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BETWIXT JESUIT AND ENLIGHTENMENT HISTORIOGRAPHY: JEAN-SYLVAIN BAILLY'S HISTORY OF INDIAN ASTRONOMY

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Abstract. — The crystallization of scientific disciplines in late eighteenth-century Europe was accompanied by the proliferation of specialist histories of science. These histories were framed as much by the imperatives of the astronomy of the times as they were by the compulsions of disciplinary differentiation. This paper attempts to contextualise the engagement with the astronomy of India in the histories of astronomy authored in the eighteenth century by the astronomer Jean-Sylvain Bailly. While Bailly's history of astronomy is not considered very highly among historians of science, the key themes that were to engage the concerns of historians of astronomy working on India for the next century were already in place in Bailly's history. The paper traces the influence of Jesuit historiography of India on the landscape of French Enlightenment historiography – and in particular on Bailly's quaint antediluvian theory of the origins of Indian astronomy. The reception of Bailly's theory of Indian astronomy is also read in context. Consequently, it is argued that in the historiography of Indian astronomy, Bailly's history marks a liminal moment before the binary dichotomies of the history of science framed the history of Oriental astronomy.

Résumé. — Entre historiographie jésuite et lumières: l'histoire de l'astronomie indienne de Jean-Sylvain Bailly. – Le processus de

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cristallisation des disciplines dans l'Europe de la fin du XVIII^{e} siècle a été accompagné d'une prolifération d'histoires spéciales des sciences. Celles-ci sont marquées tant par les impératifs des sciences de l'époque que par les contraintes de la différenciation disciplinaire. Le présent article vise à présenter la manière dont l'Inde est traitée dans l'histoire de l'astronomie écrite au XVIII^{e} siècle par l'astronome Jean-Sylvain Bailly. Alors que l'histoire de Bailly n'est pas très appréciée en histoire des sciences, on constatera que les principaux thèmes, qui allaient susciter au siècle suivant des recherches développées par les historiens de l'astronomie spécialistes de l'Inde, y étaient déjà en place. L'article ébauche l'influence que l'historiographie jésuite a exercée sur celle des Lumières françaises – et en particulier sur la théorie bizarre, élaborée par Bailly, des origines antédiluviennes de l'astronomie indienne. La réception de cette théorie est également étudiée dans son contexte. On peut affirmer que l'histoire de Bailly constitue une étape liminaire dans l'historiographie de l'astronomie indienne, avant que les dichotomies binaires de l'histoire des sciences n'impriment leur empreinte sur l'histoire de l'astronomie orientale.

> *Pour le mathématicien du XVIII^{e} siècle, l'histoire constitue une partie, voire un instrument, de la recherche mathématique elle-même. Cette conception de l'histoire et de sa pratique n'est pas l'apanage de Lagrange, mais elle est partagée par d'autres mathématiciens du XVIII^{e} siècle.*
> [Rashed, 1988, p. 47]

Between 1775 and 1787 two important French astronomers, Guillaume Le Gentil and Jean-Sylvain Bailly, produced a substantial corpus of writing on the history of mathematics and astronomy of India [Le Gentil 1779, 1781, 1784, 1785, 1785a], [Bailly 1775, 1777, 1787]. This paper examines the factors that shaped Jean-Sylvain Bailly's chronicle on the history of Indian astronomy. His contemporaries, some of whom considered him a charlatan and populist, frequently challenged Bailly's competence as a historian. Yet his *Traité de l'astronomie indienne et orientale* [Bailly 1787] and his *cause célèbre*, the hypothesis concerning the antediluvian origins of Indian astronomy were controversial and animated subsequent scholarship. Bailly's *Traité* was deeply appreciated and discussed among the late eighteenth-century community of British indologists. This positive appreciation of Bailly's work on Indian astronomy by the British orientalists surpassed that of the erudite Jean-Étienne Montucla's *Histoire des Mathématiques*[1] [Montucla 1799–1802], [Raina 2003]. Montucla's *Histoire*

[1] Montucla's history of mathematics is considered the first history of the mathematical sciences, inasmuch as it encompassed "all of the mathematical sciences" when compared

contained a chapter on the history of Indian mathematics, but the discussion was primarily on computational astronomy in ancient India.

The first part of this paper describes and contextualises Bailly's *Traité*. This is followed by a discussion concerning the reception of Bailly's work by the network of *Académiciens* and contemporary mathematicians in France. In order to situate Bailly's historical project, a genealogy of the history of Indian astronomy is traced. It is suggested that Bailly was indebted to Jesuit sources and to the Jesuit historiography of India. This historiography ironically shaped the Enlightenment image of India, and is the fountainhead of Bailly's antediluvian hypothesis. The *Traité* marks a turning point in the histories of Indian astronomy and mathematics compiled by practicing French savants during the Enlightenment. Bailly's work marks the transition from the ethnography of the French Jesuits in India to the historically meticulous writings of Delambre from the post-Enlightenment period.

HISTORIOGRAPHY IN THE GOLDEN AGE OF MATHEMATICS.

One of the earliest accounts of the history of Indian mathematics, a history that even by contemporary accounts is considered a major accomplishment, is to be found in Al-Biruni's tenth-century *Tarikh-i-Hind* [Sachau 1910]. However as a quasi-autonomous discipline the history of mathematics differentiated itself from mathematics and other varieties of history only in the seventeenth century [Struik 1980, cited in Grattan-Guinness 1994, p. 1666]. Montucla inaugurated the history of mathematics in France in the eighteenth century [Grattan-Guinness 1994, p. 1666]. This history was the work of mathematicians who maintained ties with the traditions that preceded them and possibly threw up research problems for their own work. Thus as Peiffer [2000, p. 3] writes: "historical practice was part of scientific practice". While underlining the antiquity of the discipline, these histories provided a legitimising context. An unstated objective may have been to benchmark their work in history.

Bailly's *Histoire* published in 1775 and the *Traité* published in 1787 were programmatic efforts directed towards the compilation of a universal

with works of a similar scale such as Delambre's *Histoire* or Cantor's *Vorlesungen* [Swerdlow 1993, pp. 301–306].

tableau of the history of the sciences. These two books served as the master narrative for historians of astronomy and mathematics writing on the history of Indian astronomy for the next three decades. In the last decades of the eighteenth century, Montucla had discredited Bailly's work. This critical strain was taken up by French astronomer-savants such as Delambre[2] and Biot in the first decades of the nineteenth century. The investigations of the British orientalists had by this time surpassed the questions raised by Bailly's *Histoire*. But the themes that were first articulated in that work continued to preoccupy later generations of historians. In any case, Bailly's location at this liminal moment in French history makes him and the age fascinating indeed.

Jean-Sylvain Bailly was born in Paris on 15 September, 1736, and guillotined on 12 November, 1793. The spirit of those revolutionary years brought this astronomer into the domain of public affairs, when he was "unanimously proclaimed" first mayor of Paris on 15 July, 1789. The subsequent convolutions of that revolutionary struggle, and his controversial role in the massacre of *Champ de Mars* resulted in his condemnation [Chapin 1980, p. 401]. He had received his scientific training, from "France's greatest observational astronomer" Nicolas de Lacaille,[3] and its "greatest theoretical astronomer" Alexis Clairaut [Chapin 1980, p. 401]. Before the Revolution, he succeeded his father as keeper of the king's paintings at the *Louvre* in 1768, where he had previously established an astronomical observatory in 1760. Bailly went on to become a member of the *Académie des sciences* in 1763. After 1771, he turned to literary and historical pursuits that were guided by his scientific training. His four-volume history of astronomy published between 1775 and 1782 earned for him the important honour of membership in France's most important cultural and learned societies, the *Académie française* and the *Académie des inscriptions et belles-lettres* [Chapin 1980, p. 401].

A dominant feature of the historiography of science at the time was its image of the progress of scientific knowledge. The notion of progress enabled the historian to filter and discard ideas that were not causally

[2] For a discussion of Delambre's criticism of Bailly, see [Raina 2001].

[3] Lacaille was professor of mathematics at the University of Paris, in which capacity he taught Lavoisier, Lalande and Bailly. But more importantly, the inconclusive meridional surveys undertaken during the previous century by Cassini I and by Cassini II in the eighteenth century were redone by Lacaille [Gillispie 1980, p. 113].

related to the received version of the reigning scientific theory [Laudan 1993, p. 2]. The historiography of progress facilitated boundary marking. During this early phase of the history of science, savant-historians wrote histories that appealed to scientists and promoted an image of the nature and value of science for the elite. They wrote for their scientist colleagues to persuade them of the value of their vision or of the trajectory created for their discipline.

The glorious decades of French science, it has been suggested, extended over the half-century separating the work of d'Alembert and the death of Laplace. Put another way, the half-century spanning Laplace's career was when French science was pre-eminent and Laplace was its law-giver [Gillispie 1980, p. 40]. This assertion is founded on the supposition that the exact sciences constituted the nucleus of French science. During this era French science dominated world science in a manner unmatched by any other national complex since [Pyenson 1993, p. 4]. French scientists had been the beneficiaries of the French state since the reign of Louis XIV. Hence while French Enlightenment thinkers, as Pyenson writes, "[. . .] warmed themselves beside state fires", the thinkers embarked on a mission to civilise the world [Pyenson 1993, p. 2–3]. In this nexus between science and state, scientific activity also served political goals. The high science of the savants had traditionally served the French elite, while the sciences associated with deductive reasoning were outside the purview of institutions of elite status and went unrecognised. French scientific learning was fragmented and produced functional and social differentiation [Shinn 1992, p. 64], a system of social selection developed "around obscure mathematics". A pattern emerged in the eighteenth century where social superiority was sought through mathematics education, and the pattern persisted into the nineteenth century [Shinn 1992, p. 64].

Depending on the disciplinary emphasis of the historian, the decades 1780–1820 could be termed either the Laplacian or the Cuvierian era. The ordering of nature, it appeared, was dictated by scientific societies such as the Royal Society in England and the *Académie des sciences* in France [Macleod 1987]. Metropolitan science drew its symbolic capital from three principal projects in the sciences that finalized a picture "determined by Europeans": 1) Geographically, the principal concern was to resolve finally all questions concerning the earth's shape and texture. 2) Astronomically,