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Untangling the Global in The Age of Revolutions

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Madras Observatory interior, artist unknown, 1821. From *The Royal Society*, PT/73/9/12, https://makingscience.royalsociety.org/s/rs/items/PT_73_9_12

I came to the history of the French Revolution and French Empire through the back door as it were.¹ One of those back doors opened through the walls of the Madras Observatory, which is depicted in the image I use as a starting point for these reflections. This is a visual source that really engrossed me in my recent work on the age of revolutions in the Indian and Pacific Oceans. It gets to the construction of orders of space and time in this critical period of transformation. In this sense, it fits perfectly with the orientation of the essays in this issue, towards a wider sense of the age of revolutions as one “rife with experimentation” and where the global and imperial jostled over “spatial orders” running across state, territory and nation.² Indeed, this image may usefully remind the authors that time and space are

¹ This essay is a retrospect on my recent book *Waves Across the South: A New History of Revolution and Empire* (Chicago: Chicago University Press, 2021). Further details and material on the sources on which this history of Madras Observatory relies are available in the book and especially in Chapter 7.

² Megan Maruschke, ‘The French Revolution and the New Spatial Format for Empire: A Nation-State with Imperial Extensions,’ *French Historical Studies*, Vol.44 (2021), 522.

simultaneously reconstructed in this era of revolutions; the two should be approached together. While this point is well known in the broader literature on the workings of the French Revolution, it is not common to begin with an image like this, either by way of date or place, in making it.

In progress here is a pendulum length experiment. A pendulum length experiment is a calculation of the impact of gravity on the time a pendulum's bob takes to swing; this time varies slightly from place to place on the Earth's surface. By calculating this time down to fractions of seconds, and it was something of a rage to make this calculation in the late 1820s, it was possible to work in reverse towards the exact curvature of the planet. But the pendulum-length experiment was only one of a series of calculations undertaken from Madras Observatory. The observatory was an inter-disciplinary platform close to the sea which regulated trade across the Indian Ocean. The masses of data collected here ranged from the tides to the speed of sound, the position of stars, the weather, the sighting of comets and the calculation of longitude. The Observatory was first established privately in 1786 and then officially by the Court of Directors of the East India Company in 1792. John Goldingham (1767-1849) was appointed as the first official astronomer in 1802.

As I tiptoed through the reams of statistics in the archive, I was initially rather astounded by the mass of data that arose from this observatory. This mass, however, may become less astounding when we remember the political context. The statistics facilitated the modelling of the planet as a globe, and the planet's elements, and in turn generated imperial possibilities. As I argue, settlements in Southeast Asia were formed in part through the spill-over of a calculation regime and its agents from Madras. By "calculation regime" I mean a composite of instruments and people converting elements to data across a variety of disciplines; such a calculation regime is never singular because indigenous cosmologies for instance certainly lasted its onslaught, but it was violently interventionist and transformative. Symmetrically, this spill-over was not total: the calculation regime was open to failure and to breakage, for instance in the face of the fury of oceanic waves or the Bay of Bengal's monsoon.

Yet beyond this imperial history, lies an age of revolutions history. At one level, this might be sketched in biographical terms. The image shows two *brahmin* pandits or Tamil elites, Tiruvenkatacharya, who is counting the clock, and Srinivasacharya, who is taking down the time. They are working with John Goldingham, the chief astronomer. John Warren, who acted for Goldingham in the period from 1805 to 1810, also used assistants like this.

At first glance, this is a typical early-nineteenth century British imperial institution: committed to pragmatic data crunching for the utilitarian aim of "improving" India and its allegedly illogical and superstitious modes of time-keeping. Such alleged improvements in time-keeping and in the calculation of practical matters like the position of ships, would have immediate consequences for free trade. They were seen as replacing the out-of-date domain of learning and time-measurement connected to the use of palm leaf manuscripts.³ Note the three languages which appear ornamentally on the cone used for observations on the right: Persian, Telugu and Tamil.

³ On palm leaf, see my "Materialities in the Making of World Histories: South Asia and the South Pacific," in *The Oxford Handbook of History and Material Culture*, eds Ivan Gaskell and Sarah Anne Carter (Oxford: Oxford University Press, 2020), <https://www.oxfordhandbooks.com/view/10.1093/oxfordhb/9780199341764.001.0001/oxfordhb-9780199341764-e-33>

Yet we need to think again. Despite their English names these astronomers were children of the age of revolutions. In technical fields like this, and in surveying more broadly, Europeans, French, Danish and Dutch, came to serve within the machine of the early-nineteenth century British Empire. Warren's real name was Jean-Baptiste François Joseph de Warren (1769-1830). He fought against Tipu Sultan's Mysore, a useful reminder that the expansion of Madras Observatory came in the shadow of the pacification of South India and in the taming of French ambitions by the British. The British were obsessively concerned about Tipu's French connections, but here we have a Frenchman with pro-British sentiments. De Warren left France after the French Revolution; he returned there in 1815 after the restoration of the French monarchy and was reinstated at that time in the French army. But he then made his way back to India and to Pondichéry. Meanwhile, it is likely that Goldingham was a Dane whose real name was Johannes Guldenheim, pointing to the Danish history of early modern empire in South Asia, which too had to come to terms with the rise of Britain.

Beyond these tangled biographical pathways, whereby people with quintessentially English-looking names in fact turn out to have crossed the boundaries of the age of revolutions, there is another way of considering the status of this observatory. As noted earlier, this data collection was about the creation of space and time. Where the exact curvature of the Earth is irregular, the pendulum-length experiments allowed these irregularities to be smoothed. Meanwhile, the ability of ships to transit and to move in regular intervals depended on understandings of the monsoon system developed from Madras Observatory. In other words, rather than globalising the age of revolutions what is necessary is to see how the "big data" collection of the age of revolutions led to the consolidation of a materialised globe and also an instrumentalised sense of time. Indeed, the number of instruments that were involved in this enterprise, some of which appear in the image, is surprising. Working outwards, one might argue that this regime of space and time created the possibilities for a significant moment in the erasure of the indigenous intermediary. While modes of exchange and hybridity have often been used to interpret images like this and indeed taken to be typical of the age of revolutions, such narratives take the image at face value and imagine that the segregation of assistants and experts should be dated to a later period of scientific racism in the second half of the nineteenth century. Rather, the result of this kind of calculation was a depersonalised modelling of nature; or in other words, the intermediary went missing in the data in the archive. One might say that the Anglicisation of the European technician and the erasure of the indigenous intermediary were twinned markers of this British project.

Pulling back, however, it is important to be cautious of over-doing the contrast between the British and French empires. While a case may be made that the British imperial regime adopted the refugees of the age of revolutions in Asia, especially those who were royalists, something more complex was afoot too. For both the French and the British were adopting similar modes of engaging with the Indian Ocean tied to the use of key island bases, modes of diplomacy warfare and even scientific knowledge. The Madras Observatory project may remind us of the number of savants and instruments involved in the Napoleonic expedition in Egypt and how far science was an integral part of it.

What the British did successfully however was to act as a counter-revolution. While there was much that was shared, in espousing liberty, empiricism and reason for imperial goals the British carried forward their agenda more successfully than the French. In other words, the very logics of the French Revolution shaped the steady rise of the British empire in Asia.

To approach the field like this is to avoid a naïve global approach, where the global is taken for granted in meaning and scope. It is also to avoid a bifurcated historiographical placement, where the British and French imperial historiographies do not meet the literature on the age of revolutions. The authors are surely correct in writing that: “The global umbrella, in its so-called neutrality, groups together vaguely connected phenomena without necessarily providing hermeneutic resources to decrypt the historical causality of interconnectedness.”⁴ (p.375). For the global is not neutral; when understood as a model of our Earth, it is partly a product of the age of revolutions. Interconnectedness, meanwhile, is made possible via the imperial data crunching of institutions such as the observatory. If such a critical perspective is foregrounded, it will then be possible to assess the workings and limits of such interconnections, especially in a context where the age of revolutions literature has not sufficiently engaged the global South or areas outside the Atlantic. Meanwhile, while state, nation and territory were surely constructed in this era as the authors insist, the spatial and temporal orders were also about nature, geography and even history itself. There are other disciplines, places and projects involved in this specific calculation regime to those highlighted by scholars of France in this era. I also argue that the kind of data-crunching in Madras Observatory was not too far from the origins of British imperial historiography in the early nineteenth-century. In this era, history-writing about colonial territories was a heavily statistical and scientised enterprise which had violent relations with indigenous peoples.⁵

To rework the historical narrative through the portal of Madras Observatory, then, is to take a particular place and the constellation of people, ideas and practices that functioned in that place seriously. And indeed, this place is the kind of place that has gone missing in the age of revolutions literature. It is also a small place which mirrors the commitment of this special issue to highlighting how the age of revolutions story took on specifically virulent dynamics in small sites outside the metropole. Working out from Madras Observatory, does not simply lead to Paris or London, however, but also to Singapore or Sydney. And it is these pathways of the age of revolutions that we need to consider further if a critically-reflexive commitment to interconnection is maintained. Not all paths need to return to the metropole – though some such as de Warren certainly found it conducive to move repeatedly between France and India. In other words, the vistas of the age of revolutions literature that are opened up by these essays and other new work are limitless, but those vistas must proceed carefully with critical reflection on how key categories and national fault-lines were themselves products of the age of revolutions.

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⁴ Manuel Covo and Megan Maruschke, ‘The French Revolution as an Imperial Revolution’ *French Historical Studies*, Vol. 44 (2021), 375.

⁵ See the Conclusion of Sivasundaram, *Waves Across the South*.