Managing the Green Revolution: Management Knowledge and Indian Agriculture, 1963–1973*

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Abstracts

This article delves into the circulation of a set of management ideas and concepts between India and the US and the overlooked role that this body of knowledge played in India's Green Revolution in the late 1960s. The paper takes a situated approach and examines how the Indian Institute of Management Ahmedabad (IIMA) formed a site for experimenting with management knowledge and became increasingly enmeshed with questions of rural governance by setting up a new research unit for agricultural development in the period 1963–1973. Drawing from the notion of techno-politics, the article argues that the managerial knowledge produced at this site played a significant part in the developmental politics of the Indian state that constituted India's Green Revolution. The paper describes how the management concepts introduced under the rubric of "agribusiness" – developed in the context of an industrial society and American post-war capitalism – were unpacked and aligned to the dominant developmental imaginaries of the political elite and used in the agenda to rebuild India's rural areas on the principles of cooperative organization and modes of production.

Dieser Artikel befasst sich mit der Verbreitung einer Reihe von Management-Ideen und -Konzepten zwischen Indien und den USA und der übersehenen Rolle, die dieser Wissensbestand in Indiens Grüner Revolution in den späten 1960er Jahren spielte. Der Beitrag wählt einen situ-

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ierten Ansatz und untersucht, wie sich das Indian Institute of Management Ahmedabad (IIMA) als Ort für das Experimentieren mit Managementwissen etablierte und sich in seiner neuen Forschungseinheit für landwirtschaftliche Entwicklung in den Jahren 1963–1973 zunehmend mit Fragen der ländlichen Governance befasste. Ausgehend vom Begriff der Technopolitik wird in dem Artikel argumentiert, dass das an diesem Standort produzierte Managementwissen eine wichtige Rolle in der Entwicklungspolitik des indischen Staates und in der Grünen Revolution auf dem Subkontinent spielte. Der Beitrag beschreibt, wie die unter dem Begriff „Agribusiness" eingeführten Managementkonzepte – die im Kontext einer Industriegesellschaft und des amerikanischen Nachkriegskapitalismus entwickelt wurden – an die dominanten Entwicklungsvorstellungen der politischen Elite angepasst und in der Agenda zum Wiederaufbau der ländlichen Gebiete Indiens auf der Grundlage genossenschaftlicher Organisations- und Produktionsprinzipien angewandt wurden.

1. Introduction

In December 1962 Henry Arthur, professor of Agriculture and Business at Harvard University, embarked on a round-the-world trip to visit several development projects in which he was involved.[1] As an agricultural economist, he was an influential broker of new managerial technologies that could help societies increase agricultural production with the aim of reducing poverty. His main stop during this trip was India, where the Harvard Business School (HBS) had just been invited to assist in establishing a management institute for the Indian government. Arthur was part of a delegation of senior professors that was invited to discuss the usefulness of management education and research with Indian government officials, businessmen, and other stakeholders. On his way to India, he had stopped in Italy to attend some meetings at the University of Rome and to hold a discussion with the agricultural attaché at the American Embassy. [2] He had also stopped at Beirut, Lebanon, to visit colleagues at a UNESCO-funded training centre. After his departure from India, he stopped off in Hong Kong to give lectures, in Tokyo to visit the HBS alumni club, and in Honolulu to meet colleagues at a research centre for agricultural developments.

Arthur's itinerary exemplifies the rise of an American-dominated network of agricultural experts that played a critical role in the transformation of agriculture in many parts of the world in the late 1950s and 1960s. In the wake of growing populations' demand for food, the development of new technologies and concerns for political stability, increasing agricultural production became an essential part of developmental politics in the first decades after the Second World War. In the current historiography, this process, which has been labelled the "Green Revolution", is primarily associated with the push for the use of high-yielding varieties, chemical fertilizers, pesticides, changes in irrigation

1 Henry Arthur, correspondence. Harvard Business School Baker Library (Cambridge MA), Henry Arthur Papers (hereafter HBSBL/HAP), Box 4 Folder 2.

2 Ibid.

methods, and the implementation of the principles of Fordism in farm management.[3] What has gained less scholarly attention is the influence of the new types of managerial knowledge that emerged in the late 1950s and underpinned the reorganization of "rural" sectors and the upscaling of modes of production.[4] In the search for technological solutions to augment food and fibre production to eradicate the political problems arising out of poverty, managerial knowledge became an essential part of the repertoire of the experts and technocrats charged with reorganizing post-colonial societies. New managerial techniques and concepts formed an essential role in the upscaling of agricultural production and the reorganization of agriculture as an integral part of national economies. The managerial knowledge that played a role in the unfolding of the Green Revolution was circulated across the globe by a vast growing network of universities, agrarian institutes, and, not least, business schools. The concepts and ideas produced in this emerging field of management science had an impact that transcended mere farm organization. Managerial techniques offered a new conceptual frame for measuring, analysing, and calibrating the movements of people, animals, things, information, cash, energy and all other aspects identified as constitutive of an agricultural system. Managerial knowledge can therefore be understood as an important part of what Timothy Mitchel, in a critical vein, described as the "techno-politics" essential to the creation of governable spaces as part of post-colonial state formation.[5]

Putting the limelight on the role of managerial knowledge in the Green Revolution provokes some pressing questions. Scholarship has shown that the sites for techno-political practices of the 1960s were often affected by the complex interplay between the Cold War ideological power struggles, decolonization, and post-colonial nation-building processes.[6] How did managerial knowledge, as an inherently political technology concerned with questions of how to organize and govern society, circulate in a period that is widely acknowledged for its strong ideological fault lines? Did the managerial models that circulated between multiple sites in the West, the East, and the Global South provoke contestation on the ground? To what extent was there a need to adapt the managerial techniques that underpinned the Green Revolution to diverging social, material, and political contexts and to align them to different developmental ideologies and strategies?

3 N. Cullather, The Hungry World: America's Cold War Battle against Poverty in Asia, Cambridge, MA 2013; P. Kumar, "Modernization" and Agrarian Development in India, 1912–52, in: Journal of Asian Studies 79 (2020) 3, pp. 633–658; P. Kumar et al., Roundtable: New Narratives of the Green Revolution, in: Agricultural History 91 (2017) 3, p. 397; T. C. Olsson, Agrarian Crossings: Reformers and the Remaking of the US and Mexican Countryside, Princeton 2017; S. Schmalzer, Red Revolution, Green Revolution: Scientific Farming in Socialist China, Chicago 2016; for a more critical discussion: A. Gupta, Postcolonial Developments: Agriculture in the Making of Modern India, Durham, NC 1998; V. Shiva, The Violence of the Green Revolution: Third World Agriculture, Ecology and Politics, Lexington 2016 [1991].

4 N. Sackley, The Village as Cold War Site: Experts, Development, and the History of Rural Reconstruction, in: Journal of Global History 6 (2011) 3, pp. 481–504; C. R. Unger, Towards Global Equilibrium: American Foundations and Indian Modernization, 1950s to 1970s, in: Journal of Global History 6 (2011) 1, pp. 121–142.

5 T. Mitchell, Rule of Experts: Egypt, Techno-Politics, Modernity, Berkeley 2002.

6 G. Hecht (ed.), Entangled Geographies: Empire and Technopolitics in the Global Cold War, Cambridge, MA 2011; E. Rindzevičiūtė, The Power of Systems: How Policy Sciences Opened up the Cold War World, Ithaca 2016.

India, the central case for this study, forms a puzzle in this respect. After Independence in 1947, the Indian government adopted a political economic strategy that formed a complex mix of both capitalist and socialist elements. Inspired by the Soviet Union, the government embraced economic planning as the fundament for its developmental politics, but without collectivizing the economy. Instead, it followed a mixed-economy approach and even protected the interests of several large private companies by regulating specific sectors of the economy. In the domain of agriculture, the developmental strategy was committed to a mix of Gandhian and socialist ideas, which in practice meant that the government pursued development through fostering large-scale cooperatives farming. This raises the question as to what role the new managerial techniques that emerged in the late 1950s and 1960s played in the context of the state's extending to India's rural sector. How did managerialism fit into the wider developmental strategies and ideologies?
To address these questions, I take a situated and micro-historical approach and describe in detail how one of India's first management schools, the Indian Institute of Management Ahmedabad (IIMA), in Ahmedabad in the western Indian province of Gujarat, became increasingly enmeshed with questions of rural governance by setting up a new research unit for agricultural development. IIMA, a prominent management institute of the country today, was established in 1961 by a consortium of actors, including India's central (federal) and provincial governments, the American Ford Foundation, and a group of local entrepreneurs. In the existing scholarship, the rise of management knowledge and education in India is generally associated with the process of state-led industrialization and the creation of public sector industries.[7] In this paper, however, I focus on the overlooked role that the management institute played in the early days of India's Green Revolution. It describes the nitty gritty of how, with the intense involvement of American expertise, a new research unit was developed as a node in a transnational network of rural management institutes. Drawing from archival materials I collected in India and the US, the paper describes how the management institute formed a hotbed for experimenting with the application of managerial techniques for constituting the rural reforms of India's Green Revolution. Secondly, it examines to what extent research practices needed to be aligned to dominant ideologies and developmental strategies of the state. Underlying the analysis of this paper is the already mentioned concept of "techno-politics". The term was introduced by Timothy Mitchell in his seminal studies into colonial and post-colonial state formation in Egypt to refer to the way that technical systems and expertise shape and govern political and social life.[8] The term has been used in a similar way by Gabrielle Hecht, who defined technopolitics as the "hybrids of

7 N. Srinivas, Mimicry and Revival: The Transfer and Transformation of Management Knowledge to India, 1959–1990, in: International Studies of Management & Organization 38 (2008) 4, pp. 38–57; A. Kumar, From Henley to Harvard, at Hyderabad? (Post and Neo-) Colonialism in Management Education in India, in: Enterprise & Society 20 (2019) 2, pp. 366–400; L. van Haaften, Management Science and Nation Building: The Sociotechnical Imaginary behind the Making of the Indian Institute of Management in Ahmedabad, in: Indian Economic & Social History Review 58 (2021) 3, pp. 1–27.

8 Mitchell, Rule of Experts.

technical systems and political practices that produce new forms of power and agency".[9] Building on these notions, this paper explores how managerial techniques became part of a broader technopolitical regime that produced new forms of power and agency and constituted new assemblages of things that could be managed and governed in the context of India's Green Revolution in the period 1963–1973.

2. Agribusiness for Developing Rural India

Plans for creating management institutes in India were established in the late 1950s and early 1960s, after the Planning Commission had set the objective of rapid industrialization in the Second Five Year Plan. The draft guide for setting up the first management institutes, in Ahmedabad and Calcutta, was largely aligned to this rationale and exclusively focused on developing knowledge and manpower for running India's public and private industrial sectors.[10] No reference was made to the role that managerial knowledge could potentially play in agricultural development. In other words, in the context of the developmental politics of the late 50s and early 60s, management was considered to be an "urban" rather than a "rural" affair.

Nevertheless, it was not long after its starting phase that the issue of agricultural development entered the discussions at the Ahmedabad institute. Within a few months of the institute's establishment, the first director Vikram Sarabhai started to explore the possibilities of extending the focus to the rural sector.[11] Agriculture formed the largest single sector of the Indian economy and accounted for approximately half of India's national income. Over 70 per cent of the Indian population was directly dependent on rural production.[12] The changing political context gave further impetus to the initiative. The Indian Planning Commission and Government, who had initially prioritized the industrial side of development, shifted their attention to agricultural development with the Third Five Year Plan (1961–1965), presented in April 1961. The plan aimed at "strengthening India's rural economy" and "attaining self-sufficiency in food-grains" by setting the objective of doubling the rate of growth of agricultural production over a period of five years.[13] The personal interests and beliefs of Sarabhai might also have played a role in the decision to explore the management institute's role in agricultural development. As a descendant of one of Ahmedabad's most powerful families in the textile industry, and the owner of several fibre production factories, Sarabhai knew better than anyone how

9 G. Hecht, Introduction, in: Hecht (ed.), Entangled Geographies, p. 3.

10 G. Robbins, "Recommendations for an All-Indian Institute of Management", 20 December 1959. UCLA Library Special Collection (hereafter UCLA/LSC), Robbins papers, Box 1, Folder 1; Minutes of the First Meeting of the Planning Committee for the Establishment of a central Institute of Management Studies, Ahmedabad, 29 July 1961. Indian Institute of Management Ahmedabad Archives (hereafter IIMAA).

11 Desai, Centre for Management in Agriculture: An Innovation. IIMAA, IIMA Experiences, Part 1, p. 64.

12 F. R. Frankel, Ideology and Politics in Economic Planning: The Problem of Indian Agricultural Development Strategy, in: World Politics 19 (1967) 4, pp. 621–645.

13 Government of India, Planning Commission, Third Five Year Plan, New Delhi 1961, paragraph 4.2.

industrial and agricultural development were not separated domains of development but, to a certain extent, mutually dependent.

In order to focus on the managerial aspects of agricultural development, the institute in Ahmedabad built on recent developments in Harvard. In 1944, at the height of the American war effort, Harvard Business School had established the "Food Foundation" as a distinct research unit aimed at studying managerial challenges in food production and distribution. Although not an initial success, the unit regained relevance in 1955, when two Harvard scholars, Ray Goldberg and John Davis, introduced a new concept for studying food production as a sub-system of the economy. They coined the term "agribusiness", a portmanteau word derived from agriculture and business, as a concept for studying agricultural and industrial relations through analyses of technical, economic, and human factors.[14] Agribusiness aimed to go beyond merely implementing the principles of Taylorism in farming. It formed a heuristic device that analysed a wider set of factors that could impact the efficiency of agricultural production, such as distribution, logistics and infrastructure, organizational factors, and marketing. Their concept of agribusiness drew heavily on the techniques of "input–output" economics, as developed by the Harvard professor of economics Wassily Leontief during the 1930s.[15] This method, often referred to as "inter-industry theory" was developed to analyse the relationships of mutual interplay between different sectors of the national economy. The technique did not deal with demand analysis, as in the field of macro-economics, but rather focused on the optimization of equilibria with technical problems of production.[16] In the US, the concept of agribusiness had shown its transformative potential. Agribusiness formed a conceptual scheme that allowed policy-makers as well as managers of firms to analyse the complex interdependencies in the functioning of the agricultural system as a market and their position within it. It allowed firms to optimize production processes, by calibrating and upscaling activities, and to become more competitive producers.

When the director of IIMA approached Harvard for advice on introducing a focus on agriculture, in 1963, Henry Arthur had succeeded Davis as the leader of Harvard's agribusiness group. Arthur had built a reputation in the field of agriculture with his work as an economist for various US government agencies. In the mid-1940s he was involved in the decision-making processes on wartime food rationing and in the 1950s he contributed to the European food distribution initiative as part of the Marshall Plan.[17] During his affiliation with HBS, from 1957 to 1971, Arthur became a passionate promotor of Harvard's "agribusiness" programme. He shifted his attention to global aspects of the

14 J. H. Davis and R. Goldberg, A Concept of Agribusiness, Cambridge, MA 1957.

15 For a study of how Leontief's notion of input–output analysis played an important part in the development of economic theory in the late 1940s, see V. Halsmayer, Material des Ökonomischen, ökonomisches Material: Das Vermessen von Input-Output-Systemen am Harvard Economic Research Project, 1947–1952, in: M. Hagner and Ch. Hoffmann (eds.), Nach Feierabend: Materialgeschichten, Zurich 2018, pp. 111–139.

16 Davis and Goldberg, A Concept of Agribusiness.

17 Henry Arthur held the specialized chair for Agriculture and Business, funded by the chairman of the board of the Corn Products Refining Company George Moffett since 1954.

agribusiness environment and became involved in numerous developmental projects in Europe, Latin America, and Asia.[18] The invitation to become involved in setting up a unit for agricultural research in India fitted seamlessly into his agenda of developing the concept of agribusiness in a large transnational network of researchers. He wanted to study the interplay between private and public sector management of agriculture in different national contexts and to build a global system of agricultural production and consumption.[19]

In January 1963, Arthur made his first visit to Ahmedabad to develop an idea of the potential for using the agribusiness approach to deal with rural reform in India. The guiding memo that he had received for his assignment in Ahmedabad had explicitly stressed that Harvard's participation in India was meant to be a "two-way street".[20] The aim was to set up a cooperation that allowed him to study the local situations for making useful comparisons of management practices in different contexts. Looking at how things were done abroad would sharpen their ability to see the values and limitations of management practices in the US too, it was argued. In this view, the project in Ahmedabad formed an opportunity to set up an Indian "base" or "satellite" institute for internationalized research, as part of a large transnational network that could study the interplay between private and public sector management of agriculture in different national spaces.[21] It exemplifies how the development of managerial knowledge on agriculture was, at least ideally, more of a multi-sited process rather than something produced and diffused from the centre (the US) to the periphery (what was called the Third World).

During his first stay in India, Arthur interacted intensively with the administrators and leaders of the new management school. He also visited several dairy factories and agricultural cooperatives in the region to develop a basic understanding of the agricultural challenges for India. His ideas for applying the agribusiness approach in the Indian context met enthusiasm among some business leaders in the large Indian textile industry.[22] He therefore eagerly accepted the invitation to help set up a new unit for agricultural research at IIMA. Yet he did not want to devote too much time to its day-to-day functioning practices. It was agreed that he would leave this work to one of his Doctor of Business Administration students, Michael Halse, limiting his own role to supervision

18 A. Fusonie, John H. Davis: Architect of the Agribusiness Concept Revisited, in: Agricultural History 69 (1955) 2, p. 24.

19 Letter from Harry Hansen to Stanley Teely (Dean of HBS), 11 April 1961, Boston. HBSBL, Special Collection IIMA (hereafter SC/IIMA), Box 3, Folder 9, Correspondence 1960–65; see also Adhoc Committee on the School's International Activities. Recommendation: with regard to association between HBS and IIMA, Cambridge MA, 13 April 1962. HBSBL/SC/IIMA, Box 1, Folder 12.

20 Memo from Hansen to Arthur, 9 November 1962. HBSBL/HAP, Box 2.

21 The idea that IIMA could form an Indian 'base' for Harvard for international research was one of the dominant reasons for engaging in the project. Harry Hansen to Stanley Teely (Dean of HBS), Correspondence 1960-65. 11 April 1961. HBSBL/SC/IIMA, Box 3, Folder 9; see also Adhoc Committee on the School's International Activities, Recommendation: with regard to association between HBS and IIMA.

22 A letter to the director of a textile company in Delhi mentions how his "agribusiness approach" resonated well with industrialists. Correspondence between Henry and H.K. Singh Delhi Cloth and Mills, 12 February 1963, New Delhi. HBSBL/HAP, Box 4, Folder 3; Programme of understanding business and government in the Indian environment, from 6 January to February 3 1963. HBSBL/HAP, Box 4, Folder 3.

at a distance. Halse, a British national who had gained previous experience working as a consultant in agricultural development in Burma, was appointed a Programme Associate at IIMA. He played a leading role in setting up the first research projects and developing course materials, while also working on his doctoral research.[23]

Beginning in 1963, Halse and Arthur presented their first plans for establishing a research unit as part of the institute's marketing section.[24] The aim of the unit was to develop the agribusiness approach as a tool for building a market for food production based on up-scaling production processes, as had been successful in the US. Halse started working on the teaching materials to be included in a new course, "Management of Agricultural Product Enterprises", that was to be added to the general MBA programme.[25]

In the spring of 1963, the institute obtained its first large research assignment to study the malfunctioning of a large dairy plant named Amul in the city of Anand (Gujarat). Sarabhai had linked up Halse with the director of the plant, Verghese Kurrien, who was interested in applying new managerial knowledge in the dairy sector. The factory was set up with financial help from UNESCO to process the milk production from a local cooperative of small-scale farmers. The plant was operating only at 30 per cent of its capacity and was losing about 4 million rupees a year.[26] Halse started working on the site in Amul for a period, and made several field trips in the neighbourhood. Drawing on the input-output analysis framework, he started to map the flows of goods, people, animals, and cash that were involved in the interrelated dimensions of the daily production process. He made a scheme of the organizational structure of Gujarat's milk industry, plant organization, issues of milk supply, cooperatives, and private actors that were involved in milk production, pricing, and marketing policies.[27] In a memo, he mentioned that particular attention was paid to the impact on management of the special characteristics of the "two major resources" used: the human factors, i.e. the local Patela and Baraiya farmer communities, and the non-human factors, i.e. the buffalos with their particular physiology as well as the characteristics of the milk they produced, in terms of how long it could be persevered without pasteurization.[28] By mapping the peculiarities of the complex functioning of the dairy production process in the neighbourhood, he identified some main bottlenecks for the functioning of the dairy plant. His recommendations were subsequently successfully implemented by Kurrien and with profitable results.

The project on dairy production allowed the IIMA research group to demonstrate the potential of the managerial technique drawn from the agribusiness approach to achieve certain economic goals in the rural sector. In December 1963, IIMA hosted the first

23 D. Desai, to Arthur and Goldberg. A note on development of teaching and research work at IIMA in the Field of Agricultural Productivity and Cooperative Development, December 1964. HBSBL/HAP, Box 4, Folder 3.

24 Halse to Sarabhai, Work program in agricultural enterprises, 30 January 1963, Ahmedabad. HBSBL/HAP, Box 4, Folder 3.

25 Ibid.

26 Memorandum by Halse to Sarabhai and Arthur, "Progress of work on Agricultural Product Enterprises", May 1963, Ahmedabad. IIMAA, Institution Building Files, Part II.

27 Ibid.

28 Ibid.

"Dairy Management Conference", where the experiences were shared with delegates and managers of India's dairy industry. The event provided the institute with a platform to promote its new approach for applying the new managerial techniques to India's emerging dairy sector.[29]

In the meantime, a new faculty member was appointed to teach the new courses in agriculture and to collaborate with Halse on building the new research unit. Dhirajlal Desai, a young Indian scholar with a PhD in Agricultural Economics from the University of Illinois, was appointed professor of "Agribusiness and Cooperatives". Before he started his teaching and research, he was first sent to Harvard for half a year to participate in the International Teachers Training Programme, where he was taught the latest knowledge on scientific management. In Boston, he would regularly interact not only with Arthur, who was his supervisor, but also with Ray Goldberg.[30] He took the HBS course in agribusiness and was tasked with developing case studies of "American firms interested in starting agribusiness in India with a particular reference to fertilisers, agricultural machinery and insecticides".[31]

3. Aligning Agricultural Management to the Developmental Imaginaries of India's Political Elite

With the organization of the Dairy Management conference, by the end of 1963, the unit for agribusiness at IIMA had attracted the attention of the newly appointed Minister for Food and Agriculture, Chidambaram Subramaniam. In the spring of 1964, Halse and Sarabhai were invited for a meeting to discuss the possibilities for a new study assignment.[32] Subramaniam has often been described as one of the architects of India's Green Revolution for his role in propagating the use of high-yielding varieties of seeds and the intensification of the use of fertilizers.[33] He took a personal interest in the project in Ahmedabad, as he was a strong believer in the potential of using scientific management for reorganizing India's rural areas.[34] As a result of the meeting, Halse and Desai received a grant from the ministry to study the functioning of the Community Block Development Programme – a major development programme launched by the Indian government in 1952 aimed at promoting rural welfare by creating new governmental structures

29 Memorandum from Halse to Sarabhai and Arthur, 6 May 1963, progress of work on Agricultural Product Enterprises up to 4 May. IIMAA, Institution Building Files, Part II.

30 Desai to Arthur and Goldberg, a note on the development of teaching and research work at IIMA, in the field of agricultural productivity and cooperative development, December 1964, Ahmedabad. HBSBL/HAP, Box 4, Folder 2.

31 Ibid.

32 Halse to Sarabhai, memo "Present status and future planning" from 23 November 1964. IIMAA, Institution Building Files, Part I, p. 233.

33 Cullather, The Hungry World, pp. 206–210.

34 Memo from Halse to Sarabhai, November 1964. IIMAA, Institution Building Files, Part III; see also Speech by Subramaniam held at the IIMA convocation ceremony in April 1972, Ahmedabad. IIMAA, Collection of Convocation Speeches.

that could foster community thinking and collective action.[35] The assignment implicated a massive increase of resources that allowed IIMA to attract four new assistant professors and four research fellows.[36]

So far, the team in Ahmedabad had unrolled its plans for the research unit in relative autonomy, but the closer attention of the ministry produced a dilemma. The capitalist agribusiness approach, propagated by Arthur, did not merge well with the rural developmental imaginaries that dominated the political centre in Delhi. After independence, the Nehru government and the Planning Commission had embraced agricultural cooperatives rather than individual producers competing on a free-market as the key instruments for the politics of the modernization of rural India.[37] The Third Five Year Plan, presented in 1961,[38] had sketched the contours for further strengthening India's agricultural economy through newly established institutions and democratic organizations like the Panchayat Samitis and the Village Panchayats and with cooperative forms of agricultural production.[39] As has been extensively described in the literature, the cooperative form of organizing rural production was envisioned as the best strategy for tackling the country's food crises and allowing small-scale farmers to increase productivity by pooling their resources without exposing them to expensive credit that would infringe their autonomy and agency.[40] The Nehru government saw the cooperative model as a key instrument for changing the agricultural sector of the economy from an individualistic to a "socially regulated and cooperative basis".[41] The cooperative model also fitted squarely into the politics of non-alignment, and was embraced as an alternative to both the US's capitalist and the Soviets' collectivist models of economic organization while at the same time merging well with Gandhi's romantic nationalist ideas about the village and the panchayats as "sites for authenticity".[42]

The intensification of the relations with the ministry prompted Halse and Desai to rethink the role of the research unit as part of the ministerial developmental strategies. Interacting with state officials, Halse increasingly sympathized with what they described as

35 Desai to Arthur and Goldberg, 'a note on development of teaching and research work at IIMA, in the field of agricultural productivity and cooperative development', December 1964, Ahmedabad. HBSBL/HAP, Box 4, Folder 2.

36 Ibid.

37 The cooperative form of organizing rural production, already introduced under colonial rule, following the examples of the Raiffeisen model that emerged in Germany in the late nineteenth century, gained new meaning and relevance in the post-colonial context.

38 Government of India, Planning Commission, Third Five Year Plan, New Delhi 1961, paragraph 4.4.

39 The Panchayat Samitis and Village Panchayats were governmental units and introduced as local self-governance institutions in the 1950s, on the block and village level, respectively.

40 N. Sackley, Village Models: Etawah, India, and the Making and Remaking of Development in the Early Cold War, in: Diplomatic History 37 (2013) 4, pp. 749–778; T. C Sherman, Nehru's India: A History in Seven Myths, Princeton 2022; C. Six, Rural Social Engineering: Reordering the Countryside in Decolonising India and Malaysia (1947–60), in: Rural History 2023, online pre-publication, pp. 1–22; C. R. Unger, The Decolonization of Development: Rural Development in India before and after 1947, in: M. Bandeira Jerónimo and J. P. Monteiro (eds.), Internationalism, Imperialism and the Formation of the Contemporary World: The Pasts of the Present, Cham 2018, pp. 253–278.

41 Frankel, Ideology and Politics in Economic Planning, p. 628.

42 Ibid.; S. Corbridge and J. Harriss, Reinventing India: Liberalization, Hindu Nationalism, and Popular Democracy, Cambridge, UK 2000, p. 26; Sackley, The Village as Cold War Site.

the "Nehruvian ideas of development".[43] His experience in researching the dairy production process in Anand, which involved many cooperatives, might also have contributed to the changes in his beliefs. Halse started to subtly change the framing of their research activities. In the communication with government officials and administrators, the team in Ahmedabad systematically removed all terminology that referred to business or capitalism, as this had negative connotations.[44] Instead, they relabelled their approach under the rubric of "agricultural and cooperative" development. The research unit was renamed as the "Agri-coop group" or Ag-Co-group in all documentation.[45]

Alignment, however, went further than a mere rebranding. While Desai resided in Boston, Halse took more and more ownership of the research group and reformulated the research programme in a way that was more in line with the developmental politics pushed by the Indian central government. In the meantime, the collaboration with Arthur was phased out. Toward the end of 1964, Halse presented ambitious plans for further expanding the research programme of the institute and announced a significant shift in the institute's strategies. The memo stated that "HBS' approach to management" had been a key source of inspiration for their work in Ahmedabad, as it had given them insight into how the concept of agribusiness worked "in the American environment", but that this focus on "business and government" was "too limited" for dealing with the "Indian context".[46] He argued for an approach that was more attuned to the Indian environment and dovetailed with the "increasing tendency to rely on cooperative forms to achieve the objectives of increasing the production in India's agriculture".[47]

Simultaneously, he announced a geopolitical reorientation. With support of IIMA's director Sarabhai, Halse started to explore the possibilities for expanding the network for collaboration to scientists working on rural phenomena in the Soviet Union and he launched plans for a joint project of a comparative study of the management of "Russian and Indian agricultural cooperatives" with a Soviet group of scholars.[48] Collaboration with Polish and Yugoslav researchers on cooperatives was also on the agenda.[49] In December 1964, he travelled to Boston, where he would discuss the ending of his personal contract with HBS, making a stopover in Moscow on the way. Sarabhai had prepared for his visit by approaching the Indian ambassador in Moscow with a request to arrange an informal meeting between Halse and some scientists who were interested in exploring

43 In an interview, Desai describes how Halse developed a close relationship with the personal assistant to the minister for food and agriculture that enabled him to bypass the hierarchical structures of the bureaucracy. Desai, 'Centre for Management in Agriculture: An Innovation', p. 64. IIMAA, IIMA Experiences, Part 1.

44 Interview with D.K. Desai, IIMAA, IIMA Alumni Magazine, 1985, Ahmedabad.

45 IIMA annual report for 196566, p. 7. IIMAA, Annual reports.

46 Memorandum from Halse to Sarabhai, Hansen, Haynes and Chowdry, 14 October 1964, 'My future programme of work on agri-co-op management at the IIMA'. IIMAA, Institution Building Files, Part III.

47 Ibid.

48 Ibid.

49 Małgorzata Mazurek has described how Polish-Indian network of economists played a role in the development of the ideas behind the Second Five Year Plan in 1956. The developments described here do not seem to build on these networks. Małgorzata Mazurek, Polish Economists in Nehru's India: Making Science for the Third World in an Era of De-Stalinization and Decolonization, in: Slavic Review 77 (2018) 3, pp. 588–610.

the "role of cooperatives in securing agricultural development".[50] From the sources, it is unclear if and in what form these meetings took place. Certainly, formalized cooperation between IIMA and Soviet researchers did not materialize in the decades that followed. But it is nonetheless salient that the group of scientists in Ahmedabad, trained on the basis of generous donations and expertise from North America, approached agricultural economists in the communist bloc to explore options for working together on alternative development strategies. It illustrates how the Cold War context provided India-based scientists with significant agency in pursuing their own interests and agendas by appropriating and cherry-picking ideas and knowledge from different geopolitical spaces.[51] It also shows that the asymmetrical relationship between IIMA and Harvard did not imply that the Americans were in a position to impose their knowledge, ideas, and values.

In the period 1965–67, a series of events further consolidated the new course of the research group. In February 1966, Desai took over as the leader of the Agri-Co group, replacing Halse. It was the institute's policy to place the leadership of research and educational activities in the hands of Indian nationals as much as possible. Despite some personal friction between the two, Desai largely continued the agenda set by Halse, using the key principles of the agribusiness approach in developing the agri-cooperative approach to development.[52] In 1967, Halse left the institute to become a member of the National Dairy Development Board (NDDB), an organization established by the Indian government to replicate the success of the cooperative-based dairy production of the Amul Dairy project in the rest of the country. As part of the NDDB, which was chaired by Kurrien, Halse made a significant contribution to the launch of the major national rural development programme named "Operation Flood". This would lay the foundation for what has been popularly called India's "White Revolution", which turned India from a milk-deficient country into one of the largest producers of dairy products. IIMA played a significant role in this process by delivering several studies and by providing specialized training for managers in the emerging dairy sector.

Under the leadership of Desai, the Ag-Co group received numerous new research assignments. In 1966, the institute became involved in the ministry's "High Yielding Varieties Programme" and received the assignment to study the problems in planning and supply management and the responses of farmers of alternative yielding varieties.[53] Subsequently, the research group was granted a project for research on fertilizer use and distribution, and on farmers' attitudes towards the use of fertilizers to support the seeding programme.[54] In the meantime, a new director was appointed: Ravi Matthai. He

50 Sarabhai to Jaipal (Minister of the Embassy of India in Moscow, Soviet Union), 30 November 1964, Ahmedabad. IIMAA, IIMA Institution Building Files, Part III.

51 This point is eloquently made by D. Engerman in his seminal work on foreign aid in India during the Cold War, see D. Engerman, The Price of Aid: The Economic Cold War in India, Cambridge, MA 2018, pp. 117–158; see also O. A. Westad, The Global Cold War: Third World Interventions and the Making of Our Times, Cambridge 2007; Hecht, Entangled Geographies; and Mazurek, Polish Economists in Nehru's India.

52 D. Desai, A Life Worth Living, Smriti Dagur 2014.

53 Minutes of IIMAA board meeting of March 1965, Ahmedabad. IIMAA.

54 IIMA annual reports for 1966/67 and 1967/68. IIMAA, Annual Reports.

declared agricultural development one of the key focus areas as part of the institute's "sectoral approach" of development.[55] In this period, IIMA gained the ministry's official recognition as an "Agro-Economic Research Centre", which secured salaries for five faculty members, first on an annual and later on a permanent basis. In short, within a few years, the Ag-Co group had developed from an ad-hoc research unit into a prestigious expertise centre for agricultural knowledge. In the late 1960s, it formed one of the institute's major mobilizers of external funding and outnumbered most other subsections at the institute in terms of faculty and research personnel employed.

With their experimental work of applying new managerial techniques in the agricultural sector, the Ag-Co group aimed to introduce a new perspective – or what they called "the managerial point of view" – to the epistemology of rural reforms. They promoted this view as a more technical, neutral, and decentralized outlook on governmental challenges and issues of the reorganization of India's rural areas. Input-output analysis formed the basic conceptual scheme for understanding the local agricultural realities, flanked by other methods of analysis. By analysing the functioning of the whole range of input-supplying agencies, extension services, and post-harvest operations connected with storage processing and marketing of the output, this particular form of management knowledge provided the information that was essential for rolling out large-scale state developmental projects.[56] By way of illustration, in 1965 Desai conducted a large study on low use of fertilizer by small-scale farmers.[57] On the basis of an eclectic set of data, including information on the use of fertilizers in different local districts, the effect of fertilizers on different crops, as well as data on the production, logistics, and distribution of fertilizers, he identified the main challenges in the system, i.e. how distribution flows could be improved, how demand and supply could be balanced, but also where social resistance could be addressed. Hence, the managerial point of view offered a distinct vantage point for studying the effectiveness of operations within a certain space that could not be addressed by a top-down macroeconomic approach. According to Halse, this managerial perspective formed the tissue between the "macro" ideas and policies from the central political level and the "diversity and micro problems which [were] concentrated in India's 500,000 villages".[58]

These views dovetailed with perceptions of the political centre in Delhi, as can be illustrated with a quote from minister Subramaniam. In the foreword of an IIMA publication on the Block Development Programme, he explained why the managerial perspective was important for rolling out the developmental projects. He described how the

55 R. Matthai, Management and a Nation's Need: The Indian Approach, speech at held in Bombay on 30 September 1971. IIMAA, Occasional Speeches and Writings of Ravi Matthai, p. 13.

56 Speech by Subramaniam held at the IIMA convocation ceremony, 15 April 1972. Ahmedabad. IIMAA, Collection of Convocation Speeches.

57 Desai, Fertilizer use in India and its management dimensions. Ahmedabad 1966. IIMAA, IIMA Case Studies Collection (hereafter IIMA/CSC), CMA0028TEC.

58 M. Halse, Preface, in: M. Halse (ed.), Studies in Block Development and Co-Operative Organisation, Ahmedabad 1967.

district level administrator was limited in his outlook, as he was obliged to spend most of his time at his "headquarters", and was only able to make short and confined tours to his own district. The managerial knowledge and studies conducted by the managerial scientist "[would] enable the district administrator to analyse the Block-level situations in greater detail and over a wider geographical area than [was] normally open to him".[59] Put differently, the managerial techniques opened up new ways to govern India's rural areas in an unprecedented level of detail and scale.

4. Managing India's Green Revolution: A Pedagogical Project

The previous section has described how the new managerial techniques of the agribusiness approach were realigned to the Indian developmental imaginaries to play a role in the developmental projects of the state. Yet, the role of IIMA was not limited to the production and diffusion of new types of knowledge, but also involved a pedagogical project aimed at training a new subject: the agricultural manager. The initiative to expand the educational focus of the institute initially met with internal resistance from faculty and board members at the institute.[60] It was argued that education for rural development was something to be left to the vast network of agricultural colleges, schools, and universities.[61] In response, Sarabhai stressed that IIMA would not duplicate the practices of rural educational institutes, but rather filled a gap between the macroeconomic perspectives on agricultural development taught at agri-economic departments and the management of on-farm practices taught in India's rural colleges.[62]

In 1967, two full courses on agricultural development were added to the two-year postgraduate general management programme. The first course, titled "Management of Agricultural Inputs", built heavily on the input-output approach that was central to the unit's work. It provided students with knowledge of arithmetic tools for analysing and calibrating the needs for "fertiliser, irrigation, farm power and machinery, pesticides, cattle feed and fabric production" at different levels of spatial organization.[63] The second course addressed rural development from an intersectoral perspective of the Indian economy

59 C. Subramaniam, Forward, in: Halse (ed.), Studies in Block Development.

60 Minutes of the Faculty Meeting, 11 April, 1964. IIMAA, IIMA Institution Building Files, Part I.

61 After independence, the University Education Commission, responsible for the national policies, declared rural development one of the key priorities and initiated the establishment of a large number rural universities in the period from 1947 to 1955. The Indian government invested in setting up twenty-seven vocational agricultural schools, for the purpose of "teaching the essential skills needed by a modern good farmer", primarily targeting sons of farmers. In the period from 1955 to 1961, eleven Rural Institutes were launched in non-urban regions "to provide higher education after the secondary stage to rural youth in rural environments". The first agricultural university, the Uttar Pradesh Agricultural University, was set up in 1960. A memo on Indian agriculture, by the Agricultural attaché of the US embassy, summarized that around 1960/61, there were about fifty-one agricultural colleges in India, dispersed throughout the country. Office of Agricultural Attaché, US Embassy in New Delhi, 'Brief on Indian Agriculture', 10 August 1962. HBSBL/HAP, Box 4, Folder 3.

62 Minutes of the Board Meeting 21 June 1963. IIMAA, IIMA Institution Building Files, Part I; see also Minutes of the Faculty Meeting, 11 April 1964. IIMAA, IIMA Institution Building Files, Part III.

63 IIMA, Official Catalogue 1967, Ahmedabad, p. 32. IIMAA.

and provided knowledge and tools to navigate and understand the relationships among agriculture, industry, government, and distribution management.[64]

The courses were not received with enthusiasm. The students in the post-graduate programme aspired to well-paid white-collar management jobs in urban settings rather than jobs that would take them into the rural areas. Consequently, the electives did not attract many students. After two years the courses were dropped due to lack of interest.[65] However, in 1968, more ambitious plans for offering education in agricultural management were presented as part of a new application for a four-million-dollar grant agreement from the Ford Foundation.[66] The Foundation strongly endorsed the institute's commitment to provide a specialized agricultural expert who could help run agricultural cooperatives more efficiently. The grant was the prelude to a more substantial expansion of the activities of the institute. In 1970, IIMA launched a specialized one-year post-graduate programme for "Management of Agriculture", the first of its kind in India, as an alternative to its flagship programme in general management.[67] For setting up the programme, the institute received additional funding from the United States Agency for International Development (USAID), with a five-year grant of a total of twenty-four million INR, more than three million USD.[68] To attract the right kind of student, a special admission policy was developed. A student profile was designed for primarily selecting candidates with a background in agriculture or allied subjects like agricultural sciences, veterinary science, dairy science and agricultural engineering, agricultural economics, or agricultural statistics and rural sociology.[69]

In the agricultural management programme, students were acquainted with the latest managerial techniques as well as with empirical knowledge of the specific conditions under which they would work. The institute put a strong emphasis on the case study method, as this was considered the best pedagogical strategy for bridging the gap between abstract theoretical knowledge and the specific Indian developmental challenges. In the period from 1965 to 1975, the research unit produced an impressive amount of over three hundred specialized case studies regarding agricultural management, based on fictional or concrete developmental challenges in the neighbourhood, that were used as assignments or material for class discussion.[70] The content of the curriculum was roughly based on the same academic foundations as its twin programme on general management. It drew from sub-disciplines such as accountancy, marketing, and behavioural sciences, but was tailored to preparing future agricultural managers for their task to manage India's

64 Ibid.

65 Desai, 'Centre for Management in Agriculture: An Innovation', p. 72. IIMAA, IIMA Experience, Part I.

66 Matthai to Ensminger, letter with a request to the Ford Foundation for a grant for the period 1969–1974, 2 December 1968. Rockefeller Archives Center, Ford Foundation Collection (hereafter RAC/FFC), FF Grants, Indian Institute of Management, Ahmedabad, Society (06200479).

67 Ninth Progress Report on the IIMA Ford Foundation Grant (1970–1971), Ahmedabad, p. 5. RAC/FFC, FF Grants, Indian Institute of Management, Ahmedabad, Society (06200479).

68 Minutes of the Board meeting, Ahmedabad, April 1971. IIMAA.

69 IIMA Brochure 1974–75. IIMAA.

70 List of IIMA Cases 1965–2005. IIMA/CSC.

Green Revolution. The number of students enrolled in this educational programme was relatively low – every year about a dozen graduates found their way as so-called "change agents" into India's agricultural sector – yet the impact went beyond the number of students delivered to the field. The programme for agricultural management formed a source of inspiration for several other institutes in the country for setting up like programmes. From the early 1970s, agricultural management emerged as an established field of knowledge and education that played a significant role in the agricultural transformations that constituted India's Green Revolution.

5. Conclusion

Unlike irrigation channels, dams, agricultural machinery, highly yielding seed varieties, fertilizers, pesticides and food distribution centres, generally regarded as the central ingredients of the Green Revolution, managerial knowledge was a largely invisible element that underpinned India's agricultural transformations from the late 1960s onwards. It nevertheless formed an impactful part of the techno-politics that shaped India's rural spaces as part of the post-colonial state formation project. Rooted in quantitative approaches to governmental challenges, and by building on the principles of input–output analyses, the history of management knowledge runs parallel to the histories of economics, planning, and statistics – topics that have received extensive attention in Indian historiography. Yet, this article has argued that forms of management science that emerged in the 1950s can be regarded as a distinct epistemology that was productive to a specific subject position, i.e., the agricultural manager. Moreover, the role of this manager did not conflate with the role of the state administrator and centralized planner and was imagined as a reflective outsider who provided new knowledge that formed the tissue between the micro problems and macro governance.

This paper has described the making of an expertise centre for agricultural management in Ahmedabad over the period from 1963 to 1973 as part of a larger transnational process that was impacted by the dynamics of the Cold War, decolonization, and nation-building. The overseas involvement of organizations like the Ford Foundation, USAID and Harvard, exemplifies the importance of American actors. The ideal that initially drove the cooperation was to build a transnational network of agricultural institutes that could study agricultural production as a globally interconnected system. The case, however, also showed that local resistance and national boundaries did not leave the process untouched and provoked disruptions, fragmentations, and contestations. Working in the Indian context, the team in Ahmedabad struggled applying the concept of agribusiness to the Indian realities and felt the need to unpack it and align it to the dominant Indian imaginaries for rural reform. Subsequently, the management concepts introduced under the rubric of "agribusiness" – developed in the context of an industrial society and American Post-War capitalism – were adapted and instrumentalized for the political agenda to rebuild India's rural areas on the principles of cooperative organization and

modes of production. In this process, the managerial concepts that circulated across these national boundaries appeared to be highly flexible or elastic elements that could be adapted and linked to the dominant ideological agendas. The way in which management knowledge formed an integral part of the techno-politics of rural development in India in the late 1960s and 1970s, constituted something of a distinct sphere of practices, forming what the authors of this special issue fittingly identified as one of the multiple "worlds of management".[71]

71 See the introduction by Katharina Kreuder-Sonnen, Lukas Becht, Florian Peters, and Vítězslav Sommer in this issue, pp. 590–602.