

The Problem of the Global Middle Ages: A View from the History of Science, Technology, and Medicine

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The global turn in medieval studies has, if anything, intensified the longstanding preoccupation among historians of science, technology, and medicine with Needham's question: "Why did China not produce a scientific revolution?"¹ In some cases, the answers offered are attempts at finding connections, non-European origins, or "discoveries" that happened outside Europe.² Others question the uniqueness of European modernity or propose comparative cases.³ Resulting narratives of the medieval history of science, technology, and medicine present three key problems:

The Centrality of Europe

The European origin of the Middle Ages as a chronological marker is well-documented. The term has intellectually traveled far from its roots as a middle between the fall of Rome and the fall of Constantinople.⁴ However, Eurocentric periodizations continue to exert significant intellectual pull, motivating studies that investigate the analytical possibilities in such terms.⁵ The persistent allure of these chronological categories renders them archival headings in search of entries, to borrow Derrida's conceptualization of archives.⁶ They

1. Kapil Raj, "Rescuing Science from Civilisation: On Joseph Needham's 'Asiatic Mode of (Knowledge) Production,'" in *The Bright Dark Ages: Comparative and Connective Perspectives*, ed. Arun Bala and Prasenjit Duara, 250–88 (Leiden: Brill, 2016). See also Kapil Raj, "Thinking Without the Scientific Revolution: Global Interactions and the Construction of Knowledge," *Journal of Early Modern History* 21, no. 5 (2017): 445–58.

2. Nathan Sivin, "Why the Scientific Revolution Did Not Take Place in China—or Didn't It?," *Chinese Science* 5 (1982): 39–50; Geoffrey Ernest Richard Lloyd and Nathan Sivin, *The Way and the Word: Science and Medicine in Early China and Greece* (New Haven, CT: Yale University Press, 2002), 45–66.

3. Shigehisa Kuriyama, *The Expressiveness of the Body and the Divergence of Greek and Chinese Medicine* (New York: Zone Books, 1999).

4. John H. Arnold, *What Is Medieval History?* (Hoboken, NJ: John Wiley & Sons, 2020); Martin J Dougherty, *The 'Dark' Ages: From the Sack of Rome to Hastings* (London: Amber Books Ltd, 2023).

5. See, for example, Aziz Al-Azmeh, *The Emergence of Islam in Late Antiquity: Allah and His People* (Cambridge: Cambridge University Press, 2014). Azmeh followed in the footsteps of Andrew Marsham, "The Early Caliphate and the Inheritance of Late Antiquity (c. AD 610–c. AD 750)," in *A Companion to Late Antiquity*, ed. Philip Rousseau, 479–92 (Oxford: Blackwell Publishing Ltd, 2012). See also Carol Bakhos and Michael Cook, eds., *Islam and Its Past: Jahiliyya, Late Antiquity, and the Qur'an* (Oxford: Oxford University Press, 2017).

6. Jacques Derrida, *Archive Fever: A Freudian Impression* (University of Chicago Press, 1996), especially 108–10.

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offer checkpoints on the road to answer “Needham’s question,” prompting historians to search for what constitutes a local historical marker that can coincide or compete with the Eurocentric one.

As a font of the premodern, the idea of the Middle Ages relies on a linear temporality that ends with modernity. This teleological organization pushes questions of origins and antecedents to the fore.⁷ Whether we study European or non-European history, we are pushed to locate the early emergence of the qualities of the modern or the roots of “modern” practices. While recasting global modernity in terms of qualities or roots may have been meant to free it from the shackles of European modernity, it instead further underscores the universality of European modernity and its teleology.⁸ Here, the excavation of pre-colonial or premodern non-European history to find the seeds of the modern becomes a pursuit of what counts as real progress or contribution to human civilization—serving to entrench European exceptionalism while attempting to dislodge its chronology.⁹ Most recently, Projit Mukharji demonstrated this entanglement of temporal structures as he reclaimed Dipesh Chakrabarty’s concept of the “waiting room of history.”¹⁰

At another level, Eurocentrism relies on the entrenched ontologies and epistemologies that govern academic pursuits and that condition postcolonial narratives of progress. As Chakrabarty explains, the move away from a Eurocentric approach cannot be achieved by centering other places or attempting to produce parallel narratives. Instead, provincializing Europe means demoting its ontologies and epistemologies.¹¹ Suman Seth highlights the difficulty of this task, demonstrating that epistemological shifts toward different modes of

7. Many works on medieval science, technology and medicine highlight how the Middle Ages can be analyzed as the prelude to modernity. See, for examples, Thomas Cahill, *Mysteries of the Middle Ages: and the Beginning of the Modern World* (Milwaukee, WI: Anchor Press, 2010); John Freely, *Before Galileo: The Birth of Modern Science in Medieval Europe* (New York: Abrams Books, 2013); and Ofer Gal, *The Origins of Modern Science: From Antiquity to the Scientific Revolution*. I have discussed elsewhere how this anticipation of the modern becomes all the more crucial when considering pre-colonial periods in the global South and extends temporally to the moment of colonial encounter. See Ahmed Ragab, “Postscript: Al-Damānḥūrī in Anticipation: Writing Postcolonially,” in *Medicine and Religion in the Life of an Ottoman Sheikh: Al-Damānḥūrī’s “Clear Statement” on Anatomy* (London: Routledge, 2019), 135–46.

8. The recasting of modernity as a set of values and characteristics and not a temporal organization has a long history that includes postmodern critiques of modernity. More recently, a revisionist reading was offered by a number of European philosophers who argued for salvaging modernism and its legacies. See, for example, Jeffrey R. Di Leo and Zahi Zalloua, eds., *Understanding Žižek, Understanding Modernism* (New York: Bloomsbury, 2022).

9. Hamid Dabashi explicates this argument in his critique of postcolonial thought. See Hamid Dabashi, *The Arab Spring: The End of Postcolonialism* (London: Zed Books, 2012); and Hamid Dabashi, *Can Non-Europeans Think?* (London: Zed Books, 2015).

10. Projit Bihari Mukharji, “No Time for Empathy: Entangled Temporalities of Pediatric Medical Experimentation in Early Postcolonial India,” *Journal for the History of Knowledge* 4 (2023): 239–58.

11. Dipesh Chakrabarty, *Provincializing Europe: Postcolonial Thought and Historical Difference*, new ed. (Princeton, NJ: Princeton University Press, 2008). Chakrabarty elaborates on these ideas further in subsequent debates and discussions. See, for example, Dipesh Chakrabarty, “In Defense of ‘Provincializing Europe’: A Response to Carola Dietze,” *History and Theory* 47, no. 1 (2008): 85–96; and Amitav Ghosh and Dipesh Chakrabarty, “A Correspondence on Provincializing Europe,” *Radical History Review* 83, no. 1 (2002): 146–72. See also Carola Dietze, “Toward a History on Equal Terms: A Discussion of ‘Provincializing Europe,’” *History and Theory* 47, no. 1 (2008): 69–84.

knowledge-making are insufficient. Instead, an investigation into the various ontologies that populate the world is necessary to heed Chakrabarty's call to provincialize Europe.¹²

Grand and Meta-Narratives

Poststructuralist approaches to history have demonstrated the problems associated with grand and meta-narratives.¹³ For one thing, meta-narratives force another layer of teleology by creating meanings that cannot be fully accounted for by historical materials. Moreover, meta-narratives reinforce existing structures of power, which tend to center modernity and Europe. Michel-Rolph Trouillot offers additional insights: meta- and grand narratives are underwritten by forms of kinship to specific historical moments and actors. The necessary omissions in producing grand narratives are rooted in understanding specific spaces, people, and histories as kin—near, understandable, and connected to the makers and consumers of historical knowledge—and others as strange or illegible.¹⁴

Yet grand and meta-narratives are easier to teach. The historical record is indeed made of small narratives with little meaning beyond their own. However, historical epistemology, as a practice and understanding of the past originating in Eurocentric modernity, demands a teleology that forces a form of organization on otherwise incoherent collections of small narratives.¹⁵ On the other hand, the poststructuralist focus on small narratives rejects not only the European modernist grand narratives, but also non-secular and non-European ones. In this sense, the rejection becomes an organizing principle that refuses to give credence to local perceptions of grand narratives—the Gods are all dead, and their plans can no longer be part of historical analysis.

The Question of Science

Historians of premodern science continue to debate the utility of the term science. The question is whether we can talk about science in the medieval world or if using a term like knowledge might be more appropriate.¹⁶ This question becomes more crucial when

12. Suman Seth, "Putting Knowledge in Its Place: Science, Colonialism, and the Postcolonial," *Postcolonial Studies* 12, no. 4 (2009): 373–88. See also Suman Seth, "The Politics of Despair and the Calling of History," *History and Theory* 56, no. 2 (2017): 241–57.

13. Jean-François Lyotard exemplified the postmodern skepticism of metanarratives: "I define postmodern as incredulity toward metanarratives." See Jean-François Lyotard, *The Postmodern Condition: A Report on Knowledge* (Twin Cities: University of Minnesota Press, 1984), xxiv.

14. Michel-Rolph Trouillot, *Silencing the Past: Power and the Production of History* (Boston: Beacon Press, 2015). See also Stéphane Gerson, "A History from Within: When Historians Write about Their Own Kin," *The Journal of Modern History* 94, no. 4 (2022): 898–937.

15. Here, I use "small narratives" as an alternative translation of Lyotard's *petits récits*: "Le petit récit reste la forme par excellence que prend l'invention imaginative et tout d'abord dans la science." See Jean-François Lyotard, *La condition postmoderne: rapport sur le savoir* (Paris: Edition de Minuit, 1979), 98. See also Jean-François Lyotard, "Domus et la mégapole," *Po&sie* 44 (1988): 93–102; and Jean-François Lyotard, *The Postmodern Condition: A Report on Knowledge* (Twin Cities: University of Minnesota Press, 1984), xi.

16. See Peter Dear, "What Is the History of Science the History Of? Early Modern Roots of the Ideology of Modern Science," *Isis* 96, no. 3 (2005): 390–406; and Lorraine Daston, "The History of Science and the History of Knowledge," *KNOW: A Journal on the Formation of Knowledge* 1, no. 1 (2017): 131–54.

discussing non-European history, where the term science is linguistically foreign and does not carry the legitimacy of the word's Latin ancestry.¹⁷ The argument is often that an expansive use of science, especially in these cases, reinforces teleology and Eurocentricity.

However, such an argument appears to be oblivious to the role played by science as a modern category and its role in legitimizing the discipline. In granting science a specific status as a modern creation, we reify European exceptionalism and reemphasize the historical break that delivers science from a cocoon of knowledge.¹⁸ Instead, I argue that the place of science in contemporary debates and the role the category played in colonial history necessitates using and expanding the term. Here, rather than attempting to protect the coherence of the term and worrying about whether it fits or does not fit modes of knowledge production in the medieval period or non-European contexts, I argue for breaking down its coherence to include more systematic forms of knowledge production and additional approaches to understanding nature, which is itself contextual and historical. This approach recognizes the power of science as a value-laden concept that implies a specific hierarchy embedded in the history of colonialism.

Conclusion—New Approaches to Old Problems

In his analysis of the postcolonial, Achille Mbembe differentiates between age and *durée*. Age is a category of time and relations to which “contemporaries could testify” as they were aware of them. *Durée*, on the other hand, is “made up of discontinuities, reversals, inertias, and swings that overlay one another, interpenetrate one another, and envelope one another: an *entanglement*.”¹⁹

While the force of debates around the problem of chronology focuses on the legitimacy of large chronological structures, such as the Middle Ages or early modernity, less attention is paid to the units that construct these structures or the thematic and archival organizations that allow them to persist. For example, discussing whether the term Middle Ages can apply to Islamic history is important. However, the Islamic Middle Ages were built not just on approximations to Europe but on entanglements with translations from Greek and their impact on knowledge, “Sunni revivalism,” the Ghazali-vs-Ibn Rushd narrative, and other historical signifiers that became the building blocks that rendered the Islamic Middle Ages possible.

17. Marwa Elshakry, “When Science Became Western: Historiographical Reflections,” *Isis* 101, no. 1 (2010): 98–109.

18. The investment in the uniqueness of science as a category is foundational to historiographical narratives about “the West and the Rest.” See Toby E. Huff, *The Rise of Early Modern Science: Islam, China, and the West* (Cambridge: Cambridge University Press, 2003); and Niall Ferguson, *Civilization: The West and the Rest* (New York: Penguin Books, 2011). Elsewhere I discuss the role played by these narratives in emphasizing a secondary position for non-Western knowledge production. See Ahmed Ragab, “Islam Intensified: Snapshot Historiography and the Making of Muslim Identities,” *Postcolonial Studies* 22, no. 2 (2019): 203–19.

19. Achille Mbembe, *On the Postcolony: Studies on the History of Society and Culture* (Berkeley: University of California Press, 2001), 14. Elsewhere I argue that such concepts can help us understand the narrative structures of Islamic sciences. See Ahmed Ragab, “Translation and the Making of a Medical Archive: The Case of the Islamic Translation Movement,” *Osiris* 37 (2022): 25–46.

I propose restructuring these *durées* intentionally to ask what happens if we understand a particular period of history as organized around a specific theme. A theme provides an entry point for reimagining the chronology from its building blocks and for accessing the ontologies that make such an organization possible. By bringing these organizational principles to the fore, we can examine them critically and consider them as prompts rather than skeletons for historical narratives.

For instance, a theme like *synthesis* nods to the spread of Islam and the reunification of Alexander's old empire. It also points to the making of new knowledge regimes, the spread of different technologies, and exchanges among medical and scientific practitioners. Using it as a prompt and not a descriptor allows us to deploy the aesthetic of synthesis to ask questions about the meaning of cultural, intellectual, and religious systems, translation and communication, historical narratives and narratives around the beginning and the end of the world, and ideas of the strange, foreign, unique, and familiar. Here, synthesis, as a theme in writing the history of science, technology and medicine (among others), is not offered as a meaning-bearing theme, where we look for moments of synthesis (a priori defined) or examples of connections. Instead, it is a prompt to investigate various ontological and epistemological arrangements worldwide. To be sure, synthesis carries the birthmarks of the traditional historiographical narrative—this is the period of reunification and the spread of Islam. But this adoption of a conventional concept is to question and destabilize rather than settle and emphasize.

The interplay of familiarity (in terms) and defamiliarization (in narrative) attempts to answer Spivak's question, "Can the subaltern speak?"—not through recovering a subaltern category, an endeavor that Spivak, Seth, and Mukharji argue is foolhardy and futile, but through the deliberate defamiliarization of the familiar. The phenomenological familiarity (how terms like synthesis, institutions, or empires sound familiar historiographically) is a commitment to the debate around meta-narratives that looks to deconstruct their coherence instead of sidestepping them. At another level, applying these themes to non-European history offers another layer of provincialization. Synthesis, for example, could commence with questions from Indo-Persian histories of knowledge. Institutions, including the medical and scientific, can emerge from Chinese and Islamic contexts and empires from Sino-Mongolian, Meso-American, and African histories. While each of these themes remains a question rather than an answer, the process of defamiliarization they prompt can and should be located outside of Europe. This approach is critical when it comes to the history of science, technology, and medicine because it unravels the entanglements that preserve their exceptionalism and embeds them in different and dynamic narratives.

I argue that the historian's task is to invent, discover, and rediscover those themes that emerge from their research, defamiliarize their sources, and reorient their chronology accordingly. The decentralization and the multiplicities of these themes, as opposed to the struggle to find a unifying alternative, will emphasize the incoherence of grand narratives and the necessary localization of small narratives.