



Science, war and imperialism: India in the second world war
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Colonialism in India was a complex phenomenon as it did not operate at the political level only but penetrated all spheres of activity. It is not a coincidence that the rise of capitalism in Europe coincided with the spread of colonialism in the third world. The reason for initiating markets across the globe was the profit-hunting motive. This, in turn, helped capitalism develop in Europe. Not unnoticed, scientific discoveries and technological developments played crucial roles in colonialism and capitalism. The story of colonialism (and later imperialism) in India also illustrates the point. Both colonialism and imperialism mean political and economic domination of the other. The former can be thought of as the practice of domination, and the latter as an idea behind the practice.

Scholarship in Indian STM, which has gathered momentum since the 1990s, has so far focused mainly on the colonial era. The majority of these works deal with the long nineteenth century extending until World War I, whereas historical studies focusing on the theme in twentieth-century India are relatively less. As David Arnold (2000) rightly observed, “Despite their obvious importance, the science, technology, and medicine of the period between the outbreak of the First World War and Indian independence have, as yet, attracted little scholarship.” In these studies, the literature primarily concerns the relationship between science and colonialism. Debates in the historiography surround the nature of science in a colony (Western/indigenous/colonial) and the manner of its growth (diffusion/circulation). Ultimately, the notions of limitation, dependence, and

subordination to the imperial metropolis are dominant in these works.

The literature on the twentieth century, which deals with the final decades of British rule, is concerned mainly with the role of science and technology in nationalist intellectuals’ discourse on the creation of an Indian ‘modernity’. The primary actors in such stories are usually politicians and scientists—Gandhi, Nehru, Bhatnagar, Saha, Bhaba, among others. There has been an excessive reliance on the analytical frameworks of ‘colonialism’ and ‘nationalism’ in interpreting STM in India. As a result, the picture painted is oversimplified—the nineteenth century is characterized by ‘tools of imperialism’ with mostly European actors, and the mid-twentieth century is enveloped by debates over development and nationhood with predominantly Indian actors. The book under review, despite its title, does not solely focus on how World War II contributed to the growth of science in India. Jagadish N. Sinha’s work covers the state of science and technology in India before the war. Also, it delves into the dynamics of growth and stagnation in Indian science during the mid-twentieth century. As one of the pioneers studying the techno-scientific developments in India during the last few decades of British rule, he provides valuable insights on the topic.

Science, War and Imperialism originated from Sinha’s doctoral thesis at Delhi University and was first published by Brill in 2008 as part of the Social Science in Asia Series. The work was initiated during the first wave of debates on science and colonialism in India, with scholars such as Deepak Kumar (1995) leading the discourse. Sinha’s book remains closely connected to this tradition. The scholars of the first wave believed that colonial rule hindered the growth of local scientific traditions, leading to the neglect of certain scientific disciplines. Sinha argues that the neglect of Indian scientific capability was made worse during the Second World War. The British government was unwilling

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to mobilize India's scientific resources for the war effort. This failure had a lasting impact on the reconstruction of science and technology after the war. The book explores little-known episodes in the history of science policy in India. Sinha emphasizes the colonial nature of British science in India and highlights the stark contrast between the relationship of Indian science to British science and that of Australia and Canada, which were considered as 'white colonies'. British politicians and scientists' discrimination and colonialism caused challenges for Indian science after the war, according to him.

In his research, Sinha examines the effects of World War II on three interconnected topics: (a) the changes in science policy and planning that occurred before and during the war, (b) how these changes impacted social and economic progress in India, and (c) the ways in which Indians responded to and resisted colonial policies. Before the war, the prevailing attitude towards scientific research within the British Empire was one of "ad hocism." This approach was primarily focused on meeting the immediate needs of the colonial administration rather than pursuing long-term scientific goals. According to Sinha, the war had a profound impact on the political landscape of the country. The war acted as a catalyst for the process of transition from colonialism to nationalism and freedom. It marked the beginning of a new era of national reconstruction that was based on modern principles. The war brought about a significant change in the country's position, leading to a new political consciousness among the people. This consciousness was based on self-determination and freedom, which were integral to the national reconstruction process. The transition from colonialism to nationalism was not easy, and it required the active participation of the masses. However, the war provided the impetus for this transition and set the stage for the country's emergence as an independent nation.

There were several reasons for the failure of colonial policies aimed at promoting scientific research in India. One of the main factors was the Government of India Act of 1919, which sought to appease nationalist demands for autonomy by creating a dual form of government. Certain areas, such as agriculture, industry, and health, were transferred to provincial (Indian) control, while revenue remained under central control. This led to a fragmented scientific research system that was plagued by underfunding, excessive bureaucracy, and lack of coordination. As a result, meaningful progress in these critical areas was hindered, and the Indian people did not fully realize the benefits of scientific advancements. India's scientific institutes, research organizations, and technical education were already struggling to keep pace with the rapidly changing technological landscape. Unfortunately, the postwar economic crisis and depression dealt a severe blow to these institutions, further weakening them. Although India made significant gains in the late 1930s, the

author argues that the country lacked coordinated science and industrial policies at the start of World War II.

During World War II's initial years, the empire faced some serious military and strategic challenges. There was a significant push towards boosting industrial production and scientific research in India to address these concerns. This was aimed at providing the necessary resources and expertise to help the Empire meet its wartime objectives. In his analysis, Sinha highlights the disparity in colonial support received by various areas during the period. He notes that certain sectors, such as agriculture, medical science, public health, and transport, were given significant attention, resulting in their growth and development. On the other hand, areas such as energy, natural resource management, and basic sciences were neglected and received less support, leading to their comparatively slower progress. This uneven distribution of resources had a lasting impact on these sectors' development and growth trajectory in the post-colonial era.

In India, there was a transition in scientific policy during the latter part of World War II. The author identifies the compulsion of the colonial government to adopt long-term planning and preparation to combat a prolonged war. The Council of Scientific and Industrial Research (CSIR) was founded to coordinate scientific and industrial research at the all-India level, indicating meticulous planning in a post-war environment. During his visit to India, A. V. Hill, the secretary of the Royal Society, emphasized the importance of reorganizing scientific research to cater to the needs of the hour: national reconstruction and development. This was a significant moment in the evolution of science policy in India as Hill's advocacy endorsed a more comprehensive research approach, which would facilitate the progress of science, technology, and innovation in the country.

During the period leading up to India's independence, several complex political factors significantly shaped the country's future. One of the most pressing issues was India's imminent independence, which was causing a great deal of uncertainty and anxiety about how the country would fare on its own. Additionally, the United States was ascending as a global superpower, slowly but surely undermining the hegemonic position of the British Empire. The competing ideologies of national development that were being debated at the time further complicated matters. Some favoured the Gandhian model, others were more drawn to the Soviet model, and finally, some believed that the capitalist model was the best way forward for India. Sinha analyzes the complex interplay of these events that formed the basis for the reorganization of science in independent India.

Deepak Kumar's account of the 'disunity in the science and technology for development discourse' leading up to independence is more balanced in this context. It tells a story of Indian nationalist voices and the colonial government,



each articulating their versions of what a modern India should look like. During World War II, some years after the Indian National Congress had first adopted techno-scientific planning as an ideal, the colonial government began working out its own programme to improve the material basis of Indians' life as 'a plausible answer to Gandhi's call to the British to Quit India' (2000). While Sinha's book provides a thorough examination of the postwar structure of Indian science, it does not adequately address the achievements made by Indian scientists. In particular, the remarkable work of Raman, Saha, Bhatnagar, and others in establishing the Indian scientific establishment in the 1930s is not adequately integrated into his book. These individuals were instrumental in creating new associations, leading newly formed university departments and national laboratories, winning international recognition for their research, and educating a new generation of scientists in post-colonial India. The participation of Indian scientists in the political movement for freedom infused a strong sense of nationalism in their scientific pursuits. In the aftermath of World War II, Indian scientists were instrumental in creating a hybrid of modern

science. This postwar blend of science was a reflection of the agency and ingenuity of Indian scientists, and it played a significant role in shaping the scientific landscape of the country. Therefore, further examination of the contribution of Indian scientists in creating this hybrid form of science is essential to fully appreciate their role in shaping modern India (Anderson, 2010; Phalkey, 2013).

The book in question is a unique and comprehensive piece of literature that sheds light on the intersection of science and India during the Second World War. At the time of its first publication (2008), very few historians focused on the contemporary history of the Indian subcontinent, let alone on the role of science in shaping the region during the war. Therefore, this book is a valuable addition to the existing body of literature on the subject and provides a detailed and insightful analysis of the events that took place during that time. Sinha's study paves the way for new avenues of research into post-colonial science in India. It is important to express gratitude towards the current publisher for providing an affordable South Asian edition.

