

Science as a tool for subjugation: An analysis of British rule in India

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ABSTRACT

The development of modern science was seen as one of the greatest intellectual achievements of human beings that liberated human society from centuries of superstitions and obscurantist beliefs and practices. It paved the way for industrialisation, economic development and overall prosperity of the country. The rapid pace of industrialisation required the sourcing of raw materials from far-off places and new markets for finished products. This led to an expansion of the empire and competition among the imperial powers to control as many areas as possible outside Europe. British entry into India and their subsequent consolidation of power over the Indian people were entirely different from all previous incursions.

Science and technology were not used only as a force to take over India physically, but also as a systematic intellectual tool to subjugate Indians mentally and physically. Based on extensive literature review and archival materials, in this paper, we have analyzed how the introduction of science and technology in India by colonial rulers was a systematic strategy to destroy India's cultural heritage and prove that Indians by nature are inferior, mentally and physically to Europeans. Our analysis shows that the British established Scientific institutions in India to collect data on natural resources for their efficient exploitation and further expansion of their empire. In their policies and actions, they discriminated, demoralised and even tried to devastate the Indian mind by curtailing the available basic facilities needed to perform their work. Science became a handy tool to legitimise their rule over India.

Keywords: Colonial Science, Indigenous knowledge, Scientific rationality, Subjugation, Swadeshi movement.

Introduction

The development of modern science was seen as one of the greatest intellectual achievements of human beings that liberated human society from centuries of superstitions and obscurantist beliefs and practices. It helped the rapid development of industry and the expansion of the empire. However, an empire may be created by force but they need to be sustained by belief. Such beliefs justify the position of the conquerors and to some extent bind, the conquered to them. In most times and places, such belief had taken a religious form, but in the case of the British empire particularly in India, religion has a limited role. It is because ruling over such a diverse population, a nation that was itself religiously divided, needed other ways of justifying its imperial superiority. One of the most potent ways was the belief that British rule has brought greater prosperity as it is based on the rational ordering of nature. The British, who initially arrived in the Mughal court as merchants and traders in 1615, took 142 years to fully metamorphose into military invaders with the victory in the battle of Plassey in 1757. They arrived with a specific objective: exploit the resources and impose political and economic dominance over the Indian continents.

To establish the superiority of their rule, the British used a variety of strategies, tricks, and tactics to depress and demoralise Indians. They questioned and ridiculed Indians' indigenous knowledge and practices as part of their plan and conspiracy, and used science to uncover everything wrong with Indian culture, language, knowledge, value, and beliefs. Their main strategy was to make Indians believe that their knowledge system was far inferior to the western system of knowledge and it is somewhat a part of pseudoscience. The British presented the Indians as being incapable of doing modern science. It created doubts in the Indian mind about their origins, existence, tradition, cultural practices, religion, social structure, and education system. British culture, tradition, customs, values, and methods were portrayed as superior to native culture.

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In this paper, we are exploring how the British used science to disparage the indigenous knowledge system while asserting the superiority of modern science. What were the different ways and means for demoralizing and denigrating native Indians and their cultural heritage to justify British rule over India? And what were the responses of Indians towards these kinds of subjugation? We have used an extensive literature review, archival materials, letters and reports of European scientists, administrators and biographical and autobiographical write up, letters and speeches of Indian scientists, and politicians to corroborate our analysis.

The rest of the paper is organised in the following sections. The second section deals with the conceptual and theoretical aspect of 'science as a subjugating tool' and how the introduction of modern science was a larger campaign to rationalise Indian society and eradicate the prevalence of superstitious, subjective and intuitively oriented epistemologies. In the third section, we have discussed the various means and ways adopted by colonisers to subjugate Indians such as the establishment of different types of survey organisations and institutions, introduction of English language education, rationalisation of the legal framework, questioning of the cognitive capability of Indians, subjugation of Indian medical knowledge system, etc, and in the fourth section, we have discussed the responses of Indians towards subjugation. In the last section, we have given the conclusion and policy implication of the study.

Science as a subjugating tool

It is generally believed that 'knowledge is power' and those who hold the knowledge become powerful. But a question arises, can knowledge be non-dominative or non-coercive? To answer this, we need to find the context in which knowledge is used. When we used science or knowledge in the context of colonisation, argued Kumar (1995), it precludes the possibility of knowledge being used in a non-dominant way. Britisher used the techno-scientific knowledge to inspire awe and elicit acquiescence. The expansion of the British empire was determined by several objectives, including trade, the hunt for new markets and raw

materials and the expansion of religion and political authority (Woodward,1902). After gaining political control over the parts of Indian territory, the British began to use science to subjugate the native people mentally and physically.

Subjugation is regarded as an essential process or practice to colonise a person or a society as a whole (Kohn & Reddy, 2017). Subjugation is a strategy to dominate and rule without freedom or impose total control. The Cambridge Dictionary defines subjugation as ‘the act of defeating people or a country and ruling them in a way that allows them no freedom.’ Interestingly, to explain it in a much better way, the dictionary uses a few examples, and one among them is the colonial subjugation of India by the British (Cambridge Dictionary, 2022). In human history, for subjugating the opponent, the subjugator had gone to any extent by even using epidemics (Purohit, 2004). The concept of subjugation could be also equated with the Gramscian concept of hegemony. Antonio Gramsci, states ‘that man is not ruled by force alone, but also by ideas’(Bates, 1975)So domination is not solely by power, but by ideas too. According to John Krige ‘hegemony is a capacity, a state of being, a preponderance of power’ (Krige, 2006). Science and scientists have also been used as a tool by the political authority for domestic consolidation and international projection. It was also an important component of the process of colonisation and the traditional construction of the empire (ibid, p.253).

The British utilised science as a subjugating tool to control people and legitimise their rule over India. Before we discuss how science was used as a subjugating tool to colonise people, it is important to elaborate on the concept of colonialism. Loomba (2005) defined colonialism as ‘the conquest and control of other people’s land and goods. However, Horvath (1972) believed the concept of colonialism is a very complex phenomenon as the term colonialism is still undefined due to its extensive stretch and lack of homogeneity in its application. The term colonialism cannot be confined to ‘economic gain and political power’ as there have been numerous instances where the colonies had not profited from their colonisers with any of the above two (Nandy,1982). However, when we trace the history of the word ‘colony, we find that it originated from the Latin word *colonus*,

meaning farmer. This root reminds us that the practice of colonialism usually involved the transfer of population to a new territory, where the arrivals lived as permanent settlers while maintaining political allegiance to their country of origin (Kohn & Reddy, 2017). The British rulers always made a distinction between the colony and their home country and their policies and allegiance also worked on the same line.

Introduction of Western Science in India

The Britishers brought 'modern science' to India and other colonies as a value-neutral, objective in its procedures, privileging abstraction and reasons, empirically grounded and somehow transcending time and space and thus universally valid knowledge. These attributes gave the colonisers and the advocates of western science confidence that the spread of this epistemology and the institutions and procedures associated with it to the rest of the globe was both beneficial and inevitable (Adas, 2016). British scholars and administrators advocated the diffusion of Western Science as part of a larger campaign to rationalise Indian society and eradicate the prevalence of superstitious, subjective and intuitively oriented epistemologies. Western science was very aggressive, expansive and intolerant to rival non-western epistemologies. The scientific approach was quite compatible with prevailing western hegemonic ideologies, such as the mission civilisation.

A host of self-appointed, usually amateur, ethnologists brought extensive data on a diverse group of people and cultures, they encounter overseas. Their observation became the basis for elaborate, allegedly scientific and invariably hierarchical classification of human types. This classification in turn provided evidence to support highly contentious theories, the relationships among human groups i.e. racism. The emergence of Baconian or mechanistic strains of thinking in western science sidelined the other approaches such as the organic approaches to nature and the cosmos, which might have been more comfortable with the accommodative toward non-western epistemology. The dominant Baconian science rendered the British scholars and policymakers unreceptive to non-western ways of thinking about and interacting with the natural world. Western science not only

sidelined the non-western knowledge system but also proved a threat to their existence.

Alvars (1988) in his analysis of the diffusion of western science outside Europe found that Britishers used science as a hegemonic tool to colonise people in Asia and Africa and asserted that any suggestions about delinking them from imperialism can only be fraudulent. Immediately after having established their political control over parts of India, they started using science and technology to consolidate and expand their power. The first step was to start various kinds of surveys to collect comprehensive data on various resources of India.

Scientific Survey work

The establishment of the Survey of India (1767), the Great Trigonometrical Survey (1802), the Geological Survey of India (1851) and the Botanical Survey of India (1890) were some examples of scientific organisations that enabled the Britisher to take advantage of India's abundant natural resources (Sikarwar, 2021). For instance, the real objectives of different types of survey works were to generate wealth, prepare maps of the Indian territory according to the needs of the railway and military and thus help the British spy. Many scientists working in these organisations found the demand of East India Company unrealistic and many of them became frustrated due to the growing greed of the company as it saw only the economic aspects of geology. However, they could not do much because they did not have much say in decision-making or policy formulation. In May 1903, a stalwart Indian geologist Pramatha Nath Bose wrote in a National Magazine with the title 'A Plea for a Patriotic Movement' in which he argued: 'the mineral resources of the country may be said to be almost exclusively exploited by the foreigners'(Bose,1906). He wanted that these resources should be used for the development of India and the welfare of its people. He was instrumental in the establishment of the first Iron and steel company in India.

The overt objective of establishing various scientific institutions in India was to acquire a better understanding of Indian topography, flora and fauna, minerals and other natural resources, however, the covert objectives of Britishers were to

exploit the Indian resources to further expand and consolidate their empire. As Matthew Edney rightly described the introduction of the survey was a form of scientific 'panopticon' geared at providing imperial power with the ability to structure and scientifically 'see' and 'know' India (Edney,1997. p.24). David Arnold (2004) also found that the Trigonometrical Survey was at the centre of British scientific and technological attempts to colonise India. The British promoted the "Mining Association" in 1836 to exploit the mineral resources, particularly Sulphur found in the Himalayan region of Garhwal and Kumaon (Present-day Uttarakhand). In this entire process of survey work, Indians were rarely engaged, and if they were engaged, they were employed as an assistant only for data collection. The data that were collected were used for the benefit of colonial rulers/scientists either by sending them to their mother country for publication or commercial exploitation of resources.

Indian workers who were involved in the process of data collection were never given any credit for the production of scientific knowledge. S.N. Sen (1966) quoting a survey of publications covering the period between 1784 and 1883, found a bibliography of 643 scientific papers in which only five papers were written by Indian authors. The East India Company was never comfortable with the use of the natives for survey work as it considered them too risky. The Company believed that native Indians may become knowledgeable while working with company surveyors and might sell the information to the French or Dutch rivals. To overcome this problem Madras Observatory ran a surveying school from 1794 to 1810 to train teenage European orphaned boys as practical revenue surveyors. This school was not open to native Indians (Kochhar,1991).

By 1813, the engagement of Indians for the survey was banned as the government were anxious to prevent the native from obtaining or being taught, any knowledge of this kind. Only the company's military officers could carry out survey work and map-making (Phillimore,1945). Later on, whenever, they were engaged for data collection or survey work, they were used because they were cheap and suitable to work in harsh conditions. Even the Mohammedan Madarsa (1781) at Calcutta

and Sanskrit College (1791) at Banaras was established to train Muslim and Hindu youths to collect information from their elders and pass it on to the British. Indian surveyors were only taught how to take the observation; they were never taught how to reduce the data because Britishers feared that they may be cheated. Indians were kept peripheral in any kind of scientific pursuit (Krishna, 1992). Even renowned Indian scientists were not immune to the practice of subjugation under British rule. Scholars like Ashis Nandy have rightly pointed out: 'From the halcyon days of Archimedes to the heady days of early colonialism, science was primarily an instrument, not an end; certainly not the end of any nation or state. It was science that was put to the use of the colonial state; the state was not put to the use of science (Nandy,1988).

Subjugation through English Education

In the beginning, Britishers deliberately obstructed the diffusion of modern education among the native population as they were apprehensive that Indian achievements in science and technology might emerge as a challenge to Western Science and scientists and they may pose a hurdle in their process of subjugation. The East India Company never wanted to give modern education to native Indians. Kochhar quoted company director who justified in the following words:

We have just lost America from our folly in having allowed the establishment of schools and colleges, and it would not do for us to repeat the same act of folly with India (Kochhar,1991, P.1930).

However, once the British got firmly entrenched in India, they started imparting English education to natives to prepare clerks and assistants who could facilitate effective control and governance of the native population. Mahendra Lal Sarkar who left Presidency College Calcutta to join Medical college observed: 'the principal object of education in Presidency college was to teach the people how to read and write English language (ibid). The British government's imposition of the English language through education policy was a strategic move, as it attempted to subdue native languages (Rahman *et al.*, 2018). It was done through an agenda that Lord Macaulay regarded as

‘to prepare a class of persons Indian in blood and colour, but English in tastes, in opinions, in morals and intellect’ (Nayar,2019,p.63). Thomas Babington Macaulay in his 2 February 1835 minutes on Indian education tried to destroy the Indian knowledge system by declaring the Indian Education system dreadful. To prove his points, he wrote:

“I am quite ready to take the oriental learning at the valuation of the orient a lists themselves. I have never found one among them who could deny that a single shelf of a good European library was worth the whole native literature of India and Arabia. The intrinsic superiority of the Western literature is indeed fully admitted by those members of the committee who support the oriental plan of education”(ibid,p.57).

Further, he also argued:

“It is, I believe, no exaggeration to say that all the historical information which has been collected from all the books written in the Sanscrit language is less valuable than what may be found in the most paltry bridgements used at preparatory schools in England” (ibid., p.58).

These words show his intentions, approach, frame of mind, and the level of mental violence he was having towards the Indians.

Suppression through Rationalisation of Law

British codified laws in India in terms of the rationalisation of law in the Weberian sense to ensure ‘order’ ‘certainty’, and ‘uniformity’ (DeSousa, 2008, P. 68). These laws while giving a sense of uniformity to the ‘rule of law’, were also used against the local populace to suppress the uprising. For instance, the introduction of the Criminal Tribes Act, of 1871 branded the whole community, including children and women as born criminals. This act made about 200 communities in several provinces in India born ‘criminals’. It requires the nomadic communities to register themselves at the nearest police station and obtain a licence. They could not go out of their designated district without the permission of the police. If they changed their residence, the information had to be supplied and permission

requested. If a member of a community was not present for more than a year in their settlement without police permission, they had to suffer through three years of prison time (Singh, 2021).

Similarly, the enactment of the Indian Forest Act 1865 was apparently to deal with the unregulated environmental destruction caused by the spiralling need for hardwood for both military (eg. naval) and civil (eg. Railways) applications. But the real motive was to dislodge the local people from their customary usage rights. Gadgil and Guha (1993) very vividly described how across India peasants' forest common and ancient rights of hunt, forage, and harvest were pushed aside and a new vision of forest as property and 'productive use of forest' assets advantageous to colonial power were conceptualised.

Casting Aspersions on Cognitive Capacity of Indian

Britishers came to India with a definite sense of superiority. Lushington asserted: 'the English are a superior race compared with the Hindus; they know better than the inferior race itself what is suitable to it' (quoted by Kumar, 1995). Anthropologists supported Darwin's theory of the 'survival of fittest' and justified the belief that mankind had experienced various levels of evolution culminating in the Whiteman's civilisation. Although Britishers recognised native Indians as skilled workers, when higher mental faculties were required they were very sceptical. For instance, Henry Benedict Medlicott an Irish-born geologist who was a Fellow of the Royal Society and worked as the superintendent of the Geological Survey of India (GSI) (1873-74) believed:

Indians were incapable of any original work in natural science. Let us wait till the scientific chord among the natives was touched and added that "if indeed it exists as yet in this variety of human race; so let us exercise a little discretion with our weaker brethren, and not expect them to run before they can walk (Kumar, 1995, P.187).

George J. Peirce's racist views toward Indians were commonplace. In a 1917 issue of *Scientific American*, he said: 'While the Hindu race has achieved brilliant success in science, literature and arts, it has given very little to the world in the way

of inventions; in fact, the prevalent impression among the Occidental peoples has been that the Indian brain was imitative and assimilative and sadly lacked inventive faculties (Minorsky, 2021, p.9).

These types of attitudes led Britishers to question everything which Indians could claim to have relevance and application.

Subjugation of Indian Medicinal Knowledge

Indians have been practising medical science from ancient times, and Indian medicine, particularly Ayurveda was profoundly rooted in indigenous knowledge. There were numerous successful practitioners of Ayurvedic and Unani medicines and other traditional medicines in different parts of the country. These physicians were referred to as 'Kaviraja', and they were well-trained experts in various medical procedures and Sanskrit texts (Gupta, 2020). Modern medical science became an essential instrument for the British to prove their supremacy and establish hegemony over the Indian physicians and the general population. They began comparing western medicine with the indigenous medicinal systems to defame the indigenous system.

Lord William Bentinck, the Governor-General of India (1828 to 1835) was one of the first rulers who put a stumbling block in Indian medicine. He formed a committee to investigate the clinical training of Indian medical trainees and India's poor medical education management. The committee's recommendations entirely favoured Western science and included specific suggestions that resulted in the deprivation of indigenous medicine. The committee suggested that the training should be entirely focused on Western medicine and that the Native Medical Institution (NMI) of Calcutta, which was established in 1822, should be closed.

The most shocking step was the withdrawal of support and assistance to India's medical system and the termination of medical study in Sanskrit colleges. Even the medical education offered by the Calcutta Madrasa was brought to closure (Kumar, 1997). Due to the closure of NMI, Calcutta in 1835, the cooperative relationship between the Western and indigenous systems came to an end. The Anglicists, who were intolerant of

native knowledge, took over the Orient a list policy (Arnold, 2004). The state was now heading towards pursuing a Eurocentric policy (Khaleeli, 2001). Western medications were state-sponsored and patronised, while the local practitioner lost both. However, colonial practitioners appropriated Indian knowledge where ever they found it useful as they believed, while many of the "Hakims" activities are unscientific, discarding their knowledge is also inappropriate because precious suggestions can be learned from them (Shah, 1876). As a result, colonisers exploited medical science to achieve authority over the colonised. To ruin the image of indigenous medical knowledge in comparison to western medicine they cut off all means of support or assistance to subjugate the Indian mind. The British went to such lengths to denigrate and crush the Indian knowledge system that it was difficult for disciplines like Ayurveda to recover. They culturally punched the Indians by completely out manoeuvring indigenous knowledge.

Indian Response to Subjugation

To challenge the British subjugation the Indian intellectual and scientific community responded in various ways by establishing indigenous institutes, associations, societies, journals, and magazines to prove that India has a diverse and rich tradition of rational and empirical thinking and they are capable of doing modern science. They criticised the colonial government for not promoting science education among native Indians. Aligarh Scientific Society (1864), and the Bihar Scientific Society (1868) were established to impart modern scientific education. Mahender Lal Sarkar established the Indian Association for Cultivation of Science (IACS) in 1876 to provide facilities to Indian students to pursue modern science in India. He believed that Indian students are not able to excel in science, not because of the defect in their mental and physical stature but due to a lack of support and encouragement to pursue science in India. The IASC became the symbol of a distinct Indian identity in the world of science (Kumar, 1995).

In Bengal, the concern for the need for technical education was taken up by Pramatha nath Bose in 1886. Jogendranath Ghosh founded 'The Association for the Advancement of

Scientific and Industrial Education' (1904) to assist Indian students studying overseas. JRD Tata helped in the establishment of the Indian Institute of Science (1909), Sir Ashutosh Mukherjee founded the University College of Science and Technology in 1914, Pandit Madan Mohan Malaviya founded the Banaras Hindu University (BHU) in 1916, and Acharya Jagadish Chandra Bose came up with Basu Bigyan Mandir, known as the Bose Institute in 1917 (Sinha 2015). The Swadeshi movement inspired many scientists to search for their lost identity. To inspire the young Indian scholars to take pride and inspiration in their scientific cultural heritage, he took a mammoth work to write 'History of Hindu Chemistry, published in two volumes, first in 1902 and second in 1909. Pramatha Nath Bose wrote 'A history of Hindu Civilization under British Rule' (1896) and Benoy Kumar Sarkar compiled 'Hindu achievements in exact science Book'(1918). The establishment of these institutions, associations and publications of these books by Indian scientists and their discoveries, invention, awards, honours, and international acclaim not only boosted the scientists individually but also raised the spirit of the scientific community in particular and the ordinary Indians in general.

Conclusion

In this paper, we have analyzed how the British used science as a tool for subjugation. At first glance, it is difficult to understand how an idea or body of knowledge called Science, which emerged from rational and empirical thinking to explore nature, can be used as a tool for subjugation. However, it was a unique phenomenon in the sense that instead of brutal force, rational empirical thought (i.e. science and technology) were used to colonise people. Britishers established scientific institutions and organisations to justify and secure colonial rule and used scientific studies and findings to enact a law, exploit resources and subjugate people in India. Thus, we find a close relationship between knowledge production and wielding of political power. It is the ability to produce scientific knowledge that helped the Britishers to destroy the native knowledge system and subjugate them to accept the colonial rule. The work of colonisation becomes much easier for the colonisers when they are successful

in making people lose their faith in their traditions, culture, values and customs and knowledge system as they accept the inherent superiority of their masters. Given the suppressive and divisive elements present in the colonial policies, education and legal framework we should change or eliminate them to build a more inclusive, sustainable and progressive society.

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