wars.¹⁶ In the early 1820s, Clot was invited to visit Cairo and meet with Mehmet Ali Pasha, the new ruler of Egypt, who was attempting to build an army and was looking to create a medical staff for this army.¹⁷ Clot was able to convince the Pasha to build a school of medicine to train physicians and surgeons for the army.¹⁸ The school, with a military hospital attached to it, was built in 1827. Clot became the school's director and the Chief Army Surgeon. He was given the title bey, which apparently made such an impression on the young surgeon that he continued to write his last name as "Clot-bey" even on the covers of his books published in France. Clot became the main authority on medicine in Egypt in the eyes of the French medical community. Soon after, he was elected to the Academie Royale de la Medecine, to the Academie des Sciences, and received the title of knight in the legion d'honneur, among other titles.¹⁹

Clot perceived his work as a revolutionary endeavor that would change medical practice in the region forever.²⁰ The school's mission was to transform the minds of "people who were deprived of enlightenment" and to help them enter into the new world of civilization through medical instruction, since medicine is the most sublime of the sciences.²¹ In his speech before the exam of 1830 (the third year of school operation), Clot explained to his students how delighted he was to see their progress: "The exams of these first years have proven that you can be part of an intelligent community, whose main character should always be a distinguished love of the sciences."²² The goal of the new school was to

16 See Christian Jean Dubois, *Clot Bey: Médecin De Marseille, 1793-1868 : Chirurgien Du Vice-Roi D'egypte* (Marseille, 2013).

17 On Muhammad Ali and his projects, see Khaled Fahmy, *All the Pasha's Men: Mehmed Ali, His Army, and the Making of Modern Egypt*, vol. 8 (Cambridge, 1997); *Mehmed Ali: From Ottoman Governor to Ruler of Egypt* (Oxford, 2009).

18 Bijing and Clot-Bey, 14-15.

19 Clot also remained loyal to his patron Muḥammad Ali as he thanked him profusely in the beginning of his memoirs. See Antoine Barthélemy Clot, *Aperçu Général Sur L'egypte* (Bruxelles, 1840).

20 Khaled Fahmy, "Medicine and Power: Towards a Social History of Medicine in Nineteenth Century Egypt," *Cairo Papers in Social Sciences* 23, no. 2 (2001).

21 Ibid., *Compte Rendu Des Travaux De L'école De Médecine D'abou-Zabel (Egypte), Et De L'examen Général Des Élèves, ... Suivi De La Description Et Du Plan De L'hôpital. 1243-1838, 1244-1829, 1245-1830* (Marseille, 1830), 13.

22 Ibid., 11.

create a new medical elite attached to the European medical scene and to introduce a different form of medical practice, previously unknown to the region.²³ These students, most of whom had received education in other traditional local institutions, were to impose a different form of legitimacy for both their new system of education (one based on regular school-wide instructions, diplomas, and exams, as opposed to apprenticeships and personal licensing by masters of the profession); their epistemic structure, which relied on a different arrangement of medical sciences; and their therapeutic approaches on an unfamiliar terrain, which had different practicing medical elites.

History played a variety of roles in Clot's thinking and in the execution of his project. From the start, Egypt was a place that was imbued with nostalgia for Europeans. In the emerging mythology of European sciences, Ancient Egypt was the first stop in the trajectory of civilizations, the place where knowledge was born before it moved to the Greeks.²⁴ In the textbooks that Clot prepared or supervised for the new medical school, Ancient Egypt continued to figure in a repeated narrative about the origins of medicine and how it developed over time. For instance, in the introduction to his book, *The Treasures of Health* (*Kunūz al-Sihhah*), he wrote, "It is well known that the Egyptian lands were always a place of knowledge."²⁵ Similarly, in the introduction to a surgery textbook entitled *Mubligh al-barāh* and published in 1835, he explained, "Ancient Egyptians knew surgery. This is because the Egyptian lands, being a great historical nation, was the first home for sciences and crafts [...] The practice of surgery in Ancient Egypt was part of their religion. This is why we see images of [Gods and priests] cutting and cauterizing, in the ruins."²⁶ While these ruins had constituted part of the local spatial imaginary for centuries and descriptions of these ruins could be found in writings dating back to the fourteenth century,²⁷ these local accounts connected their history to Noah's flood, the

23 Many of the school's graduates traveled to Paris for further studies before returning to work in Cairo: Clot-Bey, 4; *Durar Al-Ghawāl Fī Amrād Al-Aṭfāl*, ed. Muḥammad ibn 'Umar ibn Sulaymān Tūnisi (Cairo, 1844), 5.

24 Clot, *Aperçu Général Sur L'égypte*, 2: 246.

25 Clot-Bey, *Kunūz Al-Ṣiḥḥah Wa Yawāqūt Al-Minḥah*, 6.

26 Bijin and Clot-Bey, 8.

27 On ancient ruins and history in medieval Islamic writings, see Michael Cook, "Pharaonic History in Medieval Egypt," *Studia Islamica*, 57 (1983). Cook (and Patricia Crone) argued that there was no evidence of a regional identity in Egypt during most of the medieval period (Patricia Crone and Michael Cook, *Hagarism: The Making of the Islamic World* (CUP Archive, 1977)). Haarman, on the other hand, provided arguments to the contrary and argued that some of the ancient ruins served to constitute this regional identity (Ulrich Haarman, "Regional Sentiment in Medieval Egypt," *Bulletin of the School of*

Exodus, and the demise of polytheistic nations. The French recollection of these monuments and of the history attached to them was not reflective of these local accounts.

Islamic history also figured prominently in the historical narratives that populated the introductions of medical and other textbooks. For instance, in the surgery textbook *Mubligh al-Barāh fī 'ilm al-Jirāh*, Hippocrates is credited with transforming old practices of medicine and surgery into scientific activities, which entailed a systematized theory, a consistent treatment strategy, and an appreciation of anatomy and dissection that implied an interest in empiricism.²⁸ Arabs translated books of Greek medicine and learned their practice, producing some remarkable figures in the first two centuries after these translations.²⁹ Nicolas Perron was fluent in Arabic and far more versed in Islamic history than Clot, who did not speak Arabic. Perron had similar ideas about the history of Islamic sciences, but his ideas extended to include the history of language, law, and many other aspects of Islamic culture. While Clot's Golden Age and Decline were rooted in science and medicine, Perron's included all aspects of life. Perron was dissatisfied with his students' knowledge of Arabic. In January 1845, he wrote from Cairo to his friend Mohl about his idea to edit and print an Arabic dictionary composed by al-Fayruzababi (d. 1414), which he wanted Mohl to help him promote with the Société Asiatique in Paris. Perron explained that the dictionary would not only be useful to European Arabists, but also to local scholars:

These poor scholars (Ulemas), who [have] nothing of knowledge but its name, are of such incommensurable laziness and ignorance. Their devout sloth renders them in a shameful state. They no longer know the names of the most ordinary Arabic books. And with all that, they believe they know all.³⁰

Oriental and African Studies 43, no. 1 (1980)). In either case, ancient Egyptian monuments were discussed in large part from a religious point of view that emphasized the place of ancient Egypt in the history of salvation. See also Okasha El Daly, *Egyptology: The Missing Millennium: Ancient Egypt in Medieval Arabic Writings* (London, 2005). On modern reorganization of Egypt's ancient history, see Darrell Dykstra, "Pyramids, Prophets, and Progress: Ancient Egypt in the Writings of 'alī Mubārak," *Journal of the American Oriental Society* (1994); Donald Malcolm Reid, *Whose Pharaohs?: Archaeology, Museums, and Egyptian National Identity from Napoleon to World War I* (Los Angeles, 2002).

28 Bījin and Clot-Bey, 9.

29 Ibid., 11-12.

30 Perron, 90-91.

Perron's evaluation of local scholars' ignorance of Arabic was rooted in their ignorance of what he, and other Orientalists, thought were the most important Arabic books. However, these books may not have figured as prominently in the local scholarly archive. Perron was also interested in pre-Islamic poetry, which he and other Orientalists considered to be the most eloquent Arabic poetry. He wrote from Alexandria in August 1838, discussing his intention to print a collection of pre-Islamic poetry in France in the Imprimerie Royale:

It appears to me that this collection will have great value for our European literature, which will benefit from [their colorfulness]. [In these poems], there is a special [way of] life, special morals, thoughts, traits and characters: the hot skies of these poets, [...] their tents, their deserts, their waters and their valleys. These ideas, the native and strange nuances remain the most common issues of the ordinary, simple life of these men of the desert.³¹

Perron's proposed collection was one that he himself organized from the tenth-century poetry collection "al-Aghānī," compiled by Abū al-Faraj al-Isfahānī (d. 967). Although the collection was well-known and continued to be cited and commented on, Perron rearranged the collection with an emphasis on pre-Islamic poetry and on, what he perceived, as a decline over time. Perron's project was to arrange local knowledge in a manner that corresponded to particular epistemic priorities and logics inherent in the European gestalt of the time. The new discourse that was constructed in the new schools, and in the different intellectual societies formed by European intellectuals in the region, was insistent on producing a new epistemic regime in which a specific period was privileged based on its connection to the imagined European narrative of renaissance and recovery.

Lucien Leclerc (d. 1893), a familiar name in the annals of the history of science, did not deviate much from Clot and Perron in his work. A military physician and surgeon in Algeria, Leclerc knew and corresponded with Perron and cited him repeatedly in many of his works.³² Leclerc's narrative traced a similar overall arc that described translations and the rise of Islamic sciences as well as the decline and the end of the Golden Ages. More importantly for the purpose

31 Ibid., 48-49. On his interest in pre-Islamic poetry, see also *Lettre Sur Antar* (Paris, 1841).

32 Leclerc cited Perron in various places: Lucien Leclerc, *Traité Des Simples*, vol. 1 (Paris : Imprimerie nationale, 1877), 1: 129 and 1: 250, *Histoire De La Médecine Arabe* (Paris, 1876), 1: 30, 33, 445, 453 among other places. Leclerc mentioned that Perron sent him a manuscript of al-Zahrāwī that he was looking for (Ibid., 1: 445) and on which he relied in his book on al-Zahrāwī (*La Chirurgie D'abulcasis* (JB Baillié, 1861), ii).

of this discussion, in his *Histoire*, Leclerc maintained a structure of history of science that relied on a few specific figures and their roles as the bearers of the torch of science and knowledge. This process of creating an Islamic history of science and medicine around the names of a small number of figures continued in the writings of many historians and orientalist from the nineteenth century onward. In all these cases, the selection of names relied on their perceived brilliance and innovation and their ability to challenge authority and engage in experimentation. The focus on specific figures and on their roles was not restricted to European or Western orientalist. In the writings of local historians trained in European-style schools, which soon came to dominate all learning in the region, the same cast of characters and the same narrative of rise and decline persisted.

Conclusion

In her recent book, *A Concise Book on the History of Science*, Farkhanda Hasan also traced a similar chronology. She started with Ancient Egypt and its scientific renaissance, which helped fuel Greek knowledge, then moved across the Greek masters of knowledge to the Golden Age of Islamic civilization.³³ Similar to the popular exhibition, "One Thousand and One Inventions," Hasan's narrative was organized around the biographies of figures and specific inventions that were either accomplished in this period or for which the seeds were planted there, to be reaped by the modern West. Ending her book with a brief mention of this period's decline and of the rise of modern science, Hasan exhorts her reader to understand that modern science, unlike all premodern scientific activities, is universal and, as such, available to all. In narratives about secularization and modernization in different parts of the Islamicate world, "enlightened" figures of the Islamic Golden Ages were often marshaled to provide sources of inspiration for another run at greatness.³⁴ The political impetus behind such writings is hardly ambiguous. They all represent a postcolonial

33 Farkhanda Hasan, *Nabdha 'an Tārīkh Al-'ilm Alladhī Nabatat Bidhratuhu Al-'ulā Fī Arḍ Misr* (al-Hay'ah al-Miṣriyyah al-'āmah lil-kitāb, 2014).

34 See, for instance, Fauzi M. Najjar, "Ibn Rushd and the Egyptian Enlightenment Movement," *British Journal of Middle Eastern Studies* 31, no. 2 (2004). On classical studies in modern Egypt as example of discussions about the role of the Greek in the Islamic Golden Ages, see Peter E. Pormann, "The Arab 'Cultural Awakening (Nahda)', 1870-1950, and the Classical Tradition," *International Journal of the Classical Tradition* 13, no. 1 (2006).

narrative that aims at constructing a path forward and that emerges from a historical narrative rooted in European colonial discourse.

As Justin Stearns explains, contemporary works engaged in writing the history of Islamic sciences in the Early Modern period (the period of decline) “continue to mine Islamic intellectual history for potential parallels to specific developments in the European history of, chiefly, astronomy and medicine. This is not to say that nuanced attempts at comparative intellectual history between Europe and Islamdom would not be productive, but rather that such attempts all too easily result in appeals to inherent cultural or religious traits as explanatory factors.”³⁵ Stearns argues for a more comprehensive history that investigates how Muslim scholars produced knowledge “at the intersection of philosophy, theology, occult philosophy, mysticism and the various sciences themselves,” instead of chasing the ever elusive category of science.³⁶ While the category “Science” (singular, capital S) cannot be fully separated from the narrative of the Scientific Revolution as the culmination of a modernist teleology, which is both rooted in and serves to underwrite colonialism, dispensing with the category entirely in non-Western historiographies reinforces the peculiarity of the European category. Ultimately, “Science” represented a claim on nature and natural order that both attempts to understand and use it. Problematic as the term may be, restricting it to the modern European context lends even more credence to the positivist narrative by insisting on the modernist nature of this value-laden term (Science) while doing little to undermine its value-laden nature. Alternatively, the category “sciences” (plural, small s) carries the promise of a diverse and expansive history that encompasses European as well as non-European sciences, modern and non-modern—both in the historical and moral meaning of the word.

In his “Silencing the Past,” Michel-Rolph Trouillot explains, “The past does not exist independently from the present. Indeed, the past is only past because there is a present ... In that sense, the past has no content. The past—or, more accurately, pastness—is a position.”³⁷ Early modernity is, therefore, a location detectable only from the vantage point of the modern/present. Yet, this Modern (capital M) remains coded as a function of the European underwriting of colonialism and European expansion as an earned or deserved product of history. In this context, early modernity is not a marker of chronology but one of teleology providing the prologue for the Modern and the Scientific as uniquely

35 Stearns, 938.

36 Ibid.

37 Trouillot, Michel-Rolph, *Silencing the Past: Power and the Production of History* (Boston, MA, 15).

European. "The collective subjects who supposedly remember did not exist as such at the time of the events they claim to remember. Rather, their constitution as subjects goes hand in hand with the continuous creation of the past. As such, they do not succeed such a past: they are its contemporaries."³⁸ The subject remembering the early modern in the Islamicate context is one marked by the historiography of colonialism and versed in the particular archive that funds this vantage point. As such, salvaging the early modern history of Islamic sciences, or dispensing with the category of science, as proposed by Stearns, only emphasizes the reproduction of this same marked subjectivity.

There is no doubt that the chronology of early modernity (a beginning in the early sixteenth century and an end around the beginning of the nineteenth century) meets some local chronologies. The early modern (in Europe) can start with the fall of Constantinople/the rise of Istanbul (ca. 1453) and ends with the French Revolution (1789) or the Napoleonic campaign on Egypt (1798). Here, Ottoman, Safavid, and Mughal historians produced significant works that not only challenged the narratives of decline but also dispensed with them entirely and moved well beyond their oppressive shadows. However, chronology is hardly what is at stake in the category of the early modern. The Early Modern (capitalized) is a central period in the European Archive as a prologue of the modern, a harbinger of colonialism and expansion and a moment where the West departed from the rest. The fallacies and historical inaccuracies and violences imbedded in these meanings cannot be remedied or resisted by restructuring local early modernities that accept the premises of the European modern. Instead, I propose that the category of the Early Modern fails to capture non-European histories, and that such category should be abandoned as a universal one, leaving the space for local and more pertinent (not merely more accurate) markers of periodization. Here, the "Ottoman," "Safavid," and "Mughal" may be presented as markers of specific chronologies that coincidentally match the European early modern, but they should not be required to submit to the logic of the early modern. At the same time, I object to Stearns' call to move beyond the category of science, which I argue entails the ceding of such episteme to the European and implicitly accepts the production of modern science as uniquely European. Instead, and following in the footsteps of Dipesh Chakrabarty, science requires a process of provincialization, whereby it acquires different and new meanings that are more pertinent historically.³⁹ In this historiography, the early modern and the modern emerge as spaces for

³⁸ Ibid., 16.

³⁹ See Dipesh Chakrabarty, *Provincializing Europe: Postcolonial Thought and Historical Difference* (Princeton, 2007).

what Projit Mukharji brilliantly described as braiding of scientific and technological traditions.⁴⁰

In Perron's, Clot's, and Leclerc's, but also Toby Huff's, Edward Grant's, and Farkhanda Hasan's texts, narratives are rooted in a specific archive that is conditioned by the narrative of modern science/the Scientific Revolution. In fact, Perron was precisely attempting to create such an archive that defined what is important and what is not, what is worthy of recording and what could be neglected. In this archive, names, inventions, and discoveries (but also major texts) are privileged, underwriting a larger account of "how we got here." I argue that challenging the narratives of modern science/the Scientific Revolution requires more than a revision of chronology or nomenclature. Instead, it demands a reorganization, if not a reinvention, of this archive.⁴¹ Such reorganization should prioritize continuities over ruptures not by constructing uninterrupted genealogies of important names that can bridge the periods of decline or parallel European modernity, but by focusing on the daily uninterrupted practices of knowledge production and consumption. Here, hospitals and their doctors, observatories and their timekeepers, shops and their accountants, along with astrologers and herbalists, their places of work and their clients constitute the loci where sciences take place and where knowledge is produced and consumed in the subaltern. The focus on these structures also uncovers how colonial science was not European but was rather a product of the colonial setting where the colonizer and colonized held varying agencies in the process of producing and consuming knowledge. In this context, stories about the negotiation of the ownership of nature, both as a material and as an epistemic category, can be written, allowing for the varying and competing meanings of nature that parallel and condition the ever-changing meaning of science(s).

40 See Projit Mukharji. *Doctoring Traditions: Ayurveda, Small Technologies, and Braided Sciences* (Chicago, 2016).

41 See Achille Mbembe. "The Power of the Archive and Its Limits," in *Refiguring the Archive*, 19-27: Springer, 2002.