

**Science and the Indian Nation: The Quest for Self-
Reliance, 1850s to 1960s**



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By

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CHAPTER IV

Planning the Nation 1930s to 1950s

Introduction

The rubric of planning and planners that this chapter touches upon spans the period from 1930s to 1950s. Thematically speaking the larger context of worldwide Economic Depression of the early 1930s, the success of Russian five year plans and the Asian decolonisation process of late 1940s and early 50s help to critically contextualise the arguments, debates and discussions initiated by the Indian political leadership and the intelligentsia for the case of planning the nation. In the overarching context of the Second World War and, from within the decades of the 1930s and 40s, the sovereign Indian nation state emerged and it is in these years that the protagonists of the idea of planning could wrest attention and were able to draw on a rich harvest of discussions and contentions. This chapter will document and delineate the various strands of the idea of planning and reconstruction that impinged on the nature of the anticipated and yet to be realised sovereign nation state.⁴²⁸

The engagement with the idea of planning and development from within the national movement and also as it was understood, articulated and attempted by the colonial state as a postwar promise, perforce brought in its ambit scientists, technocrats, economists, administrators and political leaders and interlocutors. With due focus and emphasis on their interaction and interface and their role in the formation of various planning and reconstruction committees, forums, boards and commissions we propose to understand some

⁴²⁸ Benjamin Zachariah in his essay 'India: The Road to the First Five Year Plan' has perceptively remarked that 'A longer history of the developmental imagination in India, or indeed of the transition from the colonial State to the independent Indian State needs to be far less respectful of the apparently crucial date of 1947, and far more attentive to the trends that emerged during the Second World war and continued into the 1950s.' See Benjamin Zachariah, 'India: The Road to the First Five Year Plan', in Sekhar Bandyopadhyay (ed.), *Decolonization and the Politics of Transition in South Asia*, New Delhi: Orient Blackswan, 2016, pp. 199-227.

aspects of the nation-state through ideas of planning and development. Many plans were floated by various groups of protagonists. The role of science and technology and their relationship with processes of planning, development and reconstruction in augmenting and enhancing production and reducing poverty were invoked from various vantage points. Indian community of scientists and technocrats interacted intensely with the emergent community of economists. The idea of planning and development provided a new intellectual context to the entire nationalist articulation and complicated the imaginings of India simultaneously widening the horizons of Indian nationalism.

The narrative regarding science and reconstruction from 1930s to 1950s anchors and takes its cue from the fact that foremost among the Indian scientists non other than M.N. Saha and, one of the most celebrated engineer and administrator of India, Sir Visveswaraya were instrumental in initiating the debates on the need, efficacy and role of planning for India's anticipated future. It was understood that without this exercise of planning indulged in and interpreted by experts, here certainly nationalist experts, the economic programme and goals articulated by Indian National Congress would not be realised. This narrative also documents the formation of the National Planning Committee (NPC) in 1938⁴²⁹ and critically analyses aspects of its thrust areas by gleaning from all the twenty six NPC subcommittee reports that were submitted on various themes of importance for the reorganisation of the modern nation state geared to achieve productive, prosperous and equitable national life.⁴³⁰ The NPC subcommittees were constituted and headed by experts from nationalist ranks to investigate and arrive at a policy framework for various strategic and sectoral themes or agendas regarding the overall reorganisation of national life.

With the advantage of hindsight, a survey of the decades of the 1930s and 40s brings a glaringly fact to the fore. In the then prevailing milieu of competitive politics characterised by both mass mobilisation and pressure tactics of the constitutional variety, the plethora of plans that were floated in the public for nation building as constructive expressions of nationalism had gathered enough inertia and momentum of their own and were manifestly able to wrest whatever little the colonial state had to offer as constructive imperialism. The benevolent expedient of Imperial commonwealth was not to suffice. The phase of transition had begun by the 30s, and by the mid 40s, independence was in sight. After the constitution of the expansive NPC by the Indian National Congress the development discourse was in the

⁴²⁹ Subhash C. Bose *Pioneer of Indian Planning*, New Delhi: Planning Commission, 1997.

⁴³⁰ K.T. Shah, *Report: National Planning Committee*, Bombay: Vora & Co., 1949.

process of acquiring a shape of its own and, in no way, it was to be outwitted, outmaneuvered and overshadowed by the colonial state's promise and 'advertisement of post-war reconstruction in India.' The discourse of development, planning and reconstruction mooted by the nationalists had scored over the belated response of the colonial state where planning figured as the 'essence of post-war developmental' promise. This narrative attempts to situate the reflex, response and role of the maturing scientific community, the community of economists, and industrial and business leaders along with the political leadership of the national movement in the development discourse of India.

A number of intellectuals cutting across varying political persuasions expressed their views on how independent India should look like—from Sir Visvesvaraya, Acharya P.C. Ray, P.C. Mahalanobis, M.N. Saha down to S.S. Bhatnagar. The older concerns and priorities of the Swadeshi days were recast in the wake of the NPC's constitution and deliberations in that regard. The discussions it fostered, among politicians, economists, industrialists and scientists saw the reworking of debates of the Swadeshi era in the unfolding industrial and technological context of the Second World War and its aftermath. The spirit of the nation was now to be translated into the goals and objectives of the nation-state. Situating ourselves at the nodal point of this interface, we will assess the trajectory of the 'development discourse' with all its tensions and contradictions.⁴³¹ A great deal of scholarly analysis has been done about planning and development predicating upon economists' opinion and utilising their conceptual categories and tools, but the concerns, priorities and stakes of the scientific community cannot be contextualised without its juxtaposition to that of industrialists, economists, political interlocutors and propagandists.

In surveying the tumultuous decades of the 1930s and 40s, and addressing the problematique of development, the explorations pertaining to the then prevailing and proliferating scientific institutions remain relevant.⁴³² The biographical flavour of both

⁴³¹ In doing so the strategy to be employed is to amplify the opinions of the scientific community.

⁴³² The National Academy of Sciences came into existence in 1930. Saha was instrumental in its establishment; Indian Academy of Science was established in 1934, C.V. Raman being its founder president. The Indian National Science Academy started its journey in 1935. S.S. Bhatnagar built a chain of eleven national laboratories from 1947-54. Besides, many university departments of science were started in these decades. Moreover, the annual sessions of the Indian Science Congress from 1914 onwards had progressed enough to shape an articulate community of scientists that found even better amplification with the establishment of the Science and Culture group and its mouthpiece with the same name. See B. Prashad (ed.), *The Progress of Science in India during the past Twenty-five Years*, Calcutta: The Indian Science Congress Association, 1938; *The Shaping of Indian Science: Indian Science Congress Association Presidential Addresses*, 3 vols, Hyderabad: Universities Press (India) Private Limited, 2003. Also see V.V. Krishna, 'The Emergence of the Indian Scientific Community', *Sociological Bulletin*, vol. 40, nos. 1 & 2, Mar.-Sept. 1991, pp. 89-107; Sneha Sinha, 'Role of Indian Science Congress Association, 1914-1947', *Indian Journal of History of Science*, vol. 53,

institutions and individuals permeate the debates and discussion on planning. Those protagonists whose values and vision were embodied in the institutions they visualised and worked at, need to be revisited because ‘so often intrepid pioneers depart from the current path in search of their own private visions and return having discovered a far better route. To the pioneers, the value of their explorations is obvious: it is what drives them, and it needs no justification beyond its own intrinsic interest.’⁴³³ Without refuting the celebration of creativity of the human mind, the attempt is to demonstrate, with innumerable instances and plausible justification, not only the political and social nature of science but also its interlinkages with the larger political economy, both global and local. As the form and content of science and technology changed considerably after the 1930s and, more so during and after the Second World War,⁴³⁴ their linkage to the larger political economy requires adequate scrutiny. In the Indian context, the genesis of at least two institutions would be revisited with this purpose in mind. These are the CSIR and the Planning Commission whose histories allow us to interrogate and perhaps appreciate the process of planning the nation in a better way.⁴³⁵

With the outbreak of the long drawn Second World War, the NPC led massive exercise of planning was hampered. It was further impeded due to the Quit India Movement and its consequences. The Second World War and the political developments in India in the 1940s were critical to the final demise of the structure of the formal empire from South Asia and the emergence of the sovereign Indian nation state. The Indian polity of the 1940s in general and the Indian scientific community in particular were reshaped by this total war. The colonial state caught in the vortex of war was forced to promise and present the constructive facet of imperialism in the sense that, in 1944, the Government of India itself created a

no. 4, 2018, pp. T217-T222; Rajinder Singh and S.C. Roy, ‘85th Anniversary of *Science and Culture: An Introspection*’, *Science and Culture*, vol. 86, nos. 5-6, May-Jun. 2020, pp. 150-63. For Planning Commission see H.K. Paranjape, *The Planning Commission A Descriptive Account*, The Indian Institute of Public Administration, New Delhi, 1964.

⁴³³ John Brockman (ed.), *The Next Fifty Years: Science in the First half of the 21st Century*, London: Weidenfeld & Nicolson, 2002, p. 31.

⁴³⁴ Saha hinted at the departure from the low cost amateurish science to a more industrially alive and goal oriented scientific activity. In his words “Even ‘pure’ science, it is generally admitted now, subserves directly or indirectly human and social needs the expression ‘science for science’s sake’ like the sister adage ‘art for art’s sake’ is fast passing out of the vocabulary of those who have looked into the genesis, history and future of both science and art. Not that scientific research cannot and should not be carried out with the interest centred chiefly in itself but it is fallacious to think that, for this reason, it is objectively dislodged from the social framework in which the work is proceeding. As is known, even the recent developments in theoretical physics have had their repercussions on our philosophical and social concepts.” See M.N. Saha, Unsigned editorial, *Science and Culture*, vol. 2, 1937, p. 529. Also see, Santimay Chatterjee (ed.), *Collected Works of Meghnad Saha*, vol. 2, Published by Saha Institute of Nuclear Physics, Kolkata and Orient Longman, Calcutta & Delhi, 1986, p. 305.

⁴³⁵ For a history of these institutions see N.R. Rajagopal, *The CSIR Saga: A Concise History of its Evolution*, vol. 1, Publications and Information Directorate, 1991.

Department of Planning and Development under the leadership of Sir Ardeshir Dalal as member of Viceroy's Council of Ministers. The promised purpose of this new department was to plan for the reorganisation of Indian economy through industrial development. The decades of 1930s to 1950s provide the occasion to draw from the interface of scientists, industrialists and economists as planners both from nationalist camp and from the side of colonial state.⁴³⁶ The interplay of contestations and convergences of various shades and orientation from within these two larger camps has been critically analysed and documented. For the colonial state the creation of the Department of Planning and Development was a war contingent reconstruction promise. The targets that they espoused were not to be met and the Department itself was abolished or dissolved by 1946. The lacklustre and half-hearted approach of the Department despite detailed reports of various committees constituted by the government for sectoral reconstruction of Indian economic life⁴³⁷ is captured in the otherwise very balanced and sincere speech of Sir Ardeshir Dalal that he delivered at the 27th session of the Indian Economic Conference: 'What Government can do is to make a survey of all the resources in men, materials and money, estimate to what extent it is possible to employ them for as large an improvement in the economic life as is feasible within the limitations set by the political, social and other conditions of India, and thus arrive at a reasonable target within a given period of time.'⁴³⁸ In the context of the post war reconstruction promises by the colonial state, a contemporary Gandhian commentator underlined that these belated steps of the colonial state, were '[t]o divert public attention from the present atmosphere of deep bitterness and frustration', and that 'Delhi is hastily planning for Britain and not for India.'⁴³⁹ By 1944 it was evident to any perceptive analyst of the Indian political scene that the recent debates in the House of Commons have buttressed and reinforced the understanding that

⁴³⁶ In 1944 itself, and thereafter, many meaningful plan proposals for India from various groups were floated for the consumption and cognition of the colonial state and the public. Group of successful and highly accomplished industrialists presented what came to be known as Bombay plan. On behalf of the labour groups, under the leadership of M.N. Roy the people's plan was presented while the Gandhians too soon formulated their ideas of planning.

⁴³⁷ Hanson has catalogued the various reports brought out by these government committees: 'The years 1944-6 saw the publication of the "Kharegat" report on agricultural development, the "Burns" report on the technological possibilities of agricultural development, the "Gadgil" report on agricultural credit, the "Saraiyya" report on co-operation, the "Krishnamachari" report on agricultural prices, the report on the reorganization and expansion of the railways, the "Nagpur" report on roads, the "Adarkar" report on sickness insurance for industrial workers, the "Bhore" report on public health, the "Sargent" report on education, and the series of reports on irrigation projects. Some of these made extremely radical proposals.' A.H. Hanson, *The Process of Planning: A Study of India's Five-Year Plans 1950-1964*, London: Oxford University Press, 1966, p. 39.

⁴³⁸ As quoted in D.S. Nag, *A Study of Economic Plans for India*, Bombay: Hind Kitabs, 1949, p. 34.

⁴³⁹ Shriman Narayan Agarwal, *The Gandhian Plan of Economic Development for India*, Bombay: Padma Publications, 1944, pp. 1 & 2.

economic reconstruction plans and promises ‘drawn up by the Government of India are only meant to by-pass and side-track the fundamental issue of Indian independence.’⁴⁴⁰

The Second World War was a spectacle par excellence for the shaping, organisation and demonstration of BIG SCIENCE, and in public perception, the distance and distinction between science and technology stood blurred much more than ever before. Both massive and micro or mini technological artifacts become embodiment and representative of the strength of new instrumentation based science and technology. Big science and technology were to be harnessed in planning the future development of the decolonised nations. The independent Indian state under Nehru’s leadership would soon embark upon such a path. Indian planners and scientists were of the view that real decolonisation would usher in political freedom that could also translate into economic upliftment. This could be realised and made sustainable only if leapfrogging was made possible with the fostering of frontier areas of Big Science and technology like nuclear science and later space science, on the one hand, and application of plant genetics to plant breeding and agriculture, on the other. Big science and the exercise of planning were to bind and unite the nation. Together they were to catalyse the productive potential of the nation. All of this was to take place within the political dynamics and matrix of Cold War that involved realignments in the world order. Cold War also meant secrecy, which redefined the science internationalism of yester years and complicated the already vexed question of national identity.⁴⁴¹ The impact of these emerging contexts of the new world order on Indian scientific community and the larger organisation of science and technology in India for leapfrogging and strengthening its developmental goals and agendas through scientific and technological progress and achievement was to be dealt with within the planning process.

The intellectual exercise of planning initiated by the young leaders of the Indian National Congress tried to remain sensitive to and also focused upon the foundational and fundamental work that was to be done not only at the epistemological level, but also of innovations that were to be brought at the institutional level to facilitate teaching and research for science. These were often to be carried out under the most trying circumstances. In our narrative, a life in physics or a life in chemistry or for that matter a life as an economist

⁴⁴⁰ Ibid., p. 2.

⁴⁴¹ Gabrielle Hecht and Paul N. Edwards, ‘The Technopolitics of Cold War: Towards a Transregional Perspective’, in Michael Adas (ed.), *Essays on Twentieth Century History*, Philadelphia: Temple University Press, 2010, pp. 271-314.

remains subsumed within life in totality lived in the then milieu of intellectual ferment impacted upon by the demands of the new welfarist nation state. In the years of the unfoldment of the development discourse a life in physics or chemistry is remoulded and recast as a planner and organiser of science and is impacted by the entire gamut of political, social and economic factors that sustained such endeavours. This will bring Subhash Bose, Nehru, M.N. Saha, P.C. Mahalanobis and S.N. Bhatnagar within the intellectual contours of planning.

The historic ‘Science Policy Resolution’ (SPR, 1958) of independent India encapsulates the essence and ethos generated by the entire science movement that played a crucial role in the exercise of planning the nation in the immediate preceding decades to Indian independence. SPR 1958 served as a *preamble* providing broad guidelines for the ways science and scientists were expected to serve the national sovereign welfare state and the society. In light of this resolution the Government of India offered ‘good conditions of service to scientists and accord(ed) them an honoured position, by associating (them) with the formulation of policies.’⁴⁴² This is attested by the role scientists acquired not only in organising science but also in planning the nation.

Towards Planning

In the years between 1938 and 1950, the idea of planning assumed great importance. The anticipated proximity to political self rule made planning a contested idea. In the post-Depression era, this contested idea compulsorily prompted and provoked political parties, political analysts, intellectuals including scientists and industrialists of the era to respond and passionately participate in the ongoing debate on the nature of planning in India. Various plans were proposed, published and propagated through print. Rajendra Prasad, in his foreword to a book on *A Study of Economic Plans for India* by D.S. Nag published in 1948 cogently summed up the various plans that were presented before the state and public:

The National Planning Committee under the chairmanship of Pandit Jawahara Lal Nehru, which was appointed by the Sriyut Subhash Chandra Bose when he was the president of Indian National Congress could not complete its work but collected a mass of material of great value to everyone interested in the subject. The information so collected is being brought out in handy volumes by the secretary of the Committee, Prof K.T. Shah. The Government of India has also taken a hand in planning. Certain leading industrialists of India published their plan about four years ago and principal S.N.

⁴⁴² *Science Policy Resolution of Government of India*, 4th March 1958, p. 2.

Agarwal published his Gandhian Plan and Sriyut M.N. Roy the Peoples' Plan. A great deal of literature has been already accumulated and continued to be added to.⁴⁴³

This section analyses aspects of the copious literature on planning which Rajendra Prasad alluded to. It may perhaps not be surprising to underline that the qualifying suffix *plan* began to be used often in this decade. The many imperial missions which negotiated settlements between the colonial government and various Indian interests deployed the suffix *plan* to qualify their mission. It is not incidental that in the 1940s we have Cripps Mission Plan, Wavell Plan, Cabinet Mission Plan and Mountbatten Plan apart from the development and welfare plans *per se* which is the agenda of this chapter on the idea of planning and development.

In the context of the idea of planning, the debates and deliberations that emerged from differing vantage points made the Indian literati and the political class plan conscious. This decade saw the proliferation of massive literature on planning. Publishers specialised in the publication on literature pertaining to planning and development emerged. Padma Publications and Vora and Company from Bombay and Kitabistan from Allahabad were a few of them. In this regard, it must be noted that in the disciplinarian sense, economists from the universities of Allahabad and Bombay made substantiative contributions to the ensuing debate on planning and development.⁴⁴⁴

The years 1944 and 1945 were especially remarkable in terms of publication and propaganda regarding planning and development. It is in the year 1944-45 that the Bombay Plan was floated by a group of accomplished industrialists.⁴⁴⁵ It is also in this year that the radical humanist mentored his associates to produce a People's Plan.⁴⁴⁶ In the year 1944, the Gandhians also had to engage with the idea of planning and the idea of nation state and Shriman Narayan Agarwal with the endorsement and blessings of the Mahatma produced the Gandhian plan.⁴⁴⁷ In 1944-45, every economist worth his salt responded to these plan proposals by bringing out his agreement, concurrence and criticism of these plans.⁴⁴⁸ All of

⁴⁴³ 'Foreword' in D.S. Nag, *A Study of Economic Plans for India*.

⁴⁴⁴ Various issues of the *Indian Economic Journal* of the 1930s and 1940s published by the University of Allahabad stand testimony to the contribution mentioned above.

⁴⁴⁵ Purshotamdas Thakurdas, J.R.D. Tata, G.D. Birla, Sir Ardeshir. Dalal, Sir Shri Ram, Kasturbhai Lalbhai, A. D. Shroff and John Matthai, *A Brief Memorandum Outlining a Plan of Economic Development for India*, 2 parts, 1944; New York: Penguin, 1945.

⁴⁴⁶ B.N. Banerjee, G.D. Parikh, V.M. Tarakunde, *People's Plan: For Economic Development of India*, Delhi: A.K. Mukerjee, Secretary, Indian Federation of Labour, 1944.

⁴⁴⁷ Shriman Narayan Agarwal, *The Gandhian Plan of Economic Development for India*.

⁴⁴⁸ Criticism of various plans can be gleaned from books, booklets and pamphlets that emerged in response to these plans. Among all the plans presented in the 1940s, the Bombay Plan attained perhaps the highest circulation simply because the industrialists who authored this plan had the financial and logistical means to

these debates contributed to the overall plan consciousness of the educated Indians. It was music for millions of Indian colonial citizens to hear that these plans were to function with a budget of crore and crores of rupees. The poor Indians were not only motivated by Gandhian ethics of simplicity and austerity but their imagination was also fired by the portrayal and presentation of promised prosperity through various plans for the nation. Plan pamphleteering that profusely proliferated the political arena constituted a distinct category of political literature in the 1940s.

Planning the Nation: Early Initiatives

Prior to the planning decade, one of the most vociferous proponents of planning was Sir Mokshagondam Visweswaraya (1861-1962), a civil engineer and the Dewan of Mysore, who prolifically wrote on India's economic, industrial and social problems and emphasised on the need for planning in order to build an industrialised base to modernise India.⁴⁴⁹ He had also served as Superintending Engineer and Sanitary Engineer to the Government of Bombay and special consulting engineer to the Hyderabad State and Dewan to one of the most enlightened princely states of Mysore. His role in the industrialisation of Mysore in synergy with the nurturing of Indian Institute of Science Bangalore is too well known to be recounted here. Visweswaraya began reflecting on Indian political, economic and social problems in the wake of the extensive changes brought about by the Government of India Act 1919 and to further the cause of an industrialised, progressive and a self-reliant nationhood.⁴⁵⁰ He found India particularly wanting in socio-economic and educational status when compared to the

carry it far and wide. Naturally, the Bombay Plan document was profusely reviewed, appreciated and critiqued. For a detailed discussion on the publicity of the Bombay Plan, see Medha M. Kudasiya *Tryst with Prosperity: Indian Business and the Bombay Plan of 1944*, Gurgaon: Random House an imprint of Penguin, 2018.

For a flavour of the array of criticism, see *Fascist Economics (A Critique of the Bombay Plan of Economic Development of India)*. Containing 'The "Master-Plan" X-rayed' by G.D. Parikh and 'Planning and Planning' by M.N. Roy; Introd. by Prof. B.N. Banerjea, Calcutta: Renaissance Publishers, 1944; S.R.S. Raghavan, *Planned Economic Development for India with Special Reference to Industrial Development*, Allahabad: Kitabistan, 1944; Bimal C. Ghose, *Planning for India*, Humphery Milford, Oxford University Press, Indian Branch, 1944; A.N. Agarwala, *A Critique of the Industrialists' Plan*, Banares: N.D. Kishore and Bros., 1944; K.B. Krishna, *Plan for Economic Development of India (A Critical and Historical Survey)*, Bombay: Padma Publications Ltd., 1945; P.A. Wadia and K.T. Merchant, *The Bombay Plan A Criticism*, 1945 (1st edn.); Bombay: The Popular Book Depot, 1946; B.T. Ranadive, *The Tata-Birla Plan: Will it Work?* Bombay: People's Publishing House, 1945; Anugraha Narayan Sinha, *Economic Planning for 500 Millions*, Patna: Himalaya Publications, 1946.

⁴⁴⁹ M. Visveswaraya, *Reconstructing India*, London: P.S. King & Son, Ltd., 1920; *Unemployment in India: Its Causes and Cure*, Bangalore City: The Bangalore Press, 1932; and *Planned Economy for India*, Bangalore City: The Bangalore Press, 1934.

⁴⁵⁰ M. Visveswaraya, *Reconstructing India*.

economic and social conditions of other progressive nations.⁴⁵¹ He linked India's problems to low production output and the lack of government support to industries and related technical education and career, on the one hand, and poor infrastructure and near absence of construction and development programme, on the other. He was of the view that British assistance to Indian industry and trade could bring about immense prosperity for the country.⁴⁵² In his later writings he stressed on the importance of planning, especially the need for 'reconstruction' and 'recovery' of economic life from the disastrous effects of the Depression. Two measures, in his view, were to constitute the core of the constructive scheme he outlined, the establishment of a special formal economic organisation and a national economic plan.⁴⁵³

Visweswaraya also advocated the significance of collating data as in countries like Britain and the United States where systematic civic surveys were periodically carried out. He viewed 'statistics' as 'the basis of any solid structure of planned economy. They furnish a record of what has been done in the past and they are indispensable as a guide to planning the developments for the future. They enable government to guide and control the trend of economic development and to create wealth by judiciously conceived productive enterprises, plans of taxation and public expenditure.'⁴⁵⁴ He envisaged the creation of a pan Indian economic organisation with councils at the central, provincial and local levels working closely with the government.⁴⁵⁵ Such an organisation was not only to function as an agency to collect vital information and conduct comparative economic analyses of India and other progressive countries but to help the government with the task of economic planning.⁴⁵⁶ The Dewan proposed the five-year or ten-year plan as a blueprint to engage every region and unit in the country in the task of nation building and encouraging self-sufficiency. However, he was predisposed towards a capitalist model of development to encourage industrial

⁴⁵¹ Visvesvaraya placed the average death-rate for all India for the period between 1910-1920 at 31.8 per thousand. The corresponding recorded death rate in other countries was 21.9 in Japan, 15.12 in Canada, 14.6 in the United Kingdom, 14.0 in the United States of America and 10.5 in Australia. For 1916-17, British India's spending from all sources including fees was 11.2 crores of rupees, at the rate of Rs 14.4 per head of school-going population or 7 annas per head of the entire population. The corresponding expenditure in other countries was Rs 38 per head in the United Kingdom, Rs 104 in Canada, Rs 13 in Japan and Rs 114 in the United States of America. The asset of British India, worked out to about £14 per head. The corresponding figures for other countries were: The United States, £391; the United Kingdom, £320; Australia, £262; Canada, £259; and Japan, £52. M. Visvesvaraya, *Reconstructing India*, pp. 19-34.

⁴⁵² *Ibid.*, p. 15.

⁴⁵³ M. Visvesvaraya, *Planned Economy for India*, Bangalore City: The Bangalore Press, 1934, p. 3. Within two years, the second print came out in March 1936 with an enlarged index. The main content of both editions remained the same.

⁴⁵⁴ *Ibid.*, p. 11.

⁴⁵⁵ *Ibid.*, p. 6.

⁴⁵⁶ *Ibid.*, p. 7.

prosperity, ironically in a country where the colonial state controlled capitalist monopolies to its own imperial advantage.⁴⁵⁷ Such thrust for industrialisation, even from the nationalist stand point clearly overlooked problems of equitable distribution in capitalism. In terms of planning, Visvesvaraya felt that the ten-year plan was better suited to India's situation given the paucity of data and lack of economic organisations. A duration of ten years gave wider scope to conduct surveys, to create and collate data as per recent economic parameters and to implement policies premised upon them.

Another vocal advocate of the idea of planning in the 1930s, but from a different professional arena, a man with very different compulsions was the Indian businessman and close associate of Gandhi, G.D. Birla (1894-1983). In his address delivered at the annual session of the Federation of Indian Chambers of Commerce and Industry, Delhi on 1 April 1934, he argued in the context of depression that Indian industrial and agricultural production were on the decline and a substantial rise in living standards was essential for a well thought out plan and government intervention were required. Birla viewed planning as an idea whose main objective was to bring about maximum prosperity with a reasonable amount of effort. It was also an exercise that helped in contemplating increased production in agriculture and industry, and the parallel increase in the purchasing power of the masses.⁴⁵⁸

Birla saw self-sufficiency as a fundamental guiding principle of planning but as something to be attempted only where conditions were decidedly favorable to it. It was pointless, he felt, to produce something in which the country enjoyed no natural advantages or for which no ready market existed. Self sufficiency could be achieved in case of jute, cotton sugar, steel, cement and paper industry as India had both raw materials and market, unlike Japan and England who were dependent on other countries for raw material.⁴⁵⁹ Further, Birla was not against the policy of buying from and selling abroad convinced that 'our dreaded self-sufficiency' was not to be a hindrance to foreign trade. As part of the planning exercise, import and export tariffs, subsidies, trade pacts, the most favoured nation treatment, were to be the weapons for directing production and imports and exports into the desired channels.

⁴⁵⁷ Ibid., p. 240.

⁴⁵⁸ G.D. Birla, 'Indian Prosperity: A Plea for Planning', An address delivered at the Annual Session of the Federation of Indian Chambers of Commerce and Industry held at Delhi, on 1st April, 1934, <https://dspace.gipe.ac.in/xmlui/bitstream/handle/10973/38851/GIPE-011804-11.pdf?sequence=3&isAllowed=y> Also see Parasnath Sinha (ed.), *The Path to Prosperity: A Collection of the Speeches and Writings of G.D. Birla*, Allahabad: The Leader Press, 1950, pp. 1-26.

⁴⁵⁹ G.D. Birla, 'Indian Prosperity: A Plea for Planning'.

For the nation's progress, Birla envisaged a crucial role for the government in expanding infrastructure like building roads and other developmental aspects and pointed out that money in the form of Gold Standard Reserve (53 crore) could be used for such purposes.⁴⁶⁰ Following the Keynesian paradigm, he strongly believed that money spent would flow back if the spending was done according to a proper plan.⁴⁶¹ However, in this process, he warned against over-centralisation of production or the creation of any large disparity between the upper and the lower strata of society. Birla estimated that with proper national effort, the basic necessities of 2,000 calories food per head, about 55 yards per capita cloth, and sufficient housing accommodation could be met.⁴⁶²

Prior to the NPC exercise, the nationalist astrophysicist M.N. Saha further raised the demand for industrialisation and the role of science in planning. Saha's journal *Science and Culture*, founded in 1935, created the discussion on the importance of planning through various articles published in the early stage of publication of this journal. As the editor, Saha noted that the objective of *Science and Culture* was not only 'popularisation of scientific knowledge but also to advocate the application of science to all problems of our national reconstruction'.⁴⁶³ And for this reconstruction, he supported the idea of planning to be applied to industry, agriculture, river training and irrigation, and even to rural industries like dairy industry and the journal published articles on aspects of the role and efficacies of planning in these realms. In the very first volume of the journal, P.C. Mahalanobis in his article on 'The Application of Statistical Method in Industry' noted that in industrial research careful planning and experiment was needed to collect statistics which can help industry in its purchase and procurement of raw materials, control and standardisation of manufactured products, problems of sampling and testing etc.⁴⁶⁴ In another article written on Germany's organisation for research, it was argued that Germany was transformed into an industrialised nation from a nation of philosophers in 1860s, because of proper planning in the field of scientific research, particularly research regarding the use of water power, coal and other resources.⁴⁶⁵ It was advised that a wise and comprehensive planning on a scientific basis is

⁴⁶⁰ Ibid.

⁴⁶¹ Ibid.

⁴⁶² Ibid.

⁴⁶³ 'Indian National Reconstruction and the Soviet Example: Scientific Research and Social Planning', *Science and Culture*, vol. III, no. 4, Oct. 1937.

⁴⁶⁴ P.C. Mahalanobis, 'The Application of Statistical Method in Industry', *Science and Culture*, vol. I, Jul. 1935, p. 73.

⁴⁶⁵ 'Germany's Organization for Research: The Kaiser Wilhelm Society', *Science and Culture*, vol. I, no. 4, Sept. 1935, pp. 162, 176. Related examples were again given in the case of Sweden and Russia, that how river

required for the resuscitation of the dead rivers and for irrigation of dry land in India.⁴⁶⁶ Subsequently, J.C. Ghosh, professor of Chemistry at Dacca University did discuss about 'crop planning' and its advantages, particularly for Bengal.⁴⁶⁷ The journal in its 1938 issue published the address delivered by Subhash Chandra Bose, Congress president, where he emphasised the need for a National Planning Commission, need for necessary data and survey for economic development and industrialisation of India.⁴⁶⁸

In this period the planning literature published pointed to the paucity of data. 'Cry for data' became a popular epithet and the spirit it generated for statistics, reliable enough to inform planning and production, underlined the need for reliable data and led to the initiatives pertaining to statistical research, training and organisation. The National Planning Committee had in the beginning appointed 29 subcommittees initiating informed planning exercise in various sectors of national life. Besides these 29 subcommittees, two other subcommittees, one on Census and Statistics, and the other on Publicity were appointed by the NPC. The opening address of the Chairman at the NPC's opening session on the 1st May 1940, 'makes specific mention of the Notes sent to him by Prof. Mahalanobis, Secretary, Indian Statistical Institute, in regard to proper statistical organization needed in careful planning. It is to be hoped that the establishment of a Bureau of Statistics will be given a prominent place amongst the recommendations of the National Planning Committee.'⁴⁶⁹

Interestingly, Mahalanobis does not figure even as a member of the subcommittees during the NPC planning exercise. During this time he had emerged as a statistician and had established the Indian Statistical Institute in 1931-32, which dealt with industrial or economic data only peripherally. His statistics was more grounded in Anthropology and with the measurement of anthropological parameters. But his note to Nehru, the NPC's Chairman reveals that he was involved with planning may be not as knee deep as his contemporaries like Saha or K.T. Shah. Gradually, the 'cry for data' and the instrumentality of the Indian Statistical Institute in this regard was to draw Mahalanobis to the planning process.

Mahalanobis's association with the Second Five Year plan came from Nehru's concern and desire to have a senior scientist or technologist working for the Planning

planning had helped the countries in reviving the economy. See 'Public Supply of Electricity in India', *Science and Culture*, vol. I, no. 7, Dec. 1935.

⁴⁶⁶ 'The Control of Raging Waters', *Science and Culture*, vol. III, no. 2, Aug. 1937.

⁴⁶⁷ J.C. Ghosh, 'The Need for Crop Planning', *Science and Culture*, vol. I, Oct. 1935, p. 250.

⁴⁶⁸ Address of the Congress President: Mr. Subhash Chandra Bose, *Science and Culture*, vol. IV, no. 5, Sept. 1938, pp. 139-41.

⁴⁶⁹ *Handbook of National Planning Committee No. 2, Being an Abstract of the Proceedings and other particulars relating to the National Planning Committee*, Bombay: Published by K.T. Shah, May 1940, pp. 3-4.

Commission.⁴⁷⁰ With independence, the need for a statistical organisation was realised at the very first meeting of the Advisory Committee for Co-ordinating Scientific Work.⁴⁷¹ Mahalanobis was one of the members of this committee. Through his statistical institute, Mahalanobis was able to draw upon the best of economists, mathematicians and statisticians towards the Indian planning exercise. He was able to draw the expertise of planners, mathematicians, economists and scientists from Eastern Europe and the USSR as well.⁴⁷² Like Nehru and Saha, the imprint of Russia on Mahalanobis was well marked. He first visited Moscow in 1951, and then subsequently, in July 1954 and 1958.

In the spirit of scientism infused planning which Saha was earnestly propagating through science and culture, he expressed sharp departures and disagreements with Gandhian notion of cottage industrialism. Saha's critique of the Gandhian notion of Swadeshi and his role as a protagonist of 'developmental problematique' marks the shift from the earlier era, he himself being situated at the disjunction. From the late 1930s, Gandhi and his disciples were received more as a group of 'moralizing old men', and the agenda of planned heavy industrialisation with 'big science' as its basis gained currency. Saha, cautioned that '[I]t would, (however), be a pity if (the) question of cottage industries diverts our attention, as it sometimes tends to do, from the major problems of industrial development.'⁴⁷³ The efficacy of cottage industries was not denied by Saha but the obsessive romance of it he argued, should not overshadow the agenda of 'real industrial progress of a nation.'⁴⁷⁴ Progress for him meant 'organised industrial activity based on a sound well-thought-out policy (and) which considers among other things the available resources of the country both as raw materials and as sources of power, the needs of the home and outside markets, and the inter-relationships between industries.'⁴⁷⁵ In this regard, Saha advocated both centralised planning and protection for the fostering of heavy industrialisation. We can see through Saha, how older debates about swadeshi and self-reliance were not just recast in a newer idiom but sharp divergences and departures were at play. It should be remembered that Saha's *Science and*

⁴⁷⁰ H.K. Paranjape, *Jawaharlal Nehru and the Planning Commission*, New Delhi: The Indian Institute of Public Administration, 1964, pp. 6-7.

⁴⁷¹ National Archives of India (NAI), New Delhi, Department of Scientific Research, File no. 66 (14)/48, 1948, 'Minutes of the Inaugural Meeting of the Advisory Committee for Co-ordinating Scientific Work'. Also see Ashok Rudra, *Prasanta Chandra Mahalanobis: A Biography*, Delhi: Oxford University Press, 1996.

⁴⁷² See David C. Engerman, *The Price of Aid: The Economic Cold War in India*, Cambridge: Harvard University Press, 2018.

⁴⁷³ M.N. Saha, Unsigned Editorial, *Science and Culture*, vol. II, 1937, p. 529. Also see Santimay Chatterjee, (ed.), *Collected Works of Meghnad Saha*, vol. 2, Calcutta: Saha Institute of Nuclear Physics in collaboration with Orient Longman, Calcutta, 1986, p. 308.

⁴⁷⁴ M.N. Saha, Unsigned Editorial, p. 529.

⁴⁷⁵ *Ibid.*, p. 529.

Culture precedes the formation of the National Planning Committee (NPC) and it was this journal that carried animated discussions on planning and industrialisation. It was Saha who built a favourable opinion towards scientism based planning that persuaded Subhash Bose as President of the INC to constitute the NPC in 1938 with Nehru as its first Chairman.

It was while espousing the efficacy of industrialisation and planning as a response to the 'developmental problematique' that Saha and Nehru came together and, in the late 40s, it was because of their differing perceptions about aspects of attempting and realising the same that they drifted apart. Seen in light of these developments, it is not incidental that Saha, an acclaimed scientist and academician ended up in politics and Nehru perhaps remains the only politician who became the General President of the Indian Science Congress Association in 1947. Saha like Nehru remained embedded in socialist economics and accepted on pragmatic terms, if not willingly, Nehru's qualified and subtle acceptance of the Bombay Plan framework under the rhetoric and rubric of 'mixed economy'.⁴⁷⁶ However, among the many actors, Saha's position vis-à-vis the developmental agenda in terms of heavy industrialisation with centralised planning remained more or less consistent.

Plethora of Plans

Beginning from the late years of the 1930s, the decades of the 1940s and 50s can safely be called the decades informed, obsessed and haunted with the idea of planning. More specifically, the years between 1937 and 1947 can be described as the phase of populism, promise, planning and protest. The colonial state embroiled as it was in a massive war effort, promised many concessions for the colony. Indian intellectuals working within the rubric of Indian National Congress through the NPC exercise embarked on planning and propagating features of a welfare state in the context of the anticipatory transfer of power.⁴⁷⁷ This helped to underline the inevitability and importance of complete political independence as without independence and transfer of power, planning had no meaning and standing. As is well known, the 1940s was also mediated by popular resistance and protests like the Quit India Movement and naval mutinies. The intensification of the debates among groups of various persuasions and sectional interests within the national movement precipitated populism.

Not just in the wider world of Europe and America, but in India too, we witness a burgeoning and proliferation of literature on various aspects of planning during this period.

⁴⁷⁶ R.S. Anderson, *Building Scientific Institutions in India: Saha and Bhabha*, Montreal: McGill University Press, 1975, pp. 29-30, see also pp. 90-102.

⁴⁷⁷ K.T. Shah, *Report: National Planning Committee*, Bombay: Vora & Co., 1949.

The corpus of this expanding literature during the decades of 1940s and 50s, particularly in the context of decolonisation stands testimony to the seriousness of the debates which were initiated and engaged with for providing a formal shape to the national economies that were to emerge on the world map. India, the erstwhile classic colony and an important populous land of Asia in transition towards sovereignty, was one of the most fertile grounds for that kind of expanding literature. Through this literature, its protagonists and propagators analysed threadbare various vestiges and linkages of Indian economy to the world economy from various theoretical and ideological perspectives. In the Indian context, they were to draw a rich gamut of insights and inferences for national reconstruction both in the wake and aftermath of the Second World War. Needless, to say, the years in which the war devastated the world were incidentally also the years in which pamphleteering about various aspects of economic planning proliferated and perhaps peaked in the Indian context.

Unsurprisingly, the year 1944, not only saw the presentation of an economic development plan by a group of well accomplished and successful Indian industrialists before the public, government and the Indian intelligentsia, but it also witnessed many other competing and complementing plans regarding the anticipated course for post-war reconstruction in India. Every ideological and political dispensation active within the Congress and otherwise, had something to say on the contemporary world economic scenario, its impact on Indian economy and the need and the nature of planning to be initiated, indulged in, and embarked upon in India. Various schools of economists engaged earnestly and energetically in the engrossing and enlightening debate of the time. Economics generally and development economics particularly were young disciplines. Both the politics of the times and the organisation and production of knowledge within the rubrics of economics were haunted by the larger conceptualisations and utopias of welfare state, free market, free enterprise, capitalism, socialism etc. These very ideas were in the process of being refined and refurbished not just in the context of the after effects of the Second World War but also of the Great Depression, the experiences and outcomes of which were not far behind.⁴⁷⁸

This was also a very active and productive period for industrialists, political elites, trade unionist and labour leaders, left wing intellectuals, socialists of all shades, technocrats and bureaucrats, business leaders, scientists and economists from universities and otherwise. The ideas of planning, the various plans that were floated, the planning and development

⁴⁷⁸ See 'General Introduction' in C.N. Vakil, *Poverty, Planning and Inflation*, Bombay: Allied Publishers, 1978, pp. xiii-xxx.

department of the colonial government, the provincial planning exercises, the concerns of the various Chambers of Commerce – all participated and contributed in varying degrees to the contentions and convergences that was to impact upon the imaginings and visions of the sovereign Indian welfare state. Planning provided the forum for intense debates on various aspects of India's political economy. The inheritance and adherence to mixed economy, made operational through planned macro economic policies by the republican nation state, cannot be grasped unless one makes sense of the voices that emerged from the economic literature produced in the context of the exercise of planning. Hence, in the planning exercise that ensued during the decades on the heels of independence, almost everyone concerned jumped onto the bandwagon of planning giving rise to a plethora of plans. From the establishment of the NPC in 1938 under the young and dynamic leadership of Subhash C. Bose and its subsequent committees, expertise from scientists, economists, medical men along with political leaders and financial experts were drawn to participate and contribute in the planning exercise.

The planning exercise was also undertaken by the colonial government of the day.⁴⁷⁹ There were many common points and also intense contestations. All claimed to create a better India. The NPC and people associated with it generated a great corpus of literature on behalf of the Congress.⁴⁸⁰ J.C. Kumarappa as the president of the All India Village Industries Association⁴⁸¹ participated in and dissented from the NPC exercise of early years. Kumarappa was to soon become one of the finest interpreters and propagators of Gandhian economic ideas and thought. Gandhi's emphasis on decentralised cottage industrialism in consonance with Indian craft tradition as against centralised heavy industrialisation being visualised by the NPC became a bone of contention, and on this account, Kumarappa resigned from the NPC.⁴⁸² A few years later, with Gandhi's endorsement S.N. Aggrawal was to produce the Gandhian Plan.⁴⁸³ About the same time, a group of industrialists under the

⁴⁷⁹ The British government set up the 'Planning and Development Department' in August 1944 under the charge of Ardeshir Dalal. However, this department was abolished in 1946 and in October of the same year, a Planning Advisory Board was set up by the Interim Government to review the plans and future projects and make recommendations.1

⁴⁸⁰ K.T. Shah, *Report: National Planning Committee*.

⁴⁸¹ P.S. Sandhu, 'J.C. Kumarappa: A Gandhian Economist Ahead of his Time', *Down to Earth*, Mar. 1993, pp. 36-39; For a detailed account of J.C. Kumarappa's life and engagements, also see Mark Lindley, *J.C. Kumarappa: Mahatma Gandhi's Economist*, Bombay: Popular Prakashan, 2007.

⁴⁸² The 1940 NPC report records Kumarappa's resignation. See *Handbook of National Planning Committee No. 2, Being an Abstract of the Proceedings and other particulars relating to the National Planning Committee*, Bombay: Published by K.T. Shah, May 1940, pp. 3-4.

⁴⁸³ Shriman Narayan Agarwal, *The Gandhian Plan of Economic Development for India*.

leadership of Tata came together to produce a plan called the Bombay Plan or Tata Plan.⁴⁸⁴ A few members were common to both the Bombay plan and NPC exercise. Similarly on behalf of the All India Labour Federation, a group under the influence of M.N. Roy produced the People's Plan,⁴⁸⁵ whose authors, curiously, were not common members of any other planning group that emerged.

The Congress Plans for the Nation: The Initiatives of the National Planning Committee

As the first organised and formal efforts towards planning, it would be pertinent to review the enterprise of the NPC because it was an ambitious and massive exercise undertaken by the INC. Large number of experts participated in this intensive exercise. They were not experts just in the technical sense but also were men of rich experience in their particular realm of activity and thus were invited by the NPC to contribute under the appropriate sub-committees in consonance with their expertise and experience.⁴⁸⁶ An analysis and understanding of each sub-committee report in light of the expertise and experience of the members who shouldered the responsibilities of such sub-committees will provide a glimpse of the nature and orientation of planning and the planners involved. Needless to say, the umbrella term 'planners' also include within itself scientists, technocrats, economists, industrialists, and other interlocutors of various political orientation.

As President of the Indian National Congress, Subhash Chandra Bose constituted the National Planning Committee in October 1938. Jawaharlal Nehru was appointed as the Chairman of the Committee and K.T. Shah its General Secretary.⁴⁸⁷ The early original and coopted members included Sir M. Visveswaraya (later resigned), J.C. Kumarappa (later resigned), Sir Purshottamdas Thakurdas, Dr. Meghnad Shah, A.D. Shroff, Dr. Radha Kamal Mukherjee, N.M. Joshi, Vijayalakshmi Pandit, Gulzarilal Nanda, Dr. Nazir Ahmed, Dr. V.S. Dubey, Ambalal Sarabhai, A.K. Shaha, Dr. J.C. Ghosh, Walchand Hirachand, Abdur Rahman Siddiqui, Rani Laxmibai Rajwade and Shuaib Qureshi. It was a motley and an assorted group of people with varied professional callings and commitment but united by the vision to plan their nation's future. Among the fourteen members of the NPC were four industrialists –

⁴⁸⁴ Purshotamdas Thakurdas, J.R.D. Tata, G.D. Birla, Sir Ardeshir. Dalal, Sir Shri Ram, Kasturbhai Lalbhai, A. D. Shroff and John Matthai, *A Brief Memorandum Outlining a Plan of Economic Development for India*.

⁴⁸⁵ B.N. Banerjee, G.D. Parikh, V.M. Tarakunde, *People's Plan: For Economic Development of India*.

⁴⁸⁶ K.T. Shah, *Report: National Planning Committee*.

⁴⁸⁷ For the formation of the NPC, see Sugata Bose, *His Majesty's Opponent Subhas Chandra Bose and India's Struggle against Empire*, Gurgoan: Penguin Random House India, 2019, pp. 146-54.

Ambalal Sarabhai, Purshottamdas Thakurdas, Walchand Hirachand and A.D. Shroff, five scientists, Meghnad Saha, A.K. Saha, Nazir Ahmed, J.C. Ghosh, and V.S. Dubey, three economists, K.T. Shah, Radhakamal Mukherjee and M. Visvesvaraya, and two other members including the Gandhian leader J.C. Kumarappa, who headed the All India Village Association and the veteran labour leader N.M. Joshi.⁴⁸⁸ The committee worked under the terms of Resolutions of the Ministers of Industries' Conference, 1938. The Conference of the Ministers of Industries emphasised that the

Problems of poverty and unemployment, of National Defence and of the economic regeneration in general cannot be solved *without industrialisation*. As a step towards such industrialisation, a comprehensive scheme of National Planning should be formulated. This Scheme should provide for the development of heavy key industries, medium scale industries and cottage industries, keeping in view our national requirements, the resources of the country, as also the peculiar circumstances prevailing in the country. The Scheme should provide for the establishment of new industries of all classes and also for the development of the existing ones.⁴⁸⁹

The conference focused on developing industries such as those manufacturing machinery, plant and tools of all kinds; those manufacturing automobiles, motorboats, etc., and their accessories and other industries connected with transport and communication. It also dwelt on the manufacture of electrical plant and accessories, heavy chemicals and fertilisers and metal production as well as industries connected with power generation and power supply.⁴⁹⁰ The guiding principles for preparing such a plan were taken from the Resolution of the Indian National Congress at its Karachi session in 1931, and the Election Manifesto of the INC issued at the time of provincial general elections in 1936 announced in accordance with the 1935 Act. The discussion in these two contexts highlighted that in order to end the exploitation of the masses, political freedom or Swaraj must include real economic freedom of the starving millions. Further, it recognised that the 'most important and urgent problem of the country is the appalling poverty, unemployment and indebtedness of the peasantry fundamentally due to antiquated and repressive land tenure and revenue systems and intensified in recent years by the great slump in prices of agricultural produce. The final solution of this problem inevitably involves the removal of British imperialistic exploitation, a thorough change of the land tenure and revenue systems and a recognition by the State of

⁴⁸⁸ Saradindu Bhaduri and Noklenyangla Ayanngti Longkumer, 'Seventy-Five Years of National Planning Committee (1938-2013): A Recollection', *Science and Culture*, vol. 81, nos. 3-4, p. 67. Notwithstanding this classification of the complexion of NPC, it can also be argued that Visvesvaraya was an engineer and administrator of high calibre and vast experience. Similarly, Kumarappa was an economist in his own right.

⁴⁸⁹ K.T. Shah, *Report: National Planning Committee*, p. 5; emphasis added.

⁴⁹⁰ *Ibid.*, pp. 5-6.

its duty to provide work for the rural unemployed masses.’⁴⁹¹ The NPC members were of the view that industrialisation would help to tide over many impediments of the agricultural sector and would also pave way to its modest but judicious mechanisation and modernisation. The original terms of reference for the nature and scope of work to be done by the NPC was directed by the discussions held at the ‘Ministers of Industries’ Conference, 1938. The Committee itself conceived its task in a broader sense as manifested in its definition of planning:

Planning under a democratic system may be defined as the technical co-ordination, by *disinterested experts*, of consumption, production, investment, trade and income distribution in accordance with social objectives set by bodies representative of the nation. Such Planning is not only to be considered from the point of view of economics and the raising of the standard of living, but must include cultural and spiritual values and the human side of life.⁴⁹²

It was discussed that real planning could only take place with full political and economic freedom, and a national plan must therefore be based on India having sovereign authority. To carry out the task of preparing a national plan, the NPC constituted 29 sub-committees related to agriculture, industry, demographic relations, commerce and finance, transport, public welfare, education, women’s role in planned economy and others. To facilitate the preparation of a national plan, an exhaustive questionnaire was prepared and sent out to provincial governments, universities, public bodies and well-known individuals who were authorities in various subjects. The NPC held several sessions between 1938 and 1940 during which the interim and other aspects of the reports of the sub-committees were discussed. Amidst the resignation of Congress government and the beginning of Second World War, the reports of the Committee could not be finalised and published. However, following the end of the war, the Chairman of the NPC, in consultation with the General Secretary and other members decided to finalise the various sub-committee reports so that they could be published for further dissemination. The NPC had planned 25 volumes that would contain 29 reports of sub-committees, but had to expand the series slightly to include reports of two adhoc sub-committees on the basic principles of planning and administrative machinery required for carrying out the plan.⁴⁹³ Altogether, by the end of 1949, 27 volumes were published. This was a task completed in great adversity.

⁴⁹¹ Ibid., pp. 29-30.

⁴⁹² Ibid., p. 10; emphasis added.

⁴⁹³ ‘A Letter from Prof. K. T. Shah to J.R.D. Tata’, dated 14 Dec. 1948, Bombay, in Arvind Mambro (ed.), *Letters: J.R.D. Tata*, Delhi: Rupa & Co., 2004, p. 464.

In its initial years, the NPC office remained at the Council Hall in Bombay but after the resignation of the Congress government, it was shifted to the north wing of the Bombay University. Both offices were negotiated to be rent-free. In 1945, when it was decided to edit and publish the sub-committee reports, more space was required to accommodate the activities, but space that too free of cost, was not available readily. By exertions and persuasions the philanthropic gestures of the authorities of the New India Assurance Company that generously offered their new building for the purpose as rent-free accommodation was accepted and availed of. For the publication of reports, funds were raised from the provincial governments. However, this was insufficient to meet all expenses incurred for preparing the reports; and so, on the recommendation of Dr. John Mathai, J.R.D. Tata obtained for the Hon. General Secretary of the NPC a loan of Rs. 25,000 from Messrs. Tata Sons Ltd. Only Rs. 10,000 of this was taken in early 1947 to meet current expenses, but even that amount was paid off as soon as the sale proceeds of the series were received. An agreement was made with the publishers, Messrs. Vora and Co. to publish these reports on a profit sharing basis. The NPC retained the copyright in the publications, but took no responsibility for any loss incurred.⁴⁹⁴

The NPC: Rudiments and Rehearsal

A prima facie perusal of NPC report and the various sub-committee reports make it evident that Saha's labour to argue for a scientism-based planning where scientists were to have a role and voice acquired shape and significance with the unfoldment of the NPC exercise. This is testified by the presence of scientists or men associated with science like Meghnad Saha, A.K. Saha, Nazir Ahmed, J.C. Ghosh, and V.S. Dubey in the main NPC.⁴⁹⁵ Apart from them, many of the sub-committees were formed by inviting scientists as experts to guide their deliberations and suggest policy prescriptions or frameworks for specific aspects of planning. It is also not incidental that many sub-committees suggested the incubation and establishment of a rigorous research institute pertaining to the specific area of activity being planned. The

⁴⁹⁴ K.T. Shah, *Report: National Planning Committee*, pp. 17-19.

⁴⁹⁵ The scientists who were core members of the NPC were: Prof Jnan Chandra Ghosh, a famous Indian chemist who succeeded C.V. Raman in 1939 as Director of IISc Bangalore. He was the Chairman of the NPC sub-committee on Chemical Industries. V.S. Dube, Secretary of NPC sub-committee Mining and Metallurgy, was Prof of Economic Geology in BHU and was associated with the development of manganese ore mines in Pipra, Madhya Pradesh. Nazir Ahmed, a physicist who served as Secretary of the NPC sub-committee on Manufacturing industries. Hiralal Roy was a pioneer in chemical engineering education in India. M.R. Ramaswamy Sivan was an agronomist and editor of *Madras Agricultural Journal*. He was also the principal of Tamil Nadu Agricultural University, Coimbatore and was the Secretary of the sub-committee on Animal Husbandry and Dairying.

idea of scientific and industrial research in the context of war exigency is attributed to the establishment of the Board of Scientific and Industrial Research (BSIR) but the need for scientific and industrial research was as much a nationalist idea as was underlined by various sub-committees of the NPC.

A brief perusal of the NPC sub-committee reports is useful in understanding and gaining an insight into how certain concerns dominated the planners' vision from the start. The principal objective of economic planning was to lead the country on the path of industrialisation under the state ownership of key industries and services, mineral resources, railways, waterways, shipping and other means of public transport. The fundamental aim was to attain economic self-sufficiency, increase the national wealth three fold and to ensure an adequate standard of living for the masses. The NPC planned and proposed several objectives: the improvement of nutritional value from 2,400 to 2,800 calories for an adult worker; the consumption of about 15 yards on an average to at least 30 yards per capita per annum; housing standards to reach at least 100 sq. ft. per capita; increase in agricultural production; diminution of unemployment; increase in per capita income; liquidation of illiteracy; increase in public utility services; provision of medical aid on the basis of one health unit for 1,000 population; increase in the average life expectancy; and agricultural planning with the object of attaining self-sufficiency in food production.⁴⁹⁶ The NPC also emphasised the collation and comparison of statistical data with a view to measure the plan's progress within a ten year limit.

The various sub-committees presented their final (some were interim) reports two years after the NPC's constitution. About 16 sub-committees presented their reports in the summer of 1940. One of the most important sub-committees was the engineering (including transport) industries sub-committee whose final report was presented by one of its members, Mr Ratanchand Hirachand, on 2nd May 1940. In considering the report of the Sub-Committee on Engineering Industries and Transport Industries, the NPC resolved that the establishment and organisation of a heavy engineering industry for the manufacture of heavy machinery of various utility and scope like heavy forgings, boilers, machine tools, locomotives, railway carriages and wagons, heavy engines etc., is sine qua none for the advancement of India in general and development of her industries, and for the organisation of her defence in particular and that this was the key to all aspects of future planning.⁴⁹⁷ Hence, the NPC focused on establishing heavy mechanical industry in the coal mining area of Bihar and

⁴⁹⁶ K.T. Shah, *Report: National Planning Committee*, pp. 47-50.

⁴⁹⁷ *Ibid.*, p. 134.

Bengal. In its opinion, the functioning of existing plants producing heavy machinery were to be encouraged on an economical basis to the advantage of the nation, but at the same time, the control of foreign companies and foreign-vested interests by the state was essential for planning and for the success of these enterprises.⁴⁹⁸

On the same day i.e. 2nd May 1940, the Chairman of the Sub-Committee on Chemical Industries Dr J.C. Ghosh, an ardent advocate of scientism and high industrialism, also presented the interim report dealing with various aspects of chemical industries. Apart from establishing the dye-stuff industry, synthetic ammonia plant (for attaining self sufficiency in synthetic nitrogen fertiliser by producing 50,000 tons of ammonium sulphate), and indigenous synthetic drug industry, it sought to encourage *scientific research* in this realm. *It also proposed the establishment of a state department for industrial research, which would set up a National Chemical Laboratory as well as other such specialised laboratories as may be considered necessary*, encourage research work in universities, and provide facilities for doing research work in different parts of the country, including grants-in-aid to co-operative research work. The proposed National Chemical Laboratory was especially mandated to investigate the possibilities of using various chemicals as substitutes.⁴⁹⁹

Mr Ambalal Sarabhai as Chairman along with Dr Nazir Ahmad, Secretary of the Sub-Committee on Manufacturing Industries presented the interim report on 3rd May 1940. The committee highlighted that power, fuel and mineral resources of the country were to be fully conserved, in the sense that it must be scientifically developed and judiciously utilised. Further it recommended the establishment of an institute for industrial psychology, whose services would be available to the industry. Provincial governments and local bodies should provide for museums along with art and crafts emporiums for the encouragement of regional and local industries, especially small scale and cottage industries.⁵⁰⁰ One of the most important resolution from a national perspective arrived at by the Manufacturing Industries Sub-Committee was regarding the location of industries in India. It was of the view that ‘the claims of the industrially backward areas should be given special consideration, subject to economic considerations justifying the same.’⁵⁰¹

Nawab Ali Nawaz Jung, the chairman of the sub-committee dealing with river training and irrigation also presented its report on 3rd May 1940. With a view to obtain a high degree of co-ordination and correlation of efforts dealing with irrigation infrastructure

⁴⁹⁸ Ibid., pp. 134-136.

⁴⁹⁹ Ibid., pp. 137-138; emphasis added.

⁵⁰⁰ Ibid., pp. 139-140.

⁵⁰¹ Ibid., p. 139.

and sharing of river water, it recommended the establishment of a National Water Resources Board for the conservation and utilisation of water resources in the country. This board was to deal with irrigation, navigation, flood control, river management, hydro-electric power and surveys and related research work. Subsequently, it was also highlighted that flood and famine were two aspects of one and the same problem that could be solved by the proper utilisation of water resources.⁵⁰² The River Training and Irrigation Sub-Committee in the resolutions adopted by the NPC also noted unambiguously that ‘[t]he problem of River Training involves many highly complex engineering questions, and, in many phases of it, advance will best be made by research,’⁵⁰³ and further recommended ‘the establishment of one or two fully equipped *Hydro-Technic Research Institutes, as well as a number of local laboratories dealing with local problems.*’⁵⁰⁴

Dr Radha Kamal Mukerjee as Chairman presented the final report of the Population Sub-Committee on 4th May 1940. The sub-committee agreed with the view that the size of the Indian population was one of the most important concern and context in any effort towards national economic planning. With the deficit in food supply estimated at about 12% of the requirements of the population, and the prevalent chronic under-nutrition due to unbalanced diet and diet deficiencies of the masses, the committee recommended utilising waste lands for the optimum possible improvement in production per acre through rural land settlement policies and practices. The sub-committee noted that in the interest of social harmony and efficient economy, the size of the family and national planning were connected aspects. In order to limit the number of off springs and the family size, the state may adopt persuasive as well as socially and culturally acceptable policies to encourage population control and management.⁵⁰⁵ In order to augment and fortify the health of the population, the Population Sub-Committee also argued for the establishment of a Central Nutrition Board with regional boards for developing a national nutritional policy in coordination with the Departments of Agriculture and Public Health. There should also be *nutrition research institutes* functioning under the Boards.⁵⁰⁶

As chairman of the sub-committee on labour, Mr N.M. Joshi presented the final report on long-term issues and concerns regarding labour on 6th May 1940. The sub-committee recommended limiting working hours to 47 hours per week and nine hours per day without

⁵⁰² Ibid., pp. 145-147, 173.

⁵⁰³ Ibid., p. 175.

⁵⁰⁴ Ibid., p. 176; emphasis added.

⁵⁰⁵ Ibid., pp. 148-149.

⁵⁰⁶ Ibid., p. 148; emphasis added.

any reduction in earnings and wages. The report elaborated on the provisions of education for labour, creation of employment bureau and various legislations to protect the dignity and rights of labour.⁵⁰⁷

The interim report of the Power and Fuel Sub-Committee was presented by its Chairman, Dr Meghnath Saha on 12th May 1940. The sub-committee agreed that energy consumption for production processes and manufacturing in India was very low. Moreover, the rates or costs of production of energy in India were also unduly high and that power sources were inadequately developed, which stood in the way of promotion of industries, particularly electro-chemical and electro-thermal ones. This was due to the failure, on the part of the Indian government, to adopt a national policy on power and fuel, in spite of suggestions put forward by the Industrial Commission of 1918, and notwithstanding the worldwide movement for rational and coordinated development of power resources across the globe. The sub-committee recommended that all power and fuel resources of the country should be regarded as national property, and should be fully conserved, scientifically developed, and utilised, with a view to bringing power, particularly electrical power, at the service of domestic and industrial users at the cheapest rate.⁵⁰⁸

Mr Jabir Ali, Secretary of the Sub-Committee on Horticulture presented its final report on 14th May 1940. The sub-committee was of the opinion that the consumption of fruits and green vegetables in India was inadequate and infrequent, which adversely affected people's health. Therefore, it was necessary to increase the consumption of wholesome fruits, vegetables and related products. It recommended horticulture to be treated as an integral subject in the curricula of agriculture colleges and universities, and facilities to be offered for specialised postgraduate study. It also argued and advocated for the establishment of a ***Central Horticultural Institute to promote teaching, training and research in the field.***⁵⁰⁹

In the absence of the sub-committee's chairman, Prof J.N. Mukherjee, the final report of the Sub-Committee on Soil Conservation and Afforestation was presented by its secretary, Prof S.P. Agharkar on the 22nd June 1940. The committee brought to the notice that out of about 827 million acres of the land area in India, 173 million acres was cultivable waste and 183 millions acres as not available for cultivation. In this context, the committee highlighted the establishment of a Land Development Board to deal with the issue of afforestation, soil

⁵⁰⁷ Ibid., pp. 153-154.

⁵⁰⁸ Ibid., pp. 167-168.

⁵⁰⁹ Ibid., pp. 171-172; emphasis added.

conservation and related matters.⁵¹⁰ The Soil Conservation and Afforestation Sub-Committee further recommended a '*Central Institute for the study of soil problems*, and especially those of erosion.'⁵¹¹ The Sub-Committee also underlined the need for 'the *provision for a fully equipped research station in each of the different soil areas for soil and silvi-cultural research and developmental utilization*.'⁵¹² Similarly, it argued that 'adequate facilities should be provided for training in forestry and agriculture in the universities and technical institutes, especially with a view to making the results available to the public.'⁵¹³

The interim report of the Transport Services Sub-Committee was presented by its Secretary, Dr. F.P. Antia, on 23rd June 1940. The sub-committee noted that 'handicap for an adequate development of road as well as railway services is the absence of the necessary manufacturing industries for the production of locomotives, automobiles, wagons and coaches, their parts and accessories, within the country.'⁵¹⁴ In this regard, it emphasised the need of establishing and developing the necessary industries at the earliest. The sub-committee further recommended that '[a] modern ship-building industry along with its auxiliary industries should be established as early as possible. India should be self-sufficient in regard to all her shipping requirements and should not depend on foreign shipping services.'⁵¹⁵

Prof K.T. Shah, Chairman of the Public Finance Sub-Committee presented its interim report on 24th June 1940. There was a minute of dissent by Mr A.D. Shroff, which was read out by the NPC Chairman. However, Prof Shah informed the NPC that the report was agreed upon by other members of the sub-committee, namely, Dr D.R. Gadgil, Prof C.N. Vakil, Prof Gyan Chand, and Dr J.P. Niyogi. The sub-committee recommended that industries concerned with the provision of the main plant, machinery fittings and basic raw materials for the production and supply of nationalised utilities and services should be conducted as collective national enterprises. Further, all key industries were to be progressively nationalised and administered by a statutory corporation created for the purpose. Private enterprises, so acquired, should be paid just and proper compensation.⁵¹⁶

Due to the unavoidable absence of its chairman, Prof Sir S. Radhakrishnan, Shri E.W. Aryanayakam as Secretary presented the interim report of the General Education Sub-

⁵¹⁰ Ibid., p. 177.

⁵¹¹ Ibid., p. 178; emphasis added.

⁵¹² Ibid., p. 178; emphasis added.

⁵¹³ Ibid., p. 178.

⁵¹⁴ Ibid., p. 183.

⁵¹⁵ Ibid., p. 184.

⁵¹⁶ Ibid., p. 188.

Committee on 27th June 1940. He gave a brief account of the report, and of the basic scheme of education. It was pointed out that the sections dealing with intermediate and university education had not so far been dealt with. The committee was of the opinion that the state should make suitable provision for the training of children from the earliest stage. The fundamental principles guiding the scheme of pre-basic education should be that every child between the age of five and seven should have full facilities for a free and all-round development, both physical and mental. The programme of pre-basic education should consist of meals, medical care, cleanliness, sensory-motor and craft training, learning of a foreign language free play and others.⁵¹⁷

The interim report of the Sub-Committee on Public Health was presented by its Chairman, Col. S.S. Sokhey, on 30th August 1940. The committee recommended that India should adopt a form of health organisation, in which both curative and preventive functions need to be suitably integrated, and administered through one agency. Such an integrated system of health organisation can only be worked under state control. It was, therefore, recommended that the preservation and maintenance of people's health should be the state's responsibility. The committee stipulated one qualified medical man or woman for every 1,000 of population, and one bed for every 600 of population. A Pharmacopoeia Committee should be appointed to draw up an Indian pharmacopoeia. In order to carry out this object adequately, research should be particularly intensified to determine the action of drugs traditionally used in India. Subsequently it was recommended that an attempt should be made to absorb practitioners of the Ayurveda and Unani systems of medicine into the state health organisation by giving them further scientific training where necessary.⁵¹⁸

The final report of the Sub-Committee on Woman's Role in Planned Economy was presented by its Secretary, Srimati Mridula Sarabhai on 31st August 1940. It was resolved that in a planned society, woman's place shall be equal to that of man. Equal status, equal opportunities, and equal responsibilities shall be the guiding principles to regulate the status of woman whatsoever the basis of society in the plan.⁵¹⁹

Prof K.T. Shah, Chairman of the Sub-committee on Land Policy, presented its report. With regard to the ownership and working of land, the committee resolved that cultivation of land should be organised through cooperatives and collectives, wherever feasible, e.g. on culturable waste lands, and other lands acquired by the state. Various forms of cooperative

⁵¹⁷ Ibid., pp. 199-208.

⁵¹⁸ Ibid., pp. 211-214.

⁵¹⁹ Ibid., p. 214

farming were to be encouraged in practice. It was decided that no intermediaries between the state and cultivators should be recognised, and that all their rights and titles should be acquired by the state paying such compensation as may be considered necessary and desirable.⁵²⁰

Dr C.A. Mehta, secretary of the sub-committee on Rural and Cottage Industries presented its report. There was a prolonged discussion on the relative virtues and failings of large-scale and cottage industries. However, it was clarified that cottage industries were not intended to come in conflict with the industrialisation of the country, but it was thought that the cottage industries would help to absorb the large numbers of the unemployed and partially employed in rural areas. The establishment of a permanent Cottage Industries Board was recommended to arrange for the training of artisans and skilled workers, who would take charge of groups of unskilled workers in villages and train up the latter to the requisite level of skill and discipline as speedily as possible. The Board was to also undertake scientific and technical research in manufacturing processes suitable for cottage and rural industries, with a view to widen the list of cottage and rural industries which can be undertaken by the people with advantage.⁵²¹

As is evident, many of the sub-committees articulated the need for and recommended the establishment of dedicated research institutions for specialised industrial and agricultural needs. The overall thrust of the NPC was heavy industrialisation under centralised planning. The idea was that industrialisation, on the one hand, and scientific organisation and modernisation of agriculture, on the other, would change the prevailing status quo and will pave way for leap frogging, and that this change was to be catalysed by planned intervention based on scientism as prescribed and executed by scientists and other experts involved in the sub-committees themselves.

It was often reiterated that cottage industries were not intended to come into conflict with large scale heavy industries of the country and that they could exist in separate *demarcated domains*, as if the overall drive for heavy industrialisation would not have had any impact on cottage industries and industrialism as such. But despite the pious policy statements that they could exist in two demarcated domains, what was not visualised by the NPC was the terms of the dialogue that needed to be configured and worked out to balance the drive towards heavy industrialisation, on the one hand, and misplaced devotion to cottage

⁵²⁰ Ibid., pp. 222-223.

⁵²¹ Ibid., pp. 225-227.

industries, on the other. Overemphasis and over reliance on the promised efficacies of heavy industrialisation without much understanding of its limitations and being dismissive rather contemptuous towards the virtues of cottage industrialism and its potential for a symbiosis with everyday technologies⁵²² despite Gandhian caution remains the hallmark of the NPC report. It is in this dialogue that the feasibility and utility of various layers and levels of industrialisation was to emerge. Ironically the dialogue was never initiated and so was never carried forward towards meaningful conclusion.

Instead of dialogue, complementarity and synergy, a latent dichotomy and chasm existed even if not overtly manifest. The younger influential scientists and planners like J.C. Ghose and M.N. Saha saw cottage industries as a feature of the phase of transition till full-scale industrialisation was ushered in or accomplished. The Mahatma himself and the Gandhians as a group in the 1930s, overemphasised the Congress resolutions on the swadeshi legacies of cottage industries. Following the establishment of All India Village Industries Association in 1934, the Mahatma rightfully argued for the restoration of village industrialism. However, simultaneously, he also remained dismissive and went overboard in criticising the NPC exercise initiated by younger leaders of the Congress like Bose and Nehru. It took almost ten years for the Mahatma and his followers to realise and accept the rationale and need for planning, state led industrialisation and the fostering of key industries. This realisation of the Mahatma's camp is evident from the Gandhian plan of 1944.

Despite these tensions within the NPC, the idea of planning and the NPC exercise itself became a compelling context for the British officials to bring out their own post war reconstruction plans. Between 1940 and 1945, the idea of planning the economic development of the country became popular even among officials mainly because of the intense and growing war contingent demands for material and talents that revealed both the country's potentialities and its vulnerabilities. The war exigencies had put the colonial government in predicament. The colonial government, which had scarcely concealed its derision for the non-official body set up to prepare a national plan in 1938 under the dynamic and young leadership of Subhash C. Bose as part of the programme of the INC, realised the urgent and contingent need for a coordinated programme of development required to make the war effort a success. The colonial government did not render any financial aid to the Congress Committee on planning, instead the government as the first step initiated the establishment of a Board of Industrial and Scientific Research (BSIR). This official step

⁵²² David Arnold, *Everyday Technology: Machines and the Making of India's Modernity*, Chicago: The Chicago University Press, 2013.

‘ironically enough – [was undertaken] at about the same time as the Congress’s own planning committee went into hibernation’.⁵²³ The arrest of Congress leaders with the launch of the Quit India Movement including Nehru’s incarceration gave a fatal blow to the NPC exercise and it remained in the cold till the end of the war. During this precise period, the government initiative of the BSIR was followed by ‘the establishment, under the viceroy’s chairmanship, of a reconstruction committee of the council, equipped with a separate secretariat and associated with a number of expert committees representing provincial governments, state governments, and non-official organisations.’⁵²⁴

In June 1944, the government set up a Planning and Development Department of its own, and placed it in the charge of a seasoned and acceptable civil servant Ardeshir Dalal who was also an experienced industrialist and businessman. The Department developed a functional apparatus of consultative committees, industrial panels, and policy committees and was assured of adequate financial assistance for its operations. However, in essence it was essentially a war contingent effort to placate and assuage restiveness against the colonial state. Taking cue, governments at the provinces and states too carried out a similar exercise of outlining their own plans on how to develop their latent resources and utilise demobilised manpower in the aftermath of the Second World War. Likewise, contingent plans by industrialists, publicists and businessmen were also being discussed and worked out. ‘There was abundant seed, many sowers and a rich harvest; but all the crop that could be raised was absorbed by the War Demand.’⁵²⁵ The irony or travesty was that the colonial exercise through the Planning and Development Department was initiated in 1944 and two years later it was abolished. It came into being as a war promise that did not leave behind any enduring structural legacy though it bequeathed a rich corpus of literature in the form of detailed reports on aspects of planning. Thus ended the colonial effort towards planning and development.

As an initiative for industrial research the BSIR also came into being in the war-induced colonial context. In that sense, it was of colonial origins, but the demand for industrial research in various realms was already in discussion and consideration of the NPC. A good number of sub-committees of the NPC demanded the establishment of dedicated research institutes in one or the other aspect of industrial and agricultural activity. It was this

⁵²³ A.H. Hanson, *The Process of Planning: A Study of India’s Five-Year Plans 1950-1964*, p. 37.

⁵²⁴ *Ibid.*, p. 37.

⁵²⁵ The NPC Report poetically remarked on the plethora of plans that were floated. K.T. Shah, *Report: National Planning Committee*, p. 14.

nationalist background discussion of the NPC regarding the establishment of various industrial research institutes that became the guiding principle in co-opting the BSIR turned Council of Scientific and Industrial Research (CSIR) and catapulting it as the umbrella organisation for fostering, incubating and augmenting a chain of national laboratories under the leadership of S.S. Bhatnagar in the immediate years that followed the creation of the sovereign republic. The umbrella CSIR was to reinforce the thrust towards heavy industrialisation through centralised planning in Nehruvian India. This is evident in Nehru's dual role both as the presiding highest authority of CSIR and also as the head of the Planning Commission.

Parallel to the government efforts in the direction of industrial research, a few Indian industrialists also ventured towards creating R & D facilities. These initiatives were considered a welcome step. In his presidential address to the Indian Science Congress, none other than a great advocate of industrialisation, the celebrated chemist, J.C. Ghosh remarked: '[I]t is a welcome sign of the times that the Indian industrialists are not all blind to the value of research as a means of improving production, and in consequence, of increasing the demand. The Tata Iron and Steel Works have led the way by the foundation of a magnificent laboratory at Jamshedpur for the study of alloys of iron and steel. The Lala Sriram Trust contemplates establishing soon at Delhi an institute on the model of the Mellon Institute of America.'⁵²⁶ Soon such leading industrialists were to intervene in the ongoing planning debates through their own plan proposal popularly known as the Tata Plan or the Bombay Plan.

The Bombay Plan and the Anticipated New Sovereign Nation State

In 1944, a group of accomplished industrialists from the city of Bombay first floated a plan that came to be called the Bombay Plan.⁵²⁷ Bombay, the commercial capital and the seat of synergy between commerce, trade and industry was a propitious site from where a national plan was to be initiated. The plan's signatories were Jehangir Ratanji Dadabhoi Tata, Ghanshyam Das Birla, Sir Ardeshir Dalal, Sri Ram, Kasturbhai Lalbhai, Ardeshir Darabshaw Shroff, Sir Purshottamdas Thakurdas and John Mathai. The plan went through two editions: the first was published in January 1944. This first edition became 'Part I' of the

⁵²⁶ J.C. Ghosh, 'On Research in Chemistry in India', Presidential Address delivered at the 26th Indian Science Congress held during 3-7 Jan., 1939 at Lahore. Reprinted in *Everyman's Science*, vol. XLI, no. 4, Oct-Nov 1939, p. 224.

⁵²⁷ Purshotamdas Thakurdas, J.R.D. Tata, G.D. Birla, Sir Ardeshir Dalal, Sir Shri Ram, Kasturbhai Lalbhai, A. D. Shroff and John Matthai, *A Brief Memorandum Outlining a Plan of Economic Development for India*.

second edition, published in 2 volumes in 1945 under the editorship of Purshottamdas Thakurdas. The basic objectives were doubling of the output of the agricultural sector and a five-fold growth in the industrial sector, both within the framework of a 100 billion-rupee investment (of which 44.8% was slated for industry) over 15 years. The shares of agriculture, industry and services in the total production were to be changed from 53, 17 and 22 percent, respectively, to 40, 35 and 20 percent. The principal objectives of the plan are to achieve a balanced economy and to raise the standard of living of the masses of the population rapidly by doubling the present per capita income—i.e. increasing it from \$22 to about \$45 — within a period of 15 years from the time the plan goes into operation.⁵²⁸ The planners have laid down minimum living standards on the basis of about 2,800 calories of well-balanced diet per person, 30 yards of clothing and 100 square feet of housing. A key principle of the Bombay Plan was that the economy could not grow without government intervention and regulation. Under the assumption that the fledgling Indian industries would not be able to compete in a free-market economy, the Plan proposed that the future government protect indigenous industries against foreign competition in local markets.⁵²⁹

The plan was nationalist in aspiration and capitalist in character.⁵³⁰ The Bombay planners saw their role in uplifting and catapulting Indian political economy through industrialisation.⁵³¹ On behalf of the nation state, the Bombay plan supposedly aimed to eradicate poverty of the people, to create profit for the population so as to redistribute and reduce income inequalities of the people. By calling upon the collusion or compact of the nation state and capitalism as a virtuous and viable economic system it was a contextual and contingent defense of capitalism. This compact appeared national in its aspirations because it also endeavoured to subsume within itself many cherished goals of the long drawn national movement. In this sense, the ninety page Keynesian document also known as the Tata Plan, Bombay Plan or the Industrialists' Plan reads *prima facie* like a mild, benign, sober, socialist

⁵²⁸ Ibid. Also see P.S. Lokanathan's review essay 'A Plan for India's Economic Transformation' in Sanjaya Baru and Meghnad Desai, *The Bombay Plan: Blueprint for Economic Resurgence*, Delhi: Rupa Publications India, 2018, pp. 1-18.

⁵²⁹ Purshotamdas Thakurdas, J.R.D. Tata, G.D. Birla, Sir Ardeshir. Dalal, Sir Shri Ram, Kasturbhai Lalbhai, A. D. Shroff and John Matthai, *A Brief Memorandum Outlining a Plan of Economic Development for India*.

⁵³⁰ For detailed recent studies on the Bombay plan see Medha M. Kudasiya *Tryst with Prosperity: Indian Business and the Bombay Plan of 1944*, Gurgaon: Random House an imprint of Penguin, 2018; Sanjaya Baru and Meghnad Desai, *The Bombay Plan: Blueprint for Economic Resurgence*.

⁵³¹ There were two illustrious Indian industrialists who were close to Gandhi – G.D. Birla and Jamnalal Bajaj. Birla went on to become one of the architects and signatories of the Bombay plan though it neither received the approval or commendation of Gandhi. Bajaj, a major nationalist industrialist of Bombay remained conspicuous by his absences from the group that produced the Bombay plan. Perhaps, Bajaj's close proximity to Gandhi did not allow him to associate himself with the Bombay planners. Gandhi in fact regarded Bajaj as his fifth son. The Gandhians came up with their own plan to which Gandhi himself wrote the foreword. Another curious feature of the Bombay plan was the non-inclusion of industrialists from the southern part of the country.

document, as if socialist trends within the decolonisation struggle had tempered such capitalist perspectives and exertions. Through this plan the Indian capitalist-industrialist leaders were also trying to carve a role and a voice for themselves in the larger nation building exercise.⁵³²

Despite the Bombay planners' efforts, the Indian polity in general and mixed economy in particular had a socialist slant during the Nehruvian configuration of the sovereign Indian nation state's policies. The novel goals of equality, entrepreneurship and distributive justice that had emerged from the national movement and was also mandated by the constitutional framework in place, allowed the Indian state to legitimately strive for a commanding position as it was the state that was responsible to the millions in a multi-party democratic setup. To make a poor, stymied and stagnated country progressive meant state leadership in social and cultural realms. This also meant that for the realisation of equality, even in a limited sense, state intervention was required. The new sovereign nation state had to find its moral legitimation by intervening and acting on behalf of the poor millions; after all, the national movement was fought on their behalf and supposedly for their liberation. The nation state was to be a welfare state and, if that ambit of welfarism was to include the vast population of India, then perforce that would give the state a socialist slant, was what Nehru argued and strove for.⁵³³ The quest of the nation state to practice and propagate its welfarist agenda on a grand scale made it embrace, imbue, modify and adapt various convenient ingredients of socialism in its policies and praxis. If the nation state had to adopt that scale of welfarism then, even if it was not a socialist state in the complete sense, socialism for the nation state at that juncture became a source of inspiration and legitimation and hence a guiding star.

The colonial state was the exploiter state; the national state that emerged after decolonisation was to become the entrepreneur, in the sense, the state would be at the commanding height of the political economy and the productive processes. It would act on behalf of the people as the arbiter of distributive justice and hence would also pave way for social justice. Nehru – the planner and prime minister – wanted political democracy to lead to economic democracy.

⁵³² Amal Sanyal, 'The Curious Case of the Bombay Plan', *Contemporary Issues and Ideas in Social Sciences*, vol. 6, no.1, June 2010. Retrieved from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.680.334&rep=rep1&type=pdf>

⁵³³ Apart from Nehru's Collected Works also see Girish Mishra, *Nehru and the Congress Economic Policies*, Delhi: R.K. Publishers and Distributors, 2009.

State-led heavy industrialisation became a desideratum for the rising Indian capitalists so that they could benefit in terms of risk limitations applied both to investments and technology. Industrialisation led by the state following a considerable gestation period was viewed as a more prudent measure to follow up and then gradually propel themselves as major players in the realm of heavy industries. Moreover, the base created by the state-led heavy industry would allow the industrialists to nurture and foster auxiliary industries that would use the main products of the basic heavy industry. All this convinced a majority of the planners that in order to industrialise, key or basic industries would have to be incubated, fostered and nurtured, as it was not possible to import everything. The Indian techno-scientific community with adequate exposure in Europe viewed themselves as capable enough in this new state sponsored role. After independence, the exercise towards import substitution gradually created a critical mass of scientists and technicians who could be deployed in frontier areas like space, nuclear energy, electronics, plant breeding and so on.

Planning for the People

The common main plank of the NPC and the Bombay Plan was industrialisation and in both plans planning was synonymous to industrialisation. Surprisingly, there was a departure from this bracketing of planning with industrialisation in the People's Plan which was presented on behalf of the Indian Federation of Labour. The People's Plan made agricultural development their main agenda of concern for configuring a plan of Rs 15,000 crores for over ten years. Increase in agricultural production through mechanisation, nationalisation of land, scaling down of rural indebtedness, and extension and intensification of agriculture by massive expansion of irrigation along with voluntary collectivisation was the general recipe of the People's plan.⁵³⁴ The other plan which emphasised upon agriculture was the Gandhian plan but there were considerable difference between their priorities and emphasis.

The People's plan did not consider small scale and cottage industries important 'as the entire plan [was] based on the belief that any substantial and rapid increase in the productivity of labour depend[ed] upon the extent to which machinery [was] associated with labour in the process of production, it envisage[d] a rather gloomy future for small-scale industries.'⁵³⁵ The People's plan privileged consumer goods industries in a big way but were not enthusiastic about cottage industrialism and crafts. Contrary to this, the Gandhian plan laid great emphasis on small scale and cottage industries. In the Gandhian scheme of things,

⁵³⁴ B.N. Banerjee, G.D. Parikh, V.M. Tarakunde, *People's Plan: For Economic Development of India*.

⁵³⁵ D.S. Nag, *A Study of Economic Plans for India*, p. 46.

village and cottage industries as complementary activity to agricultural practice would pave the way for the self-sufficiency and regeneration of rural India.

Nevertheless, the way the priorities of the People's plan was envisaged would not have proved conducive to the craft tradition of India. The entire artisanal creativity and innovativeness would be the casualty. Contrary to this, the Gandhian plan relied on science based improvement of the craft and artisanal tradition of India in general and rural India in particular. The All India Village Industries Association (AIVIA) was initiated and nurtured by Gandhi and J.C. Kumarappa precisely for the regeneration of village industries. In course of Gandhi's various tours to the rural realm, the inner belly of India, 'it occurred to him that the village industries were gradually slipping out of the hands of the villager, who had become a mere producer of raw materials. The villager gave and got little in return. The artisan too had lost his creativity and partook of the resourcelessness of the rest of the village. It is with this vision of "reinstating the villager" that Gandhi constituted the AIVIA in 1934.'⁵³⁶ It was precisely with this vision in mind that Gandhi wanted science and scientists to look towards the village and improve the artisanal machinery and tools to strengthen village industrialism. This was an appeal to deploy their science for an alternative paradigm of industrialism. Gandhi was looking for a non European way to industrialise and reconfigure the national productive processes. In contemporary views of scientists like J.C. Ghosh and M.N. Saha Gandhi was dubbed as regressive and retrograde vis-à-vis the planning and industrialisation process which they themselves were ardently advocating. They were unmindful that, like them, Gandhi himself was witness to both the marvels and misuse of science as he moved across continents and also probed deeper into the ways of *doing* that were embedded and embodied in numerous and diverse craft traditions in practice at the level of villages within India and without.

The Gandhian Plan and Alternative Industrialisation

The Gandhians too were drawn into the planning exercise in the 1940s.⁵³⁷ However, Gandhi's own engagement with economics was ethical. There was no difference or demarcation between Gandhian economics and ethics. From among the Gandhian scientists, P.C. Ray, whose physical presence was an exemplar of a life lived as an embodiment of those ethical principles had left this mortal world in 1944 while Gandhi himself passed away in 1948.

⁵³⁶ Shambhu Prasad, 'Towards an Understanding of Gandhi's Views on Science', *EPW*, vol. 36, no. 39, 2001, pp. 3721-32.

⁵³⁷ Shriman Narayan Agarwal, *The Gandhian Plan of Economic Development for India*.

This left the industrialising camp unmediated, unbridled and unchecked in their endeavour towards centralised high industrialisation. The passing away of the great Gandhian scientist, Acharya P.C. Ray, was undoubtedly an irreparable loss. Had he lived on, it can be surmised that he would have contributed to the planning debate in its most precipitating phase by substantiating and nuancing the larger Gandhian arguments as a scientist to and for the society at large. He would have argued for the marriage of the long drawn tradition of craft and modern chemistry along with the modernising and industrialising capacity of modern chemistry. He had already set an example through the establishment of the Bengal Chemicals. The consumer needs of poor and unemployed Indians could have been addressed by this Gandhian Acharya of Chemistry.⁵³⁸ The passing away of P.C. Ray left M.N. Saha sad and anguished but also to an extent allowed him the indulgence of unchecked stridency to argue in favour of massive industrialisation. Perhaps the demise of Gandhi on 30 January 1948 too allowed Nehru the same indulgence and stridency with regards to the state led massive industrialisation.

In the absence of the conscience keeper and tempering mentors like the Gandhian P.C. Ray and the Mahatma himself, the stridency of the argument for industrialisation remained unmoderated. One can see symptoms of this phenomenon very clearly in the case of Saha after the demise of P.C. Ray in 1944. Same is the case with Nehru after the demise of Gandhi. They had respect for their moderating mentors no doubt, but in the urgency of nation building, they subscribed to wholesale heavy industrialisation. Not that they were contemptuous to existing craft traditions of India but the consequence of their stridency towards heavy industrialisation skewed the dialogue that would have allowed for a more complementary and synthesised configuration between crafts, everyday technologies and heavy industrialisation to emerge.

In the Swadeshi spirit and era, crafts and commodities and products like ink, paint and varnish, indigenous medicines, tea and oil were constitutive of everyday nationalism itself. Many aspects of the life of Indian middle class and many top leaders of the national movement were shown and seen as consumers, subscribers and supporters of such indigenous enterprise and their products. It was a manifestation of a nationalist stance to do so.

⁵³⁸ P.C. Ray, *Essays and Discourses*, With a Biographical Sketch & A Portrait, Madras: G.A. Natesan & Co., 1918 (1st edn.).

By the mid 1940s, when a plethora of plans were presented the Gandhians also intervened with a cogent and coherent document about their imaginings of the future India. The text titled *The Gandhian Plan of Economic Development for India* authored by Shriman Narayan Agarwal was also published in 1944, foreworded by the Mahatma, giving it his full sanction and moral authority. For the Mahatma, Shriman Narayan ‘happen[ed] to be in full sympathy with the way of life for which [he] [stood].’⁵³⁹ In Gandhi’s own words the author of the Gandhian plan, ‘has not misrepresented me in any place. There is no pretense at an exhaustive presentation of the implications of the charkha economics. It claims to be a comparative study of the charkha economics based on non-violence and the industrial economics which to be paying must be based on violence, i.e., exploitation of the non industrialised countries.’⁵⁴⁰ As was argued in many plans, so was argued by Gandhians that Indian independence was a must for any kind of planning to be feasible. The Gandhian Plan unambiguously stated ‘[W]e should not, however, forget even for a moment that without political freedom all Plans are bound to be futile. Independent India must be the first postulate of any scheme of economic reconstruction.’⁵⁴¹ In a creative sense, much influenced by the Three People’s Principles of Dr Sun Yat Sen, i.e. democracy, nationalism and people’s livelihood, the Gandhian Plan document argued for three basic premises for planning in India. Firstly, planning should be based on India’s indigenous culture and civilisation; secondly, planning must preserve democracy, i.e. planning ‘must plan for democracy and not for totalitarian control.’⁵⁴² Further, ‘planning should not only preserve democracy but also promote and enrich it by making it more real and enduring.’⁵⁴³ Thirdly and lastly, the Gandhian Plan argued that every citizen of the nation had a right to livelihood through just and honourable means: ‘each citizen has an inalienable right to work and to reap a decent harvest of his honest labour.’⁵⁴⁴ Furthermore, the Plan, with unusual transparency argued that ‘the problem of unemployment and, therefore, of livelihood can be satisfactorily solved only when we realize that the attainment of increased productivity with the help of efficient and labour-saving machines is not and should not be our goal. We can no longer afford to neglect the *human* aspect of our economic life. Man is much more valuable and important than

⁵³⁹ ‘Foreword’ by Gandhi in Shriman Narayan Agarwal, *The Gandhian Plan of Economic Development for India*.

⁵⁴⁰ Ibid.

⁵⁴¹ Shriman Narayan Agarwal, *The Gandhian Plan of Economic Development for India*, p. 3.

⁵⁴² Ibid., p. 5.

⁵⁴³ Ibid., p. 5.

⁵⁴⁴ Ibid., p. 6.

machine or material goods. Productivity and national wealth are to be increased for man and not at the cost of man.⁵⁴⁵

With these basic principles and premise outlined above, the Gandhian Plan document takes a succinct survey of the various plans then prevailing world over. It puts to scrutiny the Fascist plan of Germany, America's New Deal, the Beveridge Plan in Britain, and the Soviet Plan model. In light of the foundational lacuna of these plans to foster a non-violent peaceful and productive social formation as well as a non-violent productive world order, the Gandhian Plan presents itself as an alternative to the 'perplexed and war-torn world and economic system based on peace, democracy and human values.'⁵⁴⁶ The fundamentals of Gandhian alternative economic organisation were as ethical as economic. For Gandhi there was no difference in economics and ethics. Good economics was to meet the yardsticks of sound ethics and sturdy human values. The plan spelt out the foundational notions of Gandhian economics and these were simplicity, non-violence, sanctity and dignity of labour and human values.

The Gandhian Plan document argued that 'since the modern science of economics is founded exclusively on Western ideals, the oriental thought has not yet been able to influence its theories and principles.'⁵⁴⁷ Gandhi was very clear in his views that western industrialism had inherent elements of centralisation and violence. The Gandhian Plan document argued that the evils of industrialisation are not going to get eradicated by socialism or capitalism as 'excessive rationalised mechanisation, whether in a capitalist or socialist state, is sure to exercise its baneful influence on the physical, moral and mental health of the workers.'⁵⁴⁸ In this context, drawing his differences with the young leadership of the Congress, who stood for industrialisation, Gandhi unambiguously clarified that 'Pandit Nehru wants industrialization because he thinks that, if it is socialized, it would be free from the evils of capitalism. My own view is that the evils are inherent in industrialism and no amount of socialization can eradicate them.'⁵⁴⁹

Hence, Gandhi contends that instead of mass production on a large scale and centralised basis, production by masses on a small scale and decentralised basis can be the premise of village industrialism. About half of the Gandhian plan is related to the economics and ethics of these new premises. Part two of the Gandhian plan document spells out the

⁵⁴⁵ Ibid., p. 6.

⁵⁴⁶ Ibid., p. 15.

⁵⁴⁷ Ibid., p. 18.

⁵⁴⁸ Ibid., p. 36.

⁵⁴⁹ *Harijan*, 29-9-1940 as quoted in Ibid., p. 36.

economic plan to be pursued per se. The plan was largely for 90 per cent of the people engaged in agriculture and residing in rural areas – the real India. The chief ‘objective of the plan is therefore to raise the material as well as the cultural level of the Indian masses to a basic standard of life within a period of ten years. As this plan attaches main importance to the welfare of rural areas, greatest emphasis has been laid on the *scientific development* of agriculture and the subsidiary cottage industries. Planning, however, cannot afford to neglect other aspects of national life. Proper attention has, consequently, been devoted to the establishment of the basic or key industries as well.’⁵⁵⁰ Both the departures from and the stamp of NPC deliberations are evident in the main objectives of the Gandhian plan. The consumption goods according to this plan were to be mainly supplied by cottage industries,⁵⁵¹ but the plan conceded that ‘in a free India the development of a few basic or key industries shall not be neglected. The basic industries will not hinder but help the growth and evolution of cottage factories.’⁵⁵² Almost in consonance with the NPC deliberations, the Gandhian plan also recognises the significance of select key or basic industries including defence industries. The Gandhian plan allocated a sum of Rs 1000 crores out of a capital budget of Rs 3,500 crores to basic industries. The Gandhian plan emphasises decentralisation but concedes great role to the state. It unwittingly also augments the rural-urban dichotomy and divide. But despite these contradictions and inconsistencies and contrary to general perception, the Gandhian plan was not a faddist, dogmatic plan but to a large extent a pragmatic plan document for the upliftment of rural India utilising the resources from within.⁵⁵³

Planning and Social Sciences

Besides the contribution of scientists as planners, there were also many social scientists particularly economists in the National Planning Committee, for instance, K.T. Shah and Radhakamal Mukherjee who significantly contributed to the planning process from a social

⁵⁵⁰ Ibid., p. 54.

⁵⁵¹ Ibid., 79.

⁵⁵² Ibid., 79.

⁵⁵³ Generally Gandhi portrayed as anti machinery and his stance of anti-machinery is conflated as anti-science. Shambu Prasad has broken this essentialised reading of Gandhi by bringing in vast amounts of evidences from Gandhi’s own writings i.e. his volumes of *Collected Works* (1888-1948) to portray how energetically and intensely Gandhi engaged with science and notions of technology and what he expected from scientists especially Indian scientists. Gandhi wanted to embed science in community particularly, he wanted to draw the attention of scientists towards the villages of India and also to make science and scientists morally accountable to human struggle and existence. He wanted science to confirm to the core value of non-violence and the morality that made it possible. See Shambhu Prasad, ‘Towards an Understanding of Gandhi’s Views on Science’, *EPW*, vol. 36, no. 39, 2001, pp. 3721-32. Also see unpublished thesis titled ‘Exploring Gandhian Science: A Case Study of the Khadi Movement’, Submitted to the IIT, Delhi, Department of Humanities and Social Sciences.

scientist's perspective from within the NPC. From without the NPC, the Indian sociologist Prof Kewal Motwani was one of the advocates of the efficacies of Social Science disciplines in the larger process of planning. In particular, he underlined the role and strength of sociology in grappling with the challenges posed by planning in India. Motwani made two arguments in favour of the role and nature of social sciences in national planning.⁵⁵⁴ Having argued and underlined the need for social science in India's planning process, he cautioned that as the social science tradition in England was weak, looking towards England for insights to combat the challenges of planning in India was not conducive. In the context of planning, Motwani argued for the centrality of social sciences along with that of the sciences. If social science disciplines like sociology and economics were not nurtured in India's emerging academia and expertise and research not fostered in them, and if this larger anticipated social science enterprise was not geared to the challenges posed by the larger goal of economic and social reconstruction of India, then planning would remain a truncated and half-hearted exercise.

In the above light, Motwani also explained at length that the academia in England would not serve as a model. Being a small prosperous and powerful country, England's own narrow needs were very different from those of the countries of its larger empire. On the authority of British academicians, Motwani demonstrated that as compared to the sciences in England, in the pre First World War era, social sciences in the English academia largely remained neglected. Looking towards England in this regard would, therefore, provide no succour. As far as the nurturing of social sciences sensitive to Indian realities was concerned, no viable or feasible models and motivations were to emerge from England, he averred. So if the Indian planning exercise was to really acquire a sturdy foundation, then social sciences along with sciences were to be provided a strong footing within the Indian academia and otherwise.

Motwani was of the view that the lone social science institute in the country i.e. the Tata Institute of Social Sciences, then producing 28 graduates annually was not enough to meet the need of the hour despite its excellence. There was a need to establish an Indian Social Science Institute with branches spread throughout the country. Private initiatives were also seen as a viable option to meet this paucity. However, the expectation from the private

⁵⁵⁴ Kewal Motwani, *India Can Lead [The Role of Sociology and Social Sciences in National Planning]*, Bombay: Phoenix Publications, 1946. Kewal Motwani, *Science and Society in India: Foundations of Planning*. Foreword by Radhakamal Mukherjee, Bombay: Hind Kitabs, 1945.

sector to provide capital for such institutions or fulfill the role of the state in institution building of such kind was asking for the moon.

Assessing the Planning Decade

As has been documented in the preceding pages, the last decade prior to India's independence witnessed an exercise in and an engagement with planning as the colonial state and various nationalist groups from different vantage points presented their respective plans for developing India. Beginning from 1938, when the Congress created its National Planning Committee and various subcommittees to deliberate on a future course of progress for the anticipated new nation, all through the 1940s, the interest in planning remained unabated as through it a new role was being envisaged and carved out for the nation in the making.

In early 1940s the colonial state through its newly founded Planning and Development Department, floated many schemes and rendered numerous reports for India's development and reconstruction. The Kheraghat (Sir Feroz Kheraghat) scheme and report in the realm of agriculture, Burn's report and model for industry etc., and similar such schemes were contemplated.⁵⁵⁵ As already discussed, Sir Adershir Dalal was to steer the Planning and Development Department established in 1944 and was also associated with the Bombay Plan in parallel as a member. He was the link between the colonial state and the Indian industrial and business world. However, before the colonial Planning and Development Department could produce a comprehensive plan it was abolished in 1946. In comparative sense, it was expected that the colonial state would come up with not only a denser and comprehensive plan, but a more pragmatic and implementable plan than plans produced by the Congress's NPC or the Bombay Plan produced by Indian industrialists. This expectation remained unfulfilled. More so, because as a retreating power the colonial state did not have the time and commitment to link and thread together the numerous discrete reports on various sectors and schemes. These very important and meaningful reports could never be condensed into a comprehensive plan document by the colonial state. The extent and nature of selective borrowings from these colonial government reports and schemes by the planners of the sovereign nation state in various five year plans demand further in depth research. A contemporary prescient economist who kept a keen eye on the planning processes had hinted about such selective borrowings. His balanced opinion, in his own words, reveals the same:

⁵⁵⁵ D.S. Nag, *A Study of Economic Plans for India*.

Structurally the First Five-Year Plan may be said to be an offspring of the Bombay Plan. The formulation of a growth target, the application of the concept of investment by ‘created money’ which is another name for ‘deficit-financing’ — all these are apparently derived from the Bombay Plan. If, however, the structure is based on the Bombay Plan, its inspiration is derived from the National Planning Committee and its contents largely from the official Reconstruction Programmes. The later emphasis on Socialism may perhaps be traced to the framework of the People’s Plan.⁵⁵⁶

Various groups who produced various schemes at the national spectrum had they sat together to create a condensed comprehensive national plan document the story would have been very different. Nevertheless, the sovereign republic of India created its own Planning Commission in March 1950 through a resolution of the central cabinet. It is to be clearly understood that the Planning Commission was not created or mandated by any article of the Constitution.⁵⁵⁷

Second World War and Science: Post War Reconstruction and India

Notably, the Indian planning exercise of the 1930s and 40s had an international dimension to it and took place in the context of larger developments shaping the first half of the twentieth century. One of the most influential factors was the Soviet experiment in planning in the late 1920s and 30s which inspired and drew admiration from several quarters. The success of planning in three compressed decades made the USSR one of the most formidable technological states. Its role in the Second World War along with Britain and America was the final test of the productive capacity of the industrial-military complex that the USSR had become. It served as an example for countries like India that saw Russia as an exemplar for the planned leap-frogging.

Nehru himself was an ardent admirer of Russia and had first visited it in 1927 on the 10th anniversary of the Russian Revolution. In 1955, he visited Russia again as Prime Minister and stayed for 16 days.⁵⁵⁸ The success of planning with socialism convinced him, to an extent, about the Russian pattern of industrialisation and the ways in which Indian planning should be made amenable to learn and adapt some aspects of that experience.

Among those involved in the Indian planning exercise, M.N. Saha too was keenly inspired by the Russian experiment. Like Nehru, Saha had also visited Russia in 1945 and he

⁵⁵⁶ A.H. Hanson, *The Process of Planning: A Study of India’s Five-Year Plans 1950-1964*, pp. 43-44. Also see Foreword by A.K. Das Gupta to Radharani Choudhury, *The Plan for Economic Development for India*, Calcutta: 1959, p. vii.

⁵⁵⁷ Unlike the Planning Commission, the Finance Commission and the office of the Comptroller Auditor General (CAG) are mandated and sanctioned by the articles of the Indian Constitution.

⁵⁵⁸ *Jawaharlal Nehru in the Soviet Union*, Moscow: State Fine Arts Publishing House, 1955.

viewed it from a mature comparative framework.⁵⁵⁹ Russia provided a live example of leapfrogging to industrial modernity with production at such a large scale that it provided a sure answer to the abject perpetual poverty as was prevalent in India—a challenge that the new Indian republic had to face, mitigate and overcome in the shortest period of time. The Indian nation state had to derive clue from the USSR experiment not just in planning for science and technology but deploying science and technology for planning the nation state in its entirety. Through his journal *Science and Culture*, Saha mooted the idea of planning and canvassed and campaigned for almost a decade for scientism based planning where scientists had a lead role as experts in the planning process. It is in this context that he elicited the attention of planners and scientists towards the achievement of the Russian planning exercise constantly through his journal. He invoked the Soviet⁵⁶⁰ example for inspiration and not for blind emulation, as through his journal, almost on the eve of independence he clarified, ‘the Philosophy and the pattern of “Planning Machinery” has varied widely from country to country, and according to its traditions and standard of development has changed shape with changing conditions.’⁵⁶¹ Before the attainment of sovereign republican status and in order to concretise the debates fostered by the plethora of plans in the preceding years both by the colonial government and the Indian intelligentsia including scientists, industrialists and economists, it was necessary to spell out the frame for a planning machinery for the new nation state.

In the 1930s, the worldwide economic depression served as another major context that spurred the Indian planning exercise. To recover from the effects of the depression, even capitalist countries were drawn towards planning following its success in the USSR. Elaborating about the patterns of planning in different countries, *Science and Culture* in the essay titled ‘Patterns of Planning in Different Countries’ informs and argues that

even in the United States, the classic land of private enterprise, a good deal of planning has been done under the name “New Deal”, and through such agencies as the National Resources Planning Commission. The “New Deal” owed its strength to the economic crisis of 1931, and though it was the baby of the late President Roosevelt, and is now being killed by the resurgence of Republican capitalism, it was a vigorous baby during thirteen years of Roosevelt regime and was responsible for much good work, amongst

⁵⁵⁹ M.N. Saha, *My Experiences in Soviet Russia*, Calcutta: The Bookman, 1947.

⁵⁶⁰ *Science and Culture* again reminds its readers that ‘Planning has been a permanent feature of most governments of the world ever since Soviet Russia set the example by establishing the state planning commission (the Gosplan) in 1921.’ ‘Patterns of Planning in Different Countries’, *Science and Culture*, vol. XII, no. 7, Jan 1947, p. 297.

The same issue of the journal also presents a short account of planning of Russia, in all probability to underline the intimate relationship between socialism, socialist state and planning. See ‘The Development of Soviet Economic System’, *Science and Culture*, vol. XII, no. 7, Jan 1947, pp. 301-07.

⁵⁶¹ ‘Patterns of Planning in Different Countries’, *Science and Culture*, vol. XII, no. 7, Jan 1947, p. 297.

others the Tennessee Valley Authority, the construction of great dams over the Colorado and the Columbia Rivers by the Bureau of Reclamation. The “Brain-trust” formed by Roosevelt consisting of distinguished university men, and industrial employees, director of scientific and technical research institutes, and experts in different lines was the moving force behind the “New Deal.”⁵⁶²

The essay further recounts the necessity and practice of planning in the United Kingdom, Sweden and France through succinct glimpses of patterns and instances of planning in these countries and tries to establish that each successful nation state in the past, socialist or capitalist, has relied on planning and that scientists had a great role in planning. Thus India too, it was argued, must evolve its own planning machinery with reference to the challenges in the wake of decolonisation and must accord a viable role to its scientists not only in the post World War reconstruction but planning the nation in the long term.

The legacy of the Second World War had institutionalised technological secrecy with the Cold War buttressing it. Britain came out victorious along with the allied powers. But it was a receding and losing world power. In the aftermath of the Bretton Woods and in light of the efforts and predictions of the proverbial and enigmatic White House bureaucrat Henry Dexter White, the power had decisively shifted across the Pacific to America. The dollar command economy was to be ushered in. The only purchasing power that India had was the sterling accumulation in Britain’s hand whose future was subject to negotiation and bargain as Britain itself was a bartered economy.

The participation of the colony almost as an autonomous entity in the Bretton Woods conference that led to the formation of the World Bank in 1944 was a defining moment. The Indian delegation led by the finance member, Sir Jeremy Raisman included Sir C.D. Deshmukh (the first Indian Governor of RBI), Sir Theodore Gregory, the economic adviser and two non-official members — Sir Shanmukham Chetty and A.D. Shroff.⁵⁶³ Led by Shroff, the sympathisers and articulators of Bombay plan, and the defenders of capitalism and free and private enterprise in the long run, created the Forum of Free Enterprise in 1956. This strand of thinking was to remain prevalent in Indian economic life and vied to regain their space and role in the national economy.

⁵⁶² ‘Patterns of Planning in Different Countries’, *Science and Culture*, vol. XII, no. 7, Jan 1947, p. 297.

⁵⁶³ ‘Report of the Indian delegation to the United Nations Monetary and Financial Conference at Bretton Woods (1-22 July 1944)’. Delhi, 1945. Also see Eric Helleiner, ‘India and the Neglected Development Dimensions of Bretton Woods’, *EPW*, vol. L, no. 29, pp. 31-39.

Planning in Independent India: Planning for Science or Science in Planning

The creation of the Advisory Planning Board with Nehru as Vice-Chairman by the Interim Government in 1946 signaled a step towards the realisation of the decade long planning exercise that had begun in 1938. Following independence, the Congress Economic Programme Committee recommended the formation of a Planning Commission on a permanent basis.⁵⁶⁴ On Nehru's request, Dr Solomon Trone, an American development expert with experience of countries like USSR, China and Japan, analysed Indian planning and also recommended the setting up of a Planning Commission as an autonomous body and the creation of capital goods and heavy industries.

It is in the context of Nehru's simultaneous association with both the Planning Commission and the scientific body that provided inputs for industrialisation that Baldev Singh dates Nehru's association with the CSIR from 23 August 1947, in the immediate aftermath of the country's independence.⁵⁶⁵ Sir C.V. Raman with his pithy sense of humour called this association the 'Nehru-Bhatnagar Effect'.⁵⁶⁶ This effect was to produce a chain of laboratories to act as the R and D base for state led industrialisation. However, as Singh clarifies, the actual credit of founding the CSIR goes to Sir A. Ramaswami Mudaliar who was the Commerce member in the Viceroy's Executive Council and was instrumental in establishing the Board of Scientific and Industrial Research (BSIR) in 1940 and the Council of Scientific and Industrial Research (CSIR) in 1942, serving as the first president of both.⁵⁶⁷ As mentioned earlier, the BSIR was established to advise the government on scientific and industrial research contingent to the demands created by the Second World War. The Alipore Test House at Calcutta housed the initial laboratory of the BSIR, which was shifted two years later to Delhi, where it was accommodated in the newly built physics and chemistry laboratories of Delhi University.⁵⁶⁸ It was in this decade that science education began in right earnest at Delhi University. The BSIR's close links with the new science departments being created and made functional in Delhi University during its incipient stage is noteworthy.

⁵⁶⁴ H.K. Paranjape, *Jawaharlal Nehru and the Planning Commission*, New Delhi: The Indian Institute of Public Administration, 1964, p. 4.

⁵⁶⁵ Baldev Singh, 'Jawaharlal Nehru and the CSIR', NMML Occasional Paper no. XIII, New Delhi: NMML, 1990, p. 1.

⁵⁶⁶ Baldev Singh, 'Jawaharlal Nehru and the CSIR', p. 1.

⁵⁶⁷ Baldev Singh, 'Jawaharlal Nehru and the CSIR', pp. 1-2.

⁵⁶⁸ Indian Science Congress Supplement, *Science and Culture*, vol. XII, no. 7, 1947, p. 10.

However, this linkage of the BSIR turned CSIR to the university system was severed within a few years. This parting of ways of the research laboratories from the university system and the absence of a live synergy between the university science establishment and the CSIR specialised labs became a matter of lament among many senior scientists. C.V. Raman and Saha were among those who lamented this parting of ways. It is in this sense that Raman's dig at the rapid inauguration of specialised national R & D laboratories by Nehru and Bhatnagar without a live linkage to the university establishment becomes meaningful. The serious consequences of this chasm between incubation of science in universities and application of science in research laboratories without much blueprint of their relationship from the very early decades of science institution building was underscored sarcastically by Raman as the 'Bhatnagar effect'. Through this, the Nobel laureate known for the 'Raman effect' drew attention to the phenomenon of creating CSIR labs in a hurry which depleted the pool of science talent within the university without any planning and arrangement for its replenishment. This could also be read as the old style 'wax and string' science and scientists hinting sarcastically to the emergence of big industrial science and breakneck industrialisation. The pun of the remark blended humour and irony but its pain haunted Indian universities for a long time to come.⁵⁶⁹

This should not be misconstrued as Raman being against industrialisation and industrial research and development per se but that he wanted the role of universities and their science departments in particular to be planned and involved in the larger project of industrial research and nation building. Unlike Raman, Saha who had been intimately involved with the NPC and an outright votary of heavy industrialisation, too constantly focused on fostering science within the university. He endeavoured to bring nuclear physics and research facilities associated with it within the ambit of the university. He wanted university men to lead the brain trust of the nation. He became an ardent campaigner to incubate different emerging specialisation of science within the university system. For instance, Saha exhorted the founder of BHU, none other than Madan Mohan Malaviya, to establish an observatory within the university so that students of a colonised nation could also look up to the skies.⁵⁷⁰ Later, in the aftermath of the Second World War, Saha as chairman of

⁵⁶⁹ Similar concerns have been articulated in an editorial in *Current Science*. See P. Balaram, 'Council of Scientific and Industrial Research' (Editorial Comment), *Current Science*, vol. 83, no. 6, 2002, pp. 673-74.

⁵⁷⁰ The testimony of the above orientation of Saha can be found in a letter compiled in a commemoration volume on Madan Mohan Malaviya in the 1930s. See M.N. Saha, 'A Plea for an Astronomical Observatory at Benares', in *Parmarshdaspad Bharatbhushan Mahamana Shri Pandit Madanmohan Malaviyaji ke Kar Kamalon mein Unki Sattarvih Varshghat ke Upalaksh mein Saadar Samarpith*, Benares: Banaras Vishwa Vidhyalaya, 1932, pp. 861-71.

a committee for the planning of post-war development of astronomy and astrophysics appointed by the Government of India, recommended the establishment of astronomical laboratories at the universities of Aligarh, Delhi and Banaras.⁵⁷¹ The committee also ‘hoped that the example of the Government of India [would] be followed by the Provincial Governments in taking similar steps for the promotion of astronomical and astrophysical work in their respective universities.’⁵⁷² Further, in the long run, it visualised the ‘establishment in Northern India of a Central Astronomical Observatory provided with a large sized telescope for special stellar work.’⁵⁷³ It was in this sense, Saha constantly endeavoured to make the university the site for the incubation of science.⁵⁷⁴

As mentioned earlier, the colonial government’s interest and advocacy of planning arose from war-time exigencies. In fact, the transformation of BSIR to CSIR took place within the context of the war. War induced industrialisation was quickly adapted and became an essential component of governmental initiative in planning. War contingent industrial needs were to pave the way for the establishment of CSIR labs. Prior to Sir Ramaswami’s appointment as member of the British War Cabinet in 1942, efforts were underway to prepare the blueprint for establishing five laboratories and to compile a dictionary of raw materials in India.⁵⁷⁵ Professor A.V. Hill’s visit to India in November 1943 further catalysed the ongoing discussion of the organisation of scientific and industrial research in India.

Under the aegis of the CSIR, a chain of ten to eleven national laboratories may have been planned before independence but it came into being through the exertions of the independent Government of India when it embarked on its republican journey. These were nurtured, tuned and expanded by the sovereign republic of India with Bhatnagar being the chief architect. From the days when Nehru became one of the prime protagonists of planning through his participation in the massive NPC exercise, he strongly advocated for the construction of basic infrastructure for initiating industrialisation based development in the country. As stated in his address to the 34th Indian Science Congress on the eve of

⁵⁷¹ The January 1947 issue of *Science and Culture* in its ‘Notes and News’ section reported about this committee: ‘Towards the end of 1945, Government of India appointed a committee for the planning of the post-war development of astronomy and astrophysics in India, with Prof. M.N. Saha as chairman and Dr S.K. Banerji, Prof M. Ishaque Dr. A.L. Narayan, Prof. D.S. Kothari, Prof. K.S. Krishnan, Rao Shaheb T.P. Bhaskara Sastri, Prof. S. Bhagavantam, and Prof A.C. Banerji as members.’ See ‘Notes and News’, *Science and Culture*, vol. XII, no. 7, 1947, p. 326.

⁵⁷² ‘Notes and News’, *Science and Culture*, vol. XII, no. 7, 1947, p. 326.

⁵⁷³ *Ibid.*, p. 326.

⁵⁷⁴ For Saha, had he been alive, it would be a matter of great satisfaction for him that two of his close associates – D.S. Kothari and B.D. Nag Chaudhuri – were to later lend their hand in the founding of JNU.

⁵⁷⁵ Baldev Singh, ‘Jawaharlal Nehru and the CSIR’, p. 2.

independence, the foremost objective of science was to build a free and self-reliant India.⁵⁷⁶ Nehru was hopeful that science and scientists ‘will try to solve the problems of new India by rapid, planned development on all sectors and try to make her more and more scientifically minded,’⁵⁷⁷ and that ‘science must think in terms of the 400 hundred million persons in India’.⁵⁷⁸ To accomplish this, a grand scale of coordinated planning was the need of the hour.

As evident, the evolution of BSIR and subsequently CSIR, under the aegis of the government from early 1940s, ran parallel to the concerns of planning articulated through the NPC and also through the half-hearted efforts of the government via the Planning and Development department led by Ardeshir Dalal. In reality the CSIR was adapted and shaped after 1947 as per the industrial needs of the sovereign welfare state. The stamp and shadow of the entire NPC exercise constituted the backdrop for the evolution of CSIR and role in independent India. In order to concretise his ideas of planning and development and to realise the inherent need and requirement of industrialisation, Nehru was prudent to lend himself as the converging and nodal point both for the exercise of planning and of the parallel organisation building of industrial research. Nehru therefore took CSIR under his wings and took more than a personal interest in steering the council remaining its President throughout his Prime Ministerial tenure. However, as Nehru believed that infrastructural building for scientific and industrial research was crucial for the nation’s future, his engagement extended beyond the CSIR to include a wide gamut of scientific activities related to national development.

Thus what science was to achieve and what planning was to achieve were to converge. Science was to achieve the removal of poverty of India’s millions through a planned and phased endeavour within the broader framework of the national economy. The national laboratories were to be the initiator and catalyst for the positive and productive gestation and were envisaged by Nehru as ‘temples of science built for the service of our motherland.’⁵⁷⁹ He was aware that no quick-fix formula would work. In viewing scientific research in relation to planning, he emphasised the need for a ‘suitable planning machinery’ for the government which ultimately took the shape of the Planning Commission in 1950 to coordinate the activities of planning and CSIR.

⁵⁷⁶ ‘Presidential Address at the 34th session of the Indian Science Congress held at Delhi, 3 January 1947’, in Baldev Singh (ed.), *Jawaharlal Nehru on Science: Speeches delivered at the Annual Sessions of the Indian Science Congress*, New Delhi: Nehru Memorial Museum and Library, 1986, p. 5.

⁵⁷⁷ *Ibid.*, p. 5.

⁵⁷⁸ *Ibid.*, p. 5.

⁵⁷⁹ Baldev Singh (ed.), *Jawaharlal Nehru on Science and Society: A Collection of His Writings and Speeches*, New Delhi: Nehru Memorial Museum and Library, 1988, p. 120.

By the end of the First Five Year plan the focus on infrastructural building for research and development had yielded and made operational eleven national laboratories with regional laboratories also being envisaged and built. With the CSIR acquiring a level of stability, the Second Five Year plan focused on the need to better synchronise the CSIR and planning efforts. The ball was set rolling by the appointment of

[a] committee under the chairmanship of Sir Alfred Egerton [to review] the work and programmes of the CSIR Laboratories. Later, the Governing Body appointed a “Special Committee” with Dr. J.C. Ghosh as Chairman to examine the Egerton Report and make its recommendations. The Special Committee was asked by Jawaharlal Nehru, as President of CSIR “to advise the Planning Commission on the scientific aspects of Planning”. To ensure better coordination between CSIR and the Planning Commission, Prof. P.C. Mahalanobis was nominated as additional member on the “Special Committee”. *Dr. Ghosh, as Chairman of the “Special Committee” addressed letters to eminent scientists, national laboratories and other research institutions inviting specific research projects for scientific and industrial development which should be included in the Second Five Year Plan.*⁵⁸⁰

To strengthen scientific and industrial research during the Second Five Year plan the government appointed a panel of scientists, which included the CSIR’s Director-General, and some directors of national laboratories to advise and assist the Planning Commission. What Nehru desired was a scientific study of the pressing problems of development and the application of research findings to them. He was clear about the function and goal of science in serving humanity and society and envisaged a distinct role for scientists that he often reiterated during this period.⁵⁸¹

By the end of 1961, there were almost 23 national and regional laboratories of CSIR i.e. by the Third Five Year plan a sturdy chain of national laboratories had emerged. The CSIR’s annual budget rose from a paltry amount of Rs 60 lakhs in 1947-48 to more than Rs 12 crores by 1963-64.⁵⁸² For 17 years, from independence until his death in 1964, the CSIR progressed stridently under the guidance and leadership of Nehru.

Planning and the thrust for industrialisation in independent India also led to government initiatives on scientific manpower. Professor A.V. Hill in his report on science in India had pointed out the need to set up a Central Registry of Scientific Personnel in India. In response, the government entrusted the National Institute of Sciences with the task of enlisting qualified scientists and technologists but little progress was achieved on this

⁵⁸⁰ Baldev Singh, ‘Jawaharlal Nehru and the CSIR’, p. 16; emphasis added.

⁵⁸¹ See speeches and addresses by Nehru in Baldev Singh (ed.), *Jawaharlal Nehru on Science*, pp. 33-59.

⁵⁸² Baldev Singh, ‘Jawaharlal Nehru and the CSIR’, p. 25.

front.⁵⁸³ The appointment of a Scientific Manpower Committee on the eve of independence and renewed efforts by the National Institute of Sciences under the CSIR's aegis brought the National Register Unit into being which tabulated the total pool of scientists, engineers and medical men in the country through a series of rosters.⁵⁸⁴ Complementing this exercise, a National Register for overseas Indian scientists was initiated in 1956 and, the same year, the CSIR introduced a scheme allowing scientists who had retired to continue their research. In 1958, a 'Scientists Pool Scheme', initially with 100 and later 200 positions, was approved to provide provisional placements for scientists trained abroad and seeking openings in India.⁵⁸⁵ A monthly bulletin called 'Technical Manpower' was also brought out to disseminate information on employment opportunities in science and technology.

Conclusion

The dominant planning exercise in the 1940s argued for and aided the acceptance of a model of a highly centralised nation state. State led capital-intensive heavy industrialisation augmented this centralisation. The notion of a powerful nation state based on the same helped in the acceptance of the centralised and powerful nation state among scientists who were in the leadership position and they further forwarded the mantle of a strong nation.

During the high tide of the swadeshi spirit, it was possible for crafts to be in synergy with science based everyday technologies and together they were construed as the manifestation of swadeshi nationalism. But after the massive planning exercise and its conflict and debates with the Gandhian exercise of village industrialism based on non violence such trends and spirit were gradually elbowed out though not without protest. The dominant planning exercise saw salvation in big science, heavy industrialisation, intensive capital investment, and a centralised apparatus to coordinate all these efforts. These were identified not just as the need of the hour, but as the components of the model on which the sovereign nation state was to take shape.

Centralised planning gave legitimacy to big science and they both in turn provided legitimacy to capital-intensive heavy industrialisation. Whether the capitalists led it or the nation state led it, it did not disturb the causality of this chain. The sovereign republic that emerged with its Planning Commission was now to identify with big science and the nation was to get defined by progress in nuclear science, space, and such arenas of activity.

⁵⁸³ Ibid., pp. 19-20.

⁵⁸⁴ Ibid., pp. 19-20.

⁵⁸⁵ The CSIR along with the Union Public Service Commission was given charge of this scheme. See Baldev Singh, p. 22.

Civilisational crafts did not disappear but could be carried to the extent society required and sustained them. Craft remained within Indian society though it no longer defined its quest for modernity as it had during the swadeshi era. The possibilities of everyday technologies to act as a mediator and moderator between cottage industries and craft traditions on the one hand and high technology and industrialisation on the other, was never initiated on practical terms. In the process, many craft traditions were also lost.