



Speaking for Science

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Master Ramachandra

ONE of the major presumptions about the progress of knowledge in the erstwhile British colonies had been that it was mostly an import from the West. This ideological bias is still held by some as valid, yet majority of the serious scholarship has moved away from it. The Arabs are no longer considered as mere transmitters of ancient Greek knowledge. There is enough evidence to prove that the Greek scientific works were translated and researched upon before being passed on to Europe.

Indian contributions to scientific knowledge over the centuries have been no less. To speak of one such instance, if one looks at the intellectual climate and people's perception of science in the 19th century, one comes across the name of Master Ramchandra, a mid-19th century intellectual and mathematician of Delhi – a man who wrote forcefully against unscientific beliefs and superstitions, besides several articles and books on popular science subjects.

He had been a pioneer Urdu journalist, considered to be one who belonged to the avant garde of realist writing in Urdu. His

Haqeeqat nigari (realist writing) was actually representative of all the cultural figures of Delhi who included men like Alauddin Khan Alai, Munshi Pyare Lal Ashob, Syed Ahmad Khan, Mirza Ghalib, Altaf Husain 'Hali', and many others.

Ramchandra was born in 1821 at Panipat in a Kayastha family. His father Rai Sunder Lal Mathur was an employee of the revenue department, posted at Panipat when Ramchandra was born. Otherwise, the family had lived in Delhi and was very much part of the culture of Shahjahanabad. He was brought up and educated by his mother as his father died early when Ramchandra was just nine years old.

According to tradition, he had his early education at home and was admitted to an English school in 1833. Ramchandra excelled at school and earned scholarship to take care of his minor expenses. He was particularly bright in mathematics which he pursued on his own as there were no arrangements to teach the subject at school.

He was married early at the age of eleven, but unfortunately, his wife was deaf and dumb. Despite the economic hardships



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and the difficulty of caring for an invalid wife, Ramchandra single-mindedly pursued his academic activities.

He became a science teacher and mathematician at Delhi College (present day Zakir Husain Delhi College at Ajmeri Gate). In this capacity he wrote a book on mathematics in Urdu called *Sari-ul-Fahm*, where he tried to bridge the algebraic tradition of the Indian and Arab worlds and the more modern concept of mathematics that had emerged in the wake of the new calculus. He went on to write two books in English called *A Treatise on Maxima and Minima* (published in England in 1859, at the insistence of Augustus De Morgan, a British algebraist and logician) and a second work called *A Specimen of New Method for Differential Calculus* called the *Method of Constant Ratios* (published from Calcutta in 1863). These books were written in English which shows that they were not intended merely at Indian readership but were written to raise a pedagogical issue that was essential to the teaching of calculus even in the West.

Ramchandra was convinced, as seen in these books, that the Indian and Arabic traditions of mathematics were essentially algebraic and so set about developing a calculus that did not require a deep foundation in geometry. So the first book begins with a knowledge of the theory of equations as found in Bhaskaracharya's *Bija-Ganita*, and then proceeds to obtain the maxima and minima for any polynomial function.

The second book of Ramchandra dealt with the foundational problem in calculus. Here he tried to develop a more generalised method for calculus along the lines discussed in the earlier book. He felt that the fluxional method was problematic, since it was not free of the notion of limits. The infinitesimal method was suited for obtaining differentials, but was still grounded in the notion of limits. According to Ramchandra, the method of limits was the best available method though it required infinitely small and great terms.

Ramchandra was a great enthusiast of the vernacular medium of instruction. He felt that instruction in the mother tongue is more instinctive and natural, which was in marked contrast with the Macaulayan objective of producing clerks or to put aptly in Macaulay's oft quoted works: 'Indians in blood and colour but European in taste and manners.' Ramchandra's rationale for using the local language as the medium of instruction was that it would facilitate the task of communicating precious knowledge and will also enable the Indians to make the achievements of science their own, and thereby contribute to the development of knowledge.

Ramchandra took up translation of European scientific works into Urdu, begun by Mr Boutros, the principal of Delhi College. These activities were later formalised under the aegis of the Vernacular Translation Society. Ramchandra's papers *Fawaid-ul-Nazrin* and *Qiran-us-Sadain* were published initially by this Society. These papers sought to bring out what was good in the cultures of the East and the West and also present a unified viewpoint.

Fawaid-ul-Nazrin carried articles of new inventions, discoveries and research in modern science and technology. Most of this work was in the French encyclopaedist tradition. All these

popular articles were not merely projecting the emerging world-view of science but they were inflective of his own reading of it. They were a attempt to transform Urdu – a language known for poetic expression – into a vehicle for expressing social dissidence and commentary.

Ramchandra wrote prolifically on what he considered to be irrational and unscientific beliefs that had crept into Indian society over a period of time. He urged the readers to look at events and ideas rationally and not through traditional eyes. He writes about his preliminary attempts in this direction.

"We were ambitious enough to imitate the plan of *The Spectator*. We first commenced a monthly, and then a bi-monthly periodical, called the *Fawaid-ul-Nazrin* in which notices of English science were given, and in which not only were the dogmas of the Muhammadan and Hindu philosophy exposed but many Hindu superstitions and idolatries were openly attacked. As a result many of our countrymen, the Hindus, condemned us as infidels and irreligious."

Ramchandra's critique of Indian society did not refract through the prism of European enlightened thinking, but was a part of those critiques which were emerging since the 18th century in the country. He wrote extensively in his *Fawaid* against the widely prevalent beliefs about *chhalawa*, *bhoot* and several such superstitions. He also tried to impress upon the people the fraudulent basis of magic, and that to be a successful magician one needs to know a little physics. He wrote a book as well, titled *Bhoot Nibang*, warning his countrymen against all sorts of superstition.

Ramchandra was in tune with the Baconian programme emphasising empiricism. He was highly critical of classical Indian scholasticism which confronted him in the debates with repositories of traditional learning, the *pandits* and the *moulvis*. Making a scathing attack on the traditional organisation of the *Madarasas* and the method of education, he wrote in his paper: "Gulistan is taught in schools. The teacher merely explains the meanings of various words to the student and then the student sits at a distance from his teacher, repeating the lesson like a parrot. He is not concerned about what Shaikh Saadi has written in *Gulistan*. He is concerned only with its literal meaning."

Unfortunately, neither Ramchandra's emphasis on the vernacular medium of instruction nor his pedagogic interventions in mathematics could find any takers in the post-Macaulayan phase. Ramchandra's project succumbed to the politics of power as well as to the politics of knowledge. He belonged to the Delhi Renaissance, which ran out of steam under a hostile political dispensation, and Calcutta was to emerge as the epicentre of modern science.

Ramchandra became a Christian in 1852 and his life was in serious danger during the 1857 revolt. Most of the Christians were suspected. So Ramchandra also had to run for safety with the help of his loyal servant. He remained in Roorkee as a Native Headmaster of Thomson Civil Engineering College but came back soon to Delhi as a Headmaster of Delhi District School in 1858.

He retired early on health grounds in 1866, joined the services of the Maharaja of Patiala and took over as director of education in 1870. Most of his later life was spent in Christian missionary activities.

Ramchandra's health deteriorated fast and he died on 11 August 1880, at the age of merely 59.

(By S. Irfan Habib, Reproduced from *Achievements in Anonymity*, CSIR-NISCAIR publication)