

MASTERY OVER GEOGRAPHY AND THE RISE OF SOCIAL DEVELOPMENT: A CASE STUDY OF THE CANAL IRRIGATION SYSTEM OF THE WEST PUNJAB DURING COLONIAL INDIA

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ABSTRACT

It is the geography that determines social development and, in response, social development changes the meanings of geography. The ability to harness geography, natural resources gave the British an upper hand over the other nations in the 18th and 19th centuries and helped them creating a vast empire. The construction of the modern canal irrigation system in the Punjab by the British was a great feat of engineering and administration and the best use of the soil and water. The British canal irrigation system brought a change in the social and economic lives of the people of the Western Punjab.

Keywords: social development, canal irrigation system, colonial India,

INTRODUCTION

Morris says in his book, *Why the West Rules For Now: The Patterns of History, and What They Reveal about the Future*, that throughout the history of mankind, geography has played a significant role in the social development of mankind. It is the geography that determines social development and, in response, social development changes the meanings of geography.¹The ability to harness geography, natural resources gave the British an upper hand over the other nations in the 18th and 19th centuries and helped them creating a vast empire. The construction of the modern canal irrigation system in the Punjab by the British was a great feat of engineering and administration and the best use of the soil and water. The British canal irrigation system brought a change in the social and economic lives of the people of the Western Punjab.

Ian Morris's world of Geography, energy and organizational capacity:

Geography has always been a moving force behind the creation of great civilizations and accounts for, why societies in different parts of the world react to pressures and changes in different ways and why some succeed and some fail. Morris proclaims that it is geography which drives big history. The ability of the people of the Hilly Flanks, China, the Indus Valley, Oaxaca, and Peru, to harness the natural resources helped them in creating civilizations of their own as compared to the people of the Sahara and New Guinea.²It was not

¹ Ian Morris, *Why the West Rules for Now: The Patterns of History, and What They Reveal about the Future*(New York: Farrar, 2010),24.

²Ibid.,32.

only in the West where geography was transforming the societies but it also played a significant role in uplifting the social development of other societies as well. Arabs developed in the 8th century A.D. because of the expansion of the agriculture based on irrigation in Iraq and Egypt using different techniques, and developing new varieties of crops brought by the travelers from the Indus to the Atlantic.³ Morris argues that social development is the ability of the societies 'to get things done-to shape their physical, economic, social, and intellectual environments to their own ends'.⁴ Geography and social development transform each another in a way that living on a coalfield meant very little two thousand years ago, but two hundred years ago it began meaning a lot.⁵ The opening of the Suez canal and Panama canal transformed the meanings of geography to a great extent, not only for the countries adjacent to these canals but for the whole world as well. The societies that fail to respond to the challenge of geography fail to flourish.

Morris also discusses the social theory that "social development is the bundle of technological, subsistence, organizational, and cultural accomplishments", which affects the lives of the societies.⁶ To measure social development, one needs to measure the ability of societies to capture energy, to organize it, to manage technological innovations, and their capacity for making war. The Mediterranean Sea was at first an impediment to travel as were the Atlantic and the Pacific Oceans, but once a technology was created for coping with these natural impediments, they became highways for commerce and war. The dominance of Europe in the world arena, after 17th century, is the story of success of this bundle of tools. Morris point out two strategies of governing or ruling; one is the High-end strategy, this strategy helps in running the state through the organizational set up, organization of bureaucracy and army while in the Low-end strategy, the state is run with the help of local elites and kinsmen, by rewarding them and sharing with them the plunder.⁷ It was the energy capture and organizational capacity that helped Britain to conquer India in the 18th century.

Britain in India, mastery over geography and organizational capacity:

Ian Morris argues in his book that bigger empires take bigger projects.⁸ Great Britain, the biggest Empire of the 19th century, took the big project of establishing the largest modern irrigation system of the world in the Indus basin of the Punjab. Eighteenth century technology brought Europe closer to India. Different equipments of modernity like "steam-shipping, telegraph and railways", under Dalhousie, played a significant role in this respect.⁹ Organization and administration always helps in creating an empire while failure at the organizational and administrative level brings down an empire.¹⁰ The British ruled through the high-end strategy, bureaucratic administration instead of the low-end strategy, the kingship or monarchy¹¹ which was the tradition of ruling in pre-British India. The British organization of the canal system and its administration in the Punjab is a unique feature of Indian history. More demand for food, shelter, fuel and clothing raised the demand of land in the 18th

³Ibid.,360.

⁴Ibid.,24.

⁵Ibid., 560.

⁶Ibid., 144.

⁷Ibid., 229.

⁸Ibid., 225.

⁹ Andrew Porter, *The Nineteenth Century*(Oxford: Oxford University Press, 1999),417.

¹⁰Ibid., 181.

¹¹Ibid., 229.

century.¹² The British being aware of this development revolutionized the irrigation system of India.

The most important period of colonial India is the viceroyalty of Curzon, who introduced the administrative reforms in India. The British were aware of the geography, the abundance of water and vast tract of land in India. They built canal irrigation system, institutionalized it, organized it and had set up unique rules of administration. It helped the British a lot in sustaining their colonial gains by transforming the agricultural set up of India. It brought an economic change of great importance. The total tax revenues increased 75% between 1870-71 and 1901-92.¹³ Until 1850, Britain imported whole of its tea from China while in 1900, tea worth of 24 million pounds was imported from China and of 137 million pounds from India.¹⁴ Around mid 19th century, 'Great Britain was responsible for one-fifth of the world commerce.'¹⁵

Canal irrigation system of the Punjab:

The British having the experience of the "well-established systems of political governance, financed by its efficient land revenue administration" in Madras and Bengal, developed Punjab as the 'model agricultural province' in the second half of the 19th century.¹⁶ The British changed significantly, the agrarian system of the Punjab and increased the arable land for agriculture. The canal irrigation of the Western Punjab, "transformed this region from desert waste, or at best pastoral savanna, to one of the major centers of commercialized agriculture in South Asia".¹⁷

As Ian Morris explains that harnessing of the natural environment has always played an important role in the development of the societies, the British harnessed the natural environment of the Punjab through introducing modern irrigation system. This modern irrigation system brought a revolution in agriculture and Punjab's agricultural output had increased manifold. The canal irrigation system brought fruition in the form of canal colonies, and one of the biggest plain land settlement in the world, and, "transformation of 6 million acres of desert into one of the richest agricultural regions in Asia was a stupendous engineering feat that was seen as the colonial state's greatest achievement."¹⁸

British gave such importance to the construction of canals in the Punjab that they spent a huge amount of money in this field; for example, the British spent about 5,000,000 Pounds to construct the Upper Jhelum, Upper Chenab, and Lower Bari *Doab*.¹⁹ Before the introduction of the modern irrigation in the Western Punjab, its agriculture was based on (*sailabi*) inundation and (*barani*) rainfall, irrigation system. Perennial irrigation was useful through wells which required a high level of underground water or through canals which required a

¹²Ibid., 493.

¹³ K N Panikkar, Terence J Byres, and Utsa Patnaik, *The Making of History* (London: Anthem Press, 2002), 345-346.

¹⁴ Percival Spear, *The Oxford History of India* (Oxford: Oxford university Press, 1958), 721.

¹⁵ Paul Kennedy, *The Rise and Fall of the great Powers* (London: Fontana Press, 1989), 194.

¹⁶ Ian Talbot, "The Punjab Under Colonialism: Order and Transformation in British India" [online], available from http://www.global.ucs.edu/punjab/14.1_Talbot.pdf, 17 May 2011.

¹⁷ Imran Ali, *The Punjab under Imperialism, 1885-1947* (Oxford: Karachi, 2003), 3.

¹⁸Ibid.

¹⁹ C. H. Buck, "Canal Irrigation in the Punjab", *The Geographical Journal* 27 (Jan., 1906): 65.

rather advance technology.²⁰The basic objective of the modern canal irrigation was to bring under cultivation the vast waste crown land.

The Lower Chenab Canal with total length of 2700 miles, having yearly net revenue of the canal, nearly 40% of its capital cost of more than two million Sterling Pounds, was one of the most successful irrigation systems in the world. The area that was brought under cultivation was two million acres. The second canal colony, the Lower Jhelum Canal, in the tract of *doab*, land between the two rivers, Jhelum and Chenab, was established in 1902. With the wisdom of Col. Jawb, an eminent irrigation officer, and Sir James Wilson, a distinguished civil servant, The Triple Project, comprising the Upper Jhelum, Upper Chenab and Lower Bari Doab canals, was completed in 1915 with the cost of 7 million Sterling Pounds. The total length of the canal was 3400 miles and the area irrigated was two million acre. Individual efforts were also made in respect of building canals, like that of Reynell Taylor, Deputy Commissioner of Dera Ismael Khan, established a canal project, which brought 20,000 *bigas* (10,000 acres) of jungle under cultivation.²¹ Engineering mastery of earth and water was nowhere more evident in the empire than in the irrigation canals of India.²²

To understand the engineering feat of the British engineers in respect of the construction of these canals, it is sufficient to know that the Chenab Canal had 250 foot wide bed with the “depth of almost 11 feet of water, and discharges 10,800 cubic feet per second or about fourteen times the amount ordinarily discharged by the Thames at Richmond.”²³ It was a great surprise as to how the level of water was maintained while the canals were flowing through the different areas of low and up lands. The Sluice-gates were used to regulate the discharge of the flow of the water, and the formulas were used in such a way that every tract of land whether it was situated at the start of the canal or at the tail got the same amount of water.²⁴ The use of telegraph for conveying the message urgently, and for the most effective administration of the canal system, helped in the improvement of administration. At both sides of the canals were roads, only for the official use, then the trees and then a road for the common travelers. The trees were cared for so efficiently that they were marked with numbers. It was duty of the official to count the trees every day. The administration was very efficient and competitive.

Before the colonial rule in the Punjab, most of the population lived semi nomadic lives, in summer at the bank of rivers while in winter they migrated to the bar area, *rahna* (where there is water and pastoral land for the animals). It was a cycle of seasonal migration. After the canals construction, *chaks* were also chalked out with wide bazar, streets, hospitals, schools and pastoral land, totally different from the older villages, *mozas*, having narrow streets and no facilities that were available in the *chaks*. The British administration directly affected the rural life²⁵ and helped People in living a settled life, with a sense of the rule of law.

There was no permanent solution to cop with the menace of famine before the establishment of canal irrigation system but when once established with modern communication system of railways and roads, and responsible government, the effects of famine got diminished to a

²⁰InduBanga, *Five Punjabi Centuries*(New Delhi: Manohar, 2000),267.

²¹ J. Royal Roseberry, *Imperial Rule in Punjab: The Conquest and Administration of Multan, 1818-1881*(Lahore: Vanguard, 1988), 153.

²² Porter, *The Nineteenth Century*,264.

²³Buck, “Canal Irrigation in the Punjab”, 62.

²⁴Ibid.

²⁵ Harry M. Raulet and Jogindar S. Uppal, “The Social dynamics of Economic Development in Rural Punjab”, *Asian Survey* 10(Apr., 1970): 340.

great extent. When peasants were given rights of ownership, they cultivated the land with much labour, resulting in the permanent supply of food and the communication system. Railways, roads and telegraph greatly helped in controlling the effects of famine. Thus the modern canal irrigation system transformed the lives of the people of the Punjab from nomadic to the settled one and undoubtedly the manifestation of settled life in the form of increasing civility and polish and falling down rate of crimes did appear in canal irrigated Punjab.²⁶

Land revenue was one of the big source of income for all governments of India so the British too, gave much importance to the said department and established 'Land Revenue Systems'²⁷ to extract more revenue from the agricultural land. This Land Tenure System helped a lot in modernizing the agriculture of the Province of Punjab where every inch of arable land was measured and classified.

When agriculture flourished owing to the irrigation system of the Province, 'commercialization of produce' increased under the British Raj, the regional markets were not only linked with the all-India market but with the world market as well.²⁸ The railway integrated India into the world economy, as an exporter of cash crops and as an importer of manufactured goods.²⁹ Modern canal irrigation system improved communications. The agriculture output increased highly, 'Punjab produced a tenth of British India's total cotton crop and a third of its wheat'.³⁰ After the completion of the railway line from the Punjab to Karachi, Multan was the largest city in the value of trade in the province, in fiscal year 1880-81. Its value of export was (8,404,104) Rs, value of Imports Rs 3,703,382, and the total value Rs 12,107,486.³¹

Canal irrigation project of British Punjab totally changed the demography of the province. Different canal colonies were established in the doabs, like Sidhnai Colony in the Multan District in 1886 with an area of 57000 *bighas*, Sohag Para Colony was situated in Montgomery District in 1886-88, 90,000 acres was brought under cultivation, Chunion Colony in the southern part of the Lahore district was completed in 1906, with allotted area of 103000 acres, Lower Chenab Colony in the Rachna Doab, the largest of the canal colonies, with an allotted area of two million acres. Another colony, Lower Jhelum Colony was developed in Shahpur District, with its headquarters at the newly founded town of Sargodha. The next important project was lower Bari Doab Colony which was developed between 1910 and 1925. Nili Bar Colony was the last major project, which was done beautifully by the British, in the Montgomery and Multan Districts. It covered approximately an area of about 800,000 acres.³²

Thus, an urbanization process started due to the agricultural developments in the Punjab.³³ The British established colonies on such modern lines that land was fixed for forests, *mandis*

²⁶ Andrew J. Major, "state and Criminal Tribes in Colonial Punjab: Surveillance, control and reclamation of the 'Dangerous Classe'", *Modern Asian Studies* 33 (July., 1999): 687.

²⁷ Abhijit Benerjee and Lakshmi Lyster, "History, Institutions, and Economic Performance: The Legacy of Colonial Land Tenure Systems in India", *The American Economic Review* 95(Sep., 2005): 1192.

²⁸ Mridula Mukherjee, *Colonizing Agriculture: The Myth of Punjab Exceptionalism* (New Dehli: Sage, 2005), 55.

²⁹ Porter, *The Nineteenth Century*, 251.

³⁰ Talbot, "The Punjab Under Colonialism", 5.

³¹ J. Royal Roseberry, *Imperial Rule in Punjab*, 221.

³² Banga, *Five Punjabi Centuries*, 344-353.

³³ *Ibid*, 358.

(market) and experimental farms for fruit, seed, and vegetable.³⁴ These canal colonies proved 'extremely profitable to the government'.³⁵ It is clear that before the modern canals, dams and bridges, the large tracts of land between the rivers were uninhabited. Thus, change in geography in the form of, land contourment, agriculture, population migration, and establishment of institutions, helped in changing the meaning of the lives of the people. Whenever there are ownership rights for the peasants, improvement comes.³⁶ The British government gave ownership rights to the peasants of Punjab and it enhanced the production of the land and brought socio-economic change in the lives of the people. The British constructed the perennial canal irrigation system in the Punjab that brought a 'major economic change in this part of the British India.'³⁷

Colonial Administration and Organization Capacity:

The British invested their ideas of management and organization in India. When they came to India as rulers, the Indian society was devoid of such institutionalization, the former had introduced. It was a triumph of scientific vision of governance. The history of irrigation in India, where British built large new irrigation works, that increased colonial revenues and expanded commercial production, provides a dramatic illustration of this notion.³⁸ The colonized irrigation was a sort of 'imperial science', their mastery over the natural environment.³⁹

Colonial administration brought a huge change in the agricultural economy of the province of the British Punjab, the Western Punjab.⁴⁰ Firstly, British administered the canals through 'highly personalized action', a kind of 'paternalistic administrative structure' that transformed into bureaucratic rules to administer the canals and the canal colonies.⁴¹ The British administration assured the supply of water. British administration was so kind and effective that the peasants considered the administrators their '*ma-bap*' (parents), and they believed that the availability of water was impossible without the 'aid of the rulers.'⁴²

The bureaucracy under the British Raj in the Punjab helped greatly in big projects like the "ambitious canal construction and land distribution projects", but the administration after independence failed to get such achievements.⁴³ The British colonial agriculture was based on the canal irrigation which is the proof of not only the socio-economic development in the Punjab but it also confirms the performance of the colonial state.⁴⁴

³⁴Ali, *The Punjab under Imperialism*, 39.

³⁵Raulet and Uppal, "The Social dynamics of Economic Development in Rural Punjab", 337.

³⁶Morris, *Why the West Rules for Now*, 251.

³⁷Imran Ali, "Sikh Settlers in the Western Punjab During British Rule." *Centre for Management and Economic Research* (March 1994): 1-20.

³⁸David Gilmartin, "The Strange Career of the Rule of Law in Colonial Punjab", *The Journal of Asian Studies* 53 (Nov 1994): 1134.

³⁹Ibid.

⁴⁰Imran Ali, "Malign Growth Agricultural Colonization and the Roots of Backwardness in the Punjab", *Past & Present* 114 (Feb. 1987): 129.

⁴¹Gilmartin, "The Strange Career of the Rule of Law in Colonial Punjab", 1144.

⁴²Ibid., 4.

⁴³Imran Ali, "Malign Growth Agricultural Colonization and the Roots of Backwardness in the Punjab", 131.

⁴⁴Ali, *The Punjab under Imperialism*, 243.

Failure of the Advantage of Backwardness:

Morris argues that advantage of backwardness and slothfulness helps in rising social development.⁴⁵ But in the context of Pakistan, having advantage of backwardness, we failed miserably in getting benefits from the backwardness. Yes, it is right that the British developed canal system and the communication system for their own benefits but it also served a lot for the social development of the local people. When the British left India they did not ruin the canal irrigation system before their departure or had not packed the system for the Great Britain. They left the system in beautiful shape and good structure. After the departure of the British, we did not benefit from the canal system and ruined it owing to our mismanagement and poor rule of law. During the colonial rule, state performed in a better way in respect of the rule of law. After the emergence of Pakistan, both society and the state are in constant decline in respect of governance and morality, “in stark contrast to the British period and in marked resemblance to the pre British period.”⁴⁶

CONCLUSION

The colonial canal irrigation system has had great importance for the people of the Western Punjab. It brought a visible change in the socio-economic lives of the people, and brought a sense of urban life with modern amenities for the people. The British got mastery over the geography of the West Punjab and transformed the meaning of the lives of the people of the region. It not only helped the British in their imperial gains but was a great blessing for the people of the region as well. The present study confirms that Ian Morris is quite right in respect of the importance of geography in the social development of the societies. The colonial agriculture in the Punjab based on canal irrigation contributed a lot in the field of ending of internal warfare among semi-nomadic tribes and banditry, and changed their life pattern.

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⁴⁵Morris, *Why the West Rules for Now*, 27.

⁴⁶Ilhan Niaz, *The Culture of Power and Governance of Pakistan 1947-2008* (Karachi: Oxford, 2010), 248.

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