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Inequitable Industrialization: Metal mineral-based development in India, 1950 to 1980

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Abstract

We appraise the simultaneous development of industrialization and increase in inequality in India, 1950-1980, through the organizational lens of MR Bhagavan (1985). Some contradictions from the period persist into the 21st century and we, constructively, employ the framework of Samir Amin (2012) to recommend a refocussing of attention to agriculture in the Indian economy.

Keywords: *Industrialization; Planning; Inequality*

I. Introduction

We examine the early, post-Independence development experience of India through the lens of mineral-based industrialisation.[1] Retracing a history engendered by mass production and what is now called the developmental state, we conclude that though largely successful in erecting capital goods and other manufacturing industries, India has been equally unsuccessful in creating employment and reversing impoverishment of the majority. We argue further that the political-economic process of mineral-based industrialization established a structure of inequality by 1980 which continues to shape industrial growth and development in India today. Given augmented mineral demand arising from what Dinneen (2023) has termed "the renewable energy revolution," reflecting on the early post-Independence development history of India is useful to help assess prospects for mineral-rich countries of the developing world in the twenty-first century.

The discussion is divided into four sections. The first provides an overview of the policy frame of mineral-based industrialization in the immediate post-Independence period prior to the beginning of trade liberalization, circa 1980. Debates around the definition of development, labour rights, and the role of the state are explored. The second section assesses the industrial strength achieved by the 1960s and 70s using measures of the Indian state as well as inputs by Indian scholars of the time. The third section analyses the array of contradictions arising from mineral-based industrialization. The fourth proposes the beginnings of alternatives to mineral-based industrialisation within the contemporary context of the global ecological crisis and extreme wealth polarisation in India.

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[1]We define 'mineral-based industrialisation' as mass production based on new metal minerals like nickel, chromium, cobalt, manganese and bauxite, that first took form in the early twentieth century in Western Europe, the USA and Japan (Valiani, 2002).

II. Policy frame and structure of Indian industrialization, 1940 to 1960

As arguably the most economically important colony of the British Empire, awareness of the exploitation of colonial powers was high in India in the 1940s. Among the political elite, Dr. Ambedkar, Minister of Labour of the Central Cabinet (1942-46), Dalit (lower caste) leader, and author of India's Constitution had been central in organising the 1938 general strike of textile workers. Some 100,000 textile manufacturing workers from 60 different unions came together to protest the British Raj's move to ban the right to strike and curtail other workers' rights through the Industrial Disputes Bill (Thorat: 2000, 1238).

The Fabian Socialist, Jawaharlal Nehru, the first Prime Minister of India, favoured state-led planning and control of the industrialization process to the exclusion of foreign firms to ensure "independent" Indian development (Bhagavan:1985, 309; Mukerji: 2012, 203). Both Ambedkar and Nehru were influenced by the notion of the command economy within the context of the growing, large scale industrialization of the United Socialist Soviet Republic.

Differing significantly from these visions was that of independence activist and Quit India movement leader, Mahatma Gandhi. Critical of industrialisation processes in both the capitalist west, and state socialist Soviet Union, Gandhi envisioned post-Independence development built on a small village economy consisting of small scale manufacturing, and agriculture based on simple hand technology (Mukerji: 2012).

In terms of class and labour relations, Gandhi conceived of cooperatives and benevolent upper castes in the village economy. He did not question the fundamental inequality of the caste system and its intersections with class taking shape by the early twentieth century (Thorat: 1999). In contrast, following from his labour organising of the 1920s and 30s, and personal experiences of discrimination and exclusion as a Dalit, Dr. Ambedkar advocated for reform in both agricultural and industrial labor relations. This included legal measures to secure occupancy rights, minimum wages, and debt relief for landless agricultural workers in the 1920s, and post-1947 labour laws entailing recognition of unions, mechanisms for dispute resolution, and the right of workers to co-determine labor policy with employers (Thorat: 2000, 1238).

The Indian version of command economy that evolved by the 1950s was successive five year plans with a state focus on "heavy industry strategy" or development of the capital goods and intermediate goods sectors (Bhagavan: 1985, 309). The logic behind the strategy originated in Soviet economist G.A. Feldman's notion of prioritising investment in capital goods to increase the rate of growth of consumption in the medium term. This differs from the strategy of prioritising investment in the mass production of consumer goods so as to increase consumption in the near term (Mazumdar: 1991, 1198).

Rather than being of a socialist nature, even as defined by the state socialism of the time, the chosen strategy was driven by a combination of nationalism and pragmatism whereby the Indian state opposed both domination by foreign capital and the formation of Indian private cartels. In practical terms, the investment required for capital goods production was too large for Indian capitalists of the 1950s leaving it to the public sector to provide industrial inputs and ultimately the principal stimulus of national growth (Bhagavan: 1985, 309).

The Indian statistician, P. C. Mahalanobis' version of Feldman's model also accounted for small scale industry, the concern of Gandhi and the Gandhian economists. As part of the five year plans, protection was provided by the state to small scale manufacturers (employing 100 or less workers and limited fixed capital) primarily by closing markets to investment by new or/and large companies. Small scale industry in the Mahalanobis model was seen as providing the consumer goods required by both the majority of the country's population living in rural areas and the nascent industrial proletariat (Mazumdar: 1991).

In concrete terms, from the beginning of the second five year plan in 1956 the Indian state moved to own and control the development of vertically integrated, metal mineral-based industries producing inputs required to manufacture machine tools, heavy electrical equipment, transport equipment, and fertilisers (Bhagavan: 1985). Under the Department of Iron and Steel and the Department of Mines and Metals within the Ministry of Steel and Mines, public sector firms carried out coal extraction, coal-based power generation, price-setting and distribution of coal and coke, as well as the extraction of iron, manganese, copper, lead, zinc, dolomite, limestone, mica, pyrites and lignite. In terms of manufacturing, the public sector carried out the production of steel, the machinery required to extract minerals and produce steel, as well as the production of transport equipment and military armaments (Bhagavan: 1985; Ministry of Steel and Mines: 1965; Narayanaswami: 1962;).[2] The extent of steel-related

[2]The large public sector firms of the 1950s and 1960s and their major products include: Singareni Collieries Company (coal extraction, washing and electricity generation), National Coal Development Corporation (coal extraction and washing), National Mineral Development Corporation (extraction of iron, copper, lead, zinc, gold, diamonds, bauxite, limestone, tungsten), Indian Copper Corporation (copper smelting), Metal Corporation of India (smelting of non-ferrous minerals), Mazagon Dock Shipbuilders (naval ships, submarines, bulk carriers), Goa Shipyard (naval ships), Garden Reach Shipbuilders (naval ships), Hindustan Aeronautics (aerospace and defence-related capital goods), Bharat

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mineral extraction occurring as early as 1960, the end of the second five year plan, was considerable, including 573 manganese mines, 243 iron ore mines and 720 mica mines (Narayanaswami: 1962, 1057).

Given the large quantity of water required for mineral extraction and processing, the Ministry of Steel and Mines also engaged in water infrastructure construction. In 1964, the National Coal Development Corporation, for instance, completed permanent water supply schemes for two collieries, was near completion of two more, and was in the process of constructing six permanent water supply schemes for five collieries and one coal washery (Ministry of Steel and Mines: 1965, 4).

Skills training was another aspect of production activity of the National Coal Development Corporation, and the National Mineral Development Corporation. Along with the Ministry of Labour and Employment, the National Coal Development Corporation, for example, operated five mining training schools. Again taking 1964 as an example, the Department of Mines and Metals reported the successful training of 39 fitters, 36 Sirdars (upper level managers), and 21 assistant surveyors, all of whom had been absorbed in various collieries of the Corporation by the end of 1964 (Ministry of Steel and Mines: 1965, 3). Similarly, the Indian Bureau of Mines, also under the Ministry of Steel and Mines, ran a workshop conducting apprenticeships in drilling, applied engineering, and applied geology (Ministry of Steel and Mines: 1965, 26).

Social infrastructure was another part of the activity of the Ministry of Steel and Mines albeit limited to the needs of its employees. By the end of 1964, the National Coal Development Corporation alone had built 33 hospitals (amounting to 383 beds), 16,279 miners' quarters, 1,175 "cheap houses," and 4,137 employee quarters. In addition, in 1964 it invested in primary and middle schools for the children of employees, "education-cum-recreation facilities," cooperative stores, and cooperative credit facilities (Ministry of Steel and Mines: 1965, 4).

Adding to this massive endeavour of public enterprise was a handful of private firms involved in iron and manganese extraction, steel and cement production, and capital goods manufacturing.[3] The state imposed strict export quotas on these firms to ensure that the bulk of India's raw materials were available for domestic production. After 1953, for instance, private producers of manganese and iron were permitted to export only the equivalent of 20 per cent of the best year's mineral production over a period of three years (The Economic Weekly: 1953).

Beyond production, the Indian state provided protection from foreign competition to domestic industrial firms on the basis of four criteria: a) whether there was a good internal market and availability of skilled labor (disregarding issues of raw material shortage), b) whether there was a promising export market, c) industries having yet to fill domestic demand, and d) industries requiring large investment (Bhagavan: 1985, 306). For purposes of determining the degree of protection provided, industry was divided into three categories: 1) defense and strategic industries which were protected regardless of cost, 2) basic industries protected with periodic review, and 3) other industries protected on the basis of cost-benefit analysis (Bhagavan: 1985, 307). In terms of foreign exchange, first priority for its use was given to public sector firms needing foreign equipment and expertise followed by new projects for which local capital was not available, and lastly, the expansion of industries not yet meeting domestic demand (Bhagavan: 1985, 307).

With the escalation of oil prices in the early 1970s, the Indian state moved to nationalise the entire coal industry in 1972-73 beginning with coking coal followed by other coal mining being carried out by private firms. The overall goal was to increase coal production and to decrease oil consumption. Steel and coke oven plants, railways, thermal power and cement composed 70 per cent of total demand for coal by 1979, with petrochemical and fertiliser production forming the major non-energy demand for coal (Government of India Planning Commission: 1979, 82). As with state planning and practice in iron extraction, iron processing, and production into steel, the 1979 report of the Working Group on Energy Policy highlights "the need to synchronise investment in coal production and coal transport by railways… so that transport would not become a constraint to the use of coal" (Government of India Planning Commission: 1979, 85). Similarly, the Report recommends that the planning of thermal power stations based on mid-coal (an intermediate material in coal processing) proceed "in step" with the planning of coal washeries (Government of India Planning Commission: 1979, 86).

Returning to the question of class and labor relations, within the larger economic planning approach the Indian state made a concerted effort to control the wages of industrial workers. This was despite legislation enacted in the late 1940s that recognised unions and established tripartite structures for collective bargaining. The first five year plan report, for instance, highlights the "dangers of a wage-price spiral," and points out that both profits and

Electronics (electronic needs of defence services and other electronic machinery), Bharat Earth Movers (mining equipment, rail coaches, spare parts), Bharat Heavy Electricals (electricity producing equipment, transport, power transmission).

[3]Private sector firms involved in mineral extraction and processing, cement and steel production, and capital goods manufacturing in the 1940s, 50s and 60s include: Indian Sugar and General Engineering Corporation, Andrew Yule Company, Amar Agricultural Machinery Group, Saboo Industries, and Lakshmi Machine Works.

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wages had risen during and after World War II. In turn, the Planning Commission called for restrictions on pay rises for workers, manager remuneration, and the distribution of profits (Planning Commission: 1952, as cited by Subramanian: 2001, 141). State opposition to collective bargaining persisted into the 1980s. This was despite union resistance which resulted by the 1960s in the establishment of a degree of bilateral negotiations between public sector firm management bodies and unions.

The basic tension revolved around Planning Commission interests in meeting national annual targets and avoiding the spread of the "imitation effect," or the extension of wage increases gained by workers in one public unit, to other units, via union pressure (Subramanian: 2001, 140). Management bodies of individual public sector units, on the other hand, took a more conciliatory approach toward union wage demands in the interest of avoiding industrial action which could prevent units from meeting centrally-set, unit production targets (Subramanian: 2001, 140-141).

III. Industrial performance and strength, 1960-1980

Overall, between 1960 and 1978 total manufacturing (capital, intermediate and consumer goods) grew in India at a real annual average of 7 per cent (Bhagavan: 1985, 320). Real value added grew in the capital goods sector at an annual average of 7 per cent, in the intermediate goods sector at 14 per cent, and in consumer goods at 3 per cent (See Tables 1 and 2).[4] By the early 1970s, India had achieved near total self-sufficiency in the capacity to produce most of the standard modern capital goods required by Indian industry (Bhagavan: 1985, 323). Backward and forward linkages in machine tools, chemical equipment and heavy electricals in particular were deep, wide, and dense (Bhagavan: 1985, 325).

Table 1: *Real Annual Growth by Sector, 1960–1978 (Percentage change of value added in constant 1960 prices)*

Sector	**1961–65** (Third Plan)	**1966–68** (Annual Plans)	**1969–73** (Fourth Plan)	**1974–78** (Fifth Plan)	**Period Avg (1960–78)**
Capital Goods	19.4	17.6	10.4	9.6	7.2
Intermediate Goods	3.7	57.0	9.8	7.2	13.9
Consumer Goods	2.7	-4.0	-3.7	16.9	3.4
Total Manufacturing	9.7	-0.8	6.0	10.5	7.0

Source: Bhagavan (1985).

Table 2: *Real Annual Industrial Growth by Sector, 1960–1978 (Percentage change of total output in constant 1960 prices)*

Sector	**1961–65** (Third Plan)	**1966–68** (Annual Plans)	**1969–73** (Fourth Plan)	**1974–78** (Fifth Plan)	**Period Avg (1960–78)**
Capital Goods	22.1	-14.2	9.0	12.7	9.1
Intermediate Goods	5.9	48.6	6.6	13.3	14.4
Consumer Goods	4.4	2.5	-0.9	13.3	4.9
Total Manufacturing	11.2	2.3	4.5	13.1	8.3

Source: Bhagavan (1985).

In terms of the share of production held by each industrial sector, a significant shift occurred between 1955 and 1978. In 1955, consumer goods accounted for 60 per cent of manufacturing value added with intermediate goods accounting for 30 per cent and capital goods 10 per cent. By 1978, total manufacturing value added was composed almost evenly by each sector with capital and intermediate goods accounting for 35 per cent each and consumer goods accounting for 30 per cent. As Bhagavan points out, this resembled roughly the structure of industry in the USA and the United Kingdom, in the mid 1970s (Bhagavan: 1985, 317).

[4]Growth rates are analysed here in terms of real value added in constant 1960 prices. As Bhagavan (1985, 312) reasons, "value added is a truer measure than gross output…in that the monetary value of gross output includes values that arise from other sources… eg.material and energy inputs." Constant 1960 prices are used rather than current prices because the latter reflect the persistent and increasing inflation of the period.

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In detail, for the capital goods sector — prioritised from the onset — growth peaked at 19 per cent in the third five year plan (1961-65). From that time to 1980, there was a substantial slowing of real growth in capital goods (see Table 3). Overall, as shown in one of the few in depth studies of the development of the capital goods sector in India's early industrialization process, performance of the capital goods sector and its aggregate machinery sub-sector went from a high to medium level with little growth by the end of the 1970s. In other key capital goods sub-sectors from the 1950s to 1980: machine tools stagnated at low level performance; chemical equipment had high growth but on a low base; heavy electricals showed medium-level performance; and transport went from high to medium-level performance with grave negative growth (i.e. -9 per cent) in the fifth five year plan (Bhagavan: 1985, 322-323).

Finally, in terms of investment (see Table 4), for the first 15 years of state-led import-substitution industrialization (1950-1966) there was a consistent pattern of value addition in capital goods (as a share of total industrial value added) rising in tandem with investment in capital goods (as a share of total industrial investment). From 1967 to 1978, the share of capital goods value added was consistently lower than the investment share of capital goods indicating decreasing capacity utilization (Bhagavan: 1985, 323). The capital to output ratio was rising.

Table 3: *Real Annual Industrial Growth for Selected Capital Goods Sub-Sectors, 1960–1978*
(Percentage change of value added in constant 1960 prices)

Sub-Sector	1961–65 (Third Plan)	1966–68 (Annual Plans)	1969–73 (Fourth Plan)	1974–78 (Fifth Plan)	Period Avg (1960–78)
All Machinery and Equipment	12.7	0.2	13.8	-1.9	6.7
Machine Tools	28.7	-14.2	19.6	-0.5	9.9
Chemical Equipment[a]	37.9	-15.6	132.0	10.3	31.7
All Other Mechanical Machinery	20.1	-2.6	10.7	8.5	10.8
Heavy Electricals[b]	23.9	7.4	29.6	6.3	18.0
All Other Electrical Machinery	15.0	3.6	17.4	15.9	13.0
Transport Equipment	8.7	0.2	9.6	-9.0	2.6
Professional and Scientific Instruments	0.0	4.5	34.3	12.6	13.3

[a] 1969–71 and 1975–78 average growth rates used for Chemical Equipment.
[b] 1974–76 average growth used for Heavy Electricals.

Source: Bhagavan (1985).

Table 4: *Average Annual Real Growth of Investment by Industrial Sector, 1960–1978*
(Percentage change in constant 1960 prices)

Sector	1961–65 (Third Plan)	1966–68 (Annual Plans)	1969–73 (Fourth Plan)	1974–78 (Fifth Plan)	Period Avg (1960–78)
Capital Goods	26.0	1.7	-6.5	27.8	7.9
Intermediate Goods	8.5	2.2	-5.7	17.5	4.4
Consumer Goods	2.8	0.5	2.6	10.9	9.6
Total Manufacturing	14.7	1.8	-4.2	19.7	6.7

Source: Bhagavan (1985).

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Beyond performance, Bhagavan (1985, 311-312) elaborates three criteria for evaluating industrial strength: increase in "science-relatedness of industry," production of machine tools, and "research-intensity." This is based on Bhagwan's schema of major shifts in the production of goods beginning with the industrial revolution. In brief, in the early industrial revolution production was broken down into specialised tasks. This was followed by the replacement of human bodies with machines for certain tasks which, in turn, gave way to the assembly line principle of combining parts in steps to produce the end product. Radical change in industrial production did not occur again until the early 20th century with the introduction of the electrical, chemical, and electronics industries (Bhagavan, 1985: 312). Through the latter, principles of science were applied to industrial production, a process which is ongoing.

Applying these criteria to industry in India in the late 1970s, while India had developed the engineering, scientific and management skills required to produce capital goods — including on- and off-the-job applied training — research and development was stagnating in public sector capital goods firms by 1980 (Bhagavan: 1985, 325). Similarly, little research and development was occurring in the private sector. Bhagavan traces this and ultimately the lack of design capacity in India to its dependence on American and European technological expertise. The importation of technological expertise in standard-modern capital goods production began in the 1960s with India purchasing royalty-based technology licenses as well as drawings, documentation, and other forms of technological know-how from multinational corporations of rich countries.

In 1966, when the Indian state indicated a desire to move toward the implementation of the advanced-modern technology used in Japan and other rich countries from the 1950s, the US and UK states opposed this by halting the overseas development assistance which was the source of capital for purchasing technological knowledge. While this led to some increased collaboration between the Indian state and states of communist Europe, the Indian state also began lowering constraints on India's private sector capital goods producers for the importation of western technology. The latter was done through the provision of state subsidies and tax relief to private firms importing western technology. By the late 1970s, having increasingly divested from the capital goods sector, the Indian state liberalised the importation of special purpose and multi-purpose machine tools, particularly by promoting technological agreements with foreign firms — a move encouraged by the now large Indian private sector capital goods producing firms (Bhagavan: 1985, 307, 308, 325).

With regard to development and growth of machine tools, as alluded to earlier, Bhagavan identifies stagnation for the period in question. This pertains mainly to advanced-modern machine tools (Bhagavan: 1985, 325). In addition to the liberalization mentioned above, Bhagavan roots this stagnation in the limited demand for the products of factories using special-purpose and multi-purpose advanced-modern machine tools. On a broad scale, the fourth five year plan identifies insufficient demand as a fundamental problem. As elaborated by Minocha (1977, 10, 11): The Planning Commission has considered a fairly drastic redistribution of private consumption expenditure over the fifth plan, the average per capita consumption of the lowest 30% of income recipients would rise by as much as 59.43% and that of the top 10% would decline by 13.69% and has worked out the output growth implications of such a redistribution. The effect of redistribution of private consumption in favour of the poor would be reflected in an increase in output of some essential commodities and decline in output of some non-essential and luxury goods. There are at least 28 sectors (accounting for 2/3 of GDP in 1973-74) in which redistribution would entail a change of over 10%.

Judged then by its own benchmark, though an industrial base had been established, the Indian state's objective of expanding consumption in the medium term via concentrated investment in capital goods production à la Mahalonobis/Feldman had not been met by the 1970s. A look at the volume of industrial employment as a proportion of output, the share of wages in value of output, and the share of wages in value added by manufacture further attests to the problem of insufficient demand. Though he does not provide data, Bhagavan argues that the volume of industrial employment as a proportion of output did not increase between 1950 and 1980 (Bhagavan: 1985, 308). Providing data, Tulpule and Datta (1989, M94, M101) show that in the period 1967 to 1984 for manufacturing as a whole both the share of wages in value of output and the share of wages in value added by manufacture fell steadily though real wages rose by an average of 51.5 percent.[5] Productivity, as measured by real value added by manufacture per worker, increased in major industrial sub-sectors in the same period, namely cement, iron and steel, leather, cotton textiles and sugar (Tulpule and Datta: 1989, M102). On the whole, this data suggests a move in the wage-profit equation in favour of private and public industrial employers, feeding into insufficient demand.

[5]In greater detail, based on three year averages for the 1967-84 period, real wages (at 1960 prices) in coal mining rose by 88.8 per cent, in iron and steel 71.3 per cent, in sugar 50.7 per cent, in cement 50.8 per cent, in cotton textile 38 per cent, in paper 37.8 per cent, and in leather and tanneries 23.2 per cent (Tulpule and Datta: 1989, M101).

IV. Analyzing the contradictions

In his seminal work, *The Theory of Capitalist Development*, Paul Sweezy (1942, 180) argues that there is an inherent tendency in capitalist production to expand the capacity to produce consumption goods more rapidly than the demand for consumption goods. This tendency expresses itself in either crisis or stagnation of production which then reflects in a declining rate of national income growth. Crisis or stagnation caused by "underconsumption" breaks out first in the sphere of production of the means of production whereas crisis or stagnation caused by "overproduction" breaks out first in the sphere of production of consumer goods (Sweezy: 1942, 183) The former aptly describes the situation of India where underutilised capacity in capital goods began surfacing in the late 1960s.

Why did stagnation caused by underconsumption evolve in India by the early 1970s, a young capitalist country relative to the "advanced capitalist countries" that are the subject of Sweezy's (1942) theoretical formulations of underconsumption and overproduction? Put differently, why did a rich country problem manifest in an impoverished country with a rising rate of national income growth and abundant population to supply labor to the industrial sector?

One possible answer lies in what Mytelka (1989) refers to as the problem of "import substitute emulation." In her study of import substitution industrialization (ISI) processes in Africa, Mytelka stresses that where goods insufficiently linked to sociocultural specifics are put into production via ISI, the manufacturing 'logic' encompassed in those goods is reproduced which may or may not be appropriate to the needs of the import-emulating society. Given that much of India's technology (both capital and consumer goods) was imported from rich countries, India is likely to have imported the labor-saving technology increasingly typical of those societies by the 1950s. This would explain the diminishing proportion of wages in output and value added discussed above. In terms of consumer goods and sociocultural needs, Indian economists across the political spectrum were discussing inequality in India in the late 1970s underlining as problematic the overproduction and state subsidization of "luxury" and "semi-luxury" goods including refrigerators, air conditioners, and some 1,040 varieties of cloth (Choudhury: 1977; Mahajan: 1977; Minocha: 1977, 11, 16).[6]

Writing about the 2014 end of a growth boom in India, Jayati Ghosh offers another, less abstract explanation. Ghosh (2015, 52) argues that "the effective subsidization of the formal sector by low-paid informal activities" is a structure that was established in the pre-liberalization period and the basis of inadequate growth rates and increasing inequality that unfolded in India after 1980. Though she does not frame her discussion in Sweezy's notions of underconsumption, stagnation, or crisis, Ghosh draws connections between the lack of innovation in Indian industry and moderate economic growth and consumption rates relative to the needs of the majority. She also ties in a critique of extractive industry based industrialization, and the role of the Indian state in the pre-liberalization period. In Ghosh's (2015, 52) words: . . . new forms of capital certainly do emerge and proliferate as a result of this strategy, but they do so in a wider context in which capitalist accumulation is based essentially on extraction: of land and other natural resources, of the labor of differentiated workers, of the products of peasant cultivators and small producers of goods and services. This has reduced the incentives to focus on productivity growth and innovation as routes to more rapid growth, since state-aided primitive accumulation and socially determined extra-economic relationships provide easier and more reliable means of generating private surpluses.

Elaborating on "socially determined extra-economic relationships," Ghosh (2015, 53) underlines that "the social" is key. Institutions, fiscal planning, and the very birth and survival of business houses grew up in independent India on the basis of "primordial identities," including caste, gender, and community. These interacted with political forces, generating forms of patronage, control, and clientelism, in various forms, across India's different regions. Taking the large business houses which had evolved by the 1970s, for example, Ghosh argues that the very emergence of such capital reflected social forces and historical geographies. She underlines that into the 21st century there were still no major business groups in the North and East of the country where "traditional" business communities, or castes, do not originate; and that nationally there is not a single Dalit business group of significance. Ghosh links long-standing practices such as gender discrimination in property ownership and control that have been reinforced by corporate behaviour. Private firms have used legal structures like the Hindu Undivided Family form of ownership that deny any role to women. These social forces or/and practices have affected how large and medium business houses have made economic decisions including investment choices, employment, and output.

Reinforcing caste based differential wages and access to employment are the labor laws which, despite the late

[6]The first two issues of The Indian Economic Journal (1977, vol. 25) were dedicated to the publication of close to two dozen papers presented at a national conference problematising income inequality in India thirty years after political independence.

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Dr. Ambedkar's honourable intentions, would only assure workers' rights for the so-called, "organized sector" of the labor market. As Mukerji (2012, 211) points out: Despite enunciating specific safeguards against labor exploitation in industries, the problem still continues at several levels. Furthermore, the labour laws are specifically meant for the security of labour in the organized sector which employs merely 10-12% of the entire labor force. The majority of workers are employed in the unorganized sector primarily on contract basis.

As noted above, income inequality is another contradictory phenomenon of mineral-based industrialization in India. By the early 1970s, economists in India, including Mahalanobis and his staff, were identifying trends of income inequality in various forms. Measured by income distribution, the proportion of national income held by the top 50 per cent of the population increased from 69 to 79 per cent in the period between 1954 and 1960 (National Council of Applied Economic Research, as cited by Choudhury: 1977, 40). Meanwhile, according to the same data, the share of national income held by the bottom 20 per cent of the population fell to 4 per cent in 1960. Measured by disposable income, for the population as a whole in 1971-72 69 per cent of India's total disposable income was held by the top 38 per cent of the population (Choudhury: 1977, 39). Examining disposable income by rural and urban populations, while 19 per cent of rural population held 41 per cent of rural disposable income, 34 per cent of the urban population commanded 68 per cent of total urban disposable income (Choudhury: 1977, 39). Magnifying further the rural-urban divide, the "bottom expenditure class," with a monthly spending capacity of 18 Indian Rupees or less (at 1960-61 prices), composed 35 per cent of the urban population and 54 per cent of the rural population in 1971-72 (Choudhury: 1977, 38).[7]

Minocha and others argue that the primary reason for the erosion of real incomes for the majority of India's population by the mid-1970s was the shifting terms of internal trade (Minocha: 1977; Bhagavan: 1985; Singh and Singh: 1977). Between 1965-66 and 1974-75, both relative prices of manufactures and agricultural goods, and relative prices of agricultural and non-agricultural commodities, rose in favour of agriculture (Minocha: 1977, 8). Measured in inter-sectoral terms of trade, or the ratio of agricultural products purchased by the non-agricultural sector, and the ratio of non-agricultural products purchased by the agricultural sector, the terms are similar with ratios increasing in favour of the agricultural sector between 1951-52 and 1973-74 (Thamrajakshi as cited by Minocha: 1977, 7).

Clearly, food products were the most important agricultural commodities at play. As manufacturing industries grew, food demand rose for the growing numbers employed outside of agriculture and the growth of this demand outpaced growth in supply. Rising food prices combined with the highly unequal ownership or/and control of land that persisted after Independence made for a widening gap between the rich and poor in the agricultural sector. Similarly, rising food prices combined with the highly unequal structure of ownership of the means of industrial production and low wages for the majority of nonagricultural workers (i.e. those in the so-called, 'unorganised sector') made for a widening income gap in the nonagricultural sector.

V. Twenty-first century alternatives to mineral-based industrialization

The trend of inequality has continued in India through the liberalization decades of the 1990s to the present. By one measure, between 2000 and 2018, total household wealth held by the richest 1 per cent in India increased from 21 to 30 per cent (Chatterjee et al.: 2020, 28). Contrary to the development models of Lewis, Kuznets and Kaldor, the lack of absorption of rural and other workers into better paid, higher productivity manufacturing jobs persisted into the first decade of the 21st century. More than half of the labour force was still employed in agriculture, though agriculture represented only 15 per cent of GDP (Ghosh: 2015, 43). In terms of manufacturing, in 2011-2012 the share of manufacturing in both national output and employment accounted for only 14.4 per cent of GDP and 12.6 per cent of the work force (Ghosh: 2015, 45).

Given these persisting structural realities, one recommendation for India is to shift state energies to increasing agricultural productivity beyond the 'green revolution' methods of the past. Based on sectoral labor flow and wage data for the 1984-2004 period, Eswaran et al. (2009) argue that increased wages in agriculture have had the greatest impact on agricultural productivity. This, in turn, would be the most "direct" means of improving living standards for the large stock of the labor force that is "locked" in agriculture particularly given ongoing lack of access to education for the majority (Eswaran et al.: 2009, 53). A corollary to this is the recommendation to implement

[7] To better gauge the severe poverty of this 'bottom expenditure class', in terms of per capita private consumption required for bare minimum living levels the official Planning Commission set a figure of 20 Indian Rupees per month (at 1960-61 prices). Given that this official figure excludes medical and educational needs, Choudhury (1977, p. 40) adjusts the amount required for bare minimum living to 35 Indian Rupees (at 1960-61 prices) per individual, per month.

comprehensive land reform of the nature implemented in South Korea, Japan, and China several decades ago (Basu: 1977; Bhagavan: 1985; Ghosh, 2015). In 1977, despite several commitments to land reform, 3 per cent of households owned 50 per cent of agricultural land while 75 per cent of households owned a mere 10 per cent (Basu: 1977, 78). By 2015, following additional land reform policies, 4.9 per cent of farmers controlled 32 per cent of India's farmland, with 56.4 per cent of rural households owning no agricultural land whatsoever (Chaturvedi: 2016).

This set of recommendations is not unlike what would be some of the final formulations of Samir Amin on the question of building domestic economies that resolve unemployment and inequality in poor countries. Offering an important corrective to the ahistorical models of development economists of the 1950s, Amin underlines that mass migration to the Americas, Australia, New Zealand, and South Africa, was the outlet for the absorption of Europe's "surplus rural population," from the 16th century onward (Amin: 2012, xiii). Contrary to the assumptions of Lewis and others modelling growth in developing economies after that in Western Europe which began some three centuries earlier, all peasants displaced in European processes of agrarian capitalism were absorbed in emerging industrial centres of Europe. There were limits to this absorption. With the decimation of indigenous socioeconomic systems in the New World displaced Europeans were able to migrate or/and be resettled such that between 1500 and 1900 the proportion of the world population represented by Europeans doubled from 18 per cent to 36 per cent (Amin: 2012, xii). As Amin points-out, without this outlet, "the cities of Europe would have been overpopulated by the unemployed taking on the characteristics of the 'planet of slums' that is the reality of cities in the global South today" (Amin: 2012, xiii).

Following this logic, Amin envisions for African, Asian and Latin American countries with national rural populations exceeding 30 per cent, state-led industrialization driven by the revival and modernization of peasant agriculture to the end of national food sovereignty. In more explicit terms, Amin (2016) recommends: implementation of a set of consistent national policies aiming at 'walking on two legs', i) constructing an integrated autocentered industrial productive system ; ii) moving into policies of revival and modernization of peasant agriculture; and iii) articulating the two goals into a consistent comprehensive plan of action.

As with India in the early post-Independence period discussed here, Amin identifies state intervention as a key vehicle. But Amin's vision for state intervention in the 21st century is broader, including not only state planning but also managing an independent national financial system that includes systems of taxation, financing for the construction of industries, anti-inflation measures, and measures to avoid the growth of large foreign debt. In terms of foreign direct investment, Amin stresses that this should be "negotiated under conditions that reinforce the national project rather than annihilate it" (Amin: 2016). Framing all of this, unlike the state-led development model of post-Independence India, is the goal of national food sovereignty.

The implication for land policy is that land is not to be considered as "merchandise," but rather a common national good at the disposal of the entire peasantry (Amin, 2016). This implies ownership patterns that protect access to land for all peasant families on as equal a footing as possible. To this may be added access to land for all peasant producers including women who today throughout the developing world are largely left out of land ownership and control structures. Finally, making the link back to industrialization, Amin defines the modernization of peasant agriculture as a process whereby a number of priority industries are conceived collectively, as per national context, in order to assure the provision of inputs and consumption goods required in the agricultural sector (Amin: 2016). As already stated, this alternative development strategy is built on historical realities of both Europe and the developing world with particular focus on the latter in the contemporary moment wherein displaced peasants have not been fully or justly incorporated in urban industrial development.

VI. Conclusion

This study attempts to reconstruct a history of the structure of metal mineral extraction and manufacturing in post-Independence India. A range of primary and secondary sources has been drawn upon to make explicit the links between state-led mineral extraction and the construction of mass producing, manufacturing industries in India. We demonstrate that this process involved active state planning and management of the economy and that state intervention was central to building a diversified economy with a broad industrial base. The state thus led all activities pertaining to the extraction and processing of metal minerals, steel production, coal extraction as well as processing and pricing, production of a range of capital goods, and associated skills training. The use of national resources such as foreign exchange and debt capital was steered by the state to facilitate this multifaceted productive activity.

Whether initially intended or not, large private business houses emerged in India within three decades of

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Independence. A variety of contradictions followed from this essentially capitalist path of development whereby the power of the state was used to nurture and distribute wealth along culturally determined lines of hierarchy, the most important being caste. These contradictions include: mass industrial production combined with underconsumption and stagnation, large domestic industries dependent on monopolised technology of rich countries, population growth coupled with low employment and real wage growth for the majority, and countless forms of historic, new and renewed inequalities.

For India and other countries of the developing world, given the effects of climate change that are largely the result of exploitation of natural resources —typical of twentieth century world capitalist development—, a returned focus to agricultural productivity framed by the social goals of food sovereignty, ecological soundness and collective control, offers possibility for long-awaited change.

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