Man alone has succeeded in impressing his stamp on nature, not only by shifting plant and animal species from one place to another, but also by so altering the aspect and climate of his dwelling place, and even the plants and animals themselves... It is precisely the alteration of nature by men, not solely nature as such, which is the most essential and immediate basis of human thought, and it is in the measure that man has learned to change nature that his intelligence has increased.1

- Frederick Engels

The conceptions and worldviews that have historically informed our understanding of the relation between society and its natural environment have broadly conformed to one or the other of – to use Engel’s terms – the “two great camps”.2 On two sides of this epistemological divide were idealism and materialism. Materialism holds the primacy of matter over mind, while the opposite is true for idealism. The materialist theory of knowledge holds that a Nature and its elements exist outside and independent of human consciousness, and operates according to its own laws. Moreover, the society knows or makes

2 "Did God create the world or has the world been in existence eternally?" The answers which the philosophers gave to this question split them into two great camps. Those who asserted the primacy of spirit to nature and, therefore, in the last instance, assumed world creation in some form or other...comprised the camp of idealism. The others, who regarded the nature as primary, belong to the various schools of materialism.” Frederick Engels, Ludwig Feurbach and the Outcome of Classical German Philosophy, New York: International Publishers, 1941, pp.17-21.
sense of a phenomenon in the process of its productive activities i.e., while working upon Nature. Though the knowledge of Nature and the laws of its operation are acquired by working upon it through human labour, the same process also entails a simultaneous process of alienation of human beings from Nature. The idealist system of knowledge, on the other hand, renders Nature with metaphysical charms. One of the fundamental principles of Idealism is that human consciousness determines the ways of perceiving matter, which does not exist independent of the human mind. As such, societies at different epochs make sense of the same phenomenon differently. Both idealism and materialism has several variants and longstanding historical tradition, but idealism as a distinct philosophical tend has consistently been challenged by materialism, and has upheld a world outlook that encouraged the development of scientific thinking in our understanding of Nature. The ascendance of a materialist world outlook was a crucial ideological base in the deepening of studying nature and the development of various branches of natural sciences in the last few centuries, which also challenged and weakened the influence of the metaphysical content of organised religions.

The materialist conception of history, one of the fundamentals of Marxism, has influenced the way historians have investigated the society-nature relationship in the twentieth century. As opposed to mechanical and evolutionary materialism, Marx and Engels established the superiority of dialectical materialism, turning Hegel’s path-breaking insights mired in dialectical idealism on its head. Marxism with its consistent application of dialectic materialism in thought and action has emerged in the last hundred years as not only a potent tool of social and historical analysis but as a guide to conscious social transformation. At a time when the assertions of ‘Death of Marxism’ and ‘End of History’ declared just after the breaking up of the Soviet Union have lost all their

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3 "Epicurus, according to Marx, had discovered alienation from nature; but Hegel revealed the alienation of human beings from their own labor, and hence from both society and the specifically human relation to nature. Marx forged these insights...into a revolutionary philosophy that aimed at nothing less than the transcendence of alienation in all of its aspects: the world of rational ecology and human freedom with an earthly basis – the society of associated producers.” John Bellamy Foster, Marx’s Ecology: Materialism and Nature, New York: Monthly Review Press, 2000, p.256.
novelty, when 'post-modern' and 'post-colonial' critiques have exposed themselves in the last twenty years as nothing but the latest avatars of the stale idealism of yesteryears, when scholars peddling revisionism in the garb of Marxism have justifiably come under severe questioning and criticism, when imperialist and neo-colonial forms of domination threatens all spheres of freedom including that of intellectual life of nations and people around the world, and when celebrated movements like the Save the Narmada Movement and Chipko – presented to us as models of people's struggles – have been decisively defeated by the Indian state, a turn or return to Marxism for the people including those in the academic world appears more relevant than ever. This is also because a just and non-exploitative relation with nature cannot be forged as long as exploitative social relations exist among classes, nations, and the people.

_Society and the Physical Environment: The Annales Historians_

_Stil waters run deep and we should not be misled by surface flurries._

- Fernand Braudel⁴

Can there be a history of mountains, seas, rivers, forests, climates? There can be and there have been such histories, especially of climate, forests, species, etc. Much of it has been their natural history. Can there be a history of a river other than its natural history? Can a social history of a river be attempted? The history of a river in a social enquiry cannot but be a study of the people's relations with the river, and by extension, the relations within the society. But the category of 'people' in the ordinary sense is an indeterminate one. Can there be only one kind of relation of a society with the river? In a class-divided society there are class-based differences of world-outlook, and thereby different ways of interacting with the river. The understanding of Nature can differ within a society divided by class contradictions, which is to say that different social classes sharing the same temporal and spatial plane can have different and even

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conflicting outlooks towards Nature. Since the dominant class with control over political power tries to impose its world-outlook on the entire society, it also defines the dominant mode of the society's relation with nature. So, we find distinct ways of perceiving and making use of a river in the pre-capitalist Europe from that of post-Industrial Revolution. Similarly, ways of perceiving the river in late-nineteenth century India is different from that of late-twentieth century. Capitalism and socialism as two distinct social orders differ in their relation to nature. A river could be differently represented in a tribal oral culture than in a Sanskrit text or a buranji. Or for that matter, the classes engaged in physical labour under exploitative production relations may perceive a forest or a hill in a radically different manner than those classes that enjoyed the fruits of their labour.

People's relation with nature or their lived environment as distinct from the study of nature per se – which is the subject matter of natural sciences – has been a subject of examination for historians and social scientists for quite some time. In France in particular, there has been a long tradition of historians looking into the connections between history and geography – between the productive activities of the society and the natural environment in which it was set. Beginning in the 1920s, the historians came to be closely associated with the Annales magazine inaugurated a study of this relationship in longue durée, or in the long duration, as opposed to l'histoire événementielle, or "the history of events: the surface disturbance, the waves stirred up by the powerful movement of tides."5 Lucien Febvre was one of the forerunners of this branch of historiography which has left a rich historical tradition. To his contemporaries, "The scientific spirit which animates him is up in arms against the pseudo-science which deals in theories of excessive simplicity and impoverished the living reality...what he has aimed at especially is to show just how the played in History by the geographer's "Earth" can be determined."6 As Febvre has put the "Problem of Environment" in his influential A Geographical Introduction to History published in early 1920s,

We are proposing to consider...the vast question of the relation of the land to human societies and of human societies to the land. We propose to increase our difficulties by transposing the problem into terms of time, and by asking ourselves what conditions are imposed on history – imposed in advance – by the habitable earth.7

He noted that the enquiry into the effects of the elements of nature on human society has a long precedence in the western world, dating back as far as to the works of *On Airs, Waters and Places* by Hippocrates, the "ancestor or rather the patriarch" of such studies. He was followed by the ancients, including Plato and Ptolemy, Latin thinkers like Lucretius, and then Bodin, Abbé Dubos, Montesquieu, Buffon, Humboldt, Ratzel and other 'moderns'. But the shortcoming of this was the formulation of the ""Problem" in terms of "the relations between environment and human society in its historic evolution."8

Following the new ground broken by the likes of Febvre and Marc Bloch in charting out a new branch of historiography – "geographical history" or "historical geography" – pioneering investigations were carried out by a new generation of France historians in the post-Second World War period. Among these the more notable contributors have been Fernand Braudel and Emmanuel Le Roy Ladurie. Braudel's *The Mediterranean and the Mediterranean World in the Age of Phillip II* has been particularly influential. This book represented "an attempt to write a new kind of history, total history, written on three different registers, on three different levels, perhaps best described as three different conceptions of time."9 He "sought out, within the framework of a geographical study, those local, permanent, unchanging and much repeated features which are the 'constants' of Mediterranean history."10

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8 Febvre, A Geographical Introduction to History, p.85.
10 Ibid. p.1239.
Notwithstanding its great achievements in establishing through demonstration that the physical environment has a bearing on human history, the limitation of Annales school was closer to what Engels termed as the ‘naturalistic conception of history’ which held that “nature exclusively reacts on man, and natural conditions everywhere exclusively determined his historical development”, and therefore is bound to be “one-sided and forgets that man also reacts on nature, changing it and creating new conditions of existence for himself.”\(^{11}\) Such a history comes forth as evolutionary, one-dimensional, unidirectional and deterministic. Though the Annales historians forcefully established the environmental factors in shaping history and thereby pointing out the biases of anthropocentricism in earlier historiography, by choosing to prioritise one over the other, they unwittingly reproduced the one-sidedness of the histories they rightly critiqued. The point is to pose the question dialectically, i.e., the way a human society and the physical environment constantly works upon and shape each other over time in a two-way process.

**Social Movements and the Emergence of ‘Environmental History’**

It is generally accepted that the emergence of ‘environmental history’ as a separate sub-branch of history in North America has its origins in the social movements of that time which highlighted the adverse impact of technology-driven industry on the animate and inanimate world. Rachel Carson’s *Silent Spring* published in 1962 – which subsequently ran for more than thirty reprints – is widely perceived to be a path-breaking work in highlighting the adverse impact of the use of technology on the society and ecology. So influential was her book and the movement that generated it that “Her book...is often seen as marking the birth of the modern environmental movement.”\(^{12}\) She was highly critical of the use of harmful chemical pesticides and insecticides in agriculture,

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12 John Bellamy Foster, *The Ecological Revolution: Making Peace with the Planet*, Kharagpur: Cornerstone Publications, 2009, p.67. Foster further notes, referring to the ideological basis of Carson’s critique of the pesticide industry, “Although an immense amount has been written about Carson and her work, the fact that she was objectively a “woman of the left” has often been downplayed. Today, the rapidly accelerating planetary ecological crisis, which she more than anyone else alerted to us, calls for an exploration of the full critical nature of her thought and its relation to the larger revolt within science with which she was associated.” ibid., P.67.
which were by-products of the Second World War research in developing agents for chemical warfare. She wrote,

For the first time in the history of the world, every human being is now subjected to contact with dangerous chemicals, from the moment of conception until death. In the less than two decades of their use the synthetic pesticides have been so thoroughly distributed throughout the animate and inanimate world that they occur virtually everywhere. They have been recovered from most of the major river systems and even from streams of groundwater flowing unseen through the earth. Residues of these chemicals linger in soil to which they may have been applied a dozen years before. They have entered and lodged in the bodies of fish, birds, reptiles, and domestic and wild animals so universally that scientists carrying on animal experiments find it almost impossible to locate subjects free from such contamination. They have been found in fish in remote mountain lakes, in earthworms burrowing in soil, in the eggs of birds – and in man himself. For these chemicals are now stored in the bodies of the vast majority of human beings, regardless of age. They occur in the mother’s milk, and probably in the tissues of the unborn child.13

When she called upon the American people to demand an end to the spread of these poisonous chemicals "in an era dominated by industry, in which the right to make a dollar at whatever cost is seldom challenged", this indeed was a challenge to the powerful chemical and fertilizers industry in the USA which had strong clouts in the government. In spite of the strong opposition put up by multinational corporations that manufactured Dichlorodiphenyltrichloroethane (DDT) – one of the most important synthetic agents – the campaign triggered by *Silent Spring* managed to force the phasing out of its use in 1970s, along with some other deadly chemicals. Donald Worster argued, "We have had to confront the fact that when we in the United States manufacture a pesticide like DDT and sell it around the world, it can eventually turn up in the bodies of penguins living innocently at the South Pole. We may not want to accept responsibility for those outcomes – and most of us do not – but we cannot be unaware of them."14

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However, except the banning of some of the most harmful toxins, the chemical industry won the battle, and there was a rapid expansion of the kind of products Carson fought. In fact, by late 1980s, the production of pesticides had grown more than twice in comparison to early 1960s when *Silent Spring* was first published.\(^{15}\) It is also necessary to remember what John Bellamy Foster tells us of Rachel Carson in order to fully appreciate the vision she envisaged. He writes,

Carson’s attack on synthetic pesticides is not her most notable achievement. Rather it is her wider, ecological critique, challenging the whole nature of our society which is so important today. Carson is better understood if we recognise that she was not simply an isolated figure as is often supposed, but was a part of a larger revolt among scientists and left thinkers in the 1950s and 1960s arising initially from concerns over the effects of nuclear radiation. Alarm about the aboveground nuclear tests and the harmful effects of radiation, coupled with fears of nuclear war, spurred scientists, emanating primarily from the left, to raise searching questions about the destructiveness of our civilization. From this work, the modern ecology movement emerged...as her ecological critique developed, perceiving the destructiveness of the social encounter with the environment, she sought not merely to explain the world but to change it.\(^{16}\)

A growing awareness and acceptance of ecological destruction caused by human actions informed almost all branches of knowledge, laying the foundations for the creation of specialised disciplines like environmental sciences, etc., while prompting the emergence of sub-branches for the study of the environmental issues within the established disciplines.\(^{17}\) These developments also have had a profound impact on the writing of history, initially in the USA, but also followed by similar historical investigations in Europe and the former colonial world, including South Asia. In North America, the American Society for Environmental History was established in 1975, the first of such institutions dedicated to the historical study of the society-nature relationship. Contending that we have two histories to write – one of our “own countries” and the other of “planet earth” – Worster proposed in 1988 the writing of what he called ‘planetary history’.

\(^{15}\) Foster, *The Ecological Revolution*, p.68.
\(^{16}\) ibid., pp.69-83.
\(^{17}\) Daniel Botkin, *Discordant Harmony*
When that larger planetary history gets fully written, it will surely have at its core the evolving relationship between humans and the natural world. Planetary history has been fundamentally environmental history. It has been the story of the long shifting away from direct and local interaction with the earth, as the defining context of daily life, to dealing with it more indirectly and globally, through the impersonal mediation of powerful centralised political institutions, elaborate technologies, and complicated economic structures. Some will insist that there have been significant gains in that shift and strong, compelling reasons for making it. True enough, but all the same the transformation did not come without costs, ecological as well as social, and the large part of the new planetary history must entail calculating those costs and determining who or what paid them and why.\(^{18}\)

Donald Worster had already attempted at charting out this new genre of history with his first major work titled *Natures' Economy* that came out in 1977.\(^{19}\) He recounted the development of explorations into the society-nature relationship in the western world – a history of ecological ideas to be more specific – from eighteenth century onwards. In his own words, he tried to "select and focus on the formative moments in the life history of modern ecology...a time when ecological thought underwent a significant transformation."\(^{20}\) Clarence Glacken's work a decade earlier had studied the history of western thought on nature as well, and so did Carolyn Merchant and other historians thereafter.\(^{21}\)

Transformations in ideas and thought, however, had a correlation with material transformations in the society and the physical environment. One such momentous transformation was induced by the new settlers of America after it was ‘discovered’ by Columbus in the fifteenth century. The historian Alfred Crosby narrated this process in his *Columbian Exchange*, and argued that it was

\(^{18}\) Donald Worster, ‘The Vulnerable Earth: Towards a Planetary History’ in Donald Worster, ed. *The Ends of the Earth*, p.6


\(^{20}\) Ibid., p.xii.

not by swords alone that the New World was conquered. The diseases, animals and plants introduced by the white men destroyed the population of the indigenous people, depleted their food and livestock, and weakened their resistance to the colonisation process.\(^22\) Though many of Crosby's arguments in this book have now been criticised — at times for lapsing into biological determinism — it nevertheless anticipated the works of 'environmental history' in the following decades.

Worster followed it up with *Dust Bowl* two years later, which is now considered to be one of the pioneering works of environmental history. It was also the expansive backdrop for John Steinbeck's classic novel *The Grapes of Wrath* published in 1939. Here he examined the history of a catastrophe that was the culmination of a process of land 'reclamation' for capitalist farming that led to widespread desertification and erosion of soil in the 1930s. The great economic boom after the World War I that increased the demand for food-grains in Europe, led the American farmers to invest enormous amounts of capital in land, technology, and machinery etc. for the production of wheat in the Great Plains of southern US. In the five years between 1925 and 1930 alone, 5,260,000 acres of prairie and grasslands were brought under cultivation. As Worster noted, "Americans blazed their way across a richly endowed continent with a ruthless, devastating efficiency unmatched by any people anywhere. When the white men came to the plains, they talked expansively of "busting" and "breaking" the land. And that is exactly what they did."\(^23\) The mechanical ploughs and disks used for tilling the land turned the soil into fine grains, without any vegetation to keep it grounded. When the "black blizzards" began to sweep the plains in 1935, the entire region transformed into a veritable 'dust bowl' and a desert. To the author, "Some environmental catastrophes are nature's work, others are the slowly accumulating effects of ignorance or poverty. The Dust Bowl in contrast, was the


inevitable outcome of a culture that deliberately and self-consciously set itself that task of dominating and exploiting the land for all it was worth."24

These early works were continued and complemented in the next three decades by a large number of historical studies that looked into various aspects of the "problem of environment". The works of US historians like Alfred Crosby, William Cronon, Carolyn Merchant, Samuel Hays, Richard White, Donald Hughes, and others have expanded the scope of this field.25 For instance, William Cronon contrasted the differences in the 'ecological footprints' of the settlers of New England as opposed to its original inhabitants, the indigenous tribal communities.26 The founding of specialised journals like Environment and History came up in 1990s, showcasing a growing body of research. As the first decade of the twenty-first century comes to a close, Environmental History as a sub-branch of history has firmly established itself, incorporating the insights of not only conventional historiography but also of other disciplines of sciences and social sciences. At the same time, older branches of history such as agrarian history, spatial history, economic history etc. have also been influenced by the recent historical research into various aspects of the human-nature dialectic.

'Environmental History' in South Asia

In The Ends of the Earth – edited by Donald Worster and published in 1988 – carried an article by Richard P. Tucker, titled 'The Depletion of India's Forests under British Imperialism: Planters, Foresters and Peasants in Assam and

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24 Worster, The Dust Bowl, p.4.
Kerala'. Here Tucker argued that British rule in India, like other Western empires that colonised in the non-European world, must be viewed as a system of resource extraction and allocation, which determined not only who was to have access to nature's wealth but also the pattern of the 'biotic systems'. There was a dramatic expansion of the arable land in the subcontinent between the years 1890 and 1970, whereby thirty million hectares of land were covered by forests and grasslands were transformed into areas of crop production and settlement. This agrarian expansion was a high 45 percent. The strategy of the colonial state was to stimulate agrarian production by bringing more and more land under the plough, not by intensive cultivation in the same area. Moreover, the success or failure of agriculture was measured by the income earned by the state from the crops. This agrarian expansion was at the cost of forests, grasslands, meadows, and other tracts of land which were important 'biotic systems' that sustained the ecology of the subcontinent. But this was not the only cause of their depletion. As Tucker notes,

Foresters and planters were two of the most important exotic species introduced into India from Europe. Like imported botanical species competing with indigenous flora, these two human groups became competitors with villagers for access to the land. Many elements of the history of forest reduction in modern India can be understood from a survey of the work of foresters and planters. Both were major actors in the drama of the British Empire as a system of resource management and exploitation.

He then went on to examine the role of these two 'exotic species' or classes that were an integral part of the British Indian colonial system in changing the physical environment of two disparate regions of Asom and Kerala in the last two centuries. Tucker argued that the systematic and planned exploitation of forests and prairies went a long way in changing the ecological and social dynamics of these two regions. This was one of the early historical explorations

29 Tucker, p.120
of the colonial forest and plantation policies in an ecological framework, which
was also a part of an early attempt at mapping such changes outside of the First
World.

Ramachandra Guha's *Unquiet Woods* is generally placed considered to be the first
amongst an assortment of historical works to come up in the last twenty years
and often clubbed together as 'environmental history' of South Asia. This is
irrespective of the author himself or the people about whom he wrote hardly
recognised it as a describing something related to the 'environment'. Published
in 1989, this study foregrounded the ongoing Chipko movement in the hills of
Uttarakhand –essentially a peasant struggle for defending their customary and
communitarian entitlements over forests and hearths – and tracing the history
and the shared ideology that underlie this movement, as well as the forces they
had to struggle against in the past. Originally conceived as a sociology of the
movement, in the words of the author "this study has turned into a more general
history or of ecological decline and peasant resistance in this region, whose main
focus is on recovering the history of forest-based resistance within which Chipko
is small though distinguished part. In this study my study is both more and less
than the history and sociology of the Chipko movement." \(^{30}\) It was a time when a
justifiably criticism could be made that the relation between ecological decline
and colonialism was neglected by the contemporary historians of agrarian
history and peasant resistance.

In order to reconstruct the historical context of the movement, Guha went back
to examine the protracted conflicts between state forestry and the peasantry,
which was based on the ideological differences in understanding the social role
of forests in the colonial period. It was in a sense the exploration of "changing,
and competing, human perception of the 'uses' of nature". This work follows the
two trajectories of change: ownership and usufruct rights from forest-dwellers
and village communities to the state, as well as the state's mediation of such
policies through individual households rather than through village collectives.

\(^{30}\) 'Preface', Ramachandra Guha, *The Unquiet Woods: Ecological Change and Peasant Resistance in
the Himalaya*, Delhi: Oxford University Press, 1989, p.xii.
This newly introduced system of forest management came in sharp contradiction with the existing one that led to prolonged conflicts. Further, Guha argued that 'Gandhian', 'non-violent' and 'traditional' ideology underpinned the struggle and the modes of protest adopted.

*Unquiet Woods* placed the Chipko movement in this continuum of peasant resistance to extraneous values and principles of resource use in the region, connecting it with the degradation of the Himalayan ecology. Even with the limitations of its work – of which there are many – it inaugurated a series of research on the society's changing relations with the forests of the subcontinent, and came to fruition in the next two decades.

Yet, in the mid-1990s it was to be lamented that if environmental history worldwide had come of age, in South Asia it was by and large in its infancy. "Environmental history in this region has yet to develop a firm intellectual base, a solid scholarly foundation", argued David Arnold and Ramachandra Guha while introducing a volume of 'Essays on the Environmental History of South Asia'.

Apart from discussing themes related to the forests such as 'forest practices' by 'local communities' and 'community forest management', it brought 'environmental' issues into the ambit of agrarian studies. Therefore we find discussions on small dams locally managed by village institutions, the impact of commercial irrigation, etc. it also brought for the first time the world of pastoralists and fisher people into the ambit of history. Such works accommodating diverse interests that nevertheless investigated diverse aspects of the interconnectedness of social classes and groups to the lived environment continued to enrich this new field of South Asian historiography continued in the following years. *Nature and the Orient* brought out in 1998 was an ambitious project to bring together multi-disciplinary studies of the human-nature relationship in the non-western world covering a long period of BC 5000 to the present.

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After Richard Grove's influential work *Green Imperialism* in 1996 on the early ideas and practices of conservation in the colonial world, along with Mahesh Rangarajan's *Fencing the Forest* on central India's forests and the colonial policies related to it, two more significant studies appeared in 1999. Sumit Guha's *Environment and Ethnicity in India* also took a long-view of the historical process of "human use of the environment", tracing it for almost eight hundred years in the past from the present. He argued that by interacting with nature and with other social groups through the mediation of the institution of state, ethnicity-based identities were forged - an outcome that had a history dating back to the early medieval period. He examined the transformation of Mavel community to Rajput to Koli, and the ways the changes in the politics of identity was connected to the ecological context, particularly the forests in case of the tribal communities of Bhilwara and Gondwana in central India. It threw light on the changing human-nature relationships with the changes in the political institutions and cultural practices. It also was an attempt to correct a perceived neglect - as pointed out by K. Sivaramakrishnan - of the forests of central India as opposed to that of the Himalayan region.

Sivaramakrishnan's own work titled *Modern Forests* examined three aspects of colonial forestry that came up in the late nineteenth century British India. As per the author, he studied state forest policy "first, as a set of material technologies imposed on trees, grasses and wild animals; second, a legal regime aimed at appropriation and monopoly in the extraction of natural rents; and third, a system of rational knowledge that, ironically, became the site of a struggle among technocrats who vied for professional recognition at the upper level of bureaucracy." Taking Jungle Mahal region as the area of study, the examined the dynamic of environmental change that accompanied colonial policies of forest management in south-western and northern Bengal. This was an attempt

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to "a dialectical relationship between patterns of human engagement with non-human environments and patterns of change in those environments as they influence patterns of socio-political patterns of human behaviour." 35

Scientific forestry was a part of the colonial state-making process in the subcontinent, and reflected the contradictions of the state itself. The author noted that colonial forestry - in spite of its progressively elaborate and systematised body of law, regulations and enforcement mechanism - hardly achieved consistency in application. The state was forced to make exceptions to the law not so much as a mark of benevolence and flexibility, but to iron over internal contradictions or to cover its own weakness as an institution of rule. Thus, "sanctions and regulations were often relaxed, and exclusive claims were forsaken when they could either not be enforced or when bureaucratic agencies contested them." 36 Through the historical examination of southwest Bengal and north Bengal the work also demonstrated how the same forest polices of the state differentially influenced two distinct eco-zones.

Persistent historical interest in this field of historical research has deepened and extended our understanding of the unexplored or under-explored areas such as pastoralism, life in arid regions, grasslands apart from considerably broadening the focus from the dominant concern of South Asian environmental history - the forests, which still continues to draw much attention. 37 While these recent works went a long way in breaking new grounds hitherto historically unexplored, in the process they overlooked some of the important themes consistently explored by established sub-fields of the discipline. As it was pointed out,

36 'Preface', ibid.
Over the years a rift has developed between the concerns of agrarian historians and those of environmental history. The growth of environmental history has been accompanied, in some ways, by a decline of interest in agrarian history; the former, in fact, has defined itself in opposition to the latter...If the old agrarian history neglected the forests and pastures, environmental history now has banished the peasant fields and farms from the realm of historical concern. It was as if these histories were not connected, as if environment did not impinge on the agrarian world.38

The point was to show nature and society, forests and farms etc. in all their interconnectedness. For instance, forests and grasslands permeated the lives of the peasants, while forests-communities had strong historical ties with the agrarian world – sometimes contradictory, while in others, complimentary. Thus, the agrarian and the natural worlds were not mutually exclusive, it was argued, but connected by innumerable inter-linkages, which require historical investigation. Later works of history writing seems to be more conscious of the need “for a more nuanced dialectical relationship between the world of agrarian production and environmental change.”39

Such critique of environmental history raises a fundamental question. The history of forests in South Asia has remained primarily focussed on the state’s role – both before 1947 and after – in influencing the existing relations of the people with the forests. Can there be any ‘environmental history’ which does not take into serious account the people that inhabit the ‘environment’ – whether be it an agrarian, forested, arid, riverine, mountainous, oceanic, or any other physical setting? Can environment history exist on its own without taking into account the society in all its complexities, the people who are the makers of history, which works upon nature and not only is worked upon by it? Experience of social movements – the driving force to give birth to modern ‘environmental’ thought in the first place – particularly in the subcontinent goes to show that ‘environmental’ concerns alone have not and will not become the prime agenda

of mass movements, with the possible exception of a few isolated struggles. It is necessary for history is to remain a tool for social transformation, and that alone can transform the exploitative and destructive society-nature relationship that dominates present South Asia. This is more so at a time when the insistence made a good twenty years back that struggles like Chipko “are assertive, actively challenging the ruling class vision of a homogenising urban-industrial culture” fell far short of their objectives. When longstanding movements like that of the Narmada Valley have been well and truly defeated or cast away. When in their place, transformative movements today are not only being imbibed by the marginalised classes and communities including that of the vast swathes of forests in central and eastern India, but is being enriched and advanced in the course of building a better, just and non-exploitative social order, where nature once again becomes a part and not a victim of social development.

**Rivers as a field of History**

*To write history without putting any water in it is to leave out a large part of the story. Human experience has not been so dry as that.*

Like other elements of the inanimate natural world, with rivers too societies have had an intimate relation. But unlike the forests, which are generally seen in opposition to the civilised world, rivers were equally a part of wilderness and civilisation, of the rural and the urban, of the hills and the plains. Histories have been written of the ancient river-valley civilisations and of the great urban settlements on the major rivers of the world. The relation of those societies with the rivers has also been talked about, though even if circumstantially. Methods and means of making water available from the rivers to the settlements and agricultural fields – through aqueducts or irrigation canals – have been recorded in history. However, such references to the rivers and the riverine environment have remained mostly incidental to the telling of other stories, be it of agriculture, trade, urbanisation, navigation, and what not. However, it is only

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very recently that the ways in which rivers work upon society and the manner in which society shapes rivers through its labour – thereby both going thorough transformation in the process – has been historically investigated.

*Rivers of Empire* is one such work of history, arguably unsurpassed by any of its kind in incisiveness and creativity even after twenty five years of its publication in 1985. Written by the US historian Donald Worster, this highly persuasive and passionately written book made a trenchant critique of the capitalist world order and its concomitant way of life through a historical recounting of the transformations in the Great Valley of California, USA. Free-flowing rivers turned into lifeless and regulated ditches through the use of technology presented a mirror image of what was wrong with capitalism. As Worster emphatically declared, “Here then is the true West which we see reflected in the waters of the modern irrigation ditch. It is, first and most basically, a culture and society built on, and absolutely dependent on, a sharply alienating, intensely managerial relationship with nature.”

The transformation Worster talked about - the emergence of the New West from the great plains of California - was unprecedented even by western standards. Nor were this a work of the blind forces of nature, but of conscious and deliberate actions of the society. The key to this transformation was the technological control of water. "It made possible not only the evolution of a prosperous agriculture but also, to a great extent, the growth of coastal cities like Los Angeles and San Francisco. It eventually made California the leading state in America, and perhaps the single most influential powerful area in the world for its size." How did it all happen? The author tells us,

men, driven by a vision of the valley's potential wealth and by a passion to possess it, shot out the waterfowl. They trapped out the furbearers. They cut down large numbers of the great spreading oaks, burned away the saltbush, the chaparral, the blackberry and willow thickets, and drained the tule marshes.

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43 Ibid., p.10.
They decimated the large grazing herds, until only a tiny remnant of the elk remained in a wildlife preserve. As their food and habitat disappeared, so did the grizzly, the condor, and the wolf. And so did the aboriginal human settlers, the Yokut and the rest, who became the victims of disease, of superior force, of land hunger. In their place developed the wealthiest agricultural operation in the United States.44

But it was not just a matter of exercising control over water and over nature for private profit, as Worster argued. It was an effective means of consolidating political and economic power of the ruling classes, and of exercising its rule over the rest of the population. It was only in 1995, almost a decade later, that such themes in river history were taken up once again, by another American historian Richard White. His work *Organic Machine* documented the impact of modern dams on the ecology of the Columbia River – which he terms as the organic machine that integrates natural energy and human labour – its renowned salmon runs and the indigenous communities of American Indians that survived on the river.45 It was a case of two different worldviews, ways of life and use of nature coming into conflict, and the resultant transformation of not only the river and its nature, but also the human settlements around it.

Research has also been carried out on the history of those technical and engineering government agencies that have been instrumental in imposing this transformation of nature, such as the US Army Corps of Engineers and Bureau of Reclamation, and their close tie-ups with the capitalist and imperial agriculture-industrial complex. Todd Shallat questioned role of the Army Corps of Engineers institution as 'a nation builder', and the ideological underpinnings of their representation of big dams as 'objects of national pride'.46 The long term effects of large dams on river ecologies and human lives dependent on it had generated more research in the US, not necessarily from only historians. In *Silenced Rivers*, Patrick McCully critically examined the worldwide impact of these 'temples of

44 Ibid., p.10.
doom'. As he went on to demonstrate, a century of building large dams in different parts of the world and the destruction at different levels wrought by it have managed to tarnish seriously the lure of large dams as icons of progress and plenty. To many people, big dams have instead become symbols of the destruction of the natural world and of the corruption and arrogance of over-powerful and secretive corporations, bureaucracies and governments. Although hundreds of large dams are still under construction and many more are on engineer's drawing boards...public protests are provoked by just about every large dam that is now proposed in a democratic country. The international dam industry appears to be entering a recession from which it may never escape.47

Recent works by historians have built on these works to scrutinise the transformations in riverine environments, such as that of the Mississippi and Sacramento by Karen M. O’Neill’s *Rivers by Design* published in 2006. The author traced the history of the turning of these rivers into ‘national rivers’. As he puts it, “Over the years, rivers have had many political meanings and many economic uses...The Mississippi and Sacramento rivers were vital highways to the interior, sources of great fortunes, and symbols of regional identity. They were transformed politically into national rivers. Now they are simply two links in a national transportation system that has declined as road and rail systems have grown.”48

And though histories of rivers in main have been written in the US, it by no means has remained confined only to that country. Attempts at the historical reconstruction of the transformation of riverine ecologies, habitations and landscapes through state and private intervention in other parts of the have also been made. Mark Cioc’s work on the Rhine is one of such instances.49 In the non-western countries, though, such attempts by historians have been very feeble, if not altogether absent. This is irrespective of the fact that these have been sites of

people's struggles opposing the projects that threaten to dispossess them of their land and destroy their culture while transforming their lived environment for private profit. Indeed, these social movements have not failed to generate a considerable academic interest, the results of which can also be seen in recent South Asian scholarship.

The struggles of the people of the Narmada to defend their lives and livelihood – most of whom are adivasis – against proposed large dams including the Sardar Sarovar project prompted Amita Baviskar to carry out a sociological study of the people on the banks of the Narmada in 1990s.\textsuperscript{50} The same movement has also been examined by Sanjay Sangvai's \textit{The River and Life}, documenting its history and providing a case against forced displacement of people and the politics that necessitates it, while trying also to suggest an alternative path of people's development.\textsuperscript{51}

\textit{Drowned and Dammed}, the study of British colonialism and flood control in the Mahanadi delta can be said to be first historical work of its kind in South Asia. Rohan D'Souza examined "the British experience with flood-control in eastern India as being that of addressing the broader problem of tracking colonial capitalism's relationships with nature."\textsuperscript{52} The means of the colonial state in doing so was primarily the construction of embankments for the protection of agrarian land and other property from destructive floods. "If anything, the embankments introduced a range of hydraulic complications that seemed to worsen deltaic inundations and undermine agrarian production. By mid-1850s, flood-control policies in the Orissa Delta had not only floundered but were clearly counterproductive as well."\textsuperscript{53} The failed attempts at the introduction flood-control as a profitable venture were aimed at keeping afloat the interests of

\textsuperscript{50} Amita Baviskar, \textit{In the Belly of the River: Tribal Conflicts over Development in the Narmada Valley}, Delhi: Oxford University Press, 1995.
\textsuperscript{52} Rohan D’Souza, \textit{Drowned and Dammed: Colonial Capitalism and Flood Control in Eastern India}, Delhi: Oxford University Press, 2006
\textsuperscript{53} Ibid., pp.14-15.
colonial capital. In the process, these interventions transformed the flood­dependent agrarian regime of Orissa into a flood-vulnerable one.

The flood-plains of North Bihar have also received some attention of late, with Praveen Singh's exploration of the dynamics of flood-control in relation to the zamindaris and the colonial state in the hundred years between 1850s and 1950s. A "major preoccupation" of the colonial state, flood-control was mediated through the zamindars who were made responsible by the state for the protection of the fields under their tenancy, while itself staying away from taking up such work on the plea of financial non-viability. However, Singh reasoned that "The colonial government's control through indirect supervision at the local level faltered repeatedly. In the latter years the introduction of legal measures to implement a policy of 'scientific flood control' also proved ineffective."54 Though bringing the focus of history to the colonial flood-control measures is a desirable development, there is also a need to situate river-history in terms of the larger society-nature dialectic, and the transformations therein.

An Overview of the Chapters

Assam may properly be called the valley of the Brahmaputra, navigable branches intersect it in every possible direction, and there is perhaps not a spot of habitated [sic] ground so situated, as to be more than a convenient distance from some navigable stream.

- M'Cosh, 183755

The plains of Asom had been formed with the alluvial soil brought down by the River Brahmaputra and its tributaries over many millennia. This mighty river in its long course through the Tibetan plateau and the Himalayan mountains to the narrow valley between the Himalayan terai and its southern hill ranges, carries in its floods millions of tons of particles of silt and sand, depositing it in successive layers on its valley in Asom and delta on the Bay of Bengal. During this


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continuous geophysical process, the river through its incessant annual floods have altered the level of the ground and have given it an undulating shape, with both banks gradually sloping down towards the river that cuts through the middle of the Valley from east to west, and works as the natural basin.

What has the river Brahmaputra and its numerous tributaries criss-crossing its two banks meant to the people who have inhabited them? With its imposing presence which has evoked songs, poems and stories in the oral literature, the people have almost given it the status of a living being, bestowed with a life of its own. It is a river which at once inspires fear as well as admiration, happiness as well as sorrow. It is a river that has a presence in every person's life on its banks. It is a river which has been engaged in the perpetual acts of destruction and creation of life and the environs that sustain it. This is a river which is now in the process of being 'tamed' – supposedly for ushering in 'development' – along with many other major rivers of the subcontinent.

What was life on its banks before a free-flowing river is converted into a regulated stream, and what will be life after? What changes this profound transformation will be made by the structures coming up across the Brahmaputra and its main tributaries? What lies in store for in the future for the millions of people, accustomed for centuries, to cohabit the river? Will it bring 'development' to the people, or will turn out to be a disaster? Who makes the decisions that changes the relation of the people with the river in a drastic manner? What has led to the coming about of the idea of a regulated river in this region, who were the proponents of this idea, who needs it and why? What are the practices that are predicated on such ideas? This is just one trajectory of the numerous questions that a historical study of the Brahmaputra can and does throw up. The nature of these questions ranges from the scientific to the social and the political. In fact, the aim will be to bring forth the inter-linkages between science and politics, or in a narrower sense, political economy. To even begin to understand these questions which are justifiably being asked today, we need to make many detours and investigate many aspects of social life, and have to explore many related questions. To put the history of the people and its changing
relations with the river in context, we need to examine the factors that bring such relations into existence and sustain them in the first place.

When we talk of a history of the Brahmaputra in the last two centuries, we talk of the social history of the river, and not its natural history. Here people and their social life play the central role. For the region and its people, it is particular epoch of history with its own distinctiveness. From the early nineteenth century, it is a history of colonialism, and of semi-colonial and neo-colonial forms of exploitation after mid-twentieth century. It is a period when the people of the region have suffered and have also struggled against imperial domination. Colonialism ushered in a process that has sought to remould, and to an extent has remoulded the social relations, with a direct bearing on a transformation of the human-nature relationship. There are reasons to argue that the processes unleashed by colonial state still hold sway in the politics and policies of the Indian state when it comes to the attempt to remould people’s relation to their lived environment – be it the forests, hills or the rivers. This is also the precursor to the forging of an extractive and exploitative relation with the Brahmaputra and the people on its banks in the late-twentieth century mainly through the state’s mediation and accompanied by the rhetoric of domination over the rivers. This process is not unique to the Brahmaputra Valley; it has its parallels in the Indian subcontinent that came under colonial rule.

All tales, historical or otherwise, need not begin at the beginning. But as the unwritten rule of narrative goes, all stories need to have a beginning and an end. The story of the Brahmaputra in the present work, in some sense, begins with the search for the beginning in the late nineteenth century, the origin of the river. It culminates in the description of the river going through a metamorphosis in the late twentieth century, after which the river will cease to be, or to put it grimly, the beginning of the end of the river. What this work sets out to capture is the story in between, i.e., between the beginning and the end of the Brahmaputra.

The first chapter surveys the ways in which the river Brahmaputra presents itself in the medieval narratives not merely as a passive site for events of historic
importance to unfold, but as a factor that had a bearing on their outcome. The Brahmaputra, as the most important conduit to travel to and in Asom was described by travellers and chroniclers and located by the early cartographers of the region, some of which are recounted here. Of the series of cartographic representations of the river, James Rennell’s work in the mid-eighteenth century came to be considered as the most scientific, even though he too did not have the means to comply with the conventions of geography while studying the Brahmaputra. The later cartographic representations of the river are by professional colonial surveyors who were entrusted the task of mapping out the *terra incognita*. A few intriguing questions were specifically investigated by the colonial government while commissioning the river-surveys on the Brahmaputra. First, where did the river originate? Second, what was the true identity of the river, i.e., were the River Tsangpo of Tibet was identical with the Brahmaputra of Asom? Third, if both indeed were one and the same, then how did the river descend the dizzying heights of about 5000 meters that separated its two valleys in Tibet and Asom? Were there somewhere in the impregnable forests of the North Eastern Frontier existed the highest waterfall in the world? These were the geographical ‘mysteries’ of the Brahmaputra, to resolve which explorers were sent across the Himalayan kingdoms, and the chapter recounts some of these journeys. Significantly, all the important survey works on the Brahmaputra in the region were part of one military expedition another, and it was as true in 1910s as it was 1790s. The colonial surveyors carried the compass on one hand and the gun on the other while mapping the Brahmaputra and the region surrounding it. It was an integral part of colonial domination and subjugation.

The river has been a source and site for reproduction of life. For the majority of the people, the rivers were a source of livelihood and sustenance, though for some like fishery leaseholders it was also a source of profit. It is significant to note that occupations related to the rivers such as fishing were looked down upon in a caste-divided Hindu society like in the Brahmaputra Valley, while the fisher-folk were one of the most marginal classes with hardly any means of production at their disposal. Their condition became all the more precarious
after commercialisation of fishing in the colonial period, but they continued to survive even in highly exploitative social conditions. The second chapter briefly recounts the state of fishing and the fish-people in the colonial period, along with another occupation that did not survive this period, i.e., gold-washing on the rivers of the Valley. The chapter also talks about boats and boat-making as well as the practice of catching drift-timber on the rivers during the floods. None of these occupations were free from the impact of policies pursued by the colonial state that were aimed at maximisation of revenue generation.

The third chapter is a foray into the history of settlement and demographic patterns in the nineteenth-century Brahmaputra Valley. The Brahmaputra Valley is distinguished by three distinct topographical sub-zones, and we argue that each had its distinct natural characteristics that influenced the ways of life different from one another. The relation of the people inhabiting the three sub-zones of the riverine tract, the submontane tract, and the flood-immune permanent rice-tract in between, were different. Along with it, we also examine the demographic trends of the Valley from early decades of colonial rule to the first decades of the twentieth century to examine the correlation between the trends in demography and settlement. We argue that there was an increasing pressure on cultivable fallow land due to the grant of land-leases for tea plantation and the declaration of large forest tracts as Reserved Forests. Yet, the colonial government was of the opinion that Asom was a country of abundant land that could never be exhausted by the ‘lazy’ and ‘non-enterprising’ native peasantry. The colonial state therefore decided to encourage the immigration of peasants from the neighbouring provinces to Asom in the early decades of the twentieth century. This policy in the long run had the effect of paving the way for a new relationship with the Brahmaputra, and this is discussed in fourth chapter.

Floods were a common and annual phenomenon in Asom, as usual as the monsoon, the summer and the winter. Floods had both its beneficial and destructive aspects and the inhabitants of the Valley new it well. Yet, the medieval Ahom state is known for its embankment works that were aimed at reclaiming land for cultivation as well as to protect them from destructive floods.
The fifth chapter discusses the approach of the colonial state towards these works, which they inherited in a dilapidated condition. The state was not willing to put any strain on its revenue potentials by taking up schemes for the restoration or construction of embankments in the nineteenth century, other than spending the small sums for the upkeep of the most urgent of such works. When it did show urgency, it was usually for those embankments which were also highways of strategic importance. Otherwise, the state was content in encouraging its subjects to take up such works by themselves. But after the great earthquake of 1897 the intensity of the Brahmaputra floods appeared to have gone up, and the state considered construction of embankments that involved the expense of considerable sums.

However, the construction of embankments alone was not sufficient for the sustenance of the peasantry and their cultivation that were affected by the floods and erosion of the rivers. The colonial state devised flood mitigation policies in the first decades of the twentieth century, which included immediate flood relief, grant of gratuitous relief, distribution of food and seeds, suspension and remission of land revenue, distribution of agricultural loan, and so on. The emergence of annual floods of the Brahmaputra as a calamity in the first half of the twentieth century and the state's investigation of the causes of floods in this period were connected developments. The incidence of floods was exacerbated by the prevailing social conditions, where the poor and landless peasants had to bear the most severe burden of the state's high revenue demand and the moneylender's obligations. These issues are explored in the sixth chapter.

The ideological and material roots of the mega dams on the Brahmaputra's major tributaries can be traced to the mid-twentieth century. The 'problem' of floods was presented by the regional ruling classes as a cause of Asom's sufferings, and the big dams as its solution. Though these hopes were only to materialise only in late-twentieth century, the posing of the question of Asom's underdevelopment in such a manner is to already anticipate such an outcome. An urgent resolution of the 'problem' was called for by the great earthquake of 1950, which once again altered the fragile geophysical landscape of the Valley. State-scientists and
experts from India, Europe and the US examined the river system, and came to one near-unanimous conclusion - the need for the taming of the 'problem river'. While the provincial government was to take care of the short term measures of flood control by primarily building embankments, the Government of India was to take steps for the long term solution - the complete 'stabilisation' of the river through multi-purpose reservoirs across the major tributaries of the river. This was the building blocks that prepared the foundations of a complete metamorphosis of the Brahmaputra - from a free-flowing river to a tamed and controlled one. The adverse implications of this on the people who inhabit the river and its numerous tributaries, the dispossession, displacement and destruction it was to bring to people's lives, the degradation of the ecosystem, the dangers of mega-structures in a highly-seismic region, all were relegated to a background. But these difficult questions are being posed today to the state by the people of the region, who are protesting against these projects. The future of the region, its people and the Brahmaputra will be decided by the outcome of the struggle between the people and the state.