

SECONDARY TOOLS OF EMPIRE: Jesuit Men of Science in India

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The arrival of St. Francis Xavier at Goa on 6th May, 1542, is an event of singular importance. He was the first Jesuit in India, and many others were to follow him for the next two hundred years. Although the spread of the Christian faith was the most important plan of the Jesuits, their activities had a scientific dimension about them also, being the first European men of learning in India. In this paper I will describe their scientific activities and discuss their impact on later political developments.'

The Portuguese arrived in India even before the Mughals did. While the latter entered through the traditional north-western landgate, the former came by sea and settled on the west coast. The Portuguese introduced a new parameter, navy, in India's geopolitical equations, placing the Mughals at a permanent disadvantage for a time to come. The year of Xavier's arrival in India was also the year of Akbar's birth. The latter's fascination for elephants was legendary. We can compare the Mughal empire itself to an elephant, which is powerful on land. The Portuguese were the crocodile which controlled the waters. Because of his interest in comparative theology and probably also due to his apprehension about the Portuguese sea-borne power, Akbar invited in 1580, a Jesuit mission to his court. This led to the establishment of a church and a Jesuit mission at Agra which continued till 1803.

As long as the Mughal empire was powerful, the European remained confined to the coastal regions, outside the imperial zone of influence and minded their business. They did not take an interest in botany. This is natural, because after all it was the lure of the culinary plants that had brought them to these parts in the first place. Interest in plants was beneficial and profitable, because of their medicinal, commercial, and curiosity value in Europe. While the European traders had a good idea about India's coast-line, they were ignorant about the country's interior, having had no reason to venture there, nor being equipped for the task. Geographical exploration was left to the Jesuits, who had the training, the time, and the opportunity to criss-cross the country. They had also the necessary discipline to make careful observations, to record them faithfully, and to transmit them regularly. In Europe, these reports were dutifully preserved, yet ignored. Europe was not as yet ready for India.

In the eighteenth century, the collapse of the Mughal empire produced a political vacuum. The European vaishya outfits developed *kshatriya* ambitions, and knowing post-Plassey India became a paying proposition. Jesuit data were now dug up and put to use. Colonial geographers avidly scanned the 34 Jesuit volumes of *Lettres Edifiantes et Curieuses*. Interestingly, an abridged translation in two volumes was edited in London in 1743 by John Lockman entitled, *Travels of the Jesuits into Various Parts of the world*. He deleted accounts of conversions and miracles, as being 'quite insipid or ridiculous to most English readers, and indeed to all persons of understanding and taste'. English readers were interested undoubtedly only in those parts of the work which furthered their overseas interests. A fresh edition was published in Paris between 1780 and 1783 in 26 volumes by Ouerbocuft, who conveniently arranged the letters in geographical order. Volumes 10 to 15 give information about India. This compilation is however largely devoted to the French missionaries, with the Mughal Mission being very poorly represented.

Traditionally, the conquerors entered India from the north-west and moved eastwards, leaving the southern part alone. (Aurangzeb brought an end to the Mughal power by needlessly trying to subdue the south, and the Marathas ruined themselves by trying to extend their hold right up to Delhi). In contrast, the Europeans, coming as they did by sea, were first interested in south India, and later in the eastern, central and northern parts. This is therefore the order in which geographical information about India was sought and incorporated into the main body of European knowledge, irrespective of the order in which this information was first obtained.

Fr. Anthony Monserrate (1536-1600)

Chronologically speaking, the first Jesuit geographer in India was Fr. Anthony Monserrate even though his work was unnoticed for 200 years.³ Born at Vie de Ozona, 30 miles from Monserrate in Catalonia (Spain), he joined the Order in 1558 and left for India in 1574. He was chosen to be a member of the first Jesuit mission to Akbar's court and was asked by his superiors at Goa to keep a diary. This he did most faithfully, adding greatly to its value by his geographical and astronomical observations. On his journey from Surat to Fatehpur Sikri in 1580, he made a survey and took observations for latitude. When in 1581, Akbar marched to Kabul against his half-brother Mirza Muhammad Hakim, he took him along for continuing the tuition of his second son Murad (1570-99). He encouraged Monserrate to take observations en route, which he did as far as Jalalabad.

Akbar however did not seem to have shown any interest in the data collected by Monserrate, who kept it with himself when he returned from the mission.

On the basis of his observations, Monserrate prepared in about 1590 a small map $5\frac{1}{2}'' \times 4\frac{1}{8}''$ in size. This little map was a tremendous improvement on all previous efforts. It was based on actual observations rather than on travellers' tales. It gave a better idea of the Himalayas and of the upper course of the Punjab rivers than Rennell had done nearly 200 years later. Expectedly, Monserrate did not have any knowledge about regions east of the Yamuna. Studied today, one notices that he had placed Surat east of Goa instead of west of Goa, and that the map is four degrees too far to the east. But keeping in mind the times when it was first prepared and when it was first used, its value cannot be under-estimated⁴.

Monserrate's geographical endeavour belongs to the category of historical romance rather than to that of historical compulsion. The Jesuit Mughal Mission operated under the Portuguese patronage, but the latter soon became redundant in the European power-game. Indeed, ironically, Monserrate's work done when the Jesuit mission was established, came to light only when the mission ended.

The French who were the last of the Europeans to arrive in India and became semi-finalists in the power-game, acted as patrons to the French Jesuits. Thanks to the Jesuits, French were more successful on the scientific front than on the colonial.

Fr. Jean-Venant Bouchet (1655-1732)

The first dependable map of the interior of the southern peninsula was due to the efforts of Fr. Jean-Venant Bouchet who had the distinction of arriving in India from the east rather than from the west.⁵ Born at Fontenay-le-Comte in France, he joined the Society in 1670 and was a member of the expedition sent to Siam in 1687 by king Louis XIV. There were 14 Jesuits in all, formally designated as 'The Mathematicians of the King'. They arrived in Siam in 1688, but were expelled the same year as a result of a revolution that overthrew the king. The missionaries left for India, but only three survived the ordeal and reached Pondicherry on 17th February, 1689, two of them being Fr. Bouchet and Fr. Jean Richaud. It is not clear who the third Jesuit was. On arrival in India, Bouchet joined the Madura Mission, but left it in 1702 to set up the Carnatic Mission.

Bouchet covered the Coromandel coast on foot, made astronomical observations at Pondicherry, and prepared maps and sketches. In 1719 Bouchet sent to France his map of Madurai and the neighboring kingdoms, extending it to slightly north of latitude 14° N. Obviously there was some sort of coordination between the Jesuit data collectors on the one hand, and the French commercial and political interests, on the other. Because of the map being drawn by a small scale of not quite an inch to one degree of latitude and consequently not capable of giving the countries in any considerable detail, the Jesuits sent over several manuscript charts, and other materials, from which D'Anville composed a new map. It was drawn by a scale nearly twice as large as the former, and was a great deal more particular as well as accurate, and extended further north.⁶ D'Anville published his map of the southern Peninsula in 1737 and followed it by his famous Carte de Linde in 1752. An important feature of this map was that he left blank very conscientiously those parts of India, about which he did not have authentic knowledge. The significance of

D'Anville's efforts can be judged from the fact that his Memoirs were translated, annotated, and published with a reprint of his map in London in 1754 and 1759.⁷

Bouchet's companion Fr. Richaud discovered in 1689 that the bright southern star Alpha Centauri was in fact a double star. This was the second binary ever discovered. Earlier in 1685 Jesuit, Fr. Fontenay, had discovered from the Cape of Good Hope the first binary Alpha Crucis. Richaud's was the first credited astronomical discovery from India.

Fr. Claude Stanislaus Boudier (1686-1757)

The next stage was the geographical exploration of Hindustan (North India) undertaken by Fr. Claude Stanislaus Boudier. Born at Sens in France, Boudier left France for Chandernagore in Bengal in 1718. His chance to traverse north India came about as a result of astronomical pursuits of Raja Jai Singh Sawai of Jaipur, who wanted the Jesuit to visit him for scientific consultations. Accordingly, Boudier and another Jesuit, Pons, set out from Chandernagore on 6th January, 1734. On their arrival they seem unfortunately to have wasted much time in disputing with the local Brahmins as to the extent to which Indian astronomy was indebted to the ancient Greeks'. The two Jesuits worked at Jaipur during August and September 1734 and returned to Chandernagore about a year later.⁸

The Jesuit mission was no doubt a failure from Jai Singh Sawai's point of view. But seen from the colonial angle it was a huge success. During his journeys to and fro, Boudier fixed the longitude and latitude of many important places, and kept a survey of his route between Agra and Allahabad. His Memoir gave 'the description of places on this road (between Agra and Bengal)... With the computed distance of each from the course of the Gernne (Jamna) and the Ganges'. Boudier's work was used extensively by D'Anville and by his British counterpart, Rennell. D'Anville used Boudier's value for the latitude of Madras in preference to any other. Rennell depended on Boudier for his 1774 general map of Bengal, and used his values as late as 1793.⁹

Fr. Joseph Tieffenthaler (1710-1785)

A rather pathetic figure was Fr. Joseph Tieffenthaler who survived the dissolution of the Society of Jesus in 1773 by working under the British auspices.¹⁰ Born at Bolzana in the Austrian Tyrol, he joined the Order in 1729, and left Germany for Spain in 1740. In 1742 he sailed from Lisbon for Goa by way of the Philippines. He reached Goa in 1743. He was apparently intended originally for the Jaipur Observatory, but Raja Jai Singh's death in 1743 cut short these plans. He was accordingly sent to Agra to work at the Jesuit College there. Shortly afterwards, he began his wanderings to Mathura, Delhi, Narwar, Goa, Surat, Jodhpur, Ajmer, Jaipur, Gwalior, and to innumerable other places. In 1747, he commenced service as a priest at the Bourbon Colony at Narwar, where he remained for about eighteen years.

Meanwhile, in 1759 the king of Portugal had banished all Jesuits from Portuguese dominions. Consequently, the Jesuit presence at Goa ceased, and with this the Mughal Mission as a Jesuit enterprise 'may be said to have come to an end.' Tieffenthaler found himself in such financial straits that in 1756 he boldly decided to appeal for financial help to the 'famous English nation so well known for their humanity, liberality and charity to the poor'. He travelled to Calcutta keeping surveys of the way. Apparently he found the help he needed and settled in Oudh for the rest of his life, making Lucknow his headquarters. Till 1771 he was continually on the move making astronomical observations and surveys, employing also one or more local assistants 'versed in geography', whom he sent to explore the sources of the Ganga and the Gogra.

Tieffenthaler was a tireless explorer. 'Next to the salvation of souls, and their conquest for God, nothing has afforded me greater pleasure than the study of the geographical position of places, the variations of winds, the nature of the soil, and the character and manners of the regions through which I am travelling'. The publication history of his works makes interesting reading. In 1772 or 1773 he sent a voluminous collection of his works in Latin to a Prof. Krat Zenstein through the agency of a Dutch doctor, whom he had met in India. He sent other material to the French orientalist Anquetil Duperron, who was in India between 1755 and 1764, three of which he had spent at Surat collecting Parsi manuscripts.

In 1771 Duperron published the First European translation of Zend Avesta.¹¹ In 1759, when he was at Surat and Tieffenthaler at Narwar, the two were in correspondence with each other. Suddenly in 1776, Duperron received from Tieffenthaler (then at Faizabad) a packet of maps (including a 15-ft long map of Ganga) and some loose papers. Duperron very promptly prepared a treatise on these maps and in 1776 itself published it in the *Journal des Savants* making it a point to mention Tieffenthaler's unattended Copenhagen works. This publication spurred the German astronomer and mathematician Joseph Bernoulli, at the time professor at Berlin. He obtained Tieffenthaler's geographical work *Descriptio Indiae* from Copenhagen, and collaborated with Duperron on its translation and publication along with that of an expanded version of Duperron's treatise. The work was published in three volumes in German (1785-87) as well as in French (1786-89). Bernoulli's publication reached Rennell in England in time for Tieffenthaler's work to be incorporated into his map of 1788.

Thomas Call in India had already received copies from Tieffenthaler himself. Call's *Atlas of India embodies Routes taken between Goa and Agra by Padri Tieffenthaler; A Survey of the country N.W. of Delhi by Padri Windell and Tieffenthaler.*

Fr. Francis Xavier Wendel (d. 1803)

The sad state of the last days of the Moghul Mission is best epitomised by the rather shadowy Fr. Francis Xavier Wendel who along with Tieffenthaler survived the mission. He came to India in 1751 and resided at Agra and Lucknow for the greater part of his life. Though many of his flock were French, he was pro-British in his leanings to the extent that the Commandant at Chandernagore wrote to the Minister in Paris accusing him of being a British agent.¹²

Wendel was closely associated with Tieffenthaler in geographical pursuits. In 1764, he sent Duperron a map showing the strategic position of the Mughal and British armies at the time of the battle of Buscar. He was the author of *A Memoir on the Land of the Rajputs and other Provinces to the South and South West of Agra*, with a map which, he drew up in 1779, and presented to Rennell, who was much indebted to Wendel in the preparation of his own great map of Hindustan. In 1780, Wendel met a Russian named Czernichef who had travelled from Bukhara through Kashmir to Lucknow, and communicated his diary to Col. Francis Wilford at Benares.

Wendel died on 20th March, 1803, and like Tieffenthaler was buried at Agra. With his death, the last links with the Moghul Mission were snapped.

Monserrate revisited

In the very early years of the nineteenth century, more than 200 years after its completion, Monserrate's work was dusted out of the archival shelves and incorporated into the corpus of geographical knowledge. The time was not fortuitous. The struggle for territorial control over India was almost over, and the British were finally at Delhi. The territory west of Delhi was now of strategic importance. In 1804 Francis Wilford of the Bengal Engineers brought out a valuable *Map of the Countries West of Delhi*. This map was a tremendous improvement on any thing that had been produced before. It stretched as far as Sukkur and Dera Ghazi Khan on the south-west, Kabul on the west, and to Chitral and Gilgit in the north. For the collection of the material he employed a surveyor, Mirza Mogul Beg between 1786 and 1796, and made use of Fr. Monserrate's manuscript.¹³

It is reasonably certain that a copy of Monserrate's manuscript journal was kept at the Jesuit college at Agra, from where it was taken by Tieffenthaler, who may have passed it on to Wilford in 1784 one year before his own death. Monserrate's work thus neatly brackets the Moghul history. It was prepared when the Moghul empire was first established. It was made use of by the British when they reached the Moghul capital and formally deprived the titular emperor of his sovereignty.

Conclusion

The eighteenth century saw a bitter struggle between the two European powers, Britain and France, for territorial control of India. The European military might could have been of decisive use against the native kings only if the lay of the land was known to the foreigners. Accurate geographical information of the country came from the Jesuits who had the training, time, and the opportunity to criss-cross the country. The French were more successful on the geographical front than on the colonial. The first reliable map of India was the work of D'Anville, achieved no doubt because of his easy access to the meticulous field-work done by the Jesuits.

Interestingly, the history of the Agra-based Jesuit Mughal Mission tells us much about the history of the increasing European involvement in India. In 1579 when Akbar invited Jesuits to his court from Goa, there were apprehensions that he, incensed at Portuguese affronts on the sea, might hold the Jesuits as hostages. Two hundred years later in 1765 Tieffenthaler, already disowned by Portugal and soon to be disowned by the Pope, successfully appealed to the British at Calcutta for financial help for his geographical and exploratory pursuits. And finally Wendel, the last remnant of the mission, was openly accused by the demoralized French of being a British agent.

We have seen that the geographical work done by the Jesuits in India was of great value to the French and British colonial interests. It will be interesting to find out whether these interests directly or indirectly influenced the Jesuit aims in India and whether the Jesuits perceived the use to which their work was being put to.

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